

- ▶ standard design
- ▶ short design
- ▶ preferential series
- ▶ top series

standard, short, preferential, top

standard, short, preferential, top

design	sensing range Sn [mm]																flush	non-flush	length [mm]	pnp	npn	2-wire	10...30V DC	up to 250V AC	cable	M8-connector	M12-connector	MC-connector	page
	0.6	0.8	1.5	2	2.5	3	4	5	6	7	8	10	12	15	20														
Ø3mm	X															X		22	X			X	X			7			
M4x0.5	X															X		22	X			X	X			7			
Ø4mm		X														X		25...38	X			X	X			8			
M5x0.5		X														X		25...38	X	X		X	X			7			
Ø6.5mm			X	X												X		16...60	X	X		X	X	X		9-11			
Ø6.5mm				X		X	X									X		35.5...60	X			X	X			11-13			
M8x1			X	X												X		16...60	X	X		X	X	X		14-16			
M8x1				X	X	X	X									X		35...60	X	X		X	X	X		17-19			
M12x1				X		X	X									X		35...60	X	X		X	X	X		20-22			
M12x1							X		X		X					X		35...60	X	X		X	X	X		23-25			
M18x1								X		X						X		41...71.5	X			X		X		27-28			
M18x1										X	X	X				X		40...70	X	X		X		X		29-30			
M30x1.5											X		X			X		60...70	X					X		32-33			
M30x1.5													X	X		X		60...70	X					X		33-34			
M12x1				X												X		66...75			X	X	X		X	26			
M12x1							X									X		66.5...80			X	X	X		X	26			
M18x1								X								X		80...82			X	X	X		X	31			
M18x1										X	X					X		80...81			X	X	X		X	31			
M30x1.5											X					X		82...89			X	X	X		X	35			
M30x1.5													X			X		80...91			X	X	X		X	35			

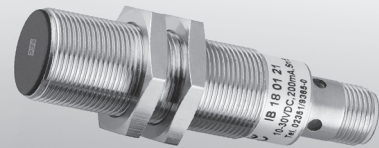
accessories

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fixing material / quick clips	38

design

- Ø3mm
- M4 x 0.5
- Ø4mm
- M5 x 0.5
- Ø6.5mm
- M8 x 1
- M12 x 1
- M18 x 1
- M30 x 1.5

flush	sensing range	0.6 to 15mm
non-flush	sensing range	2.0 to 15mm



- ✓ LED-display for switch signal
- ✓ robust metal housing
- ✓ different lengths
- ✓ connection with cable, M8-, M12- or microchange-connector (mc)

manifold output signals and connection possibilities



description

An important feature of these sensors is the cast electronics in a stable, metal housing. As a consequence of the compound, the electronics are perfectly protected from vibrations. As such, the devices are also sealed against fluids, except for the connector side.

They are much more resistant to mechanical stress than conventional proximity switches made from plastic.

The ambient temperature can be up to +70°C. In addition, these sensors work through the contactless detection of the object, without wear and tear.

Due to the large number of mechanical dimensions, the devices can be exchanged against many other proximity switches without any problems.

The range of applications in which these inductive sensors can be used extends, for example, from machine engineering/systems engineering, automotive industry, conveyor technology and technology for the packaging industry, technology for the printing/paper industries, chemical engineering and process engineering (as well as many others).

An inductive sensor (proximity switch, position sensor, initiator) is a contactless switch which reliably detects

metallic objects. In the case of inductive proximity switches, a correction factor is stated which evaluates the reduction of the sensing range in relation to the different materials that the objects are made from. This factor depends on the type, characteristics (internal structure), size and geometry of the material that the object to be detected is made from. The stated sensing range value relates to steel (factor 1 steel). In order to assess the approximate sensing range for materials which differ from this, the value has to be multiplied by the appropriate correction factor.

To achieve the maximum sensing range, care should be taken in relation to the size and characteristics of the object to be detected (standard target and/or flat surface).

application examples

- ▶ integration in automation technology machine parts
- ▶ checking the presence of metal parts with various dimensions
- ▶ detecting object heights, e.g. metal parts on conveyor belts
- ▶ detection of objects through the walls of non-metallic containers and tubes

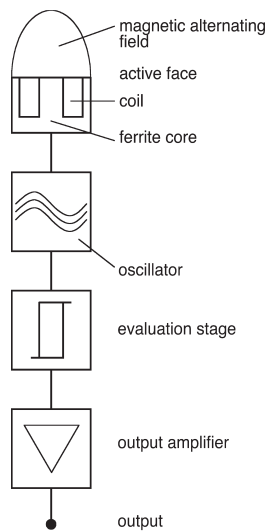
notes on inductive proximity switches

- I inductive sensor
- IA flush, **preferential types**
- IB flush, standard and short design, top-series
- IM non-flush, **preferential types**
- IN non-flush, standard and short design, top-series

function

The oscillation coil behind the active surface of the proximity switch produces an alternating electromagnetic rotational current field. Any electrically conductive material entering the field will induce rotational currents extracting energy from the oscillating circuit.

The damping of the oscillator is then converted into a switch signal in the output amplifier. It follows from the functional principle that all metals are detected, moving or not. Important: The high frequency field produces no measurable increase in temperature and no magnetic influence inside the object to be detected. That means the sensors operate without interacting with the system.



functional principle of an inductive proximity switch

sensing range / norm trimming plate

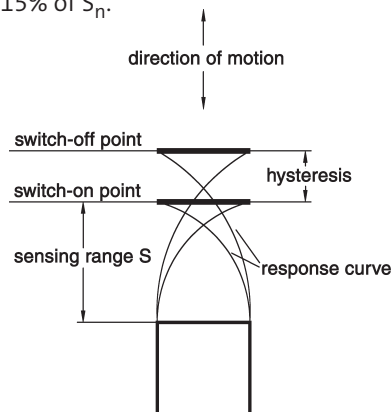
The distance to the sensor surface, where a metal causes a change in the state, is called sensing range. This range is not the same for all metals. That is why a so-called correction factor has been specified for the respective metal, e.g. copper or aluminium. The nominal sensing range S_n is determined by a norm trimming plate. This is a quadratic metal plate made from steel (St37) with a thickness of 1mm and a smoothed face. The edge length is $3 \times S_n$ if $3 \times S_n$ is larger than the diameter of the active face, otherwise the edge length is the same as the diameter of the active face.

One differentiates between the normal sensing range S_n , which is determined without consideration for manufacturing tolerances or external influences, and the operational sensing range S_o .

The safe operational sensing range is between 0 and 81% of S_n ($0 < S_o < 0.81 \times S_n$).

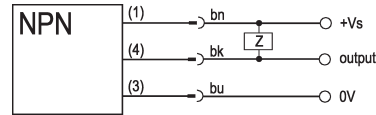
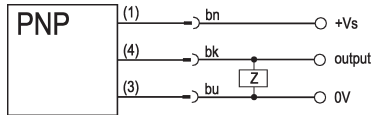
hysteresis

During the approach and subsequent removal of the measuring plate from the initiator there will be a difference between switch-on point and switch-off point. This integrated hysteresis prevents the switching output from oscillating during mechanical vibrations. Usually the hysteresis is between 5 to 15% of S_n .

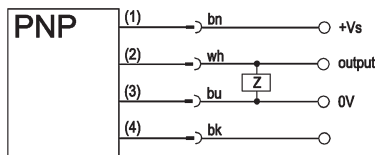


output circuit

For the switching outputs of direct current devices a differentiation is made between PNP and NPN. For PNP outputs the load is connected in such a way that it is energized (positive switching) when the sensor is driven to full output (damping). NPN devices maintain their load permanently energized, switching the earth connection only (negative switching). A corresponding wiring diagram has been enclosed with every sensor.



For devices with M12-connector and normally closed contact function (nc), the switching output is wired via PIN2. For this reason a 4-pin cable socket should be used and the connection made via the white wire.



The alternating current devices, as a rule, are 2-wire devices without short-circuit protection. Consequently a load must be connected, which allows for a minimum load current of 2mA, however, not exceeding the maximum load current. Proximity switches with analog outputs are used in the control and measurement industry. These devices produce either a linear voltage (0 ... 10V) or a current (4 ... 20mA) instead of a switch signal.

connection in series

For an operationally safe the connection in series of 3-wire PNP sensors a logical AND-gate, e.g. the **VL250100** is recommended.

connection in parallel

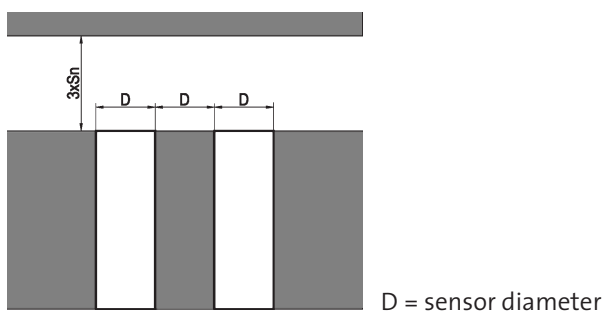
A logical OR-gate, e.g. the **VL250120**, can be used to facilitate the connection in parallel.

mounting

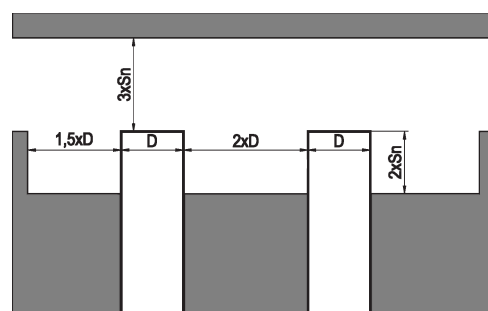
Please follow the mounting instructions for flush or non-flush sensors when installing inductive proximity switches into a metal carrier material to avoid undefined switching of the device. For a flush device the active face may be on one level with the carrier material.

Non-flush sensors must protrude. As a rule of thumb use 2x the nominal sensing range of the sensor.

mounting instructions for flush sensors



mounting instructions for non-flush sensors



sampling frequency

The sampling frequency states the maximum number of available switching operations per second. Every switching operation of the inductive proximity switch causes the oscillating circuit to move.

The time needed for this puts a limit on the sampling frequency.

For half the nominal sensing range the pulse to pause ratio should be at least 1:2, i.e. when choosing the right proximity switch, a compromise needs to be made between the size of the sensor and the sampling frequency. General rule: The larger the sensor, the smaller the sampling frequency.

1100 norm sensing ranges, increased sensing ranges

torque range

To avoid damage when mounting proximity switches, never exceed the tightening torque given.

stainless steel thread

M5 = 2Nm

M8 = 10Nm

M12 = 20Nm

M18 = 55Nm

nickel-plated brass thread

M8 = 7Nm

M12 = 15Nm

M18 = 40Nm

M30 = 200Nm

active zone/ active face

The active zone is the area in front of the active face, within which the proximity switch reacts to the approach of metal parts, i.e. changes the state of the output.

nominal sensing range (S_n)

The distance at which a metal part that is approaching the active face of the proximity switch causes a change in the state of the switching output.

repeat accuracy

Repeatability of two measurements under standardized conditions. The difference in the measured values should be less than 10%.

output function

normally open contact: object within the area of the active zone – output switched

normally closed contact: object within the area of the active zone – output inhibited

correction factors

Specify the reduction in the sensing range, if materials other than steel are used. The variance in the sensing range depends on the type, composition (internal structure), size and geometry of the material to be detected.

Typical correction factors: steel: 1 stainless steel: approx. 0.7 brass: approx. 0.4 aluminium: approx. 0.3 copper: approx. 0.2

In order to establish the approximate sensing range of materials that deviate from steel, it is necessary to multiply the sensing range for steel by the corresponding correction factor.

repeat accuracy

The repeat accuracy (according to IEC 60947-5-2 / EN 60947-5-2) is the repeat accuracy of the real sensing range S_r over a period of 8 hours at an ambient temperature of $(23 \pm 5)^\circ\text{C}$ and a defined operating voltage V_s . The specified repeat accuracy corresponds to this definition. Generally the repeat accuracy is importantly better in case of sequent measurements.

reverse polarity protection

An internal protection prevents the proximity switch being destroyed if the connecting leads are inverted.

short-circuit protection (DC devices)

An internal protection prevents the proximity switch being destroyed in the event of overcurrent.

Warning: Never use these devices in applications where the safety of a person depends on their functionality!

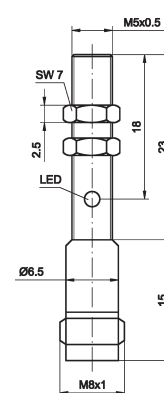
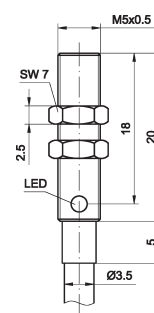
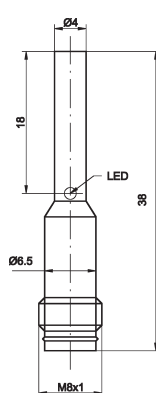
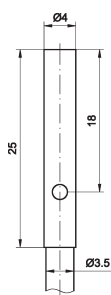


norm sensing ranges, increased sensing ranges 1100

article-no.	short design IBR30104	short design IBR30174	short design IB040104	short design IB040174
sensing range (Sn)	0.6mm	0.6mm	0.6mm	0.6mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M8-cable connector	cable	M8-cable connector
article-no.	IBR30204	*	IB040204	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	*	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	0.6mm	0.6mm	0.6mm	0.6mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 5.5mA	≤ 5.5mA	≤ 5.5mA	≤ 5.5mA
output current (max. load)	100mA	100mA	100mA	100mA
voltage drop (max. load)	1.5V DC	1.5V DC	1.5V DC	1.5V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	5kHz	5kHz	5kHz	5kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø3mm	Ø3mm	M4x0,5	M4x0,5
length (thread/complete)	-/22mm	-/22mm	19mm/22mm	19mm/22mm
housing material	stainless steel	stainless steel	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PUR-cable, 3-wire	M8-cable connector, 3-pin	2m PUR-cable, 3-wire	M8-cable connector, 3-pin
connection accessories	-	e.g. VK200075 2m, PUR, straight	-	e.g. VK200075 2m, PUR, straight
accessories	-	-	AY000044	AY000044

	short design	short design	short design	short design
article-no.	IBR40104	IBR40174	IB050104	IB050174
sensing range (Sn)	0.8mm	0.8mm	0.8mm	0.8mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M8-connector	cable	M8-connector
article-no.	IBR40204	IBR40274	IB050204	IB050274
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IBR41104	*	IB051104	IB051174
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

sensing range (Sn)	0.8mm	0.8mm	0.8mm	0.8mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 5.5mA	≤ 5.5mA	≤ 5.5mA	≤ 5.5mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	1.5V DC	1.5V DC	1.5V DC	1.5V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	5kHz	5kHz	5kHz	5kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø4mm	Ø4mm	M5x0.5	M5x0.5
length (thread/complete)	-/25mm	-/38mm	18mm/25mm	23mm/38mm
housing material	stainless steel	stainless steel	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M8-connector, 3-pin	2m PVC-cable, 3-wire	M8-connector, 3-pin
connection accessories	-	e.g. VK200075 2m, PUR, straight	-	e.g. VK200075 2m, PUR, straight
accessories	AY000044	AY000044	AY000045	AY000045

norm sensing ranges, increased sensing ranges 1100

	preferential series	preferential series	standard design	short design
article-no.	IA060100	IA060170	IB060100	IB060104
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M8-connector	cable	cable
article-no.	-	-	IB060200	IB060204
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	IB061100	IB061104
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø6.5mm	Ø6.5mm	Ø6.5mm	Ø6.5mm
length (thread/complete)	-/40mm	-/50mm	-/50mm	-/35mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M8-connector, 3-pin	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire
connection accessories	-	e.g. VK200075 2m, PUR, straight	-	-
accessories	AY000046	AY000046	AY000046	AY000046

	standard design	short design	short design	short design
article-no	IB060170	IB060174	IB060184	IB0601A4
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	M8-connector	M8-connector	M8-connector	cable
article-no.	IB060270	IB060274	IB060284	IB0602A4
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IB061170	IB061174	*	IB0611A4
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	5kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø6.5mm	Ø6.5mm	Ø6.5mm	Ø6.5mm
length (thread/complete)	-/60mm	-/45mm	-/29mm	-/16mm
housing material	stainless steel	stainless steel	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M8-connector, 3-pin	M8-connector, 3-pin	M8-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	-
connection accessories	AY000046	AY000046	AY000046	AY000046

norm sensing ranges, increased sensing ranges 1100

	top series	top series	preferential series	preferential series
article-no.	IB060173	IB0601A3	IM060100	IM060170
sensing range (Sn)	2.0mm	2.0mm	3.0mm	2.0mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	flush	flush	non-flush	non-flush
connection	M8-connector	cable	cable	M8-connector
article-no.	*	*	-	-
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	*	*	-	-
output signal	nnpn, no	nnpn, no	nnpn, no	nnpn, no
article-no.	*	*	-	-
output signal	nnpn, nc	nnpn, nc	nnpn, nc	nnpn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	2.0mm	2.0mm	3.0mm	2.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø6.5mm	Ø6.5mm	Ø6.5mm	Ø6.5mm
length (thread/complete)	-/50mm	-/40mm	-/40mm	-/50mm
housing material	stainless steel	stainless steel	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M8-connector, 3-pin	2m PUR-cable, 3-wire	2m PVC-cable, 3-wire	M8-connector, 3-pin
connection accessories	e.g. VK200075 2m, PUR, straight	-	-	e.g. VK200075 2m, PUR, straight
accessories	AY000046	AY000046	AY000046	AY000046

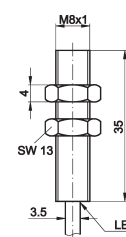
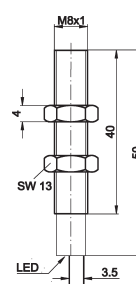
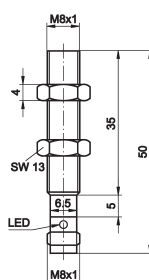
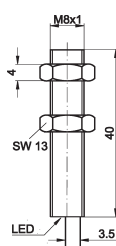
	standard design	standard design	short-design	short-design
article-no.	IN060100	IN060170	IN060174	IN060104
sensing range (Sn)	3.0mm	3.0mm	3.0mm	3.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M8-connector	M8-connector	cable
article-no.	*	IN060270	*	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	IN061170	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	3.0mm	3.0mm	3.0mm	3.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	Ø6.5mm	Ø6.5mm	Ø6.5mm	Ø6.5mm
length (thread/complete)	-/50mm	-/60mm	-/47mm	-/35.5mm
housing material	stainless steel	stainless steel	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M8-connector, 3-pin	M8-connector, 3-pin	2m PVC-cable, 3-wire
connection accessories	-	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	-
accessories	AY000046	AY000046	AY000046	AY000046

norm sensing ranges, increased sensing ranges 1100

	top series	top series		
article-no.	IN060173	IN0601A3		
sensing range (Sn)	4.0mm	4.0mm		
output signal	pnnp, no	pnnp, no		
mounting	non-flush	non-flush		
connection	M8-connector	cable		
article-no.	*	*		
output signal	pnnp, nc	pnnp, nc		
article-no.	*	*		
output signal	nnp, no	nnp, no		
article-no.	*	*		
output signal	nnp, nc	nnp, nc		
* on request				
TECHNICAL DATA				
sensing range (Sn)	4.0mm	4.0mm		
output signal	see above	see above		
operating voltage	10 ... 30V DC	10 ... 30V DC		
current consumption (w/o load)	≤ 15mA	≤ 15mA		
output current (max. load)	200mA	200mA		
voltage drop (max. load)	2.0V DC	2.0V DC		
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2		
hysteresis (of Sn) typical	< 15%	< 15%		
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2		
correction factors	see page 5	see page 5		
sampling frequency	1kHz	1kHz		
status display	yellow LED	yellow LED		
short-circuit protection	+	+		
reverse polarity protection	+	+		
design	Ø6.5mm	Ø6.5mm		
length (thread/complete)	-/50mm	-/40mm		
housing material	stainless steel	stainless steel		
temperature range	-25 ... +70°C	-25 ... +70°C		
system of protection (EN 60529)	IP67	IP67		
connection	M8-connector, 3-pin	2m PUR-cable, 3-wire		
connection accessories	e.g. VK200075 2m, PUR, straight	-		
accessories	AY000046	AY000046		

	preferential series	preferential series	standard design	short design
article-no.	IA080100	IA080170	IB080100	IB080104
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M8-connector	cable	cable
article-no.	-	-	IB080200	IB080204
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	IB081100	IB081104
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M8x1	M8x1	M8x1	M8x1
length (thread/complete)	40mm/40mm	35mm/50mm	40mm/50mm	35mm/35mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M8-connector, 3-pin	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire
connection accessories	-	e.g. VK200075 2m, PUR, straight	-	-
accessories	AY000047	AY000047	AY000047	AY000047

norm sensing ranges, increased sensing ranges 1100

	standard design	standard design	short design	short design
article-no.	IB080121	IB080170	IB080174	IB080184
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	flush	flush	flush	flush
connection	M12-connector	M8-connector	M8-connector	M8-connector
article-no.	IB080221	IB080270	IB080274	IB080284
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	IB081121	IB081170	IB081174	*
output signal	nnp, no	nnp, no	nnp, no	nnp, no
article-no.	*	*	*	*
output signal	nnp, nc	nnp, nc	nnp, nc	nnp, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	1.5mm	1.5mm	1.5mm	1.5mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M8x1	M8x1	M8x1	M8x1
length (thread/complete)	39mm/60mm	45mm/60mm	31mm/45mm	20mm/29mm
housing material	stainless steel	stainless steel	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M12-connector, 3-pin	M8-connector, 3-pin	M8-connector, 3-pin	M8-connector, 3-pin
connection accessories	e.g. VK200025 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight
accessories	AY000047	AY000047	AY000047	AY000047

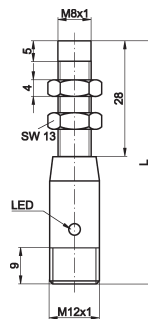
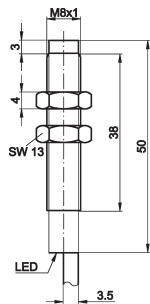
	short design	top series	top series	top series
article-no.	IB0801A4	IB080123	IB080173	IB0801A3
sensing range (Sn)	1.5mm	2.0mm	2.0mm	2.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M12-connector	M8-connector	cable
article-no.	IB0802A4	*	IB080273	IB0802A3
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	IB081123	*	IB0811A3
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	1.5mm	2.0mm	2.0mm	2.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M8x1	M8x1	M8x1	M8x1
length (thread/complete)	16mm/16mm	28mm/60mm	35mm/50mm	35mm/40mm
housing material	stainless steel	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PUR-cable, 3-wire	M12-connector, 3-pin	M8-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	-	e.g. VK200025 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	-
accessories	AY000047	AY000047	AY000047	AY000047

norm sensing ranges, increased sensing ranges 1100

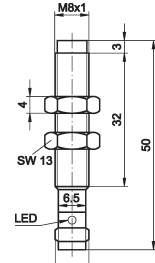
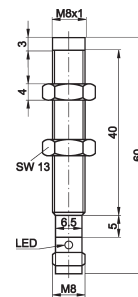
	preferential series	preferential series	short design	short design
article-no.	IM080100	IM080170	IN080104	IN080174
sensing range (Sn)	2.0mm	2.0mm	2.5mm	2.5mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M8-connector	cable	M8-connector
article-no.	-	-	*	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	IN081104	IN081174
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	2.0mm	2.0mm	2.5mm	2.5mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M8x1	M8x1	M8x1	M8x1
length (thread/complete)	35mm/40mm	30mm/50mm	32mm/35mm	28mm/45mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M8-connector, 3-pin	2m PVC-cable, 3-wire	M8-connector, 3-pin
connection accessories	-	e.g. VK200075 2m, PUR, straight	-	e.g. VK200075 2m, PUR, straight
accessories	AY000047	AY000047	AY000047	AY000047

	standard design	standard design	standard design	top series
article-no.	IN080100	IN080121	IN080170	IN080173
sensing range (Sn)	3.0mm	3.0mm	3.0mm	4.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M12-connector	M8-connector	M8-connector
article-no.	IN080200	IN080221	IN080270	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	*	*	IN081173
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	IN081270	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



IN080121 L = 60
IN080221 L = 58



TECHNICAL DATA

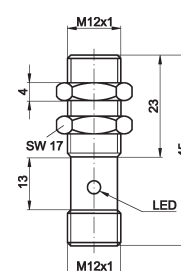
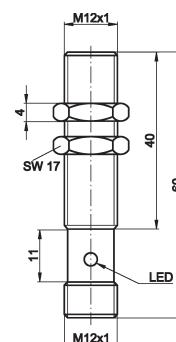
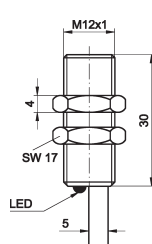
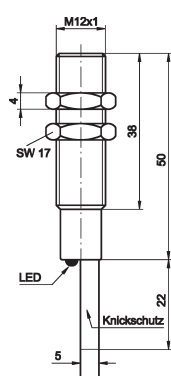
sensing range (Sn)	3.0mm	3.0mm	3.0mm	4.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	1kHz	1kHz	1kHz	1kHz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M8x1	M8x1	M8x1	M8x1
length (thread/complete)	38mm/50mm	23mm/see above	40mm/60mm	29mm/50mm
housing material	stainless steel	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin	M8-connector, 3-pin	M8-connector, 3-pin
connection accessories	-	e.g. VK200025 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight
accessories	AY000047	AY000047	AY000047	AY000047

norm sensing ranges, increased sensing ranges 1100

	top series			
article-no.	IN0801A3			
sensing range (Sn)	4.0mm			
output signal	pnp, no			
mounting	non-flush			
connection	cable			
article-no.	*			
output signal	pnp, nc			
article-no.	IN0811A3			
output signal	npn, no			
article-no.	*			
output signal	npn, nc			
* on request				
TECHNICAL DATA				
sensing range (Sn)	4.0mm			
output signal	see above			
operating voltage	10 ... 30V DC			
current consumption (w/o load)	≤ 15mA			
output current (max. load)	200mA			
voltage drop (max. load)	2.0V DC			
norm trimming plate	to EN 60947-5-2			
hysteresis (of Sn) typical	< 15%			
repeat accuracy (of Sr)	to EN 60947-5-2			
correction factors	see page 5			
sampling frequency	1kHz			
status display	yellow LED			
short-circuit protection	+			
reverse polarity protection	+			
design	M8x1			
length (thread/complete)	31mm/40mm			
housing material	stainless steel			
temperature range	-25 ... +70°C			
system of protection (EN 60529)	IP67			
connection	2m PUR-cable, 3-wire			
connection accessories	-			
accessories	AY000047			

	preferential series	preferential series	preferential series	preferential series
article-no.	IA120100	IA120104	IA120120	IA120124
sensing range (Sn)	2mm	2mm	2mm	2mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	cable	M12-connector	M12-connector
article-no.	-	-	-	-
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	-	-
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	-	-
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

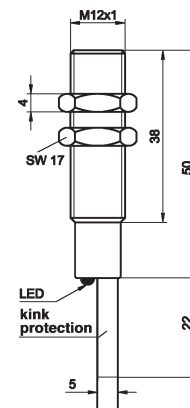
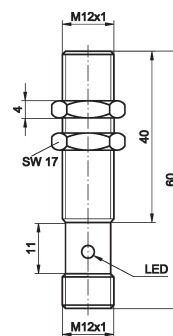
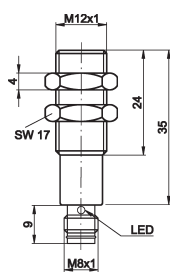
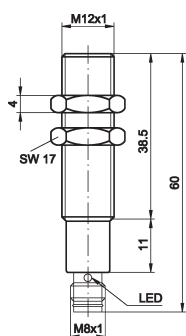
sensing range (Sn)	2mm	2mm	2mm	2mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	800Hz	800Hz	800Hz	800Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	38mm/50mm	30mm/30mm	40mm/60mm	23mm/45mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire	M12-connector, 3-pin	M12-connector, 3-pin
connection accessories	-	-	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight
accessories	AY000049	AY000049	AY000049	AY000049

norm sensing ranges, increased sensing ranges 1100

	standard design	short design	standard design	short design
article-no.	IB120100	IB120104	IB120121	IB120125
sensing range (Sn)	3.0mm	3.0mm	3.0mm	3.0mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	flush	flush	flush	flush
connection	cable	cable	M12-connector	M12-connector
article-no.	IB120200	IB120204	IB120221	IB120225
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	IB121100	*	IB121121	*
output signal	nnpn, no	nnpn, no	nnpn, no	nnpn, no
article-no.	IB121200	*	IB121221	*
output signal	nnpn, nc	nnpn, nc	nnpn, nc	nnpn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	3.0mm	3.0mm	3.0mm	3.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	800Hz	800Hz	800Hz	800Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	40mm/51.5mm	25mm/36mm	40mm/60mm	23mm/45mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire	M12-connector, 3-pin	M12-connector, 3-pin
connection accessories	-	-	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight
accessories	AY000049	AY000049	AY000049	AY000049

	standard design	short design	top series	top series
article-no.	IB120170	IB120174	IB120123	IB1201A3
sensing range (Sn)	3.0mm	3.0mm	4.0mm	4.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	M8-connector	M8-connector	M12-connector	cable
article-no.	*	IB120274	IB120223	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IB121170	*	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

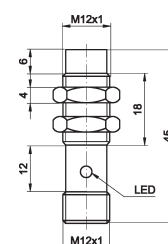
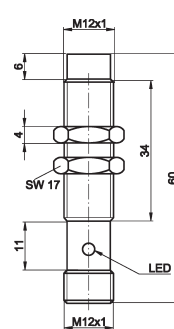
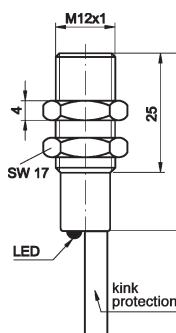
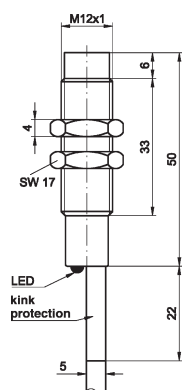
sensing range (Sn)	3.0mm	3.0mm	4.0mm	4.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	800Hz	800Hz	800Hz	800Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	38.5m/60mm	24mm/44mm	40mm/60mm	38mm/50mm
housing material	stainless steel	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M8-connector, 3-pin	M8-connector, 3-pin	M12-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	-
accessories	AY000049	AY000049	AY000049	AY000049

norm sensing ranges, increased sensing ranges 1100

article-no.	preferential series IM120100	preferential series IM120104	preferential series IM120120	preferential series IM120124
sensing range (Sn)	4.0mm	4.0mm	4.0mm	4.0mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M12-connector	M12-connector	M12-connector
article-no.	-	-	-	-
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	-	-	-	-
output signal	nnpn, no	nnpn, no	nnpn, no	nnpn, no
article-no.	-	-	*	*
output signal	nnpn, nc	nnpn, nc	nnpn, nc	nnpn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	4.0mm	4.0mm	4.0mm	4.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	400Hz	400Hz	400Hz	400Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	33mm/50mm	31mm/37mm	34mm/60mm	18mm/45mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire	M12-connector, 3-pin	M12-connector, 3-pin
connection accessories	-	-	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight
accessories	AY000049	AY000049	AY000049	AY000049

	standard design	short design	standard design	short design
article-no.	IN120100	IN120104	IN120121	IN120125
sensing range (Sn)	6.0mm	6.0mm	6.0mm	6.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	cable	M12-connector	M12-connector
article-no.	IN120200	IN120204	IN120221	IN120225
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IN121100	IN121104	IN121121	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	IN121221	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

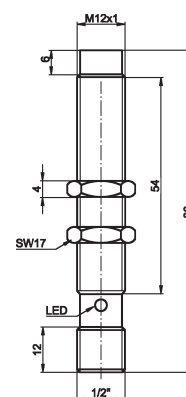
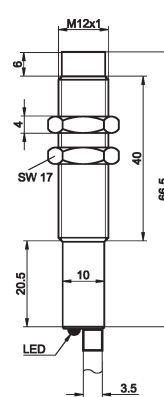
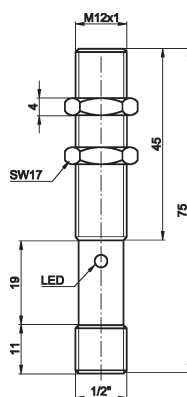
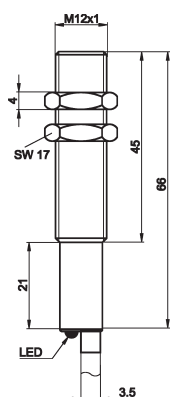
sensing range (Sn)	6.0mm	6.0mm	6.0mm	6.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	400Hz	400Hz	400Hz	400Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	33mm/50mm	20mm/37mm	34mm/60mm	18mm/45mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire	M12-connector, 3-pin	M12-connector, 3-pin
connection accessories	-	-	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight
accessories	AY000049	AY000049	AY000049	AY000049

norm sensing ranges, increased sensing ranges 1100

	standard design	short design	top series	top series
article-no.	IN120170	IN120174	IN120123	IN1201A3
sensing range (Sn)	6.0mm	6.0mm	8.0mm	8.0mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	M8-connector	M8-connector	M12-connector	cable
article-no.	*	IN120274	*	IN1202A3
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	IN121170	*	*	*
output signal	nnpn, no	nnpn, no	nnpn, no	nnpn, no
article-no.	*	*	*	*
output signal	nnpn, nc	nnpn, nc	nnpn, nc	nnpn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	6.0mm	6.0mm	8.0mm	8.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	400Hz	400Hz	400Hz	400Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	33mm/60mm	18mm/35mm	34mm/60mm	33mm/50mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M8-connector, 3-pin	M8-connector, 3-pin	M12-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	e.g. VK200075 2m, PUR, straight	e.g. VK200075 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	-
accessories	AY000049	AY000049	AY000049	AY000049

	standard design	standard design	standard design	standard design
article-no.	IB124100	IB124131	IN124100	IN124131
sensing range (Sn)	2.0mm	2.0mm	4.0mm	4.0mm
output signal	AC, no	AC, no	AC, no	AC, no
mounting	flush	flush	non-flush	non-flush
connection	cable	MC-connector	cable	MC-connector
article-no.	IB124200	-	IN124200	IN124231
output signal	AC, nc	AC, nc	AC, nc	AC, nc

* on request



TECHNICAL DATA

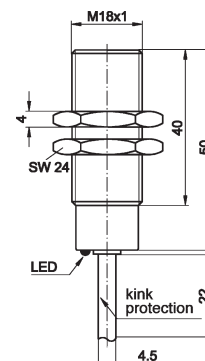
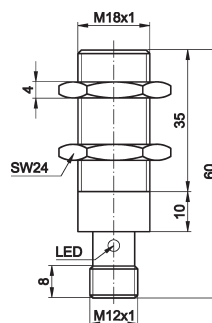
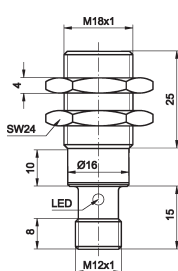
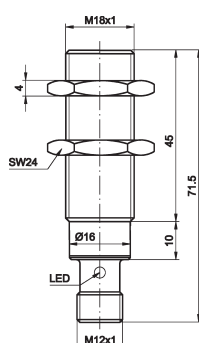
sensing range (Sn)	2.0mm	2.0mm	4.0mm	4.0mm
output signal	see above	see above	see above	see above
operating voltage	90 ... 250V AC	20 ... 250V AC	90 ... 250V AC	20 ... 250V AC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	180mA	300mA	180mA	300mA
voltage drop (max. load)	5.0V AC	5.0V AC	5.0V AC	5.0V AC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	10Hz	15Hz	10Hz	15Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	-	-	-	-
design	M12x1	M12x1	M12x1	M12x1
length (thread/complete)	45mm/66mm	45mm/75mm	40mm/66.5mm	54mm/80mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	MC-connector, 3-pin	2m PVC-cable, 3-wire	MC-connector, 3-pin
connection accessories	-	e.g. VK201034 2m, PVC, straight	-	e.g. VK201034 2m, PVC, straight
accessories	AY000049	AY000049	AY000049	AY000049

norm sensing ranges, increased sensing ranges 1100

	standard design	short design	standard design	short design
article-no.	IA180100	IA180120	IB180100	IB180104
sensing range (Sn)	5.0mm	5.0mm	5.0mm	5.0mm
output signal	pnnp, no	pnnp, no	pnnp, no	pnnp, no
mounting	flush	flush	flush	flush
connection	cable	M12-connector	cable	cable
article-no.	-	-	IB180200	*
output signal	pnnp, nc	pnnp, nc	pnnp, nc	pnnp, nc
article-no.	-	-	IB181100	*
output signal	nnp, no	nnp, no	nnp, no	nnp, no
article-no.	-	-	*	*
output signal	nnp, nc	nnp, nc	nnp, nc	nnp, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	5.0mm	5.0mm	5.0mm	5.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	500Hz	500Hz	500Hz	500Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	40mm/50mm	45mm/62mm	50mm/62mm	30mm/41mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire
connection accessories	-	e.g. VK200025 2m, PUR, straight	-	-
accessories	AY000051	AY000051	AY000051	AY000051

	standard design	short design	top series	top series
article-no.	IB180121	IB180125	IB180123	IB1801A3
sensing range (Sn)	5.0mm	5.0mm	7.0mm	7.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	M12-connector	M12-connector	M12-connector	cable
article-no.	IB180221	IB180225	IB180223	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IB181121	-	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	IB181221	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

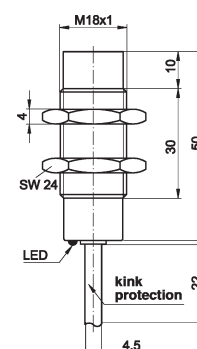
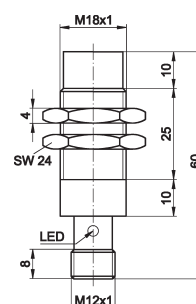
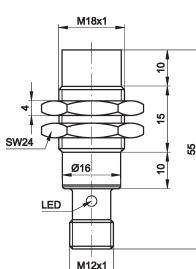
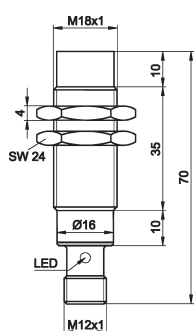
sensing range (Sn)	5.0mm	5.0mm	7.0mm	7.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	500Hz	500Hz	500Hz	500Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	45mm/71.5mm	25mm/50mm	35mm/60mm	40mm/50mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M12-connector, 3-pin	M12-connector, 3-pin	M12-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	-
accessories	AY000051	AY000051	AY000051	AY000051

norm sensing ranges, increased sensing ranges 1100

	preferential series	preferential series	standard design	short design
article-no.	IM180100	IM180120	IN180100	IN180104
sensing range (Sn)	8.0mm	8.0mm	10.0mm	10.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M12-connector	cable	cable
article-no.	-	-	*	IN180204
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	IN181100	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	8.0mm	8.0mm	10.0mm	10.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	200Hz	200Hz	200Hz	200Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	30mm/50mm	35mm/70mm	40mm/61mm	20mm/41mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin	2m PVC-cable, 3-wire	2m PVC-cable, 3-wire
connection accessories	-	e.g. VK200025 2m, PVC, straight	-	-
accessories	AY000051	AY000051	AY000051	AY000051

	standard design	short design	top series	top series
article-no.	IN180121	IN180125	IN180123	IN1801A3
sensing range (Sn)	10.0mm	10.0mm	12.0mm	12.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	M12-connector	M12-connector	M12-connector	cable
article-no.	IN180221	IB180225	*	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	IN181121	*	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

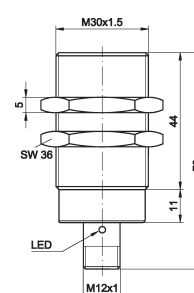
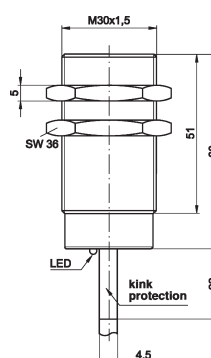
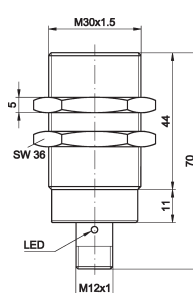
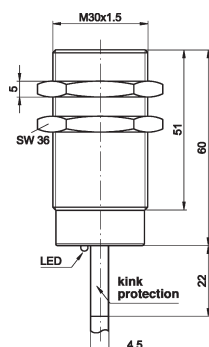
sensing range (Sn)	10.0mm	10.0mm	12.0mm	12.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	200Hz	200Hz	200Hz	200Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	35mm/70mm	15mm/50mm	25mm/60mm	30mm/50mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M12-connector, 3-pin	M12-connector, 3-pin	M12-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	-
accessories	AY000051	AY000051	AY000051	AY000051

norm sensing ranges, increased sensing ranges 1100

	standard design	standard design	standard design	standard design
article-no.	IB184100	IB184131	IN184100	IN184131
sensing range (Sn)	5.0mm	5.0mm	8.0mm	10.0mm
output signal	AC, no	AC, no	AC, no	AC, no
mounting	flush	flush	non-flush	non-flush
connection	cable	MC-connector	cable	MC-connector
article-no.	IB184200	-	IN184200	IN184231
output signal	AC, nc	AC, nc	AC, nc	AC, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	5.0mm	5.0mm	8.0mm	10.0mm
output signal	see above	see above	see above	see above
operating voltage	20 ... 250V AC	20 ... 250V AC	20 ... 250V AC	20 ... 250V AC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	400mA	500mA	400mA	500mA
voltage drop (max. load)	5.0V AC	5.0V AC	5.0V AC	5.0V AC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	10Hz	15Hz	10Hz	15Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	-	-	-	-
design	M18x1	M18x1	M18x1	M18x1
length (thread/complete)	61mm/82mm	60mm/80mm	53mm/81mm	52mm/80mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	MC-connector, 3-pin	2m PVC-cable, 3-wire	MC-connector, 3-pin
connection accessories	-	e.g. VK201034 2m, PVC, straight	-	e.g. VK201034 2m, PVC, straight
accessories	AY000051	AY000051	AY000051	AY000051

	preferential series	preferential series	standard design	standard design
article-no.	IA300100	IA300120	IB300100	IB300121
sensing range (Sn)	10.0mm	10.0mm	10.0mm	10.0mm
output signal	-	pnp, no	pnp, no	pnp, no
mounting	flush	flush	flush	flush
connection	cable	M12-connector	cable	M12-connector
article-no.	-	-	*	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	-	-	IB301100	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	-	-	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

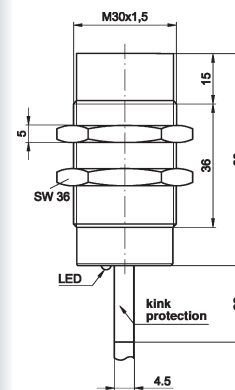
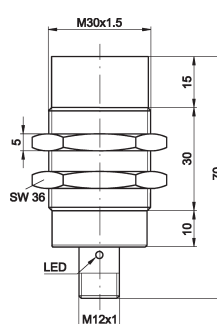
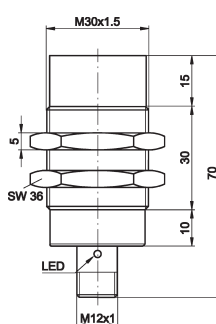
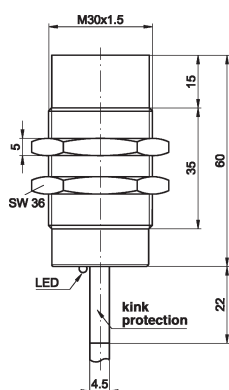
sensing range (Sn)	10.0mm	10.0mm	10.0mm	10.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	300Hz	300Hz	300Hz	300Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M30x1.5	M30x1.5	M30x1.5	M30x1.5
length (thread/complete)	51mm/60mm	44mm/70mm	51mm/60mm	44mm/70mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin	2m PVC-cable, 3-wire	M12-connector, 3-pin
connection accessories	-	e.g. VK200025 2m, PUR, straight	-	e.g. VK200025 2m, PUR, straight
accessories	AY000061	AY000061	AY000061	AY000061

norm sensing ranges, increased sensing ranges 1100

	top series	top series	preferential series	preferential series
article-no.	IB300123	IB3001A3	IM300100	IM300120
sensing range (Sn)	15.0mm	15.0mm	15.0mm	15.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	flush	flush	non-flush	non-flush
connection	M12-connector	cable	cable	M12-connector
article-no.	*	*	-	-
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	*	-	-
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	-	-
output signal	npn, nc	npn, nc	npn, nc	npn, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	15.0mm	15.0mm	15.0mm	15.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	300Hz	300Hz	100Hz	100Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M30x1.5	M30x1.5	M30x1.5	M30x1.5
length (thread/complete)	44mm/70mm	51mm/60mm	35mm/60mm	30mm/70mm
housing material	stainless steel	stainless steel	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	M12-connector, 3-pin	2m PUR-cable, 3-wire	2m PVC-cable, 3-wire	M12-connector, 3-pin
connection accessories	e.g. VK200025 2m, PUR, straight	-	-	e.g. VK200025 2m, PUR, straight
accessories	AY000061	AY000061	AY000061	AY000061

article-no.	standard design IN300100	standard design IN300121	top series IN300123	top series IN3001A3
sensing range (Sn)	20.0mm	20.0mm	20.0mm	20.0mm
output signal	pnp, no	pnp, no	pnp, no	pnp, no
mounting	non-flush	non-flush	non-flush	non-flush
connection	cable	M12-connector	M12-connector	cable
article-no.	IN300200	IN300221	*	*
output signal	pnp, nc	pnp, nc	pnp, nc	pnp, nc
article-no.	*	*	*	*
output signal	npn, no	npn, no	npn, no	npn, no
article-no.	*	*	*	*
output signal	npn, nc	npn, nc	npn, nc	npn, nc

* on request



TECHNICAL DATA

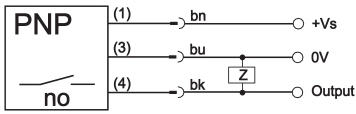
sensing range (Sn)	20.0mm	20.0mm	20.0mm	20.0mm
output signal	see above	see above	see above	see above
operating voltage	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC	10 ... 30V DC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	200mA	200mA	200mA	200mA
voltage drop (max. load)	2.0V DC	2.0V DC	2.0V DC	2.0V DC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	100Hz	100Hz	100Hz	100Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	+	+	+	+
design	M30x1.5	M30x1.5	M30x1.5	M30x1.5
length (thread/complete)	35mm/60mm	30mm/70mm	30mm/70mm	36mm/60mm
housing material	nickel-plated brass	nickel-plated brass	stainless steel	stainless steel
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 3-wire	M12-connector, 3-pin	M12-connector, 3-pin	2m PUR-cable, 3-wire
connection accessories	-	e.g. VK200025 2m, PUR, straight	e.g. VK200025 2m, PUR, straight	-
accessories	AY000061	AY000061	AY000061	AY000061

norm sensing ranges, increased sensing ranges 1100

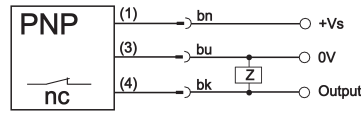
	standard design	standard design	standard design	standard design
article-no.	IB304100	IB304131	IN304100	IN304131
sensing range (Sn)	10.0mm	10.0mm	15.0mm	15.0mm
output signal	AC, no	AC, no	AC, no	AC, no
mounting	flush	flush	non-flush	non-flush
connection	cable	MC-connector	cable	MC-connector
article-no.	IB304200	-	IN304200	-
output signal	AC, nc	AC, nc	AC, nc	AC, nc
* on request				
TECHNICAL DATA				
sensing range (Sn)	10.0mm	10.0mm	15.0mm	15.0mm
output signal	see above	see above	see above	see above
operating voltage	20 ... 250V AC	20 ... 250V AC	20 ... 250V AC	20 ... 250V AC
current consumption (w/o load)	≤ 15mA	≤ 15mA	≤ 15mA	≤ 15mA
output current (max. load)	400mA	500mA	400mA	500mA
voltage drop (max. load)	5.0V AC	5.0V AC	5.0V AC	5.0V AC
norm trimming plate	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
hysteresis (of Sn) typical	< 15%	< 15%	< 15%	< 15%
repeat accuracy (of Sr)	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2	to EN 60947-5-2
correction factors	see page 5	see page 5	see page 5	see page 5
sampling frequency	10Hz	15Hz	10Hz	15Hz
status display	yellow LED	yellow LED	yellow LED	yellow LED
short-circuit protection	+	+	+	+
reverse polarity protection	-	-	-	-
design	M30x1.5	M30x1.5	M30x1.5	M30x1.5
length (thread/complete)	60mm/82mm	60mm/89mm	50mm/81mm	37mm/80mm
housing material	nickel-plated brass	nickel-plated brass	nickel-plated brass	nickel-plated brass
temperature range	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
system of protection (EN 60529)	IP67	IP67	IP67	IP67
connection	2m PVC-cable, 2-wire	MC-connector, 3-pin	2m PVC-cable, 2-wire	MC-connector, 3-pin
connection accessories	-	e.g. VK201034 2m, PVC, straight	-	e.g. VK201034 2m, PVC, straight
accessories	AY000061	AY000061	AY000061	AY000061

connection

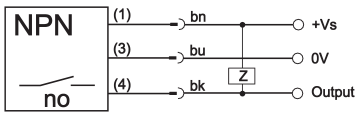
3-pin PNP, no



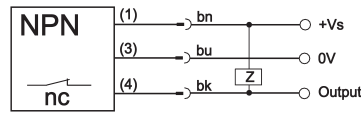
3-pin PNP, nc



3-pin NPN, no



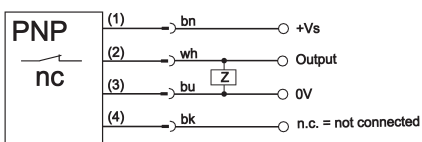
3-pin NPN, nc



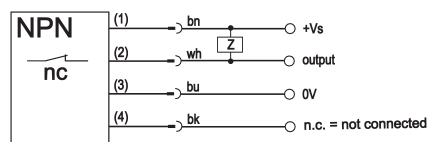
wire colors: bn = brown (1), bu = blue (2), bk = black (4)

For devices with M12-connector and normally closed contact function (nc), the switching output is wired via PIN2. For this reason a 4-pin cable socket should be used and the connection made via the white wire.

3-pin, PNP, nc, M12-connector

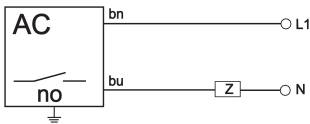


3-pin, NPN, nc, M12-connector

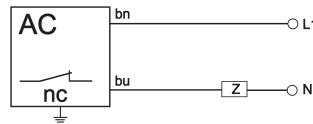


wire colors: bn = brown (1), wh = white (2), bu = blue (3)

2-pin, AC, no

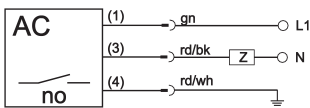


2-pin, AC, nc



wire colors: bn = brown (1), bu = blue (2)

3-pin, AC, MC-connector



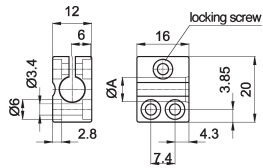
wire colors: gn = green (1), rd/bk = red/black (2), rd/wh = red/white (3)

norm sensing ranges, increased sensing ranges 1100

cable socket: number of pins (assigned):	M8, angular 3-pin	M8, straight 3-pin	M12, angular 3-pin
article-no. length	VK200071 2m	VK200075 2m	VK200021 2m
article-no. length	VK500071 5m	VK500075 5m	VK500021 5m
article-no. length	VKA00071 10m	VKA00075 10m	VKA00021 10m
cable socket: number of pins (assigned):	M12, straight 3-pin	MC, angular 3-pin	MC, straight 3-pin
article-no. length	VK200025 2m	VK201030 2m	VK201034 2m
article-no. length	VK500025 5m	- 5m	- 5m
article-no. length	VKA00025 10m	- 10m	- 10m

fixing material / quick clips

fig. 1



measurement A = sensor diameter

fig. 2

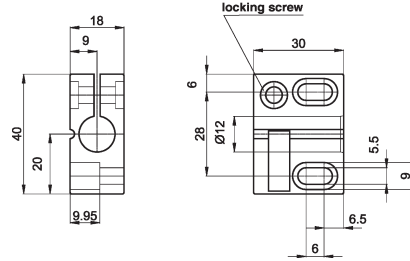


fig. 3

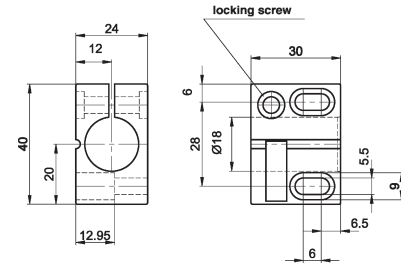


fig. 4

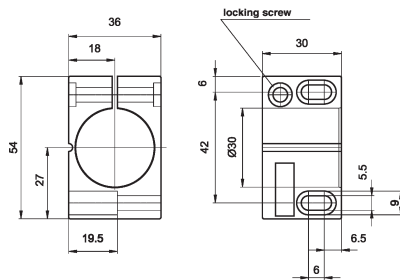


fig. 5

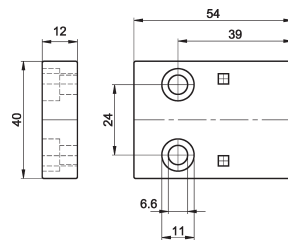
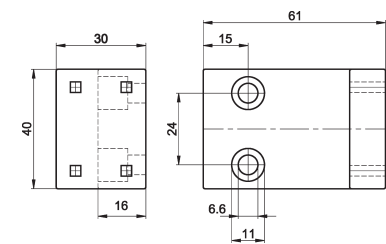


fig. 6



example



article-no.	description	note	fig.
AY000044	accessories sensor, quick clip 4, plastic	sensor Ø4, clip	1
AY000045	accessories sensor, quick clip 5, plastic	sensor Ø5, clip	1
AY000046	accessories sensor, quick clip 6.5, plastic	sensor Ø6.5, clip	1
AY000047	accessories sensor, quick clip 8, plastic	sensor Ø8, clip	1
AY000048	accessories sensor, quick clip 8, plastic	sensor Ø8, clip, positive stop	1
AY000049	accessories sensor, quick clip 12, plastic	sensor Ø12, clip	2
AY000050	accessories sensor, quick clip 12, plastic	sensor Ø12, clip, positive stop	2
AY000051	accessories sensor, quick clip 18, plastic	sensor Ø18, clip	3
AY000052	accessories sensor, quick clip 18, plastic	sensor Ø18, clip, positive stop	3
AY000061	accessories sensor, quick clip 30, plastic	sensor Ø30, clip	4
AY000062	accessories sensor, quick clip 30, plastic	sensor Ø30, clip, positive stop	4
AY000053	accessories sensor, base, straight, plastic	for quick clip Ø12 + Ø18	5
AY000054	accessories sensor, base, angular, plastic	for quick clip Ø12 + Ø18	6
AY000055	accessories sensor, identification label, white	for quick clip Ø12 + Ø18 + Ø30	w/o