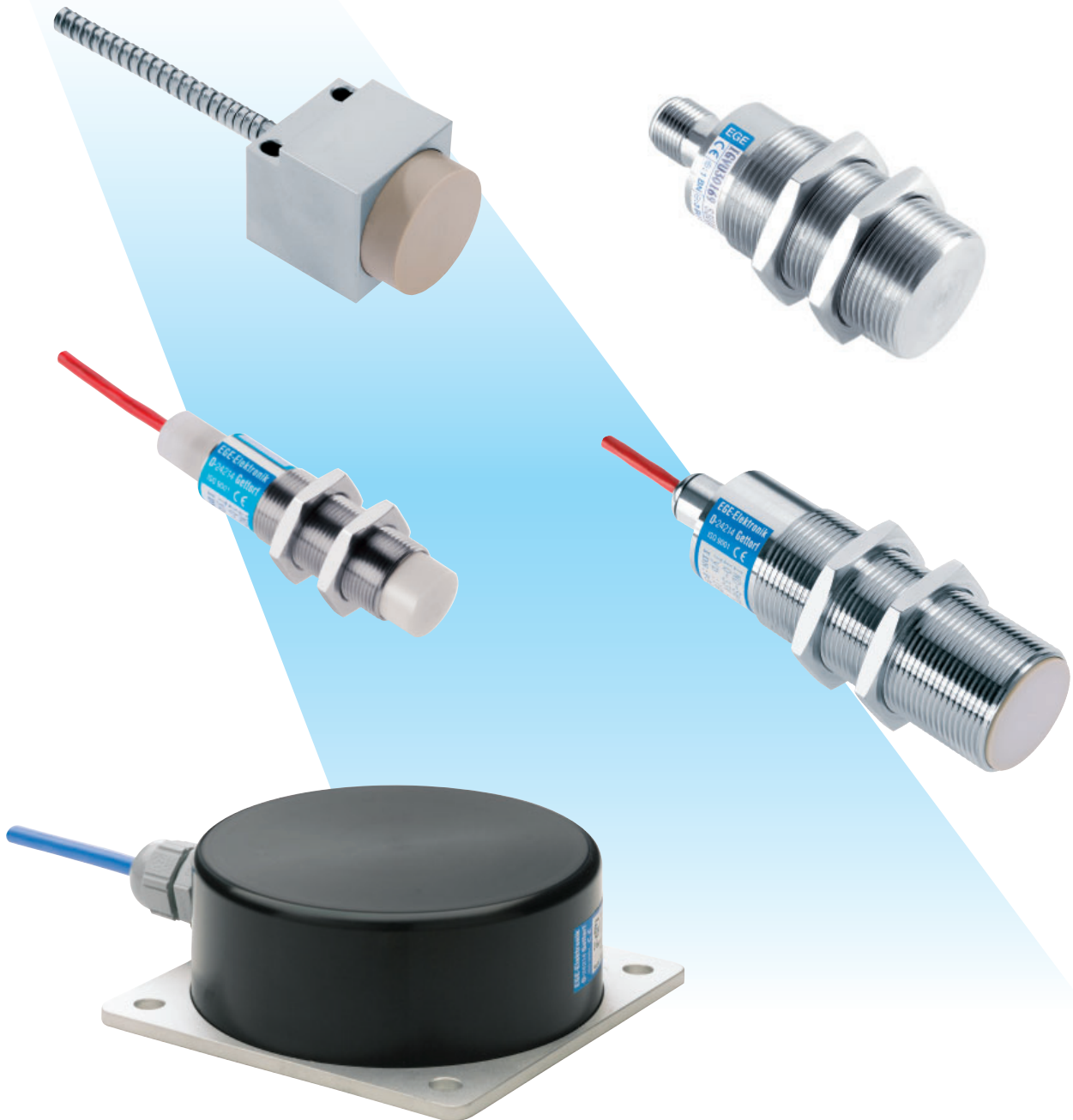


# Special-Sensors for Automation



## Inductive Sensors

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Technical alterations are reserved to us without prior announcement. The information provided in this catalogue is for reference only. Product installation information can be found in the instructions supplied with each product.

## Terminology for inductive measurement

### Operating Principal

An inductive proximity switch works with a high frequency oscillating circuit that creates an alternating electromagnetic field on the active sensor surface by means of a coil. When a metallic object nears this field a damping occurs in the oscillating circuit. If this damping exceeds a threshold value, a switching signal is generated.

### Operating distance

The operating distance is the distance between an object and the active sensor surface at which a switching signal is generated. The operating distance depends on the diameter of the coil. Therefore larger sensors are required for longer operating distances. On some of the EGE sensors the operating distance is adjustable.

If a metal object dampens only a part of the alternating field, the operating distance decreases; a larger object increases it. The following approximate values are derived from a standard rectangular measurement plate made of steel ST 37 with an edge length that corresponds to the diameter of the sensor coil or three times the rated operating distance, whichever is greater.

| Damping area in %       |     |    |    |    |      |  |
|-------------------------|-----|----|----|----|------|--|
| 150                     | 100 | 75 | 50 | 25 | 12.5 |  |
| Operating distance in % |     |    |    |    |      |  |
| 110                     | 100 | 93 | 86 | 73 | 55   |  |

The operating distance is influenced by the material of the object: Constant dimensions for different materials against steel ST 37 yield a changed operating distance.

The following table lists approximate values for the material dependent reduction factors. In practical applications variations could occur due to different alloying, for example.

| Material        | Operating distance in % |
|-----------------|-------------------------|
| steel ST37      | 100                     |
| stainless steel | 70                      |
| brass (Br)      | 50                      |
| copper (Cu)     | 45                      |
| aluminium (Al)  | 40                      |

### Rated operating distance $s_n$

The rated operating distance is a device parameter that does not take into account sample variances and external influences such as temperature and supply voltages.

### Effective operating distance $s_r$

The effective operating distance is the operating distance at nominal voltage and a nominal temperature of 23 °C. It is between 90% and 110% of the rated operating distance.

### Usable operating distance $s_u$

The usable operating distance lies in the entire allowable temperature and voltage range between 90% and 110% of the effective operating distance.

### Assured operating distance $s_a$

The assured operating distance takes into account all the external influences and sample variances and lies in the range from 0% to 80% of the usable operating distance. Within this range a guaranteed switching is ensured.

### Switch point drift

The operating distances are given for an ambient temperature of 23 °C. In the permissible temperature range the operating distance varies by less than 15% from the value at 23 °C. The temperature of the measured object has no influence on the switch point.

### Hysteresis $H$

The switching hysteresis describes the distance between the turn-on point while approaching an object and the turn-off point during the separation of it from the sensor. The hysteresis brings about a stable switching signal even when there are vibrations, temperature drift, or electrical variations. The hysteresis is defined in EN 60947-5-2 as a maximum 20% from the effective operating distance, and carries a value of typically 10% from the effective operating distance  $s_r$  for EGE sensors.

### Repeating accuracy $R$

The repeating accuracy describes the maintenance of the switching point after the repeated approach of an object under specified circumstances. EGE sensors have typical tolerances of less than 3% of the effective operating distance.

### Switching frequency

The maximum switching frequency of the sensor is determined at half rated operating distance  $s_n$  with standard measurement plates to EN 60947-5-2

## Terminology for inductive measurement

### Operating voltage

The operating voltage is the voltage range within EGE sensors function safely. For a constant voltage supply it is important to make sure that the limits are still observed when the residual ripple is included.

### Switching current

This current gives the maximum long-term current for the switching output of the sensor at an ambient temperature of 25 °C and ohmic load. At an elevated ambient temperature, the current load capability decreases.

For analog outputs, the boundary values given in the appropriate technical data, and particularly the permissible values for resistance loads, must be observed.

### Short circuit protection

The short circuit protection ensures the sensor against destruction through a short circuit on the output. After removal of the fault, the output is reactivated. Where a maximum overload current is listed, this should not be exceeded.

### Excess-current release

This value indicates the median value of current at which the short circuit protection responds with a tolerance of  $\pm 20\%$ .

### Reverse polarity protection

The reverse polarity protection prevents destruction of the sensor by a reversal of the polarity of the voltage supply.

### Voltage drop $U_d$

The voltage drop arises at the internal resistance of semiconductor elements, which are in the current-path of the output. It is dependent of the load-current and is declared according to EN 60947-5-2 for a mean current of 50 mA.

### Residual current $I_r$

The residual current flows in the load current circuit when the output is blocked. The residual current must be considered when switching sensors in parallel.

### Minimum load current $I_m$

The minimum load current is necessary for flawless operation with two-wire devices.

### Current consumption

The current consumption is the maximum value of the no-load current  $I_0$  that the sensor can absorb without a load.

### Ambient temperature

The ambient temperature indicates the maximum allowable temperature range for the sensor.

### Electromagnetic compatibility EMC

The EMC class is a measure of the noise immunity of the sensor against external electrical and magnetic influences. The information is based on the standard EN 61000-6-2.

### Switch-on impulse suppression

EGE sensors have a switch-on suppression that blocks the output during the switch-on phase, when the operational voltage is applied.

### Protective system

The protective system indicates the protection of the sensors against penetration of foreign bodies and water to EN 60529.

### LED display

EGE sensors with yellow light-emitting diodes indicate the switching status optically.

### Housing material

The housing material determines the chemical resistance of the sensor against external influences. For special applications, other housing materials are available.

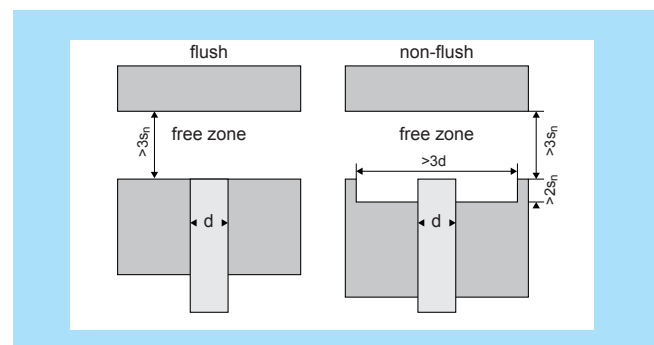
### Connection

The connection of the sensors is accomplished through plug-in connections or cables. Different cable types and lengths are available upon request.

## Instructions for mounting

### Mounting

For flush mounting the sensor can be built into metal up to its active surface without changing its characteristics. For non-flush mounting a metal-free zone around the sensor must be allowed for. A free zone to the material opposite the sensor must be maintained for all sensors.



The indicated free zones are in accordance with the standard EN 60947-5-2.

Fixing nuts are part of delivery for all metal thread sensors. For mounting clamps see page 3.71.

## Terminology for inductive measurement

### Collocation

When collocating the sensors, a minimum separation must be kept between the devices. When in doubt, a test should be conducted under application conditions. For flush mounting the lateral separation between two sensors must correspond to at least the diameter of the sensor. For non flush mounting, the lateral separation from each other must correspond to at least twice the diameter of the sensor. For oppositely mounted sensors, a minimal separation of six times the rated operating distance should be allowed.

### Torques

In order to prevent destruction of the threaded bushing during fitting, the following maximum torques must not be exceeded:

| Design  | Metal Housing | Plastic Housing |
|---------|---------------|-----------------|
| M12x1   | 10 Nm         | 1 Nm            |
| M18x1   | 25 Nm         | 2 Nm            |
| M30x1.5 | 40 Nm         | 5 Nm            |

PTFE sensors may only be tightened by hand.

## Instructions for operation

### Serial connection

For the serial connection of two wire or three wire sensors the individual voltage drops are added together. Therefore there is a lesser operational voltage at the disposal of the load. The addition of the switch-on delay times should be noted.

### Parallel connection

The parallel connection of two wire sensors can only be conditionally recommended since the residual currents are added together and flow through the load. For the parallel connection of three wire sensors, the current consumption of the individual devices is added together. Since this current does not flow through the load, the maximum number of parallel connectable three wire sensors depends only on the power supply.

## Approval for safety applications

Sensors for personal security must have a qualification approval according to EN 61508 and must be labeled accordingly. Sensors that are not labeled must not be used for applications of this kind.

### Valid standards

EN 60947-5-2

Control units; low voltage control units, auxiliary switch, proximity switch

EN 61000-6-4

Electromagnetic compatibility (EMC)  
Interference emissions in the industrial area

EN 61000-6-2

Electromagnetic compatibility (EMC)  
Generic standards immunity for industrial environments

EN 61000-4-2 (ESD)

Electrostatic discharging immunity

EN 61000-4-3 (HF radiated)

Radiated radio-frequency electromagnetic field immunity test

EN 61000-4-4 (Burst)

Electrical fast transient/burst immunity test

EN 61000-4-5 (Surge)

Surge immunity test

EN 61000-4-6 (HF conducted)

Immunity to conducted disturbances, induced by radio-frequency fields

EN 60529 : 2013

Protective systems, IP-designation

EN 60079-0 : 2012 +A11:2013

Explosive atmospheres –  
Part 0: Equipment – General requirements

EN 60079-7 : 2015

Explosive atmospheres –  
Part 7: Equipment protection by increased safety „e“

EN 60079-11 : 2012

Explosive atmospheres –  
Part 11: Equipment protection by intrinsic safety „i“

EN 60079-18 : 2015

Explosive atmospheres –  
Part 18: Equipment protection by encapsulation „m“

EN 60079-26 : 2015

Explosive atmospheres –  
Part 26: Equipment with Equipment Protection Level (EPL)Ga

EN 60079-31 : 2014

Explosive atmospheres –  
Part 31: Equipment dust ignition protection by enclosure „t“

## Authorisations

TÜV NORD CERT      Zertifizierungsstelle - Deutschland  
(technical monitoring certification agency - Germany)

## Certification

TÜV-cert      ISO 9001 : 2008

TÜV-cert      Quality control production  
Attachment IV of the EC-Guidelines 94/9/EG  
DIN EN ISO / IEC 80079-34 : 2012

TÜV Nord      Re-cancelling certificate according to EN 10204

## Application notes

### **Metal face sensors**

page 3.07 - 3.10

The inductive proximity switches series IGV are used in areas with heavy-duty mechanical loads at the sensor's face or where seals between face and housing cannot be used. Chips hitting the front or frequently changing coolants or lubricants do not diminish the function of these proximity switches. The variants with a PTFE coating are particularly well-suited for welding lines and similar environments where sensors are exposed to heavy soiling. Metal face switches are manufactured from stainless steel and are one solid piece. They detect iron and steel through the metal front face.

### **POLAR-Switches**

page 3.12 - 3.14

The POLAR-switch is ideal for application in cold storage houses and in extreme climate conditions. It is waterproof, safe for cleaning and extremely chemical-resistant. Because of its stainless steel housing, it can withstand vibrations on vehicles. The POLAR-switch is very compact and robust, it can be used from  $-60\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$ . IGMF 030 S-80 sensors are suitable in cryogenic processes and for medical-technical applications; they can be used for temperatures up to  $-80\text{ }^{\circ}\text{C}$ .

### **TROPICAL-Switches**

page 3.15 - 3.20

The TROPICAL switches series IGMF are anticipated for applications in corrosive environment. They are stable particularly at frequent temperature changes and simultaneously high humidity. The permanent work in carwashes is permissible. The high corrosion resisting at simultaneously high mechanical loading capacity is reached through the combination of PTFE and titan stabilized stainless steel. The PTFE-hoods are sealed through fluoroelastomers O-rings surely. The FEP-connecting cable is poured within the housing and freed over a double seal from the housing. Cable lengths up to 100 m are available. The installed LED's are shining through the cable side cap and don't break out the case. IGMW series sensors are suitable for hydro steam environments with pressures of up to 4 bars. For higher pressures in hydro steam environments, IGWW series sensors made of full stainless steel are recommended.

### **120 °C-High temperature switches**

page 3.21 - 3.26

The inductive PTFE switches series IGFW and INFW are made entirely of PTFE. The housing cover is securely sealed with a fluoroelastomer O-Ring. These sensors are designed for particularly difficult and aggressive environmental conditions. They can be used in damp and aggressive environments as well as under water (oil). IGMT- and IDT-series proximity switches are designed for use in temperatures up to  $120\text{ }^{\circ}\text{C}$ .

### **160 °C-High temperature switches**

page 3.27 - 3.28

Inductive compact devices for ambient temperatures up to  $160\text{ }^{\circ}\text{C}$  are available flush and non-flush in the standard designs M12, M18 and M30 with switching distances from

2 mm to 15 mm. The material used is the rugged stainless steel housing combined with high temperature resistant PEEK plastic.

### **250 °C-High temperatures sensors**

page 3.29 - 3.30

The inductive proximity switches series IGH/IDH/IRH are used for ambient temperatures up to  $250\text{ }^{\circ}\text{C}$ . The units feature optional a plug connection which withstands high temperatures, allowing users to quickly and easily install a replacement sensor head in case of damage without having to replace the sensor cable. The sensors are particularly suited for operation in extreme heat, e. g. in drying ovens or brick kilns. Manufactured from aluminum / stainless steel and PEEK, the robust sensors can be used in rugged industrial environments. Their electronics are housed separately in a pluggable cable amplifier. The units are connected via a metal armored cable.

### **Amplifiers**

page 3.32 - 3.33

Switching amplifiers are designed for induction sensors for which it is necessary to separate the sensor coil from the amplifier, e. g. for operating temperatures above  $160\text{ }^{\circ}\text{C}$  or for sensor coils which must be exchanged due to frequent damage.

The switching amplifiers work statically, that is, if the sensor coil is permanently damped, the switching output also remains activated. Switching interval and hysteresis (IKM 120 GPP, IU 130...) can be set on the amplifier. The sensor cable may have a length of up to 20 m.

### **Demanding environment**

Seite 3.34 - 3.41

The "Demanding environment" series is especially designed for harsh environments in which sensors are subjected to high electrical, electromagnetic or mechanical stress. For sensors used in critical applications, EGE has developed special inspection and test methods which place particular emphasis on the disturbances that occur in various production environments. The sensors are designed to be very resistant to the interference spectra produced by, e. g., frequency inverters, wireless communication systems and switching power supplies.

### **Surface sensors IFE...**

page 3.48 - 3.49

The switches are build as flat sensors. They are used particularly to detect moving sheet metal or steel rods on conveyor belts. The complete sensor is covered, which make the sensor moisture resistant.

Reduced overall height affects the operating distance (sn). The IFE switches are self-contained with integral amplifier.

### **Dust- and Gas-Ex sensors**

page 3.56 - 3.66

IGEX and IDEX are sensors for detecting metals in the Ex area zone 0/20 and zone 22 according to ATEX. Devices can be delivered in the standard configurations M12, M18 and M30. For large switching distances there are configurations with diameters of 80 mm to 160 mm.

## Metal face sensors • Plug connection

### Series IGUV - Proximity switches

**M12 / M18 / M30**

**One piece stainless steel housing**

**DC 10...30 V**

**Shock resistant  
Impact proof**



| Design                                                                         | DC PNP M12 • M18 • M30                            |             |             | DC 2-Wire M12 • M18 • M30 |            |            |
|--------------------------------------------------------------------------------|---------------------------------------------------|-------------|-------------|---------------------------|------------|------------|
| Dimensions                                                                     |                                                   |             |             |                           |            |            |
|                                                                                |                                                   |             |             |                           |            |            |
| Operating distance sn [mm]                                                     | 2                                                 | 5           | 10          | 2                         | 5          | 10         |
| Switching output PNP                                                           |                                                   |             |             |                           |            |            |
| ID-No.                                                                         | P31193                                            | P31194      | P31195      | P31225                    | P31226     | P31227     |
| Type                                                                           | IGVU 02 GSP                                       | IGVU 05 GSP | IGVU 10 GSP | IGVU 02 GS                | IGVU 05 GS | IGVU 10 GS |
| Supply voltage [V]                                                             | 10...30 DC                                        |             |             | 8...30 DC                 |            |            |
| Switching current [mA]                                                         | 250                                               |             |             | 150                       |            |            |
| Short circuit proof                                                            | •                                                 |             |             | •                         |            |            |
| Reverse protection                                                             | •                                                 |             |             | •                         |            |            |
| Voltage drop max. [V]                                                          | 1.5                                               |             |             | 3.5                       |            |            |
| Current consumption [mA]                                                       | 5                                                 |             |             | 1.5                       |            |            |
| Switching frequency [Hz]                                                       | 180                                               | 180         | 150         | 180                       | 180        | 150        |
| Ambient temperature [°C]                                                       | -25...+80                                         |             |             | -25...+80                 |            |            |
| EMC-class                                                                      | A                                                 |             |             | A                         |            |            |
| Protection [EN 60529]                                                          | IP 68 + IP 69K                                    |             |             | IP 68 + IP 69K            |            |            |
| LED display                                                                    | •                                                 |             |             | •                         |            |            |
| Housing material                                                               | AISI 316 L                                        |             |             | AISI 316 L                |            |            |
| Connection                                                                     | M12 connector                                     |             |             | M12 connector             |            |            |
| The specified operating distance (sn) applies to ferromagnetic objects (ST37). |                                                   |             |             |                           |            |            |
|                                                                                |                                                   |             |             |                           |            |            |
| Accessories                                                                    | connecting cable type SLG 3-2 (Z01076), page 3.69 |             |             |                           |            |            |

## Metal face sensors • Cable connection

### Series IGV - Proximity switches

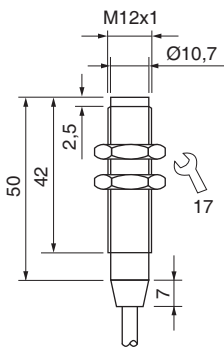
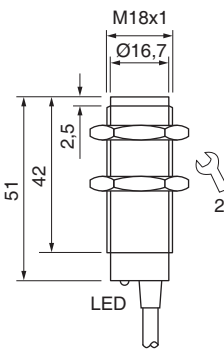
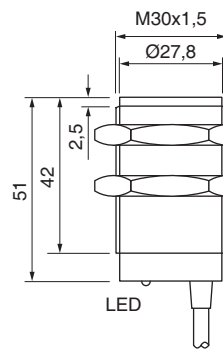
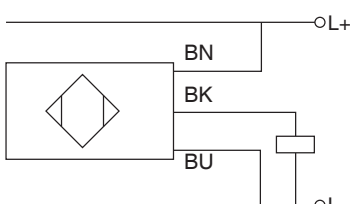
**M12 / M18 / M30**

**One piece stainless steel housing**

**DC 10...30 V**

**Shock resistant  
Impact proof**



| Design                                                                         | DC PNP • M12x1                                                                       | DC PNP • M18x1                                                                      | DC PNP • M30x1.5                                                                      |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                                                     |    |  |   |
| Operating distance sn [mm]                                                     | 2                                                                                    | 5                                                                                   | 10                                                                                    |
| Switching output PNP                                                           |   |  |  |
| ID-No.                                                                         | P31228                                                                               | P31229                                                                              | P31230                                                                                |
| Type                                                                           | IGV 02 GSP                                                                           | IGV 05 GSP                                                                          | IGV 10 GSP                                                                            |
| Supply voltage [V]                                                             | 10...30 DC                                                                           |                                                                                     |                                                                                       |
| Switching current [mA]                                                         | 250                                                                                  |                                                                                     |                                                                                       |
| Short circuit proof                                                            | •                                                                                    |                                                                                     |                                                                                       |
| Reverse protection                                                             | •                                                                                    |                                                                                     |                                                                                       |
| Voltage drop max. [V]                                                          | 1.5                                                                                  |                                                                                     |                                                                                       |
| Current consumption [mA]                                                       | max. 5                                                                               |                                                                                     |                                                                                       |
| Switching frequency [Hz]                                                       | 180                                                                                  | 180                                                                                 | 150                                                                                   |
| Ambient temperature [°C]                                                       | -25...+80                                                                            |                                                                                     |                                                                                       |
| EMC-class                                                                      | A                                                                                    |                                                                                     |                                                                                       |
| Protection [EN 60529]                                                          | IP 67                                                                                |                                                                                     |                                                                                       |
| LED display                                                                    | •                                                                                    |                                                                                     |                                                                                       |
| Housing material                                                               | AISI 316 L                                                                           |                                                                                     |                                                                                       |
| Connection                                                                     | 2 m PVC-cable 3x0.34 mm <sup>2</sup>                                                 |                                                                                     |                                                                                       |
| The specified operating distance (sn) applies to ferromagnetic objects (ST37). |  |                                                                                     |                                                                                       |
|                                                                                |                                                                                      |                                                                                     |                                                                                       |

## Metal face sensors • PTFE-coated

### Series IGUVU - Proximity switches

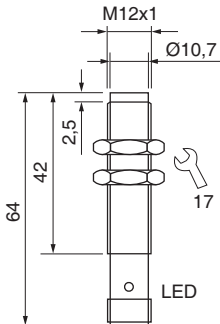
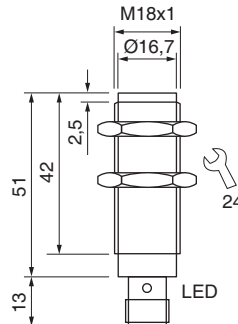
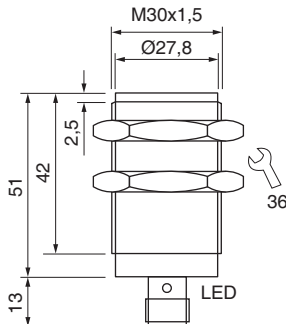
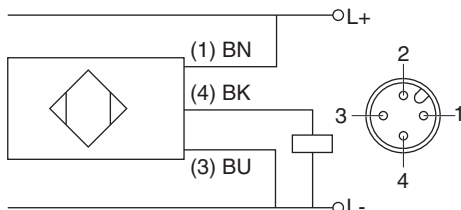
**M12 / M18 / M30**

**One piece stainless steel housing**

**DC 10...30 V**

**Shock resistant  
Impact proof**



| Design                                                                         | DC PNP • M12x1                                                                       | DC PNP • M18x1                                                                       | DC PNP • M30x1.5                                                                      |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                                                     |    |   |   |
| Operating distance sn [mm]                                                     | 2                                                                                    | 5                                                                                    | 10                                                                                    |
| Switching output PNP                                                           |   |  |  |
| ID-No.                                                                         | P31234                                                                               | P31235                                                                               | P31236                                                                                |
| Type                                                                           | IGVU 02 GSP-C                                                                        | IGVU 05 GSP-C                                                                        | IGVU 10 GSP-C                                                                         |
| Supply voltage [V]                                                             | 10...30 DC                                                                           |                                                                                      |                                                                                       |
| Switching current [mA]                                                         | 250                                                                                  |                                                                                      |                                                                                       |
| Short circuit proof                                                            | •                                                                                    |                                                                                      |                                                                                       |
| Reverse protection                                                             | •                                                                                    |                                                                                      |                                                                                       |
| Voltage drop max. [V]                                                          | 1.5                                                                                  |                                                                                      |                                                                                       |
| Current consumption [mA]                                                       | 5                                                                                    |                                                                                      |                                                                                       |
| Switching frequency [Hz]                                                       | 180                                                                                  | 180                                                                                  | 150                                                                                   |
| Ambient temperature [°C]                                                       | -25...+80                                                                            |                                                                                      |                                                                                       |
| EMC-class                                                                      | A                                                                                    |                                                                                      |                                                                                       |
| Protection [EN 60529]                                                          | IP 68 + IP 69K                                                                       |                                                                                      |                                                                                       |
| LED display                                                                    | •                                                                                    |                                                                                      |                                                                                       |
| Housing material                                                               | AISI 316 L, PTFE-coated                                                              |                                                                                      |                                                                                       |
| Connection                                                                     | M12 connector                                                                        |                                                                                      |                                                                                       |
| The specified operating distance (sn) applies to ferromagnetic objects (ST37). | Design with fixed cable on request                                                   |                                                                                      |                                                                                       |
|                                                                                |  |                                                                                      |                                                                                       |
| Accessories                                                                    | connecting cable SLG 3-2 (Z01076), page 3.69                                         |                                                                                      |                                                                                       |

## Metal face sensors • Climatic-proofed

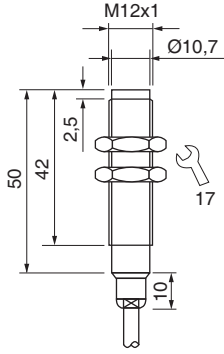
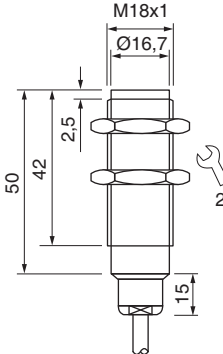
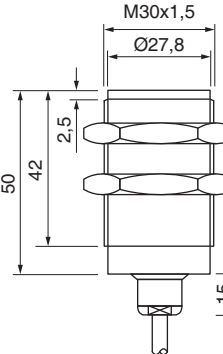
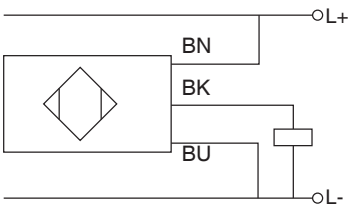
### Series IGW - Proximity switches

**M12 / M18 / M30**  
**One piece stainless**  
**steel housing**

**DC 10...30 V**

**Shock resistant**  
**Impact proof**



| Design                                                                         | DC PNP • M12x1                                                                       | DC PNP • M18x1                                                                       | DC PNP • M30x1.5                                                                      |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                                                     |    |   |   |
| Operating distance sn [mm]                                                     | 2                                                                                    | 5                                                                                    | 10                                                                                    |
| Switching output PNP                                                           |   |  |  |
| ID-No.                                                                         | P31237                                                                               | P31238                                                                               | P31239                                                                                |
| Type                                                                           | IGW 02 GSP                                                                           | IGW 05 GSP                                                                           | IGW 10 GSP                                                                            |
| Supply voltage [V]                                                             | 10...30 DC                                                                           |                                                                                      |                                                                                       |
| Switching current [mA]                                                         | 250                                                                                  |                                                                                      |                                                                                       |
| Short circuit proof                                                            | •                                                                                    |                                                                                      |                                                                                       |
| Reverse protection                                                             | •                                                                                    |                                                                                      |                                                                                       |
| Voltage drop max. [V]                                                          | 1.5                                                                                  |                                                                                      |                                                                                       |
| Current consumption [mA]                                                       | 5                                                                                    |                                                                                      |                                                                                       |
| Switching frequency [Hz]                                                       | 180                                                                                  | 180                                                                                  | 150                                                                                   |
| Ambient temperature [°C]                                                       | -10...+110                                                                           |                                                                                      |                                                                                       |
| EMC-class                                                                      | A                                                                                    |                                                                                      |                                                                                       |
| Protection [EN 60529]                                                          | IP 68 + IP 69K                                                                       |                                                                                      |                                                                                       |
| Housing material                                                               | AISI 316 L                                                                           |                                                                                      |                                                                                       |
| Connection                                                                     | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                                 |                                                                                      |                                                                                       |
| The specified operating distance (sn) applies to ferromagnetic objects (ST37). |  |                                                                                      |                                                                                       |

## Mounting clamp • For metal face sensors

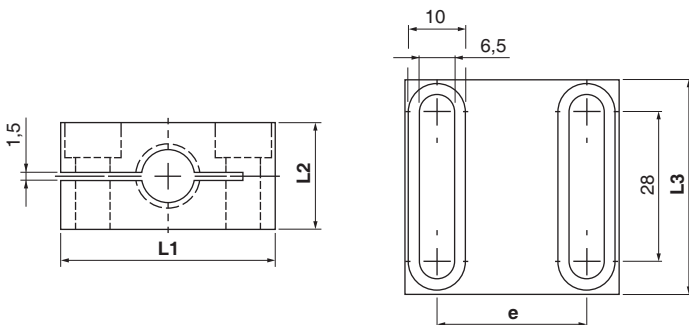
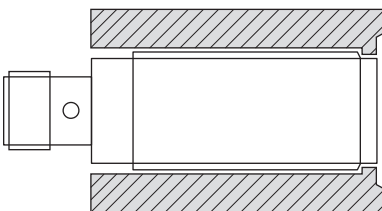
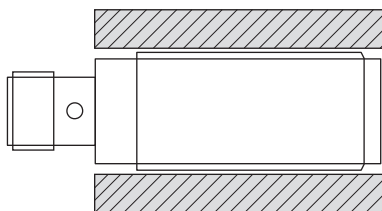
Series KBM 012 / KBM 018 / KBM 030

**Impact- and shock resistant,  
protected installation**

**Simple adjustment  
via slotted holes**

**Mount and replace sensor  
quickly and precisely**



| Design                                                                                                                                                               |      | KBM 012 • KBM 018 • KBM 030                                                           |                |                |              |              |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|----------------|----------------|--------------|--------------|--------------|
| Dimensions                                                                                                                                                           |      |    |                |                |              |              |              |
| ID-No.                                                                                                                                                               |      | Z01209                                                                                | Z01210         | Z01211         | Z01212       | Z01213       | Z01214       |
| Type                                                                                                                                                                 |      | KBM 012 A-ST52                                                                        | KBM 018 A-ST52 | KBM 030 A-ST52 | KBM 012 B-A2 | KBM 018 B-A2 | KBM 030 B-A2 |
| For sensor design                                                                                                                                                    |      | M12                                                                                   | M18            | M30            | M12          | M18          | M30          |
| Dimensions                                                                                                                                                           |      |                                                                                       |                |                |              |              |              |
| L1 x L2 x L3                                                                                                                                                         | [mm] | 34 x 24 x 40                                                                          | 40 x 30 x 40   | 55 x 40 x 40   | 34 x 24 x 40 | 40 x 30 x 40 | 55 x 40 x 40 |
| Hole spacing e                                                                                                                                                       | [mm] | 20                                                                                    | 26             | 40             | 20           | 26           | 40           |
| Sensor installation                                                                                                                                                  |      | flushed relative to the set back surface                                              |                |                | set back     |              |              |
| Housing material                                                                                                                                                     |      | ST52, hardened                                                                        |                |                | AISI 303     |              |              |
| Note:                                                                                                                                                                |      |                                                                                       |                |                |              |              |              |
| Mounting clamps are fastened to their metal surface using M6 hexagon socket screws. Make sure that the provided stainless steel washers have been placed in-between. |      |    |                |                |              |              |              |
| The typical torque is 6 Nm.                                                                                                                                          |      | flushed relative to the set back surface                                              |                |                |              |              |              |
|                                                                                                                                                                      |      |  |                |                |              |              |              |
|                                                                                                                                                                      |      | set back                                                                              |                |                |              |              |              |

## POLAR-Series DC • Climatic-proofed –60 °C

### Series IGMP - Proximity switches

M12 / M18 / M30

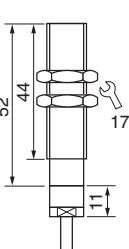
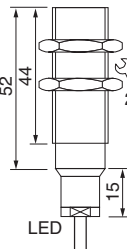
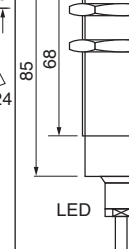
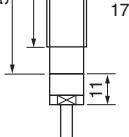
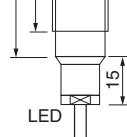
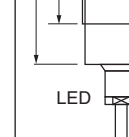
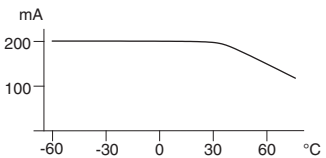
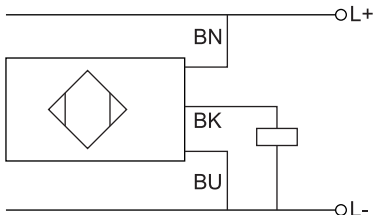
Stainless steel sleeve

DC 10...30 V

IP 68 Water-proofed

IP 69K Resistant to  
high pressure cleaning



| Design                                      | DC PNP • M12x1                                                                       |             | DC PNP • M18x1                                                                      |             | DC PNP • M30x1.5                                                                      |              |
|---------------------------------------------|--------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------|--------------|
| Dimensions                                  |    |             |   |             |   |              |
| Installation<br>flush (f)<br>non flush (nf) |    |             |   |             |   |              |
| Operating distance sn [mm]                  | 2 f                                                                                  | 4 nf        | 5 f                                                                                 | 7 nf        | 10 f                                                                                  | 15 nf        |
| Switching output PNP                        |   |             |  |             |  |              |
| ID-No.                                      | P31145                                                                               | P31146      | P31147                                                                              | P31148      | P31219                                                                                | P31220       |
| Type                                        | IGMP 02 GSP                                                                          | IGMP 04 GSP | IGMP 05 GSP                                                                         | IGMP 08 GSP | IGMP 010 GSP                                                                          | IGMP 015 GSP |
| Supply voltage [V]                          | 10...30 DC                                                                           |             |                                                                                     |             |                                                                                       |              |
| Switching current [mA]                      | 200                                                                                  |             |                                                                                     |             |                                                                                       |              |
| Short circuit proof                         | •                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Overcurrent release [mA]                    | 230                                                                                  |             |                                                                                     |             |                                                                                       |              |
| Reverse protection                          | •                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Voltage drop max. [V]                       | 2                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Load current [mA]                           | –                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Current consumption [mA]                    | 4                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Switching frequency [Hz]                    | 1000                                                                                 |             |                                                                                     |             |                                                                                       |              |
| Ambient temperature [°C]                    | –55...+60                                                                            |             |                                                                                     |             |                                                                                       |              |
| Temperature min. [°C]                       | –60                                                                                  |             |                                                                                     |             |                                                                                       |              |
| Temperature gradient [K/min]                | 5                                                                                    |             |                                                                                     |             |                                                                                       |              |
| EMC-class                                   | A                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Protection [EN 60529]                       | IP 68 + IP 69K                                                                       |             |                                                                                     |             |                                                                                       |              |
| LED display                                 | •                                                                                    |             |                                                                                     |             |                                                                                       |              |
| Housing material                            | PTFE / AISI 316 Ti                                                                   |             |                                                                                     |             |                                                                                       |              |
| Connection                                  | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                                 |             |                                                                                     |             |                                                                                       |              |
| Switching current                           |   |             |                                                                                     |             |                                                                                       |              |
|                                             |  |             |                                                                                     |             |                                                                                       |              |

## POLAR-Series AC • Climatic-proofed –60 °C

### Series IGMP - Proximity switches

**M18**

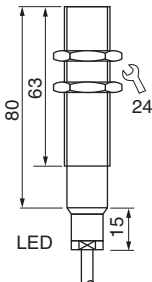
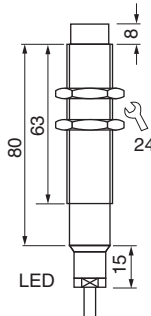
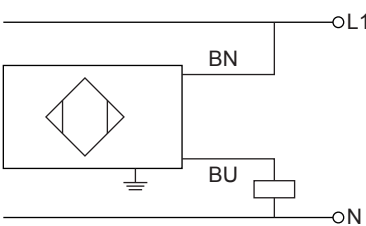
**Stainless steel sleeve**

**AC 20...250 V**

**IP 68 Water-proofed**

**IP 69K Resistant to  
high pressure cleaning**



| Design                                                                               | AC • M18x1                                                                                                                                                                |                                      |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Dimensions                                                                           |     |                                      |
| Installation<br>flush (f)<br>non flush (nf)                                          |   |                                      |
| Operating distance sn                                                                | [mm]                                                                                                                                                                      | 5 f                                  |
| Switching output                                                                     |                                                                                                                                                                           | 7 nf                                 |
| ID-No.                                                                               |                                                                                                                                                                           | P31149                               |
| Type                                                                                 |                                                                                                                                                                           | IGMP 005 WS                          |
| Supply voltage                                                                       | [V]                                                                                                                                                                       | 20...250 AC                          |
| Switching current                                                                    | [mA]                                                                                                                                                                      | 300                                  |
| Short circuit proof                                                                  |                                                                                                                                                                           | -                                    |
| Overcurrent release                                                                  | [mA]                                                                                                                                                                      | -                                    |
| Reverse protection                                                                   |                                                                                                                                                                           | -                                    |
| Voltage drop max.                                                                    | [V]                                                                                                                                                                       | 4.5                                  |
| Load current                                                                         | [mA]                                                                                                                                                                      | 5                                    |
| Current consumption                                                                  | [mA]                                                                                                                                                                      | 2.5                                  |
| Switching frequency                                                                  | [Hz]                                                                                                                                                                      | 25                                   |
| Ambient temperature                                                                  | [°C]                                                                                                                                                                      | -55...+60                            |
| Temperature min.                                                                     | [°C]                                                                                                                                                                      | -60                                  |
| Temperature gradient                                                                 | [K/min]                                                                                                                                                                   | 5                                    |
| EMC-class                                                                            |                                                                                                                                                                           | A                                    |
| Protection                                                                           | [EN 60529]                                                                                                                                                                | IP 68 + IP 69K                       |
| LED display                                                                          |                                                                                                                                                                           | •                                    |
| Housing material                                                                     |                                                                                                                                                                           | PTFE / AISI 316 Ti                   |
| Connection                                                                           |                                                                                                                                                                           | 2 m FEP-cable 3x0.75 mm <sup>2</sup> |
|  |                                                                                                                                                                           |                                      |

## POLAR-Series • Climatic-proofed –80 °C

### Series IGMP - Proximity switches

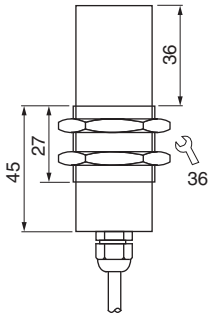
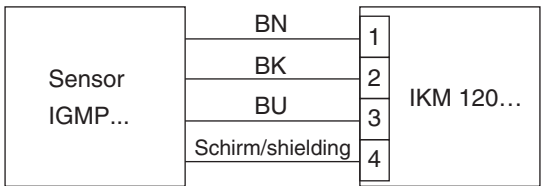
**M30**

**Stainless steel sleeve**

**IP 68 Water-proofed**

**–80 °C permanent temperature**



| Design                                                                          | M30x1.5                                                                              |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <p><b>Dimensions</b></p> <p>Installation<br/>flush (f)<br/>non flush (nf)</p>   |   |
| Operating distance sn [mm]                                                      | 3 nf                                                                                 |
| ID-No.                                                                          | P31337                                                                               |
| Type                                                                            | IGMP 030 S-80                                                                        |
| Supply voltage [V]                                                              | –                                                                                    |
| Switching current [mA]                                                          | –                                                                                    |
| Hysteresis max. [%]                                                             | 10                                                                                   |
| Short circuit proof                                                             | –                                                                                    |
| Reverse protection                                                              | –                                                                                    |
| Current consumption [mA]                                                        | –                                                                                    |
| Switching frequency [Hz]                                                        | –                                                                                    |
| Ambient temperature [°C]                                                        | –80...+50                                                                            |
| EMC-class                                                                       | A                                                                                    |
| Protection [EN 60529]                                                           | IP 68                                                                                |
| LED display                                                                     | –                                                                                    |
| Housing material                                                                | PTFE / AISI 316 Ti                                                                   |
| Connection                                                                      | 2 m FEP-cable 3x0.75 mm², shielded                                                   |
| <p>Sensor for the connection<br/>to amplifier IKM 120...,<br/>see page 3.32</p> |  |

## TROPICAL-Series DC • Climatic-proofed 120 °C

### Series IGMF - Proximity switches

M12 / M18-short form

Stainless steel sleeve

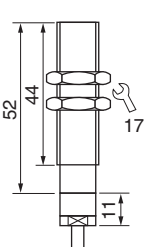
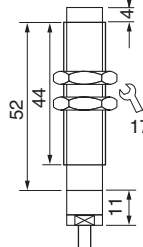
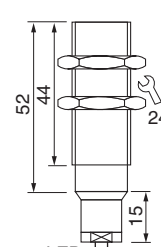
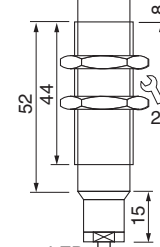
DC 10...30 V

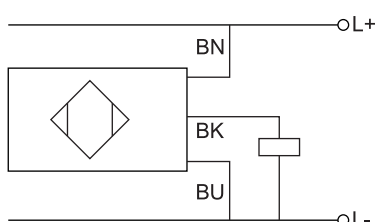
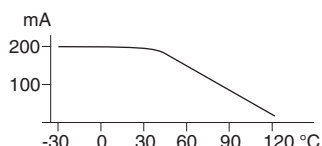
IP 68 Water-proofed

IP 69K Resistant to

high pressure cleaning



| Design                                                                                         | DC PNP • M12x1                                                                     |                                                                                    | DC PNP • M18x1                                                                       |                                                                                      |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                                                                     |  |  |  |  |
| Installation<br>flush (f)<br>non flush (nf)                                                    |                                                                                    |                                                                                    |                                                                                      |                                                                                      |
| Operating distance sn [mm]                                                                     | 2 f                                                                                | 4 nf                                                                               | 5 f                                                                                  | 7 nf                                                                                 |
| GSP  ID-No. | P31132                                                                             | P31133                                                                             | P30701                                                                               | P30703                                                                               |
| Type                                                                                           | IGMF 02 GSP                                                                        | IGMF 04 GSP                                                                        | IGMF 05 GSP                                                                          | IGMF 08 GSP                                                                          |
| GOP  ID-No. |                                                                                    |                                                                                    | P30702                                                                               | P30704                                                                               |
| Type                                                                                           |                                                                                    |                                                                                    | IGMF 05 GOP                                                                          | IGMF 08 GOP                                                                          |
| Supply voltage [V]                                                                             | 10...30 DC                                                                         |                                                                                    |                                                                                      |                                                                                      |
| Switching current [mA]                                                                         | 200                                                                                |                                                                                    |                                                                                      |                                                                                      |
| Overcurrent release [mA]                                                                       | 230                                                                                |                                                                                    |                                                                                      |                                                                                      |
| Current consumption [mA]                                                                       | 4                                                                                  |                                                                                    |                                                                                      |                                                                                      |
| Residual current [µA]                                                                          | 1                                                                                  |                                                                                    |                                                                                      |                                                                                      |
| Voltage drop max. [V]                                                                          | 2                                                                                  |                                                                                    |                                                                                      |                                                                                      |
| Switching frequency [Hz]                                                                       | 1000                                                                               |                                                                                    |                                                                                      |                                                                                      |
| Ambient temperature [°C]                                                                       | -25...+120                                                                         |                                                                                    |                                                                                      |                                                                                      |
| Compressive strength [bar]                                                                     | 10                                                                                 |                                                                                    |                                                                                      |                                                                                      |
| Residual ripple max. [%]                                                                       | 10                                                                                 |                                                                                    |                                                                                      |                                                                                      |
| EMC-class                                                                                      | A                                                                                  |                                                                                    |                                                                                      |                                                                                      |
| Protection [EN 60529]                                                                          | IP 68 + IP 69K                                                                     |                                                                                    |                                                                                      |                                                                                      |
| Housing material                                                                               | PTFE / AISI 316 Ti (A4)                                                            |                                                                                    |                                                                                      |                                                                                      |
| Connection                                                                                     | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                               |                                                                                    |                                                                                      |                                                                                      |
| Switching current                                                                              |                                                                                    |                                                                                    |                                                                                      |                                                                                      |



## TROPICAL-Series DC • Climatic-proofed 120 °C

### Series IGMF - Proximity switches

**M18 / M30**

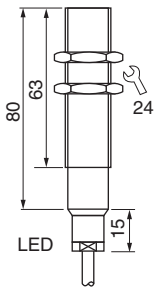
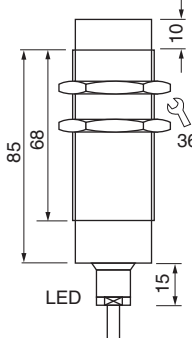
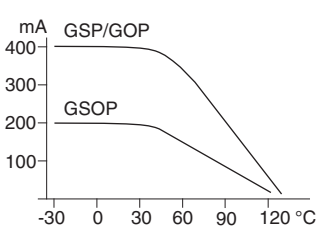
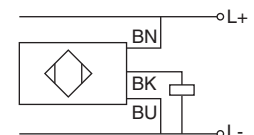
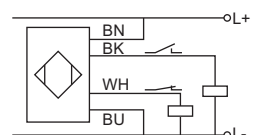
**Stainless steel sleeve**

**DC 10...55 V**

**IP 68 Water-proofed**

**IP 69K Resistant to  
high pressure cleaning**



| Design                                      | DC PNP • M18x1                                                                                        |                                                                                     | DC PNP • M30x1,5                                                                                     |                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Dimensions                                  |                     |                                                                                     |                  |                                                                                     |
| Installation<br>flush (f)<br>non flush (nf) |                    |                                                                                     |                 |                                                                                     |
| Operating distance sn [mm]                  | 5 f                                                                                                   | 7 nf                                                                                | 10 f                                                                                                 | 15 nf                                                                               |
| GSP                                         |                    |  |                   |  |
| ID-No.                                      | P30705                                                                                                | P30708                                                                              | P30711                                                                                               | P30714                                                                              |
| Type                                        | IGMF 005 GSP                                                                                          | IGMF 008 GSP                                                                        | IGMF 010 GSP                                                                                         | IGMF 015 GSP                                                                        |
| GOP                                         |                    |  |                   |  |
| ID-No.                                      | P30706                                                                                                | P30709                                                                              | P30712                                                                                               | P30715                                                                              |
| Type                                        | IGMF 005 GOP                                                                                          | IGMF 008 GOP                                                                        | IGMF 010 GOP                                                                                         | IGMF 015 GOP                                                                        |
| GSOP                                        |                    |  |                   |  |
| ID-No.                                      | P30707                                                                                                | P30710                                                                              | P30713                                                                                               | P30716                                                                              |
| Type                                        | IGMF 005 GSOP                                                                                         | IGMF 008 GSOP                                                                       | IGMF 010 GSOP                                                                                        | IGMF 015 GSOP                                                                       |
| Supply voltage [V]                          | ...GSP, ...GOP 10...55 DC / ...GSOP 10...30 DC                                                        |                                                                                     |                                                                                                      |                                                                                     |
| Switching current [mA]                      | ...GSP, ...GOP 400 / ...GSOP 200                                                                      |                                                                                     |                                                                                                      |                                                                                     |
| Overcurrent release [mA]                    | ...GSP, ...GOP 430 / ...GSOP 230                                                                      |                                                                                     |                                                                                                      |                                                                                     |
| Current consumption [mA]                    | 4                                                                                                     |                                                                                     |                                                                                                      |                                                                                     |
| Residual current [µA]                       | 1                                                                                                     |                                                                                     |                                                                                                      |                                                                                     |
| Voltage drop max. [V]                       | 2                                                                                                     |                                                                                     |                                                                                                      |                                                                                     |
| Switching frequency [Hz]                    | ...GSP, ...GOP 150 / ...GSOP 1000                                                                     |                                                                                     |                                                                                                      |                                                                                     |
| Ambient temperature [°C]                    | -25...+120                                                                                            |                                                                                     |                                                                                                      |                                                                                     |
| Compressive strenght [bar]                  | 10                                                                                                    |                                                                                     |                                                                                                      |                                                                                     |
| EMC-class                                   | A                                                                                                     |                                                                                     |                                                                                                      |                                                                                     |
| Protection [EN 60529]                       | IP 68 + IP 69K                                                                                        |                                                                                     |                                                                                                      |                                                                                     |
| Housing material                            | PTFE / AISI 316 Ti (A4)                                                                               |                                                                                     |                                                                                                      |                                                                                     |
| Connection                                  | 2 m FEP-cable 3x0.34 mm <sup>2</sup> / 2 m FEP-cable 4x0.25 mm <sup>2</sup>                           |                                                                                     |                                                                                                      |                                                                                     |
| Switching current                           |                    |                                                                                     |                                                                                                      |                                                                                     |
|                                             | <b>GSP/GOP</b><br> |                                                                                     | <b>GSOP</b><br> |                                                                                     |

## TROPICAL-Series AC • Climatic-proofed 120 °C

### Series IGMF - Proximity switches

**M18 / M30**

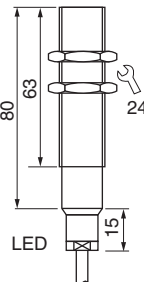
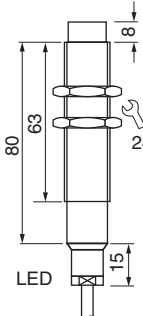
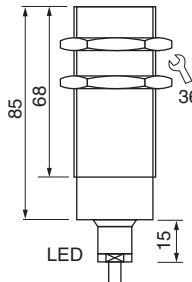
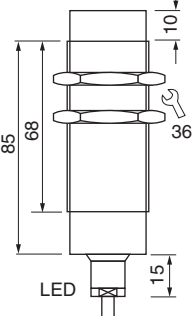
**Stainless steel sleeve**

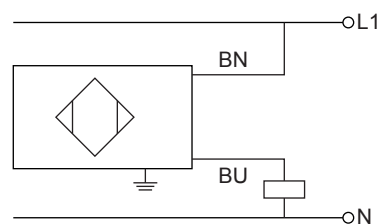
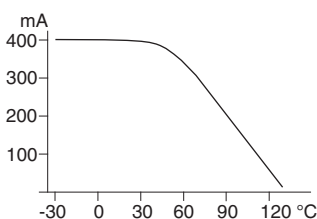
**AC 20...250 V**

**IP 68 Water-proofed**

**IP 69K Resistant to  
high pressure cleaning**



| Design                                                                                        | AC • M18x1                                                                         |                                                                                    | AC • M30x1.5                                                                        |                                                                                      |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                                                                    |  |  |  |  |
| Installation<br>flush (f)<br>non flush (nf)                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                      |
| Operating distance sn [mm]                                                                    | 5 f                                                                                | 7 nf                                                                               | 10 f                                                                                | 15 nf                                                                                |
| WS  ID-No. | P31071                                                                             | P31073                                                                             | P31075                                                                              | P31077                                                                               |
| Type                                                                                          | IGMF 005 WS                                                                        | IGMF 008 WS                                                                        | IGMF 010 WS                                                                         | IGMF 015 WS                                                                          |
| WO  ID-No. | P31070                                                                             | P31072                                                                             | P31074                                                                              | P31076                                                                               |
| Type                                                                                          | IGMF 005 WO                                                                        | IGMF 008 WO                                                                        | IGMF 010 WO                                                                         | IGMF 015 WO                                                                          |
| Supply voltage                                                                                | 20...250 AC                                                                        |                                                                                    |                                                                                     |                                                                                      |
| WS/WO [V]                                                                                     |                                                                                    |                                                                                    |                                                                                     |                                                                                      |
| Switching current                                                                             | < 400                                                                              |                                                                                    |                                                                                     |                                                                                      |
| WS/WO [mA]                                                                                    |                                                                                    |                                                                                    |                                                                                     |                                                                                      |
| Current consumption [mA]                                                                      | < 2.5                                                                              |                                                                                    |                                                                                     |                                                                                      |
| Voltage drop max. [V]                                                                         | < 5 eff.                                                                           |                                                                                    |                                                                                     |                                                                                      |
| Switching frequency [Hz]                                                                      | 25                                                                                 |                                                                                    |                                                                                     |                                                                                      |
| Ambient temperature [°C]                                                                      | -25...+120                                                                         |                                                                                    |                                                                                     |                                                                                      |
| Compressive strength [bar]                                                                    | 10                                                                                 |                                                                                    |                                                                                     |                                                                                      |
| Minimum load current [mA]                                                                     | 5.0                                                                                |                                                                                    |                                                                                     |                                                                                      |
| EMC-class                                                                                     | A                                                                                  |                                                                                    |                                                                                     |                                                                                      |
| Protection [EN 60529]                                                                         | IP 68 + IP 69K                                                                     |                                                                                    |                                                                                     |                                                                                      |
| Housing material                                                                              | PTFE / AISI 316 Ti (A4)                                                            |                                                                                    |                                                                                     |                                                                                      |
| Connection                                                                                    | 2 m FEP-cable 3x0.75 mm <sup>2</sup>                                               |                                                                                    |                                                                                     |                                                                                      |
| Switching current                                                                             |                                                                                    |                                                                                    |                                                                                     |                                                                                      |



## TROPICAL-Series DC • Climatic-proofed 120 °C

### Series IGMW - Proximity switches

M12 / M18-short form

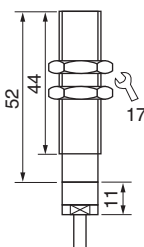
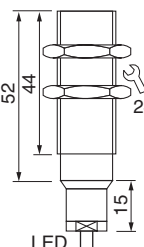
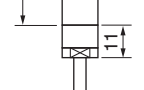
Stainless steel sleeve

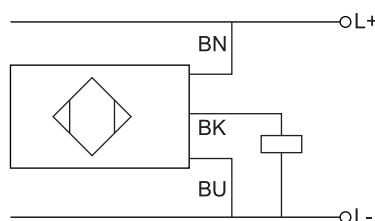
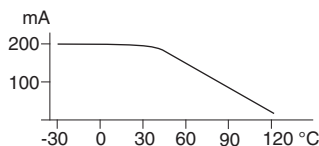
DC 10...30 V

IP 68 Water-proofed

IP 69K Resistant to  
high pressure cleaning  
Steam proof



| Design                                                                                              | DC PNP • M12x1                                                                      |                       | DC PNP • M18x1                                                                       |                       |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------|-----------------------|
| Dimensions                                                                                          |   |                       |   |                       |
| Installation<br>flush (f)<br>non flush (nf)                                                         |  |                       |  |                       |
| Operating distance sn [mm]                                                                          | 2 f                                                                                 | 4 nf                  | 5 f                                                                                  | 7 nf                  |
| GSP  ID-No. Type | P31338<br>IGMW 02 GSP                                                               | P31339<br>IGMW 04 GSP | P31340<br>IGMW 05 GSP                                                                | P31341<br>IGMW 08 GSP |
| GOP  ID-No. Type |                                                                                     |                       | P31342<br>IGMW 05 GOP                                                                | P31343<br>IGMW 08 GOP |
| Supply voltage [V]                                                                                  | 10...30 DC                                                                          |                       |                                                                                      |                       |
| Switching current [mA]                                                                              | 200                                                                                 |                       |                                                                                      |                       |
| Overcurrent release [mA]                                                                            | 230                                                                                 |                       |                                                                                      |                       |
| Current consumption [mA]                                                                            | 4                                                                                   |                       |                                                                                      |                       |
| Residual current [µA]                                                                               | 1                                                                                   |                       |                                                                                      |                       |
| Voltage drop max. [V]                                                                               | 2                                                                                   |                       |                                                                                      |                       |
| Switching frequency [Hz]                                                                            | 1000                                                                                |                       |                                                                                      |                       |
| Ambient temperature [°C]                                                                            | -25...+120                                                                          |                       |                                                                                      |                       |
| Compressive strength [bar]                                                                          | 4                                                                                   |                       |                                                                                      |                       |
| Residual ripple max. [%]                                                                            | 10                                                                                  |                       |                                                                                      |                       |
| EMC-class                                                                                           | A                                                                                   |                       |                                                                                      |                       |
| Protection [EN 60529]                                                                               | IP 68 + IP 69K                                                                      |                       |                                                                                      |                       |
| Housing material                                                                                    | PTFE / AISI 316 Ti (A4)                                                             |                       |                                                                                      |                       |
| Connection                                                                                          | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                                |                       |                                                                                      |                       |
| Switching current                                                                                   |                                                                                     |                       |                                                                                      |                       |



## TROPICAL-Series DC • Climatic-proofed 120 °C

### Series IGMW - Proximity switches

M18 / M30

Stainless steel sleeve

DC 10...55 V

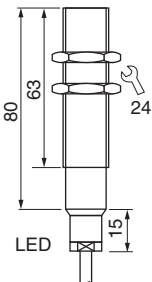
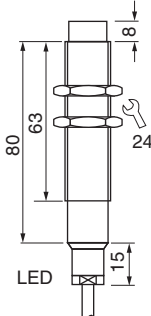
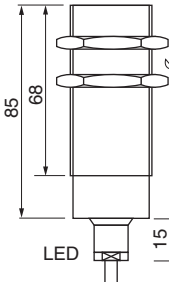
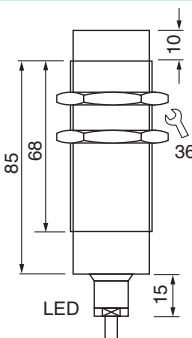
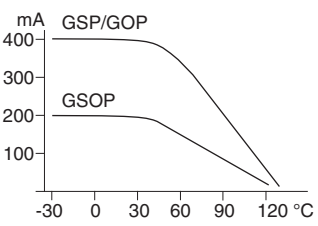
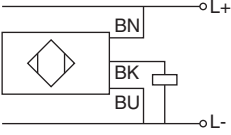
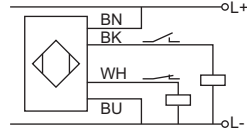
IP 68 Water-proofed

IP 69K Resistant to

high pressure cleaning

Steam proof



| Design                                      | DC PNP • M18x1                                                                                                                                                                                                                                                                                                                  |                                                                                                                         | DC PNP • M30x1,5                                                                                                        |                                                                                                                         |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Dimensions                                  |                                                                                                                                                                                                                                               |                                       |                                     |                                     |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                                                                                                                                                                                                                                                                 |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Operating distance sn [mm]                  | 5 f                                                                                                                                                                                                                                                                                                                             | 7 nf                                                                                                                    | 10 f                                                                                                                    | 15 nf                                                                                                                   |
| GSP                                         |  ID-No. P31344<br>Type IGMW 005 GSP                                                                                                                                                                                                          |  ID-No. P31345<br>Type IGMW 008 GSP  |  ID-No. P31346<br>Type IGMW 010 GSP  |  ID-No. P31347<br>Type IGMW 015 GSP  |
| GOP                                         |  ID-No. P31348<br>Type IGMW 005 GOP                                                                                                                                                                                                          |  ID-No. P31349<br>Type IGMW 008 GOP  |  ID-No. P31350<br>Type IGMW 010 GOP  |  ID-No. P31351<br>Type IGMW 015 GOP  |
| GSOP                                        |  ID-No. P31352<br>Type IGMW 005 GSOP                                                                                                                                                                                                         |  ID-No. P31353<br>Type IGMW 008 GSOP |  ID-No. P31354<br>Type IGMW 010 GSOP |  ID-No. P31355<br>Type IGMW 015 GSOP |
| Supply voltage [V]                          | ...GSP, ...GOP 10...55 DC / ...GSOP 10...30 DC                                                                                                                                                                                                                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Switching current [mA]                      | ...GSP, ...GOP 400 / ...GSOP 200                                                                                                                                                                                                                                                                                                |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Overcurrent release [mA]                    | ...GSP, ...GOP 430 / ...GSOP 230                                                                                                                                                                                                                                                                                                |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Current consumption [mA]                    | 4                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Residual current [µA]                       | 1                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Voltage drop max. [V]                       | 2                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Switching frequency [Hz]                    | ...GSP, ...GOP 150 / ...GSOP 1000                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Ambient temperature [°C]                    | -25...+120                                                                                                                                                                                                                                                                                                                      |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Compressive strenght [bar]                  | 4                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| EMC-class                                   | A                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Protection [EN 60529]                       | IP 68 + IP 69K                                                                                                                                                                                                                                                                                                                  |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Housing material                            | PTFE / AISI 316 Ti (A4)                                                                                                                                                                                                                                                                                                         |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Connection                                  | 2 m FEP-cable 3x0.34 mm <sup>2</sup> / 2 m FEP-cable 4x0.25 mm <sup>2</sup>                                                                                                                                                                                                                                                     |                                                                                                                         |                                                                                                                         |                                                                                                                         |
| Switching current                           |  <div> <div> <b>GSP/GOP</b>  </div> <div> <b>GSOP</b>  </div> </div> |                                                                                                                         |                                                                                                                         |                                                                                                                         |

## TROPICAL-Series AC • Climatic-proofed 120 °C

### Series IGMW - Proximity switches

M18 / M30

Stainless steel sleeve

AC 20...250 V

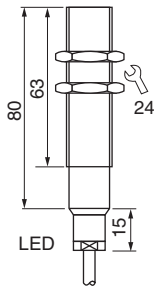
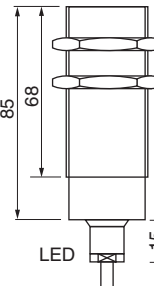
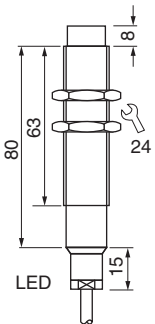
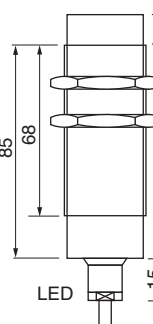
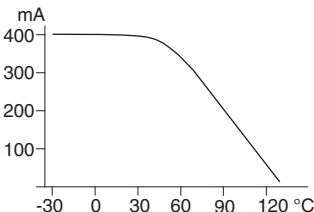
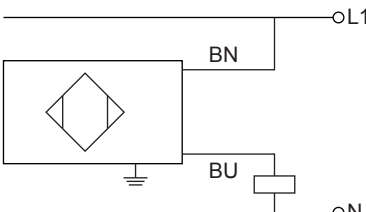
IP 68 Water-proofed

IP 69K Resistant to

high pressure cleaning

Steam proof



| Design                                                                                        | AC • M18x1                                                                           |  | AC • M30x1.5                                                                         |  |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------|--|
| Dimensions                                                                                    |    |  |   |  |
| Installation<br>flush (f)<br>non flush (nf)                                                   |    |  |  |  |
| Operating distance sn [mm]                                                                    | 5 f                                                                                  |  | 10 f                                                                                 |  |
| WS  ID-No. | P31356                                                                               |  | P31358                                                                               |  |
| Type                                                                                          | IGMW 005 WS                                                                          |  | IGMW 010 WS                                                                          |  |
| WO  ID-No. | P31360                                                                               |  | P31362                                                                               |  |
| Type                                                                                          | IGMW 005 WO                                                                          |  | IGMW 010 WO                                                                          |  |
| Supply voltage                                                                                | 20...250 AC                                                                          |  |                                                                                      |  |
| Switching current                                                                             | <400                                                                                 |  |                                                                                      |  |
| Current consumption [mA]                                                                      | <2.5                                                                                 |  |                                                                                      |  |
| Voltage drop max. [V]                                                                         | <5 eff.                                                                              |  |                                                                                      |  |
| Switching frequency [Hz]                                                                      | 25                                                                                   |  |                                                                                      |  |
| Ambient temperature [°C]                                                                      | -25...+120                                                                           |  |                                                                                      |  |
| Compressive strength [bar]                                                                    | 4                                                                                    |  |                                                                                      |  |
| Minimum load current [mA]                                                                     | 5.0                                                                                  |  |                                                                                      |  |
| EMC-class                                                                                     | A                                                                                    |  |                                                                                      |  |
| Protection [EN 60529]                                                                         | IP 68 + IP 69K                                                                       |  |                                                                                      |  |
| Housing material                                                                              | PTFE / AISI 316 Ti (A4)                                                              |  |                                                                                      |  |
| Connection                                                                                    | 2 m FEP-cable 3x0.75 mm²                                                             |  |                                                                                      |  |
| Switching current                                                                             |   |  |                                                                                      |  |
|                                                                                               |  |  |                                                                                      |  |

## TROPICAL-Series • Resistant to rolling oil

### Series IGFW / INFW - Proximity switches

PTFE housing

DC 10...55 V

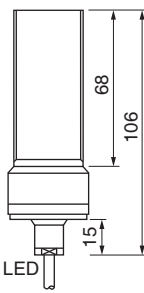
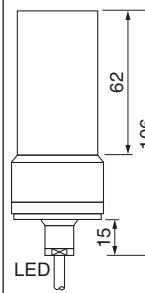
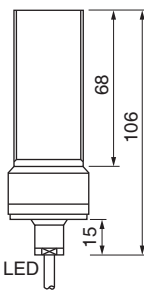
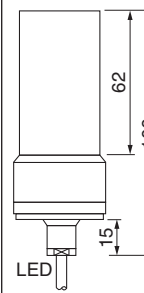
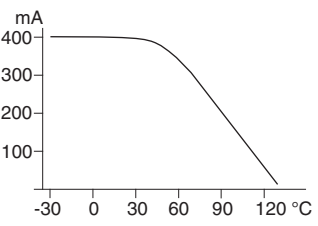
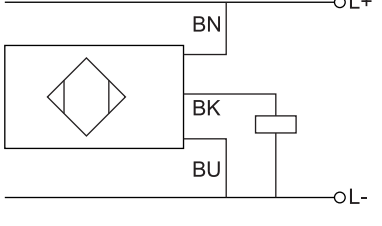
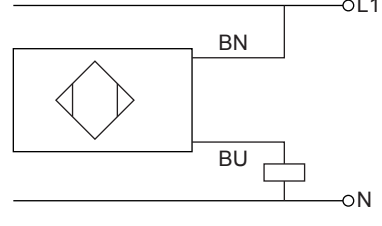
AC 20...250 V

IP 68 Water-proofed

IP 69K Resistant to

high pressure cleaning



| Design                                      | DC PNP • M30x1.5                                                                    |  | DC • Ø 35                                                                           | AC • M30x1.5                                                                          |  | AC • Ø 35                                                                             |
|---------------------------------------------|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|
| Dimensions                                  |   |  |   |    |  |   |
| Installation<br>flush (f)<br>non flush (nf) | LED                                                                                 |  | LED                                                                                 | LED                                                                                   |  | LED                                                                                   |
| Operating distance sn [mm]                  | 10 f                                                                                |  | 19 nf                                                                               | 10 f                                                                                  |  | 19 nf                                                                                 |
| Switching output (DC PNP)                   |  |  |  |   |  |  |
| ID-No.                                      | P30628                                                                              |  | P30652                                                                              | P30626                                                                                |  | P30650                                                                                |
| Type                                        | IGFW 010 GSP                                                                        |  | INFW 020 GSP                                                                        | IGFW 010 WS                                                                           |  | INFW 020 WS                                                                           |
| Supply voltage [V]                          | 10...55 DC                                                                          |  |                                                                                     | 20...250 AC                                                                           |  |                                                                                       |
| Switching current [mA]                      | < 400                                                                               |  |                                                                                     | < 400                                                                                 |  |                                                                                       |
| Surge current [mA]                          | short circuit protection                                                            |  |                                                                                     | < 3000 / 10 ms                                                                        |  |                                                                                       |
| Current consumption [mA]                    | 4                                                                                   |  |                                                                                     | 2.5                                                                                   |  |                                                                                       |
| Inverse current max. [µA]                   | 1                                                                                   |  |                                                                                     | 2500                                                                                  |  |                                                                                       |
| Voltage drop [V]                            | 2                                                                                   |  |                                                                                     | 5 eff.                                                                                |  |                                                                                       |
| Ambient temperature [°C]                    | -25...+120                                                                          |  |                                                                                     |                                                                                       |  |                                                                                       |
| Temperature deviation [%]                   | 10 (-25...+70 °C), 20 (-25...+120 °C)                                               |  |                                                                                     |                                                                                       |  |                                                                                       |
| Overcurrent release approx. [mA]            | 430                                                                                 |  |                                                                                     | -                                                                                     |  |                                                                                       |
| Reverse Protection                          | •                                                                                   |  |                                                                                     | -                                                                                     |  |                                                                                       |
| Minimum load current [mA]                   | -                                                                                   |  |                                                                                     | 4.5                                                                                   |  |                                                                                       |
| EMC-class                                   |                                                                                     |  | A                                                                                   |                                                                                       |  |                                                                                       |
| Switching frequency [Hz]                    | 100                                                                                 |  |                                                                                     | 20                                                                                    |  |                                                                                       |
| Protection [EN 60529]                       |                                                                                     |  | IP 68 + IP 69K                                                                      |                                                                                       |  |                                                                                       |
| Housing material                            |                                                                                     |  | PTFE                                                                                |                                                                                       |  |                                                                                       |
| Connection                                  | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                                |  |                                                                                     | 2 m Silicone-cable 0.75 mm <sup>2</sup>                                               |  |                                                                                       |
| Switching current                           |  |  |  |  |  |                                                                                       |

Accessories nut M30x1.5 (Z00120), clamp Ø 35 (Z00125), page 3.71

## TROPICAL-Series • Resistant to rolling oil

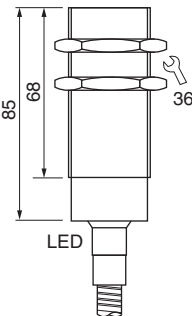
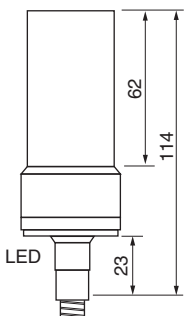
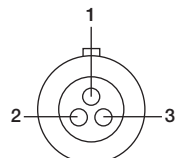
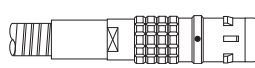
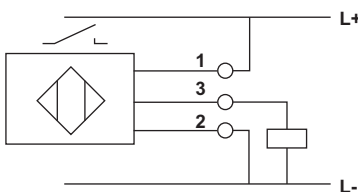
Series IGMF / INFW - Proximity switches

DC 10...55 V

Climatic-proofed  
Resistant to acid

Armoured cable  
with IP 68-plug



| Design                                                                                                                                                                                                                                                 | DC PNP • M30x1.5                                                                     | DC PNP • Ø35                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Dimensions</b><br><br>Installation<br>flush (f)<br>non flush (nf)                                                                                                                                                                                   |    |   |
| Operating distance sn [mm]                                                                                                                                                                                                                             | 10 f                                                                                 | 20 nf                                                                                 |
| Switching output PNP                                                                                                                                                                                                                                   |   |  |
| ID-No.                                                                                                                                                                                                                                                 | P31215                                                                               | P31216                                                                                |
| Type                                                                                                                                                                                                                                                   | IGMF 010 GSP-PZ                                                                      | INFW 020 GSP-PZ                                                                       |
| Supply voltage [V]                                                                                                                                                                                                                                     | 10...55 DC                                                                           | 10...55 DC                                                                            |
| Switching current max. [mA]                                                                                                                                                                                                                            | 400                                                                                  | 400                                                                                   |
| Current consumption [mA]                                                                                                                                                                                                                               | 4                                                                                    | 4                                                                                     |
| Switching frequency [Hz]                                                                                                                                                                                                                               | 150                                                                                  | 100                                                                                   |
| Ambient temperature [°C]                                                                                                                                                                                                                               | -25...+120                                                                           | -25...+120                                                                            |
| Compressive strength [bar]                                                                                                                                                                                                                             | 10                                                                                   | -                                                                                     |
| Protection [EN 60529]                                                                                                                                                                                                                                  | IP 68 + IP 69K                                                                       | IP 68 + IP 69K                                                                        |
| Function indicator                                                                                                                                                                                                                                     | LED                                                                                  | LED                                                                                   |
| Housing material                                                                                                                                                                                                                                       | PTFE, AISI 316 Ti                                                                    | PTFE                                                                                  |
| Connection                                                                                                                                                                                                                                             | 5 m FEP-cable<br>3x0.34mm <sup>2</sup><br>armoured cable                             | 5 m FEP-cable<br>3x0.34mm <sup>2</sup><br>armoured cable                              |
| Plug, Lemo series K, 3-pol<br><br><br><br><br>Sensors without plug<br>on request |  |                                                                                       |
| Accessories                                                                                                                                                                                                                                            | junction box GS..., page 3.23                                                        |                                                                                       |

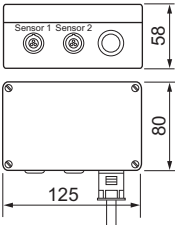
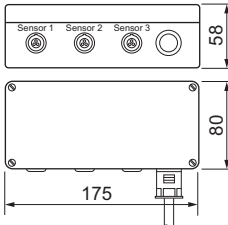
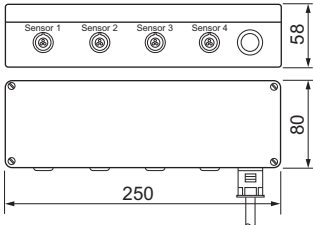
## Junction box • Resistant to rolling oil

Series GS 125 / GS 175 / GS 250

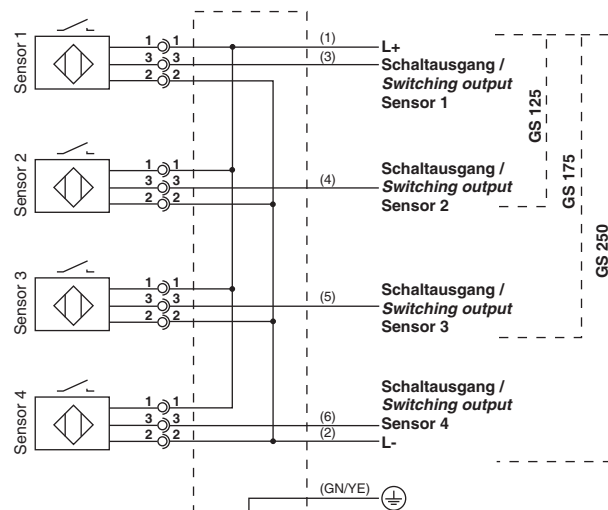
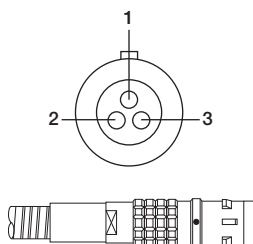
Connection of sensors with  
armoured cable

IP 68-plug



| Design                   | GS 125                                                                             | GS 175                                                                              | GS 250                                                                               |
|--------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions               |  |  |  |
| ID-No.                   | P31212                                                                             | P31217                                                                              | P31218                                                                               |
| Type                     | GS 125                                                                             | GS 175                                                                              | GS 250                                                                               |
| Connectable sensors      | 2                                                                                  | 3                                                                                   | 4                                                                                    |
| Supply voltage [V]       | 10...55 DC                                                                         | 10...55 DC                                                                          | 10...55 DC                                                                           |
| Ambient temperature [°C] | -20...+75                                                                          | -20...+75                                                                           | -20...+75                                                                            |
| Protection [EN 60529]    | IP 68                                                                              | IP 68                                                                               | IP 68                                                                                |
| Housing material         | Aluminium                                                                          | Aluminium                                                                           | Aluminium                                                                            |
| Connection               | 10 m TPE-numbered cable<br>7x0.5mm <sup>2</sup>                                    | 10 m TPE-numbered cable<br>7x0.5mm <sup>2</sup>                                     | 10 m TPE-numbered cable<br>7x0.5mm <sup>2</sup>                                      |

Plug, Lemo series K, 3-pol



Notice

for sensors IGMF 010 GSP-PZ / INFW 020 GSP-PZ, page 3.22

## High temperature 120 °C

### Series IGMT - Proximity switches

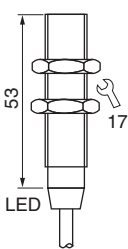
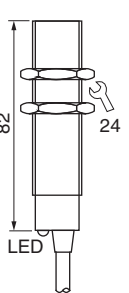
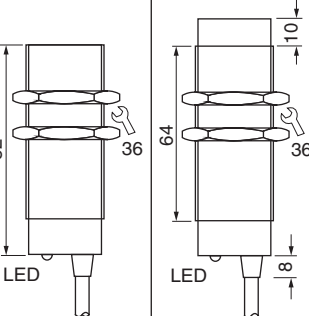
M12 / M18 / M30

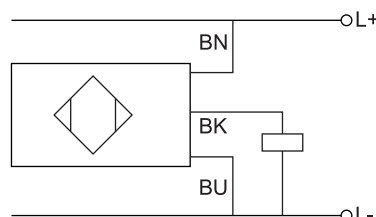
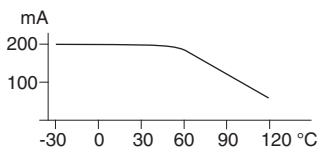
Metal sleeve

DC 10...48 V

Extended  
temperature range  
-25 °C...+120 °C



| Design                                      | DC PNP • M12x1                                                                      |             | DC PNP • M18x1                                                                      |              | DC PNP • M30x1.5                                                                      |              |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------|--------------|
| Dimensions                                  |   |             |   |              |   |              |
| Installation<br>flush (f)<br>non flush (nf) |  |             |  |              |  |              |
| Operating distance sn [mm]                  | 2 f                                                                                 | 4 nf        | 5 f                                                                                 | 8 nf         | 10 f                                                                                  | 15 nf        |
| Switching output PNP                        |  |             |  |              |  |              |
| ID-No.                                      | P31282                                                                              | P31283      | P31290                                                                              | P31291       | P31292                                                                                | P31293       |
| Type                                        | IGMT 02 GSP                                                                         | IGMT 04 GSP | IGMT 005 GSP                                                                        | IGMT 008 GSP | IGMT 010 GSP                                                                          | IGMT 015 GSP |
| Supply voltage [V]                          | 10...48 DC                                                                          |             |                                                                                     |              |                                                                                       |              |
| Switching current [mA]                      | 200                                                                                 |             |                                                                                     |              |                                                                                       |              |
| Short circuit proof                         | •                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Reverse protection                          | •                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Voltage drop max. [V]                       | 2                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Current consumption [mA]                    | 4                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Switching frequency [Hz]                    | 500                                                                                 |             |                                                                                     |              |                                                                                       |              |
| Ambient temperature [°C]                    | -25...+120                                                                          |             |                                                                                     |              |                                                                                       |              |
| EMC-class                                   | A                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Protection [EN 60529]                       | IP 67                                                                               |             |                                                                                     |              |                                                                                       |              |
| LED display                                 | •                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Housing material                            | Br-Ni / PBT                                                                         |             |                                                                                     |              |                                                                                       |              |
| Connection                                  | 2 m Silicone-cable 3x0.34 mm <sup>2</sup>                                           |             |                                                                                     |              |                                                                                       |              |
| Switching current                           |                                                                                     |             |                                                                                     |              |                                                                                       |              |
| Notes                                       | design with M12 connector on request                                                |             |                                                                                     |              |                                                                                       |              |



## High temperature 120 °C

### Series IGMT - Proximity switches

M18 / M30

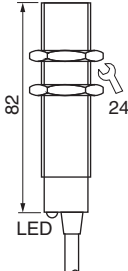
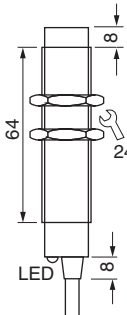
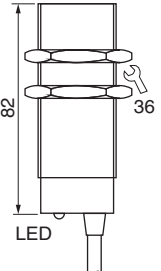
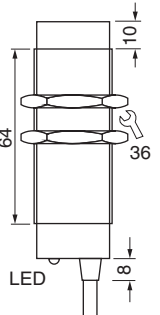
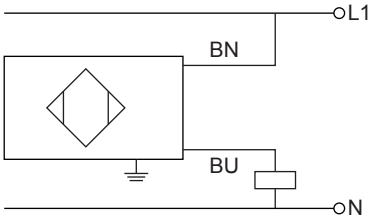
Metal sleeve

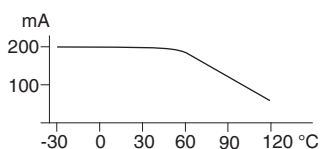
AC 20...250 V

Extended  
temperature range

-25 °C...+120 °C



| Design                                      | AC • M18x1                                                                           |                                                                                     | AC • M30x1.5                                                                          |                                                                                       |
|---------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                  |    |   |   |   |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                      |                                                                                     |                                                                                       |                                                                                       |
| Operating distance sn [mm]                  | 5 f                                                                                  | 8 nf                                                                                | 10 f                                                                                  | 15 nf                                                                                 |
| Switching output                            |   |  |  |  |
| ID-No.                                      | P31118                                                                               | P31119                                                                              | P31120                                                                                | P31121                                                                                |
| Type                                        | IGMT 005 WS                                                                          | IGMT 008 WS                                                                         | IGMT 010 WS                                                                           | IGMT 015 WS                                                                           |
| Supply voltage [V]                          | 20...250 AC                                                                          |                                                                                     |                                                                                       |                                                                                       |
| Switching current [mA]                      | 200                                                                                  |                                                                                     |                                                                                       |                                                                                       |
| Short circuit proof                         | -                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Reverse protection                          | -                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Voltage drop max. [V]                       | 5 eff.                                                                               |                                                                                     |                                                                                       |                                                                                       |
| Minimum load current [mA]                   | 5                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Current consumption [mA]                    | 2.5                                                                                  |                                                                                     |                                                                                       |                                                                                       |
| Switching frequency [Hz]                    | 25                                                                                   |                                                                                     |                                                                                       |                                                                                       |
| Ambient temperature [°C]                    | -25...+120                                                                           |                                                                                     |                                                                                       |                                                                                       |
| EMC-class                                   | A                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Protection [EN 60529]                       | IP 67                                                                                |                                                                                     |                                                                                       |                                                                                       |
| LED display                                 | •                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Housing material                            | Br-Ni / PBT                                                                          |                                                                                     |                                                                                       |                                                                                       |
| Connection                                  | 2 m Silicone-cable 3x0.75 mm <sup>2</sup>                                            |                                                                                     |                                                                                       |                                                                                       |
| Switching current                           |  |                                                                                     |                                                                                       |                                                                                       |



## High temperature 120 °C

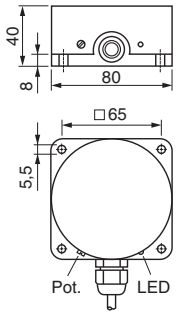
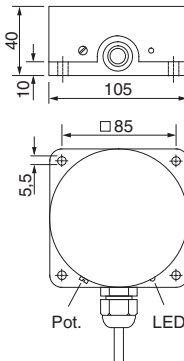
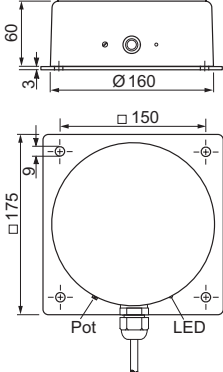
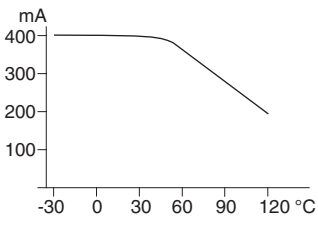
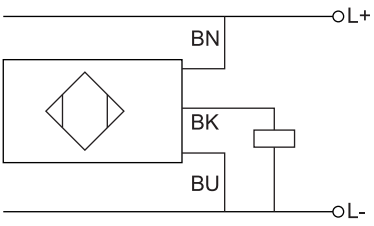
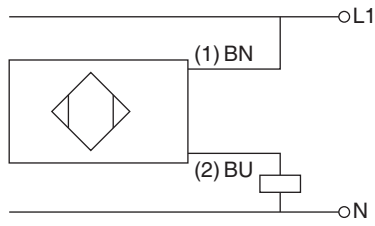
### Series IDT - Proximity switches

DC 10...55 V

AC 20...250 V

Extended  
sensing range



| Design                         | Ø80 mm                                                                                                                                                                                                                                                                                                              |                                                 | Ø105 mm                                                                              |                                                 | Ø160 mm                                                                               |                                                 |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------|
| Dimensions                     |                                                                                                                                                                                                                                   |                                                 |   |                                                 |   |                                                 |
| Installation<br>non flush (nf) |                                                                                                                                                                                                                                                                                                                     |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |
| Operating distance sn [mm]     | 50 nf                                                                                                                                                                                                                                                                                                               | 45 nf                                           | 80 nf                                                                                | 60 nf                                           | 110 nf                                                                                | 100 nf                                          |
| Switching output (DC PNP)      |                                                                                                                                                                                                                                  |                                                 |  |                                                 |  |                                                 |
| ID-No.                         | P31276                                                                                                                                                                                                                                                                                                              | P31279                                          | P31277                                                                               | P31280                                          | P31278                                                                                | P31281                                          |
| Type                           | IDT 080 GSP                                                                                                                                                                                                                                                                                                         | IDT 080 WS                                      | IDT 105 GSP                                                                          | IDT 105 WS                                      | IDT 160 GSP                                                                           | IDT 160 WS                                      |
| Supply voltage [V]             | 10...55 DC                                                                                                                                                                                                                                                                                                          | 20...250 AC                                     | 10...55 DC                                                                           | 20...250 AC                                     | 10...55 DC                                                                            | 20...250 AC                                     |
| Switching current [mA]         | 400                                                                                                                                                                                                                                                                                                                 | 400                                             | 400                                                                                  | 400                                             | 400                                                                                   | 400                                             |
| Short circuit proof            | •                                                                                                                                                                                                                                                                                                                   | –                                               | •                                                                                    | –                                               | •                                                                                     | –                                               |
| Reverse protection             | •                                                                                                                                                                                                                                                                                                                   | –                                               | •                                                                                    | –                                               | •                                                                                     | –                                               |
| Voltage drop max. [V]          | 2                                                                                                                                                                                                                                                                                                                   | 5 eff.                                          | 2                                                                                    | 5 eff.                                          | 2                                                                                     | 5 eff.                                          |
| Minimum load current [mA]      | –                                                                                                                                                                                                                                                                                                                   | 5                                               | –                                                                                    | 5                                               | –                                                                                     | 5                                               |
| Current consumption [mA]       | 4                                                                                                                                                                                                                                                                                                                   | 2.5                                             | 4                                                                                    | 2.5                                             | 4                                                                                     | 2.5                                             |
| Switching frequency [Hz]       | 20                                                                                                                                                                                                                                                                                                                  | 10                                              | 20                                                                                   | 10                                              | 20                                                                                    | 10                                              |
| Ambient temperature [°C]       | –25...+120                                                                                                                                                                                                                                                                                                          |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |
| EMC-class                      | A                                                                                                                                                                                                                                                                                                                   |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |
| Protection [EN 60529]          | IP 67                                                                                                                                                                                                                                                                                                               |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |
| Housing material               | PBT / Aluminium                                                                                                                                                                                                                                                                                                     |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |
| Connection                     | 2 m<br>Silicone-cable<br>3x0.34 mm <sup>2</sup>                                                                                                                                                                                                                                                                     | 2 m<br>Silicone-cable<br>2x0.75 mm <sup>2</sup> | 2 m<br>Silicone-cable<br>3x0.34 mm <sup>2</sup>                                      | 2 m<br>Silicone-cable<br>2x0.75 mm <sup>2</sup> | 2 m<br>Silicone-cable<br>3x0.34 mm <sup>2</sup>                                       | 2 m<br>Silicone-cable<br>2x0.75 mm <sup>2</sup> |
| Switching current              | <div>  <div> <div>DC</div>  <div>AC</div>  </div> </div> |                                                 |                                                                                      |                                                 |                                                                                       |                                                 |

## High temperature 160 °C

### Series IGMH - Proximity switches

M12 / M18 / M30

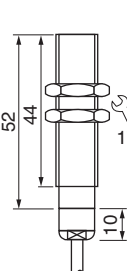
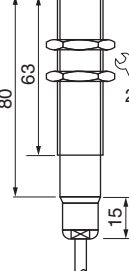
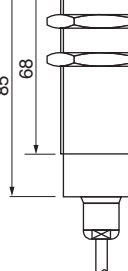
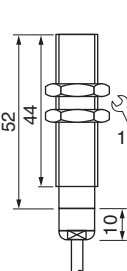
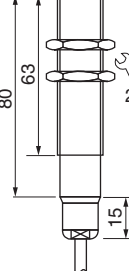
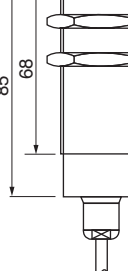
Stainless steel sleeve

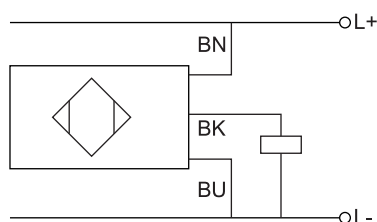
DC 10...30 V

IP 68 Water-proofed

IP 69K Resistant to  
high pressure cleaning



| Design                                      | DC PNP • M12x1                                                                      |             | DC PNP • M18x1                                                                      |              | DC PNP • M30x1.5                                                                      |              |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------|--------------|
| Dimensions                                  |   |             |   |              |   |              |
| Installation<br>flush (f)<br>non flush (nf) |   |             |   |              |   |              |
| Operating distance sn [mm]                  | 2 f                                                                                 | 4 nf        | 5 f                                                                                 | 8 nf         | 10 f                                                                                  | 15 nf        |
| Switching output PNP                        |  |             |  |              |  |              |
| ID-No.                                      | P31288                                                                              | P31289      | P31161                                                                              | P31162       | P31163                                                                                | P31164       |
| Type                                        | IGMH 02 GSP                                                                         | IGMH 04 GSP | IGMH 005 GSP                                                                        | IGMH 008 GSP | IGMH 010 GSP                                                                          | IGMH 015 GSP |
| Supply voltage [V]                          | 10...30 DC                                                                          |             |                                                                                     |              |                                                                                       |              |
| Switching current [mA]                      | 200                                                                                 |             |                                                                                     |              |                                                                                       |              |
| Short circuit proof                         | •                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Reverse protection                          | •                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Voltage drop max. [V]                       | 2                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Residual current max. [mA]                  | 0.02                                                                                |             |                                                                                     |              |                                                                                       |              |
| Current consumption (not actuated) [mA]     | 7                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Switching frequency [Hz]                    | 200                                                                                 |             |                                                                                     |              |                                                                                       |              |
| Temperature deviation [%]                   | 15                                                                                  |             |                                                                                     |              |                                                                                       |              |
| Ambient temperature [°C]                    | -25...+150                                                                          |             | -25...+160                                                                          |              |                                                                                       |              |
| EMC-class                                   | A                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Protection [EN 60529]                       | IP 68 + IP 69K                                                                      |             |                                                                                     |              |                                                                                       |              |
| LED display                                 | -                                                                                   |             |                                                                                     |              |                                                                                       |              |
| Housing material                            | AISI 316 Ti / PEEK                                                                  |             |                                                                                     |              |                                                                                       |              |
| Connection                                  | 2 m FEP-cable 3x0.34 mm²                                                            |             |                                                                                     |              |                                                                                       |              |
| Switching current                           |  |             |                                                                                     |              |                                                                                       |              |



#### Notes

temperature depending parameters are described in the technical manual

## High temperature 160 °C

### Series IGMH - Proximity switches

M12 / M18 / M30

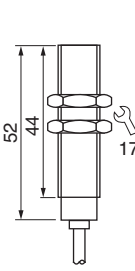
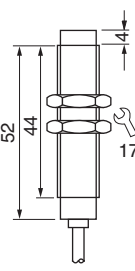
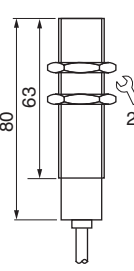
Stainless steel sleeve

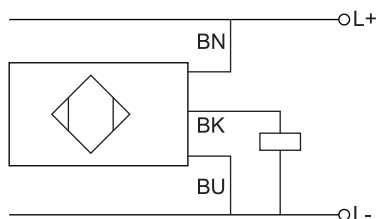
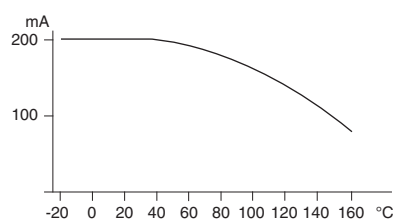
DC 10...30 V

Moisture resistant

Silicone-cable



| Design                                      | DC PNP • M12x1                                                                      |               | DC PNP • M18x1                                                                      |                | DC PNP • M30x1.5                                                                    |                |
|---------------------------------------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|----------------|
| Dimensions                                  |   |               |   |                |   |                |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                     |               |                                                                                     |                |                                                                                     |                |
| Operating distance sn [mm]                  | 2 f                                                                                 | 4 nf          | 5 f                                                                                 | 8 nf           | 10 f                                                                                | 15 nf          |
| Switching output PNP                        |  |               |  |                |  |                |
| ID-No.                                      | P31299                                                                              | P31300        | P31301                                                                              | P31302         | P31303                                                                              | P31304         |
| Type                                        | IGMH 02 GSP-K                                                                       | IGMH 04 GSP-K | IGMH 005 GSP-K                                                                      | IGMH 008 GSP-K | IGMH 010 GSP-K                                                                      | IGMH 015 GSP-K |
| Supply voltage [V]                          | 10...30 DC                                                                          |               |                                                                                     |                |                                                                                     |                |
| Switching current [mA]                      | 200                                                                                 |               |                                                                                     |                |                                                                                     |                |
| Short circuit proof                         | •                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Reverse protection                          | •                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Voltage drop max. [V]                       | 2                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Residual current max. [mA]                  | 0.02                                                                                |               |                                                                                     |                |                                                                                     |                |
| Current consumption (not actuated) [mA]     | 7                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Switching frequency [Hz]                    | 200                                                                                 |               |                                                                                     |                |                                                                                     |                |
| Temperature deviation [%]                   | 15                                                                                  |               |                                                                                     |                |                                                                                     |                |
| Ambient temperature [°C]                    | -25...+150                                                                          |               | -25...+160                                                                          |                |                                                                                     |                |
| EMC-class                                   | A                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Protection [EN 60529]                       | IP 67                                                                               |               |                                                                                     |                |                                                                                     |                |
| LED display                                 | -                                                                                   |               |                                                                                     |                |                                                                                     |                |
| Housing material                            | AISI 316 Ti / PEEK                                                                  |               |                                                                                     |                |                                                                                     |                |
| Connection                                  | 2 m Silicone-cable 3x0.34 mm <sup>2</sup>                                           |               |                                                                                     |                |                                                                                     |                |
| Switching current                           |                                                                                     |               |                                                                                     |                |                                                                                     |                |



#### Notes

temperature depending parameters are described in the technical manual

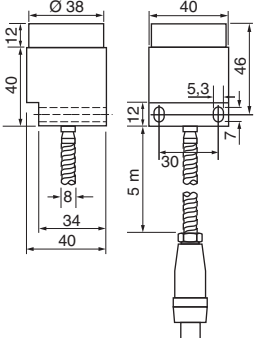
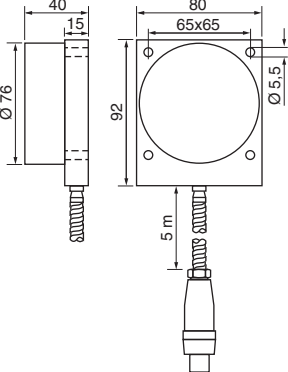
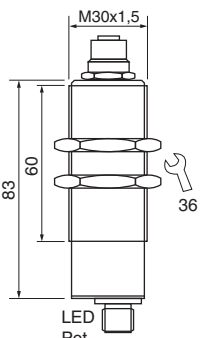
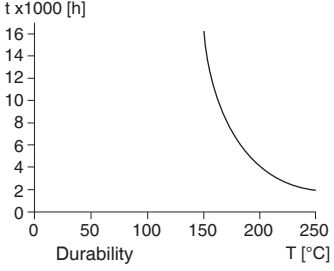
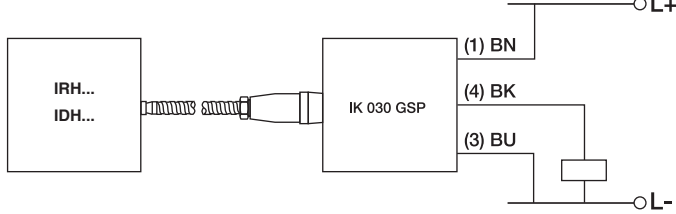
## High temperature 250 °C

### Series IRH / IDH - Proximity sensor

#### Armoured cable

#### With connector for cable amplifier



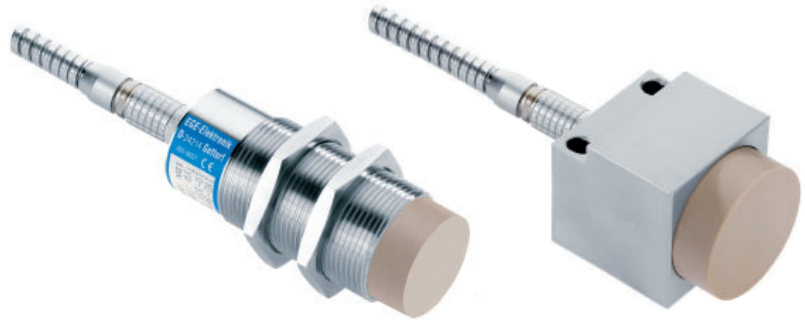
| Design                         | Cuboid 40 mm                                                                         | Ø80 mm                                                                              | DC PNP • M30x1.5                                                                      |
|--------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                     |    |  |   |
| Installation<br>non flush (nf) |                                                                                      |                                                                                     |                                                                                       |
| Operating distance sn [mm]     | 20 nf, adjustable                                                                    | 40 nf, adjustable                                                                   | amplifier                                                                             |
| Switching output PNP           |                                                                                      |                                                                                     |  |
| ID-No.                         | P31294                                                                               | P31295                                                                              | P31204                                                                                |
| Type                           | IRH 040 S250                                                                         | IDH 080 S250                                                                        | IK 030 GSP                                                                            |
| Supply voltage [V]             | —                                                                                    | —                                                                                   | 10...30                                                                               |
| Switching current [mA]         | —                                                                                    | —                                                                                   | 200                                                                                   |
| Current consumption [mA]       | —                                                                                    | —                                                                                   | 15                                                                                    |
| Voltage drop max. [V]          | —                                                                                    | —                                                                                   | 1.5                                                                                   |
| Ambient temperature [°C]       | 0...+250                                                                             | —                                                                                   | 0...+70                                                                               |
| Short circuit proof            | —                                                                                    | —                                                                                   | •                                                                                     |
| Reverse protection             | —                                                                                    | —                                                                                   | •                                                                                     |
| EMC-class                      | A                                                                                    | —                                                                                   | A                                                                                     |
| Switching frequency [Hz]       | 30                                                                                   | —                                                                                   | 30                                                                                    |
| Protection [EN 60529]          | IP 60                                                                                | —                                                                                   | IP 67                                                                                 |
| Function indicator             | —                                                                                    | —                                                                                   | LED yellow                                                                            |
| Stand-by indicator             | —                                                                                    | —                                                                                   | LED green                                                                             |
| Housing material               | Aluminium / PEEK                                                                     | —                                                                                   | AISI 316 Ti                                                                           |
| Connection cable               | 5 m FEP-cable, Ø 8 mm armoured cable                                                 | —                                                                                   | —                                                                                     |
| Connection                     | M12 connector                                                                        | —                                                                                   | M12 connector                                                                         |
| t x1000 [h]                    |   |                                                                                     |                                                                                       |
| Accessories                    |  |                                                                                     |                                                                                       |
|                                | connecting cable SLG 3-2 (Z01076), page 3.69                                         |                                                                                     |                                                                                       |

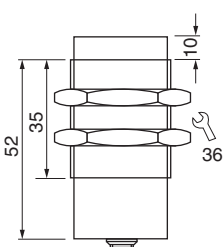
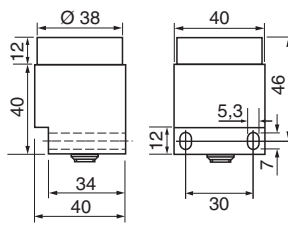
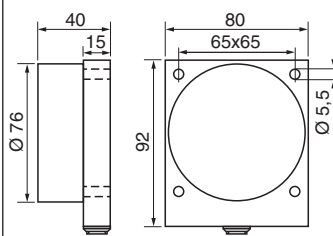
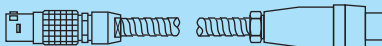
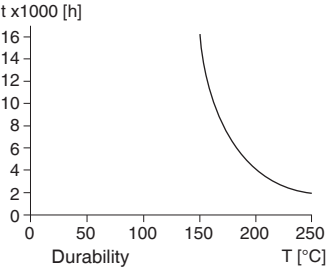
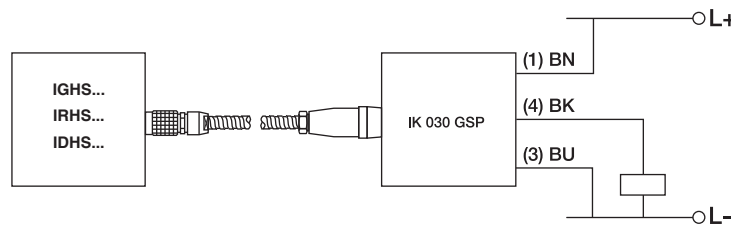
## High temperature 250 °C

### Series IGHS / IRHS / IDHS - Proximity sensor

#### Armoured cable

#### With connector for cable amplifier and sensor



| Design                                                                              | M30x1.5                                                                              | Cuboid 40 mm                                                                        | Ø 80 mm                                                                              |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                                                          |    |  |  |
| Installation non flush (nf)                                                         |                                                                                      |                                                                                     |                                                                                      |
| Operating distance sn [mm]                                                          | 15 nf, adjustable                                                                    | 20 nf, adjustable                                                                   | 40 nf, adjustable                                                                    |
| ID-No.                                                                              | P31298                                                                               | P31296                                                                              | P31297                                                                               |
| Type                                                                                | IGHS 030 S250                                                                        | IRHS 040 S250                                                                       | IDHS 080 S250                                                                        |
| Supply voltage [V]                                                                  | -                                                                                    |                                                                                     |                                                                                      |
| Switching current [mA]                                                              | -                                                                                    |                                                                                     |                                                                                      |
| Current consumption [mA]                                                            | -                                                                                    |                                                                                     |                                                                                      |
| Voltage drop [V]                                                                    | -                                                                                    |                                                                                     |                                                                                      |
| Ambient temperature [°C]                                                            | 0...+250                                                                             |                                                                                     |                                                                                      |
| Short circuit proof                                                                 | -                                                                                    |                                                                                     |                                                                                      |
| Reverse protection                                                                  | -                                                                                    |                                                                                     |                                                                                      |
| EMC-class                                                                           | A                                                                                    |                                                                                     |                                                                                      |
| Switching frequency [Hz]                                                            | 30                                                                                   |                                                                                     |                                                                                      |
| Protection [EN 60529]                                                               | IP 60                                                                                |                                                                                     |                                                                                      |
| Housing material                                                                    | AISI 316 Ti / PEEK                                                                   | Aluminium / PEEK                                                                    |                                                                                      |
| Connection                                                                          | M12 connector                                                                        |                                                                                     |                                                                                      |
| Connection cable (Accessories)                                                      | 5 m FEP-cable, Ø 8 mm armoured cable (KAP 08-DS5, Z01190)                            |                                                                                     |                                                                                      |
|                                                                                     |  |                                                                                     |                                                                                      |
|  |  |                                                                                     |                                                                                      |
| Accessories                                                                         | connecting cable SLG 3-2 (Z01076), page 3.69                                         |                                                                                     |                                                                                      |

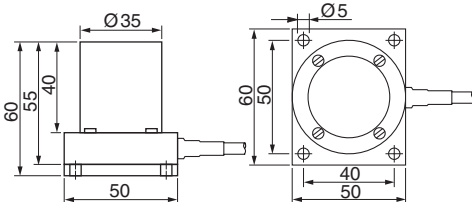
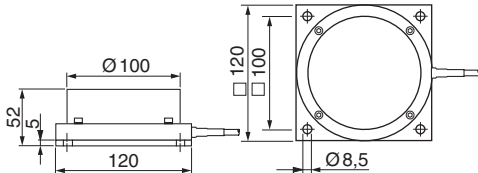
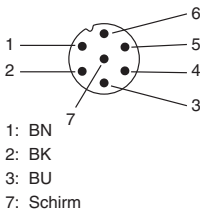
## High temperature 200 °C

### Series INT - Proximity sensor

PTFE housing

No cooling



| Design                                                                 | INT020-S200                                                                                                                                                                                                                                                                                                                         |                        | INT100-S180                                                                           |                        |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|------------------------|
| Dimensions                                                             |                                                                                                                                                                                                                                                   |                        |   |                        |
| Installation non flush (nf)                                            |                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                       |                        |
| Operating distance sn [mm]                                             | 15 nf                                                                                                                                                                                                                                                                                                                               |                        | 50 nf                                                                                 |                        |
| Adjustable range [mm]                                                  | 5...20                                                                                                                                                                                                                                                                                                                              |                        | 10...80                                                                               |                        |
| ID-No.                                                                 | P31101                                                                                                                                                                                                                                                                                                                              | P30411                 | P31103                                                                                | P30427                 |
| Type                                                                   | INT020-S200 K                                                                                                                                                                                                                                                                                                                       | INT020-S200 GC         | INT100-S180 K                                                                         | INT100-S180 GC         |
| Limiting temperature [°C]                                              | 250                                                                                                                                                                                                                                                                                                                                 |                        | 200                                                                                   |                        |
| Nominal temperature [°C]                                               | 200                                                                                                                                                                                                                                                                                                                                 |                        | 180                                                                                   |                        |
| Temperature deviation [mm/°C] (not linear)                             | 0.05                                                                                                                                                                                                                                                                                                                                |                        | 0.06                                                                                  |                        |
| EMC-class                                                              | B                                                                                                                                                                                                                                                                                                                                   |                        |                                                                                       |                        |
| Protection [EN 60529]                                                  | IP 40                                                                                                                                                                                                                                                                                                                               |                        |                                                                                       |                        |
| Housing material                                                       | PTFE                                                                                                                                                                                                                                                                                                                                |                        |                                                                                       |                        |
| Mounting                                                               | Aluminium plate                                                                                                                                                                                                                                                                                                                     |                        |                                                                                       |                        |
| Sensing material [ST 37]                                               | 40x40x1                                                                                                                                                                                                                                                                                                                             |                        | 100x100x1                                                                             |                        |
| Connecting cable                                                       | 5 m PTFE shielded                                                                                                                                                                                                                                                                                                                   |                        |                                                                                       |                        |
| Connection and required Amplifier                                      | clamp connection<br>IKM 120 GPP                                                                                                                                                                                                                                                                                                     | plug C 16<br>IU 130... | clamp connection<br>IKM 120 GPP                                                       | plug C 16<br>IU 130... |
| Special notes                                                          | If the ambient temperature exceeds 230 °C, there might be failed reactions from the sensor, but it will nor be destroyed by this. The inductive high temperature proximity switches must be used with an amplifier. The connection cable can be up to 10 m long. We can supply the cable with a flexible aluminium tube on request. |                        |                                                                                       |                        |
| Connection diagram                                                     | Sensor-Connection<br>sensors INT...K to IKM 120 GPP                                                                                                                                                                                                                                                                                 |                        | Plug C 16: connection for<br>Sensors INT...to IU 130...                               |                        |
| Amplifiers see page 3.32 - 3.33                                        |                                                                                                                                                                                                                                                 |                        |  |                        |
| Temperature depending parameters are described in the technical manual |                                                                                                                                                                                                                                                                                                                                     |                        |                                                                                       |                        |
| Accessories                                                            |                                                                                                                                                                                                                                                                                                                                     |                        | plug C 16                                                                             |                        |

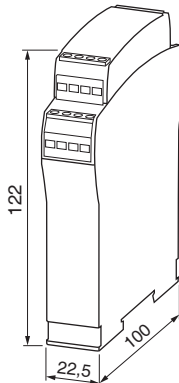
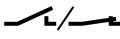
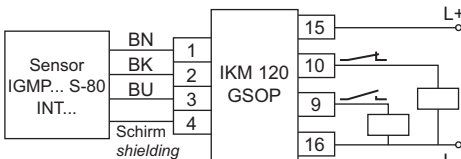
## Amplifier

### Series IKM

**For the connection of  
separate sensors for  
extreme temperatures**

**LED display**



| Design                   | IKM 120 GSOP                                                                                |  |
|--------------------------|---------------------------------------------------------------------------------------------|--|
| Dimensions               |          |  |
| ID-No.                   | P31334                                                                                      |  |
| Type                     | IKM 120 GSOP                                                                                |  |
| Switching output         | <br>PNP |  |
| Supply voltage [V]       | 24 V DC $\pm 20\%$                                                                          |  |
| Switching current [mA]   | 400                                                                                         |  |
| Short circuit proof      | •                                                                                           |  |
| Current consumption [mA] | max. 18                                                                                     |  |
| Operating distance       | adjustable                                                                                  |  |
| Hysteresis max. [%]      | 10                                                                                          |  |
| Switching frequency [Hz] | 100                                                                                         |  |
| Ambient temperature [°C] | -25...+75                                                                                   |  |
| EMC-class                | A                                                                                           |  |
| Protection [EN 60529]    | terminal: IP 20 / housing: IP 40                                                            |  |
| Function indicator       | LED yellow                                                                                  |  |
| Stand-by indicator       | LED green                                                                                   |  |
| Housing material         | PA                                                                                          |  |
| Connection sensor        | terminal screws                                                                             |  |
| Connection Amplifier     | terminal screws                                                                             |  |
|                          |         |  |

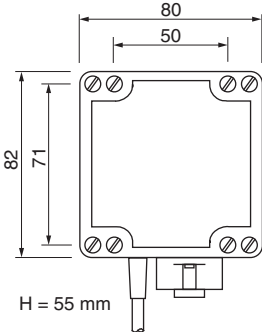
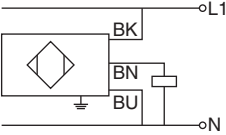
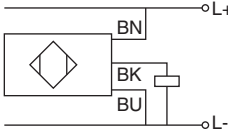
## Amplifiers

### Series IU

For the connection of  
separate sensors

LED display



| Design                   | IU 130...                                                                                                       |                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Dimensions               |                              |                                                                                                                   |
|                          |                                                                                                                 |                                                                                                                   |
| ID-No.                   | P30438                                                                                                          | P30439                                                                                                            |
| Type                     | IU 130 WP                                                                                                       | IU 130 GPP                                                                                                        |
| Supply voltage [V]       | 230 AC $\pm 10\%$                                                                                               | 24 DC $\pm 10\%$                                                                                                  |
| Switching current [mA]   | 400                                                                                                             |                                                                                                                   |
| Short circuit proof      | -                                                                                                               |                                                                                                                   |
| Current consumption [mA] | 15                                                                                                              |                                                                                                                   |
| Operating distance       | adjustable                                                                                                      |                                                                                                                   |
| Hysteresis max. [%]      | adjustable                                                                                                      |                                                                                                                   |
| Output                   | programmable                                                                                                    |                                                                                                                   |
| Switching frequency [Hz] | 5                                                                                                               | 15                                                                                                                |
| Ambient temperature [°C] | -20...+70                                                                                                       |                                                                                                                   |
| EMC-class                | A                                                                                                               |                                                                                                                   |
| Protection [EN 60529]    | IP 67                                                                                                           |                                                                                                                   |
| Function indicator       | LED yellow                                                                                                      |                                                                                                                   |
| Stand-by indicator       | LED green                                                                                                       |                                                                                                                   |
| Housing material         | PBT                                                                                                             |                                                                                                                   |
| Connection sensor        | C 16 plug connection                                                                                            |                                                                                                                   |
| Connection amplifier     | 2 m PVC-cable<br>4x0.75 mm <sup>2</sup>                                                                         | 2 m PVC-cable<br>3x0.50 mm <sup>2</sup>                                                                           |
|                          | <p>connection amplifier</p>  | <p>connection amplifier</p>  |
| Accessories              | external plug C 16 (Z00039)                                                                                     |                                                                                                                   |

## Demanding environment

### Series IGM - Proximity switches

M12 / M18 / M30

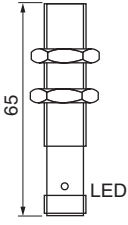
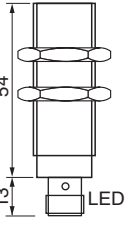
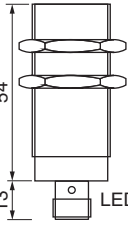
Metal sleeve

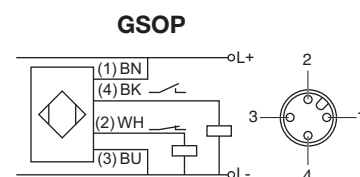
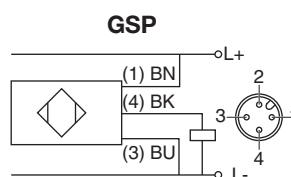
DC 10...48 V

Short form

Increased EMC



| Design                                      | DC PNP • M12x1                                                                      |                                                                                     | DC PNP • M18x1                                                                      |                                                                                     | DC PNP • M30x1.5                                                                      |                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Dimensions                                  |   |                                                                                     |   |                                                                                     |   |                                                                                     |
| Installation<br>flush (f)<br>non flush (nf) |  |                                                                                     |  |                                                                                     |  |                                                                                     |
| Operating distance sn [mm]                  | 2 f                                                                                 | 4 nf                                                                                | 5 f                                                                                 | 8 nf                                                                                | 10 f                                                                                  | 15 nf                                                                               |
| GSP                                         |  |  |  |  |    |  |
| ID-No.                                      | P31246                                                                              | P31247                                                                              | P31305                                                                              | P31306                                                                              | P31307                                                                                | P31308                                                                              |
| Type                                        | IGMU 02 GSP                                                                         | IGMU 04 GSP                                                                         | IGMU 05 GSP                                                                         | IGMU 08 GSP                                                                         | IGMU 10 GSP                                                                           | IGMU 15 GSP                                                                         |
| GSOP                                        |  |  |  |  |    |  |
| ID-No.                                      | -                                                                                   | -                                                                                   | P31250                                                                              | P31251                                                                              | P31254                                                                                | P31255                                                                              |
| Type                                        | -                                                                                   | -                                                                                   | IGMU 05 GSOP                                                                        | IGMU 08 GSOP                                                                        | IGMU 10 GSOP                                                                          | IGMU 15 GSOP                                                                        |
| Supply voltage [V]                          | 10...48 DC                                                                          |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Switching current [mA]                      | 200                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Short circuit proof                         | •                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Reverse protection                          | •                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Voltage drop max. [V]                       | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Current consumption [mA]                    | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Switching frequency [Hz]                    | 500                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Ambient temperature [°C]                    | -25...+75                                                                           |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| EMC-class                                   | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Protection [EN 60529]                       | IP 67                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| LED display                                 | •                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Housing material                            | Br-Ni / PBT                                                                         |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |
| Connection                                  | M12 connector                                                                       |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                     |



Accessories connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69

## Demanding environment

### Series IGM - Proximity switches

M12 / M18 / M30

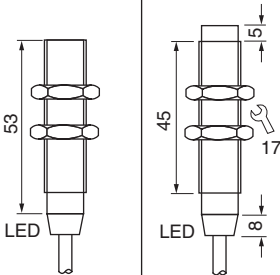
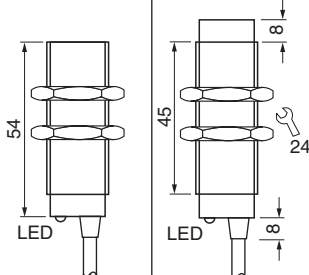
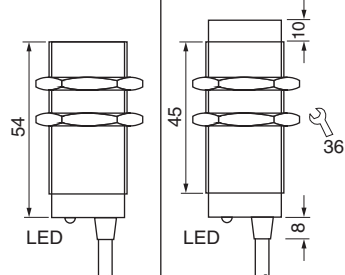
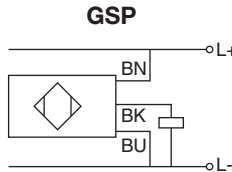
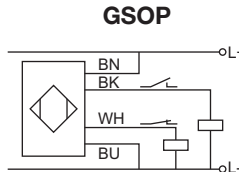
Metal sleeve

DC 10...48 V

Short form

Increased EMC



| Design                                                                                          | DC PNP • M12x1                                                                      |            | DC PNP • M18x1                                                                      |                                                                                       | DC PNP • M30x1.5                                                                      |             |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------|
| Dimensions                                                                                      |   |            |  |                                                                                       |   |             |
| Installation<br>flush (f)<br>non flush (nf)                                                     |  |            |  |                                                                                       |  |             |
| Operating distance sn [mm]                                                                      | 2 f                                                                                 | 4 nf       | 5 f                                                                                 | 8 nf                                                                                  | 10 f                                                                                  | 15 nf       |
| GSP  ID-No.  | P31244                                                                              | P31245     | P31309                                                                              | P31310                                                                                | P31311                                                                                | P31312      |
| Type                                                                                            | IGM 02 GSP                                                                          | IGM 04 GSP | IGM 05 GSP                                                                          | IGM 08 GSP                                                                            | IGM 10 GSP                                                                            | IGM 15 GSP  |
| GSOP  ID-No. | -                                                                                   | -          | P31248                                                                              | P31249                                                                                | P31252                                                                                | P31253      |
| Type                                                                                            | -                                                                                   | -          | IGM 05 GSOP                                                                         | IGM 08 GSOP                                                                           | IGM 10 GSOP                                                                           | IGM 15 GSOP |
| Supply voltage [V]                                                                              | 10...48 DC                                                                          |            |                                                                                     |                                                                                       |                                                                                       |             |
| Switching current [mA]                                                                          | 200                                                                                 |            |                                                                                     |                                                                                       |                                                                                       |             |
| Short circuit proof                                                                             | •                                                                                   |            |                                                                                     |                                                                                       |                                                                                       |             |
| Reverse protection                                                                              | •                                                                                   |            |                                                                                     |                                                                                       |                                                                                       |             |
| Voltage drop max. [V]                                                                           | 2                                                                                   |            |                                                                                     |                                                                                       |                                                                                       |             |
| Current consumption [mA]                                                                        | 2.5                                                                                 |            |                                                                                     |                                                                                       |                                                                                       |             |
| Switching frequency [Hz]                                                                        | 500                                                                                 |            |                                                                                     |                                                                                       |                                                                                       |             |
| Ambient temperature [°C]                                                                        | -25...+75                                                                           |            |                                                                                     |                                                                                       |                                                                                       |             |
| EMC-class                                                                                       | A                                                                                   |            |                                                                                     |                                                                                       |                                                                                       |             |
| Protection [EN 60529]                                                                           | IP 67                                                                               |            |                                                                                     |                                                                                       |                                                                                       |             |
| LED display                                                                                     | •                                                                                   |            |                                                                                     |                                                                                       |                                                                                       |             |
| Housing material                                                                                | Br-Ni / PBT                                                                         |            |                                                                                     |                                                                                       |                                                                                       |             |
| Connection                                                                                      | GSP: 2 m PVC-cable 3x0.34 mm²                                                       |            |                                                                                     | GSOP: 2 m PVC-cable 4x0.34 mm²                                                        |                                                                                       |             |
|                                                                                                 |  |            |                                                                                     |  |                                                                                       |             |

## Demanding environment

### Series IGM - Proximity switches

**M18 / M30**

**Metal sleeve**

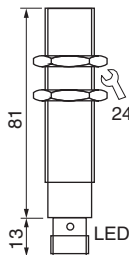
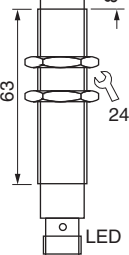
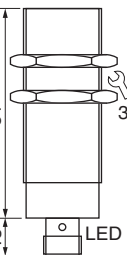
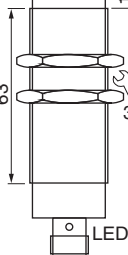
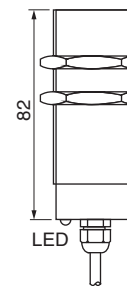
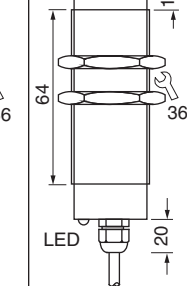
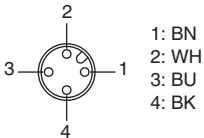
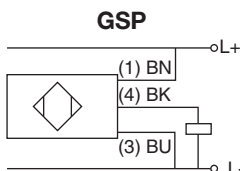
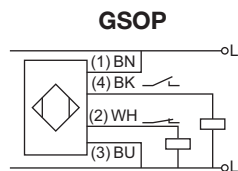
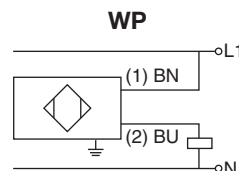
**DC 10...48 V**

**AC 20...250 V**

**Long form**

**Increased EMC**



| Design                                                                                   | DC PNP • M18x1                                                                      |                                                                                    | DC PNP • M30x1.5                                                                     |                                                                                     | AC • M30x1.5<br>programmable                                                          |                                                                                      |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                                                               |   |  |    |  |   |  |
| Installation<br>flush (f)<br>non flush (nf)                                              |                                                                                     |                                                                                    |                                                                                      |                                                                                     |                                                                                       |                                                                                      |
| Operating distance sn [mm]                                                               | 5 f                                                                                 | 8 nf                                                                               | 10 f                                                                                 | 15 nf                                                                               | 10 f                                                                                  | 15 nf                                                                                |
| GSP   | ID-No. P31313<br>IGMU 005 GSP                                                       | ID-No. P31314<br>IGMU 008 GSP                                                      | ID-No. P31315<br>IGMU 010 GSP                                                        | ID-No. P31316<br>IGMU 015 GSP                                                       | -                                                                                     | -                                                                                    |
| GSOP  | ID-No. P31258<br>IGMU 005 GSOP                                                      | ID-No. P31259<br>IGMU 008 GSOP                                                     | ID-No. P31262<br>IGMU 010 GSOP                                                       | ID-No. P31263<br>IGMU 015 GSOP                                                      | -                                                                                     | -                                                                                    |
| WP    | ID-No. -                                                                            | ID-No. -                                                                           | ID-No. -                                                                             | ID-No. -                                                                            | P30015<br>IGMS 010 WP                                                                 | P30019<br>IGMS 015 WP                                                                |
| Supply voltage [V]                                                                       | 10...48 DC                                                                          |                                                                                    |                                                                                      |                                                                                     | 20...250 AC                                                                           |                                                                                      |
| Switching current [mA]                                                                   | 200                                                                                 |                                                                                    |                                                                                      |                                                                                     | 400                                                                                   |                                                                                      |
| Short circuit proof                                                                      | •                                                                                   |                                                                                    |                                                                                      |                                                                                     | 3000 mA/10 ms                                                                         |                                                                                      |
| Reverse protection                                                                       | •                                                                                   |                                                                                    |                                                                                      |                                                                                     | -                                                                                     |                                                                                      |
| Voltage drop max. [V]                                                                    | 2                                                                                   |                                                                                    |                                                                                      |                                                                                     | 6                                                                                     |                                                                                      |
| Minimum load current [mA]                                                                | -                                                                                   |                                                                                    |                                                                                      |                                                                                     | 5                                                                                     |                                                                                      |
| Current consumption [mA]                                                                 | 2.5                                                                                 |                                                                                    |                                                                                      |                                                                                     | 2.5                                                                                   |                                                                                      |
| Switching frequency [Hz]                                                                 | 500                                                                                 |                                                                                    |                                                                                      |                                                                                     | 25                                                                                    |                                                                                      |
| Ambient temperature [°C]                                                                 | -25...+75                                                                           |                                                                                    |                                                                                      |                                                                                     | -25...+75                                                                             |                                                                                      |
| EMC-class                                                                                | A                                                                                   |                                                                                    |                                                                                      |                                                                                     | A                                                                                     |                                                                                      |
| Protection [EN 60529]                                                                    | IP 67                                                                               |                                                                                    |                                                                                      |                                                                                     | IP 67                                                                                 |                                                                                      |
| LED display                                                                              | •                                                                                   |                                                                                    |                                                                                      |                                                                                     | •                                                                                     |                                                                                      |
| Housing material                                                                         | Br-Ni / PBT                                                                         |                                                                                    |                                                                                      |                                                                                     | Br-Ni / PBT                                                                           |                                                                                      |
| Connection                                                                               | M12 connector                                                                       |                                                                                    |                                                                                      |                                                                                     | PG-plug connection<br>2 m PVC-cable 3x0.5 mm²                                         |                                                                                      |
| Accessories                                                                              | connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69                          |                                                                                    |                                                                                      |                                                                                     |                                                                                       |                                                                                      |
|       |  |                                                                                    |  |                                                                                     |  |                                                                                      |

## Demanding environment

### Series IGM - Proximity switches

M18 / M30

Metal sleeve

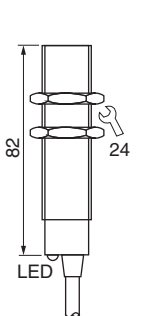
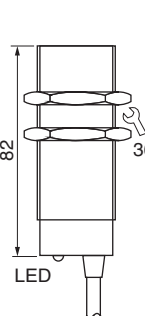
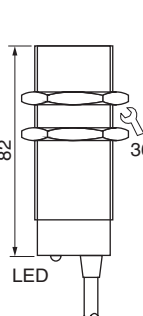
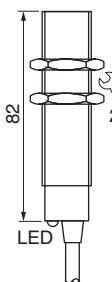
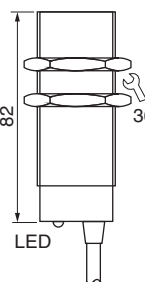
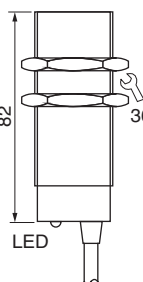
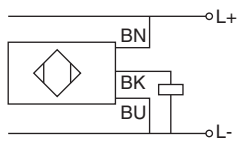
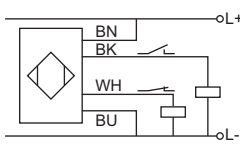
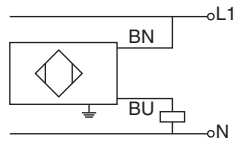
DC 10...48 V

AC 20...250 V

Long form

Increased EMC



| Design                                                                                   | DC PNP • M18x1                                                                            |                                    | DC PNP • M30x1.5                                                                     |                                    | AC • M30x1.5                                                                          |                      |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------|----------------------|
| Dimensions                                                                               |         |                                    |    |                                    |   |                      |
| Installation<br>flush (f)<br>non flush (nf)                                              |         |                                    |    |                                    |   |                      |
| Operating distance sn [mm]                                                               | 5 f                                                                                       | 8 nf                               | 10 f                                                                                 | 15 nf                              | 10 f                                                                                  | 15 nf                |
| GSP   | ID-No. P31317<br>Type IGM 005 GSP                                                         | ID-No. P31318<br>Type IGM 008 GSP  | ID-No. P31319<br>Type IGM 010 GSP                                                    | ID-No. P31320<br>Type IGM 015 GSP  | -                                                                                     | -                    |
| GSOP  | ID-No. P31256<br>Type IGM 005 GSOP                                                        | ID-No. P31257<br>Type IGM 008 GSOP | ID-No. P31260<br>Type IGM 010 GSOP                                                   | ID-No. P31261<br>Type IGM 015 GSOP | -                                                                                     | -                    |
| WS    | ID-No. -<br>Type -                                                                        | ID-No. -<br>Type -                 | ID-No. -<br>Type -                                                                   | ID-No. -<br>Type -                 | P30016<br>IGM 010 WS                                                                  | P30020<br>IGM 015 WS |
| Supply voltage [V]                                                                       | 10...48 DC                                                                                |                                    |                                                                                      |                                    | 20...250 AC                                                                           |                      |
| Switching current [mA]                                                                   | 200                                                                                       |                                    |                                                                                      |                                    | 400                                                                                   |                      |
| Short circuit proof                                                                      | •                                                                                         |                                    |                                                                                      |                                    | 3000 mA/10 ms                                                                         |                      |
| Reverse protection                                                                       | •                                                                                         |                                    |                                                                                      |                                    | -                                                                                     |                      |
| Voltage drop max. [V]                                                                    | 2                                                                                         |                                    |                                                                                      |                                    | 6                                                                                     |                      |
| Minimum load current [mA]                                                                | -                                                                                         |                                    |                                                                                      |                                    | 5                                                                                     |                      |
| Current consumption [mA]                                                                 | 2.5                                                                                       |                                    |                                                                                      |                                    | 2.5                                                                                   |                      |
| Switching frequency [Hz]                                                                 | 500                                                                                       |                                    |                                                                                      |                                    | 25                                                                                    |                      |
| Ambient temperature [°C]                                                                 | -25...+75                                                                                 |                                    |                                                                                      |                                    | -25...+75                                                                             |                      |
| EMC-class                                                                                | A                                                                                         |                                    |                                                                                      |                                    | A                                                                                     |                      |
| Protection [EN 60529]                                                                    | IP 67                                                                                     |                                    |                                                                                      |                                    | IP 67                                                                                 |                      |
| LED display                                                                              | •                                                                                         |                                    |                                                                                      |                                    | •                                                                                     |                      |
| Housing material                                                                         | Br-Ni / PBT                                                                               |                                    |                                                                                      |                                    | Br-Ni / PBT                                                                           |                      |
| Connection                                                                               | GSP: 2 m PVC-cable, 3x0.34 mm <sup>2</sup><br>GSOP: 2 m PVC-cable, 4x0.34 mm <sup>2</sup> |                                    |                                                                                      |                                    | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup>                                                |                      |
|                                                                                          |        |                                    |  |                                    |  |                      |

## Demanding environment

### Series ID - Proximity switches

Ø80 mm

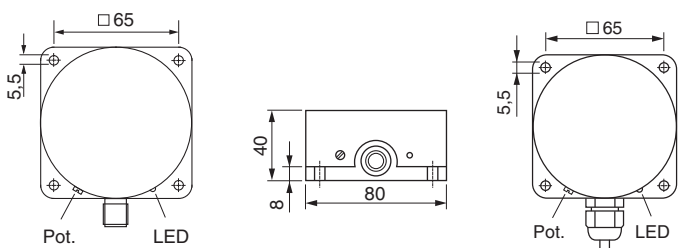
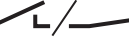
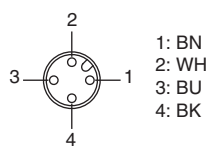
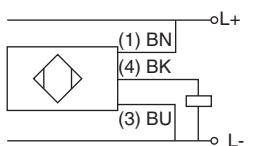
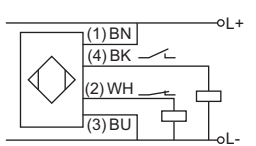
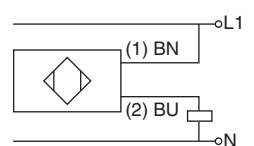
DC 10...55 V

AC 20...250 V

Sensing range adjustable

Increased EMC



| Design                                                                                                         | DC PNP • Ø80 mm                                                                                                                                                                                                                                                                                                                        | DC PNP • Ø80 mm                                                 | AC • Ø80 mm<br>programmable                |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------|
| <b>Dimensions</b><br><br>Installation<br>non flush (nf)                                                        |                                                                                                                                                                                                                                                     |                                                                 |                                            |
| Operating distance sn [mm]<br>(Adjustable range)                                                               | 55 nf<br>(25...80)                                                                                                                                                                                                                                                                                                                     | 55 nf<br>(25...80)                                              | 55 nf<br>(25...80)                         |
| <b>GSP</b>  ID-No.<br>Type  | P31321<br>IDU 080 GSP                                                                                                                                                                                                                                                                                                                  | P31322<br>ID 080 GSP                                            | -                                          |
| <b>GSOP</b>  ID-No.<br>Type | P31264<br>IDU 080 GSOP                                                                                                                                                                                                                                                                                                                 | P31265<br>ID 080 GSOP                                           | -                                          |
| <b>WP</b>  ID-No.<br>Type   | -                                                                                                                                                                                                                                                                                                                                      | -                                                               | P31266<br>IDS 080 WP                       |
| Supply voltage [V]                                                                                             | 10...55 DC                                                                                                                                                                                                                                                                                                                             | 10...55 DC                                                      | 20...250 AC                                |
| Switching current [mA]                                                                                         | 400                                                                                                                                                                                                                                                                                                                                    | 400                                                             | 400                                        |
| Short circuit proof                                                                                            | •                                                                                                                                                                                                                                                                                                                                      | •                                                               | 3000 mA/10 ms                              |
| Reverse protection                                                                                             | •                                                                                                                                                                                                                                                                                                                                      | •                                                               | -                                          |
| Voltage drop max. [V]                                                                                          | 2                                                                                                                                                                                                                                                                                                                                      | 2                                                               | 6 eff.                                     |
| Minimum load current [mA]                                                                                      | -                                                                                                                                                                                                                                                                                                                                      | -                                                               | 8                                          |
| Current consumption [mA]                                                                                       | 4                                                                                                                                                                                                                                                                                                                                      | 4                                                               | 2.5                                        |
| Switching frequency [Hz]                                                                                       | 20                                                                                                                                                                                                                                                                                                                                     | 20                                                              | 10                                         |
| Ambient temperature [°C]                                                                                       | -25...+75                                                                                                                                                                                                                                                                                                                              | -25...+75                                                       | -25...+75                                  |
| EMC-class                                                                                                      | A                                                                                                                                                                                                                                                                                                                                      | A                                                               | A                                          |
| Protection [EN 60529]                                                                                          | IP 67                                                                                                                                                                                                                                                                                                                                  | IP 67                                                           | IP 67                                      |
| LED display                                                                                                    | •                                                                                                                                                                                                                                                                                                                                      | •                                                               | •                                          |
| Housing material                                                                                               | PBT                                                                                                                                                                                                                                                                                                                                    | PBT                                                             | PBT                                        |
| Connection                                                                                                     | M12 connector                                                                                                                                                                                                                                                                                                                          | GSP: 2 m PVC-cable, 3x0.5 mm²<br>GSOP: 2 m PVC-cable, 4x0.5 mm² | PG-plug connection<br>2 m, 2x0.75 mm², PVC |
|                             | <div> <b>GSP</b>  </div> <div> <b>GSOP</b>  </div> <div> <b>WP</b>  </div> |                                                                 |                                            |
| Accessories                                                                                                    | connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69                                                                                                                                                                                                                                                                             |                                                                 |                                            |

## Demanding environment

### Series ID - Proximity switches

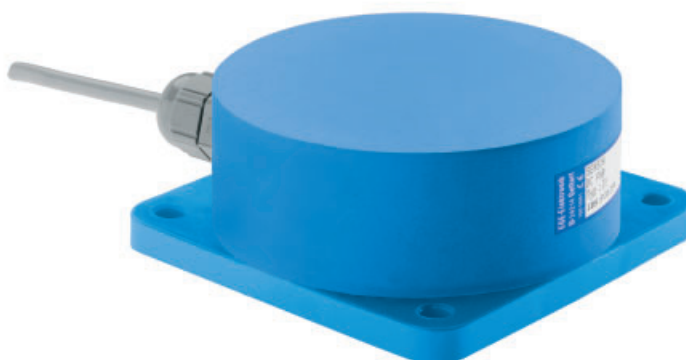
Ø 105 mm

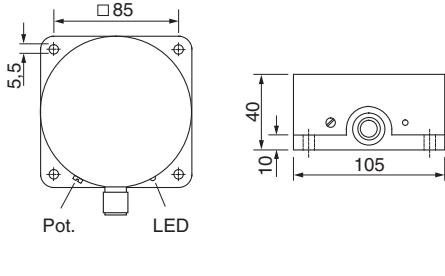
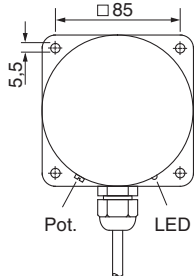
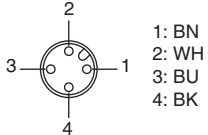
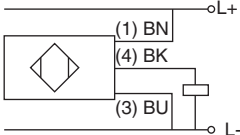
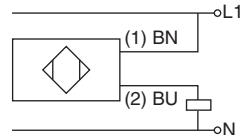
DC 10...55 V

AC 20...250 V

Sensing range adjustable

Increased EMC



| Design                                                                                                         | DC PNP • Ø 105 mm                                                                                 |                                                                                         | AC • Ø 105 mm<br>programmable                                                                      |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Dimensions</b><br><br>Installation<br>non flush (nf)                                                        |                |                                                                                         |                |
| Operating distance sn [mm]<br>(Adjustable range)                                                               | 100 nf<br>(20...110)                                                                              | 100 nf<br>(20...110)                                                                    | 70 nf<br>(20...110)                                                                                |
| <b>GSP</b>  ID-No.<br>Type  | P31323<br>IDU 105 GSP                                                                             | P31324<br>ID 105 GSP                                                                    | -                                                                                                  |
| <b>GSOP</b>  ID-No.<br>Type | P31267<br>IDU 105 GSOP                                                                            | P31268<br>ID 105 GSOP                                                                   | -                                                                                                  |
| <b>WP</b>  ID-No.<br>Type   | -                                                                                                 | -                                                                                       | P31269<br>IDS 105 WP                                                                               |
| Supply voltage [V]                                                                                             | 10...55 DC                                                                                        | 10...55 DC                                                                              | 20...250 AC                                                                                        |
| Switching current [mA]                                                                                         | 400                                                                                               | 400                                                                                     | 400                                                                                                |
| Short circuit proof                                                                                            | •                                                                                                 | •                                                                                       | 3000 mA/10 ms                                                                                      |
| Reverse protection                                                                                             | •                                                                                                 | •                                                                                       | -                                                                                                  |
| Voltage drop max. [V]                                                                                          | 2                                                                                                 | 2                                                                                       | 6 eff.                                                                                             |
| Minimum load current [mA]                                                                                      | -                                                                                                 | -                                                                                       | 8                                                                                                  |
| Current consumption [mA]                                                                                       | 4                                                                                                 | 4                                                                                       | 2.5                                                                                                |
| Switching frequency [Hz]                                                                                       | 20                                                                                                | 20                                                                                      | 10                                                                                                 |
| Ambient temperature [°C]                                                                                       | -25...+75                                                                                         | -25...+75                                                                               | -25...+75                                                                                          |
| EMC-class                                                                                                      | A                                                                                                 | A                                                                                       | A                                                                                                  |
| Protection [EN 60529]                                                                                          | IP 67                                                                                             | IP 67                                                                                   | IP 67                                                                                              |
| LED display                                                                                                    | •                                                                                                 | •                                                                                       | •                                                                                                  |
| Housing material                                                                                               | PBT                                                                                               | PBT                                                                                     | PBT                                                                                                |
| Connection                                                                                                     | M12 connector                                                                                     | GSP: 2 m PVC-cable, 3x0.5 mm <sup>2</sup><br>GSOP: 2 m PVC-cable, 4x0.5 mm <sup>2</sup> | PG-plug connection<br>2 m, 2x0.75 mm <sup>2</sup> , PVC                                            |
|                             | <b>GSP</b><br> |                                                                                         | <b>WP</b><br> |

Accessories connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69

## Demanding environment

### Series ID - Proximity switches

Ø 160 mm

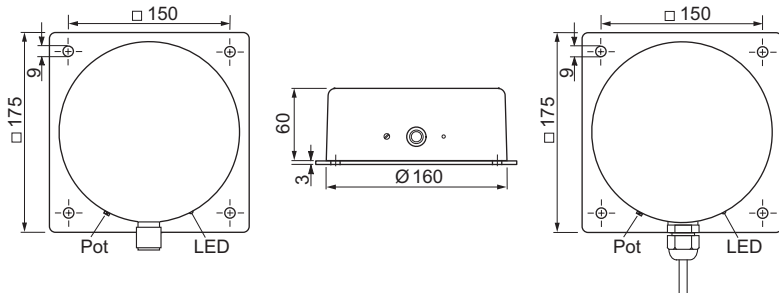
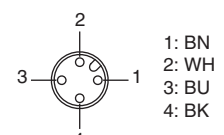
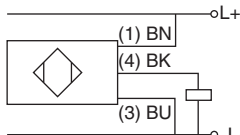
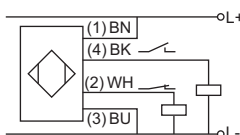
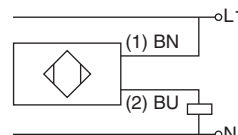
DC 10...55 V

AC 20...250 V

Sensing range adjustable

Increased EMC



| Design                                                                                                         | DC PNP • Ø 160 mm                                                                                 | DC PNP • Ø 160 mm                                                                                   | AC • Ø 160 mm<br>programmable                                                                      |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Dimensions</b><br><br>Installation<br>non flush (nf)                                                        |                |                                                                                                     |                                                                                                    |
| Operating distance sn [mm]<br>(Adjustable range)                                                               | 120 nf<br>(20...150)                                                                              | 120 nf<br>(20...150)                                                                                | 120 nf<br>(20...150)                                                                               |
| <b>GSP</b>  ID-No.<br>Type  | <b>P31325</b><br>IDU 160 GSP                                                                      | <b>P31326</b><br>ID 160 GSP                                                                         | -                                                                                                  |
| <b>GSOP</b>  ID-No.<br>Type | <b>P31270</b><br>IDU 160 GSOP                                                                     | <b>P31271</b><br>ID 160 GSOP                                                                        | -                                                                                                  |
| <b>WP</b>  ID-No.<br>Type   | -                                                                                                 | -                                                                                                   | <b>P31272</b><br>IDS 160 WP                                                                        |
| Supply voltage [V]                                                                                             | 10...55 DC                                                                                        | 10...55 DC                                                                                          | 20...250 AC                                                                                        |
| Switching current [mA]                                                                                         | 400                                                                                               | 400                                                                                                 | 400                                                                                                |
| Short circuit proof                                                                                            | •                                                                                                 | •                                                                                                   | 3000 mA/10 ms                                                                                      |
| Reverse protection                                                                                             | •                                                                                                 | •                                                                                                   | -                                                                                                  |
| Voltage drop max. [V]                                                                                          | 2                                                                                                 | 2                                                                                                   | 6 eff.                                                                                             |
| Minimum load current [mA]                                                                                      | -                                                                                                 | -                                                                                                   | 8                                                                                                  |
| Current consumption [mA]                                                                                       | 4                                                                                                 | 4                                                                                                   | 2.5                                                                                                |
| Switching frequency [Hz]                                                                                       | 20                                                                                                | 20                                                                                                  | 10                                                                                                 |
| Ambient temperature [°C]                                                                                       | -25...+75                                                                                         | -25...+75                                                                                           | -25...+75                                                                                          |
| EMC-class                                                                                                      | A                                                                                                 | A                                                                                                   | A                                                                                                  |
| Protection [EN 60529]                                                                                          | IP 67                                                                                             | IP 67                                                                                               | IP 67                                                                                              |
| LED display                                                                                                    | •                                                                                                 | •                                                                                                   | •                                                                                                  |
| Housing material                                                                                               | PBT / Aluminium                                                                                   | PBT / Aluminium                                                                                     | PBT / Aluminium                                                                                    |
| Connection                                                                                                     | M12 connector                                                                                     | GSP: 2 m PVC-cable, 3x0.5 mm <sup>2</sup><br>GSOP: 2 m PVC-cable, 4x0.5 mm <sup>2</sup>             | PG-plug connection<br>2 m, 2x0.75 mm <sup>2</sup> , PVC                                            |
|                             | <b>GSP</b><br> | <b>GSOP</b><br> | <b>WP</b><br> |

Accessories connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69

## Demanding environment

### Series ID - Proximity switches

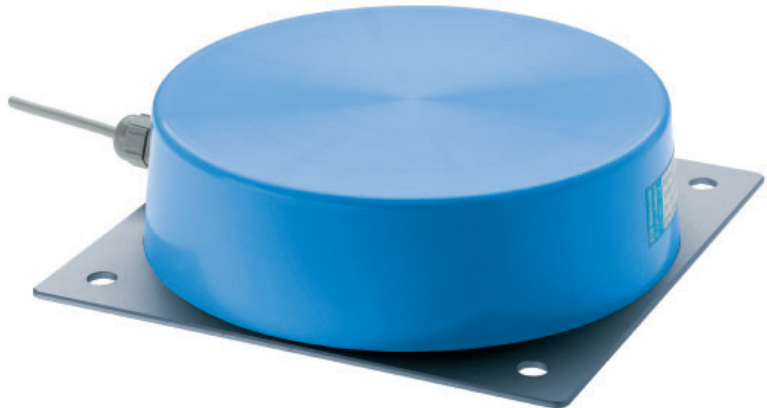
Ø 200 mm

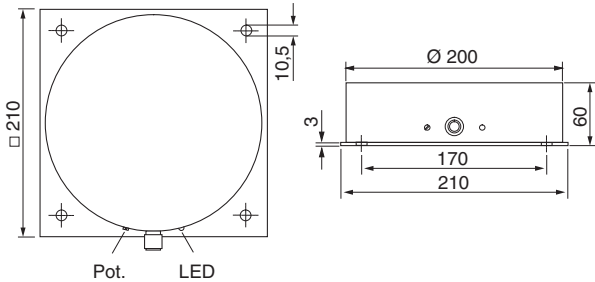
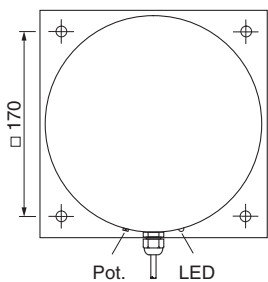
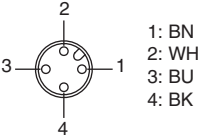
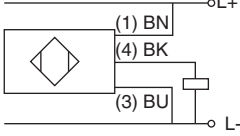
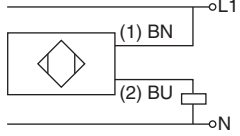
DC 10...55 V

AC 20...250 V

Sensing range adjustable

Increased EMC



| Design                                                                                                         | DC PNP • Ø200 mm                                                                                  |                                                                                         | AC • Ø200 mm<br>programmable                                                                       |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Dimensions</b><br><br>Installation<br>non flush (nf)                                                        |                |                                                                                         |                |
| Operating distance sn [mm]<br>(Adjustable range)                                                               | 140 nf<br>(40...170)                                                                              |                                                                                         | 140 nf<br>(40...170)                                                                               |
| <b>GSP</b>  ID-No.<br>Type  | <b>P31327</b><br>IDU 200 GSP                                                                      |                                                                                         | <b>P31328</b><br>ID 200 GSP                                                                        |
| <b>GSOP</b>  ID-No.<br>Type | <b>P31273</b><br>IDU 200 GSOP                                                                     |                                                                                         | <b>P31274</b><br>ID 200 GSOP                                                                       |
| <b>WP</b>  ID-No.<br>Type   | -                                                                                                 |                                                                                         | <b>P31275</b><br>IDS 200 WP                                                                        |
| Supply voltage [V]                                                                                             | 10...55 DC                                                                                        |                                                                                         | 20...250 AC                                                                                        |
| Switching current [mA]                                                                                         | 400                                                                                               |                                                                                         | 400                                                                                                |
| Short circuit proof                                                                                            | •                                                                                                 |                                                                                         | 3000 mA/10 ms                                                                                      |
| Reverse protection                                                                                             | •                                                                                                 |                                                                                         | -                                                                                                  |
| Voltage drop max. [V]                                                                                          | 2                                                                                                 |                                                                                         | 6 eff.                                                                                             |
| Minimum load current [mA]                                                                                      | -                                                                                                 |                                                                                         | 8                                                                                                  |
| Current consumption [mA]                                                                                       | 4                                                                                                 |                                                                                         | 2.5                                                                                                |
| Switching frequency [Hz]                                                                                       | 20                                                                                                |                                                                                         | 10                                                                                                 |
| Ambient temperature [°C]                                                                                       | -25...+75                                                                                         |                                                                                         | -25...+75                                                                                          |
| EMC-class                                                                                                      | A                                                                                                 |                                                                                         | A                                                                                                  |
| Protection [EN 60529]                                                                                          | IP 67                                                                                             |                                                                                         | IP 67                                                                                              |
| LED display                                                                                                    | •                                                                                                 |                                                                                         | •                                                                                                  |
| Housing material                                                                                               | PBT / Aluminium                                                                                   |                                                                                         | PBT / Aluminium                                                                                    |
| Connection                                                                                                     | M12 connector                                                                                     | GSP: 2 m PVC-cable, 3x0.5 mm <sup>2</sup><br>GSOP: 2 m PVC-cable, 4x0.5 mm <sup>2</sup> | PG-plug connection<br>2 m, 2x0.75 mm <sup>2</sup> , PVC                                            |
|                             | <b>GSP</b><br> |                                                                                         | <b>WP</b><br> |
| Accessories                                                                                                    | connecting cable SLG 3-2 (GSP) / SLG 4-2 (GSOP), page 3.69                                        |                                                                                         |                                                                                                    |

## Analog output

### Series IGA - Proximity sensors

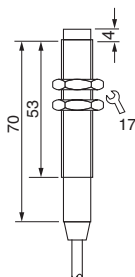
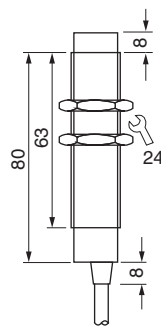
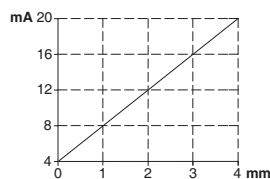
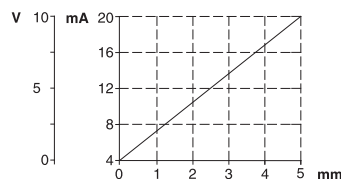
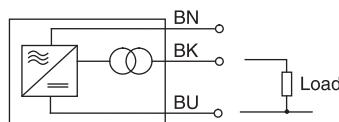
**M12 / M18**

**Metal sleeve**

**0...10 V**

**4...20 mA**



| Design                                               | M12x1                                                                                | M18x1                                                                                | M18x1                                                                                 |
|------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                           |    |  |                                                                                       |
| Installation<br>non flush (nf)                       |                                                                                      |                                                                                      |                                                                                       |
| Analog range [mm]                                    | 0...4 nf                                                                             | 0...5 nf                                                                             | 0...5 nf                                                                              |
| Output                                               |   |   |  |
| ID-No.                                               | 4...20 mA<br>P31128                                                                  | 0...10 V<br>P31040                                                                   | 4...20 mA<br>P31129                                                                   |
| Type                                                 | IGA 104 GI                                                                           | IGA 005 GU                                                                           | IGA 005 GI                                                                            |
| Supply voltage [V]                                   | 18...27 DC                                                                           | 18...27 DC                                                                           | 18...27 DC                                                                            |
| Current consumption max. [mA]                        | 40                                                                                   | 25                                                                                   | 40                                                                                    |
| Voltage output max. [V]                              | –                                                                                    | 11                                                                                   | –                                                                                     |
| Output current max. [mA]                             | 23                                                                                   | –                                                                                    | 23                                                                                    |
| Linearity deviation [%]                              | 10                                                                                   | 5                                                                                    | 5                                                                                     |
| Load resistance R <sub>L</sub> [kΩ]                  | <0.4                                                                                 | >2                                                                                   | <0.4                                                                                  |
| Ambient temperature [°C]                             | –25...+70                                                                            |                                                                                      |                                                                                       |
| Temperature deviation [%]                            | 10                                                                                   |                                                                                      |                                                                                       |
| Protection [EN 60529]                                | IP 67                                                                                |                                                                                      |                                                                                       |
| Housing material                                     | Br-Ni / PBT                                                                          |                                                                                      |                                                                                       |
| Connecting                                           | 2 m PVC-cable 3x0.34 mm <sup>2</sup>                                                 | 2 m PVC-cable 3x0.5 mm <sup>2</sup>                                                  |                                                                                       |
| Output signal with<br>approaching<br>iron plate ST37 |   |  |                                                                                       |
| Connection diagram                                   |  |                                                                                      |                                                                                       |

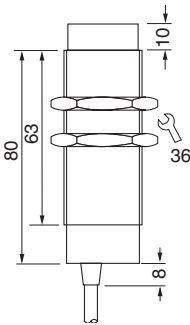
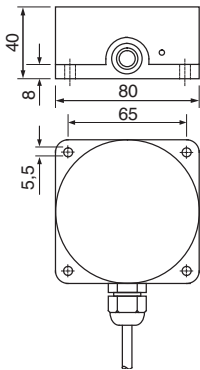
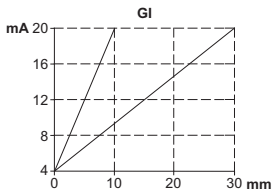
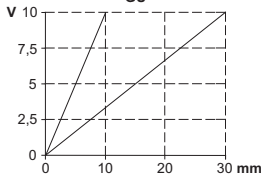
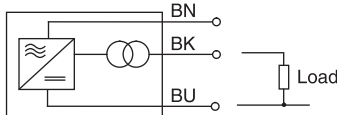
## Analog output

### Series IGA / IDA - Proximity sensors

**M30**  
**Ø 80 mm**

**0...10 V**  
**4...20 mA**



| Design                                               | M30x1.5                                                                              |                                                                                     | Ø 80 mm                                                                               |                                                                                       |
|------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                           |    |                                                                                     |   |                                                                                       |
| Installation<br>non flush (nf)                       |                                                                                      |                                                                                     |                                                                                       |                                                                                       |
| Analog range [mm]                                    | 0...10 nf                                                                            | 0...10 nf                                                                           | 0...30 nf                                                                             | 0...30 nf                                                                             |
| Output                                               |   |  |  |  |
| ID-No.                                               | 0...10 V<br>P31041                                                                   | 4...20 mA<br>P31130                                                                 | 0...10 V<br>P31043                                                                    | 4...20 mA<br>P31131                                                                   |
| Type                                                 | IGA 010 GU                                                                           | IGA 010 GI                                                                          | IDA 030 GU                                                                            | IDA 030 GI                                                                            |
| Supply voltage [V]                                   | 18...27 DC                                                                           | 18...27 DC                                                                          | 18...27 DC                                                                            | 18...27 DC                                                                            |
| Current consumption max. [mA]                        | 25                                                                                   | 40                                                                                  | 25                                                                                    | 40                                                                                    |
| Voltage output max. [V]                              | 11                                                                                   | –                                                                                   | 11                                                                                    | –                                                                                     |
| Output current max. [mA]                             | –                                                                                    | 23                                                                                  | –                                                                                     | 23                                                                                    |
| Linearity deviation [%]                              | 5                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Load resistance R <sub>L</sub> [kΩ]                  | >2                                                                                   | <0.4                                                                                | >2                                                                                    | <0.4                                                                                  |
| Ambient temperature [°C]                             | –25...+70                                                                            |                                                                                     |                                                                                       |                                                                                       |
| Temperature deviation [%]                            | 10                                                                                   |                                                                                     |                                                                                       |                                                                                       |
| Protection [EN 60529]                                | IP 67                                                                                |                                                                                     |                                                                                       |                                                                                       |
| Housing material                                     | Br-Ni / PBT                                                                          |                                                                                     | PBT                                                                                   |                                                                                       |
| Connection                                           | 2 m PVC-cable 3x0.5 mm <sup>2</sup>                                                  |                                                                                     |                                                                                       |                                                                                       |
| Output signal with<br>approaching<br>iron plate ST37 |   |                                                                                     |  |                                                                                       |
| Connection diagram                                   |  |                                                                                     |                                                                                       |                                                                                       |

## Analog • High temperature 160 °C

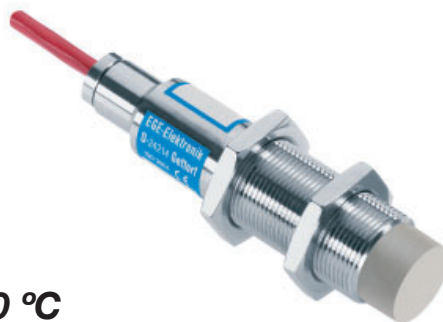
### Series IGT - Proximity sensors

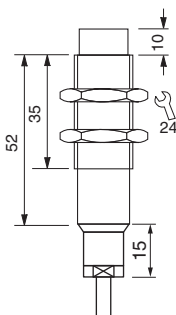
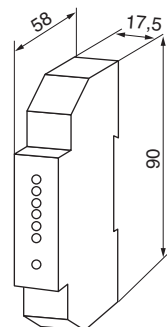
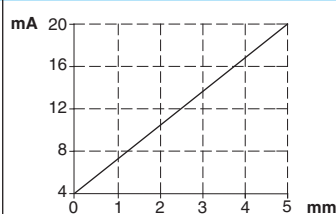
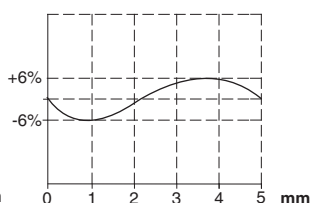
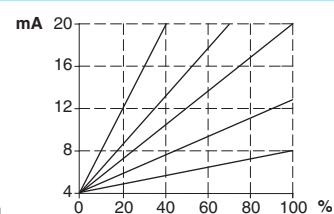
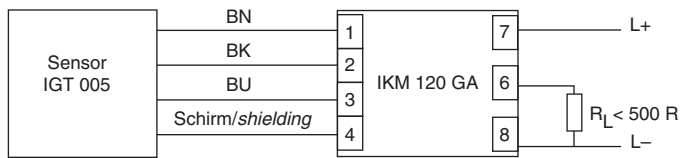
**M18**

**4...20 mA**

**For the connection to  
amplifier IKM 120 GA**

**Permanent temperature 160 °C**



| Design                                            | IGT 005                                                                                                                                                                  | IKM 120 GA                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                        |                                                                                        |   |
| Installation<br>non flush (nf)                    |                                                                                                                                                                          |                                                                                       |
| Analog range [mm]                                 | 0...5 nf                                                                                                                                                                 | —                                                                                     |
| ID-No.                                            | P31143                                                                                                                                                                   | P31144                                                                                |
| Type                                              | IGT 005                                                                                                                                                                  | IKM 120 GA                                                                            |
| Supply voltage [V]                                | —                                                                                                                                                                        | 24 DC ±20%                                                                            |
| Current consumption [mA]                          | —                                                                                                                                                                        | 30                                                                                    |
| Current output [mA]                               | —                                                                                                                                                                        | 4...20 mA                                                                             |
| Linearity [%]                                     | 6                                                                                                                                                                        | 0.5                                                                                   |
| Load $R_L$ [ $\Omega$ ]                           | —                                                                                                                                                                        | 50...500                                                                              |
| Ambient temperature [°C]                          | -25...+160                                                                                                                                                               | -20...+60                                                                             |
| Temperature deviation [%]                         | 10                                                                                                                                                                       | 2                                                                                     |
| Protection [EN 60529]                             | IP 67                                                                                                                                                                    | IP 40                                                                                 |
| Housing material                                  | AISI 316 Ti / PKS                                                                                                                                                        | PC                                                                                    |
| Connection                                        | 2 m PTFE 3x0.75 mm <sup>2</sup>                                                                                                                                          | terminal screws                                                                       |
| Output signal with<br>approaching iron plate ST37 |   |  |
| Connection diagramm                               |                                                                                      |                                                                                       |

## Standard switches

### Series IGM - Proximity switches

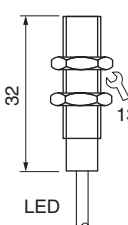
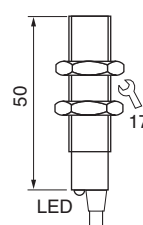
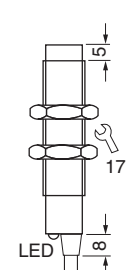
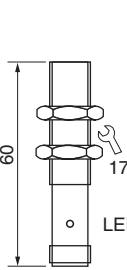
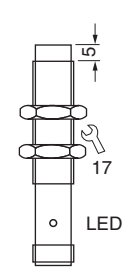
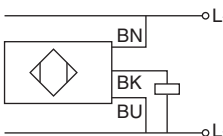
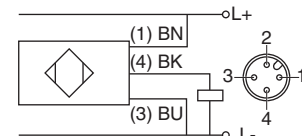
**M8 / M12**

**Metal sleeve**

**DC 10...30 V**

**Euronorm**



| Design                                      | M8x1                                                                                | DC PNP • M12x1                                                                      |                                                                                      | DC PNP • M12x1                                                                        |                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                  |   |   |   |   |   |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Operating distance sn [mm]                  | 1.5 f                                                                               | 2 f                                                                                 | 4 nf                                                                                 | 2 f                                                                                   | 4 nf                                                                                  |
| Switching output PNP                        |  |  |  |  |  |
| ID-No.                                      | P31013                                                                              | P31104                                                                              | P31105                                                                               | P31106                                                                                | P31107                                                                                |
| Type                                        | IGM 1 GSP                                                                           | IGM 102 GSP                                                                         | IGM 104 GSP                                                                          | IGMU 102 GSP                                                                          | IGMU 104 GSP                                                                          |
| Supply voltage [V]                          | 10...30 DC                                                                          | 10...30 DC                                                                          | 10...30 DC                                                                           | 10...30 DC                                                                            | 10...30 DC                                                                            |
| Switching current [mA]                      | 200                                                                                 | 200                                                                                 | 200                                                                                  | 200                                                                                   | 200                                                                                   |
| Short circuit proof                         | •                                                                                   | •                                                                                   | •                                                                                    | •                                                                                     | •                                                                                     |
| Overcurrent release [mA]                    | 250                                                                                 | 250                                                                                 | 250                                                                                  | 250                                                                                   | 250                                                                                   |
| Reverse protection                          | •                                                                                   | •                                                                                   | •                                                                                    | •                                                                                     | •                                                                                     |
| Voltage drop max. [V]                       | 2                                                                                   | 2                                                                                   | 2                                                                                    | 2                                                                                     | 2                                                                                     |
| Residual current [mA]                       | –                                                                                   | –                                                                                   | –                                                                                    | –                                                                                     | –                                                                                     |
| Current consumption (not actuated) [mA]     | <11                                                                                 | <5                                                                                  | <5                                                                                   | <5                                                                                    | <5                                                                                    |
| Switching frequency [Hz]                    | 1000                                                                                | 800                                                                                 | 400                                                                                  | 800                                                                                   | 400                                                                                   |
| Ambient temperature [°C]                    | –25...+70                                                                           | –25...+70                                                                           | –25...+70                                                                            | –25...+70                                                                             | –25...+70                                                                             |
| EMC-class                                   | A                                                                                   | A                                                                                   | A                                                                                    | A                                                                                     | A                                                                                     |
| Protection [EN 60529]                       | IP 67                                                                               | IP 67                                                                               | IP 67                                                                                | IP 67                                                                                 | IP 67                                                                                 |
| LED display                                 | •                                                                                   | •                                                                                   | •                                                                                    | •                                                                                     | •                                                                                     |
| Housing material                            | Stainless steel / PA                                                                | Br-Ni / PPO                                                                         | Br-Ni / PPO                                                                          | Br-Ni / PPO                                                                           | Br-Ni / PPO                                                                           |
| Connection                                  | 2 m PVC-cable<br>3x0.14 mm <sup>2</sup>                                             | 2 m PVC-cable<br>3x0.14 mm <sup>2</sup>                                             | 2 m PVC-cable<br>3x0.14 mm <sup>2</sup>                                              | M12 connector                                                                         | M12 connector                                                                         |
| Accessories                                 |  |                                                                                     |                                                                                      |  |                                                                                       |

connecting cable SLG 3-2, page 3.69

## Standard switches

### Serie IGM - Proximity switches

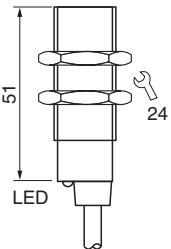
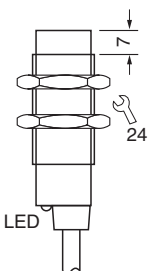
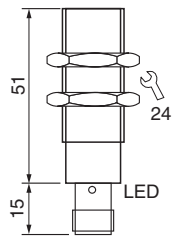
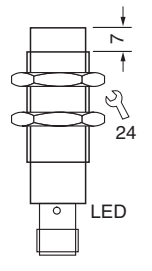
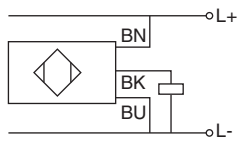
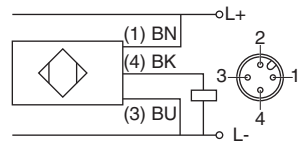
**M18**

**Metal sleeve**

**DC 10...30 V**

**Euronorm**



| Design                                      | DC PNP • M18x1                                                                      |                                                                                     | DC PNP • M18x1                                                                        |                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                  |   |   |    |   |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Operating distance sn [mm]                  | 5 f                                                                                 | 8 nf                                                                                | 5 f                                                                                   | 8 nf                                                                                  |
| Switching output PNP                        |  |  |  |  |
| ID-No.                                      | P31110                                                                              | P31111                                                                              | P31112                                                                                | P31113                                                                                |
| Type                                        | IGM 105 GSP                                                                         | IGM 108 GSP                                                                         | IGMU 105 GSP                                                                          | IGMU 108 GSP                                                                          |
| Supply voltage [V]                          | 10...30 DC                                                                          | 10...30 DC                                                                          | 10...30 DC                                                                            | 10...30 DC                                                                            |
| Switching current [mA]                      | 200                                                                                 | 200                                                                                 | 200                                                                                   | 200                                                                                   |
| Short circuit proof                         | •                                                                                   | •                                                                                   | •                                                                                     | •                                                                                     |
| Overcurrent release [mA]                    | 250                                                                                 | 250                                                                                 | 250                                                                                   | 250                                                                                   |
| Reverse protection                          | •                                                                                   | •                                                                                   | •                                                                                     | •                                                                                     |
| Voltage drop max. [V]                       | 1.5                                                                                 | 1.5                                                                                 | 1.5                                                                                   | 1.5                                                                                   |
| Residual current [mA]                       | –                                                                                   | –                                                                                   | –                                                                                     | –                                                                                     |
| Current consumption (not actuated) [mA]     | 1                                                                                   | 1                                                                                   | 1                                                                                     | 1                                                                                     |
| Switching frequency [Hz]                    | 500                                                                                 | 200                                                                                 | 500                                                                                   | 200                                                                                   |
| Ambient temperature [°C]                    | –25...+70                                                                           | –25...+70                                                                           | –25...+70                                                                             | –25...+70                                                                             |
| EMC-class                                   | A                                                                                   | A                                                                                   | A                                                                                     | A                                                                                     |
| Protection [EN 60529]                       | IP 67                                                                               | IP 67                                                                               | IP 67                                                                                 | IP 67                                                                                 |
| LED display                                 | •                                                                                   | •                                                                                   | •                                                                                     | •                                                                                     |
| Housing material                            | Br-Ni / PPO                                                                         | Br-Ni / PPO                                                                         | Br-Ni / PPO                                                                           | Br-Ni / PPO                                                                           |
| Connection                                  | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup>                                              | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup>                                              | M12 connector                                                                         | M12 connector                                                                         |
| Accessories                                 |  |                                                                                     |  |                                                                                       |

connecting cable SLG 3-2, page 3.69

## Standard switches

### Series INK - Proximity switches

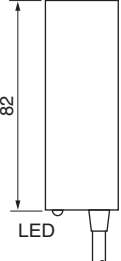
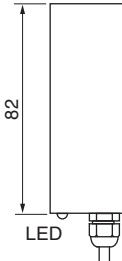
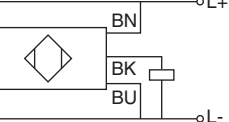
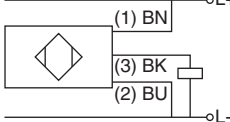
#### Smooth-bodied switch

Ø 20 mm / Ø 34 mm

DC 10...55 V

Sensors for AC voltage are available on request



| Design                                  | DC PNP                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                     | DC PNP                                                                                |                                                                                       |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                         | Ø 20 mm                                                                                                                                                                                                                                                                                                                                                                                    | Ø 34 mm                                                                             | Ø 20 mm<br>programmable                                                               | Ø 34 mm                                                                               |
| Dimensions                              |                                                                                                                                                                                                                                                                                                          |   |   |   |
| Installation<br>non flush (nf)          | LED                                                                                                                                                                                                                                                                                                                                                                                        | LED                                                                                 | LED                                                                                   | LED                                                                                   |
| Operating distance sn [mm]              | 10 nf                                                                                                                                                                                                                                                                                                                                                                                      | 20 nf                                                                               | 10 nf                                                                                 | 20 nf                                                                                 |
| Switching output PNP                    |                                                                                                                                                                                                                                                                                                         |  |  |  |
| ID-No.                                  | P30159                                                                                                                                                                                                                                                                                                                                                                                     | P30166                                                                              | P30158                                                                                | P30165                                                                                |
| Type                                    | INK 010 GSP                                                                                                                                                                                                                                                                                                                                                                                | INK 020 GSP                                                                         | INKS 010 GPP                                                                          | INKS 020 GPP                                                                          |
| Supply voltage [V]                      | 10...55 DC                                                                                                                                                                                                                                                                                                                                                                                 | 10...55 DC                                                                          | 10...55 DC                                                                            | 10...55 DC                                                                            |
| Switching current [mA]                  | 400                                                                                                                                                                                                                                                                                                                                                                                        | 400                                                                                 | 400                                                                                   | 400                                                                                   |
| Short circuit proof                     | •                                                                                                                                                                                                                                                                                                                                                                                          | •                                                                                   | •                                                                                     | •                                                                                     |
| Overcurrent release [mA]                | 450                                                                                                                                                                                                                                                                                                                                                                                        | 450                                                                                 | 450                                                                                   | 450                                                                                   |
| Reverse protection                      | •                                                                                                                                                                                                                                                                                                                                                                                          | •                                                                                   | •                                                                                     | •                                                                                     |
| Voltage drop max. [V]                   | 2                                                                                                                                                                                                                                                                                                                                                                                          | 2                                                                                   | 2                                                                                     | 2                                                                                     |
| Residual current [mA]                   | –                                                                                                                                                                                                                                                                                                                                                                                          | –                                                                                   | –                                                                                     | –                                                                                     |
| Current consumption (not actuated) [mA] | 2.5                                                                                                                                                                                                                                                                                                                                                                                        | 2.5                                                                                 | 2.5                                                                                   | 2.5                                                                                   |
| Switching frequency [Hz]                | 1500                                                                                                                                                                                                                                                                                                                                                                                       | 500                                                                                 | 1500                                                                                  | 500                                                                                   |
| Ambient temperature [°C]                | –25...+75                                                                                                                                                                                                                                                                                                                                                                                  | –25...+75                                                                           | –25...+75                                                                             | –25...+75                                                                             |
| EMC-class                               | A                                                                                                                                                                                                                                                                                                                                                                                          | A                                                                                   | A                                                                                     | A                                                                                     |
| Protection [EN 60529]                   | IP 67                                                                                                                                                                                                                                                                                                                                                                                      | IP 67                                                                               | IP 67                                                                                 | IP 67                                                                                 |
| LED display                             | •                                                                                                                                                                                                                                                                                                                                                                                          | •                                                                                   | •                                                                                     | •                                                                                     |
| Housing material                        | PBT                                                                                                                                                                                                                                                                                                                                                                                        | PBT                                                                                 | PBT                                                                                   | PBT                                                                                   |
| Connection                              | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                     | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup>                                              | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup><br>(PG-plug connection)                        | 2 m PVC-cable<br>3x0.5 mm <sup>2</sup><br>(PG-plug connection)                        |
| PG-plug connection                      | <p>DC</p> <p>1: BN</p> <p>2: BU</p> <p>3: BK</p>  <p>Schalter / switch</p> <p>Disconnect power supply before pulling off plug connector.<br/>Spannungsversorgung abschalten bevor Steckverbindung gezogen wird.</p>  |                                                                                     |  |                                                                                       |

Disconnect power supply before pulling off plug connector.  
Spannungsversorgung abschalten bevor Steckverbindung gezogen wird.

#### Accessories

mounting clamps Ø 20 mm (Z00100), Ø 34 mm (Z00102) are part of delivery

## Special functions • Surface sensor

### Series IFE - Proximity switches

Wide detection range

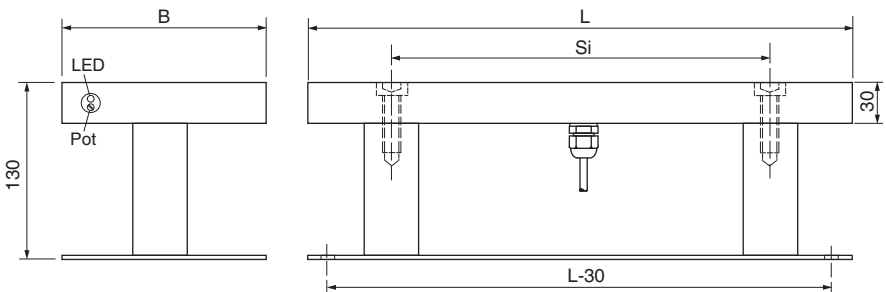
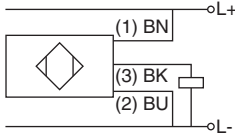
DC 10...55 V

Sensitivity adjustable

Moisture-resistant

PG-plug IP 68



| Design                           |                                | DC PNP                                                                               |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|----------------------------------|--------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                       | Installation<br>non flush (nf) |   |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|                                  |                                |                                                                                      |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Operating distance sn [mm]       |                                | 100 nf                                                                               | 100 nf                                                                              | 130 nf                                                                              | 150 nf                                                                                | 180 nf                                                                                |
| Adjustable range max.            |                                | 120                                                                                  | 150                                                                                 | 170                                                                                 | 200                                                                                   | 250                                                                                   |
| Switching output PNP             |                                |   |  |  |  |  |
| ID-No.                           |                                | P31016                                                                               | P31018                                                                              | P31020                                                                              | P31022                                                                                | P31024                                                                                |
| Type                             |                                | IFE 200/100 GSP                                                                      | IFE 400/100 GSP                                                                     | IFE 400/150 GSP                                                                     | IFE 700/150 GSP                                                                       | IFE 900/150 GSP                                                                       |
| Dimensions                       | L                              | 200                                                                                  | 400                                                                                 | 400                                                                                 | 700                                                                                   | 900                                                                                   |
|                                  | B                              | 100                                                                                  | 100                                                                                 | 150                                                                                 | 150                                                                                   | 150                                                                                   |
|                                  | Si                             | 108                                                                                  | 280                                                                                 | 230                                                                                 | 190                                                                                   | 182                                                                                   |
| Supply voltage [V]               |                                | 10...55 DC                                                                           |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Switching current [mA]           |                                | <400                                                                                 |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Short circuit protection         |                                | •                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Overcurrent release approx. [mA] |                                | 430                                                                                  |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Reverse protection               |                                | •                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Current consumption approx. [mA] |                                | 4                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Inverse current max. [μA]        |                                | 1                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Residual ripple max. [%]         |                                | 15                                                                                   |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Voltage drop max. [V]            |                                | 2                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Switching frequency [Hz]         |                                | 10                                                                                   |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Hysteresis [%]                   |                                | 10                                                                                   |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Ambient temperature [°C]         |                                | -25...+75                                                                            |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Correction factors               |                                | St 37: 1                                                                             | AL: 0.4                                                                             | VA 4: 0.65                                                                          | Cu: 0.45                                                                              | ZN: 0.5 MS: 0.6                                                                       |
| EMC-class                        |                                | A                                                                                    |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Protection [EN 60529]            |                                | IP 68                                                                                |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Housing material                 |                                | PVC / Aluminium                                                                      |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Connection                       |                                | PG-plug connection, 2 m PVC-cable 3x0.5 mm <sup>2</sup>                              |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|                                  |                                |  |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
| Notes                            |                                | see page 3.06                                                                        |                                                                                     |                                                                                     |                                                                                       |                                                                                       |

## Special functions • Surface sensor

### Series IFE - Proximity switches

Wide detection range

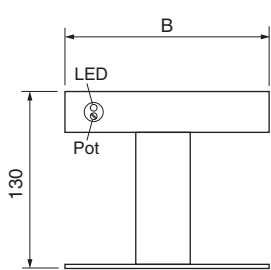
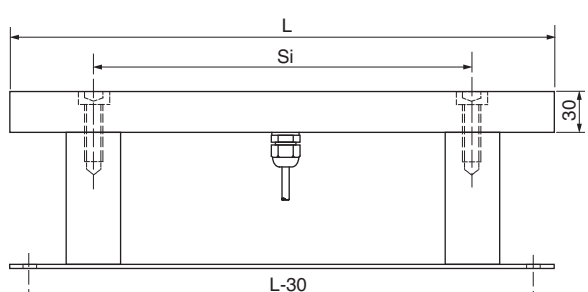
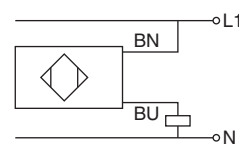
AC 20...250 V

Sensitivity adjustable

Moisture-resistant

PG-plug IP 68



| Design                       |                                                                                    | AC                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                   |  |   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|                              |                                                                                    |                                                                                      |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Operating distance sn [mm]   |                                                                                    | 100 nf                                                                               | 100 nf                                                                              | 130 nf                                                                               | 150 nf                                                                                | 180 nf                                                                                |
| Adjustable range max.        |                                                                                    | 120                                                                                  | 150                                                                                 | 170                                                                                  | 200                                                                                   | 250                                                                                   |
| Switching output             |                                                                                    |   |  |  |  |  |
| ID-No.                       |                                                                                    | P31015                                                                               | P31017                                                                              | P31019                                                                               | P31021                                                                                | P31023                                                                                |
| Type                         |                                                                                    | IFE 200/100 WS                                                                       | IFE 400/100 WS                                                                      | IFE 400/150 WS                                                                       | IFE 700/150 WS                                                                        | IFE 900/150 WS                                                                        |
| Dimensions                   | L                                                                                  | 200                                                                                  | 400                                                                                 | 400                                                                                  | 700                                                                                   | 900                                                                                   |
|                              | B                                                                                  | 100                                                                                  | 100                                                                                 | 150                                                                                  | 150                                                                                   | 150                                                                                   |
|                              | Si                                                                                 | 108                                                                                  | 280                                                                                 | 230                                                                                  | 190                                                                                   | 182                                                                                   |
| Supply voltage               | [V]                                                                                | 20...250 AC                                                                          |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Switching current            | [mA]                                                                               | < 400                                                                                |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Surge current                | [mA]                                                                               | < 3000 / 10 ms                                                                       |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Overcurrent release approx.  | [mA]                                                                               | -                                                                                    |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Current consumption approx.  | [mA]                                                                               | 2.5                                                                                  |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Inverse current approx.      | [mA]                                                                               | 2.5                                                                                  |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Minimum load current approx. | [mA]                                                                               | 6                                                                                    |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Voltage drop max.            | [V]                                                                                | 6 eff.                                                                               |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Switching frequency          | [Hz]                                                                               | 10                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Hysteresis                   | [%]                                                                                | 10                                                                                   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Ambient temperature          | [°C]                                                                               | -25...+75                                                                            |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Correktion factors           |                                                                                    | St 37: 1                                                                             | AL: 0.4                                                                             | VA 4: 0.65                                                                           | Cu: 0.45                                                                              | ZN: 0.5 MS: 0.6                                                                       |
| EMC-class                    |                                                                                    | A                                                                                    |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Protection [EN 60529]        |                                                                                    | IP 68                                                                                |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Housing material             |                                                                                    | PVC                                                                                  |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Connection                   |                                                                                    | PG-plug connection, 2 m PVC-cable 2x0.75 mm²                                         |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|                              |                                                                                    |  |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Notes                        |                                                                                    | see page 3.06                                                                        |                                                                                     |                                                                                      |                                                                                       |                                                                                       |

## Special functions • Offshore

### Series IGMO - Proximity switches

**M12 / M18**

**Stainless steel sleeve**

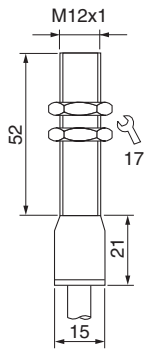
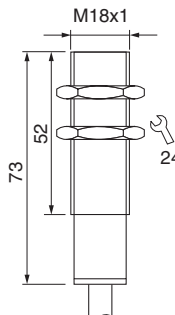
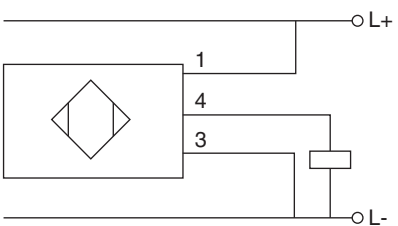
**DC 10...30 V**

**High compressive strength**

**Longitudinal water blocked cable**

**Sea water proofed**



| Design                     | DC PNP • M12x1                                                                       | DC PNP • M18x1                                                                        |
|----------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                 |    |   |
| Installation<br>flush (f)  |                                                                                      |                                                                                       |
| Operating distance sn [mm] | 2 f                                                                                  | 5 f                                                                                   |
| Switching output PNP       |   |  |
| ID-No.                     | P31223                                                                               | P31224                                                                                |
| Type                       | IGMO 02 GSP                                                                          | IGMO 05 GSP                                                                           |
| Supply voltage [V]         | 10...30 DC                                                                           |                                                                                       |
| Switching current [mA]     | 200                                                                                  |                                                                                       |
| Short circuit proof        | •                                                                                    |                                                                                       |
| Reverse protection         | •                                                                                    |                                                                                       |
| Current consumption [mA]   | 4                                                                                    |                                                                                       |
| Switching frequency [Hz]   | 200                                                                                  |                                                                                       |
| Ambient temperature [°C]   | -25...+70                                                                            |                                                                                       |
| Compressive strength [bar] | 30                                                                                   |                                                                                       |
| Protection [EN 60529]      | IP 68                                                                                |                                                                                       |
| Housing material           | PTFE / AISI 316 Ti                                                                   |                                                                                       |
| Sealing material           | FKM                                                                                  |                                                                                       |
| Connection                 | 1 m longitudinal water blocked cable                                                 |                                                                                       |
|                            |  |                                                                                       |

## Special functions • Offshore

### Series IGVO - Proximity switches

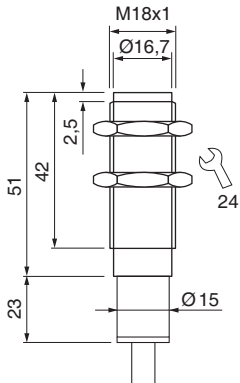
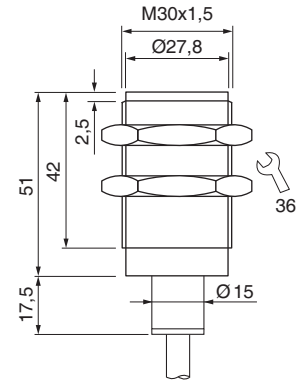
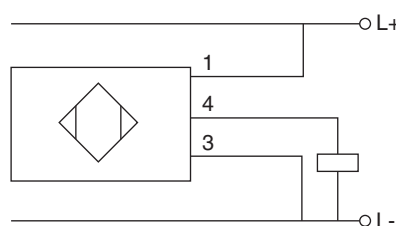
**M18 / M30**

**One piece stainless steel housing**

**DC 10...30 V**

**High compressive strength  
Longitudinal water blocked cab  
Sea water proofed**



| Design                        | DC PNP • M18x1                                                                       | DC PNP • M30x1.5                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                    |    |   |
| Installation flush (f)        |                                                                                      |                                                                                       |
| Operating distance sn [mm]    | 5 b                                                                                  | 10 b                                                                                  |
| Switching output PNP          |   |  |
| ID-No.                        | P31365                                                                               | P31366                                                                                |
| Type                          | IGVO 05 GSP                                                                          | IGVO 10 GSP                                                                           |
| Supply voltage [V]            | 10...30 DC                                                                           |                                                                                       |
| Switching current [mA]        | 250                                                                                  |                                                                                       |
| Short circuit proof           | •                                                                                    |                                                                                       |
| Reverse protection            | •                                                                                    |                                                                                       |
| Current consumption max. [mA] | 5                                                                                    |                                                                                       |
| Switching frequency [Hz]      | 180                                                                                  | 150                                                                                   |
| Ambient temperature [°C]      | -25...+70                                                                            |                                                                                       |
| Compressive strength [bar]    | 30                                                                                   |                                                                                       |
| Protection [EN 60529]         | IP 68 + IP 69K                                                                       |                                                                                       |
| EMC-class                     | A                                                                                    |                                                                                       |
| Housing material              | AISI 316 L                                                                           |                                                                                       |
| Sealing material              | FKM                                                                                  |                                                                                       |
| Connection                    | 1 m longitudinal water blocked cable PLWDC-cable 3x0.5 mm²                           |                                                                                       |
|                               |  |                                                                                       |

## Special functions • Washing resistant

### Series IDKW - Proximity switches

DC 10...30 V

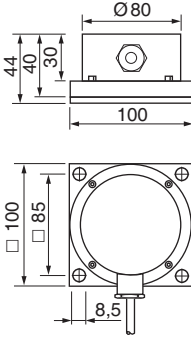
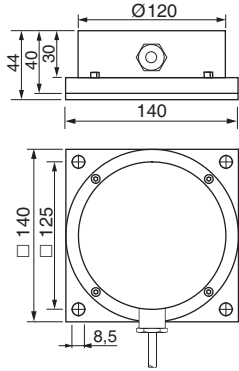
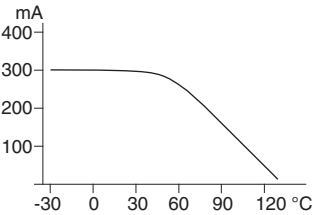
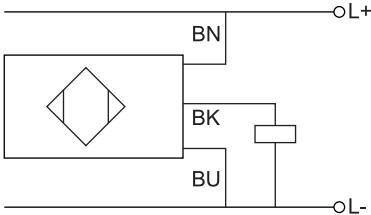
110 °C Permanent temperature

Resistant to hot steam

Resistant to detergents

IP 68 + IP 69K



| Design                         | DC PNP • Ø 80 mm                                                                     | DC PNP • Ø 120 mm                                                                     |
|--------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                     |    |   |
| Installation<br>non flush (nf) |                                                                                      |                                                                                       |
| Operating distance sn [mm]     | 55 nf                                                                                | 90 nf                                                                                 |
| Switching output PNP           |   |  |
| ID-No.                         | P31214                                                                               | P31177                                                                                |
| Type                           | IDKW 080 GSP                                                                         | IDKW 120 GSP                                                                          |
| Supply voltage [V]             | 10...30 DC                                                                           |                                                                                       |
| Switching current [mA]         | 300                                                                                  |                                                                                       |
| Hysteresis                     | <0.1 Sn                                                                              |                                                                                       |
| Voltage drop max. [V]          | 2                                                                                    |                                                                                       |
| Current consumption [mA]       | 10                                                                                   |                                                                                       |
| Switching frequency [Hz]       | 30                                                                                   |                                                                                       |
| Ambient temperature [°C]       | -20...+110                                                                           |                                                                                       |
| Limiting temperature [°C]      | 120                                                                                  |                                                                                       |
| Temperature deviation [%]      | ≤10                                                                                  |                                                                                       |
| EMC-class                      | A                                                                                    |                                                                                       |
| Protection [EN 60529]          | IP 68 + IP 69K                                                                       |                                                                                       |
| Housing material               | PP / AISI 316 Ti                                                                     |                                                                                       |
| Sealing material               | EPDM                                                                                 |                                                                                       |
| Connection                     | 5 m FEP-cable 3x0.75 mm², shielded                                                   |                                                                                       |
| Switching current              |   |                                                                                       |
|                                |  |                                                                                       |

## Special functions • Factor 1

### Series IGB / IDB - Proximity switches

**M30**

**Ø 80 mm / Ø 160 mm**

**DC 10...30 V**

**Correction factor 1  
for all metals**



| Design                                                        | M30x1.5       | M30x1.5      | Ø 80 mm                                  | Ø 160 mm     |
|---------------------------------------------------------------|---------------|--------------|------------------------------------------|--------------|
| Dimensions                                                    |               |              |                                          |              |
| Installation<br>flush (f)<br>non flush (nf)<br>adjustable (a) |               |              |                                          |              |
| Operating distance sn [mm]                                    | 10 f          | 20 nf        | 70 nf-a                                  | 150 nf-a     |
| Switching output PNP                                          |               |              |                                          |              |
| ID-No.                                                        | P31135        | P31136       | P31141                                   | P31142       |
| Type                                                          | IGBS 010 GSP  | IGBS 020 GSP | IDBS 080 GPP                             | IDBS 160 GPP |
| Supply voltage [V]                                            | 10...30 DC    |              |                                          |              |
| Switching current [mA]                                        | 200           |              |                                          |              |
| Short circuit proof                                           | •             |              |                                          |              |
| Current consumption [mA]                                      | 25            |              |                                          |              |
| Reverse protection                                            | •             |              |                                          |              |
| Voltage drop max. [V]                                         | 2             |              |                                          |              |
| Switching frequency [Hz]                                      | 300           |              | 20                                       |              |
| Ambient temperature [°C]                                      | -25...+75     |              |                                          |              |
| EMC-class                                                     | A             |              |                                          |              |
| Protection [EN 60529]                                         | IP 67         |              |                                          |              |
| Housing material                                              | Br-Ni / PBT   |              | PBT / Aluminium                          |              |
| Connection                                                    | M12 connector |              | PG-plug connection<br>2 m, 3x0.5 mm² PVC |              |
| PG-plug-system                                                |               |              |                                          |              |

**AC** 1: BN 2: BU 3: BK  
**DC** 1: BN 2: BU 3: BK  
  
 Schalter / switch  
 Disconnect power supply before pulling off plug connector.  
 Spannungsversorgung abschalten bevor Steckverbindung gezogen wird.

**Metal face sensors • Speed sensor •  $-40...+150\text{ }^{\circ}\text{C}$**

**Series HGVH**

**Detection of ferromagnetic targets**

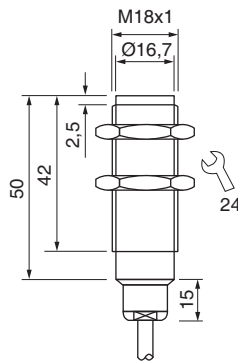
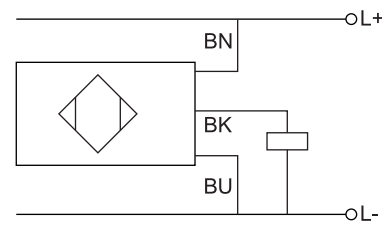
**One piece stainless steel housing**

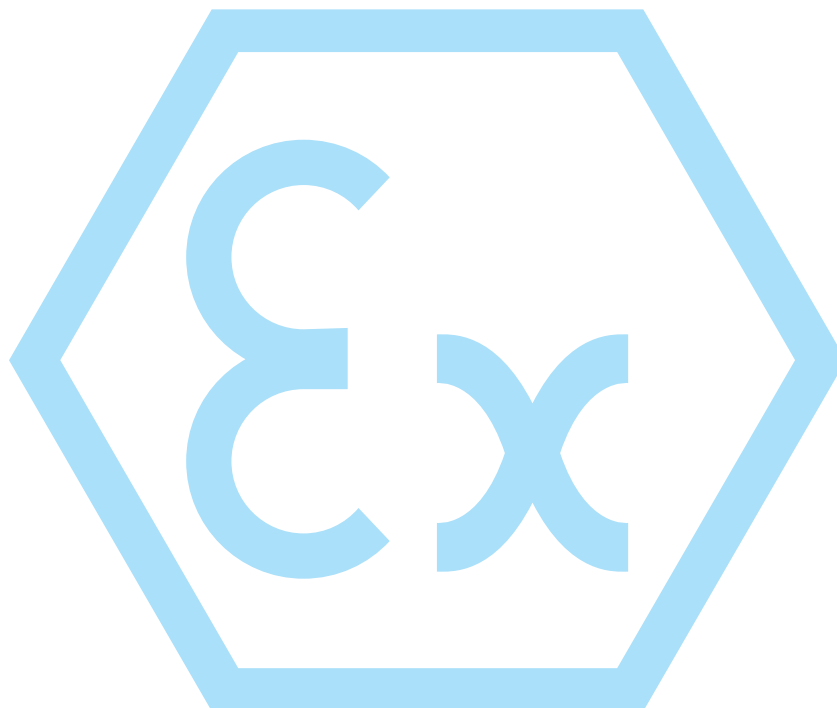
**$-40...+150\text{ }^{\circ}\text{C}$**

**IP 68 Water-proofed**

**IP 69K Resistant to high pressure cleaning**



| Design                                     | DC PNP • M18x1.5                                                                     |
|--------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                 |   |
| Operating distance sn [mm]                 | 3                                                                                    |
| Switching output PNP                       |   |
| ID-No.                                     | P31364                                                                               |
| Type                                       | HGVH 03 GSP                                                                          |
| Supply voltage [V]                         | 10...30 DC                                                                           |
| Switching current max. [mA]                | 100                                                                                  |
| Short circuit proof                        | •                                                                                    |
| Reverse protection                         | •                                                                                    |
| Voltage drop max. [V]                      | 1.5                                                                                  |
| Current consumption max. [mA]              | 20                                                                                   |
| Switching frequency [Hz]                   | 6000                                                                                 |
| Ambient temperature [ $^{\circ}\text{C}$ ] | $-40...+150$                                                                         |
| EMC-class                                  | A                                                                                    |
| Protection [EN 60529]                      | IP 68 + IP 69K                                                                       |
| Housing material                           | AISI 316 L                                                                           |
| Connection                                 | 2 m FEP-cable 3x0.34 mm <sup>2</sup>                                                 |
|                                            |  |



***Probes***  
***Compact models***  
***Amplifiers***

## Dust - Compact model • Zone 20

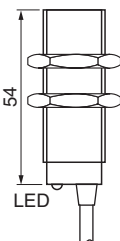
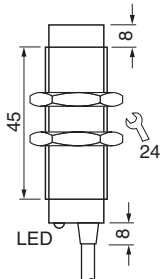
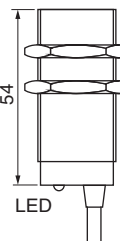
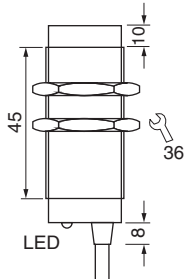
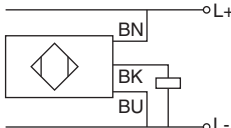
### Series IGEX20 - Proximity switches

#### Category 1

Dust  Zone 20

Direct connection to DC 24 V  
PNP switching output



| Design                                      | DC PNP • M18x1                                                                       |                                                                                     | DC PNP • M30x1.5                                                                      |                                                                                       |
|---------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                  |    |   |   |   |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                      |                                                                                     |                                                                                       |                                                                                       |
| Operating distance [mm]                     | 5 f                                                                                  | 8 nf                                                                                | 10 f                                                                                  | 15 nf                                                                                 |
| Switching output PNP                        |   |  |  |  |
| ID-No.                                      | P31178                                                                               | P31179                                                                              | P31180                                                                                | P31181                                                                                |
| Type                                        | IGEX20 05 GSP                                                                        | IGEX20 08 GSP                                                                       | IGEX20 10 GSP                                                                         | IGEX20 15 GSP                                                                         |
| Ex marking                                  | II 1D T80 °C IP 67                                                                   |                                                                                     |                                                                                       |                                                                                       |
| Certificate No.                             | ÜV 05 ATEX 2845 X                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Supply voltage [V]                          | 10...30 DC                                                                           |                                                                                     |                                                                                       |                                                                                       |
| Switching current [mA]                      | 100                                                                                  |                                                                                     |                                                                                       |                                                                                       |
| Short circuit proof                         | •                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Reverse protection                          | •                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Voltage drop max. [V]                       | 2                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Residual current [mA]                       | -                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Current consumption [mA]                    | 7                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Switching frequency [Hz]                    | 200                                                                                  |                                                                                     |                                                                                       |                                                                                       |
| Ambient temperature [°C]                    | -20...+70                                                                            |                                                                                     |                                                                                       |                                                                                       |
| EMC-class                                   | A                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Protection [EN 60529]                       | IP 67                                                                                |                                                                                     |                                                                                       |                                                                                       |
| LED display                                 | •                                                                                    |                                                                                     |                                                                                       |                                                                                       |
| Housing material                            | Br-Ni / PA                                                                           |                                                                                     |                                                                                       |                                                                                       |
| Connection                                  | 2 m PVC-cable 3x0.5 mm <sup>2</sup>                                                  |                                                                                     |                                                                                       |                                                                                       |
|                                             |  |                                                                                     |                                                                                       |                                                                                       |
| Accessories                                 | housing for screw terminals series GK...                                             |                                                                                     |                                                                                       |                                                                                       |

### Series IGEXU - Proximity switches

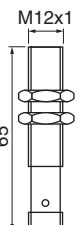
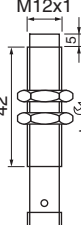
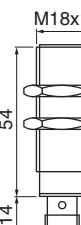
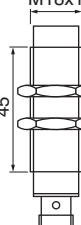
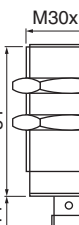
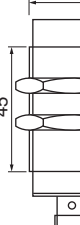
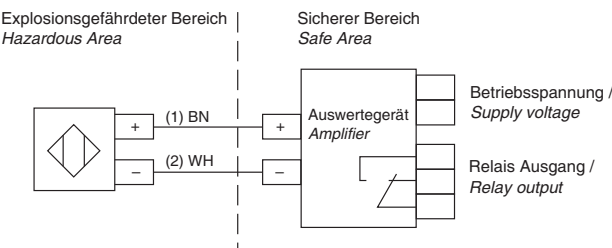
#### Gas-Ex Category 1

 II 1G Ex ia IIC T6 Ga

#### Dust-Ex Category 1

 II 1D Ex ia IIIC T80 °C Da



| Design                                                              | M12x1                                                                                                                                                                                                                                  |                                                                                    | M18x1                                                                              |                                                                                      | M30x1.5                                                                              |                                                                                      |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Dimensions                                                          |                                                                                                                                                      |  |  |  |  |  |
| Installation<br>flush (f)<br>non flush (nf)                         |                                                                                                                                                                                                                                        |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Operating distance [mm]                                             | 2 f                                                                                                                                                                                                                                    | 4 nf                                                                               | 5 f                                                                                | 8 nf                                                                                 | 10 f                                                                                 | 15 nf                                                                                |
| ID-No.                                                              | P31196                                                                                                                                                                                                                                 | P31197                                                                             | P31198                                                                             | P31199                                                                               | P31200                                                                               | P31201                                                                               |
| Type                                                                | IGEXU 02                                                                                                                                                                                                                               | IGEXU 04                                                                           | IGEXU 05                                                                           | IGEXU 08                                                                             | IGEXU 10                                                                             | IGEXU 15                                                                             |
| Ex area of use                                                      | Gas: Zone 0/1 / Dust: Zone 20/21                                                                                                                                                                                                       |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Certificate No.                                                     | TÜV 15 ATEX 163839 X                                                                                                                                                                                                                   |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Ex marking                                                          | Gas:  II 1G Ex ia IIC T6 Ga<br>Dust:  II 1D Ex ia IIIC T80 °C Da |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Ambient temperature [°C]<br>and medium temperature                  | Gas Zone 0: T6: $-20 \leq T_a \leq +60$<br>T5: $-20 \leq T_a \leq +60$<br>T4: $-20 \leq T_a \leq +60$<br>T3: $-20 \leq T_a \leq +60$<br>Dust Zone 20: $-25 \leq T_a \leq +75$                                                          |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
|                                                                     | Gas Zone 1: T6: $-25 \leq T_a \leq +75$<br>T5: $-25 \leq T_a \leq +75$<br>T4: $-25 \leq T_a \leq +75$<br>T3: $-25 \leq T_a \leq +75$<br>Dust Zone 21: $-25 \leq T_a \leq +75$                                                          |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Maximum values                                                      | $U_i = 12.6 \text{ V}$ / $I_i = 15.9 \text{ mA}$ / $P_i = 50 \text{ mW}$ / $C_i = 22 \text{ nF}$ / $L_i = 3 \text{ mH}$                                                                                                                |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Housing material                                                    | Br-Ni / PA                                                                                                                                                                                                                             |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Protection [EN 60529]                                               | IP 67                                                                                                                                                                                                                                  |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Connection                                                          | M12 connector                                                                                                                                                                                                                          |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| For the connection to<br>amplifiers IKM 122 Ex...,<br>see page 3.67 |                                                                                                                                                    |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |
| Accessories                                                         | plug-lock type PL-M12 (Z01182), page 3.69                                                                                                                                                                                              |                                                                                    |                                                                                    |                                                                                      |                                                                                      |                                                                                      |

### Series IGEX - Proximity switches

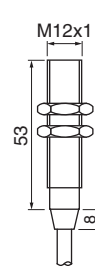
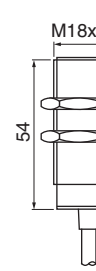
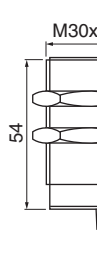
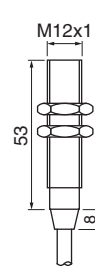
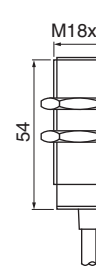
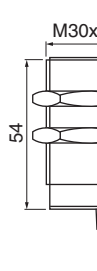
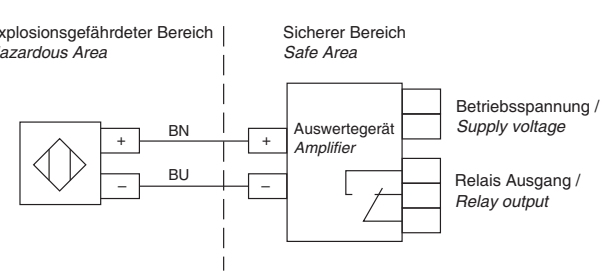
#### Gas-Ex Category 1

 II 1G Ex ia IIC T6 Ga

#### Dust-Ex Category 1

 II 1D Ex ia IIIC T80 °C Da



| Design                                                              | M12x1                                                                                                                                                                                                                                  |         | M18x1                                                                                                                                                                            |         | M30x1.5                                                                              |         |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------|---------|
| Dimensions                                                          |                                                                                                                                                      |         |                                                                                                |         |  |         |
| Installation<br>flush (f)<br>non flush (nb)                         |                                                                                                                                                      |         |                                                                                                |         |  |         |
| Operating distance [mm]                                             | 2 f                                                                                                                                                                                                                                    | 4 nf    | 5 f                                                                                                                                                                              | 8 nf    | 10 f                                                                                 | 15 nf   |
| ID-No.                                                              | P31151                                                                                                                                                                                                                                 | P31152  | P31153                                                                                                                                                                           | P31154  | P31155                                                                               | P31156  |
| Type                                                                | IGEX 02                                                                                                                                                                                                                                | IGEX 04 | IGEX 05                                                                                                                                                                          | IGEX 08 | IGEX 10                                                                              | IGEX 15 |
| Ex area of use                                                      | Gas: Zone 0/1 / Dust: Zone 20/21                                                                                                                                                                                                       |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Certificate No.                                                     | TÜV 15 ATEX 163839 X                                                                                                                                                                                                                   |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Ex marking                                                          | Gas:  II 1G Ex ia IIC T6 Ga<br>Dust:  II 1D Ex ia IIIC T80 °C Da |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Ambient temperature [°C]<br>and medium temperature                  | Gas Zone 0:<br>T6: $-20 \leq T_a \leq +60$<br>T5: $-20 \leq T_a \leq +60$<br>T4: $-20 \leq T_a \leq +60$<br>T3: $-20 \leq T_a \leq +60$<br>Dust Zone 20: $-25 \leq T_a \leq +75$                                                       |         | Gas Zone 1:<br>T6: $-25 \leq T_a \leq +75$<br>T5: $-25 \leq T_a \leq +75$<br>T4: $-25 \leq T_a \leq +75$<br>T3: $-25 \leq T_a \leq +75$<br>Dust Zone 21: $-25 \leq T_a \leq +75$ |         |                                                                                      |         |
| Maximum values                                                      | $U_i = 12.6 \text{ V}$ / $I_i = 15.9 \text{ mA}$ / $P_i = 50 \text{ mW}$ / $C_i = 22 \text{ nF}$ / $L_i = 3 \text{ mH}$                                                                                                                |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Housing material                                                    | Br-Ni / PA                                                                                                                                                                                                                             |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Protection [EN 60529]                                               | IP 67                                                                                                                                                                                                                                  |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Connection                                                          | 2 m PVC-cable 2x0.5 mm <sup>2</sup>                                                                                                                                                                                                    |         |                                                                                                                                                                                  |         |                                                                                      |         |
| For the connection to<br>amplifiers IKM 122 Ex...,<br>see page 3.67 | <div><div>Explosionsgefährdeter Bereich<br/>Hazardous Area</div><div></div><div>Sicherer Bereich<br/>Safe Area</div></div>                         |         |                                                                                                                                                                                  |         |                                                                                      |         |
| Note                                                                | proximity switches with cable length >2 m are available on request                                                                                                                                                                     |         |                                                                                                                                                                                  |         |                                                                                      |         |

### Series IGEXH - Proximity switches

#### Gas-Ex Category 1

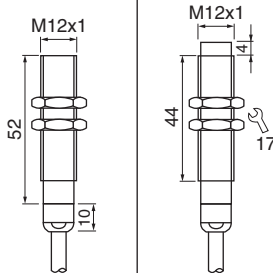
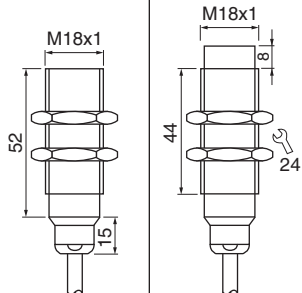
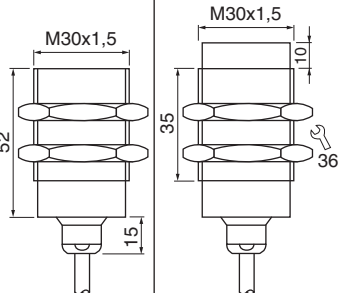
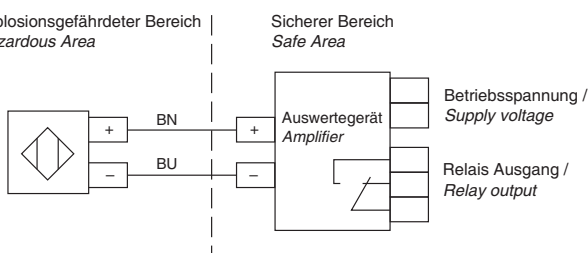
 II 1G Ex ia IIC T6 Ga

#### Dust-Ex Category 1

 II 1D Ex ia IIIC T145 °C Da

High temperature sensors +140 °C



| Design                                                              | M12x1                                                                                                                                                                                                                                   |          | M18x1                                                                                                                                  |          | M30x1.5                                                                              |          |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|----------|
| Dimensions                                                          |                                                                                                                                                       |          |                                                     |          |  |          |
| Installation<br>flush (f)<br>non flush (nf)                         |                                                                                                                                                                                                                                         |          |                                                                                                                                        |          |                                                                                      |          |
| Operating distance [mm]                                             | 2 f                                                                                                                                                                                                                                     | 4 nf     | 5 f                                                                                                                                    | 8 nf     | 10 f                                                                                 | 15 nf    |
| ID-No.                                                              | P31367                                                                                                                                                                                                                                  | P31368   | P31369                                                                                                                                 | P31370   | P31371                                                                               | P31372   |
| Type                                                                | IGEXH 02                                                                                                                                                                                                                                | IGEXH 04 | IGEXH 05                                                                                                                               | IGEXH 08 | IGEXH 10                                                                             | IGEXH 15 |
| Ex area of use                                                      | Gas: Zone 0/1 / Dust: Zone 20/21                                                                                                                                                                                                        |          |                                                                                                                                        |          |                                                                                      |          |
| Certificate No.                                                     | TÜV 15 ATEX 163839 X                                                                                                                                                                                                                    |          |                                                                                                                                        |          |                                                                                      |          |
| Ex marking                                                          | Gas:  II 1G Ex ia IIC T6 Ga<br>Dust:  II 1D Ex ia IIIC T145 °C Da |          |                                                                                                                                        |          |                                                                                      |          |
| Ambient temperature [°C]<br>and medium temperature                  | Gas Zone 0:<br>T6: -20 ≤ Ta ≤ +60<br>T5: -20 ≤ Ta ≤ +60<br>T4: -20 ≤ Ta ≤ +60<br>T3: -20 ≤ Ta ≤ +60<br>Dust Zone 20: -25 ≤ Ta ≤ +140                                                                                                    |          | Gas Zone 1:<br>T6: -25 ≤ Ta ≤ +75<br>T5: -25 ≤ Ta ≤ +90<br>T4: -25 ≤ Ta ≤ +125<br>T3: -25 ≤ Ta ≤ +140<br>Dust Zone 21: -25 ≤ Ta ≤ +140 |          |                                                                                      |          |
| Maximum values                                                      | Ui = 12.6 V / li = 15.9 mA / Pi = 50 mW / Ci = 22 nF / Li = 3 mH                                                                                                                                                                        |          |                                                                                                                                        |          |                                                                                      |          |
| Housing material                                                    | AISI 316 Ti / PEEK                                                                                                                                                                                                                      |          |                                                                                                                                        |          |                                                                                      |          |
| Protection [EN 60529]                                               | IP 68                                                                                                                                                                                                                                   |          |                                                                                                                                        |          |                                                                                      |          |
| Connection                                                          | 2 m FEP-cable 2x0.34 mm <sup>2</sup>                                                                                                                                                                                                    |          |                                                                                                                                        |          |                                                                                      |          |
| For the connection to<br>amplifiers IKM 122 Ex...,<br>see page 3.67 | <div><div>Explosionsgefährdeter Bereich<br/>Hazardous Area</div><div></div><div>Sicherer Bereich<br/>Safe Area</div></div>                          |          |                                                                                                                                        |          |                                                                                      |          |
| Note                                                                | proximity switches with cable length > 2 m are available on request                                                                                                                                                                     |          |                                                                                                                                        |          |                                                                                      |          |

### Series IGEXP - Proximity switches

#### Gas-Ex Category 1

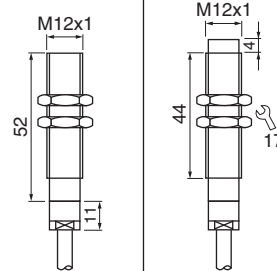
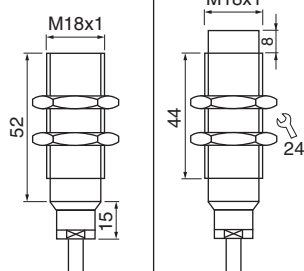
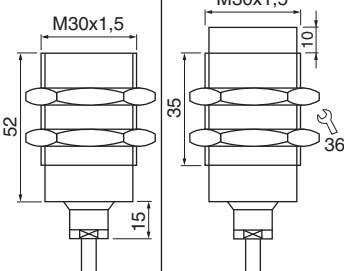
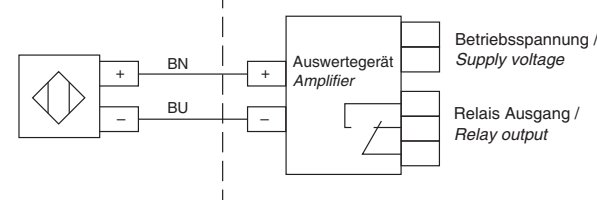
 II 1G Ex ia IIC T6 Ga

#### Dust-Ex Category 1

 II 1D Ex ia IIIC T65 °C Da

#### POLAR-Sensors –60 °C



| Design                                                              | M12x1                                                                                                                                                                                                                                  |          | M18x1                                                                                                                               |          | M30x1.5                                                                              |          |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|----------|
| Dimensions                                                          |                                                                                                                                                      |          |                                                  |          |  |          |
| Installation<br>flush (f)<br>non flush (nf)                         |                                                                                                                                                                                                                                        |          |                                                                                                                                     |          |                                                                                      |          |
| Operating distance [mm]                                             | 2 f                                                                                                                                                                                                                                    | 4 nf     | 5 f                                                                                                                                 | 8 nf     | 10 f                                                                                 | 15 nf    |
| ID-No.                                                              | P31373                                                                                                                                                                                                                                 | P31374   | P31375                                                                                                                              | P31376   | P31377                                                                               | P31378   |
| Type                                                                | IGEXP 02                                                                                                                                                                                                                               | IGEXP 04 | IGEXP 05                                                                                                                            | IGEXP 08 | IGEXP 10                                                                             | IGEXP 15 |
| Ex area of use                                                      | Gas: Zone 0/1 / Dust: Zone 20/21                                                                                                                                                                                                       |          |                                                                                                                                     |          |                                                                                      |          |
| Certificate No.                                                     | TÜV 15 ATEX 163839 X                                                                                                                                                                                                                   |          |                                                                                                                                     |          |                                                                                      |          |
| Ex marking                                                          | Gas:  II 1G Ex ia IIC T6 Ga<br>Dust:  II 1D Ex ia IIIC T65 °C Da |          |                                                                                                                                     |          |                                                                                      |          |
| Ambient temperature [°C]<br>and medium temperature                  | Gas Zone 0:<br>T6: -20 ≤ Ta ≤ +60<br>T5: -20 ≤ Ta ≤ +60<br>T4: -20 ≤ Ta ≤ +60<br>T3: -20 ≤ Ta ≤ +60<br>Dust Zone 20: -60 ≤ Ta ≤ +60                                                                                                    |          | Gas Zone 1:<br>T6: -60 ≤ Ta ≤ +60<br>T5: -60 ≤ Ta ≤ +60<br>T4: -60 ≤ Ta ≤ +60<br>T3: -60 ≤ Ta ≤ +60<br>Dust Zone 21: -60 ≤ Ta ≤ +60 |          |                                                                                      |          |
| Maximum values                                                      | Ui = 12.6 V / li = 15.9 mA / Pi = 50 mW / Ci = 22 nF / Li = 3 mH                                                                                                                                                                       |          |                                                                                                                                     |          |                                                                                      |          |
| Housing material                                                    | AISI 316 Ti / PTFE                                                                                                                                                                                                                     |          |                                                                                                                                     |          |                                                                                      |          |
| Protection [EN 60529]                                               | IP 68                                                                                                                                                                                                                                  |          |                                                                                                                                     |          |                                                                                      |          |
| Connection                                                          | 2 m FEP-cable 2x0.34 mm²                                                                                                                                                                                                               |          |                                                                                                                                     |          |                                                                                      |          |
| For the connection to<br>amplifiers IKM 122 Ex...,<br>see page 3.67 | <div><div><div>Explosionsgefährdeter Bereich<br/>Hazardous Area</div><div></div></div></div>                                                       |          |                                                                                                                                     |          |                                                                                      |          |
| Note                                                                | proximity switches with cable length > 2 m are available on request                                                                                                                                                                    |          |                                                                                                                                     |          |                                                                                      |          |

## Dust - Compact model • Zone 22

### Series IGEX22 - Proximity switches

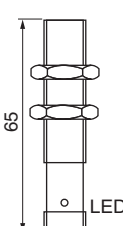
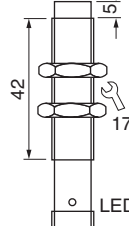
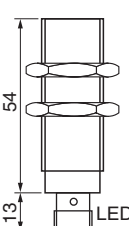
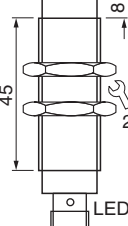
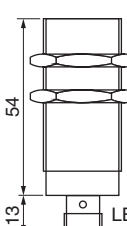
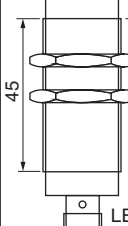
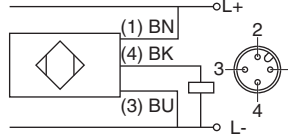
#### Category 3

Dust  Zone 22

DC 24 V

PNP switching output



| Design                                      | DC PNP • M12x1                                                                                                          |                                                                                     | DC PNP • M18x1                                                                      |                                                                                      | DC PNP • M30x1.5                                                                      |                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                  |                                       |   |   |   |   |   |
| Installation<br>flush (f)<br>non flush (nf) |                                                                                                                         |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Operating distance [mm]                     | 2 f                                                                                                                     | 4 nf                                                                                | 5 f                                                                                 | 8 nf                                                                                 | 10 f                                                                                  | 15 nf                                                                                 |
| Switching output PNP                        |                                      |  |  |  |  |  |
| ID-No.                                      | P31187                                                                                                                  | P31188                                                                              | P31189                                                                              | P31190                                                                               | P31191                                                                                | P31192                                                                                |
| Type                                        | IGEX22 02 GSPU                                                                                                          | IGEX22 04 GSPU                                                                      | IGEX22 05 GSPU                                                                      | IGEX22 08 GSPU                                                                       | IGEX22 10 GSPU                                                                        | IGEX22 15 GSPU                                                                        |
| Ex marking                                  |  II 3D Ex mc IIIC T 80 °C Dc IP 67 X |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Supply voltage [V]                          | 10...30 DC                                                                                                              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Switching current [mA]                      | 200                                                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Short circuit proof                         | •                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Overcurrent release [mA]                    | 250                                                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Reverse protection                          | •                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Voltage drop max. [V]                       | 2                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Residual current [mA]                       | -                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Current consumption [mA]                    | 7                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Switching frequency [Hz]                    | 500                                                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Ambient temperature [°C]                    | -25...+70                                                                                                               |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| EMC-class                                   | A                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Protection [EN 60529]                       | IP 67                                                                                                                   |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| LED display                                 | •                                                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Housing material                            | Br-Ni / PBT                                                                                                             |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Connection                                  | M12 connector                                                                                                           |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|                                             |                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Accessories                                 | connection cable SLG 3-2 (Z01076), plug-lock type PL-M12 (Z01182), page 3.69                                            |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |

## Dust - Compact model • Zone 22

### Series IGEX22 - Proximity switches

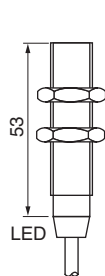
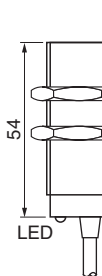
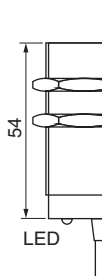
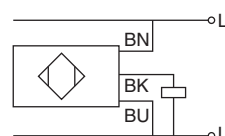
#### Category 3

Dust  Zone 22

DC 24 V

PNP switching output



| Design                                      | DC PNP • M12x1                                                                       |               | DC PNP • M18x1                                                                      |               | DC PNP • M30x1.5                                                                      |               |
|---------------------------------------------|--------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------|
| Dimensions                                  |    |               |   |               |   |               |
| Installation<br>flush (f)<br>non flush (nf) |    |               |   |               |   |               |
| Operating distance [mm]                     | 2 f                                                                                  | 4 nf          | 5 f                                                                                 | 8 nf          | 10 f                                                                                  | 15 nf         |
| Output PNP                                  |   |               |  |               |  |               |
| ID-No.                                      | P31165                                                                               | P31166        | P31167                                                                              | P31168        | P31169                                                                                | P31170        |
| Type                                        | IGEX22 02 GSP                                                                        | IGEX22 04 GSP | IGEX22 05 GSP                                                                       | IGEX22 08 GSP | IGEX22 10 GSP                                                                         | IGEX22 15 GSP |
| Ex marking                                  | Ⓔ II 3D Ex mc IIIC T 80 °C Dc IP 67 X                                                |               |                                                                                     |               |                                                                                       |               |
| Supply voltage [V]                          | 10...30 DC                                                                           |               |                                                                                     |               |                                                                                       |               |
| Switching current [mA]                      | 200                                                                                  |               |                                                                                     |               |                                                                                       |               |
| Short circuit proof                         | •                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Overcurrent release [mA]                    | 250                                                                                  |               |                                                                                     |               |                                                                                       |               |
| Reverse protection                          | •                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Voltage drop max. [V]                       | 2                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Residual current [mA]                       | –                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Current consumption [mA]                    | 7                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Switching frequency [Hz]                    | 500                                                                                  |               |                                                                                     |               |                                                                                       |               |
| Ambient temperature [°C]                    | –25...+70                                                                            |               |                                                                                     |               |                                                                                       |               |
| EMC-class                                   | A                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Protection [EN 60529]                       | IP 67                                                                                |               |                                                                                     |               |                                                                                       |               |
| LED display                                 | •                                                                                    |               |                                                                                     |               |                                                                                       |               |
| Housing material                            | Br-Ni / PBT                                                                          |               |                                                                                     |               |                                                                                       |               |
| Connection                                  | 2 m PVC-cable 3x0.34 mm²                                                             |               |                                                                                     |               |                                                                                       |               |
|                                             |  |               |                                                                                     |               |                                                                                       |               |

## Dust - Compact model • Zone 22

### Series IGVE22 - Proximity switches

Stainless steel

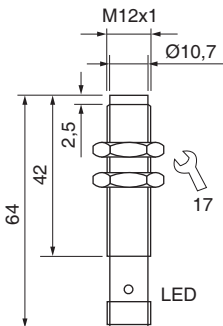
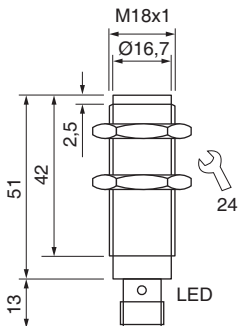
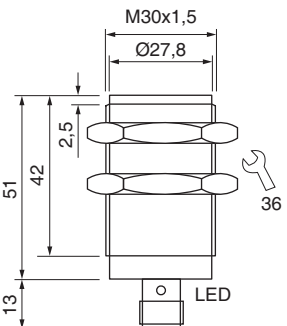
Category 3

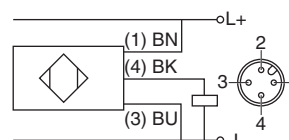
Dust  Zone 22

DC 24 V

PNP switching output



| Design                   | DC PNP • M12x1                                                                                                          | DC PNP • M18x1                                                                       | DC PNP • M30x1,5                                                                      |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions               |                                       |   |   |
| Operating distance [mm]  | 2                                                                                                                       | 5                                                                                    | 10                                                                                    |
| Switching output PNP     |                                      |  |  |
| ID-No.                   | P31285                                                                                                                  | P31286                                                                               | P31287                                                                                |
| Type                     | IGVE22 02 GSPU                                                                                                          | IGVE22 05 GSPU                                                                       | IGVE22 10 GSPU                                                                        |
| Ex marking               |  II 3D Ex mc IIIC T 95 °C Dc IP 67 X |                                                                                      |                                                                                       |
| Supply voltage [V]       | 10...30 DC                                                                                                              |                                                                                      |                                                                                       |
| Switching current [mA]   | 200                                                                                                                     |                                                                                      |                                                                                       |
| Short circuit proof      | •                                                                                                                       |                                                                                      |                                                                                       |
| Reverse protection       | •                                                                                                                       |                                                                                      |                                                                                       |
| Voltage drop max. [V]    | 1,5                                                                                                                     |                                                                                      |                                                                                       |
| Current consumption [mA] | 12                                                                                                                      |                                                                                      |                                                                                       |
| Switching frequency [Hz] | 180                                                                                                                     |                                                                                      |                                                                                       |
| Ambient temperature [°C] | -25...+70                                                                                                               |                                                                                      |                                                                                       |
| EMC class                | A                                                                                                                       |                                                                                      |                                                                                       |
| Protection [EN 60529]    | IP 67                                                                                                                   |                                                                                      |                                                                                       |
| LED display              | •                                                                                                                       |                                                                                      |                                                                                       |
| Housing material         | AISI 316 L                                                                                                              |                                                                                      |                                                                                       |
| Connection               | M12 connector                                                                                                           |                                                                                      |                                                                                       |



Accessories connection cable SLG 3-2 (Z01076), plug-lock type PL-M12 (Z01182), page 3.69

## Dust - Compact model • Zone 20

### Series IDEX20 - Proximity switches

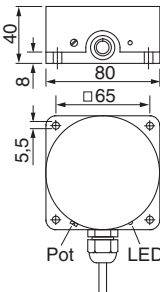
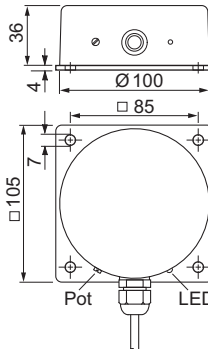
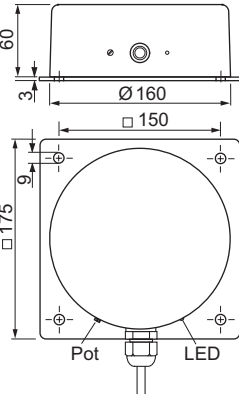
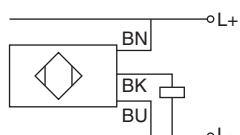
#### Category 1

#### Dust Zone 20

#### DC 24 V

#### PNP switching output



| Design                                        | DC PNP • Ø80 mm                                                                                       | DC PNP • Ø100 mm                                                                    | DC PNP • Ø160 mm                                                                      |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                    |                     |  |   |
| Installation non flush (nf)                   | Pot LED                                                                                               | Pot LED                                                                             | Pot LED                                                                               |
| Operating distance [mm]<br>(Adjustable range) | 55 nf<br>(10...80)                                                                                    | 70 nf<br>(10...110)                                                                 | 120 nf<br>(20...150)                                                                  |
| Switching output PNP                          |                    |  |  |
| ID-No.                                        | P31182                                                                                                | P31183                                                                              | P31184                                                                                |
| Type                                          | IDEX20 080 GSP                                                                                        | IDEX20 100 GSP                                                                      | IDEX20 160 GSP                                                                        |
| Ex marking                                    |  II 1D T80 °C IP67 |                                                                                     |                                                                                       |
| Certificate No.                               | TÜV 05 ATEX 2845 X                                                                                    |                                                                                     |                                                                                       |
| Supply voltage [V]                            | 10...30 DC                                                                                            |                                                                                     |                                                                                       |
| Switching current [mA]                        | 100                                                                                                   |                                                                                     |                                                                                       |
| Short circuit proof                           | •                                                                                                     |                                                                                     |                                                                                       |
| Reverse protection                            | •                                                                                                     |                                                                                     |                                                                                       |
| Voltage drop max. [V]                         | 2                                                                                                     |                                                                                     |                                                                                       |
| Residual current [mA]                         | -                                                                                                     |                                                                                     |                                                                                       |
| Current consumption [mA]                      | 7                                                                                                     |                                                                                     |                                                                                       |
| Switching frequency [Hz]                      | 20                                                                                                    |                                                                                     |                                                                                       |
| Ambient temperature [°C]                      | -25...+70                                                                                             |                                                                                     |                                                                                       |
| EMC-class                                     | A                                                                                                     |                                                                                     |                                                                                       |
| Protection [EN 60529]                         | IP 67                                                                                                 |                                                                                     |                                                                                       |
| LED display                                   | •                                                                                                     |                                                                                     |                                                                                       |
| Housing material                              | PA                                                                                                    | PA / Aluminium                                                                      | PA / Aluminium                                                                        |
| Connection                                    | 2 m PVC-cable 3x0.5 mm <sup>2</sup>                                                                   |                                                                                     |                                                                                       |
|                                               |                   |                                                                                     |                                                                                       |
| Accessories                                   | housing for screw terminals series GK...                                                              |                                                                                     |                                                                                       |

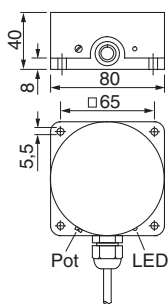
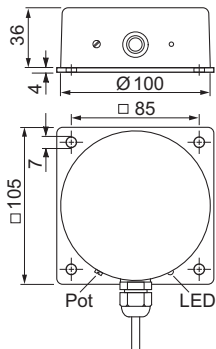
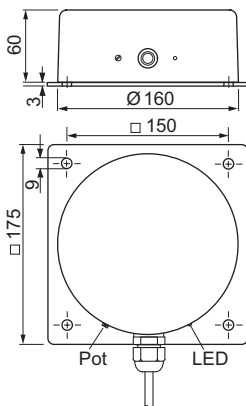
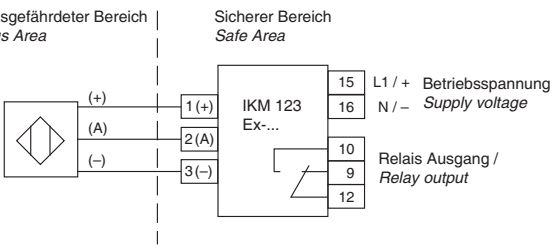
### Series IDEX - Proximity switches

#### Category 1

Dust  Zone 20

Gas  Zone 0



| Design                                                                                              | Ø80 mm                                                                                                                                                                                                                                                                                                                                             | Ø100 mm                                                                             | Ø160 mm                                                                              |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Dimensions</b><br><br><b>Installation</b><br>non flush (nf)                                      |                                                                                                                                                                                                                                                                  |  |  |
| Operating distance [mm]<br>(Adjustable range)                                                       | 55 nf<br>(10...70)                                                                                                                                                                                                                                                                                                                                 | 70 nf<br>(10...100)                                                                 | 120 nf<br>(20...150)                                                                 |
| ID-No.                                                                                              | P31157                                                                                                                                                                                                                                                                                                                                             | P31158                                                                              | P31159                                                                               |
| Type                                                                                                | IDEX 080                                                                                                                                                                                                                                                                                                                                           | IDEX 100                                                                            | IDEX 160                                                                             |
| Ambient temperature [°C]                                                                            | -25...+75                                                                                                                                                                                                                                                                                                                                          |                                                                                     |                                                                                      |
| Ex marking                                                                                          | Ex II 1G Ex ia IIC T6 / Ex II 1D T100 °C                                                                                                                                                                                                                                                                                                           |                                                                                     |                                                                                      |
| Certificate No.                                                                                     | TÜV 03 ATEX 2037                                                                                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                      |
| Ambient temperatures for temperature classes [°C]                                                   | T6 : 75<br>T5 : 90                                                                                                                                                                                                                                                                                                                                 |                                                                                     |                                                                                      |
| Maximum values                                                                                      | Ci = 120 nF<br>Li = negligibly small<br>Ii = 80 mA<br>Ui = 12.6 V<br>Pi = 252 mW                                                                                                                                                                                                                                                                   |                                                                                     |                                                                                      |
| Only for the connection to certified intrinsically safe circuits with the following maximum values: |                                                                                                                                                                                                                                                                                                                                                    |                                                                                     |                                                                                      |
| Housing material                                                                                    | PA / Aluminium                                                                                                                                                                                                                                                                                                                                     |                                                                                     |                                                                                      |
| Protection [EN 60529]                                                                               | IP 67                                                                                                                                                                                                                                                                                                                                              |                                                                                     |                                                                                      |
| Connection                                                                                          | 2 m PVC-cable 3x0.5 mm <sup>2</sup>                                                                                                                                                                                                                                                                                                                |                                                                                     |                                                                                      |
| For the connection to amplifiers IKM 123 Ex..., see page 3.68                                       | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> Explosionsgefährdeter Bereich<br/>Hazardous Area </div> <div style="text-align: center;"> Sicherer Bereich<br/>Safe Area </div> </div>  |                                                                                     |                                                                                      |

## Dust - Compact model • Zone 22

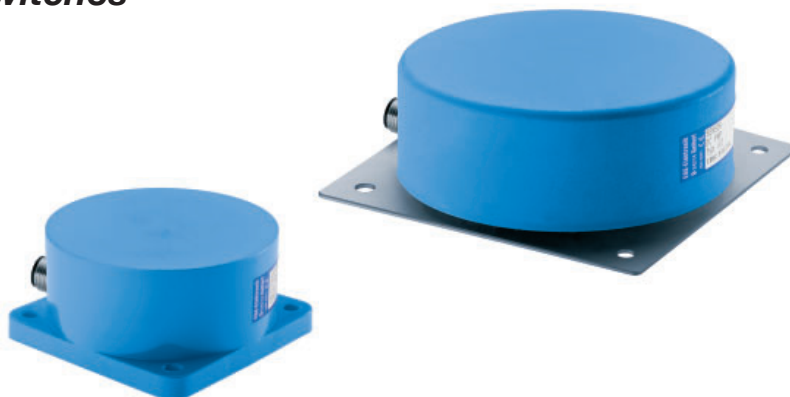
### Series IDEX22 - Proximity switches

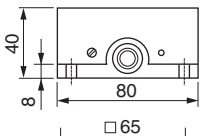
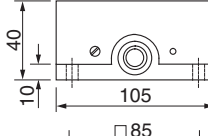
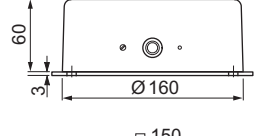
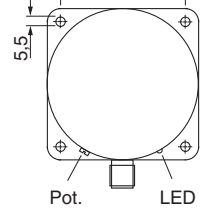
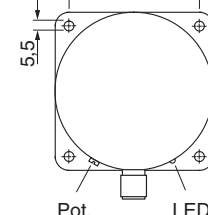
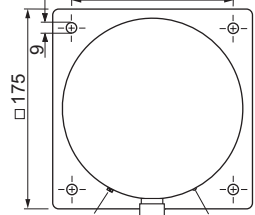
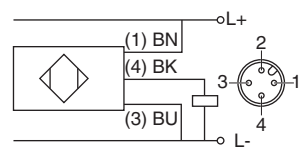
#### Category 3

#### Dust Zone 22

#### DC 24 V

#### PNP switching output



| Design                                        | DC PNP • Ø80 mm                                                                                                         | DC PNP • Ø105 mm                                                                    | DC PNP • Ø160 mm                                                                      |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Dimensions                                    |                                        |   |    |
| Installation non flush (nf)                   |                                       |  |   |
| Operating distance [mm]<br>(Adjustable range) | 55 nf<br>(10...80)                                                                                                      | 100 nf<br>(10...110)                                                                | 120 nf<br>(20...150)                                                                  |
| Switching output PNP                          |                                      |  |  |
| ID-No.                                        | P31329                                                                                                                  | P31330                                                                              | P31331                                                                                |
| Type                                          | IDEX22 080 GSPU                                                                                                         | IDEX22 105 GSPU                                                                     | IDEX22 160 GSPU                                                                       |
| Ex marking                                    |  II 3D Ex mc IIIC T 80 °C Dc IP 67 X |                                                                                     |                                                                                       |
| Supply voltage [V]                            | 10...30 DC                                                                                                              |                                                                                     |                                                                                       |
| Switching current [mA]                        | 200                                                                                                                     |                                                                                     |                                                                                       |
| Short circuit proof                           | •                                                                                                                       |                                                                                     |                                                                                       |
| Overcurrent release [mA]                      | 450                                                                                                                     |                                                                                     |                                                                                       |
| Reverse protection                            | •                                                                                                                       |                                                                                     |                                                                                       |
| Voltage drop max. [V]                         | 2                                                                                                                       |                                                                                     |                                                                                       |
| Residual current [mA]                         | -                                                                                                                       |                                                                                     |                                                                                       |
| Current consumption [mA]                      | 7                                                                                                                       |                                                                                     |                                                                                       |
| Switching frequency [Hz]                      | 20                                                                                                                      |                                                                                     |                                                                                       |
| Ambient temperature [°C]                      | -20...+70                                                                                                               |                                                                                     |                                                                                       |
| EMC-class                                     | A                                                                                                                       |                                                                                     |                                                                                       |
| Protection [EN 60529]                         | IP 67                                                                                                                   |                                                                                     |                                                                                       |
| LED display                                   | •                                                                                                                       |                                                                                     |                                                                                       |
| Housing material                              | PBT                                                                                                                     | PBT                                                                                 | PBT / Aluminium                                                                       |
| Connection                                    | M12 connector                                                                                                           | M12 connector                                                                       | M12 connector                                                                         |
| Accessories                                   |                                     |                                                                                     |                                                                                       |

connection cable SLG 3-2 (Z01076), page 3.69

## - Amplifiers

### Series IKM 122 Ex

Dust 

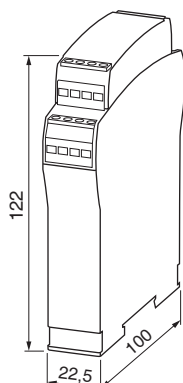
Gas 

**Cable break and  
short circuit monitoring**

**Connection to intrinsically safe  
2-lead sensors**

**Output function programmable**



|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Design                     | IKM 122 Ex...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
| Dimensions                 | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
| ID-No.                     | P31332                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | P31333        |
| Type                       | IKM 122 Ex-230                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | IKM 122 Ex-24 |
| Output                     | <div></div> relay / change over                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Ex area of use             | outside of the hazardous areas (gas or dust)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
| Certificate No.            | TÜV 11 ATEX 556280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |
| Ex marking                 | Gas:  II (1) G [Ex ia Ga] IIC<br>Dust:  II (1) D [Ex ia Da] IIIC                                                                                                                                                                                                                                                                                                                                                         |               |
| Ambient temperature [°C]   | -20 ≤ Ta ≤ +60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |
| Maximum values             | Uo = 9.6 V / Io = 10.1 mA / Po = 24.2 mW / Co = 0.84 µF / Lo = 5.00 mH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
| Supply voltage [V]         | 230 AC ±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 24 DC ±10%    |
| Switching voltage max [V]  | 250 AC / 60 DC / 24 DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
| Switching current max. [A] | 4 AC / 0.8 DC / 4 DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Switching power            | cos φ >0.7 / L/R ≤200 ms / L/R ≤200 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |
| Protection [EN 60529]      | IP 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
| Connection                 | terminal screws                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |
|                            | <div><div><div>Explosionsgefährdeter Bereich<br/>Hazardous Area</div><div></div></div><div><div>Sicherer Bereich<br/>Safe Area</div><div><div><div>IKM 122<br/>Ex-...</div><div><div>15</div><div>16</div><div>10</div><div>9</div><div>12</div></div><div><div></div></div></div><div><div>L1 / + Betriebsspannung<br/>N / - Supply voltage</div><div>Relais Ausgang /<br/>Relay output</div></div></div></div></div> |               |

## - Amplifiers

### Series IKM 123 Ex

Dust 

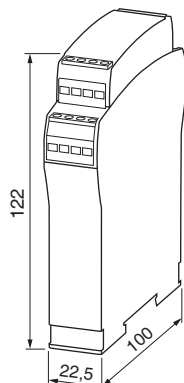
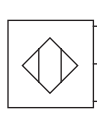
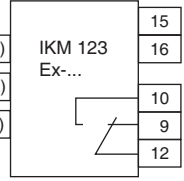
Gas 

Cable break and  
short circuit monitoring

Connection to intrinsically safe  
3-lead sensors

Output function programmable



| Design                     | IKM 122 Ex...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Dimensions                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
| ID-No.                     | P31335                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | P31336        |
| Type                       | IKM 123 Ex-230                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IKM 123 Ex-24 |
| Output                     | <br>relay / change over                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |
| Ex area of use             | outside of the hazardous areas (gas or dust)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Certificate No.            | TÜV 11 ATEX 556280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
| Ex marking                 | Gas:  II (1) G [Ex ia Ga] IIC<br>Dust:  II (1) D [Ex ia Da] IIIC                                                                                                                                                                                                                                                                                                                                                                           |               |
| Ambient temperature [°C]   | -20 ≤ Ta ≤ +60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |
| Maximum values             | U <sub>0</sub> = 9.6 V / I <sub>0</sub> = 50.5 mA / P <sub>0</sub> = 121.3 mW / C <sub>0</sub> = 0.68 µF / L <sub>0</sub> = 5.00 mH                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |
| Supply voltage [V]         | 230 AC ±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 24 DC ±10%    |
| Switching voltage max [V]  | 250 AC / 60 DC / 24 DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |
| Switching current max. [A] | 4 AC / 0.8 DC / 4 DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |
| Switching power            | cos φ > 0.7 / L/R ≤ 200 ms / L/R ≤ 200 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |
| Protection [EN 60529]      | IP 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |
| Connection                 | terminal screws                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |
|                            | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Explosionsgefährdeter Bereich<br/>Hazardous Area</p>  </div> <div style="text-align: center;"> <p>Sicherer Bereich<br/>Safe Area</p>  </div> <div style="text-align: left;"> <p>15 L1 / + Betriebsspannung<br/>16 N / - Supply voltage<br/><br/>10 Relais Ausgang /<br/>9 Relay output<br/>12</p> </div> </div> |               |

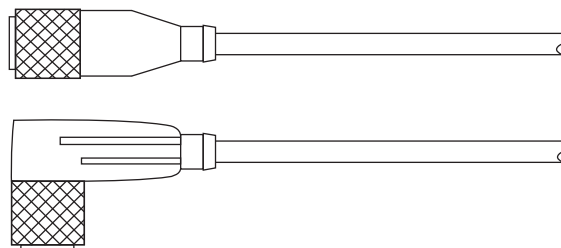
## Accessories • M12 connector

### System SL

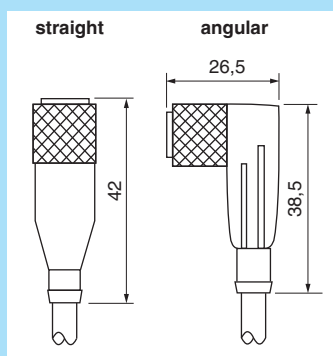
**Finished cable plug housing**

**Self locking screw plug**

**Protection IP 67**



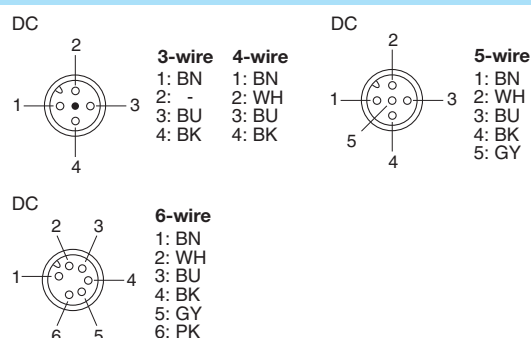
#### Cable plug housing



**SLG...**

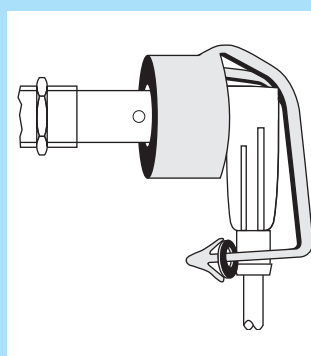
**SLW...**

#### Pin-assignment



**DC**

#### Plug-lock



**PL-M12**

| TYPE        | ID-NO. | DESIGN                                                                                     |
|-------------|--------|--------------------------------------------------------------------------------------------|
| SLG 3-2     | Z01076 | Cable plug housing straight, 2 m cable 3x0.34 mm <sup>2</sup> max. 250 V / 4 A             |
| SLG 3-5     | Z01077 | Cable plug housing straight, 5 m cable 3x0.34 mm <sup>2</sup> max. 250 V / 4 A             |
| SLW 3-2     | Z01078 | Cable plug housing angular, 2 m cable 3x0.34 mm <sup>2</sup> max. 250 V / 4 A              |
| SLW 3-5     | Z01079 | Cable plug housing angular, 5 m cable 3x0.34 mm <sup>2</sup> max. 250 V / 4 A              |
| SLW 3-2-LED | Z00052 | Cable plug housing angular, 2 m cable 3x0.34 mm <sup>2</sup> max. 250 V / 4 A PNP with LED |
| SLG 4-2     | Z00445 | Cable plug housing straight, 2 m cable 4x0.25 mm <sup>2</sup> max. 250 V / 4 A             |
| SLG 4-5     | Z00449 | Cable plug housing straight, 5 m cable 4x0.25 mm <sup>2</sup> max. 250 V / 4 A             |
| SLW 4-2     | Z00446 | Cable plug housing angular, 2 m cable 4x0.25 mm <sup>2</sup> max. 250 V / 4 A              |
| SLW 4-5     | Z00450 | Cable plug housing angular, 5 m cable 4x0.25 mm <sup>2</sup> max. 250 V / 4 A              |
| SLW 4-2-LED | Z01157 | Cable plug housing angular, 2 m cable 4x0.25 mm <sup>2</sup> max. 250 V / 4 A PNP with LED |
| SLG 5-2     | Z01150 | Cable plug housing straight, 2 m cable 5x0.34 mm <sup>2</sup> max. 60 V / 2 A              |
| SLW 5-2     | Z01151 | Cable plug housing angular, 2 m cable 5x0.34 mm <sup>2</sup> max. 60 V / 2 A               |
| SLG 6-2     | Z01197 | Cable plug housing straight, 2 m cable 6x0.25 mm <sup>2</sup> max. 36 V / 2 A              |
| SLW 6-2     | Z01198 | Cable plug housing angular, 2 m cable 6x0.25 mm <sup>2</sup> max. 36 V / 2 A               |
| PL-M12      | Z01182 | Plug-lock for sensors in Ex areas                                                          |

#### DATA

|                   |              |                       |                                        |
|-------------------|--------------|-----------------------|----------------------------------------|
| Thread            | M12x1        | Contact resistance    | ≤ 5 mΩ                                 |
| Material          | PVC          | Insulation resistance | >10 <sup>9</sup>                       |
| Protection        | IP 67        | Testing voltage       | 2.0 KV eff. / 5 and 6 pol. 1.5 KV eff. |
| Temperature range | -25...+80 °C |                       |                                        |

#### Note

Sensors with NC output are connected to 4 pole cable plug housings. In this case, the break output is connected to the white lead (connection 2).

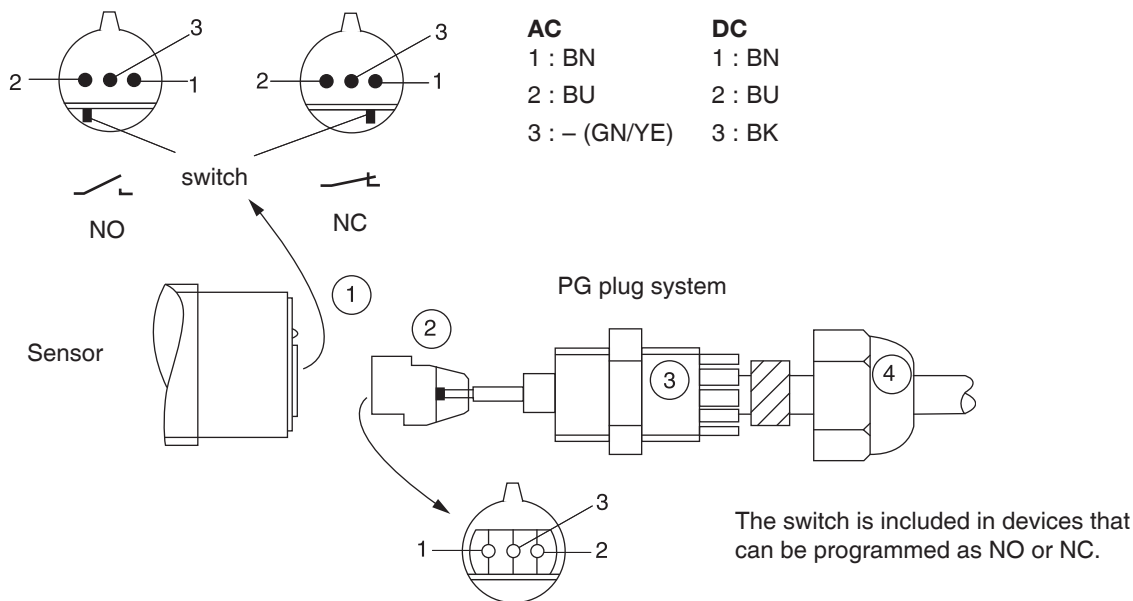
## Accessories • PG plug system

### PG plug system

#### PG plug type connection with PVC-cable

Protection IP 68

#### PG-plug connection



#### Mounting of PG plug system

Connect the cable to the EGE-plug (2) and put it into the plug-housing (1) until it is at the stop. Make sure that the "nose" of the plug fits exactly into the housing. If this is done in the right way, the plug is hidden in the plug-housing.

Screw part (3) into the plug-housing (1) and fix it rightly with a spanner. After about 2 hours righten it again with the spanner.

Now fit the nut (4) by hand and afterwards with a spanner. Do not apply too much force. For a good sealing there should be stet 2 mm between nut (4) and part (3).

| TYPE    | ID-NO. | DESIGN                                                       |
|---------|--------|--------------------------------------------------------------|
| PG 2-2  | Z00025 | PG-plug connection, 2 m PVC-cable 2x0.75 mm <sup>2</sup> AC  |
| PG 2-3  | Z00026 | PG-plug connection, 3 m PVC-cable 2x0.75 mm <sup>2</sup> AC  |
| PG 2-5  | Z00027 | PG-plug connection, 5 m PVC-cable 2x0.75 mm <sup>2</sup> AC  |
| PG 2-10 | Z00028 | PG-plug connection, 10 m PVC-cable 2x0.75 mm <sup>2</sup> AC |
| PG 2-20 | Z00029 | PG-plug connection, 20 m PVC-cable 2x0.75 mm <sup>2</sup> AC |
| PG 3-2  | Z00020 | PG-plug connection, 2 m PVC-cable 3x0.5 mm <sup>2</sup> DC   |
| PG 3-3  | Z00021 | PG-plug connection, 3 m PVC-cable 3x0.5 mm <sup>2</sup> DC   |
| PG 3-5  | Z00022 | PG-plug connection, 5 m PVC-cable 3x0.5 mm <sup>2</sup> DC   |
| PG 3-10 | Z00023 | PG-plug connection, 10 m PVC-cable 3x0.5 mm <sup>2</sup> DC  |
| PG 3-20 | Z00024 | PG-plug connection, 20 m PVC-cable 3x0.5 mm <sup>2</sup> DC  |

#### Note

The power supply must be disconnected before the plug will be installed or removed.

Code: BK = black BN = brown BU = blue GN = green YE = yellow GY = grey PK = pink WH = white

## Accessories • Assembly parts

### Lock nuts, brass-nickel - plated

| ID-NO.             | Z00106 | Z00107 | Z00114 | Z00109  | Z00110  |
|--------------------|--------|--------|--------|---------|---------|
| Nut thickness [mm] | 4      | 4      | 4      | 5       | 5       |
| Thread             | M12x1  | M18x1  | M22x1  | M30x1.5 | M38x1.5 |
| Spanner size       | 17     | 24     | 27     | 36      | 50      |

### Lock nuts, special steel

| ID-NO.             | Z01098 | Z00112 | Z00113 | Z00115  |
|--------------------|--------|--------|--------|---------|
| Nut thickness [mm] | 4      | 4      | 4      | 5       |
| Thread             | M8x1   | M12x1  | M18x1  | M30x1.5 |
| Spanner size       | 13     | 17     | 24     | 36      |

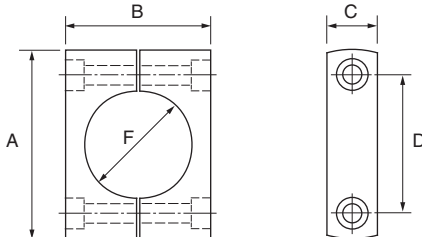
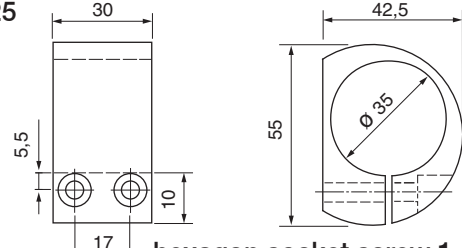
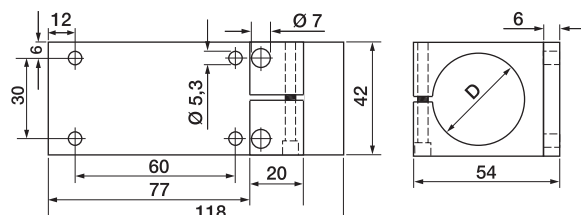
### Lock nuts, plastics

| ID-NO.             | Z00180 | Z00120  | Z00117 | Z00118 | Z00119  | Z01092 | Z01052 |
|--------------------|--------|---------|--------|--------|---------|--------|--------|
| Nut thickness [mm] | 6      | 8       | 4      | 5      | 5,5     | 8      | 8      |
| Thread             | M14x1  | M30x1.5 | M12x1  | M18x1  | M30x1.5 | G 3/4  | G 1    |
| Spanner size       | 22     | 41      | 17     | 24     | 36      | 41     | 50     |
| Material           | PTFE   | PTFE    | PPE    | PPE    | PPE     | PTFE   | PTFE   |

### Central screw, polyamide

|        |                                                      |
|--------|------------------------------------------------------|
| Z00104 | M12, length 70 mm, hexagon socket 10 mm, material PA |
| Z00105 | M16, length 90 mm, hexagon socket 14 mm, material PA |

## MOUNTING CLAMPS

| TYPE                          | ID-NO.               | DIMENSIONS                                                                                                                | DESIGN                                                                                                                                                                                                                                                                          |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
|-------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|---------|------|---------|------|---------|------|----|---|----|----|---|----|----|---|-------|-------|
| KLS 20<br>KLS 34              | Ø 20<br>Ø 34         | Z00100<br>Z00102                                                                                                          | Clamps of PA,<br>for smooth-bodied switches                                                                                                                                                                                                                                     |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
|                               |                      |  <p>E: hexagon socket screw 1.4305</p> | <table><tr><th>F</th><th>Ø 20</th><th>Ø 34</th></tr><tr><td>A</td><td>47</td><td>61</td></tr><tr><td>B</td><td>30</td><td>47</td></tr><tr><td>C</td><td>17</td><td>15</td></tr><tr><td>D</td><td>32</td><td>45</td></tr><tr><td>E</td><td>M5x30</td><td>M5x50</td></tr></table> | F    | Ø 20 | Ø 34    | A    | 47      | 61   | B       | 30   | 47 | C | 17 | 15 | D | 32 | 45 | E | M5x30 | M5x50 |
| F                             | Ø 20                 | Ø 34                                                                                                                      |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| A                             | 47                   | 61                                                                                                                        |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| B                             | 30                   | 47                                                                                                                        |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| C                             | 17                   | 15                                                                                                                        |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| D                             | 32                   | 45                                                                                                                        |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| E                             | M5x30                | M5x50                                                                                                                     |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| KLB 35                        | Ø 35                 | Z00125                                                                                                                    | Clamp of PTFE (Teflon),<br>for smooth-bodied switches<br>hexagon socket screw M5x40                                                                                                                                                                                             |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
|                               |                      |  <p>hexagon socket screw 1.4571</p>    |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| KBM 025<br>KBM 030<br>KBM 035 | Ø 25<br>Ø 30<br>Ø 35 | Z01189<br>Z01188<br>Z01187                                                                                                | Mounting clamp of Aluminium                                                                                                                                                                                                                                                     |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
|                               |                      |                                       | <table><tr><th>Type</th><th>D</th></tr><tr><td>KBM 025</td><td>Ø 25</td></tr><tr><td>KBM 030</td><td>Ø 30</td></tr><tr><td>KBM 035</td><td>Ø 35</td></tr></table>                                                                                                               | Type | D    | KBM 025 | Ø 25 | KBM 030 | Ø 30 | KBM 035 | Ø 35 |    |   |    |    |   |    |    |   |       |       |
| Type                          | D                    |                                                                                                                           |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| KBM 025                       | Ø 25                 |                                                                                                                           |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| KBM 030                       | Ø 30                 |                                                                                                                           |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |
| KBM 035                       | Ø 35                 |                                                                                                                           |                                                                                                                                                                                                                                                                                 |      |      |         |      |         |      |         |      |    |   |    |    |   |    |    |   |       |       |



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