Baumer
Passion for Sensors

Inductive sensors.

Compact, fast, reliable.

Edition 2013

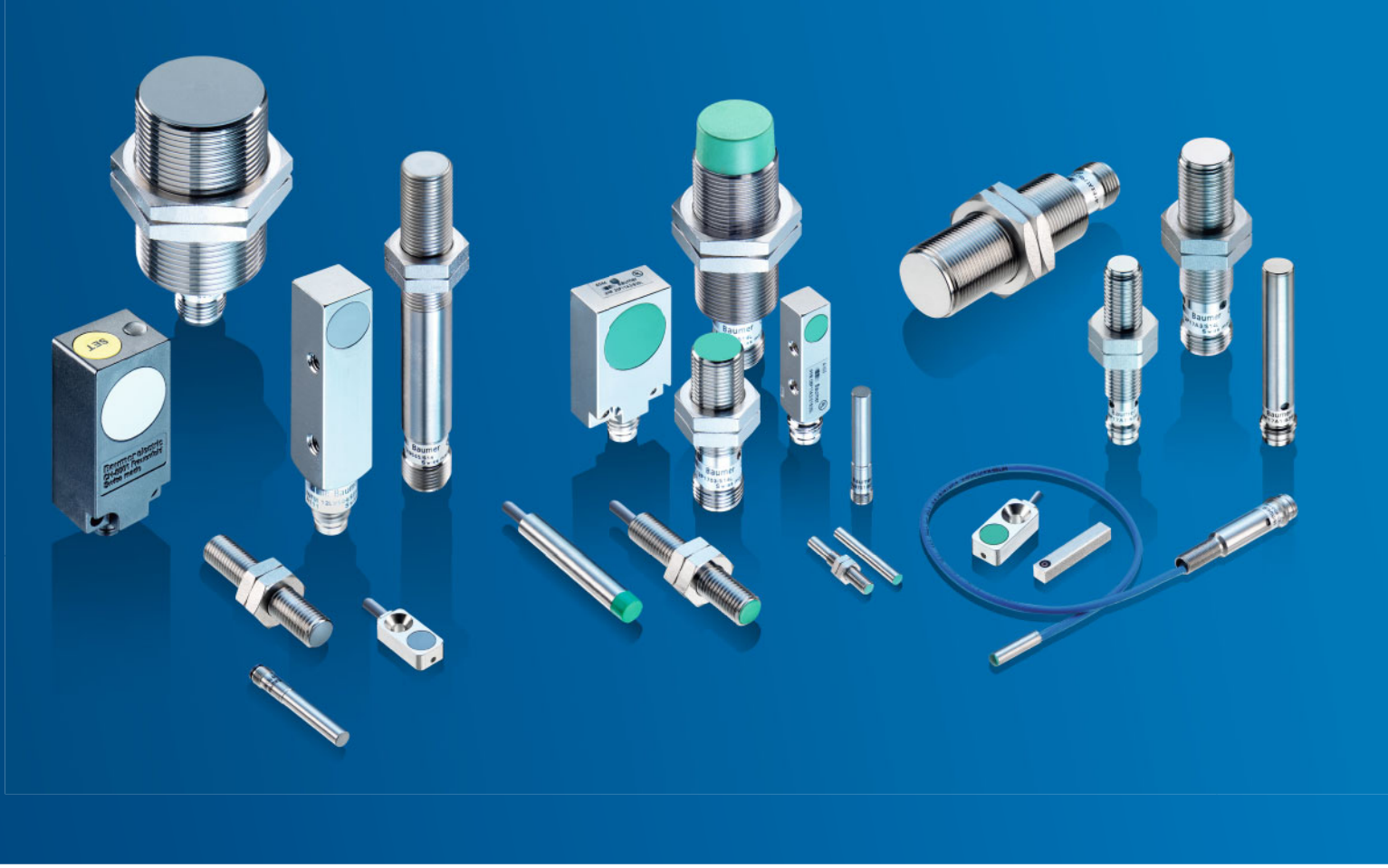
Inductive sensors
by Baumer combine
tried and tested
technology
and sophisticated
innovations.

Visibly better: Baumer sensors.

The Baumer Group is leading at international level in the development and production of sensors, shaft encoders, measuring instruments as well as components for automatic image processing. As an owner-managed family business, we employ about 2500 workers worldwide in 36 subsidiaries and 18 countries. With marked customer orientation, consistently high quality and vast innovation potential worldwide, Baumer develops specific solutions for many industries and applications.

Our standards – your benefits.

- Passion coupled with expertise – both have made us a sensor pioneer and technology leader
- Our range of services is hard to beat – we have the right product, developed by our own team, for every task
- Inspiring through innovation – a challenge Baumer employees take on every day
- Reliability, precision and quality – our customers' requirements are what drives us
- Partnership from the start – together with our customers we develop suitable solutions
- Always a step ahead – thanks to our production depth, our flexibility and our delivery reliability
- Available worldwide – Baumer is Baumer everywhere



Indispensable in all machines

Non-contacting, inductive proximity sensors play a major role in automation technology all over the world. For several decades millions of them have been used for monitoring the presence, movement and position of metal machine parts, valves, and gears. They feature the mostly stringently tested and most proven technology on the market. This is a key success factor which will enable them to provide reliable solutions for many demanding automation tasks tomorrow.

Inductive sensors operate very reliably even under the harshest industrial conditions like high pressure and above-normal temperatures. In high-speed applications too, the sensors stand out due to their precise switching points.

They can basically be divided into two groups:

- Sensors with digital outputs for presence detection or object counting
- Measuring sensors with analog outputs for determination of object distance

Both groups are available in sub-miniature housings to large-scale designs with a measuring distance of 15 mm.

Learn more.
Downloadable data sheets as well as further information about our products is available at:
www.baumer.com/inductive

Table of contents.

Baumer – setting standards with innovations.

The success story of the Baumer Group is characterized by innovations. By hardware and software engineers, designers or process engineers who work day in and day out to make our products and systems even better.

We pay particular attention to the increased miniaturization, precision as well as the measuring speed and robustness of the sensors. These features characterize our products even today. And that is something we are proud of.

The Baumer development teams are organized in an international network and are in close contact with well-known universities, recognized research institutes and highly specialized international engineering companies. As the technological leader, Baumer always endeavors to maintain its lead over the long term and protect its numerous innovations through patents.

Comprehensive product range

- Actuators and positioning drives
- Capacitive proximity sensors
- Conductivity sensors
- Counters
- Digital cameras
- Encoders
- Force and strain sensors
- Inductive sensors
- Level measurement
- Magnetic sensors
- Network Components
- OCR and code reader systems
- Optical inspection systems
- Photoelectric sensors
- Precision switches My-Com
- Pressure measurement
- Process analysis
- Process displays
- Resolvers
- Speed switches
- Spindle positioning systems
- Tachogenerators
- Temperature sensors
- Ultrasonic sensors
- Vision sensors

- Inductive sensors
- Capacitive sensors
- Photoelectric sensors
- Vision sensors
- Ultrasonic sensors
- Magnetic sensors
- Precision switches
  My-Com

Passion for sensors.

Whether for object or position recognition, measuring, a miniaturized or exceptionally robust design – Baumer has the right sensor for every application. Different sensor functions in standard housings ease assembly for the user and limit the setup time to a minimum. Baumer can supply a wide range from inductive to vision sensors and advise you comprehensively.

Customized solutions.

Our broad range of products enables us to provide the optimum solution for a large number of applications. But customers might have needs completely outside these application areas that cannot be entirely satisfied by the products currently on the market.

And this is precisely why our development engineers work closely with our customers. In searching for optimum solutions to meet these special needs, we are able to create customized solutions. Our customized solutions range from special mechanical designs to completely new sensor systems.

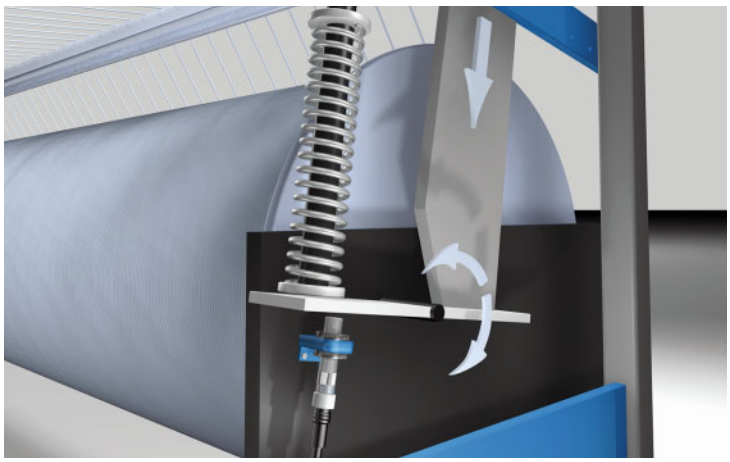
An innovative sensor solution can also help you gain a significant competitive advantage.

We would be happy to advise you!

Inductive distance measuring sensors *AlphaProx*

Applications
- Machine tool building
- Installation/handling
- Semiconductor manufacture
- Packaging machines
- Measuring/testing technology
- Textile machines
- Graphic machines
- Plastic machines
- Commercial vehicles

In industry, the building sector or process chemistry, efficient solutions are always generated by a team of competent specialists. Baumer also relies on a 'team' when it comes to offering solutions for industrial applications. This team is formed by the *AlphaProx* family, which comprises technologically high-quality analog sensors.
Every sensor has individual specifications which are perfectly adapted to single applications.

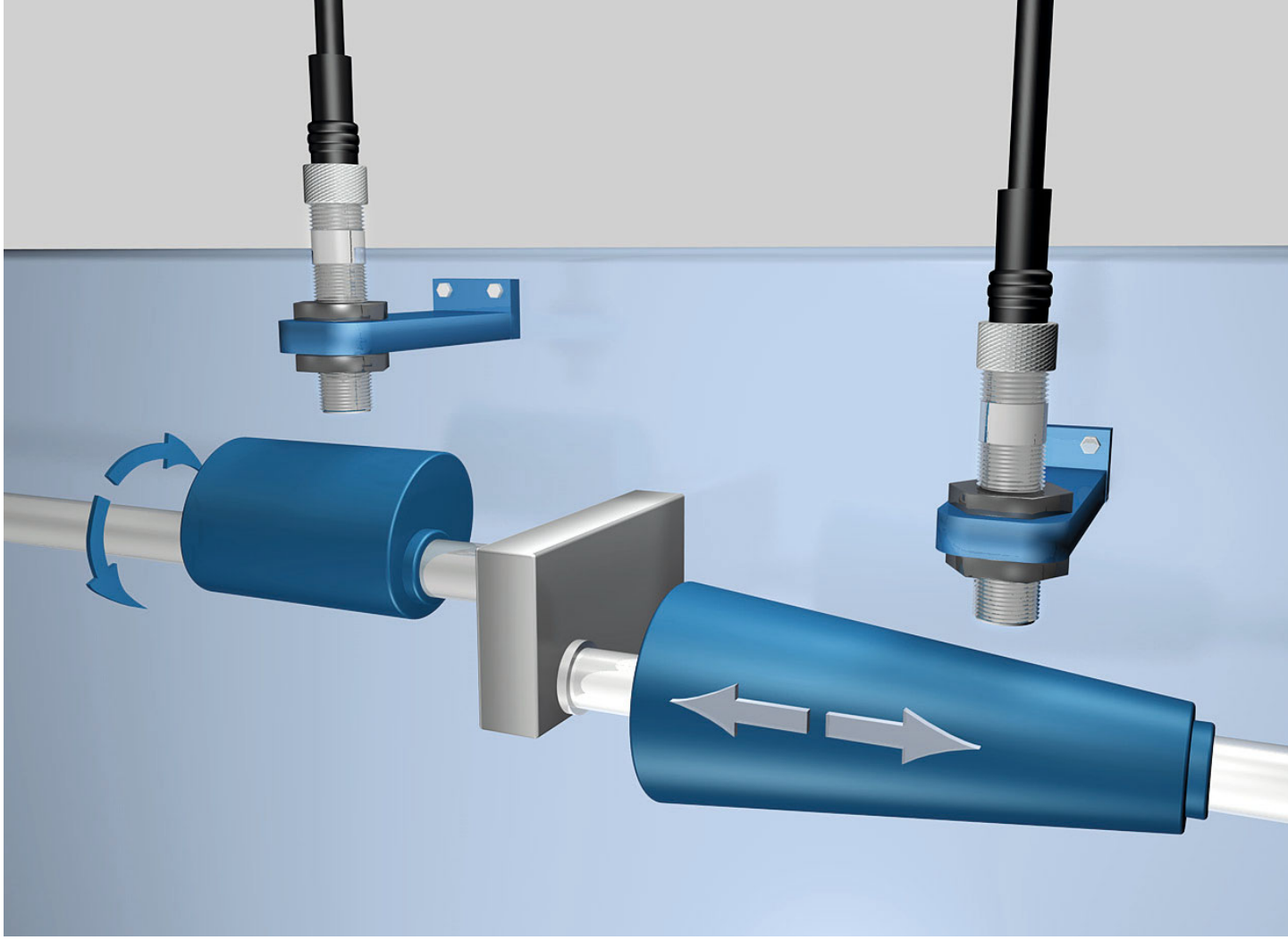


Tape tension control and monitoring

- High control quality at high frequencies possible
- The sensor performs two functions: distance measurement (analog) and end position shut-off (digital)
- Through teach-in the sensor measuring range can optimally be adapted to different roller diameters

Vibration measurements on shafts and bearings

- Bearing play or true running measurements
- Measurement of distances to 1 µm
- Mounting is possible even in extremely limited spaces (amplifier is integrated in the sensor)
- Very rapid movements can be measured
- Miniature sensors also available in a connector version



Absolute distance and angular measurement

- High reliability thanks to contact less measuring
- Dirt-resistant measuring system
- Measurement of linear and rotary movements possible
- Compact sensor sizes allow mounting even in limited spaces

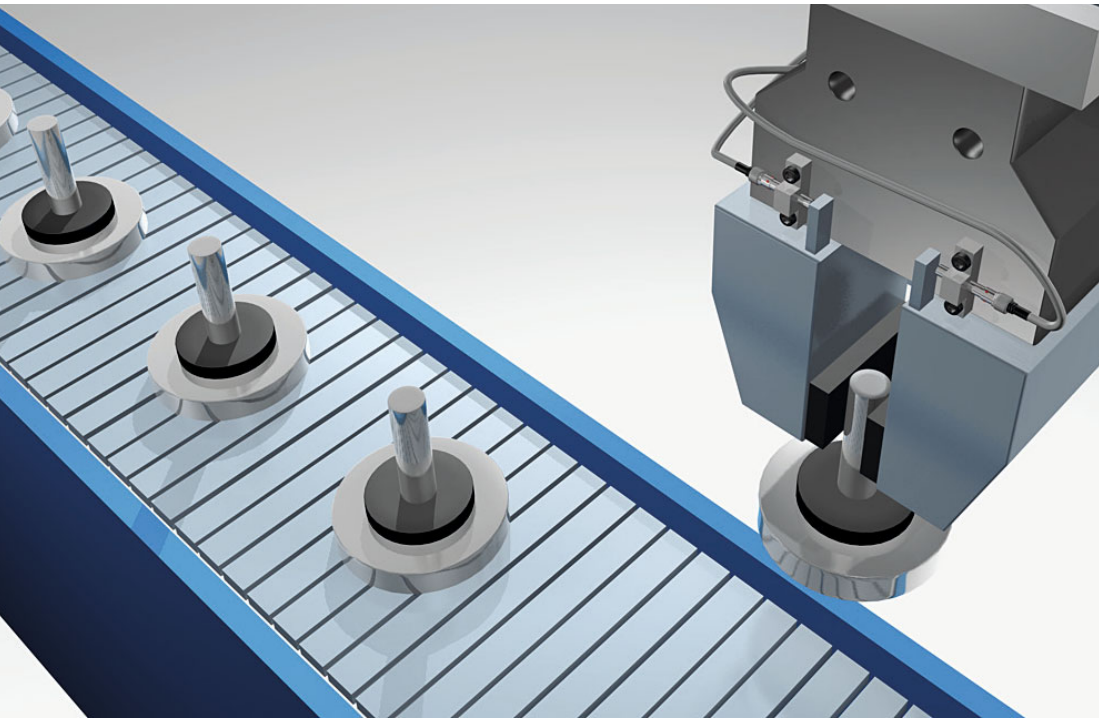
Miniature housing
Featuring a diameter of 4 mm, the IWRM 04 may be referred to as the smallest distance measuring inductive sensor with an integrated amplifier.

Flexible thanks to teach-in
Sensors with a teach-in input can optimally be adapted to the respective application conditions. Both the analog output and an additionally integrated switching output can be configured with the very easy teach-in routine.

Temperature-stable at large measuring distances
Baumer sensors feature high temperature stability at large measuring distances.
Over 80% of all industrial applications are exposed to temperatures between +20 … +50° C.
In the 0 … +60° C range, these sensors have a negligible temperature drift.

Very high EMC
Resistance to electromagnetic disturbances is an important factor when it comes to the practical use of sensors. The EMC limit values of Baumer sensors considerably exceed sensor standard specifications, guaranteeing very high operational safety.

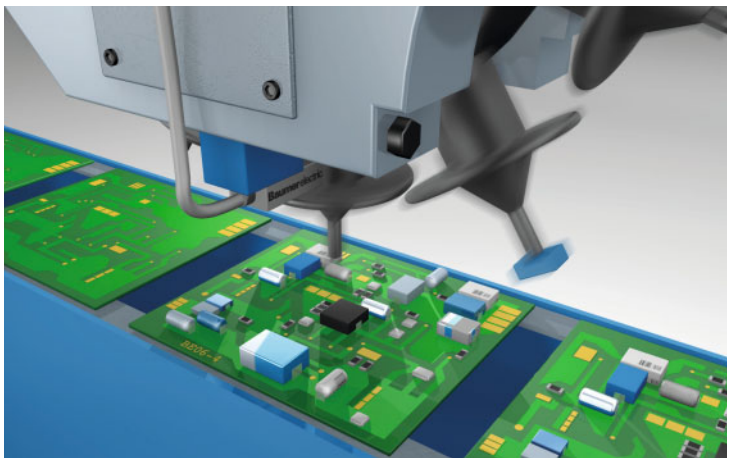
Inductive sensors in miniature housings



Applications
- Installation/handling
- Machine tools
- Semiconductor manufacturing
- Packaging machines
- Measuring/testing technology
- Graphic machines
- Medical devices
- Laboratory automation

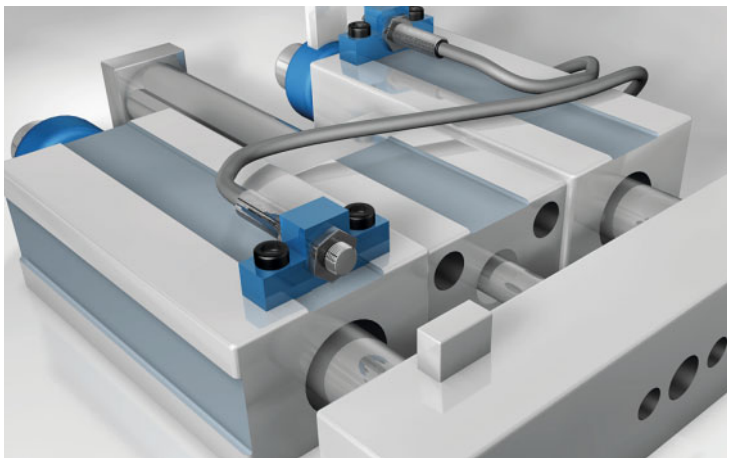
Robot grippers

- End position detection of gripper jaws
- Work piece presence/absence check
- Miniature sensors designed for limited spaces



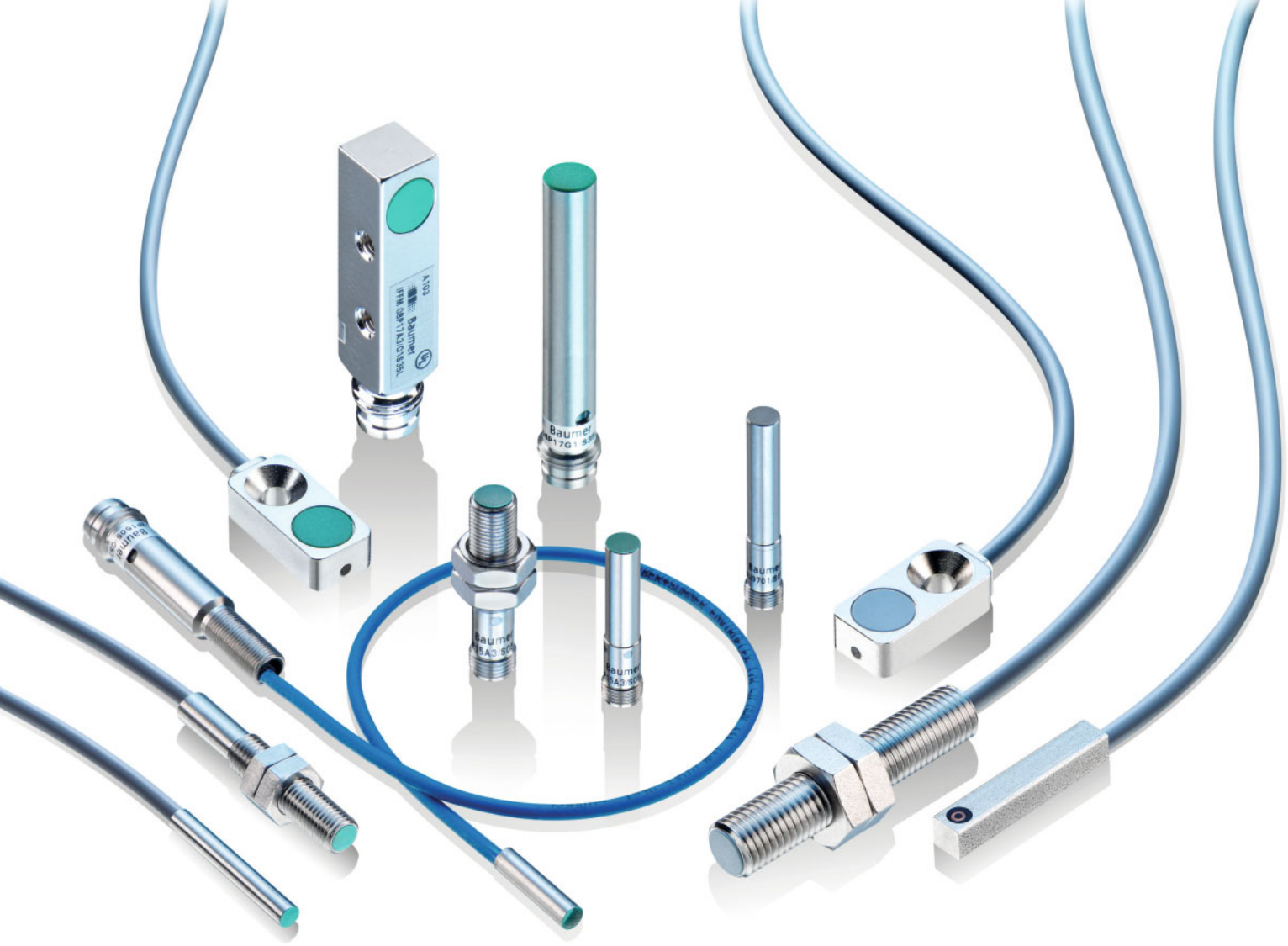
SMD placement machine

- Process synchronization
- Precise position detection
- Absolute distance measurement with high resolution
- Compact sensor sizes allow installation even in limited spaces



Linear unit

- End position feedback
- Referencing/initialization



In industries like handling and robotics, laboratory automation or in medical device manufacturing, a trend toward more and more compact plants and equipment is clearly recognizable. Baumer meets this requirement with an extensive range of miniature sensors.

The right housing for every situation

- Cylindrical sensors with a housing diameter of 3 mm
- Stainless steel housing with thread for a dimension of M4, M5, M8
- Square sensors for a dimension of 4, 6 and 8 mm

Compact whether switching or measuring

Switching or measuring sensors are available depending on the task. Thanks to an integrated amplifier circuit, the sensors can easily be integrated in compact machines and equipment even with higher measuring precision requirements.

Wide variety of connection types

Connector versions down to the smallest housing dimensions facilitate sensor installation. Cable versions demonstrate their benefits in very limited spaces.
PVC and PUR cables guarantee a long service life under chemically and mechanically above-normal conditions.

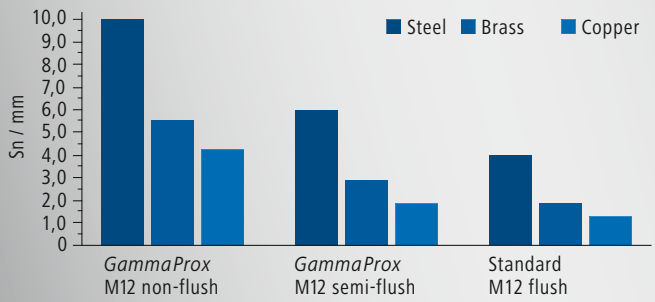
GammaProx inductive sensors with increased sensing distance

5 x Sn

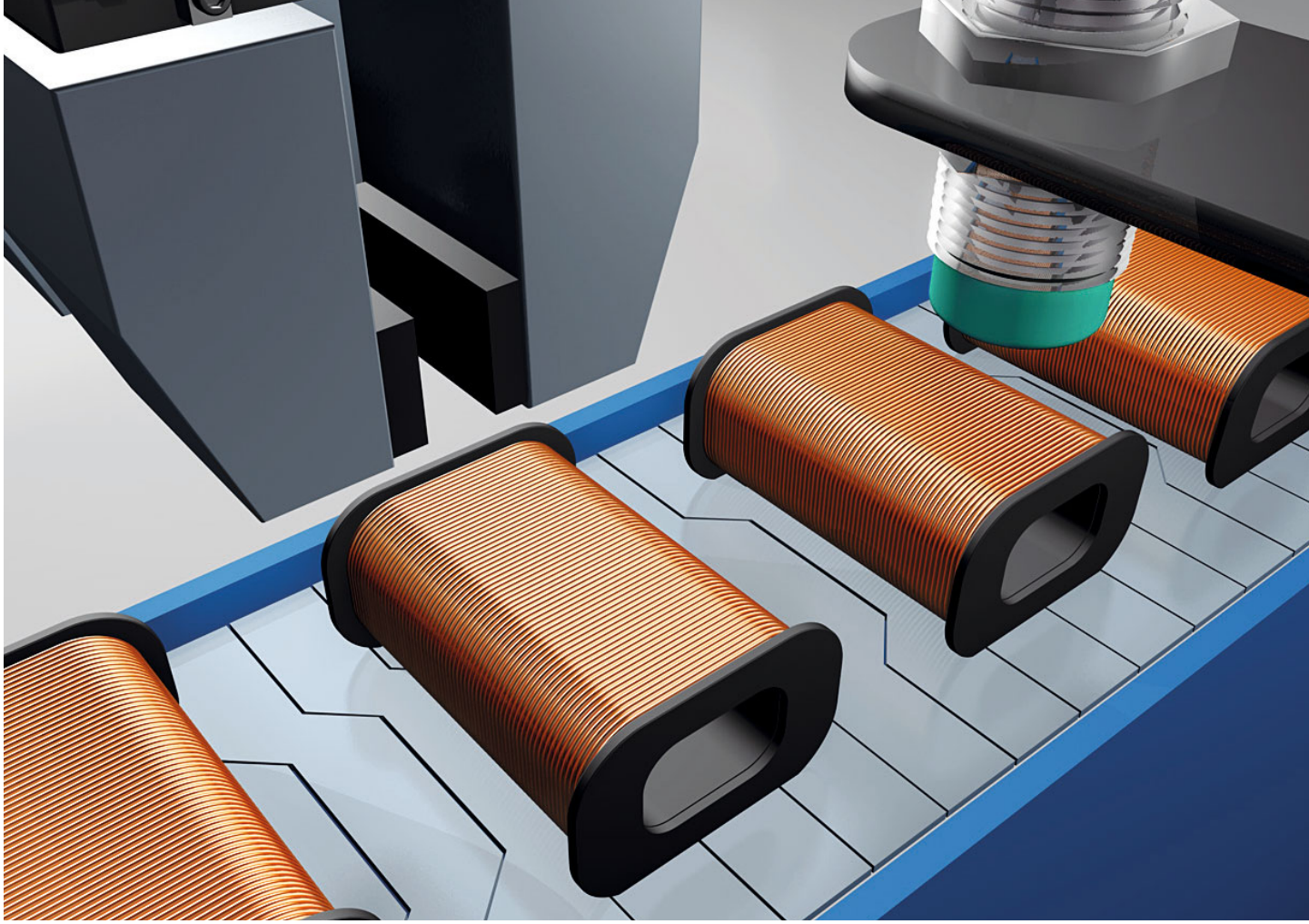
5 times greater sensing distance than CENELEC standard
The sensing distances of the inductive *GammaProx* family are up to five times greater than the CENELEC standard value. This enables equally safe and reliable detection of steel and non-ferrous metals.

Thanks to the increased sensing distance, it is possible to select generally greater distances to the moved objects, which permits greater installation tolerances, prevents damage, and increases plant reliability.

Increased protection through semi-flush mounting
Semi-flush sensors are suitable for flush mounting in non-ferromagnetic materials. In addition, this improves protection against mechanical damage caused by falling parts or loose plant components.

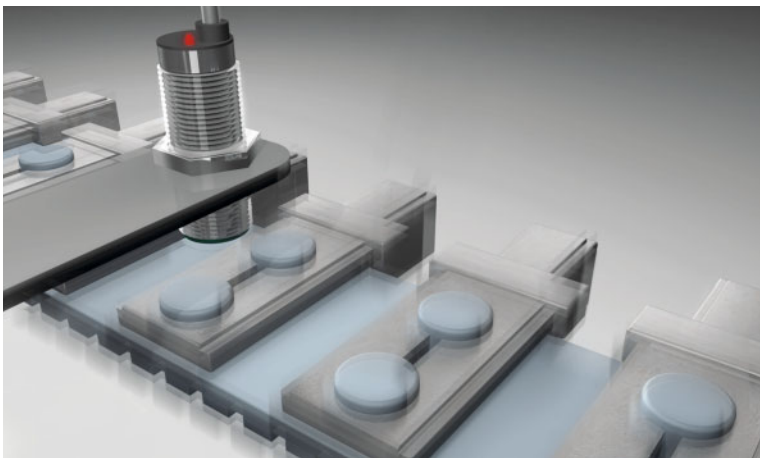


Applications
- Installation/handling
- Machine tools
- Textile machines
- Graphic machines
- Packaging machines
- Storage technology/ materials handling



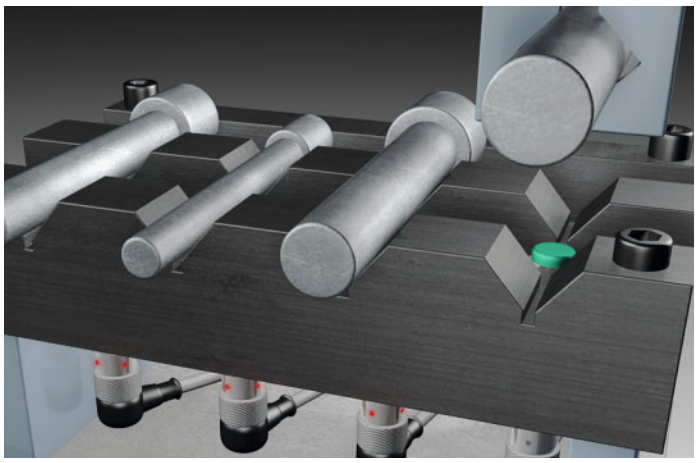
Coil and transformer production

- Copper wire coil detection
- Quality control during coil production
- Use on winding machines



Metal object detection and counting

- At greatly varying object distances (mechanical tolerance compensation)
- Reliable identification of different object sizes
- Detects different metals (decreased reduction factor influence)
- Reliable detection of plastic-coated metal parts



Handling and robotics

- Presence check in the tool holder
- Allows greater installation tolerances
- Reliable detection even at greatly varying object distances

Robust sensor solutions for the food and beverage industry

Applications
- Food processing
- Food storage
- Food packaging
- Filling
- Quality control

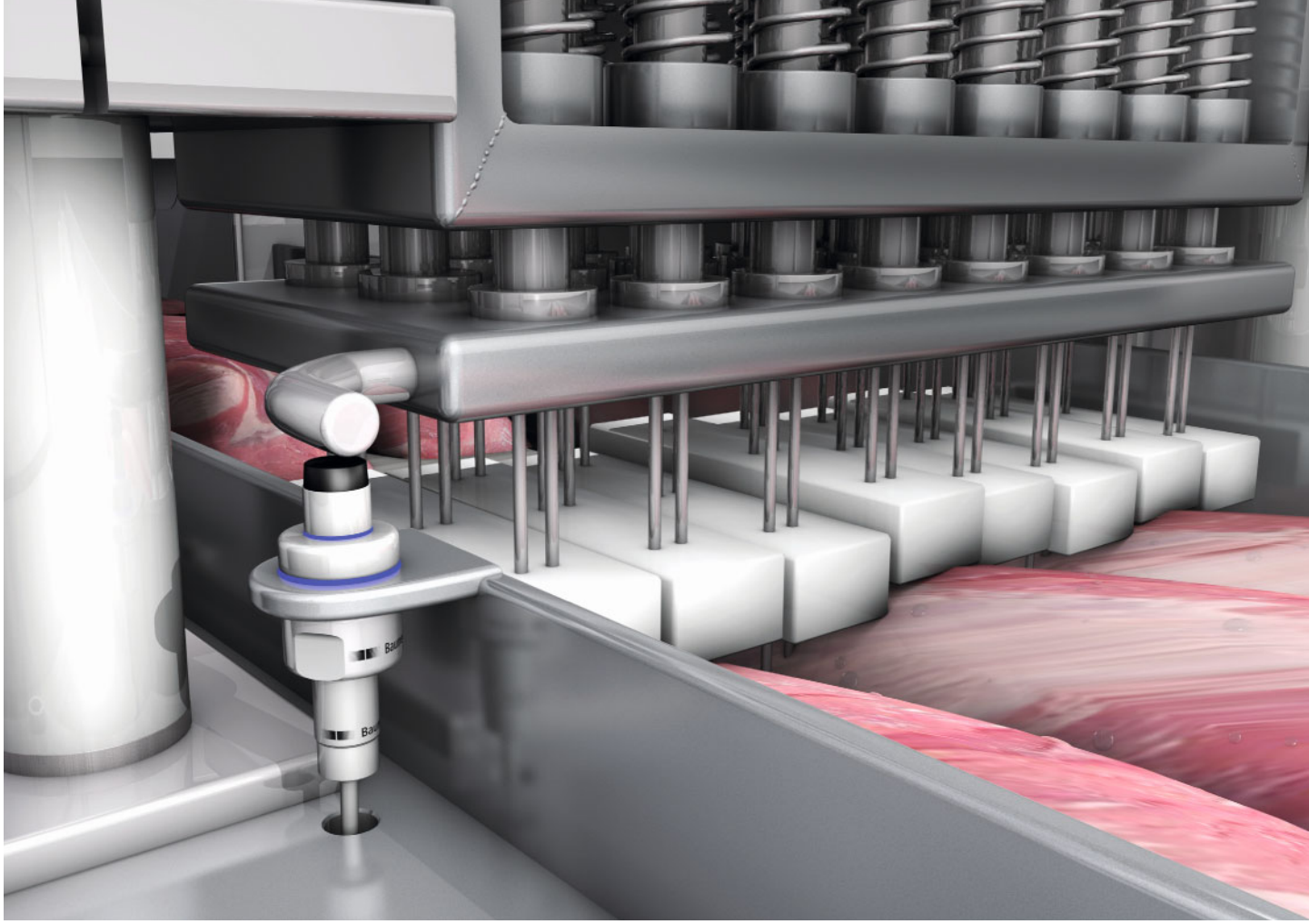
Inductive sensors for the food and beverage industry meet strict standards and regulations. We only use FDA-compliant materials, and we make sure they are chemically resistant to cleaning agents. The housings are made of V4A stainless steel with a roughness factor of max. 0.8 µm so that no microbacterial residue can accumulate. The sensors are available in two different housing designs for a variety of machine zones.

Unique proTect+ impermeability concept
Guarantees 100% impermeability after many temperature cycles, a long service life, and high reliability.

Stainless steel housing V4A with protection class IP 69K
For incredible robustness and a long service life.

Ecolab-tested and FDA-compliant
For reliable chemical resistance to cleaning agents and consistent use of materials that conform to food standards and regulations.

Integral hygienic design
Of sensors and fitting accessories meets design guidelines for hygienic applications, enables them to be used in immediate proximity to food, and simplifies the certification process for machines.



Hygienic design for the food area (IFBR)

EHEDG certified design, 100% gap-free to prevent formation of bacterial residue that could enter the food production flow.

Washdown design for the splash zone (IFRR and IWRR)

Sensors for the splash zone meet the same strict criteria as sensors for the food area. However, the spatial arrangement prevents residue from entering the food production flow from this zone. As a result, conventional mechanical mounting of these sensors is possible with two through-holes.

High temperature range
Facilitates versatile use and results in long service life even at high temperatures, e.g. in CIP processes.

Laser inscription
Ensures that the sensor can always be clearly identified.

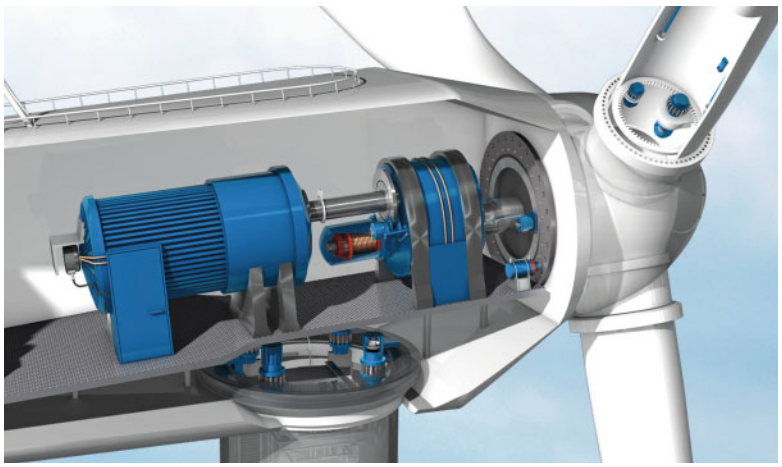
Sensor solutions for demanding indoor and outdoor applications

- Resistance to cleaning processes
- Protection class IP 69K makes the sensors resistant to spray from high-pressure cleaners as used, for example, in the food industry or for commercial vehicles. As a result, the maintenance costs are much lower compared to when conventional sensors are used.

- Increased protection through semi-flush mounting
- Semi-flush sensors are suitable for flush mounting in non-ferromagnetic materials. In addition, this improves protection against mechanical damage caused by falling parts or loose plant components.

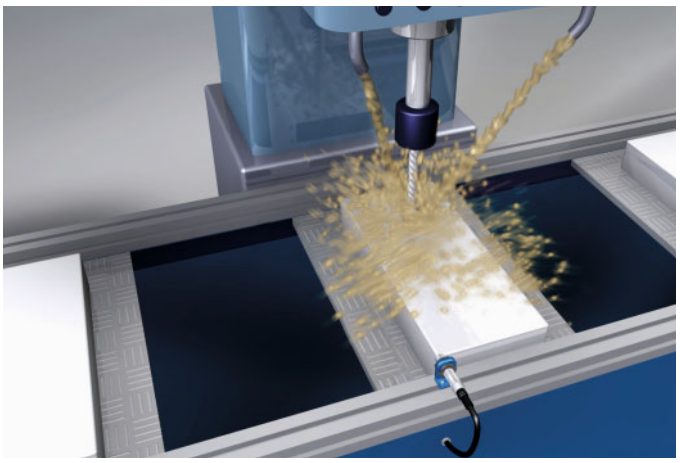
Applications

- Commercial vehicles
- Machine tools
- Shipping
- Cranes and lifting gear
- Metal manufacturing/processing



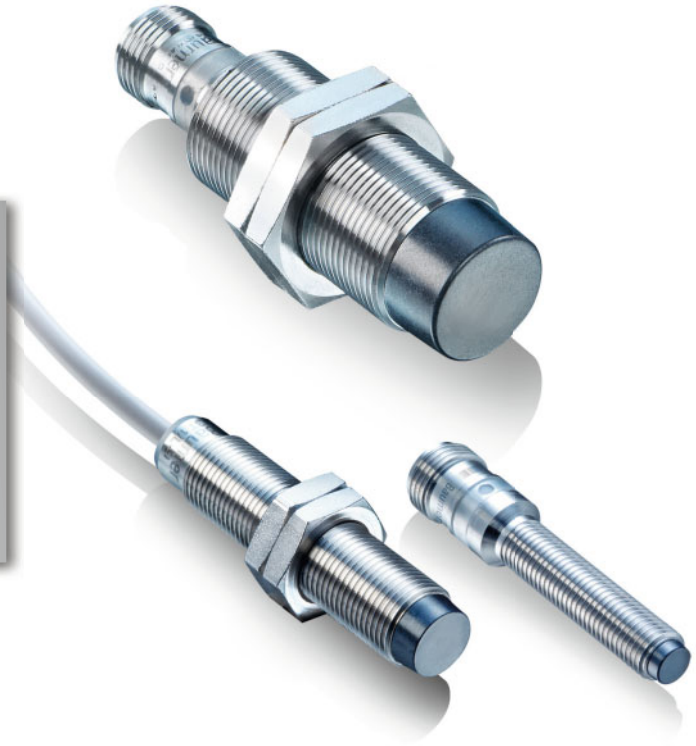
Robust inductive sensors for position detection and speed measurement

- Robust and easy detection of the nacelle position
- Reliable rotor speed measurement in a cost-efficient manner
- Efficiency and safety thanks to air gap monitoring



Continuous operation in wet rooms

- In machining production (CNC)
- Under the influence of cutting, grinding and metalworking fluids



IFRM and IFRR outdoor sensors have a large temperature range from –40 … +80° C.

IFRR outdoor sensors meet stringent requirements with regard to chemical resistance thanks to their robust stainless steel housing.

Baumer *DuroProx* (IFRD) and outdoor sensors (IFRM and IFRR) are tough in the truest sense of the word. The inductive sensors with an all-metal housing and/or LCP front cap were developed for demanding industrial environments and meet very stringent impermeability requirements up to protection class IP 69K.

Thanks to a temperature range from –25 … +100°C and the closed housing made of stainless V4A steel, DuroProx sensors can be used in the food area, in cutting oil environments or in other severely soiled environments. They also function properly in applications in electrically harsh environments. This is ensured not only by the all-metal housing with a sensing face made of stainless steel but also by increased noise immunity in accordance with EN 61000-6-2.

The outdoor sensors feature outstanding robustness as well as a wide temperature range from –40 … 80° C, large sensing distances, and high switching frequencies. In addition to switching sensors, measuring sensors (IWRM and IWRR) are also available which boast high precision even in demanding environments.

V4A

All-metal housing
The entire housing, including the sensing face, is made of stainless steel V4A (1.4404). As a result, *DuroProx* sensors are resistant to abrasive and chemically aggressive media like acid, lye or salt water.

+100 °C

Durability at high temperatures
The operating temperature range of *DuroProx* sensors runs from –25 … +100° C. As a result, they can also be operated continuously in the surroundings of generators, combustion engines or in cleaning processes.

C

Connection cable

Most of our proximity switches are equipped with highly flexible PVC cable. If high resistance against oil and grease is required, the cable material can be changed to PUR.
A FEP cable is used for high temperature resistance. The standard cable length is 2 meters.

D

Dimension

Normally the dimension refers to the width of the sensor, which for cylindrical body styles equals the diameter. Normally, the larger the body, the larger the coil and therefore the larger the sensing distance.

H

Hysteresis

Hysteresis is the difference between the operating and switching-off point as an object approaches and moves away from the sensor.

M

Magnetic fields

Strong magnetic fields might push the ferrite cores of the proximity switch into saturation. Proper switching is no longer guaranteed. Protective shielding is recommended.

Maximum cable length

A large cable length is a capacitive load for the output circuit and increases the influence of interference. Length should therefore be kept as short as possible.

Max. switching current

The maximum permissible load current passed through the sensor.

N

NAMUR

NAMUR proximity switches change their current consumption as a metallic object approaches. The changed current consumption or the change in the internal resistance serves as the output signal. Together with suitable tested switching amplifiers, they can be used in an explosive environment.

O

Oil resistant

The standard PVC cables as well as the PBT sensing faces are not made to operate continuously in oily environments. PUR (polyurethane) cable options are available for both sensors and connectors.

Operating temperature range

The sensors are designed and tested for function in the specified temperature range.

Output protection

The sensors are protected against voltage peaks, short circuits and reverse polarity.

Output indicator

The LED indicates the current output.

R

Reverse polarity protection

These sensors are protected against temporary reversed polarity voltage connection.

Ripple

The voltage supplied to the sensor should always be within the specified range for proper operation. Within this range a 10 % ripple (V_R) is allowed.

S

Sensor standard

The sensor standard is described in EN 60947-5-2.

Status display

Most of our proximity switches have an LED display. Most of our proximity switches have an LED display which indicates the output switching status.

Short circuit protection

The sensors are protected against voltage peaks, short circuits and reverse polarity.

Supply current

This is the maximum current consumed by the sensor, at nominal voltage, exclusive of output.

V

Voltage drop V_d

This value indicates the maximum voltage drop measured across the conducting output.

Voltage supply range +Vs

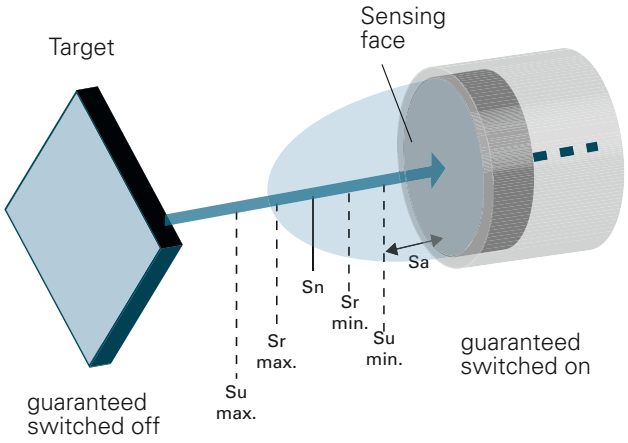
Maximum ripple 10 % of Vs. The supply voltage should not be higher or lower than the indicated maximum or minimum values.

Sensing distance

The international standard EN 60947-5-2 defines the sensing distance as follows: the sensing distance is the distance at which a standard target moving toward the sensing face of a proximity switch causes a signal change.

Standard target

The standard target is defined as a square plate, 1 mm thick, made of Fe 360 (mild steel). The length of its side is defined as the larger of either the sensing face diameter or three times s_n (nominal sensing distance).



Nominal sensing distance S_n

Nominal sensing distance S_n is a type classification parameter and does not take into account tolerances during machining or changes due to external conditions such as voltage or temperature.

Assured sensing distance S_a

Distance from the sensing face at which the operation of the proximity switch is ensured under defined conditions. For inductive proximity switches the assured sensing distance is between 0% and 81% of the nominal switching distance.

Effective sensing distance S_r

Effective sensing distance of an individual proximity switch which is measured at a defined temperature, voltage and installation conditions. For inductive proximity switches it must be between 90% and 110% of the nominal sensing distance at 23 ±5 °C

Usable sensing distance S_u

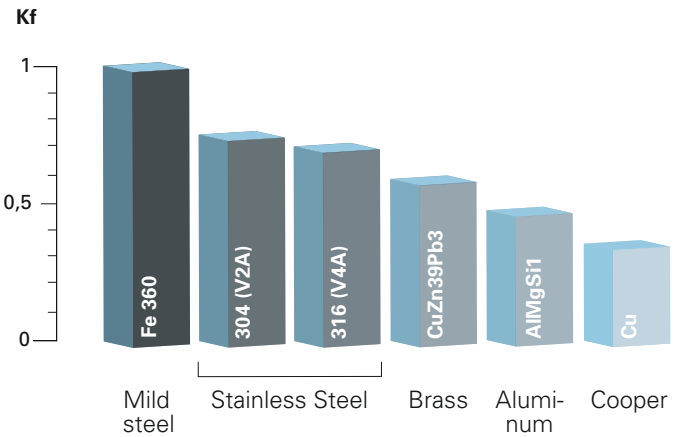
Sensing distance of an individual proximity switch measured over the temperature range and at a supply voltage of 90% and 110% of the rated value. For inductive proximity switches it must be between 90% and 110% of the effective sensing distance.

Correction factor Cf

If the target material differs from the standard target (as defined above), then the applicable published sensing distance must be multiplied by the appropriate correction factor (Cf).

Note: The published figures should be taken as a guideline only. Targets which differ in size and shape from the standard geometry may also give a different sensing distance when compared to the figures stated in the data sheets.

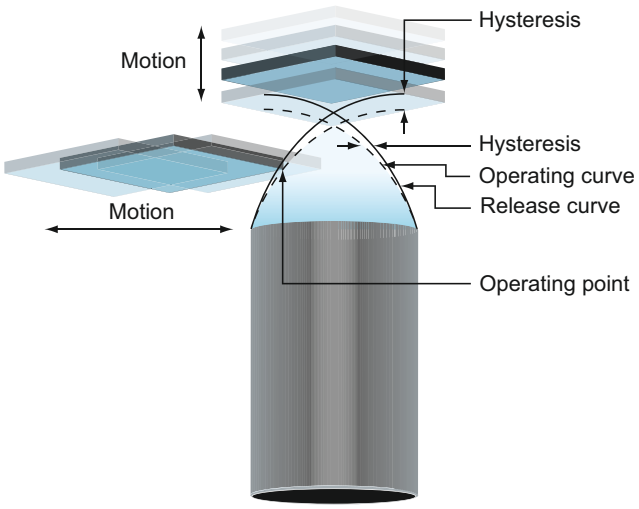
When sensing aluminum foil or non-metallic materials coated with a thin layer of aluminum or copper, the sensing distance achieved may be close to the value of mild steel. Actual S_n depends on the thickness of the layer as well as the alloy composition.



Hysteresis

At approach and removal of the target, there is a difference between operating and release point which is defined as Hysteresis.

Hysteresis is designed into a sensor's characteristics to guard against possible incorrect pick-up due to vibration.



Repeat accuracy (digital sensors)

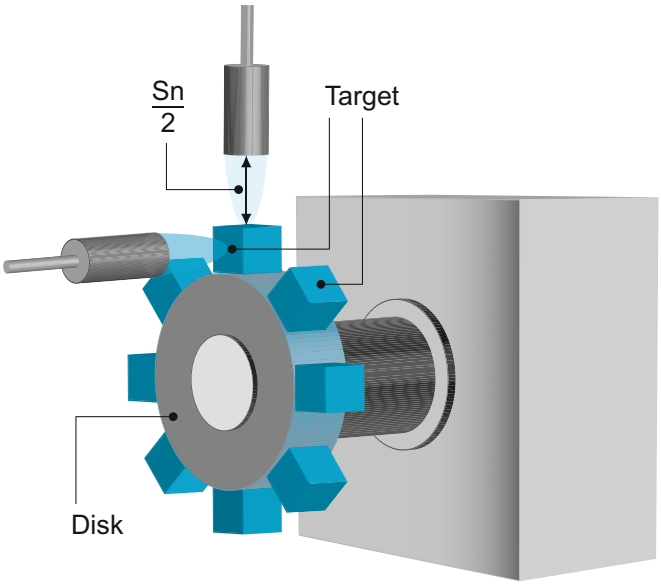
Repeat accuracy is described in the sensor standard EN 60947-5-2, which specifies that reproducibility amounts to 5% when two arbitrary measurements are taken within 8 hours, at a temperature of +23°C ±5 °C, and with a voltage supply that varies less than ±5 %.

Temperature range

The normal temperature range is between -25 °C and +75 °C. Please call should your application require installations in areas where this range may be exceeded.

Switching frequency

Meeting EN 60947-5-2 standards, the switching frequency is the highest possible number of switchings per second.



Protection class

1) Protection from ingress of dust and complete protection against electric shock.

2) Protection from water jets from any direction.

IP 67 includes the IP 65 specification. In addition this class offers protection against water when the housing is immersed in water under defined pressure and time conditions (30 minutes in 1 meter deep water).

Water must not enter in a quantity that will produce harmful effects if the housing is continuously immersed in water and if conditions which are specified between the manufacturer and user are fulfilled. The conditions must however be more difficult than in IP 67.

Protection from ingress of water during high-pressure cleaning with pure water at a water pressure of 8,000 to 10,000 kPa and a water temperature of +80 °C. The pressurization period is 30 seconds per position. Because this test procedure distinctly differs from the other IP tests, devices with the test seal IP 69K do not automatically have protection class IP 67 or IP 68. Solely devices with protection class IP 67 also have the underlying protection classes as well.

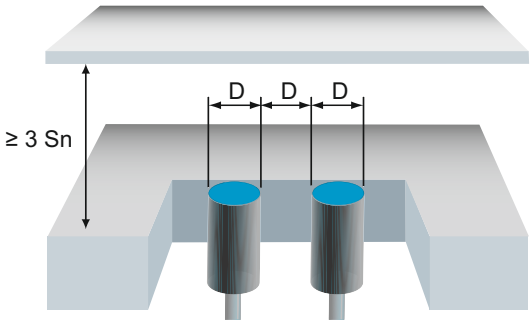
To rule out unintentional interference of the measuring field and to achieve maximum sensing distances, it is required to follow the mounting instructions and to maintain the specified minimum distances. If the minimum distances are undercut, a reduction of the sensing distances is expectable. A sensor test directly at the application is recommended.

Mounting instructions for cylindrical forms

shielded (flush) mounting

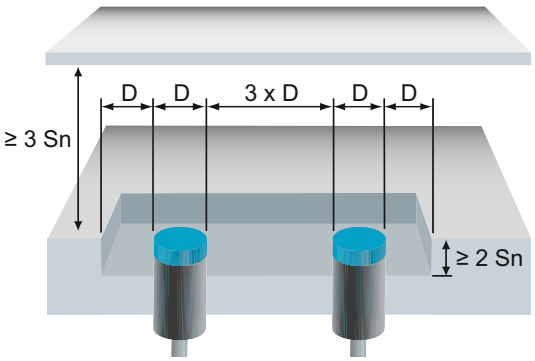
Sensor may be mounted flush in a metal plate.

Choice of carrier material can have an influence on sensing distance.



unshielded (non-flush) mounting

There must be a space equal to the diameter of the sensing head, with no metal interference. Following this rule the electrical field strength is less attenuated, which enables a larger sensing distance.

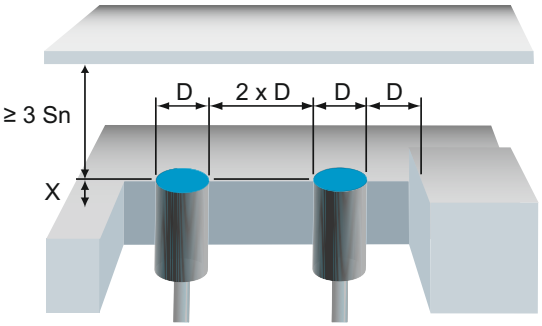


quasi shielded mounting

When mounted in ferromagnetic material these sensors require a space (x) behind the active area that is free of metal.

Sensors can be installed shielded (flush) when mounted in non ferrous materials (colored metals etc.).

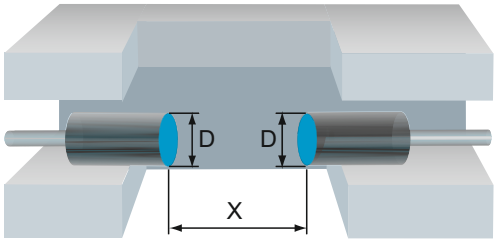
Always read and follow the installation instructions for distance measuring sensors.



x ≥ 1/3 Sn	for ferromagnetic material
x = 0	for all other materials

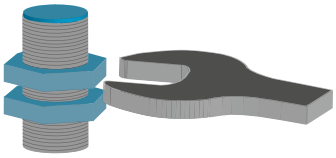
opposite mounting

Minimum distances must be observed to prevent oppositely positioned sensors from affecting each other.



Sensor types	Minimum distance X
Standard sensors	2 x D
DuroProx sensors	3 x D
GammaProx sensors	5 x D

Maximum installation torque



To avoid damage to the proximity switches during mounting, the default torque value should not be exceeded.

Reduce torque values by 30 % at the sensor's face.

Stainless steel thread:	Brass nickel plated thread: Die-cast zinc thread:	Polybutylenterephthalate thread:
M4 = 1,8 Nm	M3 = 0,9 Nm	M12 = 1,5 Nm
M5 = 2 Nm	M8 = 7 Nm	M18 = 3 Nm
M8 = 10 Nm	M12 = 15 Nm	M30 = 15 Nm
M12 = 20 Nm	M18 = 40 Nm	
M18 = 55 Nm	M30 = 200 Nm	

Mounting instructions for housings without threads

Strong, occasional housing loads, like those which occur e.g. during fixing with headless screws, must be avoided (IFRM 03, 04, 06). Incorrect installation can lead to irreversible damage to the proximity switch.

Sensors with a housing diameter of 6.5 mm can be installed optimally with the plastic support bracket 10109474.

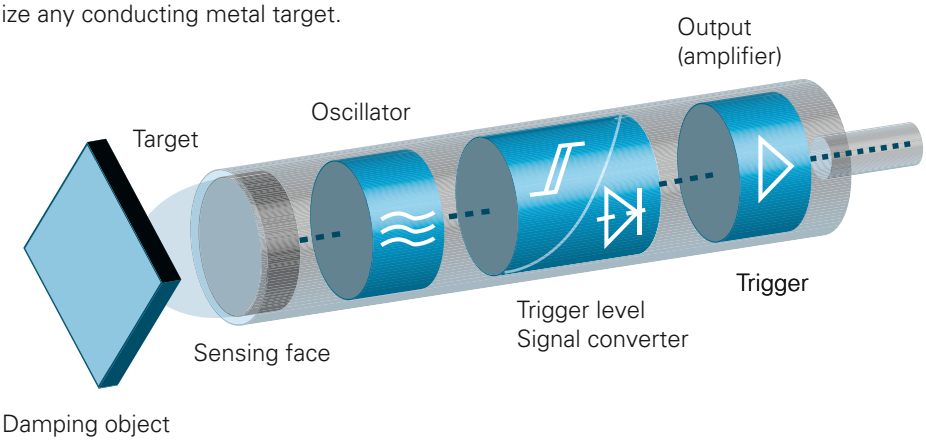
Cable dimensions

Housing ø	Wire diameter	Cable material*
ø 3	3 x 0,05 mm^2	PVC
M5 / ø 4	3 x 0,08 mm^2	PUR
M8 / ø 6,5	3 x 0,14 mm^2	PVC
M12	3 x 0,25 mm^2	PVC
M18	3 x 0,25 / 3 x 0,50 mm^2	PVC
M30	3 x 0,50 mm^2	PVC

* where not otherwise stated

The sensor

Baumer inductive proximity switches are non-contact electronic sensors. Inductive sensors will recognize any conducting metal target.



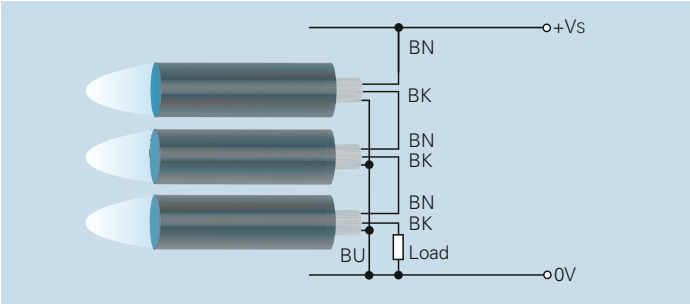
Operation

The oscillator creates a high frequency electromagnetic field, which radiates from the sensing face of the switch. When a conductive metal object enters this electromagnetic field, eddy currents are induced within the metal, causing a change in the amplitude of the oscillations.
The result is a voltage change at the output of the oscillator, which causes the trigger to change state and alter the output state.

Output

Digitally switching sensors are available with a PNP, NPN or Namur output; measuring sensors come with 0 … 10 V or 4 ... 20 mA.

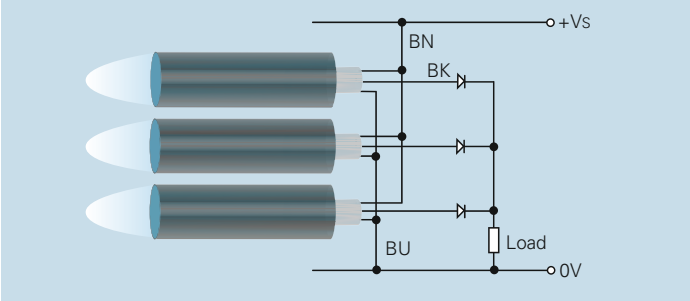
Series switching



3-wire DC (PNP circuit shown)

The voltage drop across each conducting sensor reduces the voltage available to drive the load. The number of proximity switches which can be connected in series is therefore limited and may be worked out by summing the individual voltage drops plus the load requirement.

Parallel switching



3-wire DC

3-wire DC sensors may be connected in parallel as shown. A parallel connection, however, must incorporate a decoupling diode.

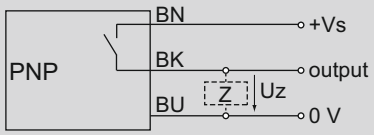
Explanatory notes on the connection diagrams

The specified diagrams indicate the undamped output. A sensor is in a damped state when an object is located in within its scanning range. In the diagrams Z denotes the typical load resistance position; Uz denotes the voltage applied to this load resistance. If Uz = high (≈ +Vs), then current flows; if Uz = low (≈ 0 V), then no current flows via the load resistance. Load resistance between output and +Vs is referred to as pull-up resistance, load resistance between output and 0 V as pull-down resistance.

PNP or NPN output

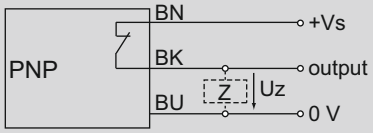
Sensors with a PNP or NPN output have a 3-wire design (+Vs, output and 0 V) and operate with direct current (DC). The load resistance of PNP sensors is between output and 0 V (pull-down resistance), while load resistance of NPN sensors is between +Vs and output (pull-up resistance). As a result, the PNP output is connected to the positive voltage supply during switching (positive switching output), whereas the NPN output is connected to the negative voltage supply during switching (negative switching output).
Normally open contacts and/or normally closed contacts define the switching function. Normally open contacts are referred to as normally open (NO), normally closed contacts as normally closed (NC). During damping with an object, sensors with normally open function establish contact connections (Uz = high), while sensors with normally closed function disconnect connections (Uz = low).

PNP normally open (NO)



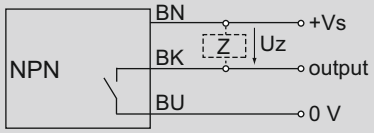
State	Uz	LED
undamped	low	off
damped	high	on

PNP normally closed (NC)



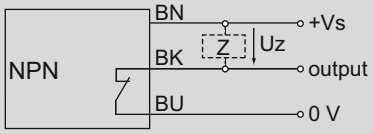
State	Uz	LED
undamped	high	on
damped	low	off

NPN normally open (NO)



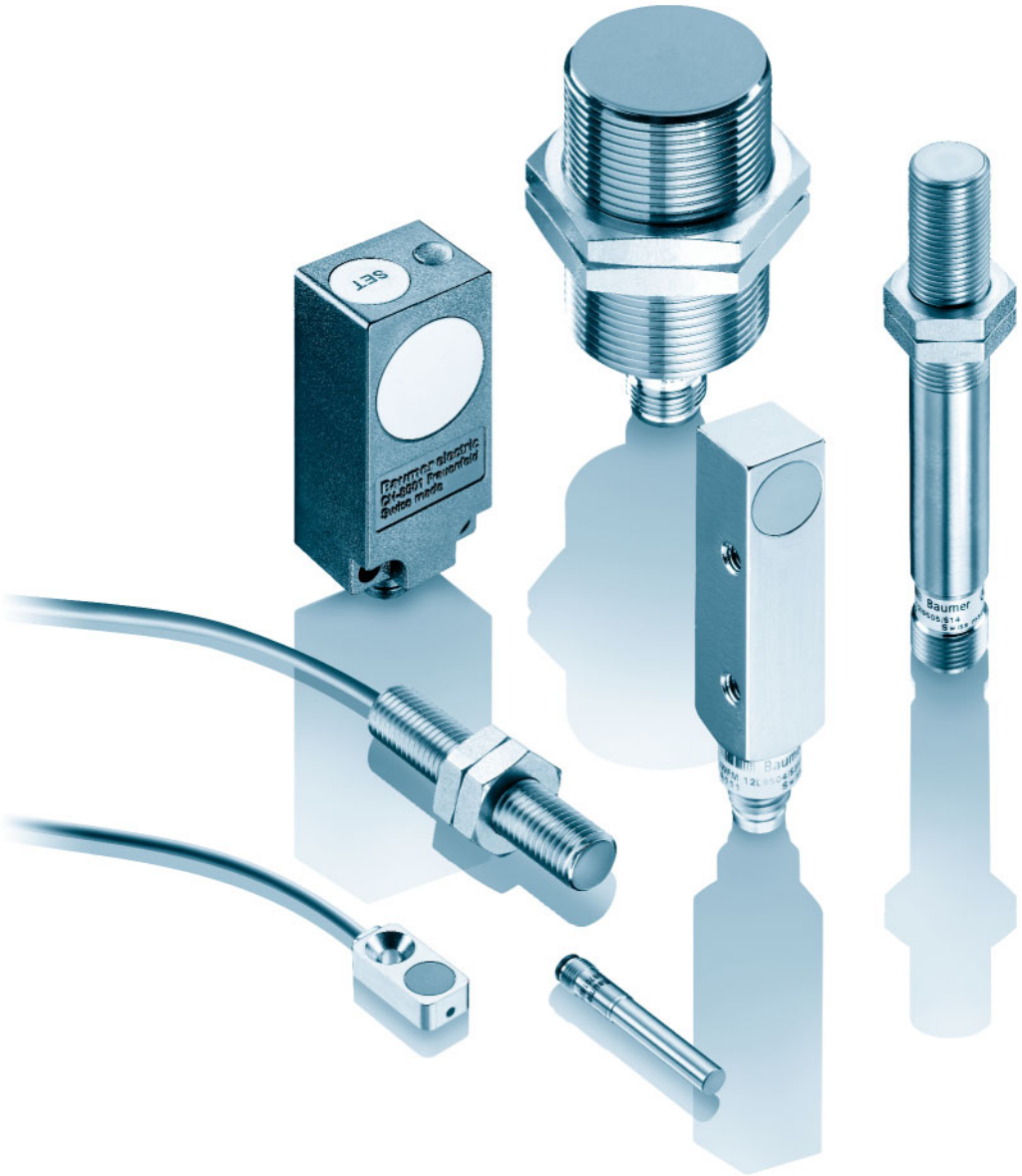
State	Uz	LED
undamped	low	off
damped	high	on

NPN normally closed (NC)



State	Uz	LED
undamped	high	on
damped	low	off

Inductive distance measuring sensors
AlphaProx



Cylindrical designs

product family	IWRM 04	IWRM 06	IWRM 08	IWRM 12	IPRM 12	IWRM 12	IWRM 12Z
							
	AlphaProx	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*
mounting type	quasi-flush	quasi-flush	quasi-flush	flush	quasi-flush	quasi-flush	quasi-flush
measuring distance Sd	0 ... 1 mm	0 ... 2 mm	0 ... 2 mm	1 ... 1,5 mm 1 ... 2 mm	0,5 ... 1,5 mm 0 ... 2 mm 0 ... 3 mm	0 ... 4 mm	0 ... 4 mm
dimension	4 mm	6,5 mm	8 mm	12 mm	12 mm	12 mm	12 mm
housing length	30 mm	40 mm 46 mm	40 mm 46 mm	50 mm	90 mm	50 mm	60 mm
voltage output	■	■	■	■		■	
voltage output / PNP							■
current output		■	■		■	■	
cable, 2 m		■	■	■			
connector M5	■						
connector M8		■	■				
connector M12					■	■	■
stainless steel	■	■	■				
brass nickel plated				■		■	■
steel (9 SMn (Pb) 28/36)					■		
page	**36**	**37**	**38**	**42**	**41**	**39**	**43**

ATEX/Outdoor

product family	IWRM 12 ATEX	IWRM 18	IWRR 18
			
	AlphaProx	*AlphaProx*	*AlphaProx*
Outdoor design		■	■
ATEX 2D	■		
Ecolab			■
mounting type	quasi-flush	quasi-flush	quasi-flush
measuring distance Sd	0 ... 4 mm	0 ... 8 mm	0 ... 7 mm
dimension	12 mm	18 mm	18 mm
housing length	50 mm	60 mm	60 mm
current output	■	■	■
connector M12	■	■	■
brass nickel plated	■	■	
stainless steel 1.4404 (V4A)			■
page	**40**	**47**	**48**

IWRM 18	IWRM 18	IWRM 18Z	IWRM 30	IWRM 30	IWRM 30Z
					
AlphaProx	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*
quasi-flush	flush	quasi-flush	flush	quasi-flush	quasi-flush
0 ... 8 mm	2 ... 4 mm 2 ... 5 mm	0 ... 8 mm	5 ... 9 mm 5 ... 10 mm	0 ... 16 mm	0 ... 16 mm
18 mm	18 mm	18 mm	30 mm	30 mm	30 mm
60 mm	31,5 mm 65 mm	60 mm	60 mm	63 mm	62 mm
■	■		■	■	
		■			■
■	■		■	■	
	■		■		
■		■		■	■
■	■	■	■	■	■
44	45	46	49	50	51

Rectangular designs

product family	**IWFM 05**	**IWFM 08**	**IWFM 12**	**IWFM 12**	**IWFM 18**	**IWFM 20**	**IWFM 20**
							
	AlphaProx	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*	*AlphaProx*
mounting type	quasi-flush	quasi-flush	flush	flush	flush	flush	flush
measuring distance Sd	0 ... 1 mm	0 ... 2 mm	0 ... 4 mm	1 ... 2 mm	0 ... 4 mm	2 ... 3 mm 2 ... 5 mm	0 ... 2 mm
dimension	5 mm	8 mm	12 mm	12 mm	18 mm	20 mm	20 mm
housing length	32 mm	16 mm	60 mm	55 mm	30 mm	35 mm	30 mm
voltage - / current output			■		■		
voltage output	■	■		■	■	■	■
voltage output / PNP							
current output						■	
cable, 2 m		■		■			
flylead connector M8		■					■
connector M5	■						
connector M8			■		■	■	
stainless steel	■						
brass nickel plated			■	■	■	■	■
polyester							
die-cast zinc nickel plated		■					
page	**52**	**53**	**54**	**55**	**56**	**57**	**58**

IWFK 20

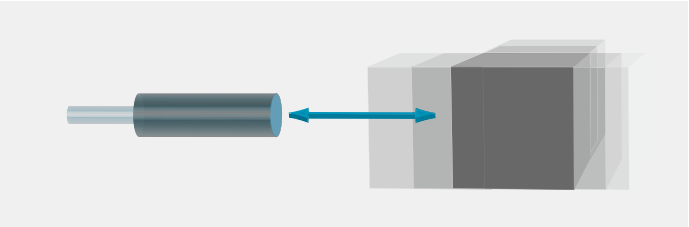
AlphaProx
quasi-flush
0 ... 10 mm
20 mm
42 mm
■
■
■
59

Function

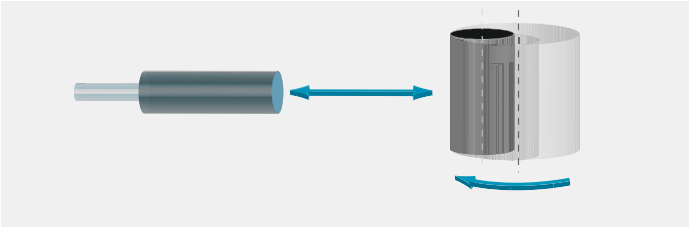
Inductive sensors with analog output signals are characterized by their short response times, high resolution and linearity as well as their outstanding repeat accuracy. The output current and voltage values are proportional to the distance between the sensor and the object being detected. In other words, they represent absolute measured values corresponding to the distance between the active surface and the object. These properties make inductively measuring linear sensors extremely interesting for numerous applications in the area of measurement and control engineering.

Typical applications

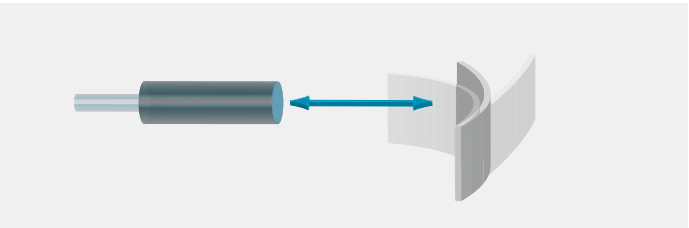
Travel / position / displacement



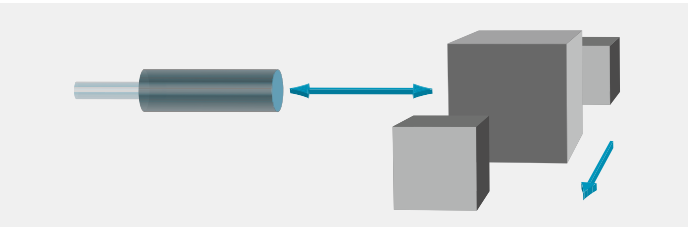
Diameter / eccentricity



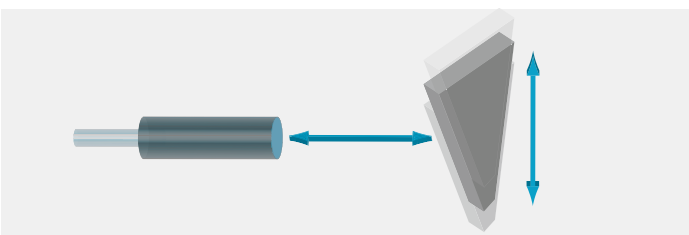
Deflection / deformation



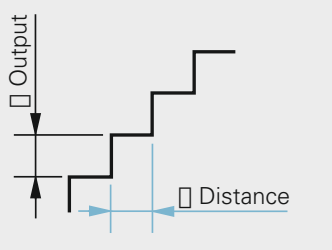
Size comparison / measurement tolerance



Taper / ramp

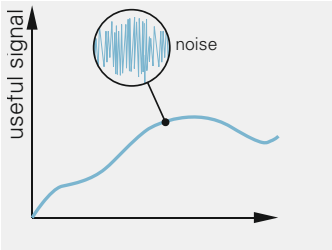


Resolution in general



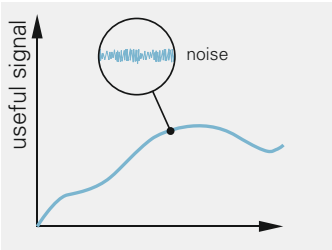
Resolution represents the smallest possible change in distance which will produce a measurable signal change at the sensor's output. Resolution can be impaired by high-frequency electrical interference (noise) or by the resolution of digital/analog converters.

Dynamic resolution



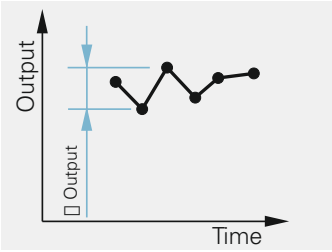
Signal noise exerts full effect on signal processing during very rapid measurements (high scan rates). Filtration without influencing the useful signal is only possible to a limited extent, if at all.

Static resolution



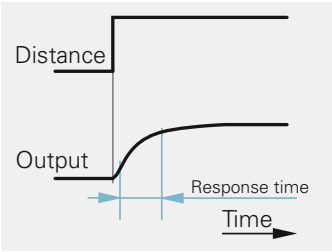
Very slow object movements (low scan rates) such as the temperature expansion of shafts allow the high-frequency interference to be filtered. The carrier signal is not influenced by this filtration. Using this technique significantly increases the resolution when compared to dynamic measurements.

Repeat accuracy



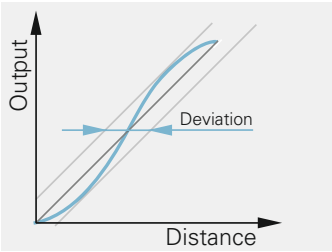
Repeat accuracy means the difference between the measured values of suc-cessive measurements within a period of 8 hours at an ambient temperature of 23 °C ± 5 °C.

Response time



The time which the signal output of a sensor requires to rise from 10 % to 90 % of the maximum signal level is called the response time.

FS Linearity



Linearity defines the deviation between the output signal and a straight line. It is given as a percentage of the measuring range end value (FS or Full Scale). The following alternatives are available for applications where the indicated linearity is insufficient:

- Sensors with linearized output curves
- Polynomials for the mathematical linearization of the sensor curve's in the controller

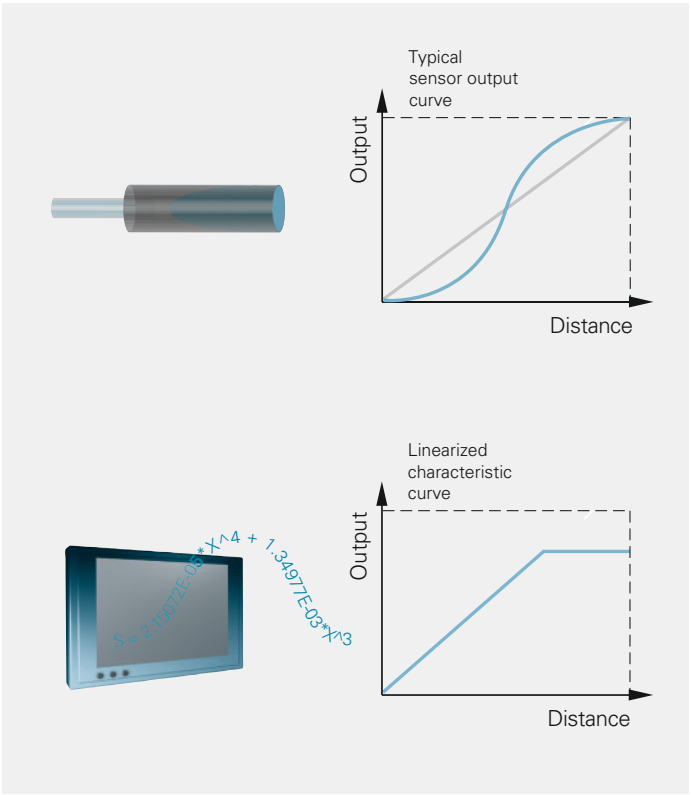
Signal linearization with polynomials

Polynomials represent a mathematical function which converts a typical inductive analog sensor output curve into a linear signal. For example, it is integrated in the software of a programmable logic control to change the s-shaped sensor signal into a straight line.

Polynomials are used when ...

- a linear signal progression is required across the entire signal range
- rapid measurements are to be performed
- no sensors with linear output curves are available for the intended measuring range
- an economical solution is desired

A variety of sensors with linear output curves are also available as alternatives.



Functions

The following parameters can be altered using the Teach-in function:

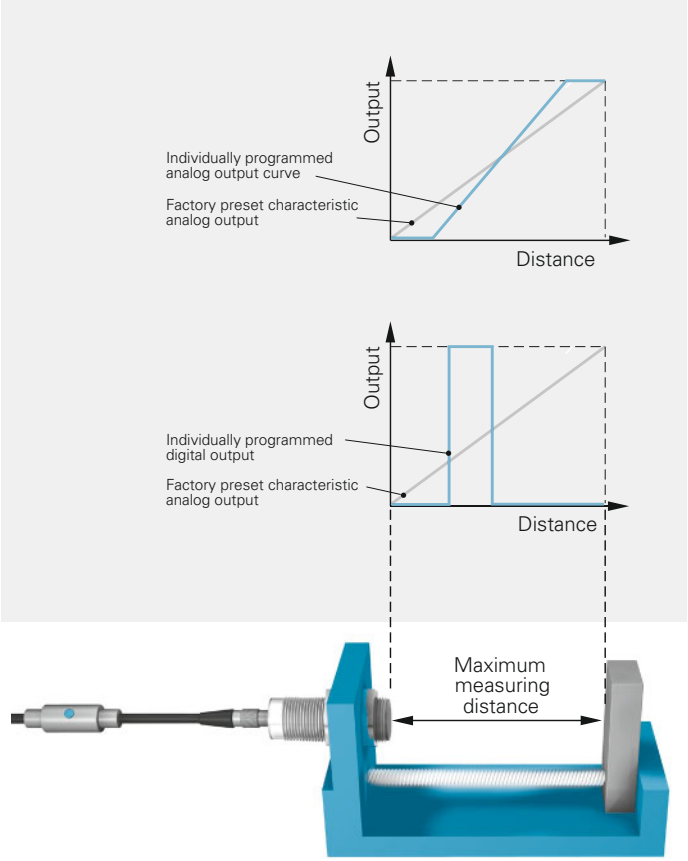
- Analog output (measuring range)
- Digital output (switching window)

Procedure

The same Teach-in function menu structure is used for all sensors from Baumer, with the primary emphasis being on the simplest operation possible. This function allows the measuring range to be freely programmed within predefined limits. If, for example, a small measuring range with a large signal amplitude is desired, the range can be limited to merely a few millimeters. If necessary, the direction of the analog output's flow can be inverted, too.

In addition, the points at which one of the digital outputs switches on and off can be specified. These can lie either within or outside the individually programmed measuring range.

Programmable output curve



Accessories

Diverse accessories, including an external teach-in adapter as well as a 3-point converter which enables conversion of an analog signal into several digital signals, are available for analog sensors.

Sd = 0 ... 1 mm

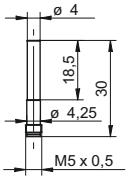
- compact housing design
- very high resolution
- short response time

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 1 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,005 mm
linearity error	± 100 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 0,5 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	15 mA
output circuit	voltage output
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
housing material	stainless steel
dimension	4 mm
housing length	30 mm
connection types	connector M5
ambient conditions	
operating temperature	10 ... +60 °C
protection class	IP 67

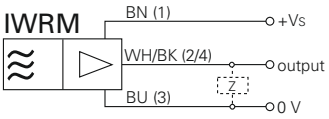
connectors and mating connectors	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference
IWRM 04U9701/S05

dimension drawing



connection diagram



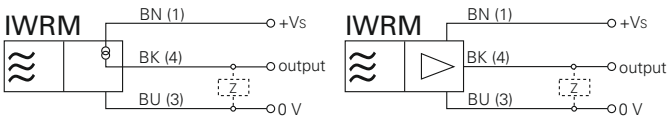
Sd = 0 ... 2 mm

- very high resolution
- short response time

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 2 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,02 mm
linearity error	± 100 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 0,7 ms
voltage supply range +Vs	15 ... 30 VDC
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	25 mA
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
current output	
current consumption max. (no load)	35 mA
output signal	0 ... 10 mA
load resistance +Vs min.	< 910 Ohm
load resistance +Vs max.	< 2400 Ohm
mechanical data	
type	cylindrical smooth
housing material	stainless steel
dimension	6,5 mm
ambient conditions	
operating temperature	10 ... +60 °C
protection class	IP 67

dimension drawings

connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

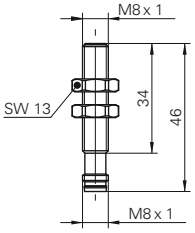
order reference	output circuit	housing length	connection types
IWRM 06I9501	current output	40 mm	cable, 2 m
IWRM 06I9501/S35	current output	46 mm	connector M8
IWRM 06U9501	voltage output	40 mm	cable, 2 m
IWRM 06U9501/S35	voltage output	46 mm	connector M8

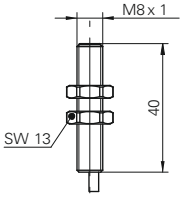
Sd = 0 ... 2 mm

- very high resolution
- short response time

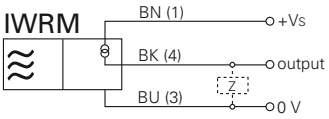
general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 2 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,02 mm
linearity error	± 100 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 0,5 ms
voltage supply range +Vs	15 ... 30 VDC
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	25 mA
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
current output	
current consumption max. (no load)	35 mA
output signal	0 ... 10 mA
load resistance +Vs min.	< 910 Ohm
load resistance +Vs max.	< 2400 Ohm
mechanical data	
type	cylindrical threaded
housing material	stainless steel
dimension	8 mm
ambient conditions	
operating temperature	10 ... +60 °C
protection class	IP 67

dimension drawings





connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10151719	Sensofix series 08
for details: see accessories section	

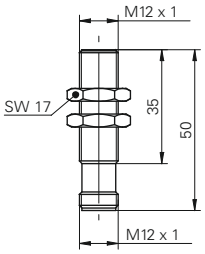
order reference	output circuit	housing length	connection types
IWRM 08I9501	current output	40 mm	cable, 2 m
IWRM 08I9501/S35	current output	46 mm	connector M8
IWRM 08U9501	voltage output	40 mm	cable, 2 m
IWRM 08U9501/S35	voltage output	46 mm	connector M8

Sd = 0 ... 4 mm

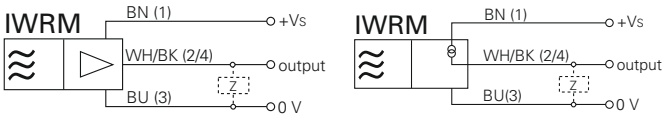
- large measuring distance
- very high resolution
- short response time

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 4 mm
linearity error	± 160 µm
temperature drift	± 4 % (Full Scale)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	20 mA
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
current output	
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	12 mm
housing length	50 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10151720	Sensofix series 12 round
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference	resolution	repeat accuracy	output circuit	response time (factory characteristic)
IWRM 12I9704/S14	< 0,001 mm (stat.) < 0,005 mm (dynam.)	< 0,01 mm	current output	< 2 ms
IWRM 12I9705/S14	< 0,0005 mm (stat.) < 0,001 mm (dynam.)	< 0,005 mm	current output	< 30 ms
IWRM 12U9704/S14	< 0,001 mm (stat.) < 0,005 mm (dynam.)	< 0,01 mm	voltage output	< 2 ms
IWRM 12U9705/S14	< 0,0005 mm (stat.) < 0,001 mm (dynam.)	< 0,005 mm	voltage output	< 30 ms

Sd = 0 ... 4 mm

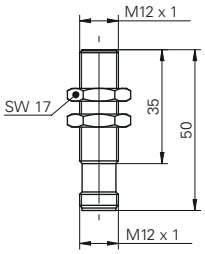
- ATEX certification
- very high resolution

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 4 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,01 mm
linearity error	± 160 µm
temperature drift	± 4 % (Full Scale)
approvals/certificates	ATEX 2D
electrical data	
response time (factory characteristic)	< 2 ms
voltage supply range +Vs	15 ... 27 VDC
current consumption max. (no load)	20 mA
output circuit	current output
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
Maximal zulässige Verlustleistung	< 1,35 W
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	12 mm
housing length	50 mm
connection types	connector M12
tightening torque	15 Nm
ambient conditions	
protection class	IP 67
safe maximum values	
marking	II 2D Ex tb IIIC T100°C Db IP6X
operating temperature Ta	-10 ... +50 °C

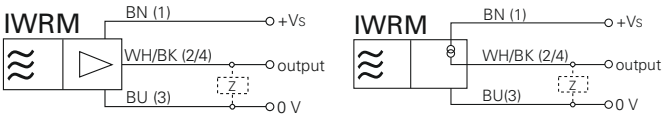
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference
IWRM 12I9704/S14X

dimension drawing



connection diagrams

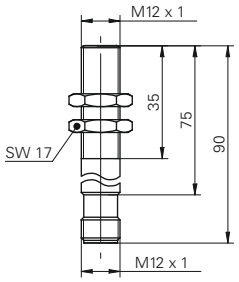


Sd = 0 ... 3 mm

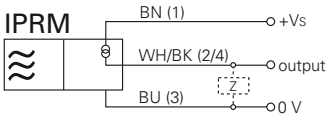
- very high resolution
- high repeat accuracy
- minimized temperature drift

general data	
mounting type	quasi-flush
measuring speed	< 1 mm / ms
repeat accuracy (Sd)	< 1 µm
electrical data	
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	50 mA
output circuit	current output
output signal	0 ... 20 mA
load resistance +Vs min.	< 100 Ohm
load resistance +Vs max.	< 400 Ohm
voltage drop Vd	< 7 VDC
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
dimension	12 mm
housing length	90 mm
housing material	steel (9 SMn (Pb) 28/36)
material (sensing face)	ceramic
connection types	connector M12
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawing



connection diagram



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

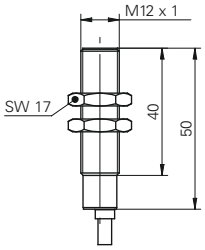
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	measuring distance Sd	linearity error	temperature drift	resolution (RMS)
IPRM 12I9504/S14	0,5 ... 1,5 mm	± 50 µm	± 10 µm	< 0,01 µm (stat. 10 Hz) < 0,06 µm (dynam. 520 Hz) < 0,004 µm (range center)
IPRM 12I9505/S14	0 ... 2 mm	± 60 µm	± 10 µm	< 0,012 µm (stat. 10 Hz) < 0,065 µm (dynam. 520 Hz) < 0,006 µm (range center)
IPRM 12I9506/S14	0 ... 3 mm	± 150 µm	± 25 µm	< 0,08 µm (stat. 10 Hz) < 0,17 µm (dynam. 520 Hz) < 0,013 µm (range center)

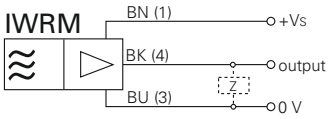
Sd = 1 ... 2 mm

general data	
mounting type	flush
measuring speed	< 0,5 mm / ms
repeat accuracy	< 0,02 mm
temperature coefficient	1 µm / (K mm)
electrical data	
voltage supply range +Vs	14 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output
output signal	1 ... 9 VDC
load resistance	> 1000 Ohm
residual output ripple	< 0,5 % Vs
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	12 mm
housing length	50 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawing



connection diagram



accessories

10151720	Sensofix series 12 round
for details: see accessories section	

order reference	measuring distance Sd	reference distance	linearity error
IWRM 12U9501	1 ... 2 mm	1,35 ... 1,65 mm	± 80 µm
IWRM 12U9502	1 ... 1,5 mm	1,15 ... 1,35 mm	± 60 µm

Sd = 0 ... 4 mm

- external Teach-in
- integrated Analog- and switching output
- linear analog output

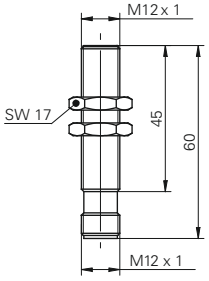
general data	
mounting type	quasi-flush
special type	2 adjust. switching points
measuring distance Sd	0 ... 4 mm
resolution	< 0,005 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,01 mm
adjustment	external Teach-in
linearity error	± 16 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2,5 ms
response time (teach in characteristic)	< 3,1 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output / PNP
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
output current	< 10 mA (PNP)
voltage drop Vd	< 5 VDC (PNP)
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	12 mm
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

connectors and mating connectors	
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
additional cable connectors and field wireable connectors: see accessories	

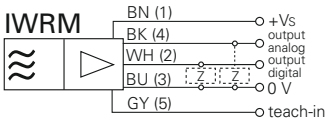
accessories	
10151720	Sensofix series 12 round
10141584	Teach-in Adapter M12
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference
IWRM 12Z8704/S14C

dimension drawing



connection diagram

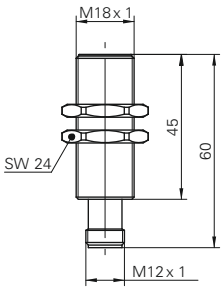


Sd = 0 ... 8 mm

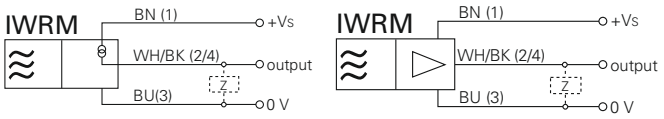
- large measuring distance
- short response time
- extended immunity against electrical interference

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 8 mm
resolution	< 0,005 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
linearity error	± 400 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
short circuit protection	yes
reverse polarity protection	yes
voltage output	
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
current output	
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	18 mm
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

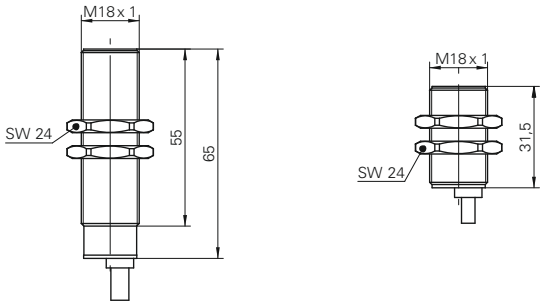
accessories	
10151658	Sensofix series 18
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference	output circuit
IWRM 18I9704/S14	current output
IWRM 18U9704/S14	voltage output

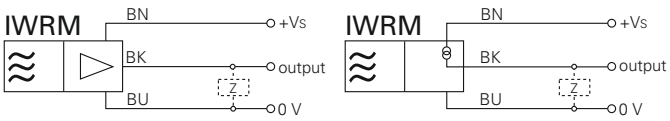
Sd = 2...5 mm

general data	
mounting type	flush
measuring speed	< 1 mm / ms
repeat accuracy	< 0,02 mm
temperature coefficient	1 µm / (K mm)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
residual output ripple	< 0,5 % Vs
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	20 mA
output signal	1 ... 9 VDC
load resistance	> 1000 Ohm
current output	
current consumption max. (no load)	35 mA
output signal	4 ... 20 mA
load resistance +Vs min.	< 500 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	18 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawings



connection diagrams



accessories	
10151658	Sensofix series 18
for details: see accessories section	

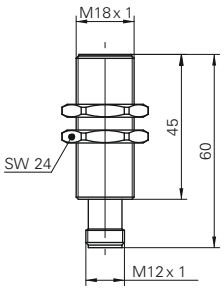
order reference	measuring distance Sd	reference distance	output circuit	housing length	linearity error
IWRM 18I9501	2 ... 5 mm	3,25 ... 3,75 mm	current output	65 mm	± 100 µm
IWRM 18I9502	2 ... 4 mm	2,8 ... 3,2 mm	current output	65 mm	± 80 µm
IWRM 18I9511	2 ... 5 mm	3,25 ... 3,75 mm	current output	31,5 mm	± 100 µm
IWRM 18U9501	2 ... 5 mm	3,25 ... 3,75 mm	voltage output	65 mm	± 100 µm
IWRM 18U9502	2 ... 4 mm	2,8 ... 3,2 mm	voltage output	65 mm	± 80 µm
IWRM 18U9511	2 ... 5 mm	3,25 ... 3,75 mm	voltage output	31,5 mm	± 100 µm
IWRM 18U9512	2 ... 4 mm	2,8 ... 3,2 mm	voltage output	31,5 mm	± 80 µm

Sd = 0 ... 8 mm

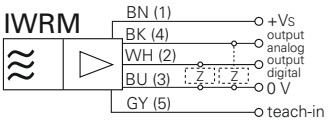
- external Teach-in
- integrated Analog- and switching output
- linear analog output

general data	
mounting type	quasi-flush
special type	2 adjust. switching points
measuring distance Sd	0 ... 8 mm
resolution	< 0,01 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
adjustment	external Teach-in
linearity error	± 32 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2 ms
response time (teach in characteristic)	< 3,1 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output / PNP
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
output current	< 10 mA (PNP)
voltage drop Vd	< 5 VDC (PNP)
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	18 mm
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagram



connectors and mating connectors	
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10151658	Sensofix series 18
10141584	Teach-in Adapter M12
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference
IWRM 18Z8704/S14C

Sd = 0 ... 8 mm

- large measuring distance
- operating temperature -40 … +70°C

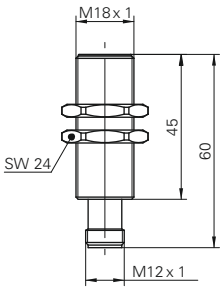
general data	
mounting type	quasi-flush
special type	Outdoor design
measuring distance Sd	0 ... 8 mm
resolution	< 0,005 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
linearity error	± 400 µm
temperature drift	± 10 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	40 mA
output circuit	current output
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-40 ... +70 °C
protection class	IP 67

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

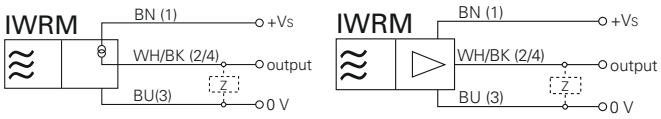
accessories	
10151658	Sensofix series 18
for details: see accessories section	

order reference
IWRM 18I97T4/S14

dimension drawing



connection diagrams



Sd = 0 ... 7 mm

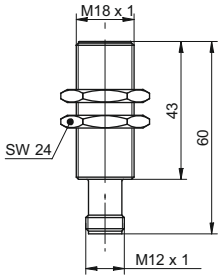
- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +70°C

general data	
mounting type	quasi-flush
special type	Outdoor design Washdown design
measuring distance Sd	0 ... 7 mm
resolution	< 0,005 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
linearity error	± 350 µm
temperature drift	± 10 % (Full Scale)
approvals/certificates	Ecolab
electrical data	
response time (factory characteristic)	< 2 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	40 mA
output circuit	current output
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A)
dimension	18 mm
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-40 ... +70 °C
cleaning temperature	70 ... +85 °C (30 min/day)
protection class	IP 68/69K & proTect+

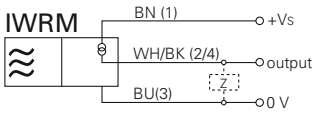
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

order reference
IWRR 18I97T4/S14

dimension drawing



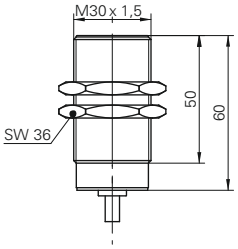
connection diagram



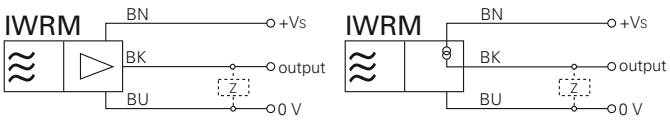
Sd = 5 ... 10 mm

general data	
mounting type	flush
measuring speed	< 1,5 mm / ms
repeat accuracy	< 0,02 mm
temperature coefficient	1 µm / (K mm)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
residual output ripple	< 0,5 % Vs
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	20 mA
output signal	1 ... 9 VDC
load resistance	> 1000 Ohm
current output	
current consumption max. (no load)	35 mA
output signal	4 ... 20 mA
load resistance +Vs min.	< 500 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	30 mm
housing length	60 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawing



connection diagrams



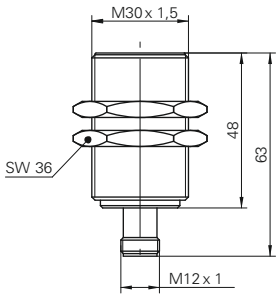
order reference	measuring distance Sd	reference distance	output circuit	linearity error
IWRM 30I9501	5 ... 10 mm	7,1 ... 7,9 mm	current output	± 200 µm
IWRM 30U9501	5 ... 10 mm	7,1 ... 7,9 mm	voltage output	± 200 µm
IWRM 30U9502	5 ... 9 mm	6,7 ... 7,3 mm	voltage output	± 150 µm

Sd = 0 ... 16 mm

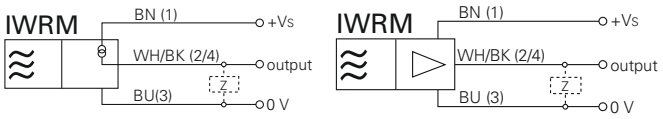
- large measuring distance
- short response time
- extended immunity against electrical interference

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 16 mm
resolution	< 0,005 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
linearity error	± 1600 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
short circuit protection	yes
reverse polarity protection	yes
voltage output	
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
current output	
output signal	4 ... 20 mA
load resistance +Vs min.	< 330 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	30 mm
housing length	63 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference	output circuit
IWRM 30I9704/S14	current output
IWRM 30U9704/S14	voltage output

Sd = 0 ... 16 mm

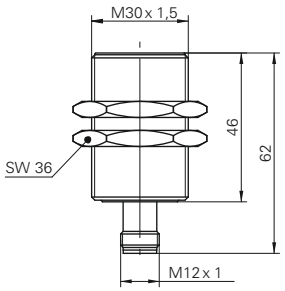
- external Teach-in
- integrated analog and switching output
- linear analog output

general data	
mounting type	quasi-flush
special type	2 adjust. switching points
measuring distance Sd	0 ... 16 mm
resolution	< 0,01 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
adjustment	external Teach-in
linearity error	± 160 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2,5 ms
response time (teach in characteristic)	< 3,1 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output / PNP
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
output current	< 10 mA (PNP)
voltage drop Vd	< 5 VDC (PNP)
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	30 mm
housing length	62 mm
connection types	connector M12
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

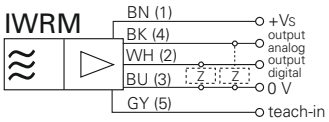
connectors and mating connectors	
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10152386	Sensofix series 30
10141584	Teach-in Adapter M12
10163979	Converter 3-point (M12)
for details: see accessories section	

order reference
IWRM 30Z8704/S14C

dimension drawing



connection diagram



Sd = 0 ... 1 mm

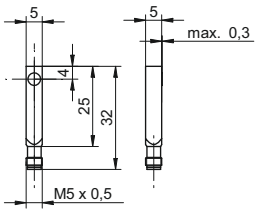
- very high resolution
- short response time

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 1 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,01 mm
linearity error	± 70 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 0,5 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	15 mA
output circuit	voltage output
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	stainless steel
dimension	5 mm
housing length	32 mm
connection types	connector M5
ambient conditions	
operating temperature	10 ... +60 °C
protection class	IP 67

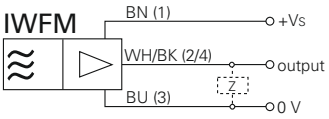
connectors and mating connectors	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference
IWFM 05U9701/S05

dimension drawing



connection diagram



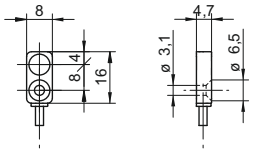
Sd = 0 ... 2 mm

- very high resolution
- short response time

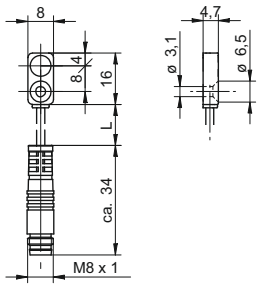
general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 2 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,02 mm
linearity error	± 100 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 1 ms
current consumption max. (no load)	10 mA
output circuit	voltage output
load resistance	> 3000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	die-cast zinc nickel plated
dimension	8 mm
housing length	16 mm
ambient conditions	
operating temperature	10 ... +60 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawing

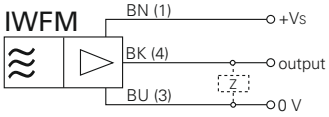


flylead connector version



standard cable length 200 mm (L)

connection diagram



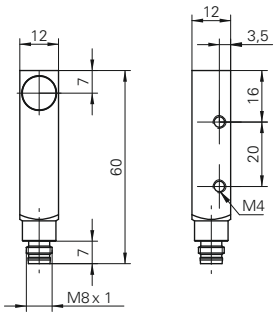
order reference	output signal	voltage supply range +Vs	connection types
IWFM 08U6501	0 ... 5 VDC	10,8 ... 14,4 VDC	cable, 2 m
IWFM 08U6501/KS35	0 ... 5 VDC	10,8 ... 14,4 VDC	flylead connector M8
IWFM 08U9501	0 ... 10 VDC	15 ... 30 VDC	cable, 2 m
IWFM 08U9501/KS35	0 ... 10 VDC	15 ... 30 VDC	flylead connector M8

Sd = 0 ... 4 mm

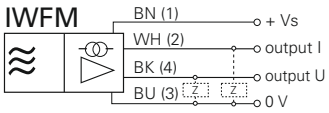
- very high resolution
- short response time
- integrated current- and voltage output

general data	
mounting type	flush
measuring distance Sd	0 ... 4 mm
linearity error	± 4 % (S = 0,5 ... 4 mm Full Scale)
temperature drift	± 4 % (Full Scale)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	40 mA
output circuit	voltage - / current output
output signal	0 ... 10 V / 4 ... 20 mA
load resistance	> 1000 Ohm (Uout) / 330 ... 1000 Ohm (Iout)
voltage drop Vd	< 7,2 VDC (Iout)
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	12 mm
housing length	60 mm
connection types	connector M8
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagram



connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

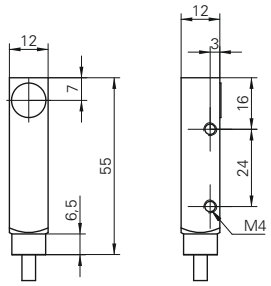
order reference	resolution	repeat accuracy	response time (factory characteristic)
IWFM 12L9504/S35A	< 0,005 mm	< 0,01 mm	< 2 ms
IWFM 12L9505/S35A	< 0,001 mm	< 0,005 mm	< 30 ms

Sd = 1 ... 2 mm

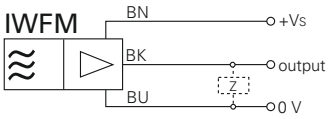
general data	
mounting type	flush
measuring distance Sd	1 ... 2 mm
reference distance	1,35 ... 1,65 mm
measuring speed	< 0,5 mm / ms
repeat accuracy	< 0,02 mm
linearity error	± 80 µm
temperature coefficient	1 µm / (K mm)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output
output signal	1 ... 9 VDC
load resistance	> 1000 Ohm
residual output ripple	< 0,5 % Vs
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	12 mm
housing length	55 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

order reference
IWFM 12U9501/O1

dimension drawing



connection diagram

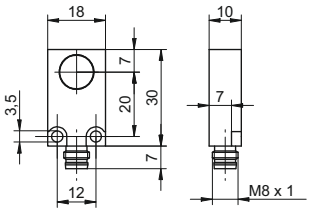


Sd = 0 ... 4 mm

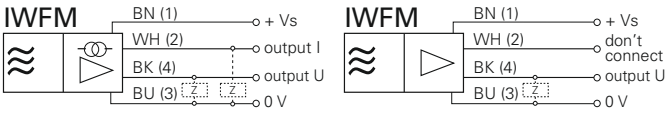
- very high resolution
- short response time
- linear analog output

general data	
mounting type	flush
measuring distance Sd	0 ... 4 mm
temperature drift	± 5 % (Full Scale)
voltage - / current output	
linearity error	± 4 % (S = 0,5 ... 4 mm Full Scale)
voltage output	
linearity error	± 0,4 %
electrical data	
voltage supply range +Vs	15 ... 30 VDC
short circuit protection	yes
reverse polarity protection	yes
voltage - / current output	
current consumption max. (no load)	40 mA
output signal	0 ... 10 V / 4 ... 20 mA
load resistance	> 1000 Ohm (Uout) / 330 ... 1000 Ohm (Iout)
voltage drop Vd	< 7,2 VDC (Iout)
voltage output	
current consumption max. (no load)	20 mA
output signal	0 ... 10 VDC
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	18 mm
housing length	30 mm
connection types	connector M8
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

dimension drawing



connection diagrams



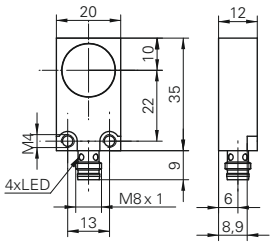
connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10152385	Sensofix series 18/20 inductive rectangular
for details: see accessories section	

order reference	resolution	repeat accuracy	output circuit	response time (factory characteristic)	linearity error
IWFM 18L9504/S35A	< 0,005 mm	< 0,01 mm	voltage - / current output	< 2 ms	± 4 % (S = 0,5 ... 4 mm Full Scale)
IWFM 18L9505/S35A	< 0,001 mm	< 0,05 mm	voltage - / current output	< 30 ms	± 4 % (S = 0,5 ... 4 mm Full Scale)
IWFM 18U7504/S35A	< 0,005 mm	< 0,01 mm	voltage output	< 2,5 ms	± 0,4 %

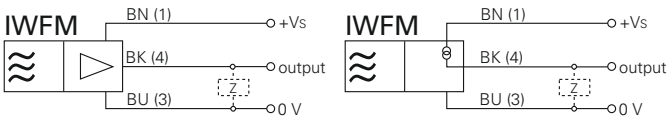
Sd = 2 ... 5 mm

general data	
mounting type	flush
measuring speed	< 1 mm / ms
repeat accuracy	< 0,01 mm
temperature coefficient	1 µm / (K mm)
electrical data	
voltage supply range +Vs	15 ... 30 VDC
residual output ripple	< 0,5 % Vs
short circuit protection	yes
reverse polarity protection	yes
voltage output	
current consumption max. (no load)	20 mA
output signal	1 ... 9 VDC
load resistance	> 1000 Ohm
current output	
current consumption max. (no load)	35 mA
output signal	4 ... 20 mA
load resistance +Vs min.	< 500 Ohm
load resistance +Vs max.	< 1000 Ohm
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	20 mm
housing length	35 mm
connection types	connector M8
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10152385	Sensofix series 18/20 inductive rectangular
for details: see accessories section	

order reference	measuring distance Sd	reference distance	output circuit	linearity error
IWFM 20I9501/S35	2 ... 5 mm	3,25 ... 3,75 mm	current output	± 100 µm
IWFM 20I9503/S35	2 ... 3 mm	2,35 ... 2,65 mm	current output	± 60 µm
IWFM 20U9501/S35	2 ... 5 mm	3,25 ... 3,75 mm	voltage output	± 100 µm
IWFM 20U9503/S35	2 ... 3 mm	2,35 ... 2,65 mm	voltage output	± 60 µm

Sd = 0 ... 2 mm

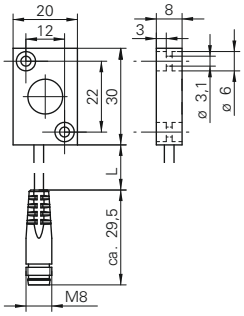
- small linearity error
- very short response time

general data	
mounting type	flush
measuring distance Sd	0 ... 2 mm
resolution	< 0,001 mm (stat.) < 0,005 mm (dynam.)
repeat accuracy	< 0,01 mm
linearity error	± 40 µm
temperature drift	± 2 % (Full Scale)
electrical data	
response time (factory characteristic)	< 0,5 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	20 mm
housing length	30 mm
connection types	flylead connector M8
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

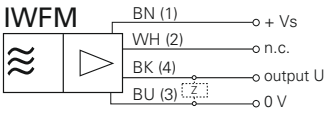
order reference
IWFM 20U9509/KS35AP

dimension drawing



standard cable length 200 mm (L)

connection diagram



Sd = 0 ... 10 mm

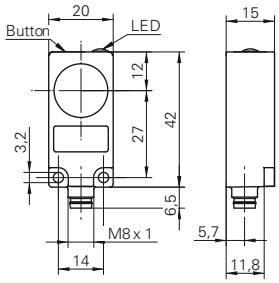
- internal Teach-in
- integrated Analog- and switching output
- linear analog output

general data	
mounting type	quasi-flush
measuring distance Sd	0 ... 10 mm
resolution	< 0,01 mm (stat.) < 0,01 mm (dynam.)
repeat accuracy	< 0,015 mm
adjustment	Teach-in
linearity error	± 50 µm
temperature drift	± 5 % (Full Scale)
electrical data	
response time (factory characteristic)	< 2,5 ms
response time (teach in characteristic)	< 3,1 ms
voltage supply range +Vs	15 ... 30 VDC
current consumption max. (no load)	20 mA
output circuit	voltage output / PNP
output signal	0 ... 10 VDC
load resistance	> 1000 Ohm
output current	< 10 mA (PNP)
voltage drop Vd	< 5 VDC (PNP)
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
housing material	polyester
dimension	20 mm
housing length	42 mm
connection types	connector M8
ambient conditions	
operating temperature	-10 ... +70 °C
protection class	IP 67

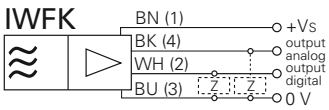
connectors and mating connectors	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10152385	Sensofix series 18/20 inductive rectangular
for details: see accessories section	

order reference
IWFK 20Z8704/S35A

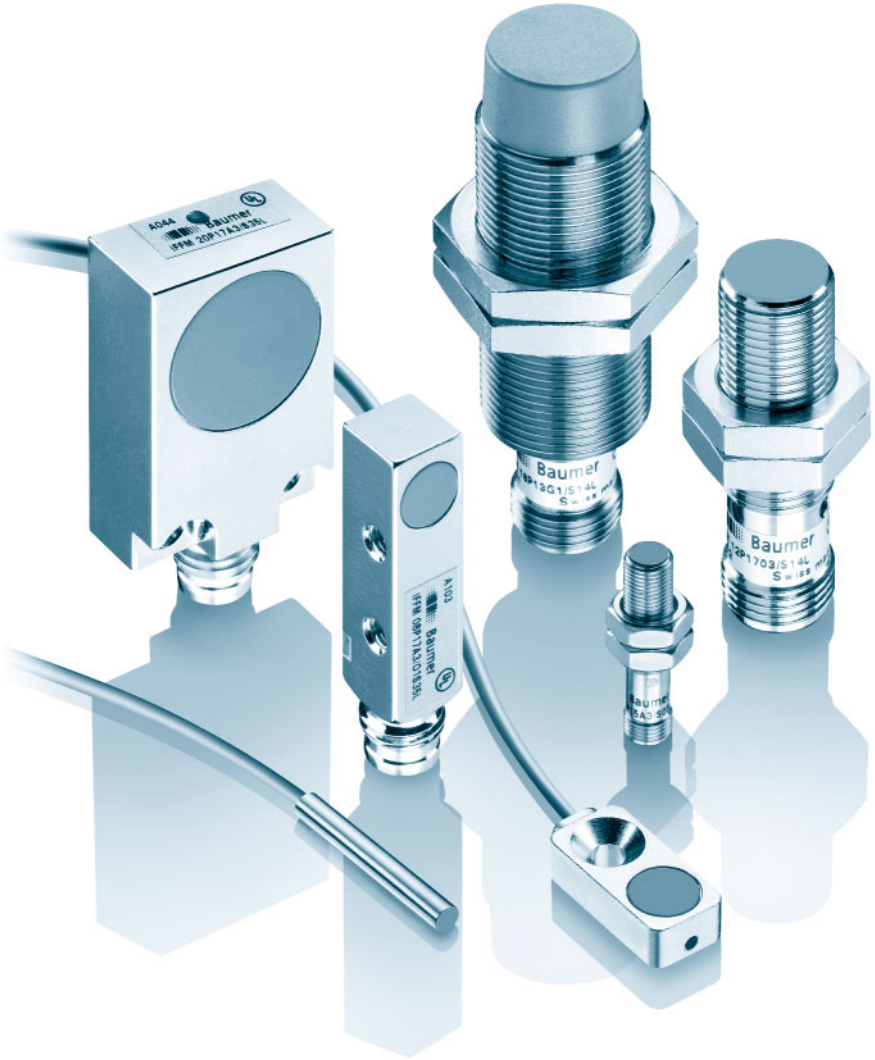
dimension drawing



connection diagram



Inductive sensors
Standard solutions



Cylindrical designs

product family	IFRM 03	IFRM 03	IFRM 04	IFRM 04	IFRM 04	IFRM 04	IFRM 04
							
mounting type	flush	flush	flush	flush	flush	flush	flush
nominal sensing distance Sn	0,8 mm	0,8 mm	0,8 mm	1 mm	1 mm	1 mm	1 mm
dimension	3 mm	3 mm	4 mm	4 mm	4 mm	4 mm	4 mm
housing length	12 mm	16 mm 22 mm	22 mm	15 mm	20 mm 24 mm	25 mm	36 mm 45 mm
NPN	■	■	■	■	■	■	■
PNP	■	■	■	■	■	■	■
cable, 2 m		■	■		■	■	
flylead connector M8		■	■		■	■	
wires, 0,5 m		■		■			
connector M5					■		
connector M8	■						■
stainless steel	■	■	■	■	■	■	■
page	**68**	**69**	**70**	**71**	**72**	**73**	**74**

Cylindrical designs

product family	IFRM 05	IFRM 06	IFRM 06	IFRM 06	IFRM 06	IFRM 06	IFRM 06
							
						GammaProx	*GammaProx*
mounting type	flush	flush	flush	flush	flush	quasi-flush	non-flush
nominal sensing distance Sn	1,6 mm	2 mm	2 mm	2 mm	2 mm	3 mm	6 mm
dimension	5 mm	6,5 mm	6,5 mm	6,5 mm	6,5 mm	6,5 mm	6,5 mm
housing length	36 mm 45 mm	22 mm 28 mm	30 mm 36 mm	40 mm 46 mm	50 mm 56 mm	40 mm 46 mm	40 mm 46 mm
NPN	■	■	■	■	■	■	■
PNP	■	■	■	■	■	■	■
cable, 2 m		■	■	■	■	■	■
flylead connector M8		■	■	■	■		
connector M8	■	■	■	■	■	■	■
connector M12							
stainless steel	■	■	■	■	■	■	■
brass nickel plated							
page	**84**	**85**	**86**	**87**	**88**	**89**	**90**

IFRM 04	IFRM 04	IFRM 04	IFRM 05	IFRM 05	IFRM 05	IFRM 05	IFRM 05	IFRM 05
								
flush	flush	flush	flush	flush	flush	flush	flush	flush
1,6 mm	1,6 mm	1,6 mm	1 mm	1 mm	1 mm	1 mm	1,6 mm	1,6 mm
4 mm	4 mm	4 mm	5 mm	5 mm	5 mm	5 mm	5 mm	5 mm
20 mm	25 mm	36 mm 45 mm	15 mm	20 mm 24 mm	25 mm	36 mm 45 mm	20 mm	25 mm
■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■
■	■			■	■		■	■
■	■			■	■			
			■					
				■				
		■				■		
■	■	■	■	■	■	■	■	■
75	76	77	78	79	80	81	82	83

IFRM 08	IFRM 08	IFRM 08	IFRM 08	IFRM 08	IFRM 08	IFRM 08	IFRM 12	IFRM 12
								
					GammaProx	*GammaProx*		
flush	flush	flush	flush	flush	quasi-flush	non-flush	flush	flush
2 mm	2 mm	2 mm	2 mm	2 mm	3 mm	6 mm	4 mm	4 mm
8 mm	8 mm	8 mm	8 mm	8 mm	8 mm	8 mm	12 mm	12 mm
22 mm 28 mm	30 mm 36 mm	40 mm 46 mm	50 mm 56 mm	50 mm	40 mm 46 mm	40 mm 46 mm	30,4 mm 40,4 mm	40 mm 50 mm
■	■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■	■
■	■	■	■		■	■	■	■
■	■	■	■					
■	■	■	■		■	■		
				■			■	■
■	■	■	■	■	■	■		
							■	■
91	92	93	94	95	96	97	98	99

Cylindrical designs

product family	IFRM 12	IFRM 12	IFRM 12	IFRM 12	IFRM 12	IFRM 12	IFRM 18
							
			GammaProx	*GammaProx*	*GammaProx*	*GammaProx*	
mounting type	flush	flush	quasi-flush	quasi-flush	non-flush	non-flush	quasi-flush
nominal sensing distance Sn	4 mm	4 mm	6 mm	6 mm	10 mm	10 mm	8 mm
dimension	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	18 mm
housing length	50 mm 60 mm	50 mm	40 mm 50 mm	50 mm 60 mm	40 mm 50 mm	50 mm 60 mm	35 mm 45 mm
NPN	■	■	■	■	■	■	■
PNP	■	■	■	■	■	■	■
cable, 2 m	■		■	■	■	■	■
connector M8		■					
connector M12	■		■	■	■	■	■
brass nickel plated	■	■	■	■	■	■	■
page	**100**	**101**	**102**	**103**	**104**	**105**	**106**

Cylindrical designs

product family	IFRM 30	IFRM 30
		
mounting type	flush	non-flush
nominal sensing distance Sn	10 mm	15 mm
dimension	30 mm	30 mm
housing length	60 mm 65 mm	69,5 mm 74,4 mm
PNP	■	■
cable, 2 m	■	■
connector M12	■	■
brass nickel plated	■	■
page	**115**	**116**

IFRM 18	IFRM 18	IFRM 18	IFRM 18	IFRM 18	IFRM 18	IFRM 18	IFRM 18
							
				GammaProx	*GammaProx*	*GammaProx*	*GammaProx*
quasi-flush	quasi-flush	quasi-flush	non-flush	quasi-flush	quasi-flush	non-flush	non-flush
8 mm	8 mm	8 mm	12 mm	12 mm	12 mm	20 mm	20 mm
18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm
50 mm 60 mm	50 mm	65 mm 78 mm	39 mm 52,5 mm	40 mm 50 mm	50 mm 60 mm	40 mm 50 mm	50 mm 60 mm
■	■	■		■	■	■	■
■	■	■	■	■	■	■	■
■		■	■	■	■	■	■
	■						
■		■	■	■	■	■	■
■	■	■	■	■	■	■	■
107	**108**	**109**	**110**	**111**	**112**	**113**	**114**

Rectangular designs

product family	IFFM 04	IFFM 06	IFFM 06	IFFM 08	IFFM 08	IFFM 08	IFFM 08
							
mounting type	flush	flush	flush	flush	flush	flush	flush
nominal sensing distance Sn	0,8 mm	1 mm	1 mm	2 mm	2 mm	2 mm	2 mm
dimension	4 mm	6 mm	6 mm	8 mm	8 mm	8 mm	8 mm
housing length	22 mm	20 mm 24 mm	30 mm	16 mm	20 mm 27 mm	28,5 mm 35,5 mm	38,5 mm 45,9 mm
NPN	■	■	■	■	■	■	■
PNP	■	■	■	■	■	■	■
cable, 2 m	■	■	■	■	■	■	■
flylead connector M8				■			
connector M5		■					
connector M8					■	■	■
stainless steel	■						
brass nickel plated		■	■		■	■	
die-cast zinc nickel plated				■			■
page	**117**	**118**	**119**	**120**	**121**	**122**	**123**

IFFM 08	IFFM 08	IFFM 12	IFFM 20	IFFM 20
				
flush	flush	flush	flush	flush
2 mm	2 mm	4 mm	5 mm	8 mm
8 mm	8 mm	12 mm	20 mm	20 mm
49 mm	59 mm	23,5 mm	32 mm	32 mm
■	■	■	■	■
■	■	■	■	■
		■		
■	■		■	■
■	■	■	■	■
124	125	126	127	128

Sn = 0,8 mm

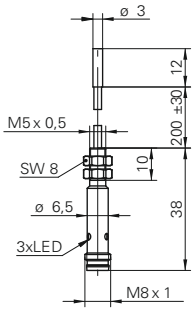
- sensing probe 12 mm long
- remote cable amplifier
- M8 x 1 quick disconnect

general data	
mounting type	flush
nominal sensing distance Sn	0,8 mm
hysteresis	2 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	POM
housing material	stainless steel
dimension	3 mm
housing length	12 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

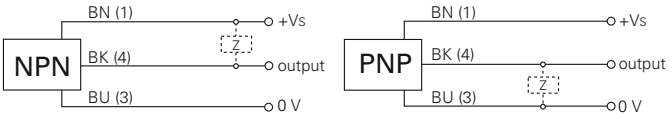
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10137021	Clamping nut for sensors Ø 3 mm
for details: see accessories section	

order reference	output circuit
IFRM 03N1505/CS35L	NPN make function (NO)
IFRM 03N3505/CS35L	NPN break function (NC)
IFRM 03P1505/CS35L	PNP make function (NO)
IFRM 03P3505/CS35L	PNP break function (NC)

dimension drawing



connection diagrams



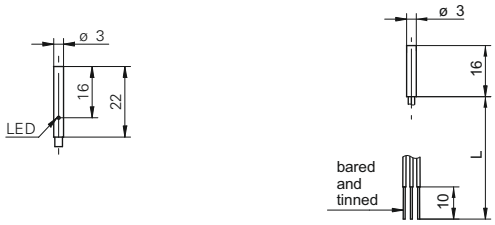
Sn = 0,8 mm

- smallest sensor housing size
- fully contained electronics
- 16 mm long version with individual strands

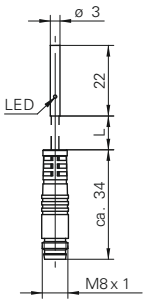
general data	
mounting type	flush
nominal sensing distance Sn	0,8 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	POM
housing material	stainless steel
dimension	3 mm
cable, 2 m	
housing length	22 mm
flylead connector M8	
housing length	22 mm
wires, 0,5 m	
housing length	16 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10137021	Clamping nut for sensors Ø 3 mm
for details: see accessories section	

dimension drawings

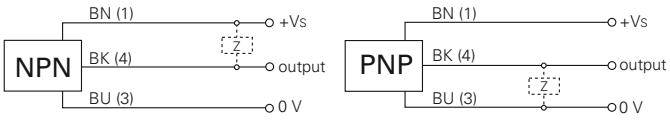


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

PUR cable

order reference	connection types	output circuit	output indicator
IFRM 03N1501/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 03N1501/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 03N1503/Q	wires, 0,5 m	NPN make function (NO)	-
IFRM 03N3501/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 03N3501/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 03N3503/Q	wires, 0,5 m	NPN break function (NC)	-
IFRM 03P1501/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 03P1501/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 03P1503/Q	wires, 0,5 m	PNP make function (NO)	-
IFRM 03P3501/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 03P3501/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 03P3503/Q	wires, 0,5 m	PNP break function (NC)	-

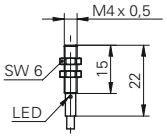
Sn = 0,8 mm

- smallest diameter threaded housing sensor M4 x 0,5

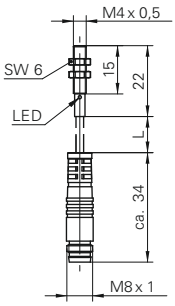
general data	
mounting type	flush
nominal sensing distance Sn	0,8 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	POM
housing material	stainless steel
dimension	4 mm
housing length	22 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawing

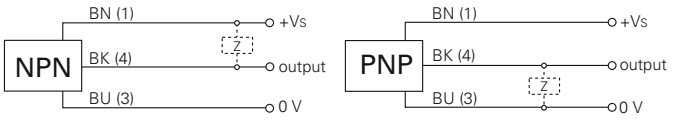


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

PUR cable

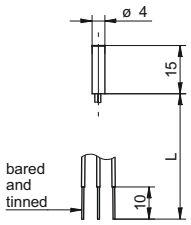
order reference	connection types	output circuit
IFRM 04N15B1/KS35PL	flylead connector M8	NPN make function (NO)
IFRM 04N15B1/L	cable, 2 m	NPN make function (NO)
IFRM 04N35B1/KS35PL	flylead connector M8	NPN break function (NC)
IFRM 04N35B1/L	cable, 2 m	NPN break function (NC)
IFRM 04P15B1/KS35PL	flylead connector M8	PNP make function (NO)
IFRM 04P15B1/L	cable, 2 m	PNP make function (NO)
IFRM 04P35B1/KS35PL	flylead connector M8	PNP break function (NC)
IFRM 04P35B1/L	cable, 2 m	PNP break function (NC)

Sn = 1 mm

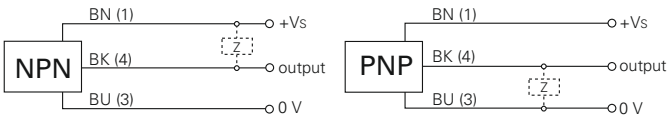
- fully contained electronics
- 3 individual strands
- 15 mm housing length

general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
housing length	15 mm
connection types	wires, 0,5 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagrams



accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

order reference	output circuit
IFRM 04N15A5/Q	NPN make function (NO)
IFRM 04N35A5/Q	NPN break function (NC)
IFRM 04P15A5/Q	PNP make function (NO)
IFRM 04P35A5/Q	PNP break function (NC)

Sn = 1 mm

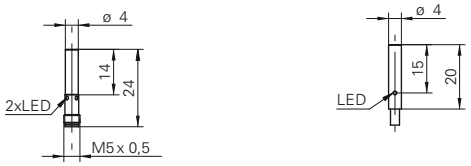
- fully contained electronics
- miniature connector M5 x 0,5
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
cable, 2 m	
housing length	20 mm
flylead connector M8	
housing length	20 mm
connector M5	
housing length	24 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

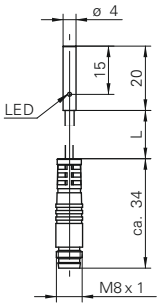
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

dimension drawings

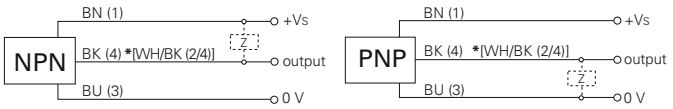


flylead connector version



standard cable length 200 mm (L)

connection diagrams



* .../S05L pin 2 & 4 electrically connected

remarks

PUR cable

order reference	connection types	output circuit	output indicator
IFRM 04N15A3/KS35PL	flylead connector M8	NPN make function (NO)	LED red
IFRM 04N15A3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 04N15A3/S05L	connector M5	NPN make function (NO)	2 port LED red
IFRM 04N35A3/KS35PL	flylead connector M8	NPN break function (NC)	LED red
IFRM 04N35A3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 04N35A3/S05L	connector M5	NPN break function (NC)	2 port LED red
IFRM 04P15A3/KS35PL	flylead connector M8	PNP make function (NO)	LED red
IFRM 04P15A3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 04P15A3/S05L	connector M5	PNP make function (NO)	2 port LED red
IFRM 04P35A3/KS35PL	flylead connector M8	PNP break function (NC)	LED red
IFRM 04P35A3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 04P35A3/S05L	connector M5	PNP break function (NC)	2 port LED red

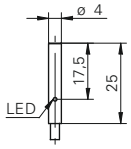
Sn = 1 mm

- fully contained electronics
- standard cable version
- high switching frequency

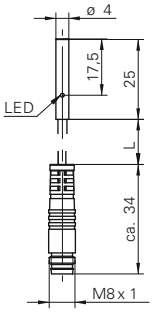
general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
housing length	25 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

dimension drawing

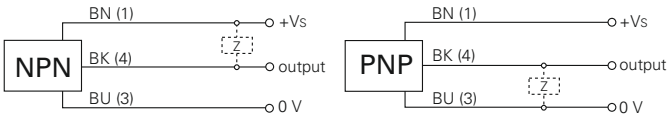


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

PUR cable

order reference	connection types	output circuit
IFRM 04N15A1/KS35PL	flylead connector M8	NPN make function (NO)
IFRM 04N15A1/L	cable, 2 m	NPN make function (NO)
IFRM 04N35A1/KS35PL	flylead connector M8	NPN break function (NC)
IFRM 04N35A1/L	cable, 2 m	NPN break function (NC)
IFRM 04P15A1/KS35PL	flylead connector M8	PNP make function (NO)
IFRM 04P15A1/L	cable, 2 m	PNP make function (NO)
IFRM 04P35A1/KS35PL	flylead connector M8	PNP break function (NC)
IFRM 04P35A1/L	cable, 2 m	PNP break function (NC)

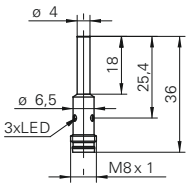
Sn = 1 mm

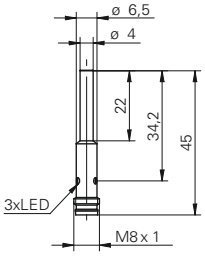
- robust steel housing
- M8 x 1 quick disconnect
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

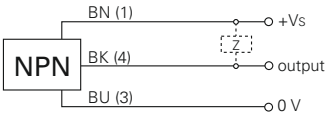
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

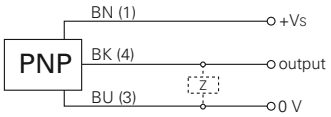
dimension drawings





connection diagrams





order reference	output circuit	housing length
IFRM 04N15A3/S35L	NPN make function (NO)	36 mm
IFRM 04N35A3/S35L	NPN break function (NC)	36 mm
IFRM 04P15A1/S35L	PNP make function (NO)	45 mm
IFRM 04P15A3/S35L	PNP make function (NO)	36 mm
IFRM 04P35A1/S35L	PNP break function (NC)	45 mm
IFRM 04P35A3/S35L	PNP break function (NC)	36 mm

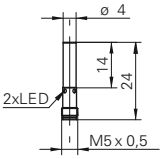
Sn = 1,6 mm

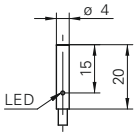
- fully contained electronics
- miniature connector M5 x 0,5
- increased sensing distance

general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
cable, 2 m	
housing length	20 mm
flylead connector M8	
housing length	20 mm
connector M5	
housing length	24 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

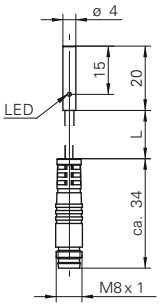
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

dimension drawings



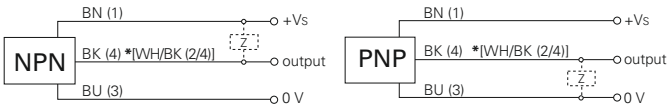


flylead connector version



standard cable length 200 mm (L)

connection diagrams



* .../S05L pin 2 & 4 electrically connected

remarks

PUR cable

order reference	connection types	output circuit	output indicator
IFRM 04N17A3/KS35PL	flylead connector M8	NPN make function (NO)	LED red
IFRM 04N17A3/PL	cable, 2 m	NPN make function (NO)	LED red
IFRM 04N17A3/S05L	connector M5	NPN make function (NO)	2 port LED red
IFRM 04N37A3/KS35PL	flylead connector M8	NPN break function (NC)	LED red
IFRM 04N37A3/PL	cable, 2 m	NPN break function (NC)	LED red
IFRM 04N37A3/S05L	connector M5	NPN break function (NC)	2 port LED red
IFRM 04P17A3/KS35PL	flylead connector M8	PNP make function (NO)	LED red
IFRM 04P17A3/PL	cable, 2 m	PNP make function (NO)	LED red
IFRM 04P17A3/S05L	connector M5	PNP make function (NO)	2 port LED red
IFRM 04P37A3/KS35PL	flylead connector M8	PNP break function (NC)	LED red
IFRM 04P37A3/PL	cable, 2 m	PNP break function (NC)	LED red
IFRM 04P37A3/S05L	connector M5	PNP break function (NC)	2 port LED red

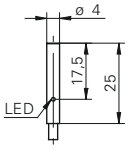
Sn = 1,6 mm

- fully contained electronics
- standard cable version
- increased sensing distance

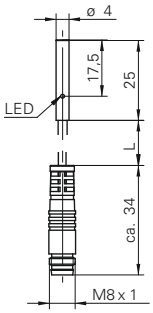
general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
housing length	25 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

dimension drawing

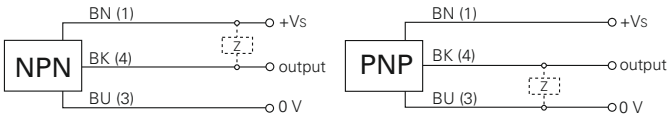


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

PUR cable

order reference	connection types	output circuit
IFRM 04N17A1/KS35PL	flylead connector M8	NPN make function (NO)
IFRM 04N17A1/PL	cable, 2 m	NPN make function (NO)
IFRM 04N37A1/KS35PL	flylead connector M8	NPN break function (NC)
IFRM 04N37A1/PL	cable, 2 m	NPN break function (NC)
IFRM 04P17A1/KS35PL	flylead connector M8	PNP make function (NO)
IFRM 04P17A1/PL	cable, 2 m	PNP make function (NO)
IFRM 04P37A1/KS35PL	flylead connector M8	PNP break function (NC)
IFRM 04P37A1/PL	cable, 2 m	PNP break function (NC)

Sn = 1,6 mm

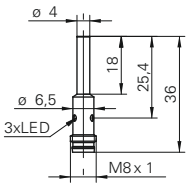
- robust steel housing
- M8 x 1 quick disconnect
- increased sensing distance

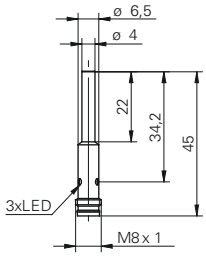
general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel
dimension	4 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

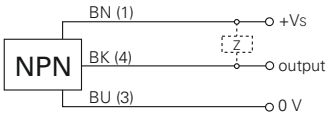
order reference	output circuit	housing length
IFRM 04N17A1/S35L	NPN make function (NO)	45 mm
IFRM 04N17A3/S35L	NPN make function (NO)	36 mm
IFRM 04N37A1/S35L	NPN break function (NC)	45 mm
IFRM 04N37A3/S35L	NPN break function (NC)	36 mm
IFRM 04P17A1/S35L	PNP make function (NO)	45 mm
IFRM 04P17A3/S35L	PNP make function (NO)	36 mm
IFRM 04P37A1/S35L	PNP break function (NC)	45 mm
IFRM 04P37A3/S35L	PNP break function (NC)	36 mm

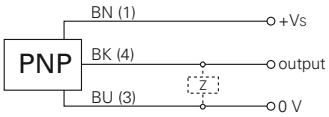
dimension drawings





connection diagrams





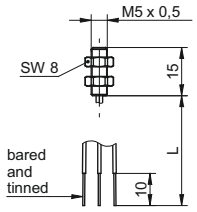
Sn = 1 mm

- fully contained electronics
- 3 individual strands
- 15 mm housing length

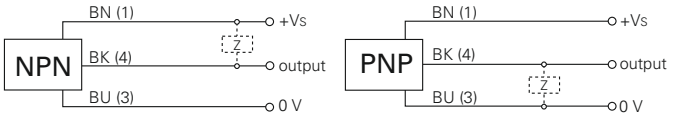
general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
housing length	15 mm
connection types	wires, 0,5 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

order reference	output circuit
IFRM 05N15A5/Q	NPN make function (NO)
IFRM 05N35A5/Q	NPN break function (NC)
IFRM 05P15A5/Q	PNP make function (NO)
IFRM 05P35A5/Q	PNP break function (NC)

dimension drawing



connection diagrams



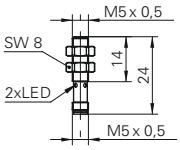
Sn = 1 mm

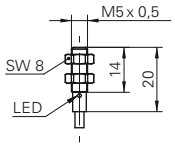
- fully contained electronics
- miniature connector M5 x 0,5
- integrated LED-status display

general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
cable, 2 m	
housing length	20 mm
flylead connector M8	
housing length	20 mm
connector M5	
housing length	24 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

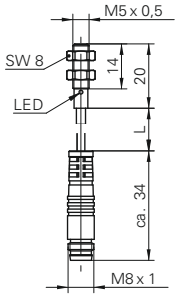
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawings



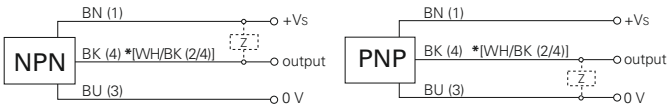


flylead connector version



standard cable length 200 mm (L)

connection diagrams



* .../S05L pin 2 & 4 electrically connected

remarks

PUR cable

order reference	connection types	output circuit	output indicator
IFRM 05N15A3/KS35PL	flylead connector M8	NPN make function (NO)	LED red
IFRM 05N15A3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 05N15A3/S05L	connector M5	NPN make function (NO)	2 port LED red
IFRM 05N35A3/KS35PL	flylead connector M8	NPN break function (NC)	LED red
IFRM 05N35A3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 05N35A3/S05L	connector M5	NPN break function (NC)	2 port LED red
IFRM 05P15A3/KS35PL	flylead connector M8	PNP make function (NO)	LED red
IFRM 05P15A3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 05P15A3/S05L	connector M5	PNP make function (NO)	2 port LED red
IFRM 05P35A3/KS35PL	flylead connector M8	PNP break function (NC)	LED red
IFRM 05P35A3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 05P35A3/S05L	connector M5	PNP break function (NC)	2 port LED red

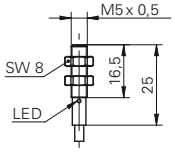
Sn = 1 mm

- fully contained electronics
- standard cable version
- integrated LED-status display

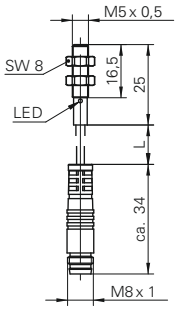
general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
housing length	25 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawing

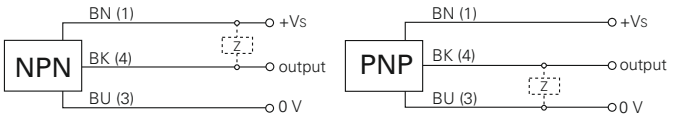


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

PUR cable

order reference	connection types	output circuit
IFRM 05N15A1/KS35PL	flylead connector M8	NPN make function (NO)
IFRM 05N15A1/L	cable, 2 m	NPN make function (NO)
IFRM 05N35A1/KS35PL	flylead connector M8	NPN break function (NC)
IFRM 05N35A1/L	cable, 2 m	NPN break function (NC)
IFRM 05P15A1/KS35PL	flylead connector M8	PNP make function (NO)
IFRM 05P15A1/L	cable, 2 m	PNP make function (NO)
IFRM 05P35A1/KS35PL	flylead connector M8	PNP break function (NC)
IFRM 05P35A1/L	cable, 2 m	PNP break function (NC)

Sn = 1 mm

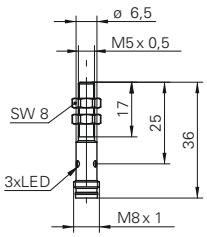
- robust steel housing
- M8 x 1 quick disconnect
- 3 port LED

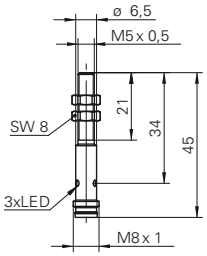
general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

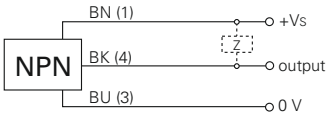
order reference	output circuit	housing length
IFRM 05N15A3/S35L	NPN make function (NO)	36 mm
IFRM 05N35A3/S35L	NPN break function (NC)	36 mm
IFRM 05P15A1/S35L	PNP make function (NO)	45 mm
IFRM 05P15A3/S35L	PNP make function (NO)	36 mm
IFRM 05P35A1/S35L	PNP break function (NC)	45 mm
IFRM 05P35A3/S35L	PNP break function (NC)	36 mm

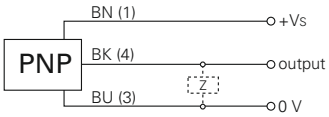
dimension drawings





connection diagrams





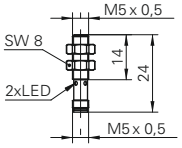
Sn = 1,6 mm

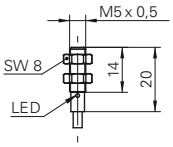
- fully contained electronics
- miniature connector M5 x 0,5
- increased sensing distance

general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
cable, 2 m	
housing length	20 mm
connector M5	
housing length	24 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

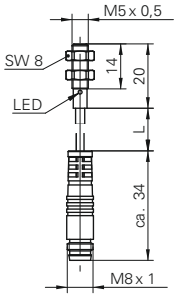
connectors and mating connectors	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawings



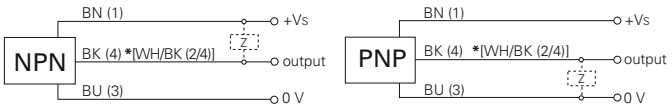


flylead connector version



standard cable length 200 mm (L)

connection diagrams



* .../S05L pin 2 & 4 electrically connected

remarks

PUR cable

order reference	connection types	output circuit	output indicator
IFRM 05N17A3/PL	cable, 2 m	NPN make function (NO)	LED red
IFRM 05N17A3/S05L	connector M5	NPN make function (NO)	2 port LED red
IFRM 05N37A3/PL	cable, 2 m	NPN break function (NC)	LED red
IFRM 05N37A3/S05L	connector M5	NPN break function (NC)	2 port LED red
IFRM 05P17A3/PL	cable, 2 m	PNP make function (NO)	LED red
IFRM 05P17A3/S05L	connector M5	PNP make function (NO)	2 port LED red
IFRM 05P37A3/PL	cable, 2 m	PNP break function (NC)	LED red
IFRM 05P37A3/S05L	connector M5	PNP break function (NC)	2 port LED red

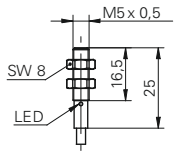
Sn = 1,6 mm

- fully contained electronics
- standard cable version
- increased sensing distance

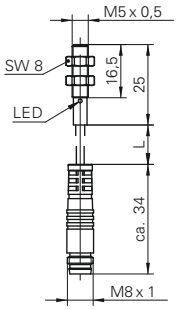
general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
housing length	25 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

order reference	output circuit
IFRM 05N17A1/PL	NPN make function (NO)
IFRM 05N37A1/PL	NPN break function (NC)
IFRM 05P17A1/PL	PNP make function (NO)
IFRM 05P37A1/PL	PNP break function (NC)

dimension drawing

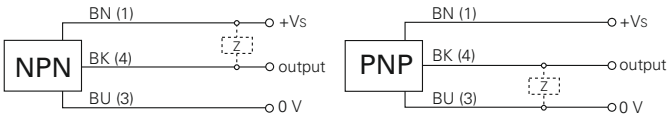


flylead connector version



standard cable length 200 mm (L)

connection diagrams



remarks

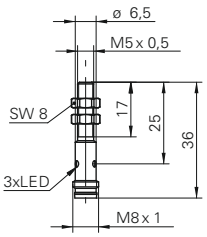
PUR cable

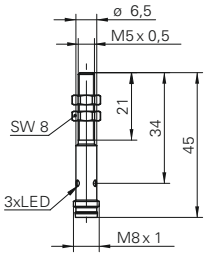
Sn = 1,6 mm

- robust steel housing
- M8 x 1 quick disconnect
- increased sensing distance

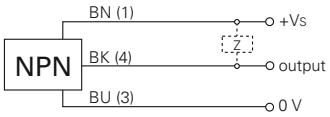
general data	
mounting type	flush
nominal sensing distance Sn	1,6 mm
hysteresis	2 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	5 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

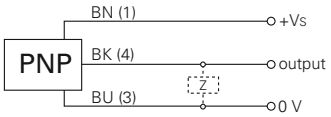
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	output circuit	housing length
IFRM 05N17A1/S35L	NPN make function (NO)	45 mm
IFRM 05N17A3/S35L	NPN make function (NO)	36 mm
IFRM 05N37A1/S35L	NPN break function (NC)	45 mm
IFRM 05N37A3/S35L	NPN break function (NC)	36 mm
IFRM 05P17A1/S35L	PNP make function (NO)	45 mm
IFRM 05P17A3/S35L	PNP make function (NO)	36 mm
IFRM 05P37A1/S35L	PNP break function (NC)	45 mm
IFRM 05P37A3/S35L	PNP break function (NC)	36 mm

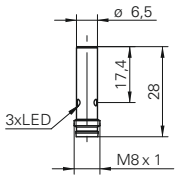
Sn = 2 mm

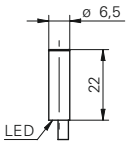
- robust steel housing
- shortest version with M8 x 1 connector
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	22 mm
flylead connector M8	
housing length	22 mm
connector M8	
housing length	28 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

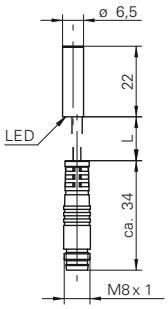
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

dimension drawings



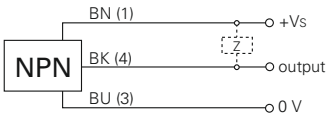


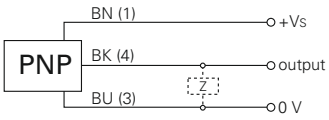
flylead connector version



standard cable length 200 mm (L)

connection diagrams





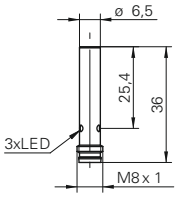
order reference	connection types	output circuit	output indicator
IFRM 06N1713/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 06N1713/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N17A5/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N3713/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 06N3713/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N37A5/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P1713/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 06P1713/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P17A5/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P3713/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 06P3713/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P37A5/S35L	connector M8	PNP break function (NC)	3 port LED red

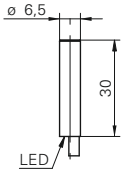
Sn = 2 mm

- robust steel housing
- high switching frequency
- mounting with special support

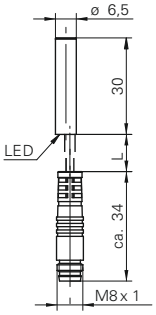
general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	30 mm
flylead connector M8	
housing length	30 mm
connector M8	
housing length	36 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



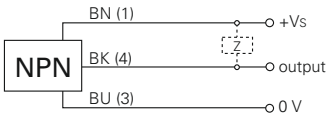


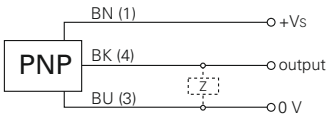
flylead connector version



standard cable length 200 mm (L)

connection diagrams





connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

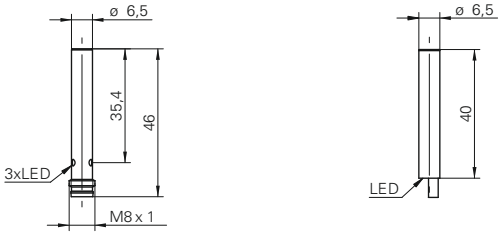
order reference	connection types	output circuit	output indicator
IFRM 06N1701/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 06N1701/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N17A3/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N3701/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 06N3701/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N37A3/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P1701/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 06P1701/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P17A3/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P3701/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 06P3701/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P37A3/S35L	connector M8	PNP break function (NC)	3 port LED red

Sn = 2 mm

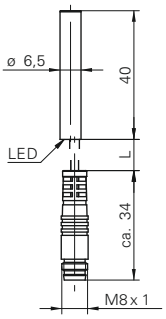
- robust steel housing
- high switching frequency
- mounting with special support

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	40 mm
flylead connector M8	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings

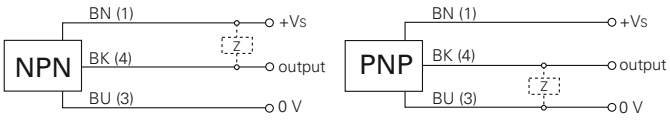


flylead connector version



standard cable length 200 mm (L)

connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

order reference	connection types	output circuit	output indicator
IFRM 06N17A1/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 06N17A1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N17A1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N37A1/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 06N37A1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N37A1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P17A1/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 06P17A1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P17A1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P37A1/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 06P37A1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P37A1/S35L	connector M8	PNP break function (NC)	3 port LED red

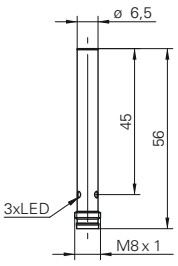
Sn = 2 mm

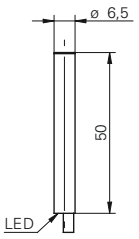
- long, robust steel housings
- cable and connector versions
- mounting with special support

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	50 mm
flylead connector M8	
housing length	50 mm
connector M8	
housing length	56 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

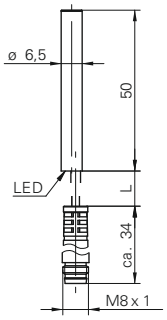
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

dimension drawings



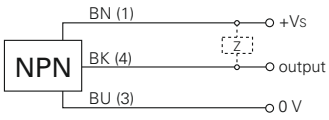


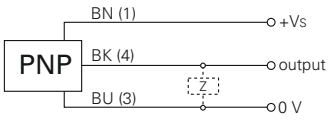
flylead connector version



standard cable length 200 mm (L)

connection diagrams





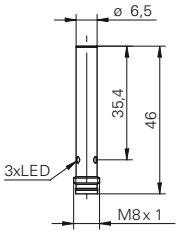
order reference	connection types	output circuit	output indicator
IFRM 06N17A4/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N17A4/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N37A4/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N37A4/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P17A4/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 06P17A4/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P17A4/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P37A4/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 06P37A4/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P37A4/S35L	connector M8	PNP break function (NC)	3 port LED red

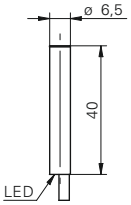
Sn = 3 mm

- version with extended Sn *GammaProx*
- quasi shielded mounting
- robust steel housing

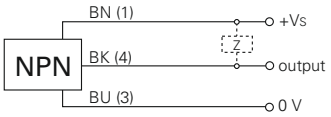
general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	3 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	18 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

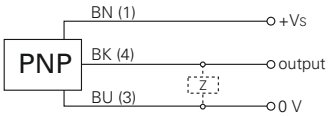
dimension drawings





connection diagrams





remarks

for correct installation refer to “mounting instructions”

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

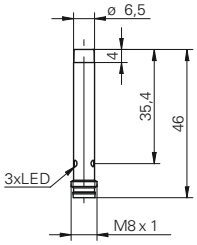
order reference	connection types	output circuit	output indicator
IFRM 06N17G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N17G1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N37G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N37G1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P17G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P17G1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P37G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P37G1/S35L	connector M8	PNP break function (NC)	3 port LED red

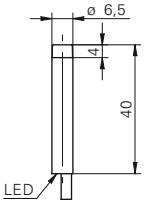
Sn = 6 mm

- version with extended Sn *GammaProx*
- non shielded mounting
- robust steel housing

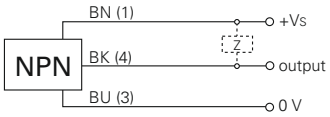
general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	6 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	18 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
cable, 2 m	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

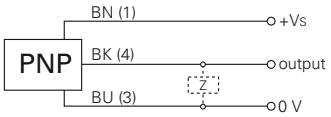
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
10117742	Clamping nut for sensors Ø 6,5 mm
for details: see accessories section	

order reference	connection types	output circuit	output indicator
IFRM 06N13G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 06N13G1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 06N33G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 06N33G1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 06P13G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 06P13G1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 06P33G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 06P33G1/S35L	connector M8	PNP break function (NC)	3 port LED red

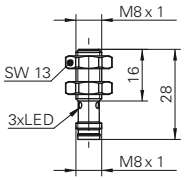
Sn = 2 mm

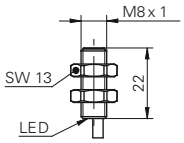
- shortest version with M8 x 1 connector
- high switching frequency
- robust steel housing

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	22 mm
flylead connector M8	
housing length	22 mm
connector M8	
housing length	28 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

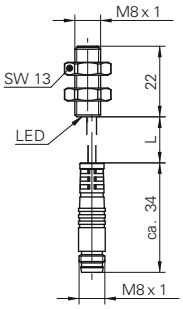
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings



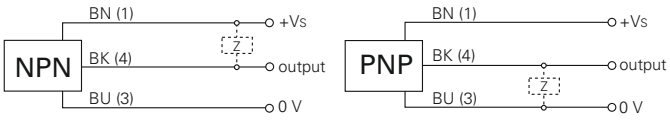


flylead connector version



standard cable length 200 mm (L)

connection diagrams



order reference	connection types	output circuit	output indicator
IFRM 08N1713/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 08N1713/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N17A5/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N3713/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 08N3713/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N37A5/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P1713/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 08P1713/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P17A5/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P3713/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 08P3713/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P37A5/S35L	connector M8	PNP break function (NC)	3 port LED red

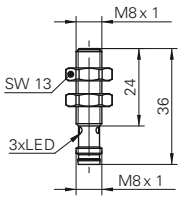
Sn = 2 mm

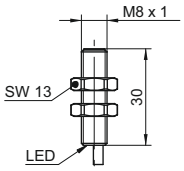
- robust steel housing
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	30 mm
flylead connector M8	
housing length	30 mm
connector M8	
housing length	36 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

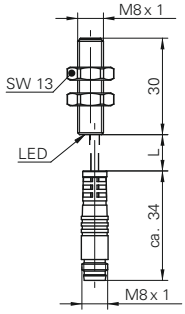
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings



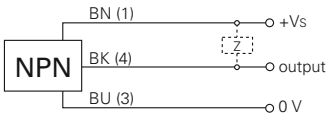


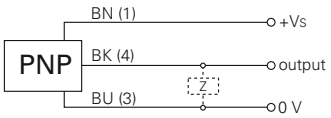
flylead connector version



standard cable length 200 mm (L)

connection diagrams





order reference	connection types	output circuit	output indicator
IFRM 08N1701/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 08N1701/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N17A3/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N3701/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 08N3701/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N37A3/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P1701/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 08P1701/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P17A3/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P3701/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 08P3701/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P37A3/S35L	connector M8	PNP break function (NC)	3 port LED red

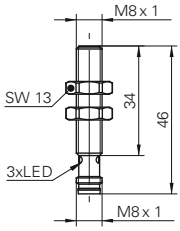
Sn = 2 mm

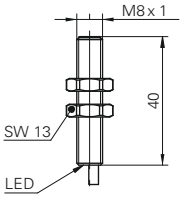
- robust steel housing
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	40 mm
flylead connector M8	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

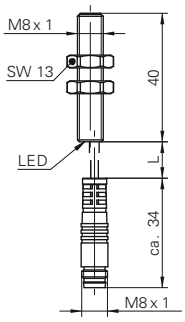
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings



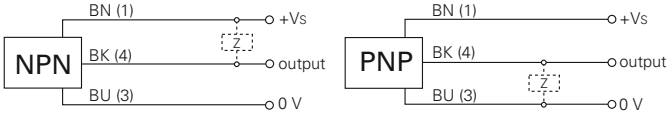


flylead connector version



standard cable length 200 mm (L)

connection diagrams



order reference	connection types	output circuit	output indicator
IFRM 08N17A1/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 08N17A1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N17A1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N37A1/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 08N37A1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N37A1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P17A1/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 08P17A1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P17A1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P37A1/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 08P37A1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P37A1/S35L	connector M8	PNP break function (NC)	3 port LED red

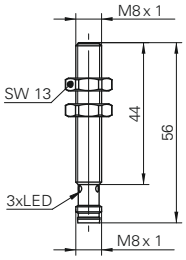
Sn = 2 mm

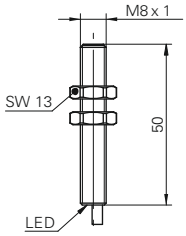
- robust steel housing
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	50 mm
flylead connector M8	
housing length	50 mm
connector M8	
housing length	56 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

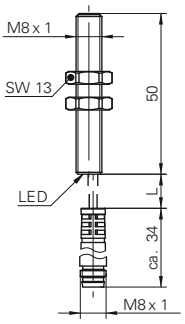
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings



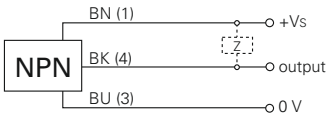


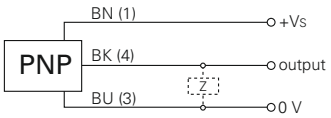
flylead connector version



standard cable length 200 mm (L)

connection diagrams





order reference	connection types	output circuit	output indicator
IFRM 08N17A4/KS35L	flylead connector M8	NPN make function (NO)	LED red
IFRM 08N17A4/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N17A4/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N37A4/KS35L	flylead connector M8	NPN break function (NC)	LED red
IFRM 08N37A4/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N37A4/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P17A4/KS35L	flylead connector M8	PNP make function (NO)	LED red
IFRM 08P17A4/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P17A4/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P37A4/KS35L	flylead connector M8	PNP break function (NC)	LED red
IFRM 08P37A4/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P37A4/S35L	connector M8	PNP break function (NC)	3 port LED red

Sn = 2 mm

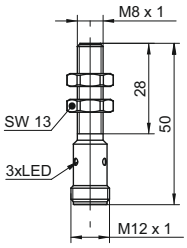
- robust steel housing
- high switching frequency
- M12 x 1 quick disconnect

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
housing length	50 mm
connection types	connector M12
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

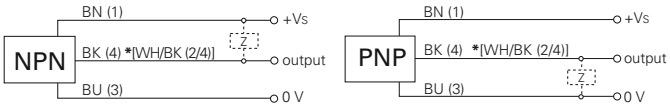
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

order reference	output circuit
IFRM 08N1703/S14L	NPN make function (NO)
IFRM 08N3703/S14L	NPN break function (NC)
IFRM 08P1703/S14L	PNP make function (NO)
IFRM 08P3703/S14L	PNP break function (NC)

dimension drawing



connection diagrams



* .../S14L pin 2 & 4 electrically connected

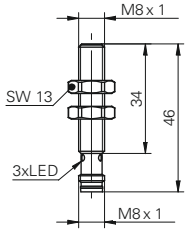
Sn = 3 mm

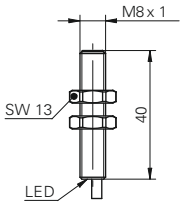

- version with extended Sn *GammaProx*
- quasi shielded mounting
- robust steel housing

general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	3 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	18 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

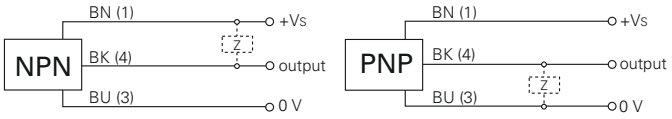
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings





connection diagrams



remarks

for correct installation refer to “mounting instructions”

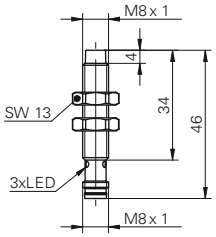
order reference	connection types	output circuit	output indicator
IFRM 08N17G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N17G1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N37G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N37G1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P17G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P17G1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P37G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P37G1/S35L	connector M8	PNP break function (NC)	3 port LED red

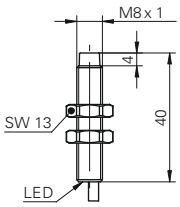
Sn = 6 mm

- version with extended Sn *GammaProx*
- non shielded mounting
- robust steel housing

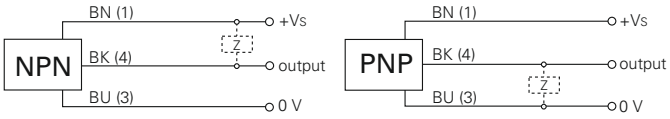
general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	6 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	18 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	stainless steel
dimension	8 mm
cable, 2 m	
housing length	40 mm
connector M8	
housing length	46 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawings





connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151719	Sensofix series 08
for details: see accessories section	

order reference	connection types	output circuit	output indicator
IFRM 08N13G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 08N13G1/S35L	connector M8	NPN make function (NO)	3 port LED red
IFRM 08N33G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 08N33G1/S35L	connector M8	NPN break function (NC)	3 port LED red
IFRM 08P13G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 08P13G1/S35L	connector M8	PNP make function (NO)	3 port LED red
IFRM 08P33G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 08P33G1/S35L	connector M8	PNP break function (NC)	3 port LED red

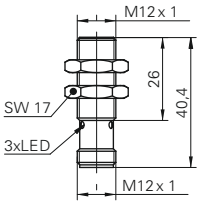
Sn = 4 mm

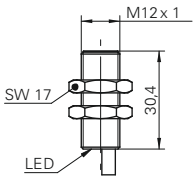
- shortest version with M12 x 1 connector
- high stability across entire temperature range

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	30,4 mm
connector M12	
housing length	40,4 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

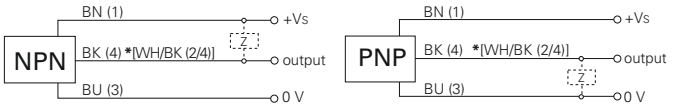
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

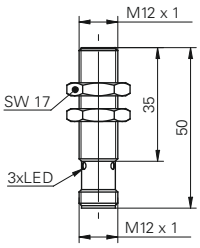
order reference	connection types	output circuit	output indicator
IFRM 12N1701/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N1703/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N3701/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N3703/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P1701/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P1703/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P3701/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P3703/S14L	connector M12	PNP break function (NC)	3 port LED red

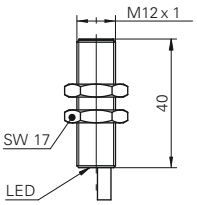
Sn = 4 mm

- high stability across entire temperature range

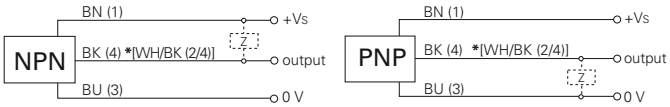
general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	40 mm
connector M12	
housing length	50 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	connection types	output circuit	output indicator
IFRM 12N1701/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N1702/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N3701/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12N3702/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12P1701/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P1702/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P3701/S14L	connector M12	PNP break function (NC)	3 port LED red
IFRM 12P3702/L	cable, 2 m	PNP break function (NC)	LED red

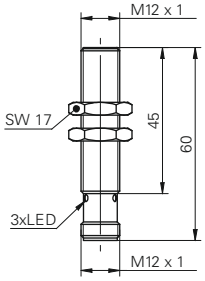
Sn = 4 mm

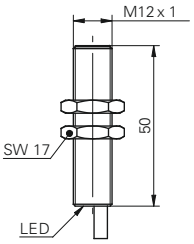
- extra long housings
- high stability across entire temperature range

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

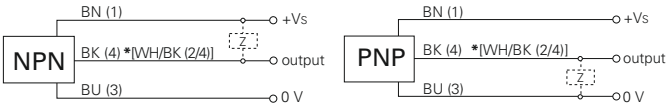
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

order reference	connection types	output circuit	output indicator
IFRM 12N1704/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N1704/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N3704/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N3704/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P1704/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P1704/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P3704/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P3704/S14L	connector M12	PNP break function (NC)	3 port LED red

Sn = 4 mm

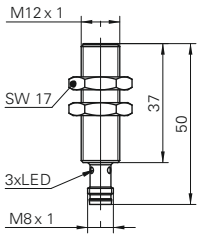
- M8 x 1 quick disconnect
- high stability across entire temperature range

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 25 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	18 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
housing length	50 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

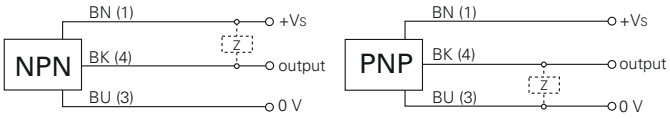
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	output circuit
IFRM 12N1701/S35L	NPN make function (NO)
IFRM 12N3701/S35L	NPN break function (NC)
IFRM 12P1701/S35L	PNP make function (NO)
IFRM 12P3701/S35L	PNP break function (NC)

dimension drawing



connection diagrams



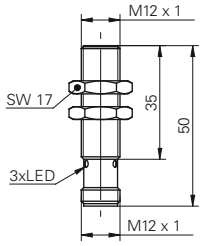
Sn = 6 mm

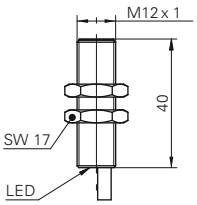
- version with extended Sn *GammaProx*
- quasi shielded mounting

general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	6 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	40 mm
connector M12	
housing length	50 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

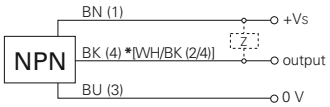
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

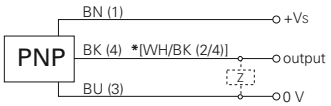
dimension drawings





connection diagrams





* .../S14L pin 2 & 4 electrically connected

remarks

for correct installation refer to "mounting instructions"

order reference	connection types	output circuit	output indicator
IFRM 12N17G3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N17G3/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N37G3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N37G3/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P17G3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P17G3/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P37G3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P37G3/S14L	connector M12	PNP break function (NC)	3 port LED red

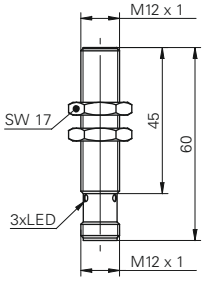
Sn = 6 mm

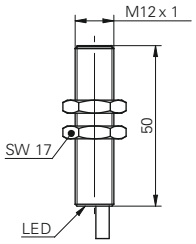
- version with extended Sn *GammaProx*
- quasi shielded mounting

general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	6 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

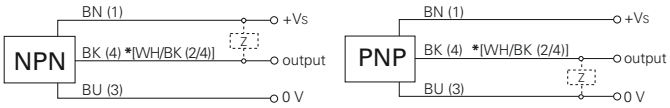
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

remarks

for correct installation refer to “mounting instructions”

order reference	connection types	output circuit	output indicator
IFRM 12N17G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N17G1/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N37G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N37G1/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P17G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P17G1/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P37G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P37G1/S14L	connector M12	PNP break function (NC)	3 port LED red

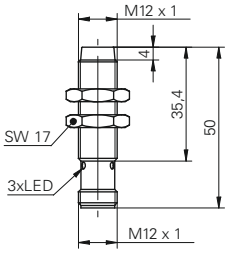
Sn = 10 mm

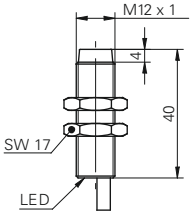
- version with extended Sn *GammaProx*
- non shielded mounting

general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	10 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	40 mm
connector M12	
housing length	50 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

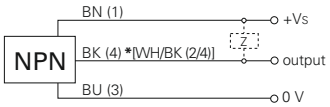
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

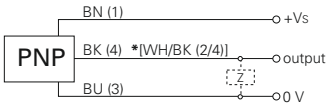
dimension drawings





connection diagrams





* .../S14L pin 2 & 4 electrically connected

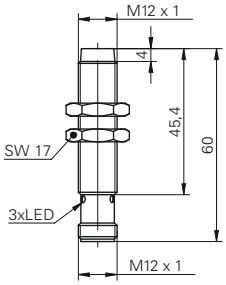
order reference	connection types	output circuit	output indicator
IFRM 12N13G3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N13G3/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N33G3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N33G3/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P13G3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P13G3/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P33G3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P33G3/S14L	connector M12	PNP break function (NC)	3 port LED red

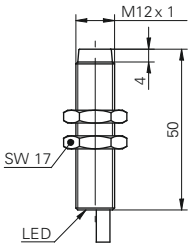
Sn = 10 mm

- version with extended Sn *GammaProx*
- non shielded mounting

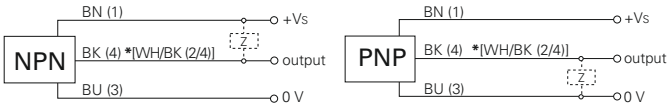
general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	10 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	connection types	output circuit	output indicator
IFRM 12N13G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 12N13G1/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 12N33G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 12N33G1/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 12P13G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 12P13G1/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 12P33G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 12P33G1/S14L	connector M12	PNP break function (NC)	3 port LED red

Sn = 8 mm

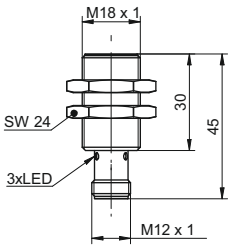
- quasi shielded mounting
- improved EMC compatibility

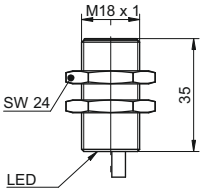
general data	
mounting type	quasi-flush
nominal sensing distance Sn	8 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
tightening torque	40 Nm
cable, 2 m	
housing length	35 mm
connector M12	
housing length	45 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

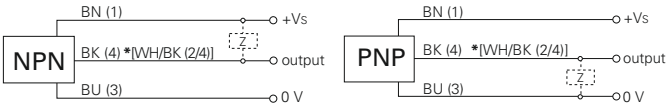
order reference	connection types	output circuit
IFRM 18N17A5/L	cable, 2 m	NPN make function (NO)
IFRM 18N17A5/S14L	connector M12	NPN make function (NO)
IFRM 18N37A5/L	cable, 2 m	NPN break function (NC)
IFRM 18N37A5/S14L	connector M12	NPN break function (NC)
IFRM 18P17A5/L	cable, 2 m	PNP make function (NO)
IFRM 18P17A5/S14L	connector M12	PNP make function (NO)
IFRM 18P37A5/L	cable, 2 m	PNP break function (NC)
IFRM 18P37A5/S14L	connector M12	PNP break function (NC)

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

remarks

for correct installation refer to “mounting instructions”

Sn = 8 mm

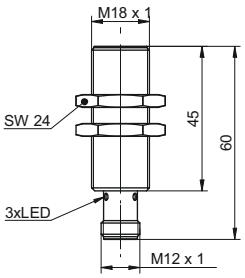
- quasi shielded mounting
- improved EMC compatibility

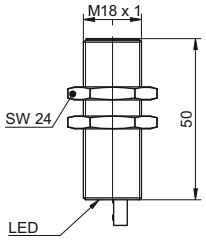
general data	
mounting type	quasi-flush
nominal sensing distance Sn	8 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
tightening torque	40 Nm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

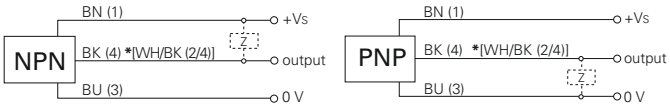
order reference	connection types	output circuit
IFRM 18N17A3/L	cable, 2 m	NPN make function (NO)
IFRM 18N17A3/S14L	connector M12	NPN make function (NO)
IFRM 18N37A3/L	cable, 2 m	NPN break function (NC)
IFRM 18N37A3/S14L	connector M12	NPN break function (NC)
IFRM 18P17A3/L	cable, 2 m	PNP make function (NO)
IFRM 18P17A3/S14L	connector M12	PNP make function (NO)
IFRM 18P37A3/L	cable, 2 m	PNP break function (NC)
IFRM 18P37A3/S14L	connector M12	PNP break function (NC)

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

remarks

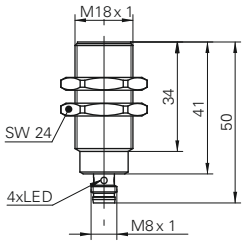
for correct installation refer to “mounting instructions”

Sn = 8 mm

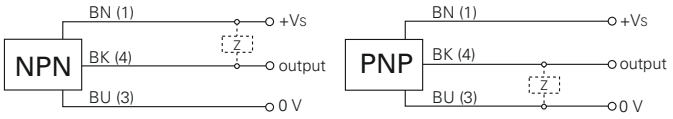
- voltage supply range +Vs 10 ... 50 VDC
- quasi shielded mounting
- M8 x 1 quick disconnect

general data	
mounting type	quasi-flush
nominal sensing distance Sn	8 mm
hysteresis	3 ... 25 % of Sr
output indicator	4 port LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 50 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
housing length	50 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagrams



remarks

for correct installation refer to “mounting instructions”

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

order reference	output circuit
IFRM 18N1701/S35L	NPN make function (NO)
IFRM 18N3701/S35L	NPN break function (NC)
IFRM 18P1701/S35L	PNP make function (NO)
IFRM 18P3701/S35L	PNP break function (NC)

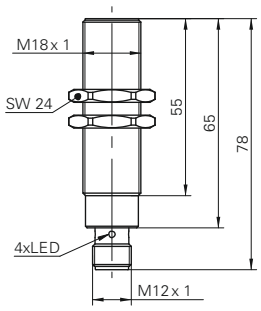
Sn = 8 mm

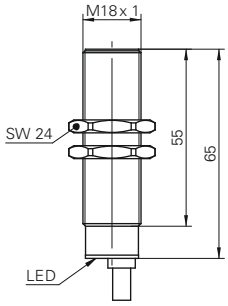
- voltage supply range +Vs 10 ... 50 VDC
- quasi shielded mounting
- very long housing

general data	
mounting type	quasi-flush
nominal sensing distance Sn	8 mm
hysteresis	3 ... 25 % of Sr
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 50 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	65 mm
connector M12	
housing length	78 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

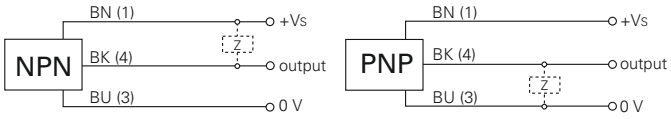
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

dimension drawings





connection diagram



remarks

for correct installation refer to “mounting instructions”

order reference	connection types	output circuit	output indicator
IFRM 18N1704/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 18N1704/S14L	connector M12	NPN make function (NO)	4 port LED red
IFRM 18P1704/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 18P1704/S14L	connector M12	PNP make function (NO)	4 port LED red
IFRM 18P3704/S14L	connector M12	PNP break function (NC)	4 port LED red

Sn = 12 mm

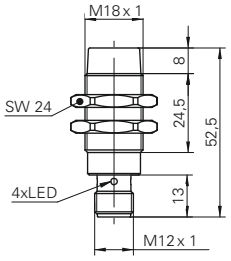
- non shielded mounting

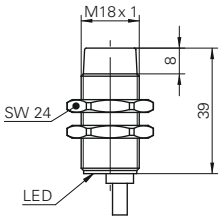
general data	
mounting type	non-flush
nominal sensing distance Sn	12 mm
hysteresis	3 ... 25 % of Sr
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	15 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	39 mm
connector M12	
housing length	52,5 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

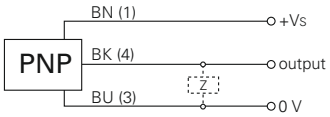
order reference	connection types	output indicator
IFRM 18P1301/L	cable, 2 m	LED red
IFRM 18P1301/S14L	connector M12	4 port LED red

dimension drawings





connection diagram

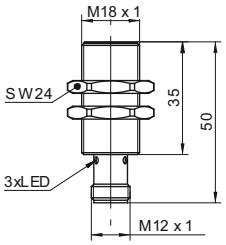


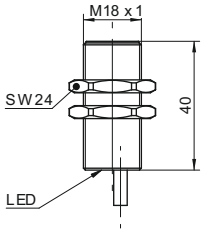
Sn = 12 mm

- version with extended Sn *GammaProx*
- quasi shielded mounting

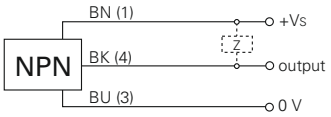
general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	12 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	40 mm
connector M12	
housing length	50 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

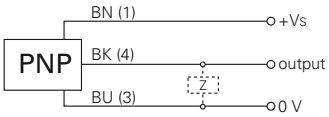
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

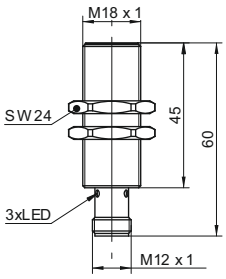
order reference	connection types	output circuit	output indicator
IFRM 18N17G3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 18N17G3/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 18N37G3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 18N37G3/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 18P17G3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 18P17G3/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 18P37G3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 18P37G3/S14L	connector M12	PNP break function (NC)	3 port LED red

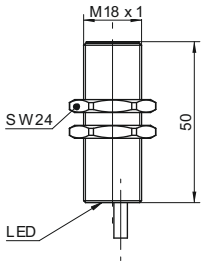
Sn = 12 mm

- version with extended Sn *GammaProx*
- quasi shielded mounting

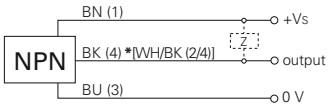
general data	
mounting type	quasi-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	12 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

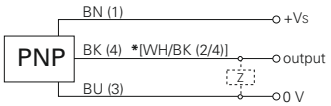
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

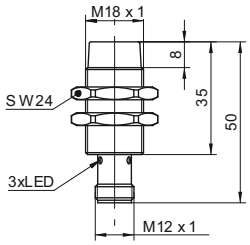
order reference	connection types	output circuit	output indicator
IFRM 18N17G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 18N17G1/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 18N37G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 18N37G1/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 18P17G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 18P17G1/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 18P37G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 18P37G1/S14L	connector M12	PNP break function (NC)	3 port LED red

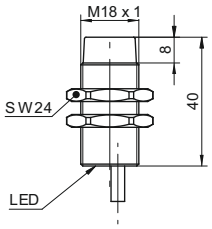
Sn = 20 mm

- version with extended Sn *GammaProx*
- non shielded mounting

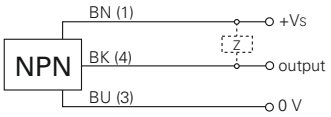
general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	20 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	40 mm
connector M12	
housing length	50 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

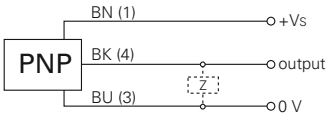
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

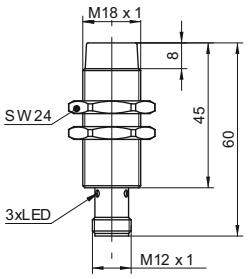
order reference	connection types	output circuit	output indicator
IFRM 18N13G3/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 18N13G3/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 18N33G3/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 18N33G3/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 18P13G3/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 18P13G3/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 18P33G3/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 18P33G3/S14L	connector M12	PNP break function (NC)	3 port LED red

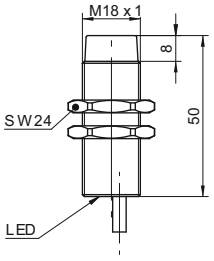
Sn = 20 mm

- version with extended Sn *GammaProx*
- non shielded mounting

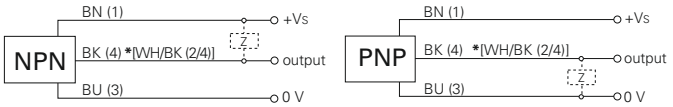
general data	
mounting type	non-flush
special type	enhanced distance (*GammaProx*)
nominal sensing distance Sn	20 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

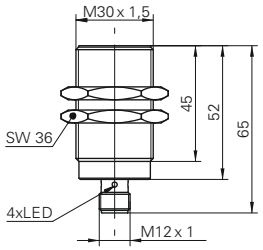
order reference	connection types	output circuit	output indicator
IFRM 18N13G1/L	cable, 2 m	NPN make function (NO)	LED red
IFRM 18N13G1/S14L	connector M12	NPN make function (NO)	3 port LED red
IFRM 18N33G1/L	cable, 2 m	NPN break function (NC)	LED red
IFRM 18N33G1/S14L	connector M12	NPN break function (NC)	3 port LED red
IFRM 18P13G1/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 18P13G1/S14L	connector M12	PNP make function (NO)	3 port LED red
IFRM 18P33G1/L	cable, 2 m	PNP break function (NC)	LED red
IFRM 18P33G1/S14L	connector M12	PNP break function (NC)	3 port LED red

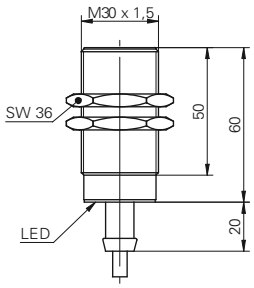
Sn = 10 mm

- voltage supply range +Vs 10 ... 50 VDC
- shielded mounting
- M12 x 1 quick disconnect

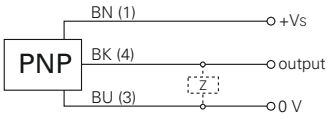
general data	
mounting type	flush
nominal sensing distance Sn	10 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 50 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	30 mm
cable, 2 m	
housing length	60 mm
connector M12	
housing length	65 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings





connection diagram



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

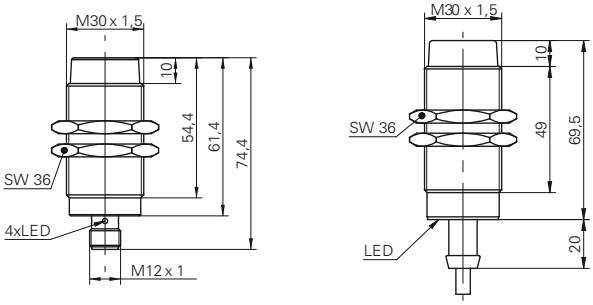
order reference	connection types	output circuit	output indicator
IFRM 30P1501/S14L	connector M12	PNP make function (NO)	4 port LED red
IFRM 30P1601/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 30P3501/S14L	connector M12	PNP break function (NC)	4 port LED red
IFRM 30P3601/L	cable, 2 m	PNP break function (NC)	LED red

Sn = 15 mm

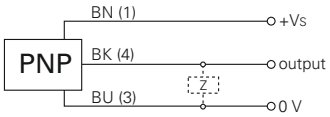
- voltage supply range +Vs 10 ... 50 VDC
- non shielded mounting
- M12 x 1 quick disconnect

general data	
mounting type	non-flush
nominal sensing distance Sn	15 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 50 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	30 mm
cable, 2 m	
housing length	69,5 mm
connector M12	
housing length	74,4 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



connection diagram



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	connection types	output circuit	output indicator
IFRM 30P1101/S14L	connector M12	PNP make function (NO)	4 port LED red
IFRM 30P1201/L	cable, 2 m	PNP make function (NO)	LED red
IFRM 30P3101/S14L	connector M12	PNP break function (NC)	4 port LED red
IFRM 30P3201/L	cable, 2 m	PNP break function (NC)	LED red

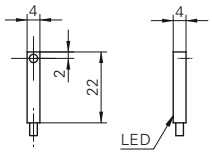
Sn = 0,8 mm

- smallest rectangular housing
- stainless steel housing

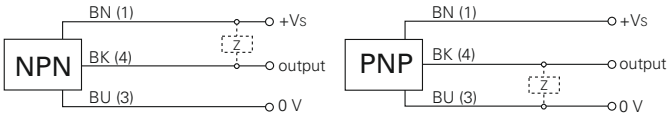
general data	
mounting type	flush
nominal sensing distance Sn	0,8 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red (backside)
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	EP
housing material	stainless steel
dimension	4 mm
housing length	22 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

order reference	output circuit
IFFM 04N1501/O1L	NPN make function (NO)
IFFM 04N3501/O1L	NPN break function (NC)
IFFM 04P1501/O1L	PNP make function (NO)
IFFM 04P3501/O1L	PNP break function (NC)

dimension drawing



connection diagrams

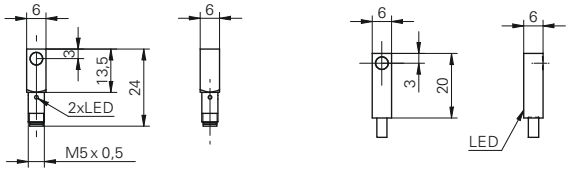


Sn = 1 mm

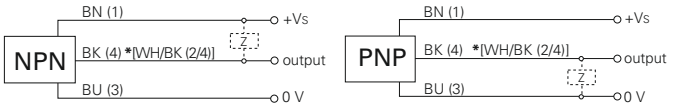
- miniature connector M5 x 0,5
- smallest rectangular housing with connector

general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	LCP
housing material	brass nickel plated
dimension	6 mm
cable, 2 m	
housing length	20 mm
connector M5	
housing length	24 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



connection diagrams



* .../S05L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	connection types	output circuit	output indicator
IFFM 06N15A3/O1L	cable, 2 m	NPN make function (NO)	LED red (backside)
IFFM 06N15A3/O1S05L	connector M5	NPN make function (NO)	2 port LED red
IFFM 06N35A3/O1L	cable, 2 m	NPN break function (NC)	LED red (backside)
IFFM 06N35A3/O1S05L	connector M5	NPN break function (NC)	2 port LED red
IFFM 06P15A3/O1L	cable, 2 m	PNP make function (NO)	LED red (backside)
IFFM 06P15A3/O1S05L	connector M5	PNP make function (NO)	2 port LED red
IFFM 06P35A3/O1L	cable, 2 m	PNP break function (NC)	LED red (backside)
IFFM 06P35A3/O1S05L	connector M5	PNP break function (NC)	2 port LED red

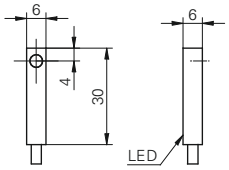
Sn = 1 mm

- standard cable version
- high switching frequency

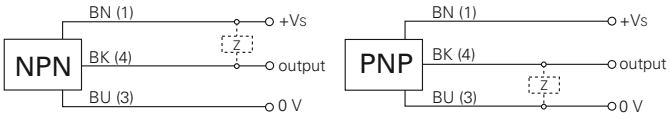
general data	
mounting type	flush
nominal sensing distance Sn	1 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red (backside)
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	LCP
housing material	brass nickel plated
dimension	6 mm
housing length	30 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

order reference	output circuit
IFFM 06N15A1/O1L	NPN make function (NO)
IFFM 06N35A1/O1L	NPN break function (NC)
IFFM 06P15A1/O1L	PNP make function (NO)
IFFM 06P35A1/O1L	PNP break function (NC)

dimension drawing



connection diagrams



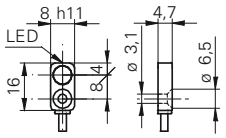
Sn = 2 mm

- extra flat version
- through bore for M3 screw
- robust metal housing

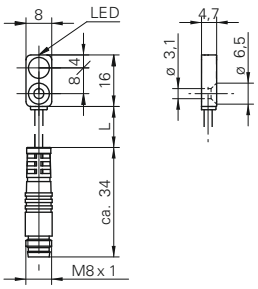
general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	2 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	die-cast zinc nickel plated
dimension	8 mm
housing length	16 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

dimension drawing

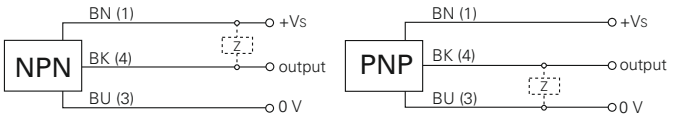


flylead connector version



standard cable length 200 mm (L)

connection diagrams



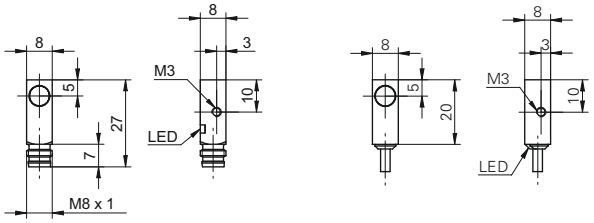
order reference	connection types	output circuit
IFFM 08N17A6/KS35L	flylead connector M8	NPN make function (NO)
IFFM 08N17A6/L	cable, 2 m	NPN make function (NO)
IFFM 08N37A6/KS35L	flylead connector M8	NPN break function (NC)
IFFM 08N37A6/L	cable, 2 m	NPN break function (NC)
IFFM 08P17A6/KS35L	flylead connector M8	PNP make function (NO)
IFFM 08P17A6/L	cable, 2 m	PNP make function (NO)
IFFM 08P37A6/KS35L	flylead connector M8	PNP break function (NC)
IFFM 08P37A6/L	cable, 2 m	PNP break function (NC)

Sn = 2 mm

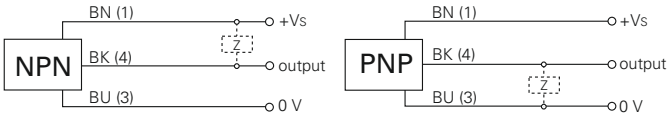
- shortest rectangular design with M8 x 1 connector
- cable and connector versions
- high switching frequency

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	8 mm
cable, 2 m	
housing length	20 mm
connector M8	
housing length	27 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

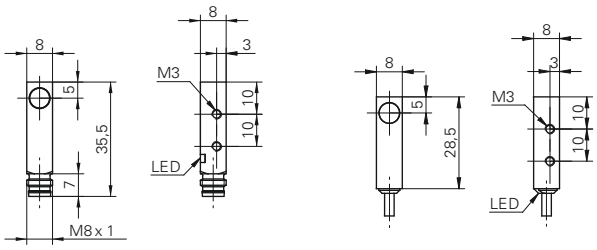
order reference	connection types	output circuit
IFFM 08N1703/O1L	cable, 2 m	NPN make function (NO)
IFFM 08N17A5/O1S35L	connector M8	NPN make function (NO)
IFFM 08N3703/O1L	cable, 2 m	NPN break function (NC)
IFFM 08N37A5/O1S35L	connector M8	NPN break function (NC)
IFFM 08P1703/O1L	cable, 2 m	PNP make function (NO)
IFFM 08P17A5/O1S35L	connector M8	PNP make function (NO)
IFFM 08P3703/O1L	cable, 2 m	PNP break function (NC)
IFFM 08P37A5/O1S35L	connector M8	PNP break function (NC)

Sn = 2 mm

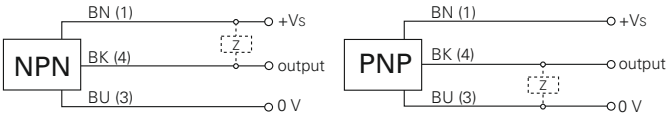
- high switching frequency
- cable and connector versions

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	8 mm
cable, 2 m	
housing length	28,5 mm
connector M8	
housing length	35,5 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



connection diagrams



* .../S05L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

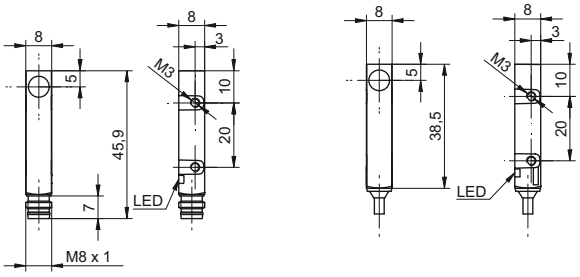
order reference	connection types	output circuit
IFFM 08N1702/O1L	cable, 2 m	NPN make function (NO)
IFFM 08N17A3/O1S35L	connector M8	NPN make function (NO)
IFFM 08N3702/O1L	cable, 2 m	NPN break function (NC)
IFFM 08N37A3/O1S35L	connector M8	NPN break function (NC)
IFFM 08P1702/O1L	cable, 2 m	PNP make function (NO)
IFFM 08P17A3/O1S35L	connector M8	PNP make function (NO)
IFFM 08P3702/O1L	cable, 2 m	PNP break function (NC)
IFFM 08P37A3/O1S35L	connector M8	PNP break function (NC)

Sn = 2 mm

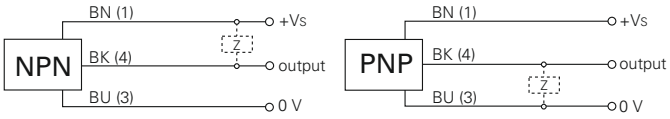
- high switching frequency
- cable and connector versions

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	die-cast zinc nickel plated
dimension	8 mm
cable, 2 m	
housing length	38,5 mm
connector M8	
housing length	45,9 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings



connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

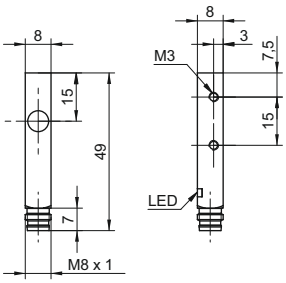
order reference	connection types	output circuit
IFFM 08N1701/O1L	cable, 2 m	NPN make function (NO)
IFFM 08N17A1/O1S35L	connector M8	NPN make function (NO)
IFFM 08N3701/O1L	cable, 2 m	NPN break function (NC)
IFFM 08N37A1/O1S35L	connector M8	NPN break function (NC)
IFFM 08P1701/O1L	cable, 2 m	PNP make function (NO)
IFFM 08P17A1/O1S35L	connector M8	PNP make function (NO)
IFFM 08P3701/O1L	cable, 2 m	PNP break function (NC)
IFFM 08P37A1/O1S35L	connector M8	PNP break function (NC)

Sn = 2 mm

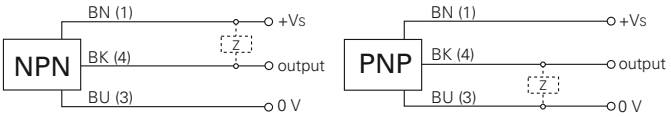
- active area at mid position
- high switching frequency
- cable and connector versions

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	8 mm
housing length	49 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

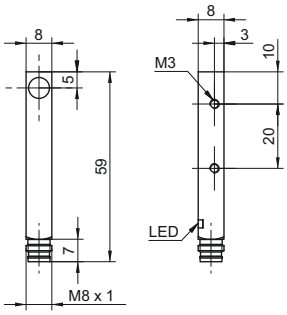
order reference	output circuit
IFFM 08N1703/O2S35L	NPN make function (NO)
IFFM 08N3703/O2S35L	NPN break function (NC)
IFFM 08P1703/O2S35L	PNP make function (NO)
IFFM 08P3703/O2S35L	PNP break function (NC)

Sn = 2 mm

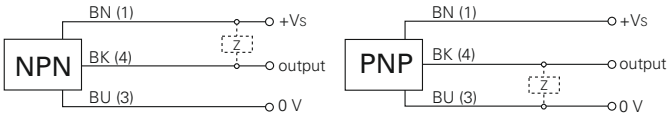
- high switching frequency
- cable and connector versions
- very long housing

general data	
mounting type	flush
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	8 mm
housing length	59 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagrams



connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	output circuit
IFFM 08N1701/O1S35L	NPN make function (NO)
IFFM 08N3701/O1S35L	NPN break function (NC)
IFFM 08P1701/O1S35L	PNP make function (NO)
IFFM 08P3701/O1S35L	PNP break function (NC)

Sn = 4 mm

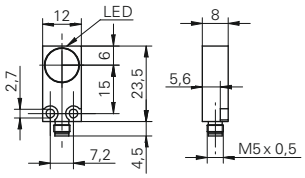
- extra flat version
- miniature connector M5 x 0,5

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
housing length	23,5 mm
connection types	connector M5
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

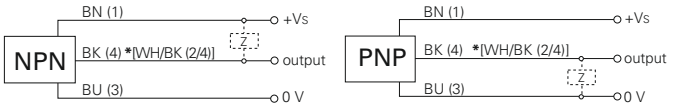
connectors and mating connectors	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	output circuit
IFFM 12N17A3/S05L	NPN make function (NO)
IFFM 12N37A3/S05L	NPN break function (NC)
IFFM 12P17A3/S05L	PNP make function (NO)
IFFM 12P37A3/S05L	PNP break function (NC)

dimension drawing



connection diagrams



* .../S05L pin 2 & 4 electrically connected

Sn = 5 mm

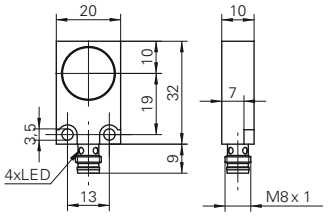
- voltage supply range +Vs 10 ... 50 VDC
- extra flat version
- 4 port LED

general data	
mounting type	flush
nominal sensing distance Sn	5 mm
hysteresis	3 ... 20 % of Sr
output indicator	4 port LED red
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 50 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 3 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	20 mm
housing length	32 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

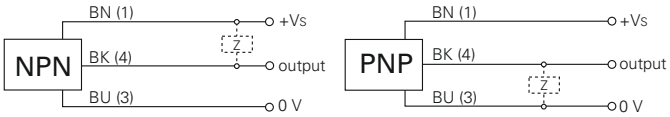
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10152385	Sensofix series 18/20 inductive rectangular
for details: see accessories section	

order reference	output circuit
IFFM 20N1501/S35L	NPN make function (NO)
IFFM 20N3501/S35L	NPN break function (NC)
IFFM 20P1501/S35L	PNP make function (NO)
IFFM 20P3501/S35L	PNP break function (NC)

dimension drawing



connection diagrams



Sn = 8 mm

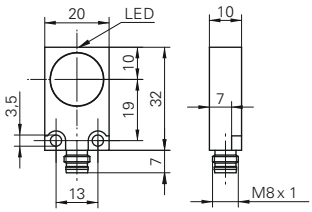
- increased sensing distance
- extra flat version

general data	
mounting type	flush
nominal sensing distance Sn	8 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PBT
housing material	brass nickel plated
dimension	20 mm
housing length	32 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

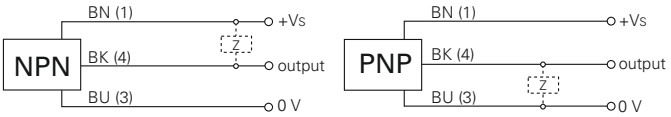
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10152385	Sensofix series 18/20 inductive rectangular
for details: see accessories section	

order reference	output circuit
IFFM 20N17A3/S35L	NPN make function (NO)
IFFM 20N37A3/S35L	NPN break function (NC)
IFFM 20P17A3/S35L	PNP make function (NO)
IFFM 20P37A3/S35L	PNP break function (NC)

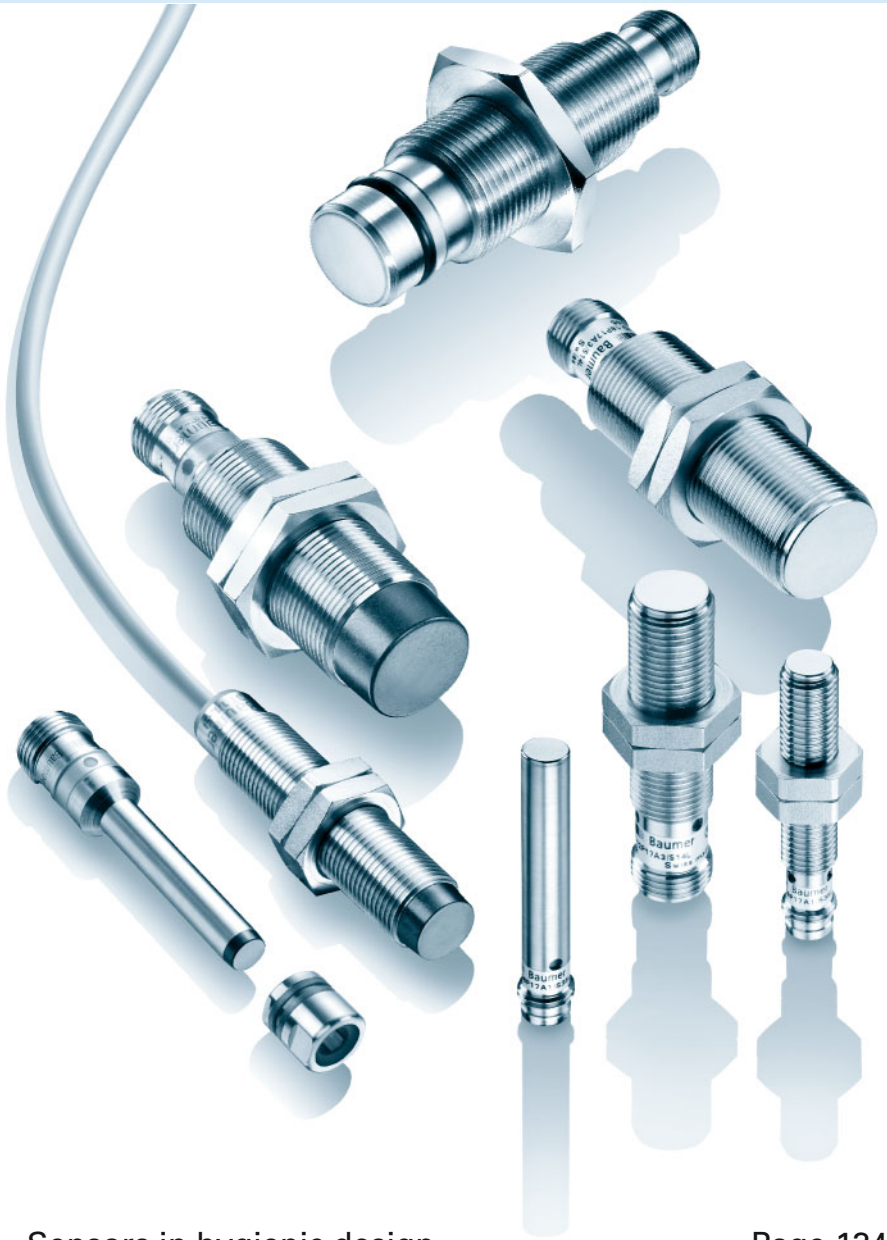
dimension drawing



connection diagrams



Industry and application solutions



Hygienic design

product family	IFBR 06	IFBR 11	IFBR 11	IFBR 17	IFBR 17
					
mounting type	non-flush	flush	non-flush	quasi-flush	non-flush
nominal sensing distance Sn	3 mm	4 mm	6 mm	8 mm	12 mm
dimension	6,5 mm	11 mm	11 mm	17 mm	17 mm
housing length	55 mm	54 mm 60 mm	54 mm 60 mm	55 mm 60 mm	55 mm 60 mm
NPN	■	■	■	■	■
PNP	■	■	■	■	■
cable PVC, 2 m		■	■	■	■
connector M12	■	■	■	■	■
stainless steel 1.4404 (V4A); LSR	■	■	■	■	■
IP 68/69K & proTect+	■	■	■	■	■
page	**134**	**135**	**136**	**137**	**138**

Outdoor design

product family	IFRM 12	IFRR 12	IFRM 18	IFRR 18	IFRM 18	IFRR 18
						
			GammaProx	*GammaProx*		
mounting type	non-flush	non-flush	flush	flush	non-flush	non-flush
nominal sensing distance Sn	6 mm	6 mm	10 mm	10 mm	12 mm	12 mm
dimension	12 mm	12 mm	18 mm	18 mm	18 mm	18 mm
housing length	50 mm 60 mm	55 mm 60 mm	50 mm 60 mm	61 mm	50 mm 60 mm	55 mm 60 mm
NPN	■	■	■	■	■	■
PNP	■	■	■	■	■	■
cable PUR 3 x 0,25, 2 m	■	■	■		■	■
connector M12	■	■	■	■	■	■
brass nickel plated	■		■		■	
stainless steel 1.4404 (V4A); LSR		■		■		■
IP 67	■		■		■	
IP 68/69K & proTect+		■		■		■
page	**144**	**145**	**146**	**147**	**148**	**149**

Washdown design

product family	IFRR 08	IFRR 12	IFRR 12	IFRR 18	IFRR 18
					
mounting type	non-flush	flush	non-flush	quasi-flush	non-flush
nominal sensing distance Sn	3 mm	4 mm	6 mm	8 mm	12 mm
dimension	8 mm	12 mm	12 mm	18 mm	18 mm
housing length	55 mm	55 mm 60 mm	55 mm 60 mm	55 mm 60 mm	55 mm 60 mm
NPN	■	■	■	■	■
PNP	■	■	■	■	■
cable PVC, 2 m		■	■	■	■
connector M12	■	■	■	■	■
stainless steel 1.4404 (V4A); LSR	■	■	■	■	■
IP 68/69K & proTect+	■	■	■	■	■
page	**139**	**140**	**141**	**142**	**143**

Full metal housing

product family	IFRD 06	IFRD 08	IFRD 12	IFRD 18
				
	DuroProx	*DuroProx*	*DuroProx*	*DuroProx*
mounting type	quasi-flush	quasi-flush	quasi-flush	quasi-flush
nominal sensing distance Sn	2 mm	2 mm	4 mm	6 mm
dimension	6,5 mm	8 mm	12 mm	18 mm
housing length	46 mm	46 mm	50 mm	60 mm
NPN	■	■	■	■
PNP	■	■	■	■
connector M8	■	■		
connector M12			■	■
stainless steel 1.4404 (V4A)	■	■	■	■
IP 68/67 (sensing face/sensor)	■	■	■	■
IP 69K	■	■	■	■
page	**150**	**151**	**152**	**153**

product family	IFR 04 / IFR 05	IFRM 06X	IFRM 08X	IFR 10	IFRM 12X	IFRM 12 ATEX	IFRM 12 ATEX
							
flush	■	■	■	■	■	■	■
non-flush			■	■	■		
nominal sensing distance Sn	0,8 mm	1,5 mm	1,5 mm 2 mm	2 mm 4 mm	2 mm 4 mm	4 mm	4 mm
dimension	4 mm 5 mm	6,5 mm	8 mm	10 mm	12 mm	12 mm	12 mm
housing length	25 mm	25 mm	25 mm 27 mm 41 mm 50 mm	6,5 mm	30 mm 34 mm	30,4 mm	40 mm
NAMUR	■	■	■	■	■		
NPN						■	■
PNP						■	■
ATEX 1G		■	■		■		
ATEX 3D						■	■
cable PUR 5 x 0,14, 2 m		■					
cable, 2 m	■	■	■		■	■	■
print				■			
connector M8			■				
stainless steel	■		■				
brass nickel plated		■	■		■	■	■
PBT				■			
protection class	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
page	**154**	**155**	**156**	**157**	**160**	**158**	**159**

product family	IFRM 18X	IFF 08	IFFK 10E
			
flush	■	■	
non-flush	■		■
nominal sensing distance Sn	5 mm 8 mm	1,5 mm	2 mm
dimension	18 mm	8 mm	10 mm
housing length	30 mm 38 mm	25 mm	27,8 mm
NAMUR	■	■	■
ATEX 1G	■		
cable, 2 m	■	■	
spade lug			■
brass nickel plated	■	■	
PBT			■
protection class	IP 67	IP 67	IP 67
page	**161**	**162**	**163**

product family	IFRW 12 / IFRW 18	IFRP 12	IFRP 16 / IFRP 18	IFRM 06	IFRM 08 / IFRM 12	IFRH 08	IFRH 12 / IFRH 18
							
high pressure		■	■				
high temperature				■	■	■	■
welding and magnetic noise	■						
flush	■	■	■	■	■	■	■
nominal sensing distance Sn	2 mm 5 mm	2 mm	2 mm	2 mm	2 mm 4 mm	1,5 mm	2 mm 5 mm
dimension	12 mm 18 mm	12 mm	16 mm 18 mm	6,5 mm	8 mm 12 mm	8 mm	12 mm 18 mm
housing length	50 mm 60 mm	50 mm 70 mm	60 mm	30 mm	30 mm 40 mm	30 mm	30 mm 71 mm
NPN				■	■		
PNP	■	■	■	■	■	■	■
cable FEP, 1 m				■	■		
cable, 2 m						■	■
connector M12	■	■	■				
stainless steel		■	■	■	■	■	■
brass chromium plated	■						
brass nickel plated					■		■
IP 67	■			■	■	■	■
IP 68/67 (sensing face/sensor)		■	■				
page	**164**	**165**	**166**	**167**	**168**	**170**	**171**

product family	ILFK 12	IARM 08	IARM 12
			
inductive code reader	■		
with banking screw		■	■
flush	■	■	■
non-flush	■		
nominal sensing distance Sn	2 mm 4 mm	0,4 mm	1,2 mm
dimension	30 mm	8 mm	12 mm
housing length	38 mm 79 mm	56 mm	56,3 mm
NPN			■
PNP	■	■	■
cable, 2 m	■		
connector M8		■	■
PA 6	■		
steel / hardened steel		■	■
IP 67	■	■	■
page	**173**	**174**	**175**

Sn = 3 mm

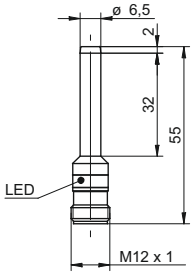
- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

general data	
mounting type	non-flush
special type	hygienic design
nominal sensing distance Sn	3 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab EHEDG
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	6,5 mm
housing length	55 mm
connection types	connector M12
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

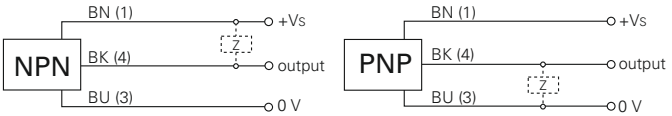
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	
accessories	
HI06-1H	Mounting for sensors in hygienic design Ø 6,5 mm
for details: see accessories section	

order reference	output circuit
IFBR 06N13T1/S14L-9	NPN make function (NO)
IFBR 06N33T1/S14L-9	NPN break function (NC)
IFBR 06P13T1/S14L-9	PNP make function (NO)
IFBR 06P33T1/S14L-9	PNP break function (NC)

dimension drawing



connection diagrams



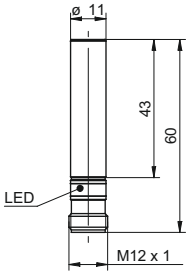
* .../S14L pin 2 & 4 electrically connected

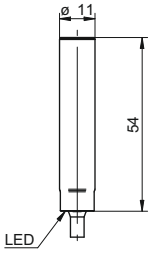
Sn = 4 mm

- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

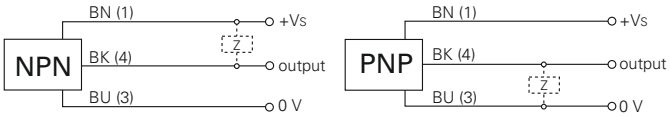
general data	
mounting type	flush
special type	hygienic design
nominal sensing distance Sn	4 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab EHEDG
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	11 mm
cable PVC, 2 m	
housing length	54 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	
accessories	
HI11-1H	Mounting for sensors in hygienic design Ø 11 mm
for details: see accessories section	

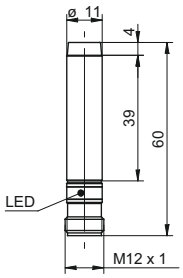
order reference	connection types	output circuit
IFBR 11N17T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFBR 11N17T1/S14L-9	connector M12	NPN make function (NO)
IFBR 11N37T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFBR 11N37T1/S14L-9	connector M12	NPN break function (NC)
IFBR 11P17T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFBR 11P17T1/S14L-9	connector M12	PNP make function (NO)
IFBR 11P37T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFBR 11P37T1/S14L-9	connector M12	PNP break function (NC)

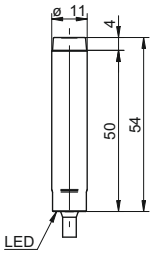
Sn = 6 mm

- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

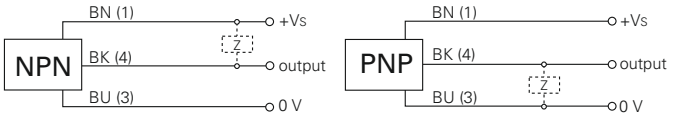
general data	
mounting type	non-flush
special type	hygienic design
nominal sensing distance Sn	6 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab EHEDG
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	11 mm
cable PVC, 2 m	
housing length	54 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	
accessories	
HI11-1H	Mounting for sensors in hygienic design Ø 11 mm
for details: see accessories section	

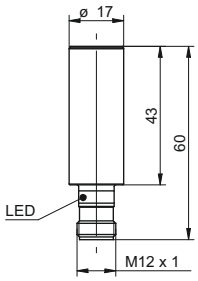
order reference	connection types	output circuit
IFBR 11N13T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFBR 11N13T1/S14L-9	connector M12	NPN make function (NO)
IFBR 11N33T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFBR 11N33T1/S14L-9	connector M12	NPN break function (NC)
IFBR 11P13T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFBR 11P13T1/S14L-9	connector M12	PNP make function (NO)
IFBR 11P33T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFBR 11P33T1/S14L-9	connector M12	PNP break function (NC)

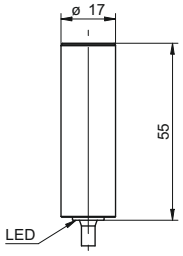
Sn = 8 mm

- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

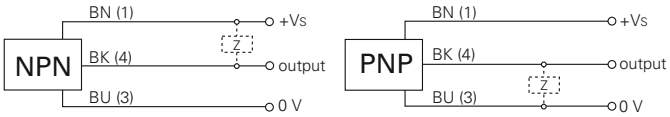
general data	
mounting type	quasi-flush
special type	hygienic design
nominal sensing distance Sn	8 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab EHEDG
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	17 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	
accessories	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm
for details: see accessories section	

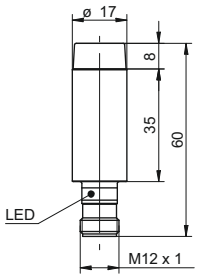
order reference	connection types	output circuit
IFBR 17N17T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFBR 17N17T1/S14L-9	connector M12	NPN make function (NO)
IFBR 17N37T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFBR 17N37T1/S14L-9	connector M12	NPN break function (NC)
IFBR 17P17T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFBR 17P17T1/S14L-9	connector M12	PNP make function (NO)
IFBR 17P37T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFBR 17P37T1/S14L-9	connector M12	PNP break function (NC)

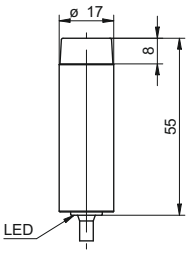
Sn = 12 mm

- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

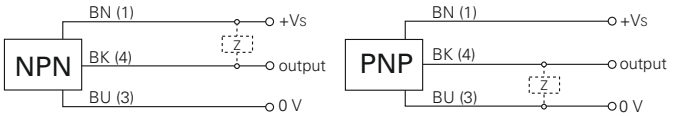
general data	
mounting type	non-flush
special type	hygienic design
nominal sensing distance Sn	12 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab EHEDG
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	17 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	
accessories	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm
for details: see accessories section	

order reference	connection types	output circuit
IFBR 17N13T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFBR 17N13T1/S14L-9	connector M12	NPN make function (NO)
IFBR 17N33T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFBR 17N33T1/S14L-9	connector M12	NPN break function (NC)
IFBR 17P13T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFBR 17P13T1/S14L-9	connector M12	PNP make function (NO)
IFBR 17P33T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFBR 17P33T1/S14L-9	connector M12	PNP break function (NC)

Sn = 3 mm

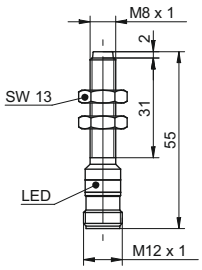
- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

general data	
mounting type	non-flush
special type	washdown design
nominal sensing distance Sn	3 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	8 mm
housing length	55 mm
connection types	connector M12
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

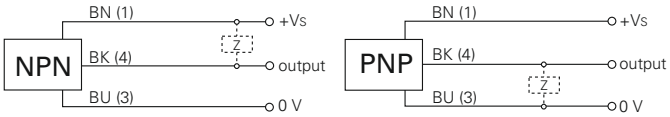
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

order reference	output circuit
IFRR 08N13T1/S14L-9	NPN make function (NO)
IFRR 08N33T1/S14L-9	NPN break function (NC)
IFRR 08P13T1/S14L-9	PNP make function (NO)
IFRR 08P33T1/S14L-9	PNP break function (NC)

dimension drawing

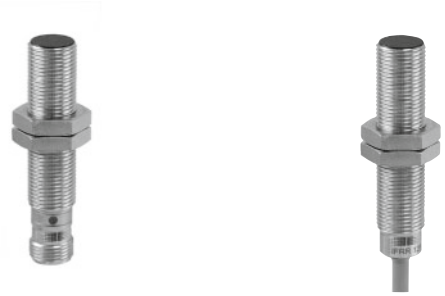


connection diagrams



* .../S14L pin 2 & 4 electrically connected

Sn = 4 mm

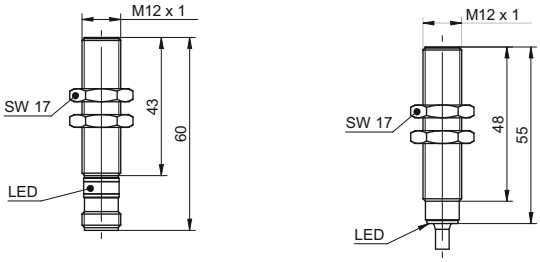


- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

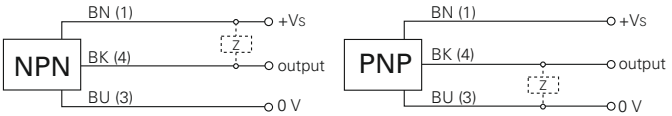
general data	
mounting type	flush
special type	washdown design
nominal sensing distance Sn	4 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	12 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

dimension drawings



connection diagrams



* .../S14L pin 2 & 4 electrically connected

order reference	connection types	output circuit
IFRR 12N17T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFRR 12N17T1/S14L-9	connector M12	NPN make function (NO)
IFRR 12N37T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFRR 12N37T1/S14L-9	connector M12	NPN break function (NC)
IFRR 12P17T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFRR 12P17T1/S14L-9	connector M12	PNP make function (NO)
IFRR 12P37T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFRR 12P37T1/S14L-9	connector M12	PNP break function (NC)

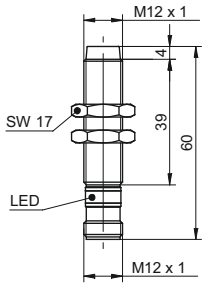
Sn = 6 mm

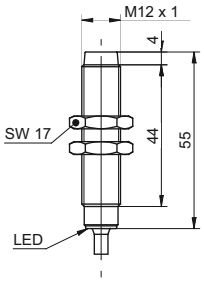
- robust steel housing
- high switching frequency
- M12 x 1 quick disconnect

general data	
mounting type	non-flush
nominal sensing distance Sn	6 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	12 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

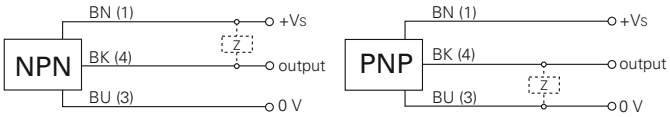
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

order reference	special type	connection types	output circuit
IFRR 12N13T1/L-9	washdown design	cable PVC, 2 m	NPN make function (NO)
IFRR 12N13T1/S14L-9	outdoor design washdown design	connector M12	NPN make function (NO)
IFRR 12N33T1/L-9	washdown design	cable PVC, 2 m	NPN break function (NC)
IFRR 12N33T1/S14L-9	outdoor design washdown design	connector M12	NPN break function (NC)
IFRR 12P13T1/L-9	washdown design	cable PVC, 2 m	PNP make function (NO)
IFRR 12P13T1/S14L-9	outdoor design washdown design	connector M12	PNP make function (NO)
IFRR 12P33T1/L-9	washdown design	cable PVC, 2 m	PNP break function (NC)
IFRR 12P33T1/S14L-9	outdoor design washdown design	connector M12	PNP break function (NC)

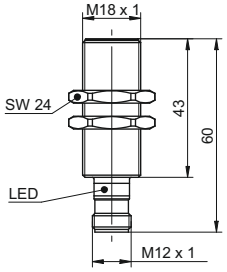
Sn = 8 mm

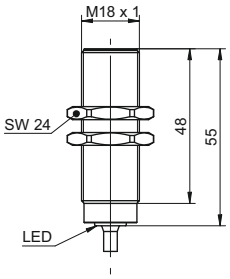
- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

general data	
mounting type	quasi-flush
special type	washdown design
nominal sensing distance Sn	8 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	18 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

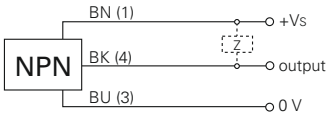
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

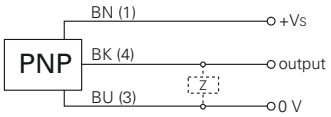
dimension drawings





connection diagrams





* .../S14L pin 2 & 4 electrically connected

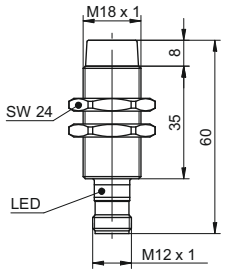
order reference	connection types	output circuit
IFRR 18N17T1/L-9	cable PVC, 2 m	NPN make function (NO)
IFRR 18N17T1/S14L-9	connector M12	NPN make function (NO)
IFRR 18N37T1/L-9	cable PVC, 2 m	NPN break function (NC)
IFRR 18N37T1/S14L-9	connector M12	NPN break function (NC)
IFRR 18P17T1/L-9	cable PVC, 2 m	PNP make function (NO)
IFRR 18P17T1/S14L-9	connector M12	PNP make function (NO)
IFRR 18P37T1/L-9	cable PVC, 2 m	PNP break function (NC)
IFRR 18P37T1/S14L-9	connector M12	PNP break function (NC)

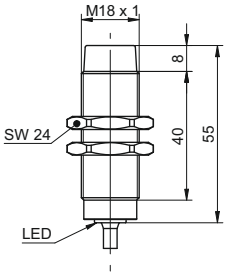
Sn = 12 mm

- robust steel housing
- high switching frequency
- M12 x 1 quick disconnect

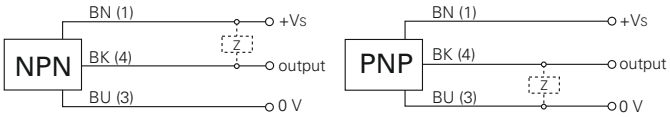
general data	
mounting type	non-flush
nominal sensing distance Sn	12 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	18 mm
cable PVC, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

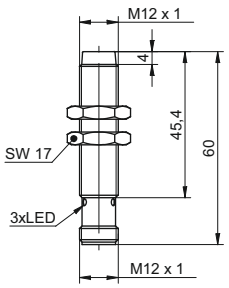
order reference	special type	connection types	output circuit
IFRR 18N13T1/L-9	washdown design	cable PVC, 2 m	NPN make function (NO)
IFRR 18N13T1/S14L-9	outdoor design washdown design	connector M12	NPN make function (NO)
IFRR 18N33T1/L-9	washdown design	cable PVC, 2 m	NPN break function (NC)
IFRR 18N33T1/S14L-9	outdoor design washdown design	connector M12	NPN break function (NC)
IFRR 18P13T1/L-9	washdown design	cable PVC, 2 m	PNP make function (NO)
IFRR 18P13T1/S14L-9	outdoor design washdown design	connector M12	PNP make function (NO)
IFRR 18P33T1/L-9	washdown design	cable PVC, 2 m	PNP break function (NC)
IFRR 18P33T1/S14L-9	outdoor design washdown design	connector M12	PNP break function (NC)

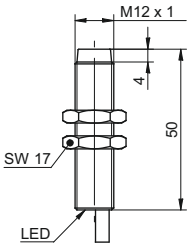
Sn = 6 mm

- operating temperature -40 … +80 °C

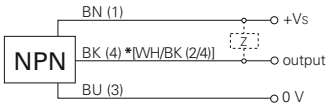
general data	
mounting type	non-flush
special type	outdoor design
nominal sensing distance Sn	6 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
cable PUR 3 x 0,25, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
protection class	IP 67

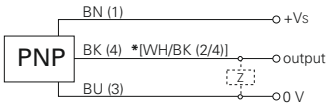
dimension drawings





connection diagrams





connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	connection types	output circuit
IFRM 12N13T1/PL	cable PUR 3 x 0,25, 2 m	NPN make function (NO)
IFRM 12N13T1/S14L	connector M12	NPN make function (NO)
IFRM 12N33T1/PL	cable PUR 3 x 0,25, 2 m	NPN break function (NC)
IFRM 12N33T1/S14L	connector M12	NPN break function (NC)
IFRM 12P13T1/PL	cable PUR 3 x 0,25, 2 m	PNP make function (NO)
IFRM 12P13T1/S14L	connector M12	PNP make function (NO)
IFRM 12P33T1/PL	cable PUR 3 x 0,25, 2 m	PNP break function (NC)
IFRM 12P33T1/S14L	connector M12	PNP break function (NC)

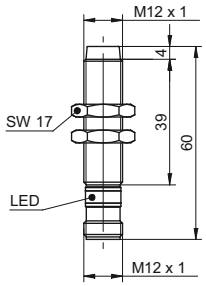
Sn = 6 mm

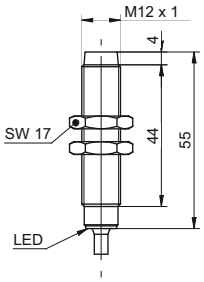
- robust steel housing
- high switching frequency
- M12 x 1 quick disconnect

general data	
mounting type	non-flush
nominal sensing distance Sn	6 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 1 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	12 mm
cable PUR 3 x 0,25, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

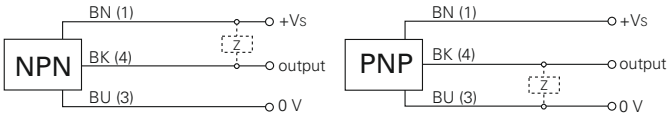
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

order reference	special type	connection types	output circuit	approvals/certificates
IFRR 12N13T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	NPN make function (NO)	-
IFRR 12N13T1/S14L-9	outdoor design washdown design	connector M12	NPN make function (NO)	Ecolab
IFRR 12N33T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	NPN break function (NC)	-
IFRR 12N33T1/S14L-9	outdoor design washdown design	connector M12	NPN break function (NC)	Ecolab
IFRR 12P13T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	PNP make function (NO)	-
IFRR 12P13T1/S14L-9	outdoor design washdown design	connector M12	PNP make function (NO)	Ecolab
IFRR 12P33T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	PNP break function (NC)	-
IFRR 12P33T1/S14L-9	outdoor design washdown design	connector M12	PNP break function (NC)	Ecolab

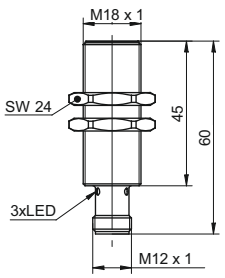
Sn = 10 mm

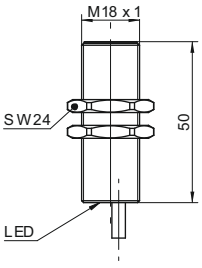
- increased sensing distance
- operating temperature -40 … +80 °C

general data	
mounting type	flush
special type	outdoor design
nominal sensing distance Sn	10 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable PUR 3 x 0,25, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
protection class	IP 67

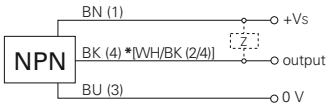
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

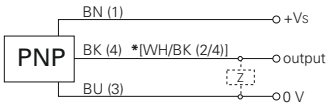
dimension drawings





connection diagrams





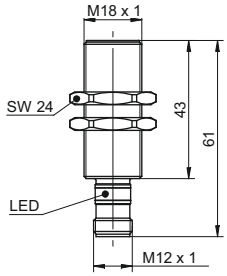
order reference	connection types	output circuit
IFRM 18N17M1/PL	cable PUR 3 x 0,25, 2 m	NPN make function (NO)
IFRM 18N17M1/S14L	connector M12	NPN make function (NO)
IFRM 18N37M1/PL	cable PUR 3 x 0,25, 2 m	NPN break function (NC)
IFRM 18N37M1/S14L	connector M12	NPN break function (NC)
IFRM 18P17M1/PL	cable PUR 3 x 0,25, 2 m	PNP make function (NO)
IFRM 18P17M1/S14L	connector M12	PNP make function (NO)
IFRM 18P37M1/PL	cable PUR 3 x 0,25, 2 m	PNP break function (NC)
IFRM 18P37M1/S14L	connector M12	PNP break function (NC)

Sn = 10 mm

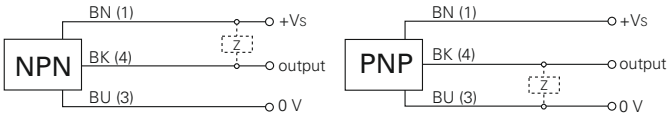
- robust steel housing
- protection class IP 69K & proTect+
- operating temperature -40 … +80°C

general data	
mounting type	flush
special type	outdoor design
nominal sensing distance Sn	10 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
approvals/certificates	Ecolab
electrical data	
switching frequency	< 400 Hz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	24 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	18 mm
housing length	61 mm
connection types	connector M12
ambient conditions	
operating temperature	-40 ... +80 °C
protection class	IP 68/69K & proTect+

dimension drawing



connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

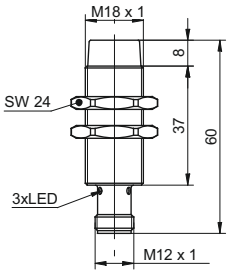
order reference	output circuit
IFRR 18N17M1/S14L-9	NPN make function (NO)
IFRR 18N37M1/S14L-9	NPN break function (NC)
IFRR 18P17M1/S14L-9	PNP make function (NO)
IFRR 18P37M1/S14L-9	PNP break function (NC)

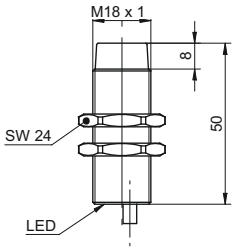
Sn = 12 mm

- operating temperature -40 … +80 °C

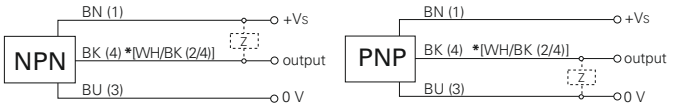
general data	
mounting type	non-flush
special type	outdoor design
nominal sensing distance Sn	12 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	18 mm
cable PUR 3 x 0,25, 2 m	
housing length	50 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
protection class	IP 67

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

order reference	connection types	output circuit
IFRM 18N13T1/PL	cable PUR 3 x 0,25, 2 m	NPN make function (NO)
IFRM 18N13T1/S14L	connector M12	NPN make function (NO)
IFRM 18N33T1/PL	cable PUR 3 x 0,25, 2 m	NPN break function (NC)
IFRM 18N33T1/S14L	connector M12	NPN break function (NC)
IFRM 18P13T1/PL	cable PUR 3 x 0,25, 2 m	PNP make function (NO)
IFRM 18P13T1/S14L	connector M12	PNP make function (NO)
IFRM 18P33T1/PL	cable PUR 3 x 0,25, 2 m	PNP break function (NC)
IFRM 18P33T1/S14L	connector M12	PNP break function (NC)

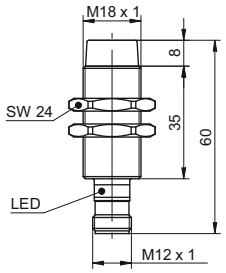
Sn = 12 mm

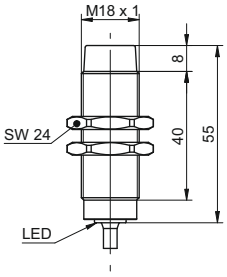
- robust steel housing
- high switching frequency
- M12 x 1 quick disconnect

general data	
mounting type	non-flush
nominal sensing distance Sn	12 mm
hysteresis	2 ... 15 % of Sr
output indicator	LED red
electrical data	
switching frequency	< 500 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
output current (at cleaning temperature)	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel 1.4404 (V4A); LSR
dimension	18 mm
cable PUR 3 x 0,25, 2 m	
housing length	55 mm
connector M12	
housing length	60 mm
ambient conditions	
operating temperature	-40 ... +80 °C
cleaning temperature	80 ... +100 °C (30 min/day)
protection class	IP 68/69K & proTect+

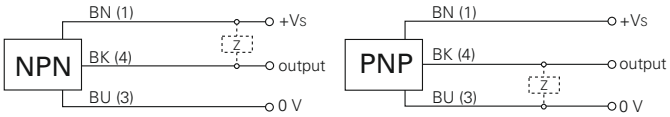
connectors and mating connectors	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
additional cable connectors and field wireable connectors: see accessories	

dimension drawings





connection diagrams



* .../S14L pin 2 & 4 electrically connected

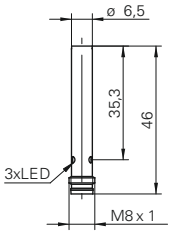
order reference	special type	connection types	output circuit	approvals/certificates
IFRR 18N13T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	NPN make function (NO)	-
IFRR 18N13T1/S14L-9	outdoor design washdown design	connector M12	NPN make function (NO)	Ecolab
IFRR 18N33T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	NPN break function (NC)	-
IFRR 18N33T1/S14L-9	outdoor design washdown design	connector M12	NPN break function (NC)	Ecolab
IFRR 18P13T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	PNP make function (NO)	-
IFRR 18P13T1/S14L-9	outdoor design washdown design	connector M12	PNP make function (NO)	Ecolab
IFRR 18P33T1/PL-9	outdoor design	cable PUR 3 x 0,25, 2 m	PNP break function (NC)	-
IFRR 18P33T1/S14L-9	outdoor design washdown design	connector M12	PNP break function (NC)	Ecolab

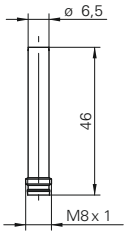
Sn = 2 mm

- full stainless steel housing 1.4404 (V4A)
- protection class IP 69K

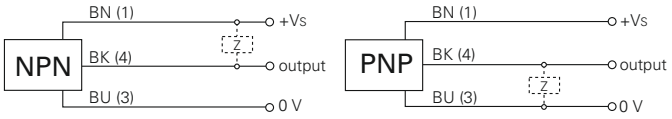
general data	
mounting type	quasi-flush
special type	full metal housing (*DuroProx*)
nominal sensing distance Sn	2 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 150 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	20 mA
voltage drop Vd	< 2 VDC
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	stainless steel 1.4404 (V4A)
housing material	stainless steel 1.4404 (V4A)
pressure static	< 20 bar
dimension	6,5 mm
housing length	46 mm
connection types	connector M8

dimension drawings





connection diagrams



remarks

for correct installation refer to “mounting instructions”

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

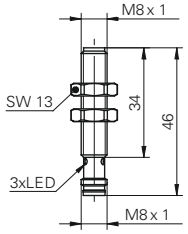
order reference	output circuit	operating temperature	protection class	output indicator	output current
IFRD 06N17A1/S35L	NPN make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 06N17T1/S35	NPN make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 06N37A1/S35L	NPN break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 06N37T1/S35	NPN break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 06P17A1/S35L	PNP make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 06P17T1/S35	PNP make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 06P37A1/S35L	PNP break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 06P37T1/S35	PNP break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA

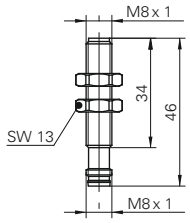
Sn = 2 mm

- full stainless steel housing 1.4404 (V4A)
- protection class IP 69K

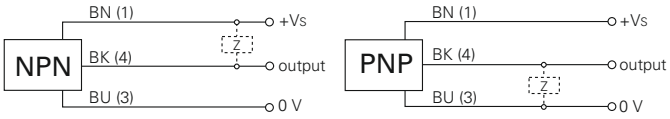
general data	
mounting type	quasi-flush
special type	full metal housing (*DuroProx*)
nominal sensing distance Sn	2 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 150 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	20 mA
voltage drop Vd	< 2 VDC
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	stainless steel 1.4404 (V4A)
housing material	stainless steel 1.4404 (V4A)
pressure static	< 20 bar
dimension	8 mm
housing length	46 mm
connection types	connector M8

dimension drawings





connection diagrams



remarks

for correct installation refer to “mounting instructions”

connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

accessories	
10151719	Sensofix series 08
for details: see accessories section	

order reference	output circuit	operating temperature	protection class	output indicator	output current
IFRD 08N17A1/S35L	NPN make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 08N17T1/S35	NPN make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 08N37A1/S35L	NPN break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 08N37T1/S35	NPN break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 08P17A1/S35L	PNP make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 08P17T1/S35	PNP make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 08P37A1/S35L	PNP break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 08P37T1/S35	PNP break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA

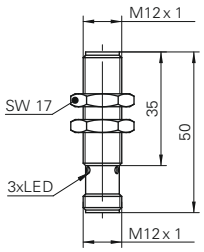
Sn = 4 mm

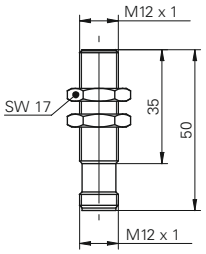
- full stainless steel housing 1.4404 (V4A)
- protection class IP 69K

general data	
mounting type	quasi-flush
special type	full metal housing (*DuroProx*)
nominal sensing distance Sn	4 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 100 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	14 mA
voltage drop Vd	< 2 VDC
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	stainless steel 1.4404 (V4A)
housing material	stainless steel 1.4404 (V4A)
pressure static	< 20 bar
dimension	12 mm
housing length	50 mm
connection types	connector M12

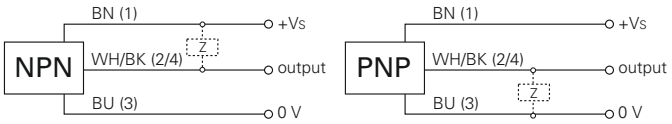
connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings





connection diagrams



remarks

for correct installation refer to “mounting instructions”

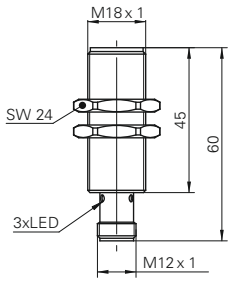
order reference	output circuit	operating temperature	protection class	output indicator	output current
IFRD 12N17A3/S14L	NPN make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 12N17T3/S14	NPN make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 12N37A3/S14L	NPN break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 12N37T3/S14	NPN break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 12P17A3/S14L	PNP make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 12P17T3/S14	PNP make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 12P37A3/S14L	PNP break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 12P37T3/S14	PNP break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA

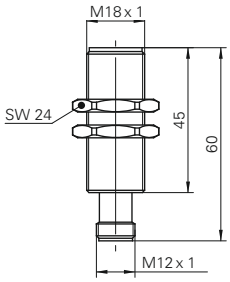
Sn = 6 mm

- full stainless steel housing 1.4404 (V4A)
- protection class IP 69K

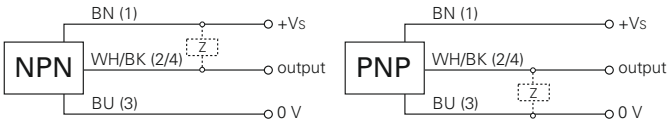
general data	
mounting type	quasi-flush
special type	full metal housing (*DuroProx*)
nominal sensing distance Sn	6 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 100 Hz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	14 mA
voltage drop Vd	< 2 VDC
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	stainless steel 1.4404 (V4A)
housing material	stainless steel 1.4404 (V4A)
pressure static	< 20 bar
dimension	18 mm
housing length	60 mm
connection types	connector M12

dimension drawings





connection diagrams



remarks

for correct installation refer to “mounting instructions”

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151658	Sensofix series 18
for details: see accessories section	

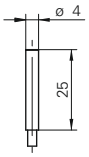
order reference	output circuit	operating temperature	protection class	output indicator	output current
IFRD 18N17A3/S14L	NPN make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 18N17T3/S14	NPN make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 18N37A3/S14L	NPN break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 18N37T3/S14	NPN break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 18P17A3/S14L	PNP make function (NO)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 18P17T3/S14	PNP make function (NO)	-25 ... +100 °C	IP 69K	-	< 100 mA
IFRD 18P37A3/S14L	PNP break function (NC)	-25 ... +75 °C	IP 68/67 (sensing face/sensor)	3 port LED red	< 200 mA
IFRD 18P37T3/S14	PNP break function (NC)	-25 ... +100 °C	IP 69K	-	< 100 mA

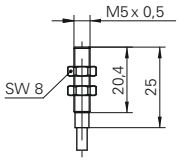
Sn = 0,8 mm

- smallest NAMUR type sensors
- high switching frequency
- robust steel housing

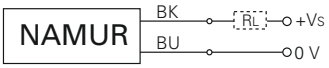
general data	
mounting type	flush
nominal sensing distance Sn	0,8 mm
electrical data	
switching frequency	< 5 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
housing material	stainless steel
housing length	25 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings





connection diagram



accessories	
10119345	Clamping nut for sensors Ø 4 mm
for details: see accessories section	

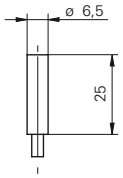
order reference	type	dimension
IFR 04.82.05	cylindrical smooth	4 mm
IFR 05.82.05	cylindrical threaded	5 mm

Sn = 1,5 mm

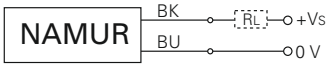
- high switching frequency
- ATEX certification

general data	
mounting type	flush
nominal sensing distance Sn	1,5 mm
approvals/certificates	ATEX 1G
electrical data	
switching frequency	< 5 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	cylindrical smooth
housing material	brass nickel plated
dimension	6,5 mm
housing length	25 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67
safe maximum values	
EC-type-examination Certificate	PTB 03 ATEX 2146
marking	II 1G Ex ia IIC T6 Ga
current Ii	< 37 mA
voltage Ui	< 13,5 VDC
power Pi	< 0,125 W
internal capacitance Ci	< 50 nF
internal inductance Li	< 0,2 mH
operating temperature Ta (temp. class T5)	-20 ... +60 °C
operating temperature Ta (temp. class T6)	-20 ... +40 °C

dimension drawing



connection diagram



operating data according to EN 60947-5-6

+Vs = 8,2 V
RL = 1 kΩ
T = 20 °C
Sn at 1,8 mA

for applications in hazardous areas

accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
for details: see accessories section	

order reference	connection types
IFRM 06X9503	cable, 2 m
IFRM 06X9503/P	cable PUR 5 x 0,14, 2 m

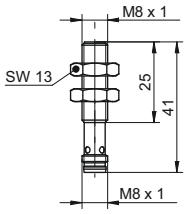
Sn = 1,5 mm / 2 mm

- shielded and unshielded versions
- high switching frequency
- ATEX certification

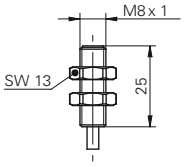
general data	
approvals/certificates	ATEX 1G
electrical data	
switching frequency	< 5 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	cylindrical threaded
dimension	8 mm
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67
safe maximum values	
EC-type-examination Certificate	PTB 03 ATEX 2146
marking	II 1G Ex ia IIC T6 Ga
current Ii	< 37 mA
voltage Ui	< 13,5 VDC
power Pi	< 0,125 W
internal capacitance Ci	< 50 nF
internal inductance Li	< 0,2 mH
operating temperature Ta (temp. class T5)	-20 ... +60 °C
operating temperature Ta (temp. class T6)	-20 ... +40 °C

accessories	
10151719	Sensofix series 08
for details: see accessories section	

dimension drawings

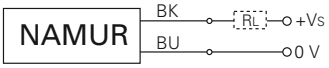


flush



non-flush

connection diagram



operating data according to EN 60947-5-6

+Vs = 8,2 V
RL = 1 kΩ
T = 20 °C
Sn at 1,8 mA

for applications in hazardous areas

remarks

available with connector S35

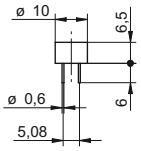
order reference	nominal sensing distance Sn	mounting type	housing material	housing length	connection types
IFRM 08X9103	2 mm	non-flush	brass nickel plated	27 mm	cable, 2 m
IFRM 08X9501/S35	1,5 mm	flush	stainless steel	50 mm	connector M8
IFRM 08X9503	1,5 mm	flush	brass nickel plated	25 mm	cable, 2 m
IFRM 08X9503/S35	1,5 mm	flush	stainless steel	41 mm	connector M8

Sn = 2 mm / 4 mm

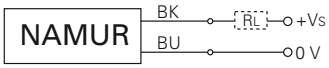
- circuit board mountable
- pin-spacing 5 mm
- shielded and unshielded versions

electrical data	
switching frequency	< 2 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	cylindrical smooth
housing material	PBT
dimension	10 mm
housing length	6,5 mm
connection types	print
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagram



order reference	nominal sensing distance Sn	mounting type
IFR 10.82.01	4 mm	non-flush
IFR 10.82.05	2 mm	flush

Sn = 4 mm

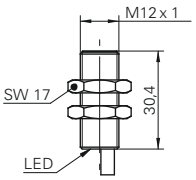
- high stability across entire temperature range
- ATEX certification

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
approvals/certificates	ATEX 3D
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
housing length	30,4 mm
connection types	cable, 2 m
ambient conditions	
protection class	IP 67
safe maximum values	
marking	II 3D Ex tc IIIC T100°C Dc X
operating temperature Ta	-25 ... +65 °C

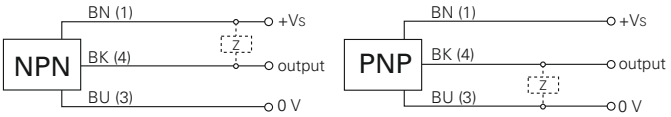
accessories		
10151720	Sensofix series 12 round	
for details: see accessories section		

order reference	output circuit
IFRM 12N17X1/L	NPN make function (NO)
IFRM 12N37X1/L	NPN break function (NC)
IFRM 12P17X1/L	PNP make function (NO)
IFRM 12P37X1/L	PNP break function (NC)

dimension drawing



connection diagrams



Sn = 4 mm

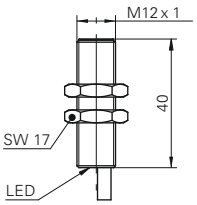
- high stability across entire temperature range
- ATEX certification

general data	
mounting type	flush
nominal sensing distance Sn	4 mm
hysteresis	3 ... 20 % of Sr
output indicator	LED red
approvals/certificates	ATEX 3D
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	brass nickel plated
dimension	12 mm
housing length	40 mm
connection types	cable, 2 m
ambient conditions	
protection class	IP 67
safe maximum values	
marking	II 3D Ex tc IIIC T100°C Dc X
operating temperature Ta	-25 ... +65 °C

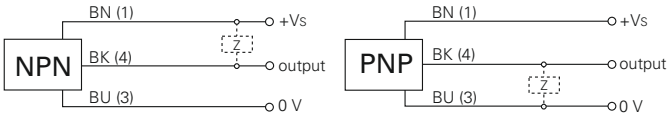
accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

order reference	output circuit
IFRM 12N17X2/L	NPN make function (NO)
IFRM 12N37X2/L	NPN break function (NC)
IFRM 12P17X2/L	PNP make function (NO)
IFRM 12P37X2/L	PNP break function (NC)

dimension drawing



connection diagrams



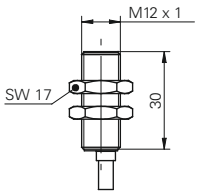
Sn = 2 mm / 4 mm

- shielded and unshielded versions
- ATEX certification

general data	
approvals/certificates	ATEX 1G
electrical data	
switching frequency	< 2 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	12 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67
safe maximum values	
EC-type-examination Certificate	PTB 03 ATEX 2146
marking	II 1G Ex ia IIC T6 Ga
current Ii	< 37 mA
voltage Ui	< 13,5 VDC
power Pi	< 0,125 W
internal capacitance Ci	< 50 nF
internal inductance Li	< 0,2 mH
operating temperature Ta (temp. class T5)	-20 ... +60 °C
operating temperature Ta (temp. class T6)	-20 ... +40 °C

accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings



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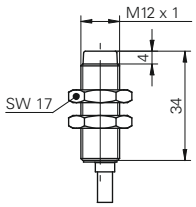
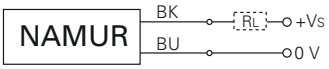


non-flush

connection diagram



operating data according to EN 60947-5-6

+Vs = 8,2 V
RL = 1 kΩ
T = 20 °C
Sn at 1,8 mA

for applications in hazardous areas

order reference	nominal sensing distance Sn	mounting type	housing length
IFRM 12X9103	4 mm	non-flush	34 mm
IFRM 12X9503	2 mm	flush	30 mm

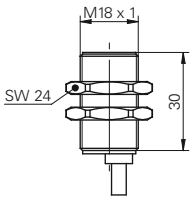
Sn = 5 mm / 8 mm

- shielded and unshielded versions
- ATEX certification

general data	
approvals/certificates	ATEX 1G
electrical data	
switching frequency	< 1 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	cylindrical threaded
housing material	brass nickel plated
dimension	18 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67
safe maximum values	
EC-type-examination Certificate	PTB 03 ATEX 2146
marking	II 1G Ex ia IIC T6 Ga
current Ii	< 37 mA
voltage Ui	< 13,5 VDC
power Pi	< 0,125 W
internal capacitance Ci	< 50 nF
internal inductance Li	< 0,2 mH
operating temperature Ta (temp. class T5)	-20 ... +60 °C
operating temperature Ta (temp. class T6)	-20 ... +40 °C

accessories	
10151658	Sensofix series 18
for details: see accessories section	

dimension drawings



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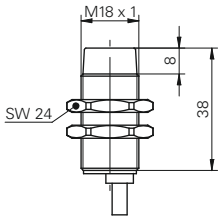
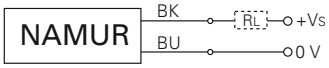


non-flush

connection diagram



operating data according to EN 60947-5-6

+Vs = 8,2 V
R_L = 1 kΩ
T = 20 °C
Sn at 1,8 mA

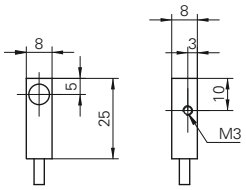
for applications in hazardous areas

order reference	nominal sensing distance Sn	mounting type	housing length
IFRM 18X9103	8 mm	non-flush	38 mm
IFRM 18X9503	5 mm	flush	30 mm

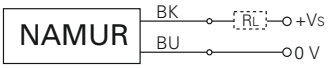
Sn = 1,5 mm

general data	
mounting type	flush
nominal sensing distance Sn	1,5 mm
electrical data	
switching frequency	< 5 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	rectangular
housing material	brass nickel plated
dimension	8 mm
housing length	25 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawing



connection diagram



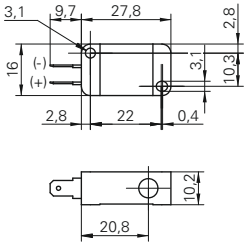
order reference
IFF 08.82.05

Sn = 2 mm

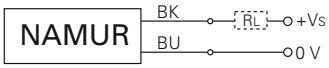
general data	
mounting type	non-flush
nominal sensing distance Sn	2 mm
electrical data	
switching frequency	< 5 kHz
normal operating voltage	8,2 VDC
voltage supply range +Vs	5 ... 30 VDC
current consumption undamped	> 4 mA
current consumption damped	< 1 mA
current consumption max. (no load)	10 mA
output circuit	NAMUR
residual ripple	< 10 % Vs
mechanical data	
type	rectangular
housing material	PBT
dimension	10 mm
housing length	27,8 mm
connection types	spade lug
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

order reference
IFFK 10E9101

dimension drawing



connection diagram



remarks

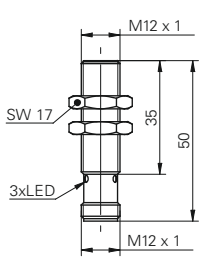
spade plug 4,8 x 0,5 mm

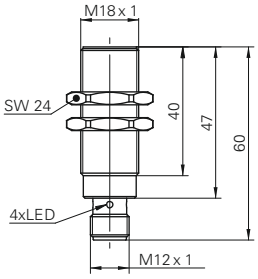
Sn = 2 mm / 5 mm

- PTFE coated sensing face
- housing made of chromium plated brass
- resist welding spark induced damage

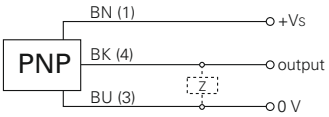
general data	
mounting type	flush
special type	welding and magnetic noise
hysteresis	3 ... 20 % of Sr
electrical data	
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	10 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 1 VDC
output current	< 250 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PTFE coated
housing material	brass chromium plated
connection types	connector M12
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

dimension drawings





connection diagram



connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	
accessories	
10151720	Sensofix series 12 round
10151658	Sensofix series 18
for details: see accessories section	

order reference	nominal sensing distance Sn	switching frequency	dimension	housing length	output indicator
IFRW 12P1501/S14L	2 mm	< 1 kHz	12 mm	50 mm	3 port LED red
IFRW 18P1501/S14L	5 mm	< 500 Hz	18 mm	60 mm	4 port LED red

Sn = 2 mm

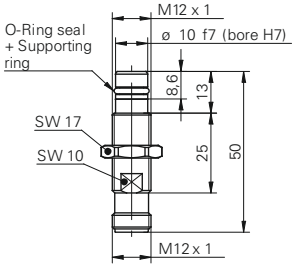
- zirconium oxide ZrO_2 sensing face
- 500 bar/7000 psi pressure rating
- sensing face sealed to IP 68

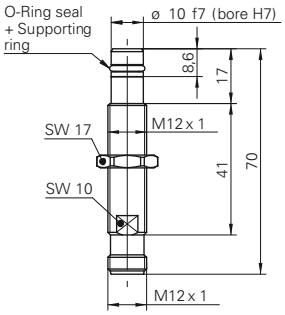
general data	
mounting type	flush
special type	high pressure
nominal sensing distance Sn	2 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	ceramic
housing material	stainless steel
pressure static	< 500 bar
pressure dynamic	< 350 bar
dimension	12 mm
connection types	connector M12
ambient conditions	
operating temperature	-25 ... +80 °C
protection class	IP 68/67 (sensing face/sensor)

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

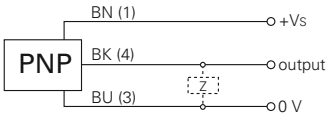
order reference	housing length
IFRP 12P1501/S14	50 mm
IFRP 12P1504/S14	70 mm

dimension drawings





connection diagram



Sn = 2 mm

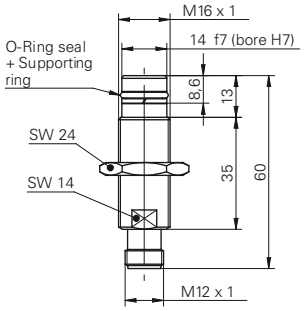
- zirconium oxide ZrO_2 sensing face
- 500 bar/7000 psi pressure rating
- sensing face sealed to IP 68

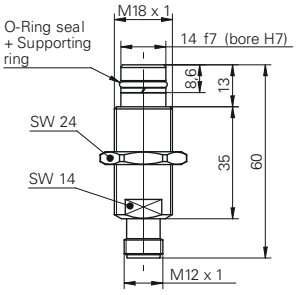
general data	
mounting type	flush
special type	high pressure
nominal sensing distance Sn	2 mm
hysteresis	2 ... 20 % of Sr
electrical data	
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	ceramic
housing material	stainless steel
pressure static	< 500 bar
pressure dynamic	< 350 bar
housing length	60 mm
connection types	connector M12
ambient conditions	
operating temperature	-25 ... +80 °C
protection class	IP 68/67 (sensing face/sensor)

connectors and mating connectors	
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

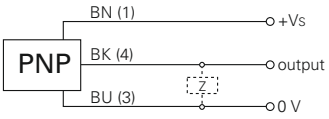
order reference	dimension
IFRP 16P1501/S14	16 mm
IFRP 18P1501/S14	18 mm

dimension drawings





connection diagram

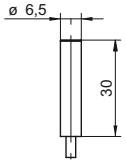


Sn = 2 mm

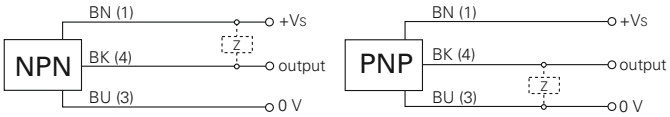
- with integral electronics up to +100 °C
- FEP cable

general data	
mounting type	flush
special type	high temperature
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical smooth
material (sensing face)	PBT
housing material	stainless steel
dimension	6,5 mm
housing length	30 mm
connection types	cable FEP, 1 m
ambient conditions	
operating temperature	-25 ... +100 °C
protection class	IP 67

dimension drawing



connection diagrams



accessories	
10109474	Mounting bracket for sensors Ø 6,5 mm
for details: see accessories section	

order reference	output circuit
IFRM 06N1707	NPN make function (NO)
IFRM 06P1707	PNP make function (NO)

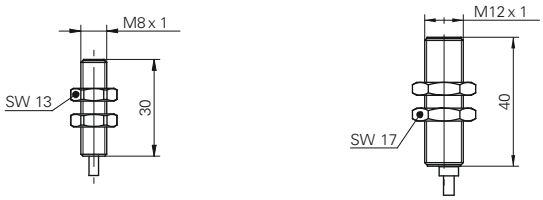
Sn = 2 mm / 4 mm

- with integral electronics up to +100°C
- FEP cable

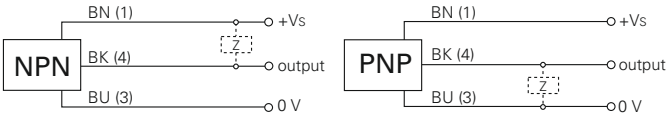
general data	
mounting type	flush
special type	high temperature
hysteresis	3 ... 20 % of Sr
electrical data	
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 3 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
connection types	cable FEP, 1 m
ambient conditions	
operating temperature	-25 ... +100 °C
protection class	IP 67

accessories	
10151720	Sensofix series 12 round
for details: see accessories section	

dimension drawings



connection diagrams



order reference	nominal sensing distance Sn	switching frequency	output circuit	dimension	housing material	housing length
IFRM 08N1707	2 mm	< 5 kHz	NPN make function (NO)	8 mm	stainless steel	30 mm
IFRM 08P1707	2 mm	< 5 kHz	PNP make function (NO)	8 mm	stainless steel	30 mm
IFRM 12N1707	4 mm	< 2 kHz	NPN make function (NO)	12 mm	brass nickel plated	40 mm
IFRM 12P1707	4 mm	< 2 kHz	PNP make function (NO)	12 mm	brass nickel plated	40 mm

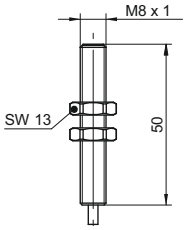
Sn = 2 mm

- with integral electronics up to +100 °C
- very long housing

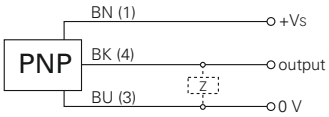
general data	
mounting type	flush
special type	high temperature
nominal sensing distance Sn	2 mm
hysteresis	3 ... 20 % of Sr
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	12 ... 30 VDC
current consumption max. (no load)	12 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 3 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
housing material	stainless steel
dimension	8 mm
housing length	50 mm
connection types	cable FEP, 1 m
ambient conditions	
operating temperature	-25 ... +100 °C
protection class	IP 67

order reference
IFRM 08P17T4

dimension drawing



connection diagram



Sn = 1,5 mm

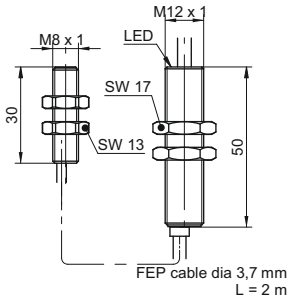
- probe designed for use up to +180°C
- active face made of LCP
- detached cable amplifier

general data	
mounting type	flush
special type	high temperature
nominal sensing distance Sn	1,5 mm
hysteresis	2 ... 25 % of Sr
electrical data	
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	LCP
housing material	stainless steel
dimension	8 mm
housing length	30 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +180 °C
protection class	IP 67

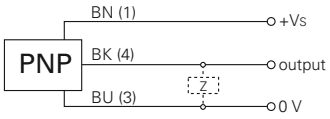
accessories	
10151719	Sensofix series 08
for details: see accessories section	

order reference	output circuit
IFRH 08P1501/L	PNP make function (NO)
IFRH 08P3501/L	PNP break function (NC)

dimension drawing



connection diagram

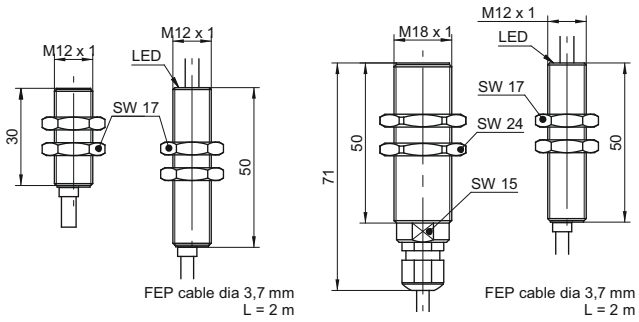


Sn = 2 mm / 5 mm

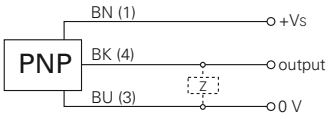
- probe designed for use up to +180°C
- active face made of LCP
- detached cable amplifier

general data	
mounting type	flush
special type	high temperature
hysteresis	2 ... 20 % of Sr
electrical data	
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
connection types	cable, 2 m
ambient conditions	
operating temperature	-25 ... +180 °C
protection class	IP 67

dimension drawings



connection diagram



accessories	
10151720	Sensofix series 12 round
10151658	Sensofix series 18
for details: see accessories section	

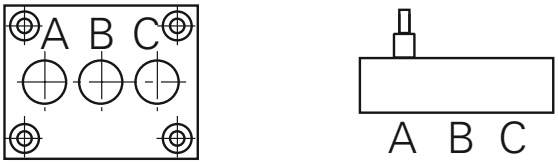
order reference	nominal sensing distance Sn	switching frequency	output circuit	dimension	housing material	housing length
IFRH 12P1501/L	2 mm	< 2 kHz	PNP make function (NO)	12 mm	brass nickel plated	30 mm
IFRH 12P3501/L	2 mm	< 2 kHz	PNP break function (NC)	12 mm	brass nickel plated	30 mm
IFRH 18P1501/L	5 mm	< 1 kHz	PNP make function (NO)	18 mm	stainless steel	71 mm
IFRH 18P3501/L	5 mm	< 1 kHz	PNP break function (NC)	18 mm	stainless steel	71 mm

Inductive code readers

Inductive code readers are compact detection units available with 3-wire inductive proximity switches. The sensors have a common voltage supply but provide individual outputs.

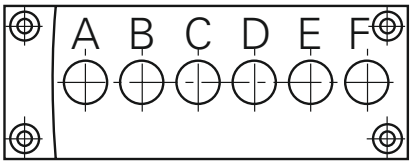
A typical application for the code reader would be for identifying changeable tool heads on complex handling or machining units. Prior to the code reader, several individual sensors were needed, which required individual mounting and set up. Now the inductive code reader can be installed, bringing considerable cost savings in both installation and service.

Sensor outputs 3 heads



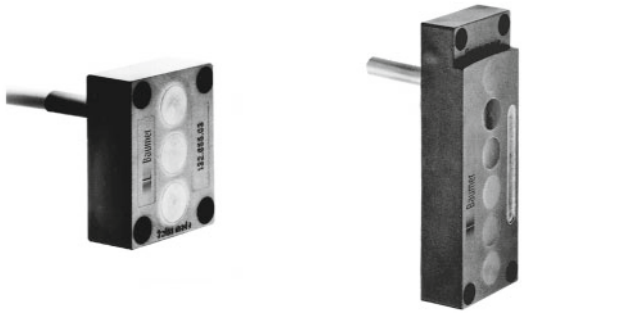
A	green
B	yellow
C	grey
+Vs	brown
0 V	white

Sensor outputs 6 heads



A	white
B	pink
C	red
D	yellow
E	grey
F	green
+Vs	brown
0 V	blue

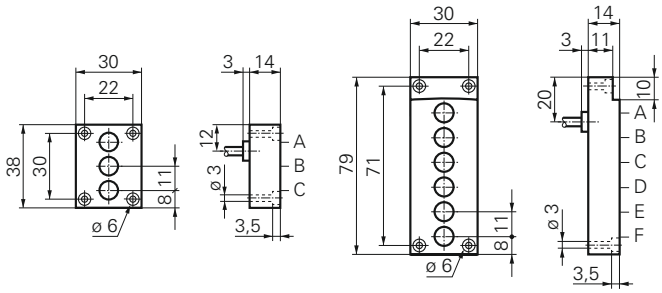
Sn = 2 mm / 4 mm



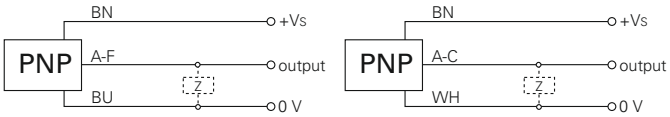
- 3 head and 6 head versions
- common voltage supply
- individual outputs

general data	
special type	inductive code reader
hysteresis	1 ... 20 % of Sr
electrical data	
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 30 VDC
output circuit	PNP make function (NO)
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	rectangular
material (sensing face)	PA 6
housing material	PA 6
dimension	30 mm
connection types	cable, 2 m
ambient conditions	
operating temperature	0 ... +60 °C
protection class	IP 67

dimension drawings



connection diagrams



6 head version

3 head version

order reference	nominal sensing distance Sn	mounting type	housing length	current consumption max. (no load)
ILFK 12P1101/I03	4 mm	non-flush	38 mm	10 mA
ILFK 12P1101/I06	4 mm	non-flush	79 mm	20 mA
ILFK 12P1501/I03	2 mm	flush	38 mm	10 mA
ILFK 12P1501/I06	2 mm	flush	79 mm	20 mA

Sn = 0,4 mm

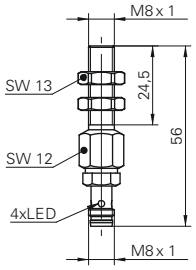
- face hardened steel 1.0737
- output triggered on impact
- quick and easy sensor replacement

general data	
mounting type	flush
special type	with banking screw
nominal sensing distance Sn	0,4 mm
hysteresis	3 ... 20 % of Sr
output indicator	4 port LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	18 mA
output circuit	PNP make function (NO)
voltage drop Vd	< 2,5 VDC
output current	< 100 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	steel / hardened steel
dimension	8 mm
housing length	56 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

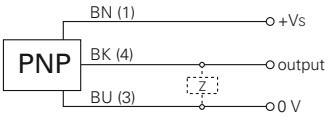
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference
IARM 08P1503/S35L

dimension drawing



connection diagram



Sn = 1,2 mm

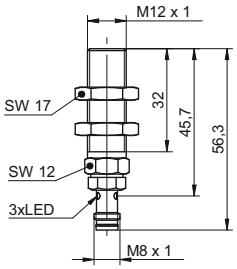
- face hardened steel 1.0737
- output triggered on impact
- quick and easy sensor replacement

general data	
mounting type	flush
special type	with banking screw
nominal sensing distance Sn	1,2 mm
real sensing distance Sr	1,0 ... 1,3 mm
temperature drift	± 10 % of Sr (-25 ... +50 °C) - 10 % ... +20 % of Sr (-25 ... +75 °C)
hysteresis	3 ... 25 % of Sr
output indicator	3 port LED red
electrical data	
switching frequency	< 5 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	12 mA
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes
mechanical data	
type	cylindrical threaded
material (sensing face)	PBT
housing material	steel / hardened steel
dimension	12 mm
housing length	56,3 mm
connection types	connector M8
ambient conditions	
operating temperature	-25 ... +75 °C
protection class	IP 67

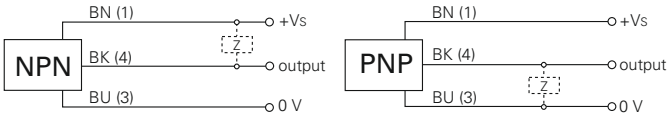
connectors and mating connectors	
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

order reference	output circuit
IARM 12N15A3/S35L	NPN make function (NO)
IARM 12P15A3/S35L	PNP make function (NO)

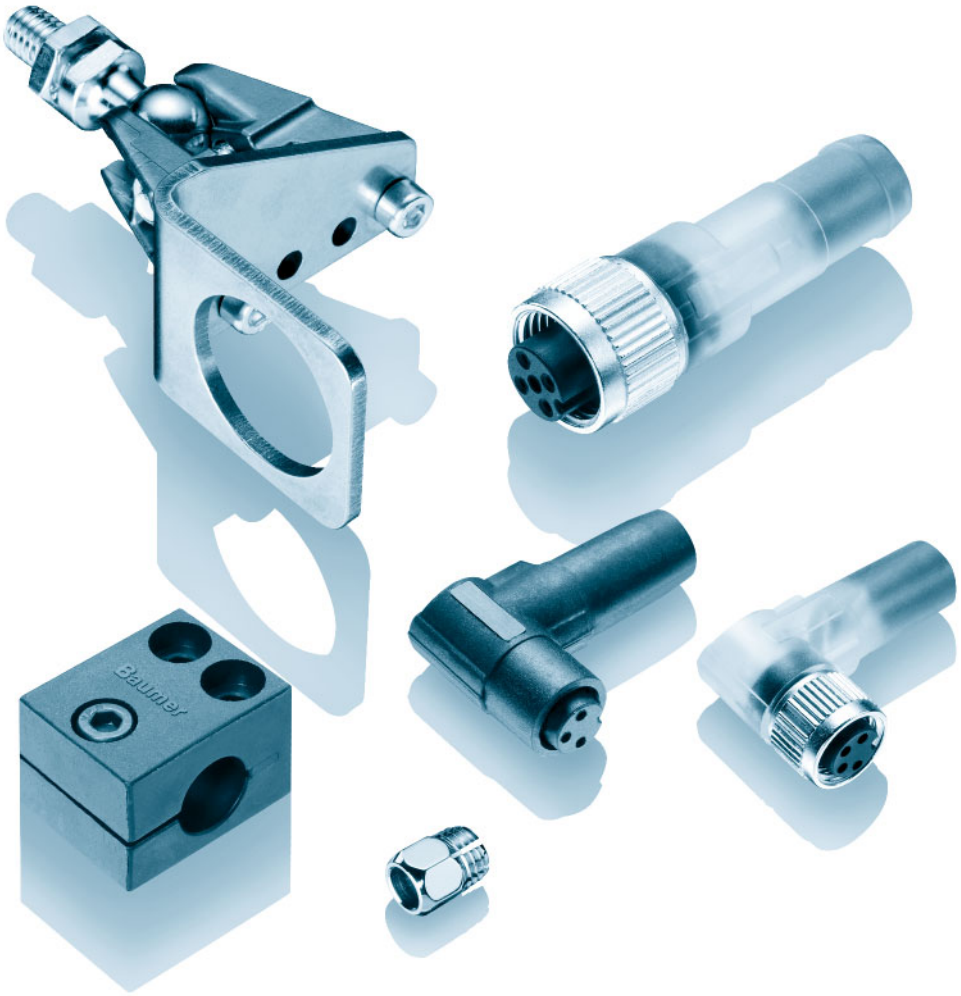
dimension drawing



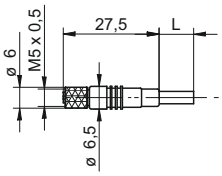
connection diagrams



Accessories



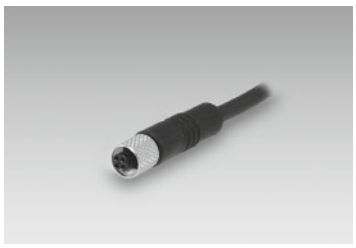
ESG 05 - Connector M5 straight

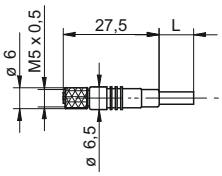


order reference	
ESG 05SP0200	Connector M5, 3 pin, straight, 2 m
ESG 05SP0500	Connector M5, 3 pin, straight, 5 m
ESG 05SP1000	Connector M5, 3 pin, straight, 10 m

- Connector unshielded
- Miniature version
- Cable coating PUR

ESG 05G - Connector M5 straight, shielded

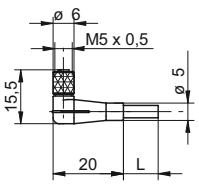




order reference	
ESG 05AP0200G	Connector M5, 4 pin, straight, 2 m, shielded

- Connector shielded
- Miniature version
- Cable coating PUR

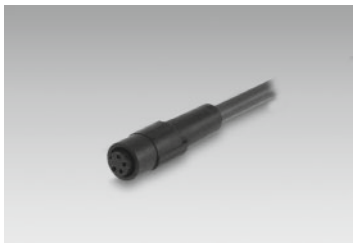
ESW 05 - Connector M5 angular

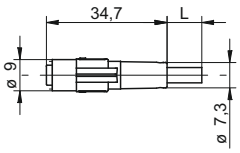


order reference	
ESW 05SP0200	Connector M5, 3 pin, angular, 2 m
ESW 05SP0500	Connector M5, 3 pin, angular, 5 m

- Connector unshielded
- Miniature version
- Cable coating PUR

ESG 09 - Connector Ø 8 mm straight, snap-in

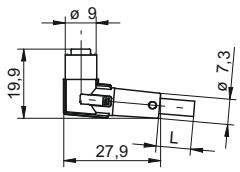




order reference	
ESG 09SH0200	Connector clip fastener, 3 pin, straight, 2 m
ESG 09SH0500	Connector clip fastener, 3 pin, straight, 5 m
ESG 09SH1000	Connector clip fastener, 3 pin, straight, 10 m

- Connector unshielded "snap-in"
- 3 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

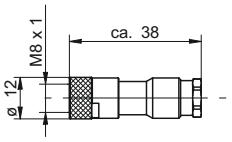
ESW 08 - Connector Ø 8 mm angular, snap-in



order reference	
ESW 08SH0200	Connector clip fastener, 3 pin, straight, 2 m
ESW 08SH0500	Connector clip fastener, 3 pin, straight, 5 m

- Connector unshielded "snap-in"
- 3 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

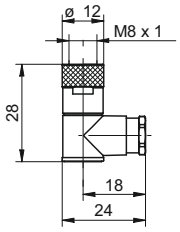
ES 21 - Cable socket M8 straight, not pre-assembled



order reference	
ES 21	Connector M8, 3 pin, straight
ES 21A	Connector M8, 4 pin, straight

- Connector unshielded
- Connector only, no cable supplied
- 3 and 4 pin version

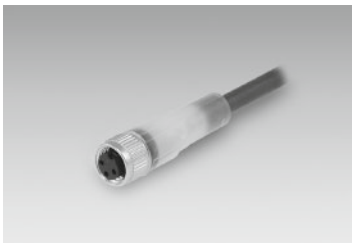
ES 22 - Cable socket M8 angular, not pre-assembled

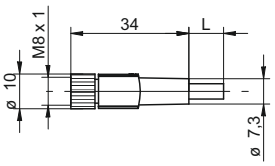


order reference	
ES 22	Connector M8, 3 pin, angular
ES 22A	Connector M8, 4 pin, angular

- Connector unshielded
- Connector only, no cable supplied
- 3 and 4 pin versions

ESG 32 - Connector M8 straight

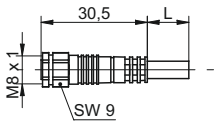




order reference	
ESG 32AH0200	Connector M8, 4 pin, straight, 2 m
ESG 32AH0500	Connector M8, 4 pin, straight, 5 m
ESG 32AH1000	Connector M8, 4 pin, straight, 10 m
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESG 32SH0500	Connector M8, 3 pin, straight, 5 m
ESG 32SH1000	Connector M8, 3 pin, straight, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

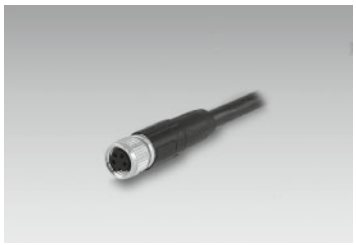
ESG 32F - Connector M8 straight, PVC/V4A

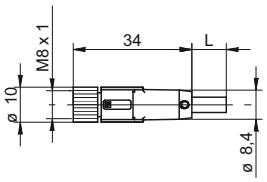


order reference	
ESG 32SF0500	Connector M8, 3 pin, straight, 5 m, V4A-PVC
ESG 32SF1000	Connector M8, 3 pin, straight, 10 m, V4A-PVC

- Connector unshielded
- 3 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Suitable for flexible cable carriers

ESG 32G - Connector M8 straight, shielded

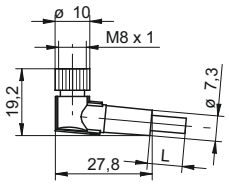




order reference	
ESG 32AH0200G	Connector M8, 4 pin, straight, 2 m, shielded
ESG 32AH0500G	Connector M8, 4 pin, straight, 5 m, shielded
ESG 32AH1000G	Connector M8, 4 pin, straight, 10 m, shielded
ESG 32SH0500G	Connector M8, 3 pin, straight, 5 m, shielded
ESG 32SH1000G	Connector M8, 3 pin, straight, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

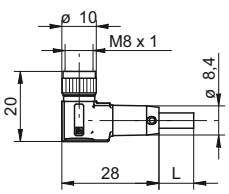
ESW 31 - Connector M8 angular



order reference	
ESW 31AH0200	Connector M8, 4 pin, angular, 2 m
ESW 31AH0500	Connector M8, 4 pin, angular, 5 m
ESW 31AH1000	Connector M8, 4 pin, angular, 10 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
ESW 31SH0500	Connector M8, 3 pin, angular, 5 m
ESW 31SH1000	Connector M8, 3 pin, angular, 10 m

- Connector unshielded
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

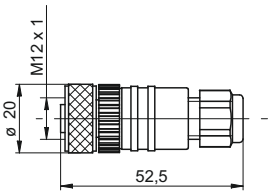
ESW 31G - Connector M8 angular, shielded



order reference	
ESW 31AH0200G	Connector M8, 4 pin, angular, 2 m, shielded
ESW 31AH0500G	Connector M8, 4 pin, angular, 5 m, shielded
ESW 31AH1000G	Connector M8, 4 pin, angular, 10 m, shielded
ESW 31SH0200G	Connector M8, 3 pin, angular, 2 m, shielded
ESW 31SH0500G	Connector M8, 3 pin, angular, 5 m, shielded

- Connector shielded, screen connected with cap nut
- 3 and 4 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

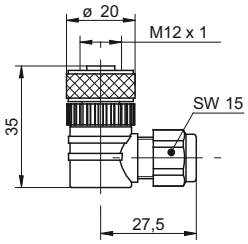
ES 18 - Cable socket M12 straight, not pre-assembled



order reference	
ES 18 PG7	Connector M12, 4 pin, straight
ES 18C PG7	Connector M12, 5 pin, straight

- Connector unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

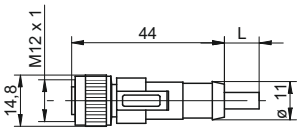
ES 14 - Cable socket M12 angular, not pre-assembled



order reference	
ES 14 PG7	Connector M12, 4 pin, angular
ES 14C PG7	Connector M12, 5 pin, angular

- Connector unshielded
- Connector only, no cable supplied
- 4 and 5 pin versions

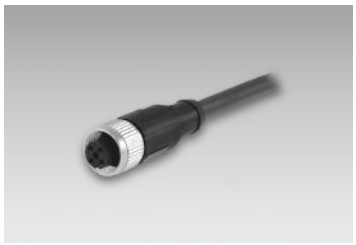
ESG 34 - Connector M12 straight

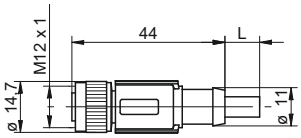


order reference	
ESG 34AH0200	Connector M12, 4 pin, straight, 2 m
ESG 34AH0500	Connector M12, 4 pin, straight, 5 m
ESG 34AH1000	Connector M12, 4 pin, straight, 10 m
ESG 34CH0200	Connector M12, 5 pin, straight, 2 m
ESG 34CH0500	Connector M12, 5 pin, straight, 5 m
ESG 34SH0200	Connector M12, 3 pin, straight, 2 m
ESG 34SH0500	Connector M12, 3 pin, straight, 5 m
ESG 34SH1000	Connector M12, 3 pin, straight, 10 m

- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

ESG 34G - Connector M12 straight, shielded

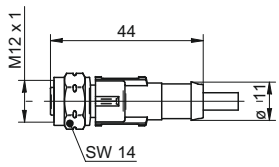




order reference	
ESG 34AH0200G	Connector M12, 4 pin, straight, 2 m, shielded
ESG 34AH0500G	Connector M12, 4 pin, straight, 5 m, shielded
ESG 34AH1000G	Connector M12, 4 pin, straight, 10 m, shielded
ESG 34CH0200G	Connector M12, 5 pin, straight, 2 m, shielded
ESG 34CH0500G	Connector M12, 5 pin, straight, 5 m, shielded
ESG 34CH1000G	Connector M12, 5 pin, straight, 10 m, shielded
ESG 34FH0200G	Connector M12, 8 pin, straight, 2 m, shielded
ESG 34FH0500G	Connector M12, 8 pin, straight, 5 m, shielded
ESG 34FH1000G	Connector M12, 8 pin, straight, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

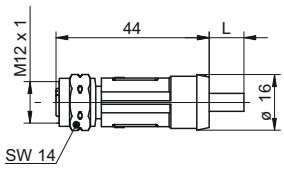
ESG 34F - Connector M12 straight, PVC/V4A



order reference	
ESG 34AF0200	Connector M12, 4 pin, straight, 2 m, V4A-PVC
ESG 34AF0500	Connector M12, 4 pin, straight, 5 m, V4A-PVC
ESG 34AF1000	Connector M12, 4 pin, straight, 10 m, V4A-PVC
ESG 34AF2500	Connector M12, 4 pin, straight, 25 m, V4A-PVC

- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

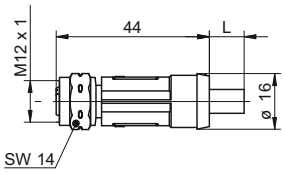
ESG 34 (Outdoor) - Connector M12 straight, PE-X cabel



order reference	
ESG 34AE0500	Connector M12, 4 pin, straight, 2 m
ESG 34AE1000	Connector M12, 4 pin, straight, 10 m

- For outdoor applications
- 4 pin versions unshielded
- Cable coating PE-X
- Halogen-free
- Cap nut material in high grade steel (1.4401)

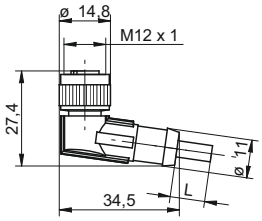
ESG 34G (Outdoor) - Connector M12 straight, 4 pin shielded; PE-X cabel



order reference	
ESG 34AE0500G	Connector M12, 12 pin, straight, 5 m, shielded
ESG 34AE1000G	Connector M12, 12 pin, straight, 10 m, shielded

- For outdoor applications
- Cable coating PE-X
- Halogen-free
- Cap nut material in high grade steel (1.4401)

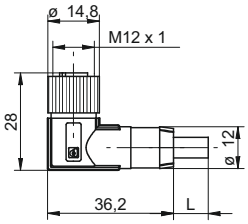
ESW 33 - Connector M12 angular



order reference	
ESW 33AH0200	Connector M12, 4 pin, angular, 2 m
ESW 33AH0500	Connector M12, 4 pin, angular, 5 m
ESW 33AH1000	Connector M12, 4 pin, angular, 10 m
ESW 33CH0200	Connector M12, 5 pin, angular, 2 m
ESW 33CH0500	Connector M12, 5 pin, angular, 5 m
ESW 33SH0200	Connector M12, 3 pin, angular, 2 m
ESW 33SH0500	Connector M12, 3 pin, angular, 5 m
ESW 33SH1000	Connector M12, 3 pin, angular, 10 m

- Connector unshielded
- 3, 4 and 5 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

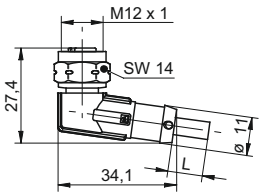
ESW 33G - Connector M12 angular, shielded



order reference	
ESW 33AH0200G	Connector M12, 4 pin, angular, 2 m, shielded
ESW 33AH0500G	Connector M12, 4 pin, angular, 5 m, shielded
ESW 33AH1000G	Connector M12, 4 pin, angular, 10 m, shielded
ESW 33CH0500G	Connector M12, 5 pin, angular, 5 m, shielded
ESW 33FH0200G	Connector M12, 8 pin, angular, 2 m, shielded
ESW 33FH0500G	Connector M12, 8 pin, angular, 5 m, shielded
ESW 33FH1000G	Connector M12, 8 pin, angular, 10 m, shielded

- Connector shielded, screen connected with cap nut
- 4, 5 and 8 pin versions
- Cable coating PUR
- Halogen-free
- Suitable for flexible cable carriers
- UL listed, number E315836

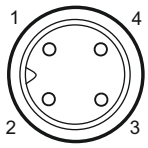
ESW 33F - Connector M12 angular, PVC/V4A



order reference	
ESW 33AF0200	Connector M12, 4 pin, angular, 2 m, V4A-PVC
ESW 33AF0500	Connector M12, 4 pin, angular, 5 m, V4A-PVC
ESW 33AF2500	Connector M12, 4 pin, angular, 25 m, V4A-PVC

- Connector unshielded
- 4 pin version
- Cable coating PVC
- Cap nut material in stainless steel V4A
- Ecolab certified and FDA conform
- UL listed, number E315836

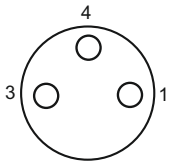
M5 3 pin



1 = BN
2 = n.c.
3 = BU
4 = BK

ESG 05
ESW 05

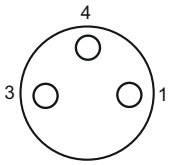
Snap-in 3 pin



1 = BN
3 = BU
4 = BK

ESG 09
ESW 08

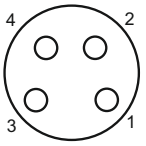
M8 3 pin



1 = BN
3 = BU
4 = BK

ES 21
ES 22
ESG 32S
ESW 31S

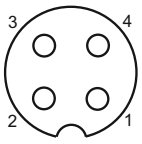
M8 4 pin



1 = BN
2 = WH
3 = BU
4 = BK

ES 21A
ES 22A
ESG 32A
ESG 32G
ESW 31A
ESW 31G

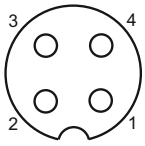
M12 3 pin



1 = BN
2 = n.c.
3 = BU
4 = WH

ESG 34S
ESW 33S

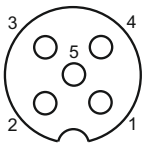
M12 4 pin



1 = BN (+Vs)
2 = WH (output)
3 = BU (0V)
4 = BK (output)

ES 14
ES 18
ESG 34A
ESG 34AF
ESG 34 (Outdoor)
ESW 33A
ESW 33AF

M12 5 pin



1 = BN
2 = WH
3 = BU
4 = BK
5 = GY

ES 14C
ES 18C
ESG 34C
ESW 33C

Note

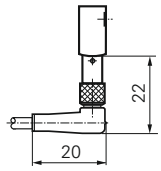
Halogen-free cables

Sheath material	PUR black gray
Special properties	suitable for drag chains silicone-free free from substances that might impair surface wetting in the coating process
Free of halogens	according to DIN VDE 0472 part 815
Flame resistance	according to UL-Style 20549
Oil resistance	according to DIN VDE 60811-2-1

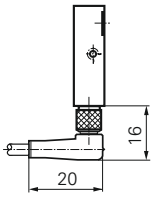
Installation dimensions

Connectors M5

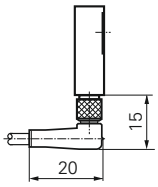
Dimension 06



Dimension 08

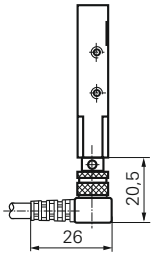


Dimension 12

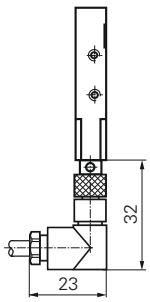


Connectors M8

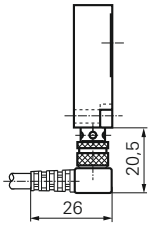
Dimension 08



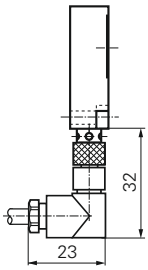
Dimension 08



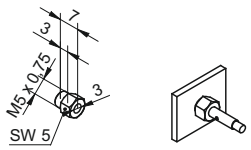
Dimension 20



Dimension 20

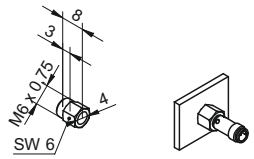


Clamping nut for sensors Ø 3 mm



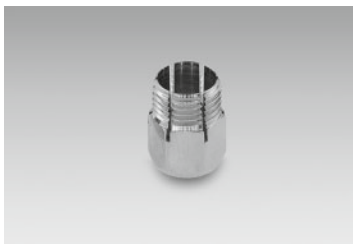
order reference	
10137021	Clamping nut for sensors Ø 3 mm

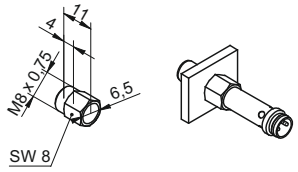
Clamping nut for sensors Ø 4 mm



order reference	
10119345	Clamping nut for sensors Ø 4 mm

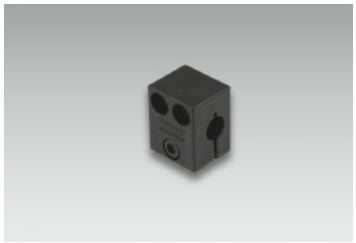
Clamping nut for sensors Ø 6,5 mm

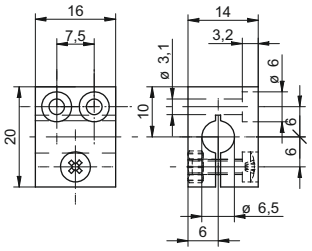




order reference	
10117742	Clamping nut for sensors Ø 6,5 mm

Mounting bracket 6,5 mm



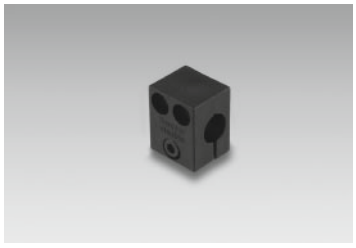


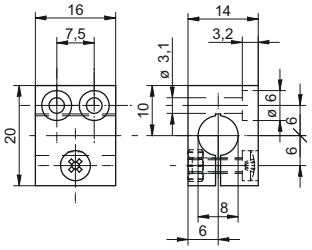
- Material: Plastic (PA6)

For sensors with Ø 6,5 mm

order reference	
10109474	Mounting bracket for sensors Ø 6,5 mm

Mounting bracket 8 mm



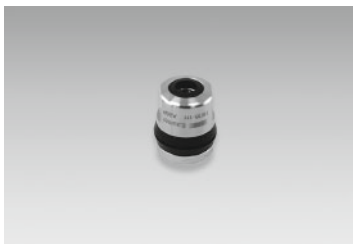


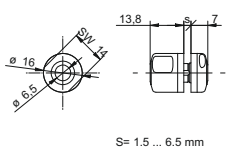
- Material: Plastic (PA6)

For sensors with Ø 8 mm

order reference	
10109475	Mounting bracket for sensors Ø 8 mm

Mounting HI06-1H for sensors in hygienic design Ø 6,5 mm



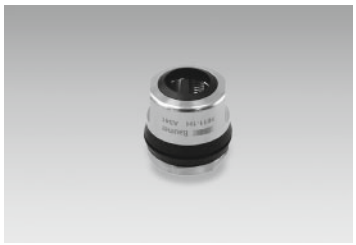


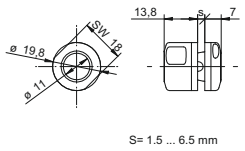
- Material: Stainless steel V4A
- EHEDG-certified

For use with inductive sensors 6,5 mm

order reference	
HI06-1H	Mounting for sensors in hygienic design Ø 6,5 mm

Mounting HI11-1H for sensors in hygienic design Ø 11 mm



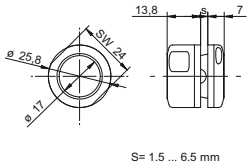


- Material: Stainless steel V4A
- EHEDG-certified

For use with inductive sensors 11 mm

order reference	
HI11-1H	Mounting for sensors in hygienic design Ø 11 mm

Mounting HI17-1H for sensors in hygienic design Ø 17 mm

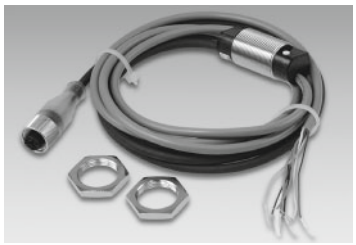


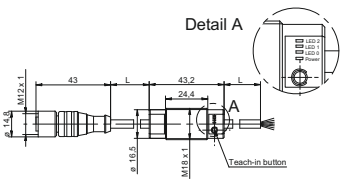
- Material: Stainless steel V4A
- EHEDG-certified

For use with inductive sensors 17 mm and photoelectric sensors in hygienic design

order reference	
HI17-1H	Mounting for sensors in hygienic design Ø 17 mm

Converter 3-point



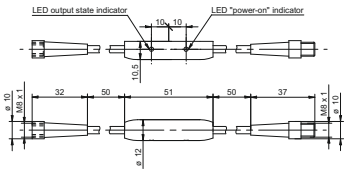


- Converter with three teachable outputs

For use with all distance measuring inductive and ultrasonic sensors

order reference	
10163979	Converter 3-point (M12)

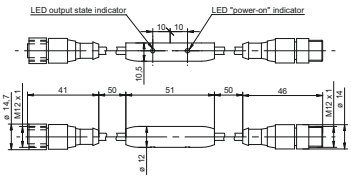
PNP to NPN Converter M8



- PNP/NPN Converter
- For frequencies up to max. 5 kHz
- For connector M8 - 3 pins

order reference	
10161959	Converter PNP/NPN - M8 x 1

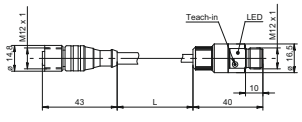
PNP to NPN Converter M12



- PNP/NPN Converter
- For frequencies up to max. 5 kHz
- For connector M12 - 3 pins

order reference	
10161958	Converter PNP/NPN - M12 x 1

Teach-in Adapter M12



order reference	
10141584	Teach-in Adapter M12

Test unit for sensors analog & digital

- Output via display (V or mA) or LED (PNP/NPN)
- Teach-in of sensors with integrated Teach- button
- Connection for plug in power supply (available as accessory)

Test- and configuration device for analog and digital PNP/NPN sensors with 18 VDC supply voltage

order reference	
11084376	Test unit for sensors analog & digital

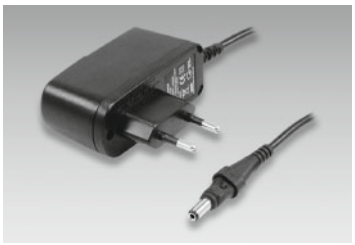
Test unit for sensors digital

- LED (red/green) for digital PNP/NPN signals
- Teach-in of sensors with integrated Teach- button
- Connection for plug in power supply (available as accessory)

Test- and configuration device for digital PNP/NPN sensors with 18 VDC supply voltage

order reference	
11084377	Test unit for sensors digital

Power supply for sensor test unit

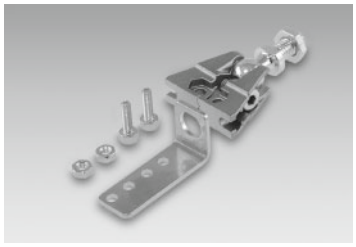


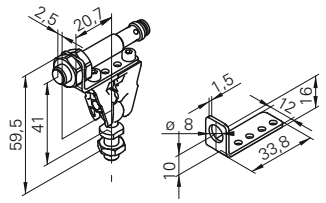
- Input 100-230 VAC
- Output 24 V/0,3 A
- Euro 2 pin plug connector

Protects the batteries of the sensor tester analog & digital for extended lifetime

order reference	
11087165	Test unit for sensors

Sensofix-Mounting kit for sensors series 08 round



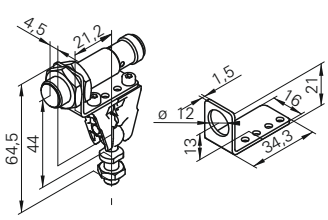


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M8 housing

order reference	
10151719	Sensofix series 08

Sensofix-Mounting kit for sensors series 12 round

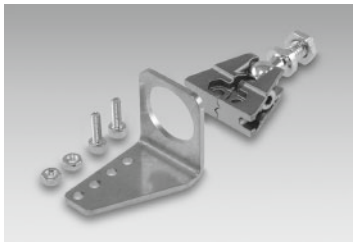


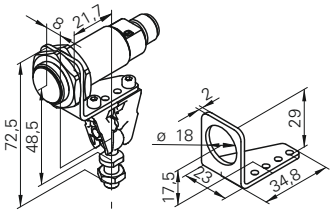
- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M12 housing

order reference	
10151720	Sensofix series 12 round

Sensofix-Mounting kit for sensors series 18 round



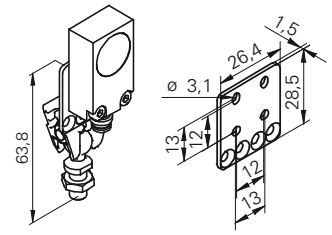


- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with all sensors in M18 housing

order reference	
10151658	Sensofix series 18

Sensofix-Mounting kit for sensors series 18/20



- Clamps made of stainless steel
- Ball pivots made of galvanized steel
- Mounting panel made of stainless steel

For use with inductive sensors series 18/20 in rectangular designs

order reference	
10152385	Sensofix series 18/20 inductive rectangular

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