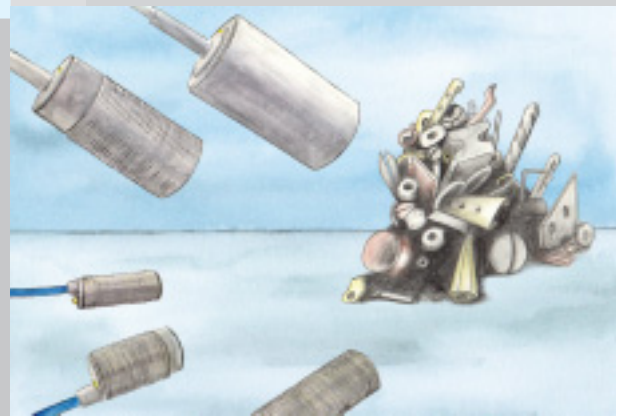


CATALOGUE

INDUCTIVE SENSORS IAS





Registration No.: 1327-01



Testing laboratory accredited according to
DIN EN 45001 Reg.-No. DAT-P-048/95-00

For all transactions, the newest version of the „General Conditions of Sale and Delivery for Products and Services of the Electrical Industry ZVEI“ shall apply, along with the supplementary conditions „extended reservation of proprietary rights“, together with the supplements listed on our order confirmations and/or invoices.

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Edition September 2004

With publication of this catalogue all former printed catalogues about RECHNER inductive sensors are invalid.

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TECHNOLOGY

The **inductive** sensors, our abbreviation **IAS**, contain a transistor oscillator whose power consumption is influenced by the approach of metals and other electrically conductive materials. This effect can also be achieved through a non-conductive material. Depending on the type, the current change of the oscillator will be amplified to a streamlined output signal or output as a binary signal by a switching amplifier.

Output stages with **npn or pnp transistors** are available for **DC** operation.
A **transistor output** stage or FET-output is integrated for **AC** connection

The output switching functions are

NO, NC or change-over (antivalent),
similar to mechanical switches.

Electronic circuits, PLCs, relays or contactors can be activated directly with inductive sensors. The current change in the oscillator is caused without contact by the approach of the actuating material to the active area. The damping of the oscillator is possible between the active surface and specified maximum sensing distance (S_n) $\pm 10\%$. No mechanical force is exerted on the actuating material in the process, and no magnetic effect is caused by the high-frequency alternating field.

The components of the IAS are mounted in plastic or metal casings and encapsulated with epoxy casting resin. The plastics used for the housings are:

- ⇒ PVC (polyvinylchloride)
- ⇒ PA (polyamide) 6.6 glass-fibre reinforced
- ⇒ PC (polycarbonate)
- ⇒ PTFE (polytetrafluor ethylene)
- ⇒ PEEK (polyetheretherketone)

And the metal housings are

- ⇒ brass / chrome or nickel-plated
- ⇒ VA stainless-steel, material No. 1.4301 or No. 1.4305.
- ⇒ Aluminium die-cast

By means of the following measures all devices are insensitive to dirt, vibration (vibration stability: 30 g, 100...2000 Hz, 1 hour) and are watertight (depending on the type, up to IP 68). The choice of housings enables a wide range of applications, e.g. with aggressive media, in hot areas or in areas subjected to steam.

Only pre-tested electronic components, proven integrated circuits and hybrid circuits are used and produced with SMT. The standard constant ambient temperature permitted is -25 up to +70°C, and up to 90°C for brief periods. High-temperature types for use from -200 up to +250°C are also included in our general product line.

With contactless detection no physical actuating force is required for operation. There is no contact bounce, no sensor wear, no maintenance and the service life is independent of the switching frequency.

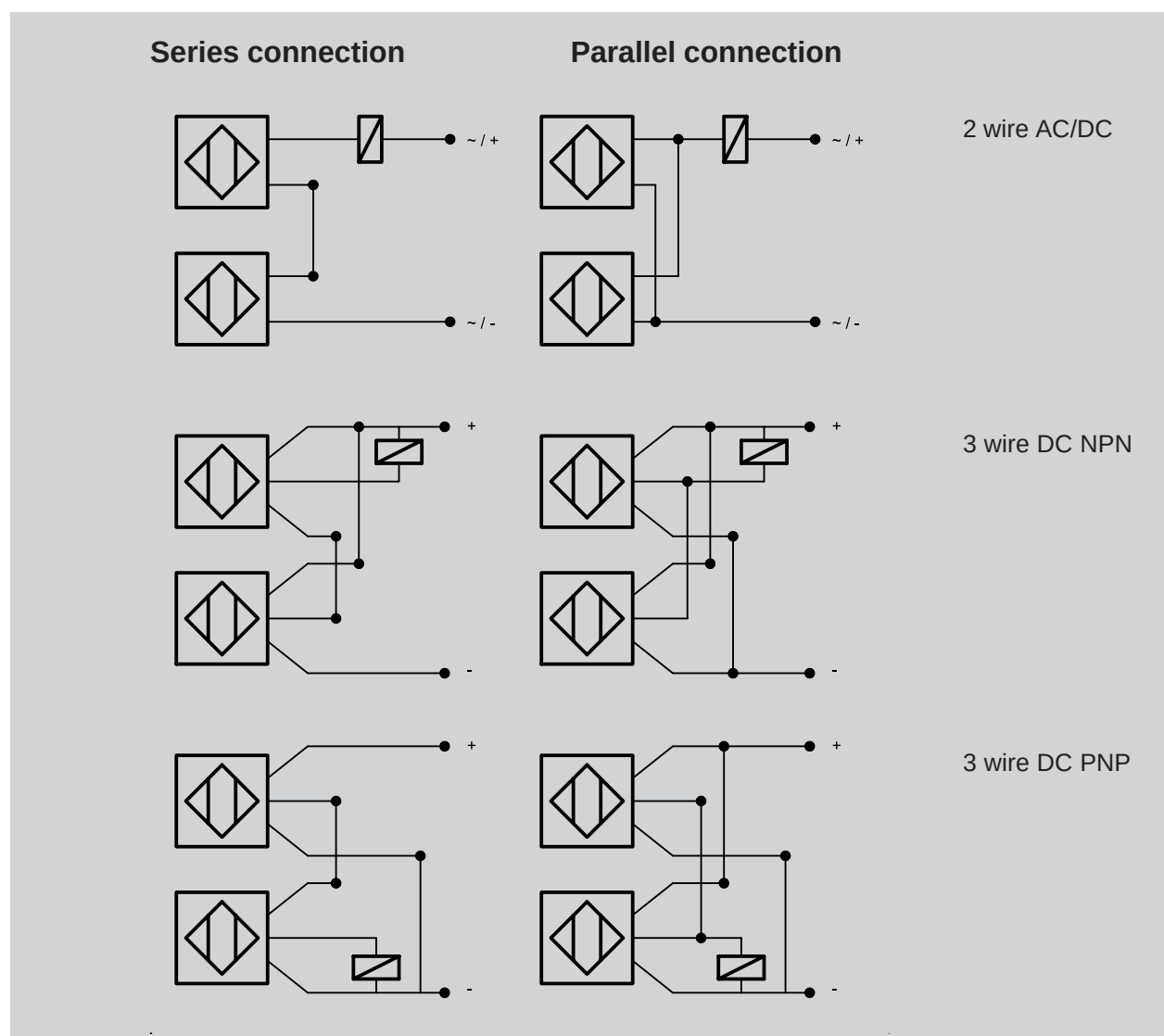
IAS can be used in machines, systems and vehicles as limit switches, contactless position switches for monitoring and positioning, as pulse generators for counting tasks, distance and speed measurements, and for many other applications (for application examples see page 11).

TECHNOLOGY

Wiring of the inductive sensors should be routed separately or screened from heavy conductor lines, as in extreme cases inductive peak voltages can destroy the sensors despite the integrated protective circuit. Screened cable or twisted lines are recommended, especially for longer cable runs > 5 m. Direct control of electric light bulbs is to be avoided, because during the switch-on moment cold current is many times the rated current and can destroy the output stage of the sensor.

Units with strong local fields, e. g. high power walkie-talkies, or noise sources in the lower frequency range, e.g. long, middle or short wave transmitters should not be operated close to the sensors or additional measures have to be taken in order to eliminate their maloperation.

2- and 3-wire sensors with binary output can be used in series or parallel connection, similar to mechanical contacts. The type-typical voltage drop and the residual voltage U_d , which must be multiplied in accordance with the number of sensors for series connection, must be noted. In the case of parallel connection of sensors with thyristor output, the first switched output takes over the total load current.

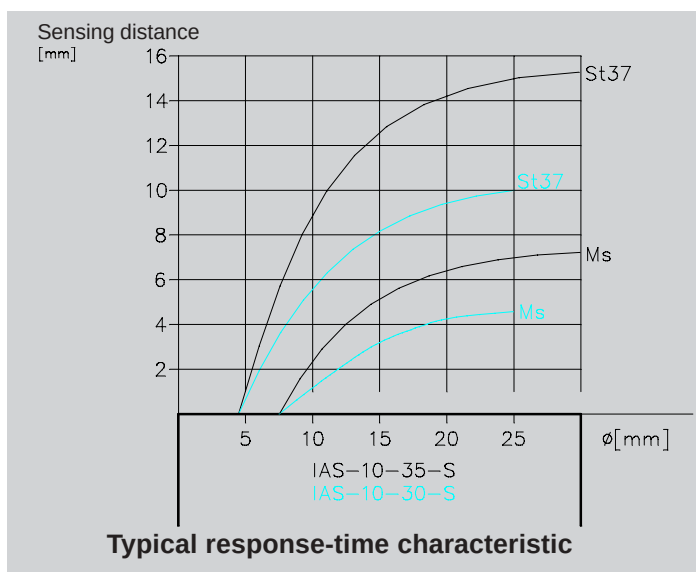


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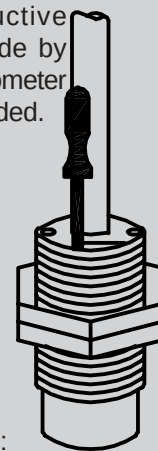
ADJUSTMENT

Analog inductive sensors are equipped with a 20-turn spindle potentiometer. This allows adjustment of an application specific operating range between the minimum distance "0 mm" and the type-typical maximum value. Consequently, the full output current range (4...20 mA) is always present, regardless of the required measuring distance. The analog sensors of series 10 are designed with a 2-colour LED that facilitates adjustment. Outside the operating range $I_A < 4$ mA and $I_A > 20$ mA green light is emitted to display operational readiness. Within the operating range of 4...20 mA the LED is yellow. In the undamped state the output current value is > 20 mA and moves with the reduction of the object distance toward 4 mA (value at total damping approx. 2.5 mA).

The data of the **nominal sensing distance** are based on the measuring method according to DIN VDE 0660, Part 208. The respective nominal sensing distance is indicated with a tolerance of ± 10 %. The standard measurement plate is square with a thickness of 1 mm and is made of carbon steel FE 360 (defined in ISO 630: 1980) with a smoothed surface and earthed. The side lengths are equal to the diameter of the active area of the IAS or equal to $3 \times S_n$, depending on which value is greater. With a different material or a smaller surface of the actuating element, the sensing distance is smaller



Adjustment of the sensing distance of the inductive analogue sensors is made by means of a spindle potentiometer with the screwdriver provided.



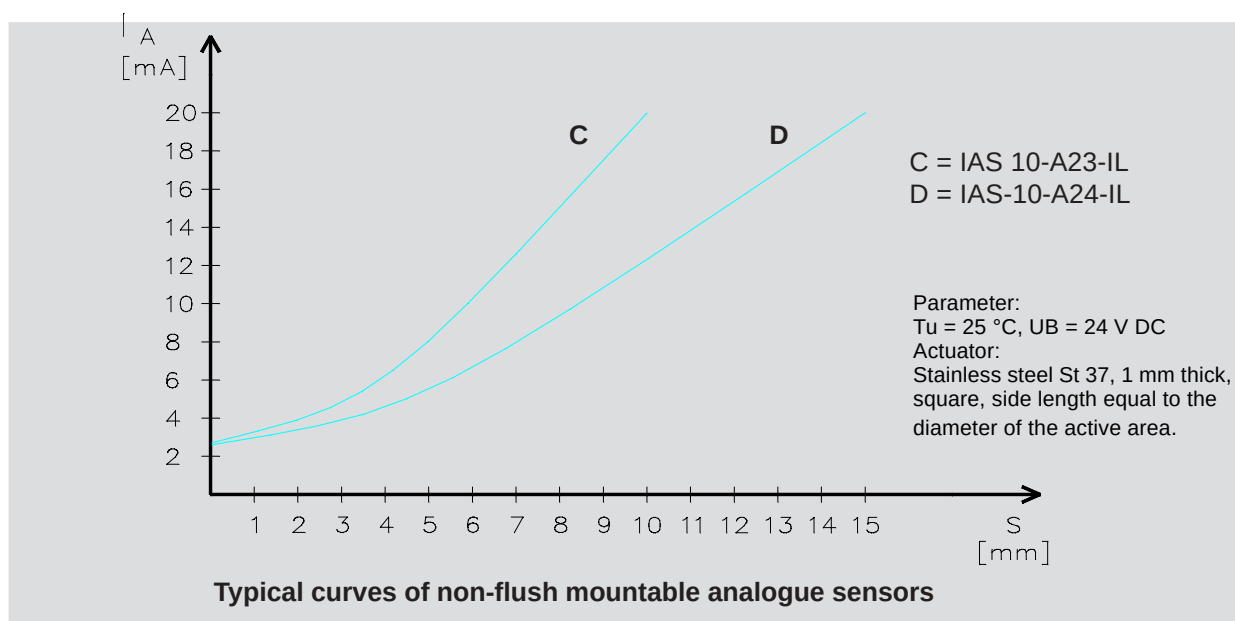
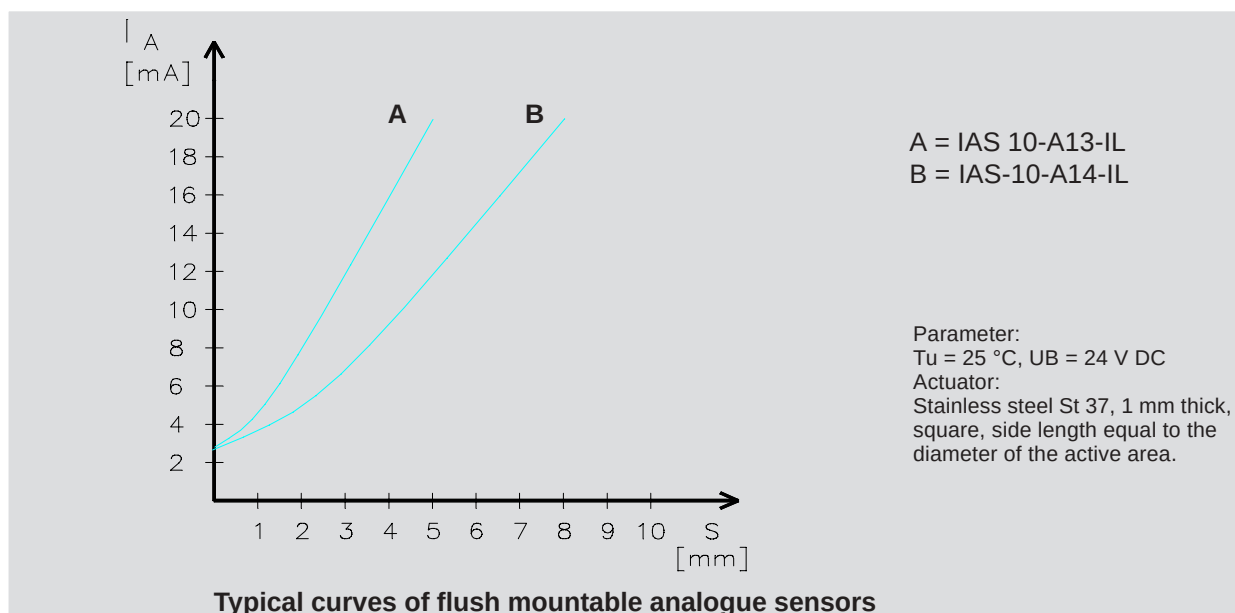
For size M30x1.5 / $\varnothing$ 30:
First open plastic tab.
For size $\geq$ M30x1.5 / $\varnothing$ 30:
First remove plastic sealing screw.

The possible sensing distance on a particular metal can be worked out by means of the typical reduction factors: **Sensing distance = $S_n \times$ reduction factor.**

Metal type:	FE 360	St 37	CrNi	V 2A	V 4A	Ms	Al	Cu	Au
Reduction factor approx.	1	1	0.85	0.75	0.7	0.45	0.4	0.3	0.24

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TYPICAL CURVES



MOUNTING

There are two different types of inductive sensors:

- 1. For flush mounting** in metal and other materials. These sensors can also be mounted close together (see Fig. 1 and 3).
- 2. For non-flush mounting** in metal. However, these types can also be mounted flush in nonmetals. When mounting two or more sensors side by side a space / free zone must be provided (see Fig. 2 and 4).

Mounting

Fig.1

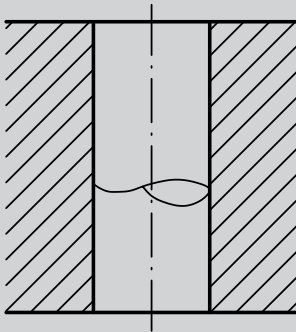
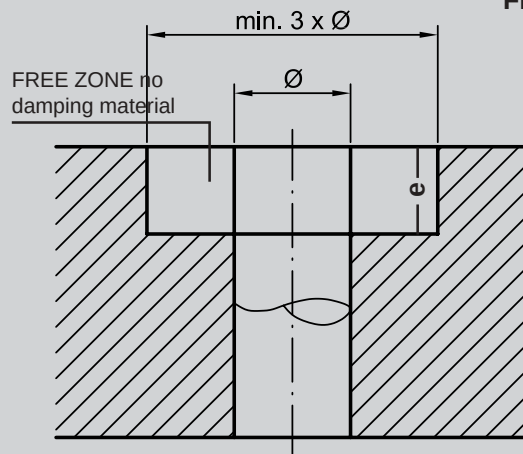


Fig.2



The dimension „e“ corresponds to the thread-free area of standard sensor types (-A21-...). Otherwise „e“ is 7 mm.

Fig.3

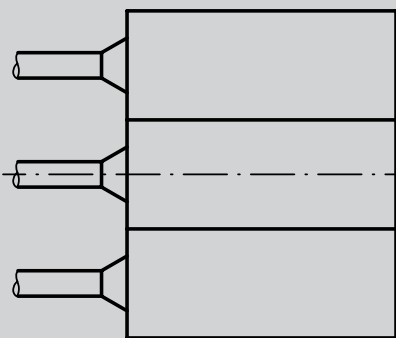
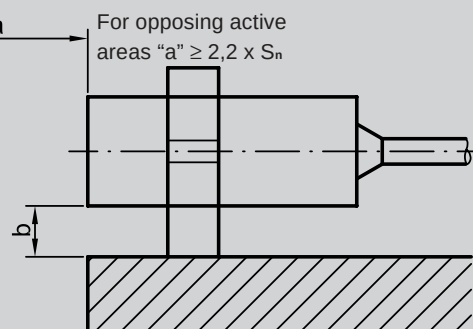


Fig.4



For non-flush mountable Sensors distance „b“ has to be $\geq 1,5 \times S_n$.

MOUNTING

The material and version-dependent **maximum torque** should be taken into consideration in order to prevent damage to the threaded sleeves when mounting.

The values listed in the table are based on the use of the nuts supplied with the sensors.

Thread	Housing Material				
	PVC	PA 6.6	PTFE	Brass	Stainless Steel
M 5 x 0.5	-	-	-	-	1.5 Nm
M 8 x 1	-	-	-	-	4.5 Nm
M 12 x 1	1.5 Nm	1 Nm	0.2 Nm	16 Nm	25 Nm
M 18 x 1	-	1.7 Nm	0.5 Nm	28 Nm	60 Nm
M 22 x 1.5	12 Nm	6 Nm	1.4 Nm	32 Nm	84 Nm
M 30 x 1.5	-	8 Nm	2.5 Nm	82 Nm	200 Nm
M 32 x 1.5	-	13 Nm	3 Nm	150 Nm	230 Nm

Due to the permitted thread tolerances specified in German standard DIN 13, the **maximum screw-in length** for threaded sensors should be taken into consideration. Depending on that the length of the threaded block for screwing in proximity sensors should not exceed the following dimensions. In the case of larger threaded blocks we recommend drilling a blind hole in order to adhere to the maximum screw-in length.

Thread:	M 5 x 0.5	M 8 x 1	M 12 x 1	M18 x 1	M 22 x 1.5	M 30 x 1.5	M 32 x 1.5
Screw-in length max.	3 mm	6 mm	8 mm	12 mm	12 mm	12 mm	12 mm

TECHNICAL TERMS

Unless otherwise specified technical data is as follows: +24°C, $U_B = 8 \text{ V DC}$ for IAS-30; $U_B = 24 \text{ V DC}$ for IAS-10 and IAS-20 and $U_B = 230 \text{ V AC}$ for IAS-60.

Operating sensing distance / S_a

Within the operating sensing distance the sensor operates reliably taking in to account all the possible tolerances. It lies between 0 and $0.81 \times S_n$.

Power up time delay

The time the sensor needs to be ready for operation after connecting the operating voltage. It is in the milliseconds range.

TECHNICAL TERMS

Housing materials

The application of the housing materials used is based on the technical specifications of the material and of the manufacturer. Even though RECHNER Sensors have far-reaching application experience concerning the use of different housing materials, the customer is responsible for checking in each case that the housing material is suitable for the application.

Cable

For the standard models PVC- or PUR-cable are used. One has to take into consideration that the cable should not be moved with ambient temperatures below -5°C . PVC is not suitable for use in applications with oil-based liquids or with UV-radiation. PUR is not suitable for continuous contact with water. For special application areas silicone or PTFE cables are available.

Nominal sensing distance / S_n

The characteristic value of a proximity sensor, without consideration of production tolerances and variations due to temperature and voltages.

Real sensing distance / S_r

The sensing distance determined at $+20^{\circ}\text{C}$ and rated voltage. Here the series variance is taken into consideration. Variation max. $\pm 10\%$.

Reduction factors

The reduction factors, as shown in the table on page 6, should be taken into consideration, for metals other than FE 360 or ST 37.

Series- and parallel connection

It is possible to connect the proximity sensors in series or parallel. When considering this it must be taken into account that the voltage drops are added for series connection and the residual voltages for parallel connection. Under these circumstances it is advisable to operate a maximum of three sensors in a corresponding circuit.

Repeat accuracy of the switching point

The variation of the switching point of two successive measurements at constant ambient conditions.

Frequency of operating cycles

The maximum damping and un-damping cycles of the proximity sensor within one second. To ascertain the frequency of operating cycles a pulse / break ratio of 1 : 2 is used as a basis, at $S_n^{1/2}$.

Switching hysteresis

The difference between the switch-on and switch-off point of a proximity sensor, when approaching or moving away from the standard measuring plate. It is $< 20\%$ of the real sensing distance.

Enclosure rating

IP 65: Protection against contact with voltage-carrying parts, protection against ingress of dust and water jet.

IP 67: Protection against contact with voltage-carrying parts, protection against ingress of dust and protection against ingress of water when the equipment is immersed in water, up to 1 m depths and for a period of 30 minutes.

Temperature variation

The displacement of the switching point if the ambient temperature changes.

APPLICATION EXAMPLES

Fig. 1: Inductive level control within a plastic container at a by-pass, by means of a metal float

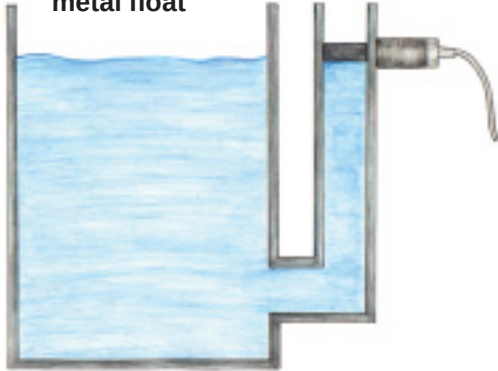


Fig. 2: Position aid for transported tins



Fig. 3: Detection of a gear wheel or cam wheel

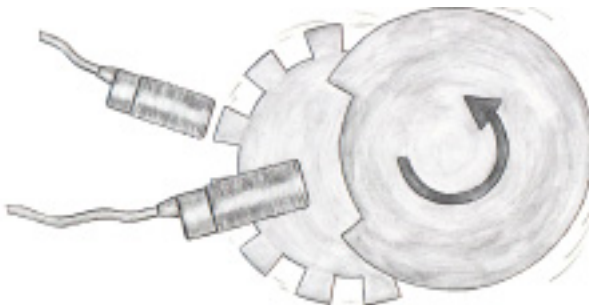


Fig. 4: Counting of metal containers

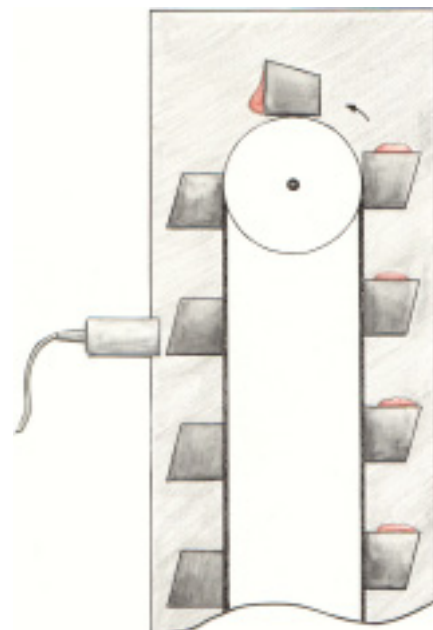
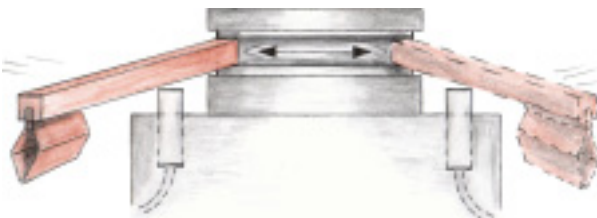


Fig. 5: Position aid for the gripper of industrial robots



SERIES

The series 10 contains inductive 3-wire proximity sensors with digital output **pnp** with NO or NC-function. Electronic circuits, PLC's, relays and our power supplies of series 130 can be directly activated. Analog sensors with 4...20 mA output are also available. The operating range of these analog sensors is adjustable by means of a potentiometer and they can be actuated by analog interfaces with internal resistance $R_i \leq 300 \text{ ohm}$. The sensors are reverse polarity protected, overload protected and have electronic short-circuit protection.

StEx-Sensors for use in Zone 20 with ATEX-certificate complete this series.

The series 20 contains inductive 3-wire proximity sensors with digital output **npn** with NO or NC-function. Electronic circuits, PLC's, relays and our power supplies of series 130 can be directly activated. The sensors are reverse-polarity protected, overload-protected and have electronic short-circuit protection.

StEx-Sensors for use in Zone 20 with ATEX-certificate complete this series.

The series 30 contains inductive 2-wire proximity signal generators according to **NAMUR DIN 60947-5-6**. These sensors can be mounted in explosion hazardous areas when they are connected to approved isolating switching amplifiers with intrinsically safe control circuits. [EExia] or [EExib], our series N-131... Depending on which isolating switching amplifier is used the NAMUR-sensors of this series can be used up to zone 1. The data specified in the certificate of conformity of the isolating switching amplifier used must be taken into consideration.

StEx-Sensors for use in Zone 20 with ATEX-certificate complete this series.

The series 60 contains inductive 2-wire AC/DC proximity sensors with digital output with NO and NC function. AC/DC relays, conductors, solenoid valves can be activated directly. PLCs with AC inputs can also be connected if the minimum load current is taken into consideration. The sensors have a protective circuit against high induction voltages.

For increased requirements for the permitted ambient temperature range of our inductive proximity sensors, we offer the series up to +100°C with integrated electronic as a 3-Wire DC version. The sensors are available with housings made of PTFE, PTFE/VA or PTFE/brass and have a silicone connection cable. For extreme ambient or product-temperature conditions, our high temperature sensors up to +250°C are available with external electronics. The sensors are integrated in PEEK, PTFE, PEEK/VA or PTFE/VA housings. For the rectangular sensors housings in PEEK/aluminium are used. The FEP-coated sensor cable with VA grid screening, in the lengths 2, 5 or 10 m, is the connection to the evaluation unit and may also be used under high-temperature conditions. The evaluation unit is connected to the sensor by means of a plug-in connector. On the sensor side the cable is permanently cast in or equipped with a temperature-resistant plug-in connector (...Y-version). The sensing distance for high temperature sensors can be adjusted on the evaluation unit and the switching state is displayed by an LED. The sensing distance adjustment should be made at operating temperature. Here the maximum specified sensing distance and the temperature drift must be taken into consideration.

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TYPE CODE

IAS-...-...-...-...-...-...-...-...

if existing

Y... = with flange connector

if existing

e. g. 100°C,... = higher temperature range

3 D = with manufacturer certificate according to ATEX

StEx = StEx according to ATEX

if existing

e. g. PTFE, PTFE/Ms,... = housing material

if existing

M... = thread size

K = plastic housing

A = Antivalent function (NO/NC)

IL = Analogue function

N = NAMUR

Ö = NC

S = NO

A... = European standard

(M).../... = Thread

C = Rectangular housing

NPN, PNP = Output function

04, 6.5, 40, ... = Version

10 = 3-wire/4-wire DC PNP/ 3-wire analogue

20 = 3-wire/4-wire DC NPN

30 = NAMUR DIN 60947-5-6

60 = 2-wire AC/DC

AC/DC metal version have an
earth wire. Pluggabel version
have an additional pin.

= Inductive Proximity Sensor

CYLINDRICAL HOUSINGS

ITEM	Sensing distance [mm]		Diameter [mm] or with thread	Housing material	Electrical Version		Connection	Pages	
	Operating range analogue [mm]				DC	AC/DC			
					10...35 V	20...250 V	Cable, Connector		
					Brass [Ms] Stainless steel [VA] Polyamide [PA] Polyvinylchloride [PVC]	NPN [20] PNP [10] Selection NO (S), NC (Ö) and Antivalent (A with 10, 20 only) see data sheet	AC/DC [60]		Cable Connector [Y...] Y7 = Metal M8 x 1 Y3 = Plastic M12 x 1 Y5 = Metal M12 x 1
					DC 10...30 VDC Analogue [IL]				
	flush	non-flush							
1	0.8	-	4	VA	10, 20		Cable	16	
2	0.8	-	M5 x 0.5	VA	10, 20		Cable, Y7	17-18	
3	1.5	-	6.5	VA	10, 20		Cable, Y7	19-21	
4	1	2	M8 x 1 - A11/A21	VA	10, 20		Cable	22-25	
	1.5	-	M8 x 1		10		Cable, Y7		
5	-	5	11	PA	10		Cable	26	
6	2	4	M12 x 1 - A12/A22	VA, Brass/PVC	10, 20, 60		Cable, Y5	27-32	
	-	5	M12 x 1	PVC	60		Cable	33	
7	5 0...5	8 0...8	M18 x 1 - A13/A23	Brass	10, 20, 60, IL		Cable, Y3, Y5	34-42	
8	-	10	M22 x 1.5	PA	10		Cable	43	
9	10	-	30	Brass	20		Cable	44	
10	10 0...10	15 0...15	M30 x 1.5 - A14/A24	Brass	10, 20, 60, IL		Cable, Y3	45-52	
11	20	-	40	PA	10, 60		Cable	53-54	
12	-	25	50	PA	10, 20		Cable	55	
13	-	40	60	PA	10		Cable	56	

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Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing $\varnothing = 4 \text{ mm}$

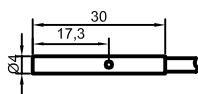
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 0.8 \text{ mm}$

Certificate:

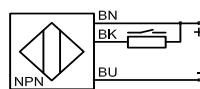


Technical data

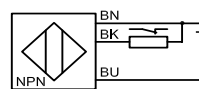
Operating distance S_n [mm], flush mounting	0.8, yes	0.8, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-04-S	IAS-20-04-Ö
Art.-No.	213 610	213 650
Connection diagram No.	1	2
Type PNP	IAS-10-04-S	IAS-10-04-Ö
Art.-No.	113 610	113 650
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	$\leq 3.5 \text{ V}$	$\leq 3.5 \text{ V}$
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	red	red
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	-	-
Lid	-	-



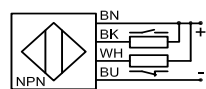
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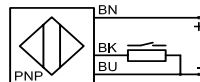
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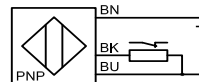
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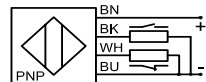
4



5



6



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Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M5 x 0.5

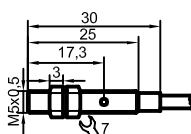
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 0.8$ mm

Certificate:

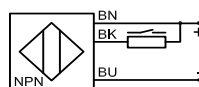


Technical data

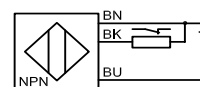
Operating distance S_n [mm], flush mounting	0.8, yes	0.8, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-M5-S	IAS-20-M5-Ö
Art.-No.	214 010	214 110
Connection diagram No.	1	2
Type PNP	IAS-10-M5-S	IAS-10-M5-Ö
Art.-No.	114 010	114 110
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	red	red
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	-	-



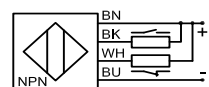
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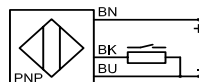
2



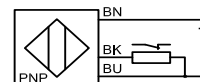
3



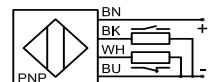
4



5



6





Inductive Sensors

Series 10 - PNP

Housing M5 x 0.5

- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 0.8$ mm
- With metal flange connector M8 x 1

Certificate:



Technical data

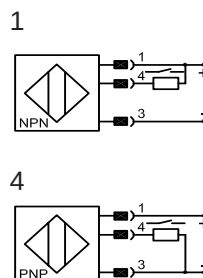
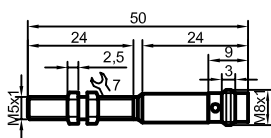
Operating distance S_n [mm], flush mounting	0.8, yes	0.8, yes
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Electrical version	3-pin DC	3-pin DC
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Output	NO	NC
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Type NPN		
Art.-No.		
Connection diagram No.		

Type PNP	IAS-10-M5-S-Y7	IAS-10-M5-Ö-Y7
Art.-No.	114 400	114 450
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	metal flange connector M8 x 1	metal flange connector M8 x 1
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	-	-



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing Ø = 6.5 mm

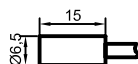
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance Sn = 1.5 mm

Certificate:

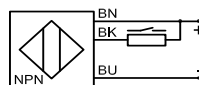


Technical data

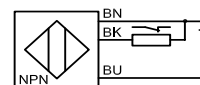
Operating distance Sn [mm], flush mounting	1.5, yes	1.5, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-6.5/15-S	
Art.-No.	214 500	
Connection diagram No.	1	
Type PNP	IAS-10-6.5/15-S	IAS-10-6.5/15-Ö
Art.-No.	114 500	114 650
Connection diagram No.	4	5
Operating voltage (U _B)	10...35 V DC	10...35 V DC
Output current max. (I _e)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U _d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I ₀)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	-	-



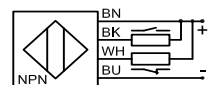
1



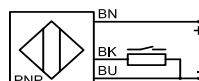
2



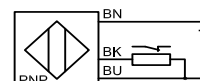
3



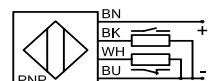
4



5



6





Inductive Sensors

Series 10 - PNP

Housing Ø = 6.5 mm

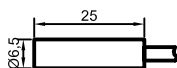
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5$ mm

Certificate:

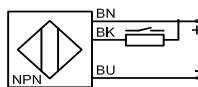


Technical data

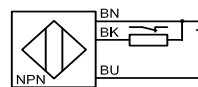
Operating distance S_n [mm], flush mounting	1.5, yes	1.5, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN		
Art.-No.		
Connection diagram No.		
Type PNP	IAS-10-6.5-S-LED	IAS-10-6.5-Ö-LED
Art.-No.	114 510	114 610
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	-	-



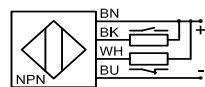
1



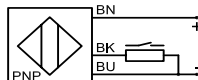
2



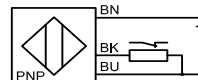
3



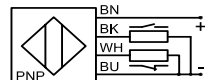
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 10 - PNP

Housing $\varnothing = 6.5$ mm

- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5$ mm
- With metal flange connector M8 x 1

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	1.5, yes	1.5, yes
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Electrical version	3-pin DC	3-pin DC
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Output	NO	NC
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Type NPN

Art.-No.

Connection diagram No.

Type PNP **IAS-10-6.5-S-Y7** **IAS-10-6.5-Ö-Y7**

Art.-No. **114 900** **115 000**

Connection diagram No. **4** **5**

Operating voltage (U_B) 10...35 V DC 10...35 V DC

Output current max. (I_e) 150 mA 150 mA

Load current min. - -

Voltage drop max. (U_d) ≤ 3.5 V ≤ 3.5 V

Permitted residual ripple max. 5 % 5 %

No-load current (I_0) typ. 10 mA typ. 10 mA

Frequency of operating cycles max. 1 kHz 1 kHz

Permitted ambient temperature -25...+70°C -25...+70°C

LED-display yellow yellow

Protective circuit built-in built-in

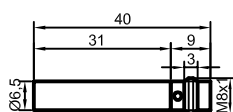
Degree of protection IEC 529 IP 67 IP 67

Connection Metal flange connector M8 x 1 Metal flange connector M8 x 1

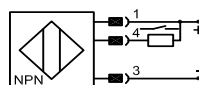
Housing material VA No. 1.4305 VA No. 1.4305

Active surface PVC PVC

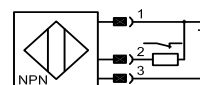
Lid - -



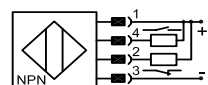
1



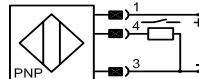
2



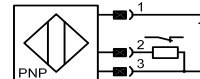
3



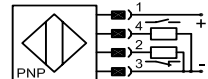
4



5



6





Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M8 x 1

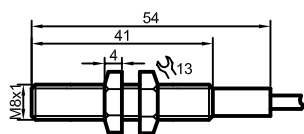
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1$ mm

Certificate:

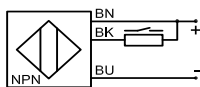


Technical data

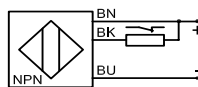
Operating distance S_n [mm], flush mounting	1, yes	1, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-A11-S	
Art.-No.	200 500	
Connection diagram No.	1	
Type PNP	IAS-10-A11-S	IAS-10-A11-Ö
Art.-No.	100 500	101 010
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	PC	PC



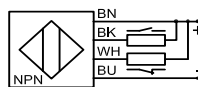
1



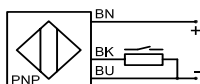
2



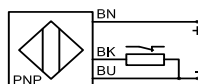
3



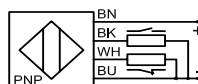
4



5



6



All specifications are subject to change without notice. (07/2004)



Inductive Sensors

Series 10 - PNP

Housing M8 x 1

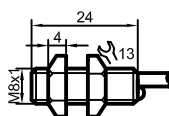
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5 \text{ mm}$

Certificate:

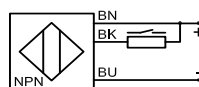


Technical data

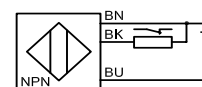
Operating distance S_n [mm], flush mounting	0.8, yes	0.8, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN		
Art.-No.		
Connection diagram No.		
Type PNP	IAS-10-M8-S	IAS-10-M8-Ö
Art.-No.	100 110	100 300
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_e)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	$\leq 3.5 \text{ V}$	$\leq 3.5 \text{ V}$
Permitted residual ripple max.	5 %	5 %
No-load current (I_0)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	-	-



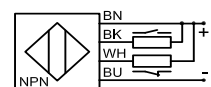
1



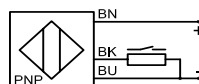
2



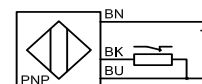
3



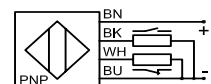
4



5



6





Inductive Sensors

Series 10 - PNP

Housing M8 x 1

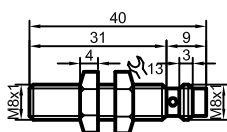
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5 \text{ mm}$
- With metal flange connector M8 x 1

Certificate:

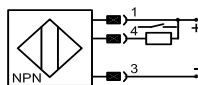


Technical data

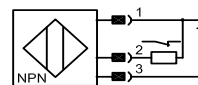
Operating distance S_n [mm], flush Mounting	1.5, yes	1.5, yes
Electrical version	3-pin DC	3-pin DC
Output	NO	NC
Type NPN		
Art.-No.		
Connection diagram No.		
Type PNP	IAS-10-M8-S-Y7	IAS-10-M8-Ö-Y7
Art.-No.	100 200	100 310
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	$\leq 3.5 \text{ V}$	$\leq 3.5 \text{ V}$
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	metal flange connector M8 x 1	metal flange connector M8 x 1
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	-	-



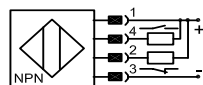
1



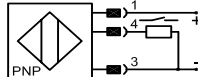
2



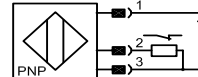
3



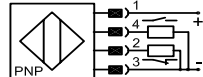
4



5



6



All specifications are subject to change without notice. (07/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M8 x 1

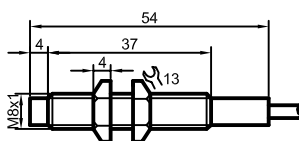
- Housing material: stainless steel VA
- Non-flush mountable
- Sensing distance $S_n = 2$ mm

Certificate:

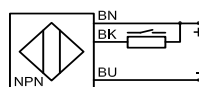


Technical data

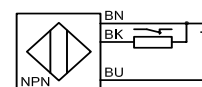
Operating distance S_n [mm], flush mounting	2, no	2, no
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-A21-S	
Art.-No.	201 200	
Connection diagram No.	1	
Type PNP	IAS-10-A21-S	IAS-10-A21-Ö
Art.-No.	101 200	101 250
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 3.5 V	≤ 3.5 V
Permitted residual ripple max.	5 %	5 %
No-load current (I_o)	typ. 10 mA	typ. 10 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PVC	PVC
Lid	PC	PC



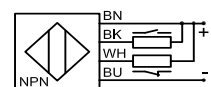
1



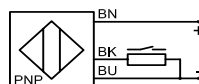
2



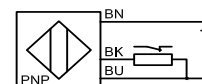
3



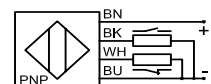
4



5



6





Inductive Sensors

Series 10 - PNP

Housing Ø = 11 mm

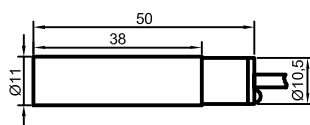
- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 5$ mm

Certificate:

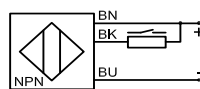


Technical data

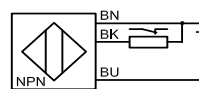
Operating distance S_n [mm], flush mounting	5, no	5, no
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN		
Art.-No.		
Connection diagram No.		
Type PNP	IAS-10-14-S	IAS-10-14-Ö
Art.-No.	115 300	115 350
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	PA	PA
Active surface	PA	PA
Lid	PA	PA



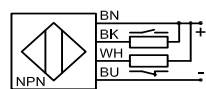
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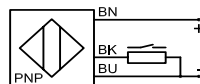
2



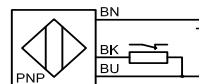
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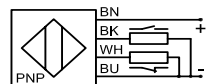
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M12 x 1

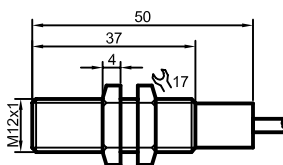
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 2\text{ mm}$

Certificate:

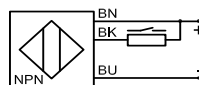


Technical data

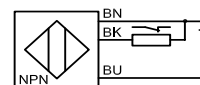
Operating distance S_n [mm], flush mounting	2, yes	2, yes
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-A12-S	IAS-20-A12-Ö
Art.-No.	201 700	201 900
Connection diagram No.	1	2
Type PNP	IAS-10-A12-S	IAS-10-A12-Ö
Art.-No.	101 700	101 900
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	$\leq 2.5\text{ V}$	$\leq 2.5\text{ V}$
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	PA	PA



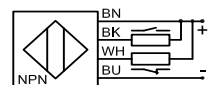
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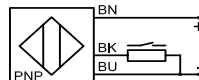
2



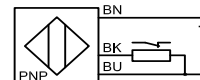
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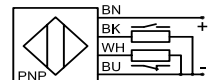
4



5



6





Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M12 x 1

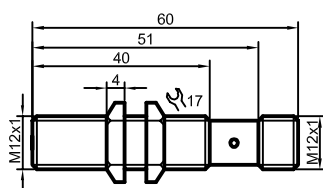
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 2$ mm
- With metal flange connector M12 x 1

Certificate:

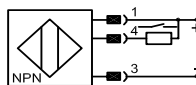


Technical data

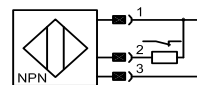
Operating distance S_n [mm], flush mounting	2, yes	2, yes
Electrical version	3-pin DC	3-pin DC
Output	NO	NC
Type NPN	IAS-20-A12-S-Y5	
Art.-No.	202 300	
Connection diagram No.	1	
Type PNP	IAS-10-A12-S-Y5	IAS-10-A12-Ö-Y5
Art.-No.	102 300	102 350
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	metal flange connector M12 x 1	metal flange connector M12 x 1
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	-	-



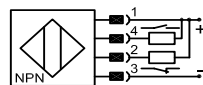
1



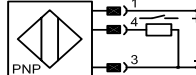
2



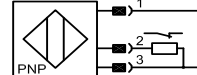
3



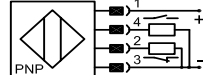
4



5



6



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Inductive Sensors Series 60 - AC/DC

Housing M12 x 1

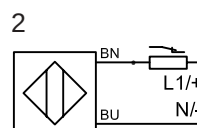
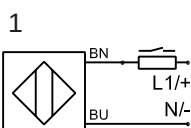
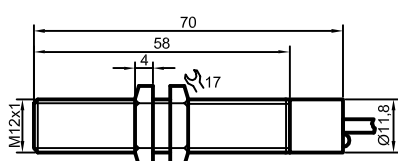
- Housing material: brass/PVC
- Flush mountable
- Sensing distance $S_n = 2$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	2, yes	2, yes
Electrical version	2-wire AC/DC	2-wire AC/DC
Output	NO	NC
Type	IAS-60-A12-S	IAS-60-A12-Ö
Art.-No.	600 300	600 500
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_o)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_o)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_o)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 2 x 0.14 mm ²	2 m 2 x 0.14 mm ²
Housing material	brass/PVC	brass/PVC
Active surface	PA	PA
Lid	PA	PA





Certificate:



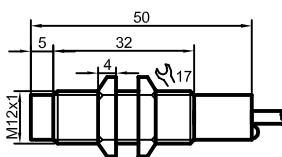
Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M12 x 1

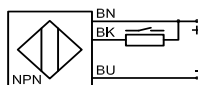
- Housing material: stainless steel VA
- Non-flush mountable
- Sensing distance $S_n = 4$ mm

Technical data

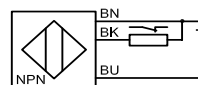
Operating distance S_n [mm], flush mounting	4, no	4, no
Electrical version	3-wire DC	3-wire DC
Output	NO	NC
Type NPN	IAS-20-A22-S	IAS-20-A22-Ö
Art.-No.	202 400	202 500
Connection diagram No.	1	2
Type PNP	IAS-10-A22-S	IAS-10-A22-Ö
Art.-No.	102 400	102 500
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	PA	PA



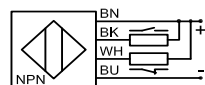
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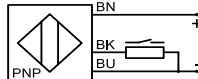
2



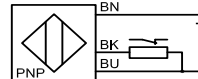
3



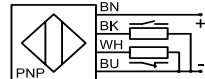
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M12 x 1

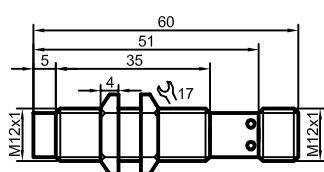
- Housing material: stainless steel VA
- Non-flush mountable
- Sensing distance $S_n = 4\text{ mm}$
- With metal flange connector M12 x 1

Certificate:

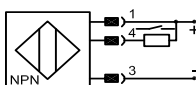


Technical data

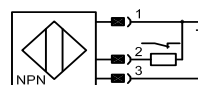
Operating distance S_n [mm], flush mounting	4, no	4, no
Electrical version	3-pin DC	3-pin DC
Output	NO	NC
Type NPN	IAS-20-A22-Ö-Y5	
Art.-No.	203 050	
Connection diagram No.	2	
Type PNP	IAS-10-A22-S-Y5	IAS-10-A22-Ö-Y5
Art.-No.	103 001	103 050
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	150 mA	150 mA
Load current min.	-	-
Voltage drop max. (U_d)	$\leq 2.5\text{ V}$	$\leq 2.5\text{ V}$
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	metal flange connector M12 x 1	metal flange connector M12 x 1
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PA	PA
Lid	-	-



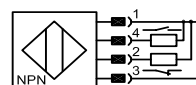
1



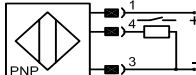
2



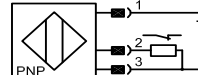
3



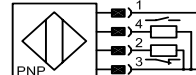
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors Series 60 - AC/DC

Housing M12 x 1

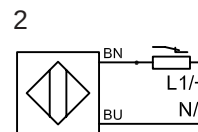
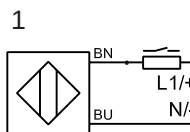
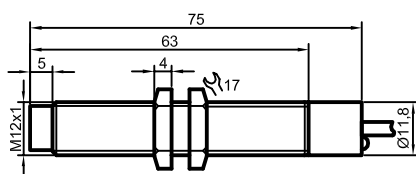
- Housing material: brass/PVC
- Non-flush mountable
- Sensing distance $S_n = 4 \text{ mm}$

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	4, no	4, no
Electrical version	2-wire AC/DC	2-wire AC/DC
Output	NO	NC
Type	IAS-60-A22-S	IAS-60-A22-Ö
Art.-No.	600 700	600 900
Connection diagram No.	1	2
Operating voltage (U_b)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_o)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_o)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 2 x 0.14 mm ²	2 m 2 x 0.14 mm ²
Housing material	brass/PVC	brass/PVC
Active surface	PA	PA
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors Series 60 - AC/DC

Housing M12 x 1

- Housing material: PVC
- Non-flush mountable
- Sensing distance $S_n = 5\text{ mm}$

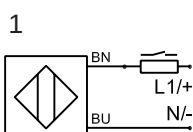
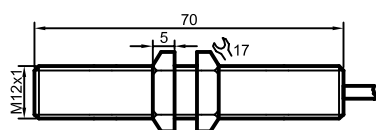
Certificate:



Technical data

Operating distance S_n [mm], flush mounting	5, no
Electrical version	2-wire AC/DC
Output	NO
Type	IAS-60-14-S-M12
Art.-No.	614 900
Connection diagram No.	1
Operating voltage (U_B)	20...250 V AC/DC
Output current max. (I_o)	300 mA
Minimum load	typ. 9 mA
Voltage drop max. (U_o)	typ. 6 V
Permitted residual ripple max.	-
No-load current (I_o)	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz
Permitted ambient temperature	-25...+70°C
LED-display	yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	PVC
Active surface	PVC
Lid	PA

All specifications are subject to change without notice. (05/2004)





Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M18 x 1

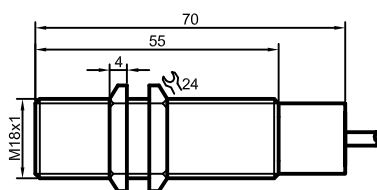
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 5$ mm

Certificate:

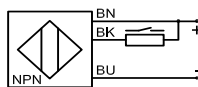


Technical data

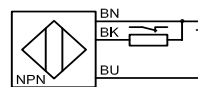
Operating distance S_n [mm], flush mounting	5, yes	5, yes	5, yes
Electrical version	3-wire DC	3-wire DC	4-wire DC
Output	NO	NC	Antivalent
Type NPN	IAS-20-A13-S		IAS-20-A13-A
Art.-No.	203 100		203 060
Connection diagram No.	1		3
Type PNP	IAS-10-A13-S	IAS-10-A13-Ö	IAS-10-A13-A
Art.-No.	103 100	103 200	103 060
Connection diagram No.	4	5	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	250 mA	2 x 250 mA
Load current min.	-	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C	-25...+70°C
LED-display	yellow	yellow	green/yellow
Protective circuit	built-in	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67	IP 67
Connection cable	2 m 3 x 0.34 mm ²	2 m 3 x 0.34 mm ²	2 m 4 x 0.34 mm ²
Housing material	brass	brass	brass
Active surface	PA	PA	PA
Lid	PA	PA	PA



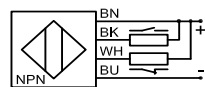
1



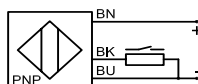
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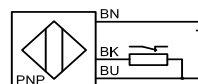
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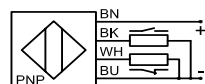
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors With Analogue Output

Series 10 - IL

Housing M18 x 1

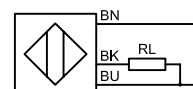
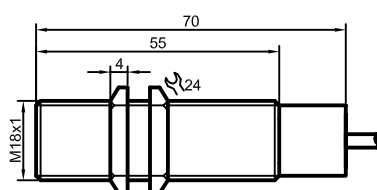
- Housing material: brass
- Flush mountable
- Operating range 0...5 mm adjustable

Certificate:



Technical data

Operating range [mm], flush mounting	0...5, yes
Linear range [mm]	1.5...5
Electrical version	3-wire DC
Output function	analogue
Type analogue	IAS-10-A13-IL
Art.-No.	105 750
Connection diagram No.	see below
Operating voltage (U_B)	15...30 V DC
Output current max. (I_o)	2,5...> 20 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	typ. 40 mA
Output current active surface free	> 20 mA
Output current active surface covered	$\leq 20...< 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60°C
LED-display	green/yellow/green
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 3 x 0.34 mm ²
Housing material	brass
Active surface	PTFE
Lid	PA





Certificate:

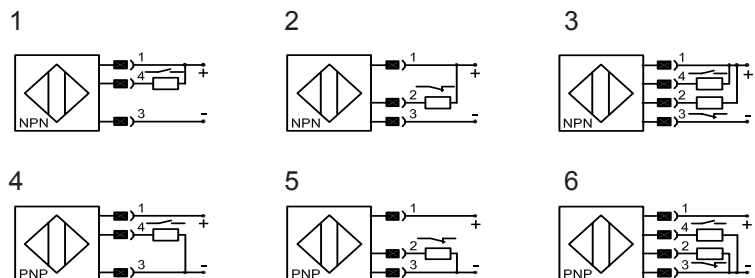
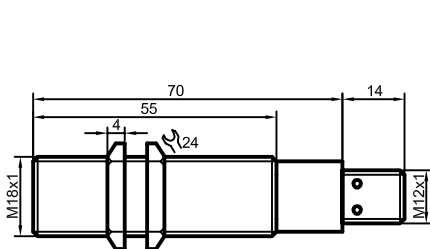
Inductive Sensors Series 20 - NPN Series 10 - PNP

Housing M18 x 1

- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 5$ mm
- With metal flange connector M12 x 1

Technical data

Operating distance S_n [mm], flush mounting	5, yes
Electrical version	4-pin DC
Output	Antivalent
Type NPN	IAS-20-A13-A-Y5
Art.-No.	203 067
Connection diagram No.	3
Type PNP	IAS-10-A13-A-Y5
Art.-No.	103 068
Connection diagram No.	6
Operating voltage (U_B)	10...35 V DC
Output current max. (I_o)	2 x 250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	2 kHz
Permitted ambient temperature	-25...+70°C
LED-display	yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection	metal flange connector M12 x 1
Housing material	brass
Active surface	PA
Lid	-



All specifications are subject to change without notice. (08/2004)



Inductive Sensors With Analogue Output

Series 10 - IL

Housing M18 x 1

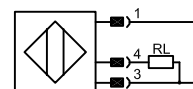
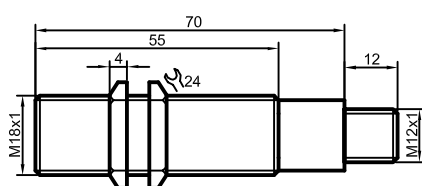
- Housing material: brass
- Flush mountable
- Operating range 0...5 mm adjustable
- With plastic flange connector M12 x 1

Certificate:



Technical data

Operating range [mm], flush mounting	0...5, yes
Linear range [mm]	1.5...5
Electrical version	3-wire DC
Output function	analogue
Type analogue	IAS-10-A13-IL-Y3
Art.-No.	105 751
Connection diagram No.	see below
Operating voltage (U_B)	15...30 V DC
Output current max. (I_o)	2,5...> 20 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	typ. 40 mA
Output current active surface free	> 20 mA
Output current active surface covered	$\leq 20...< 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60°C
LED-display	green/yellow/green
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection	plastic flange connector M12 x 1
Housing material	brass
Active surface	PTFE
Lid	-





Inductive Sensors Series 60 - AC/DC

Housing M18 x 1

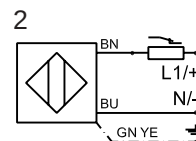
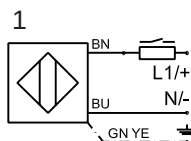
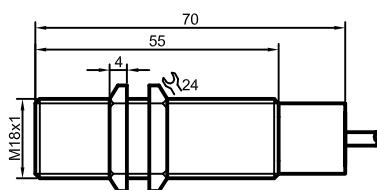
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 5\text{ mm}$

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	5, yes	5, yes
Electrical version	3-wire AC/DC	3-wire AC/DC
Output	NO	NC
Type	IAS-60-A13-S	IAS-60-A13-Ö
Art.-No.	601 000	601 200
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_e)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_0)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.34 mm ²	2 m 3 x 0.34 mm ²
Housing material	brass	brass
Active surface	PA	PA
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M18 x 1

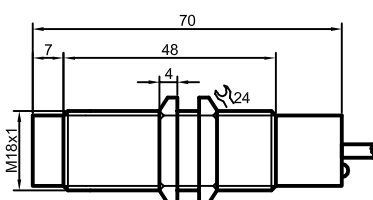
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 8$ mm

Certificate:

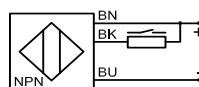


Technical data

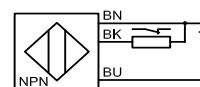
Operating distance S_n [mm], flush mounting	8, no	8, no
Electrical version	3-wire DC	4-wire DC
Output	NO	Antivalent
Type NPN	IAS-20-A23-S	IAS-20-A23-A
Art.-No.	205 800	205 780
Connection diagram No.	1	3
Type PNP	IAS-10-A23-S	IAS-10-A23-A
Art.-No.	105 800	105 780
Connection diagram No.	4	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	2 x 250 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	green/yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.34 mm ²	2 m 4 x 0.34 mm ²
Housing material	brass	brass
Active surface	PA	PA
Lid	PA	PA



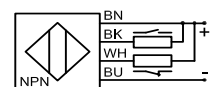
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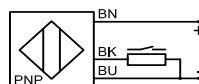
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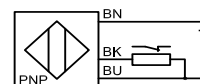
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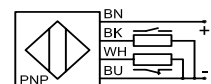
4



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6





Inductive Sensors With Analogue Output

Series 10 - IL

Housing M18 x 1

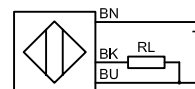
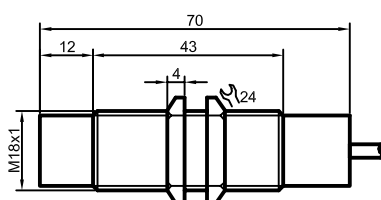
- Housing material: brass
- Non-flush mountable
- Operating range 0...8 mm adjustable

Certificate:



Technical data

Operating range [mm], flush mounting	0...8, no
Linear range [mm]	3...8
Electrical version	3-wire DC
Output function	analogue
Type analogue	IAS-10-A23-IL
Art.-No.	108 350
Connection diagram No.	see below
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	2,5...> 20 mA
Permitted residual ripple max.	5 %
No-load current (I_0)	typ. 40 mA
Output current active surface free	> 20 mA
Output current active surface covered	$\leq 20...< 4$ mA
Load resistor	$R_L = 0...300 \text{ Ohm}$
Permitted ambient temperature	0...+60°C
LED-display	green/yellow/green
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 3 x 0.34 mm ²
Housing material	brass
Active surface	PTFE
Lid	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M18 x 1

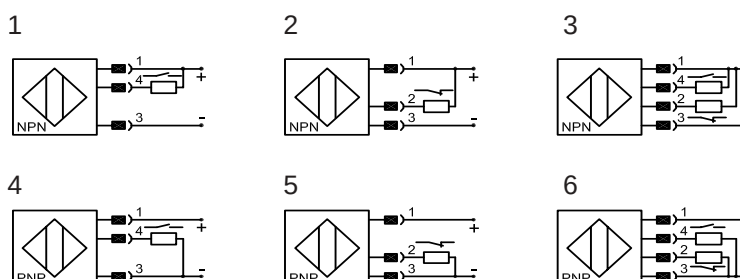
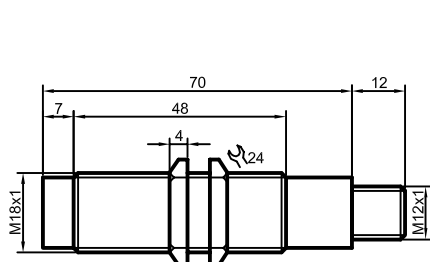
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 8$ mm
- With plastic flange connector M12 x 1

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	8, no	8, no
Electrical version	3-pin DC	4-pin DC
Output	NO	Antivalent
Type NPN		IAS-20-A23-A-Y3
Art.-No.		205 785
Connection diagram No.		3
Type PNP	IAS-10-A23-S-Y3	IAS-10-A23-A-Y3
Art.-No.	106 600	105 785
Connection diagram No.	4	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	2 x 250 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	2 kHz	2 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	plastic flange connector M12 x 1	plastic flange connector M12 x 1
Housing material	brass	brass
Active surface	PA	PA
Lid	-	-





Inductive Sensors Series 60 - AC/DC

Housing M18 x 1

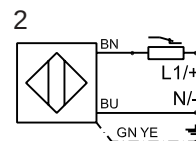
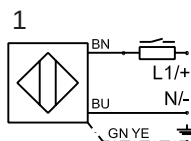
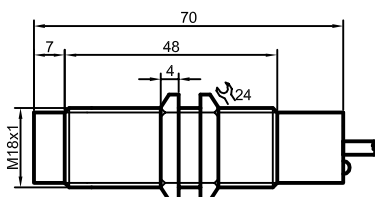
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 8$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush Mounting	8, no	8, no
Electrical version	3-wire AC/DC	3-wire AC/DC
Output	NO	NC
Type	IAS-60-A23-S	IAS-60-A23-Ö
Art.-No.	604 100	604 300
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_e)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_0)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.34 mm ²	2 m 3 x 0.34 mm ²
Housing material	brass	brass
Active surface	PA	PA
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 10 - PNP

Housing M22 x 1.5

- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 10 \text{ mm}$

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	10, no	10, no
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Electrical version	3-wire DC	3-wire DC
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Output	NO	NC
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Type NPN

Art.-No.

Connection diagram No.

Type PNP	IAS-10-23-S-M22	IAS-10-23-Ö-M22
Art.-No.	116 900	117 000
Connection diagram No.	4	5

Operating voltage (U_B)	10...35 V DC	10...35 V DC
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Output current max. (I_o)	250 mA	250 mA
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Load current min.	-	-
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Voltage drop max. (U_d)	$\leq 2.5 \text{ V}$	$\leq 2.5 \text{ V}$
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Permitted residual ripple max.	10 %	10 %
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No-load current (I_o)	typ. 15 mA	typ. 15 mA
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Frequency of operating cycles max.	2 kHz	2 kHz
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Permitted ambient temperature	-25...+70°C	-25...+70°C
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LED-display	yellow	yellow
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Protective circuit	built-in	built-in
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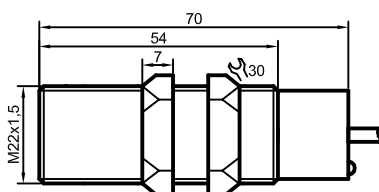
Degree of protection IEC 529	IP 67	IP 67
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Connection cable	2 m 3 x 0.34 mm ²	2 m 3 x 0.34 mm ²
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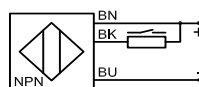
Housing material	PA	PA
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Active surface	PA	PA
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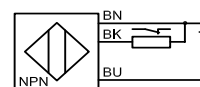
Lid	PA	PA
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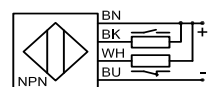
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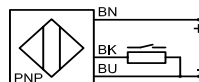
2



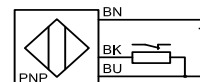
3



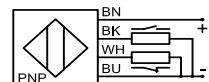
4



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Inductive Sensors Series 20 - NPN

Housing $\varnothing = 30$ mm

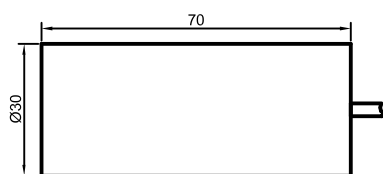
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 10$ mm

Certificate:

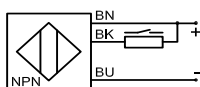


Technical data

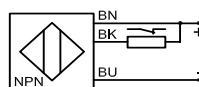
Operating distance S_n [mm], flush mounting	10, yes
Electrical version	3-wire DC
Output	NO
Type NPN	IAS-20-30-S
Art.-No.	217 300
Connection diagram No.	1
Type PNP	
Art.-No.	
Connection diagram No.	
Operating voltage (U_B)	10...35 V DC
Output current max. (I_o)	250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	1 kHz
Permitted ambient temperature	-25...+70°C
LED-display	yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 3 x 0.75 mm ²
Housing material	brass
Active surface	PA
Lid	PA



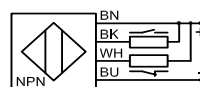
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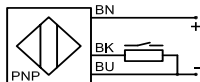
2



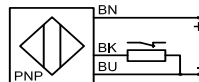
3



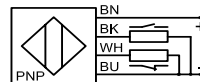
4



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All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 10 - PNP

Series 20 - NPN

Housing M30 x 1.5

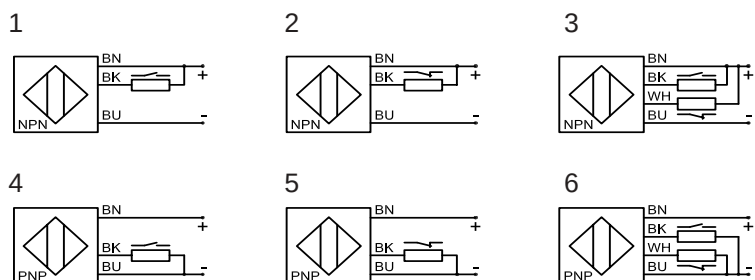
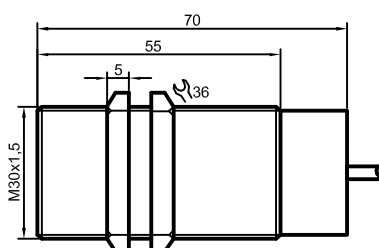
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 10$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	10, yes	10, yes
Electrical version	3-wire DC	4-wire DC
Output	NO	Antivalent
Type NPN	IAS-20-A14-S	IAS-20-A14-A
Art.-No.	208 400	208 380
Connection diagram No.	1	3
Type PNP	IAS-10-A14-S	IAS-10-A14-A
Art.-No.	108 400	108 380
Connection diagram No.	4	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	2 x 250 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	green/yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.75 mm ²	2 m 4 x 0.5 mm ²
Housing material	brass	brass
Active surface	PVC	PVC
Lid	PA	PA





Inductive Sensors Series 10 - PNP Series 20 - NPN

Housing M30 x 1.5

- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 10$ mm
- With plastic flange connector M12 x 1

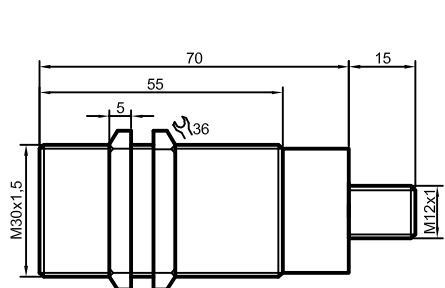
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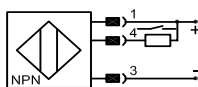
Technical data

Operating distance S_n [mm], flush mounting	10, yes	10, yes	10, yes
Electrical version	3-pin DC	3-pin DC	4-pin DC
Output	NO	NC	Antivalent
Type NPN	IAS-20-A14-A-Y3		
Art.-No.	208 385		
Connection diagram No.	3		

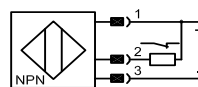
Type PNP	IAS-10-A14-S-Y3	IAS-10-A14-Ö-Y3	IAS-10-A14-A-Y3
Art.-No.	109 200	109 300	108 385
Connection diagram No.	4	5	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	250 mA	2 x 250 mA
Load current min.	-	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	1 kHz	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C	-25...+70°C
LED-display	yellow	yellow	green/yellow
Protective circuit	built-in	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67	IP 67
Connection	plastic flange connector M12 x 1	plastic flange connector M12 x 1	plastic flange connector M12 x 1
Housing material	brass	brass	brass
Active surface	PVC	PVC	PVC
Lid	-	-	-



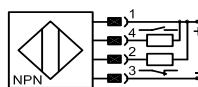
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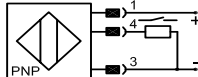
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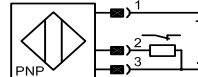
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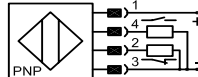
4



5



6



All specifications are subject to change without notice. (05/2004)



Inductive Sensors With Analogue Output

Series 10 - IL

Housing M30 x 1.5

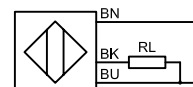
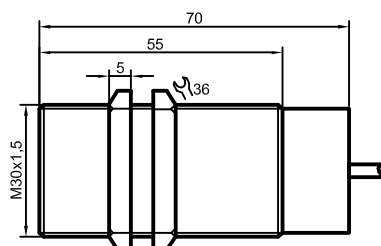
- Housing material: brass
- Flush mountable
- Operating range 0...10 mm adjustable

Certificate:



Technical data

Operating range [mm], flush mounting	0...10, yes
Linear range [mm]	3...10
Electrical version	3-wire DC
Output function	analogue
Type analogue	IAS-10-A14-IL
Art.-No.	110 950
Connection diagram No.	see below
Operating voltage (U_B)	15...30 V DC
Output current max. (I_o)	2,5...> 20 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	typ. 40 mA
Output current active surface free	> 20 mA
Output current active surface covered	$\leq 20...< 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60°C
LED-display	green/yellow/green
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 3 x 0.75 mm ²
Housing material	brass
Active surface	PTFE
Lid	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors Series 60 - AC/DC

Housing M30 x 1.5

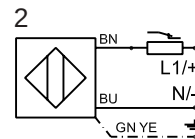
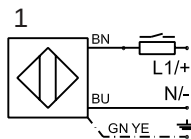
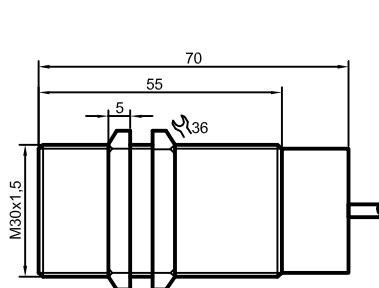
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 10$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush Mounting	10, yes	10, yes
Electrical version	3-wire AC/DC	3-wire AC/DC
Output	NO	NC
Type	IAS-60-A14 -S	IAS-60-A14-Ö
Art.-No.	607 300	607 500
Connection diagram No.	1	2
Operating voltage (U_b)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_e)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_0)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.75 mm ²	2 m 3 x 0.75 mm ²
Housing material	brass	brass
Active surface	PVC	PVC
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing M30 x 1.5

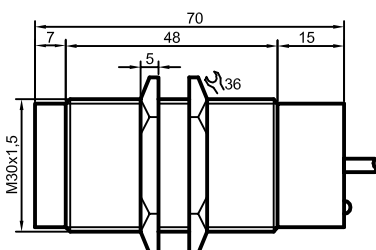
- **Housing material: brass**
- **Non-flush mountable**
- **Sensing distance Sn = 15 mm**

Certificate:

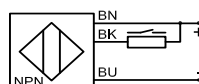


Technical data

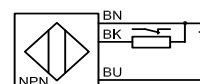
Operating distance Sn [mm], flush mounting	15, no	15, no
Electrical version	3-wire DC	4-wire DC
Output	NO	Antivalent
Type NPN	IAS-20-A24-S	IAS-20-A24-A
Art.-No.	211 000	210 980
Connection diagram No.	1	3
Type PNP	IAS-10-A24-S	IAS-10-A24-A
Art.-No.	111 000	110 980
Connection diagram No.	4	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	2 x 250 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	green/yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.75 mm ²	2 m 4 x 0.5 mm ²
Housing material	brass	brass
Active surface	PVC	PVC
Lid	PA	PA



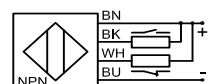
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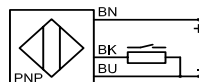
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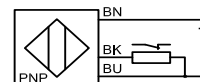
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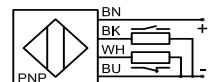
4



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6





Inductive Sensors Series 10 - PNP Series 20 - NPN

Housing M30 x 1.5

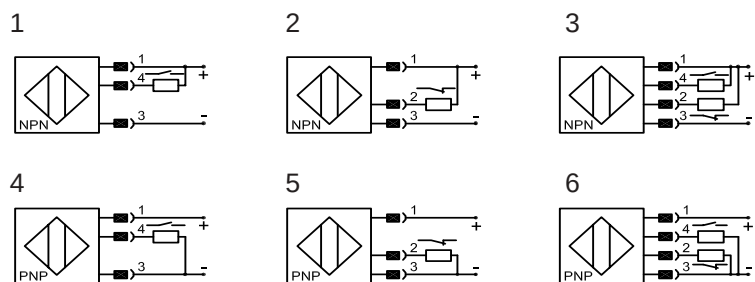
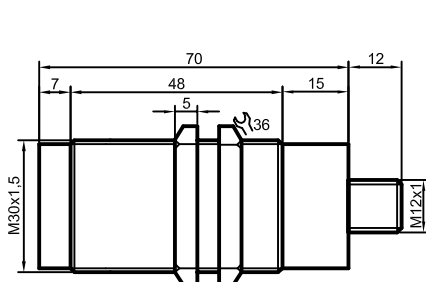
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 15$ mm
- With plastic flange connector M12 x 1

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	15, no	15, no
Electrical version	3-pin DC	4-pin DC
Output	NO	Antivalent
Type NPN		IAS-20-A24-A-Y3
Art.-No.		210 985
Connection diagram No.		3
Type PNP	IAS-10-A24-S-Y3	IAS-10-A24-A-Y3
Art.-No.	111 800	110 985
Connection diagram No.	4	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_o)	250 mA	2 x 250 mA
Load current min.	-	-
Voltage drop max. (U_d)	≤ 2.5 V	≤ 2.5 V
Permitted residual ripple max.	10 %	10 %
No-load current (I_o)	typ. 15 mA	typ. 15 mA
Frequency of operating cycles max.	1 kHz	1 kHz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	green/yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection	plastic flange connector M12 x 1	plastic flange connector M12 x 1
Housing material	brass	brass
Active surface	PVC	PVC
Lid	-	-



All specifications are subject to change without notice. (05/2004)



Inductive Sensors With Analogue Output

Series 10 - IL

Housing M30 x 1.5

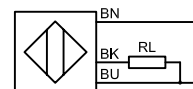
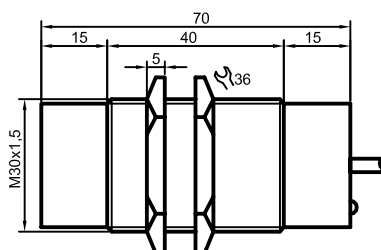
- Housing material: brass
- Non-flush mountable
- Operating range 0...15 mm adjustable

Certificate:



Technical data

Operating range [mm], flush mounting	0...15, no
Linear range [mm]	5...15
Electrical version	3-wire DC
Output function	analogue
Type analogue	IAS-10-A24-IL
Art.-No.	113 550
Connection diagram No.	see below
Operating voltage (U_B)	15...30 V DC
Output current max. (I_o)	2,5...> 20mA
Permitted residual ripple max.	5 %
No-load current (I_o)	typ. 40 mA
Output current active surface free	> 20 mA
Output current active surface covered	$\leq 20 \dots < 4$ mA
Load resistor	$R_L = 0 \dots 300$ Ohm
Permitted ambient temperature	0...+60°C
LED-display	green/yellow/green
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 3 x 0.75 mm ²
Housing material	brass
Active surface	PTFE
Lid	PA





Inductive Sensors Series 60 - AC/DC

Housing M30 x 1.5

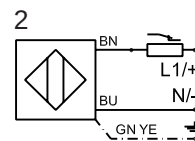
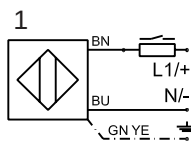
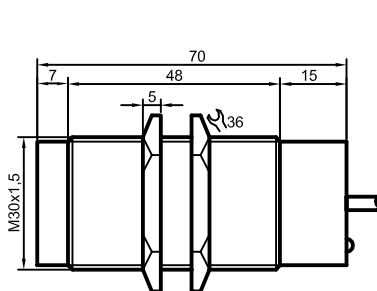
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 15 \text{ mm}$

Certificate:



Technical data

Operating distance S_n [mm], flush Mounting	15, no	15, no
Electrical version	3-wire AC/DC	3-wire AC/DC
Output	NO	NC
Type	IAS-60-A24-S	IAS-60-A24-Ö
Art.-No.	610 500	610 700
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_e)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_0)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 3 x 0.75 mm ²	2 m 3 x 0.75 mm ²
Housing material	brass	brass
Active surface	PVC	PVC
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 10 - PNP

Housing $\varnothing = 40$ mm

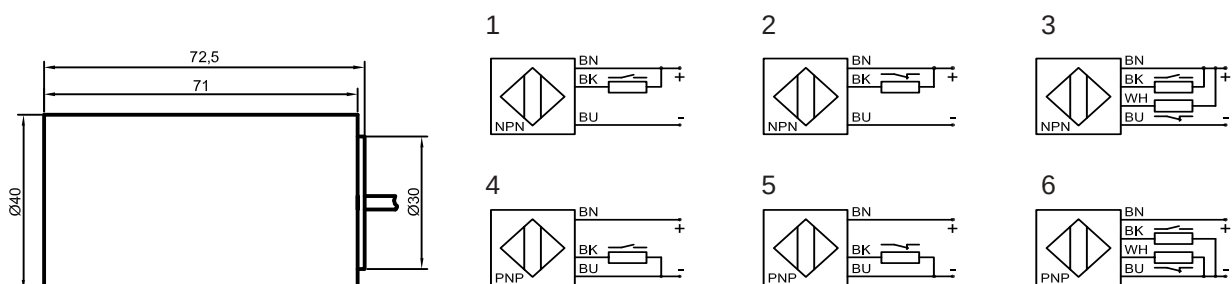
- Housing material: PA
- Flush mountable
- Sensing distance $S_n = 20$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush mounting	20, yes
Electrical version	4-wire DC
Output	Antivalent
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	IAS-10-40-A
Art.-No.	119 480
Connection diagram No.	6
Operating voltage (U_B)	10...35 V DC
Output current max. (I_o)	2 x 250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	250 Hz
Permitted ambient temperature	-25...+70°C
LED-display	green/yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 4 x 0.5 mm ²
Housing material	PA
Active surface	PA
Lid	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors Series 60 - AC/DC

Housing Ø = 40 mm

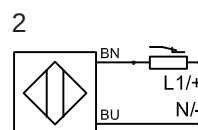
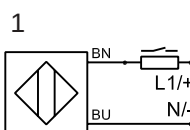
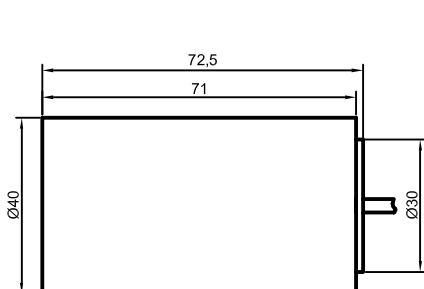
- Housing material: PA
- Flush mountable
- Sensing distance $S_n = 20$ mm

Certificate:



Technical data

Operating distance S_n [mm], flush Mounting	20, yes	20, yes
Electrical version	2-wire AC/DC	2-wire AC/DC
Output	NO	NC
Type	IAS-60-40-S	IAS-60-40-Ö
Art.-No.	620 900	621 100
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC/DC
Output current max. (I_e)	300 mA	300 mA
Minimum load	typ. 9 mA	typ. 9 mA
Voltage drop max. (U_d)	typ. 6 V	typ. 6 V
Permitted residual ripple max.	-	-
No-load current (I_0)	typ. 3.5 mA	typ. 3.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70°C	-25...+70°C
LED-display	yellow	yellow
Protective circuit	built-in	built-in
Degree of protection IEC 529	IP 67	IP 67
Connection cable	2 m 2 x 0.75 mm ²	2 m 2 x 0.75 mm ²
Housing material	PA	PA
Active surface	PA	PA
Lid	PA	PA



All specifications are subject to change without notice. (05/2004)



Inductive Sensors

Series 20 - NPN

Series 10 - PNP

Housing $\varnothing = 50$ mm

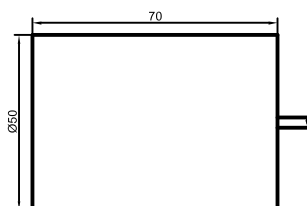
- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 25$ mm

Certificate:

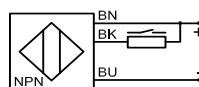


Technical data

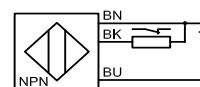
Operating distance S_n [mm], flush mounting	25, no
Electrical version	4-wire DC
Output	Antivalent
Type NPN	IAS-20-51-A
Art.-No.	219 880
Connection diagram No.	3
Type PNP	IAS-10-51-A
Art.-No.	119 880
Connection diagram No.	6
Operating voltage (U_B)	10...35 V DC
Output current max. (I_o)	2 x 250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	250 Hz
Permitted ambient temperature	-25...+70°C
LED-display	green/yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 4 x 0.5 mm ²
Housing material	PA
Active surface	PA
Lid	PA



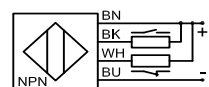
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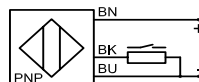
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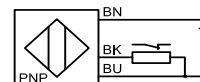
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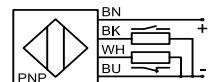
4



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Inductive Sensors

Series 10 - PNP

Housing Ø = 64 mm

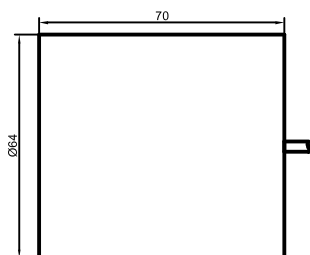
- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 40$ mm

Certificate:

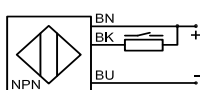


Technical data

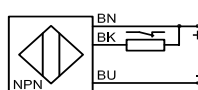
Operating distance S_n [mm], flush mounting	40, no
Electrical version	4-wire DC
Output	Antivalent
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	
Art.-No.	
Connection diagram No.	
Operating voltage (U_B)	10...35 V DC
Output current max. (I_o)	2 x 250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	250 Hz
Permitted ambient temperature	-25...+70°C
LED-display	green/yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 4 x 0.5 mm ²
Housing material	PA
Active surface	PA
Lid	PA



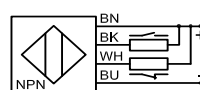
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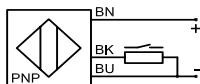
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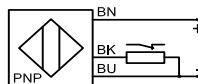
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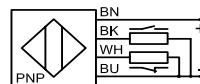
4



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All specifications are subject to change without notice. (05/2004)

ATEX/StEx SERIES 10/20

I T E M	Sensing distance [mm]		Diameter [mm] or with thread	Housing Material	Electrical Version DC 10...30 V  II 1 D IP 67 T 101°C II 2G EEx m II T4 DMT 01 ATEX E 157 NPN [20], PNP [10] Selection NO [S] and Antivalent [A] see data sheets	Connection	Pages
	Flush	Non-flush		brass stainless steel [VA]			
1	2	-	M12 x 1 - A12	[VA]	10, 20	Cable	58
2	5	-	M18 x 1 - A13	brass	10,20	Cable	59
3	10	-	M30 x 1,5 - A24	brass	10, 20	Cable	60

All specifications are subject to change without notice. (07/2004)



Certificate: DMT 01 ATEX E 157



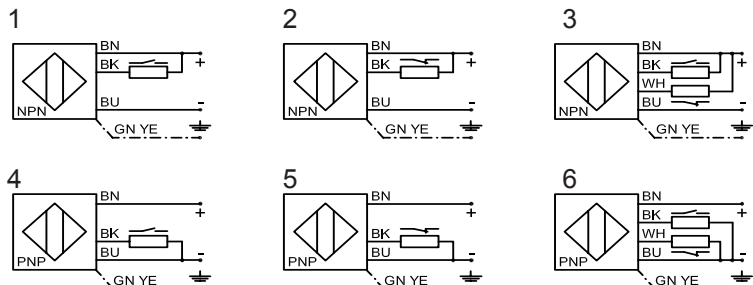
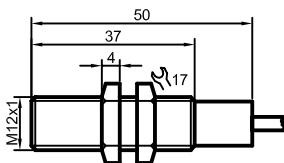
Inductive Sensors Series 20 - NPN-StEx-ATEX Series 10 - PNP-StEx-ATEX

Housing M12 x 1

- Ex II 1/2 D IP 67 T 101°C
- For use in zone 20
- Ex II 2G EEx m II T4
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance S_n 2 mm

Technical data

Operating distance S_n [mm], flush mounting	2, yes
Electrical version	4-wire DC
Output	NO
Type NPN	IAS-20-A12-S-StEx
Art.-No.	IA 0138
Connection diagram No.	1
Type PNP	IAS-10-A12-S-StEx
Art.-No.	IA 0111
Connection diagram No.	4
Operating voltage (U_B)	10...30 V DC
Output current max. (I_o)	150 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	2 kHz
Permitted ambient temperature	-20...+90°C
LED-display	yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 4 x 0.14 mm ²
Housing material	VA No. 1.4305
Active surface	PTFE
Lid	PC



All specifications are subject to change without notice. (07/2004)



Certificate: DMT 01 ATEX E 157



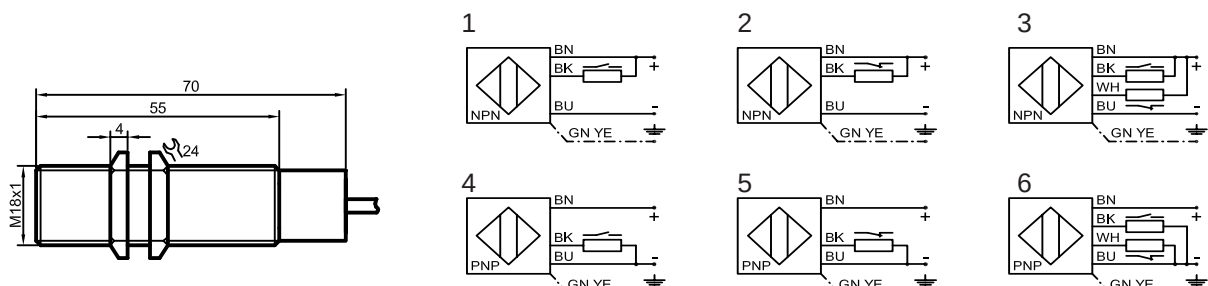
Inductive Sensors Series 20 - NPN-StEx-ATEX Series 10 - PNP-StEx-ATEX

Housing M18 x 1

- Ex II 1/2 D IP 67 T 101°C
- For use in zone 20
- Ex II 2G EEx m II T4
- Housing material: brass
- Flush mountable
- Sensing distance Sn 5 mm

Technical data

Operating distance Sn [mm], flush mounting	5, yes
Electrical version	5-wire DC
Output	Antivalent
Type NPN	IAS-20-A13-A-StEx
Art.-No.	IA 0136
Connection diagram No.	3
Type PNP	IAS-10-A13-A-StEx
Art.-No.	IA 0110
Connection diagram No.	6
Operating voltage (U_B)	10...30 V DC
Output current max. (I_o)	2 x 200 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	2 kHz
Permitted ambient temperature	-20...+90°C
LED-display	green/yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 5 x 0.14 mm ²
Housing material	brass
Active surface	PTFE
Lid	PC



All specifications are subject to change without notice. (05/2004)



Certificate: DMT 01 ATEX E 157



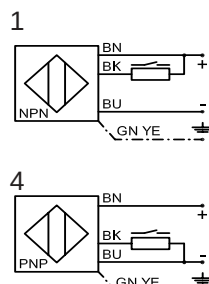
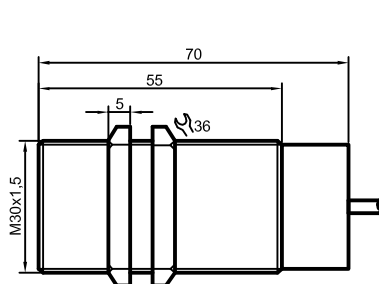
Inductive Sensors Series 20 - NPN-StEx-ATEX Series 10 - PNP-StEx-ATEX

Housing M30 x 1.5

- Ex II 1/2 D IP 67 T 101°C
- For use in zone 20
- Ex II 2G EEx m II T4
- Housing material: brass
- Flush mountable
- Sensing distance S_n 10 mm

Technical data

Operating distance S_n [mm], flush mounting	10, yes
Electrical version	5-wire DC
Output	Antivalent
Type NPN	IAS-20-A14-A-StEx
Art.-No.	IA 0137
Connection diagram No.	3
Type PNP	IAS-10-A14-A-StEx
Art.-No.	IA 0109
Connection diagram No.	6
Operating voltage (U_B)	10...30 V DC
Output current max. (I_o)	2 x 200 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.5 V
Permitted residual ripple max.	10 %
No-load current (I_o)	typ. 15 mA
Frequency of operating cycles max.	1 kHz
Permitted ambient temperature	-20...+90°C
LED-display	green/yellow
Protective circuit	built-in
Degree of protection IEC 529	IP 67
Connection cable	2 m 5 x 0.34 mm ²
Housing material	brass
Active surface	PTFE
Lid	PC



All specifications are subject to change without notice. (05/2004)

ATEX AND ATEX/StEx SERIES 30 (NAMUR)

I T E M	Sensing distance [mm]		Diameter [mm] or with thread	Housing material	Electrical Version $U_i = 15 \text{ V DC NAMUR [30]}$ DMT 03 ATEX E 048	Connection	Pages
	flush	non-flush		Brass [Ms] Stainless steel [VA] Polyamide [PA]			
1	0.8	-	4	VA	30	Cable	62
2	0.8	-	M5 x 0.5	VA	30	Cable	63
3	1.5	-	6.5	VA	30	Cable	64
4	1.5	-	M8 x 1	VA	30	Cable	65
5	-	5	11	PA	30	Cable	66
6	2	4	M12 x 1 - A12/A22	Brass	30, 30-StEx	Cable	67-68
7	5	8	M18 x 1 - A13/A23	Brass	30, 30-StEx	Cable	69-70
8	10	15	M30 x 1.5 - A14/A24	Brass	30, 30-StEx	Cable	71-72
9	10	15	M32 x 1.5	Brass, PA	30, 30-StEx	Cable	73-74

All specifications are subject to change without notice. (07/2004)



Certificate: DMT 03 ATEX E 048



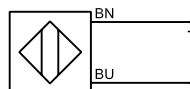
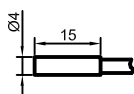
Inductive Sensors Series 30 - NAMUR

Housing Ø 4 mm

- II 2 G EEx ia IIC T1-T6
- For use in areas where there is a risk of explosion
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 0.8$ mm

Technical data

Operating distance S_n [mm], flush mounting	0.8, yes
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
Type	IAS-30-04-N
Art.-No.	300 700
Connection diagram No.	see below
Operating voltage (U_b)	$U_1 = 15$ V DC
Output current active surface free	> typ. 2 mA
Output current active surface covered	< typ. 1.5 mA
Self-inductance (L)	2mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70°C
LED-display	-
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	VA No. 1.4305
Active surface	-
Lid	-



All specifications are subject to change without notice. (07/2004)



Certificate: DMT 03 ATEX E 048



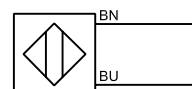
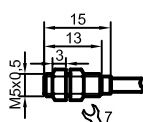
Inductive Sensors Series 30 - NAMUR

Housing M5 x 0.5

- II 2 G EEx ia IIC T1-T6
- For use in areas where there is a risk of explosion
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 0.8$ mm

Technical data

Operating distance S_n [mm], flush mounting	0.8 , yes
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
Type	IAS-30-M5-N
Art.-No.	300 800
Connection diagram No.	see below
Operating voltage (U_B)	$U_i = 15$ V DC
Output current active surface free	> typ. 2 mA
Output current active surface covered	< typ. 1.5 mA
Self-inductance (L)	2mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70°C
LED-display	-
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	VA No. 1.4305
Active surface	PA
Lid	-



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Certificate: DMT 03 ATEX E 048



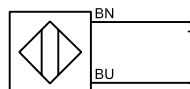
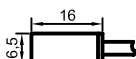
Inductive Sensors Serie 30 - NAMUR

Housing Ø 6.5 mm

-  II 2 G EEx ia IIC T1-T6
- For use in areas where there is a risk of explosion
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5$ mm

Technical data

Operating distance S_n [mm], flush mounting	1.5 , yes
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
Type	IAS-30-6.5-N
Art.-No.	300 900
Connection diagram No.	see below
Operating voltage (U_B)	$U_i = 15$ V DC
Output current active surface free	> typ. 2 mA
Output current active surface covered	< typ. 1.5 mA
Self-inductance (L)	2mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70°C
LED-display	-
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	VA No. 1.4305
Active surface	PVC
Lid	PC



All specifications are subject to change without notice. (08/2004)



Certificate: : DMT 03 ATEX E 048



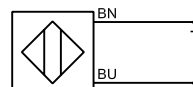
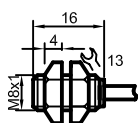
Inductive Sensors Series 30 - NAMUR

Housing M8 x 1

- Ex II 2 G EEx ia IIC T1-T6
- For use in areas where there is a risk of explosion
- Housing material: stainless steel VA
- Flush mountable
- Sensing distance $S_n = 1.5 \text{ mm}$

Technical data

Operating distance S_n [mm], flush mounting	1.5, yes
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
Type	IAS-30-M8-N
Art.-No.	301 000
Connection diagram No.	see below
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$
Output current active surface free	> typ. 2 mA
Output current active surface covered	< typ. 1.5 mA
Self-inductance (L)	2mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70°C
LED-display	-
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	VA No. 1.4305
Active surface	PVC
Lid	PC



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Certificate: DMT 03 ATEX E 048



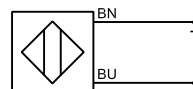
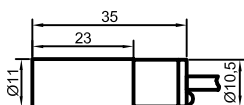
Inductive Sensors Series 30 - NAMUR

Housing Ø 11 mm

- Ex II 2 G EEx ia IIC T1-T6
- For use in areas where there is a risk of explosion
- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 5 \text{ mm}$

Technical data

Operating distance S_n [mm], flush mounting	5, no
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
Type	IAS-30-14-N
Art.-No.	301 500
Connection diagram No.	see below
Operating voltage (U_b)	$U_i = 15 \text{ V DC}$
Output current active surface free	> typ. 2 mA
Output current active surface covered	< typ. 1.5 mA
Self-inductance (L)	2mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	1 kHz
Permitted ambient temperature	-25...+70°C
LED-display	yellow
Degree of protection IEC 529	IP 67
Connection cable	2 m 2 x 0.14 mm ²
Housing material	PA
Active surface	PA
Lid	PA



All specifications are subject to change without notice. (07/2004)



Inductive Sensors Series 30 - NAMUR

Housing M12 x 1

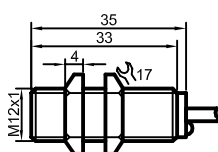
- Ex II 2 G EEx ia IIC T1-T6
- Ex II 1 D IP 67 T 101°C
- For use in areas where there is a risk of explosion
- Flush mountable
- Sensing distance $S_n = 2 \text{ mm}$

Certificate: DMT 03 ATEX E 048
DMT 01 ATEX E 157

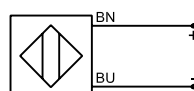


Technical data

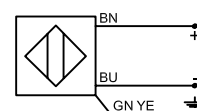
Operating distance S_n [mm], flush mounting	2, yes	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A12-N	IAS-30-A12-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
	Ex II 1 D IP 67 T 101°C	
Art.-No.	300 100	IA 0091
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1.5 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	brass	
Active surface	PA	PTFE
Lid	PA	PC



No. 1



No. 2





Certificate: **DMT 03 ATEX E 048**
DMT 01 ATEX E 157



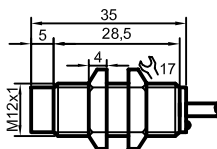
Inductive Sensors Series 30 - NAMUR

Housing M12 x1

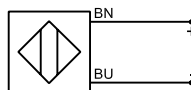
- $\text{Ex II 2 G EEx ia IIC T1-T6}$
- $\text{Ex II 1 D IP 67 T 101}^{\circ}\text{C}$
- For use in areas where there is a risk of explosion
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 4 \text{ mm}$

Technical data

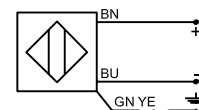
Operating distance S_n [mm], flush mounting	4, no	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A22-N	IAS-30-A22-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
		Ex II 1 D IP 67 T 101°C
Art.-No.	300 200	IA 0090
Connection diagram No.	1	2
Operating voltage (U_b)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1.5 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.14 mm ²	2 m 3 x 0.14 mm ²
Housing material	brass	
Active surface	PA	PTFE
Lid	PA	PC



No. 1



No. 2



All specifications are subject to change without notice. (08/2004)



Inductive Sensors Series 30 - NAMUR

Housing M18 x 1

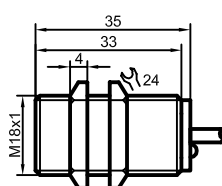
- $\text{Ex II 2 G EEx ia IIC T1-T6}$
- $\text{Ex II 1 D IP 67 T 101}^{\circ}\text{C}$
- For use in areas where there is a risk of explosion
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 5 \text{ mm}$

Certificate: **DMT 03 ATEX E 048**
DMT 01 ATEX E 157

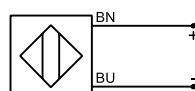


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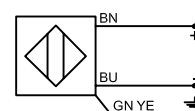
Operating distance S_n [mm], flush mounting	5, yes	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A13-N	IAS-30-A13-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
	Ex II 1 D IP 67 T 101°C	
Art.-No.	300 300	IA 0092
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1.5 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.34 mm ²	2 m 3 x 0.34 mm ²
Housing material	brass	
Active surface	PA	PTFE
Lid	PA	PC



No. 1



No. 2





Inductive Sensors Series 30 - NAMUR

Housing M18 x 1

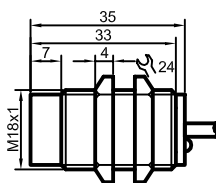
- Ex II 2 G EEx ia IIC T1-T6
- Ex II 1 D IP 67 T 101°C
- For use in areas where there is a risk of explosion
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 8 \text{ mm}$

Certificate: DMT 03 ATEX E 048
DMT 01 ATEX E 157

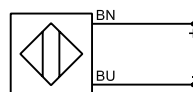


Technical data

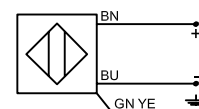
Operating distance S_n [mm], flush mounting	8, no	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A23-N	IAS-30-A23-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
	Ex II 1 D IP 67 T 101°C	
Art.-No.	300 400	IA 0094
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1.5 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.34 mm ²	2 m 3 x 0.34 mm ²
Housing material	brass	
Active surface	PA	PTFE
Lid	PA	PC



No. 1



No. 2



All specifications are subject to change without notice. (08/2004)



Certificate: **DMT 03 ATEX E 048**
DMT 01 ATEX E 157



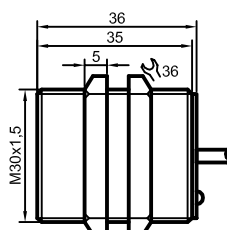
Inductive Sensors Series 30 - NAMUR

Housing M30 x 1.5

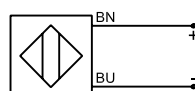
- $\text{Ex II 2 G EEx ia IIC T1-T6}$
- $\text{Ex II 1 D IP 67 T 101}^{\circ}\text{C}$
- **For use in areas where there is a risk of explosion**
- **Housing material: brass**
- **Flush mountable**
- **Sensing distance $S_n = 10$ mm**

Technical data

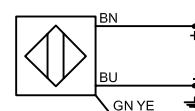
Operating distance S_n [mm], flush mounting	10, yes	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A14-N	IAS-30-A14-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
	Ex II 1 D IP 67 T 101°C	
Art.-No.	300 500	IA 0095
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15$ V DC	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.75 mm ²	2 m 3 x 0.75 mm ²
Housing material	brass	
Active surface	PVC	PTFE
Lid	PA	PC



No. 1



No. 2





Inductive Sensors Series 30 - NAMUR

Housing M 30 x 1.5

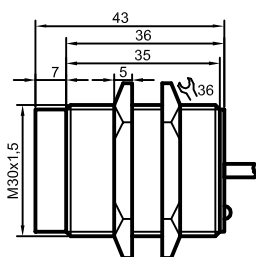
- $\text{Ex II 2 G EEx ia IIC T1-T6}$
- $\text{Ex II 1 D IP 67 T 101}^{\circ}\text{C}$
- For use in areas where there is a risk of explosion
- Housing material: brass
- Non-flush mountable
- Sensing distance $S_n = 15 \text{ mm}$

Certificate: DMT 03 ATEX E 048
DMT 01 ATEX E 157

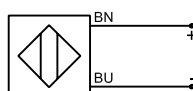


Technical data

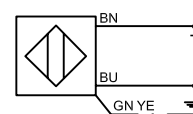
Operating distance S_n [mm], flush mounting	15, no	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-A24-N	IAS-30-A24-N-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
		Ex II 1 D IP 67 T 101°C
Art.-No.	300 600	IA 0096
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.75 mm ²	2 m 3 x 0.75 mm ²
Housing material	brass	
Active surface	PVC	PTFE
Lid	PA	PC



No. 1



No. 2



All specifications are subject to change without notice. (08/2004)



Certificate: **DMT 03 ATEX E 048**
DMT 01 ATEX E 157



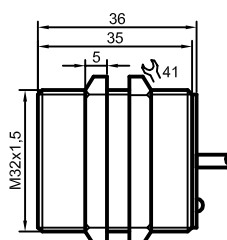
Inductive Sensors Series 30 - NAMUR

Housing M32 x 1.5

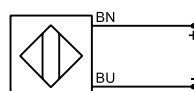
- $\text{Ex II 2 G EEx ia IIC T1-T6}$
- $\text{Ex II 1 D IP 67 T 101}^{\circ}\text{C}$
- For use in areas where there is a risk of explosion
- Housing material: brass
- Flush mountable
- Sensing distance $S_n = 10 \text{ mm}$

Technical data

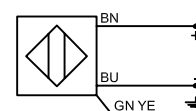
Operating distance S_n [mm], flush mounting	10, yes	
Electrical version	2-wire DC	3-wire DC
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-30-N-M32	IAS-30-30-N-M32-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
		Ex II 1 D IP 67 T 101°C
Art.-No.	302 400	IA 0097
Connection diagram No.	1	2
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.75 mm ²	2 m 3 x 0.75 mm ²
Housing material	brass	
Active surface	PVC	PTFE
Lid	PVC	PC



No. 1



No. 2





Certificate: **DMT 03 ATEX E 048**
DMT 01 ATEX E 157



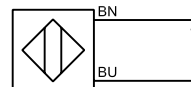
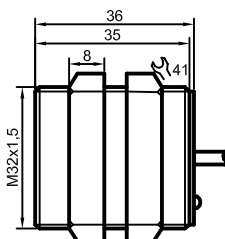
Inductive Sensors Serie 30 - NAMUR

Housing M 32 x 1.5

- Ex II 2 G EEx ia IIC T1-T6
- Ex II 1 D IP 67 T 101°C
- For use in areas where there is a risk of explosion
- Housing material: PA
- Non-flush mountable
- Sensing distance $S_n = 15 \text{ mm}$

Technical data

Operating distance S_n [mm], flush mounting	15, no	
Electrical version	2-wire DC	
Output	NAMUR DIN 60947-5-6	
Type	IAS-30-35-N-M32	IAS-30-35-N-M32-StEx
Application/Marking	Ex II 2 G EEx ia IIC T1-T6	
	Ex II 1 D IP 67 T 101°C	
Art.-No.	302 800	IA 0098
Connection diagram No.	see below	
Operating voltage (U_B)	$U_i = 15 \text{ V DC}$	
Output current active surface free	> typ. 2 mA	
Output current active surface covered	< typ. 1.5 mA	
Self-inductance (L)	2mH	
Self-capacitance (C)	250 nF	
Permitted residual ripple max.	5 %	
Frequency of operating cycles max.	1 kHz	
Permitted ambient temperature	-25...+70°C	-20...+90°C
LED-display	yellow	
Degree of protection IEC 529	IP 67	
Connection cable	2 m 2 x 0.75 mm ²	
Housing material	PA	
Active surface	PA	
Lid	PA	PC



All specifications are subject to change without notice. (08/2004)

INDUCTIVE HIGH-TEMPERATURE SENSORS

I T E M	Sensing distance Sn [mm]		Diameter [mm] or with thread or rectangular housing	Housing material	Electrical Version Amplifier 10...35 V DC NPN [20]; PNP[10]	Connection Cable metal flange connector sensor [Y] metal flange connector Amplifier [Y5]	Pages
	flush	non-flush		Aluminium [AL] Stainless steel [VA] Polyetheretherketone [PEEK]			
1	-	4	M12 x 1	PEEK	Sensor IS	Cable	76
2	-	8	M18 x 1	PEEK	Sensor IS	Cable	77
3	-	12	M22 x 1.5	PEEK	Sensor IS	Y	78
4	-	15	M30 x 1.5	PEEK	Sensor IS	Y	79
5	-	20	M32 x 1.5	PEEK, PEEK/VA	Sensor IS	Y	80-81
6	-	25	40 x 40 x 56	PEEK/AL	Sensor IS	Y	82
7	-	35	40 x 40 x 56	PEEK/AL	Sensor IS	Y	83
Amplifier ISA							
8	-	-	98,5 x 64 x 34,5	AL	10	Y5	84

All specifications are subject to change without notice. (05/2004)



Inductive High-Temperature Sensors Series - 250



Housing M12 x 1 with sealing screw

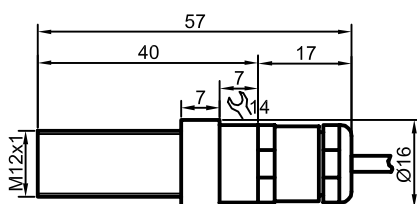
- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK
- For an ambient temperature of max. 250 °C

Certificate:



Technical data

Operating distance S_n [mm]	4
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M12
Art.-No.	IA 0117
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 68
Connection cable for connection to inductive evaluation units ISA-... with plug-in connector	2 m PTFE with VA screen grid lead
Housing material	PEEK
Active surface	PEEK



All specifications are subject to change without notice. (05/2004)



Inductive High-Temperature Sensors Series - 250



Housing M18 x 1 with sealing screw

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK
- For an ambient temperature of max. 250 °C

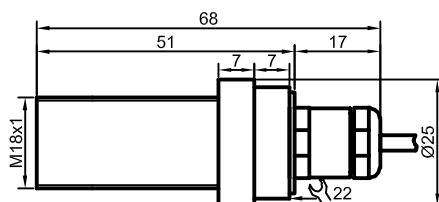
Certificate:



Technical data

Operating distance S_n [mm]	8
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M18
Art.-No.	IA 0118
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 68
Connection cable for connection to inductive evaluation units ISA-... with plug-in connector	2 m PTFE with VA screen grid lead
Housing material	PEEK
Active surface	PEEK

Available also with 5 m connection cable: Art.-No. IA 0127





Inductive High-Temperature Sensors Series - 250



Housing M22 x 1.5

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK/Brass
- For an ambient temperature of max. 250 °C

Certificate:



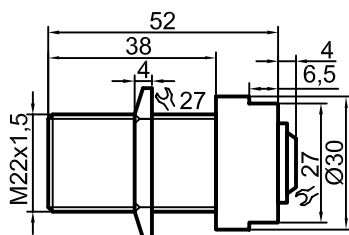
Technical data

Operating distance S_n [mm]	12
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M22-Y
Art.-No.	IA 0119
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK/Brass
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314





Inductive High-Temperature Sensors Series - 250



Housing M30 x 1.5

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK/Brass
- For an ambient temperature of max. 250 °C

Certificate:



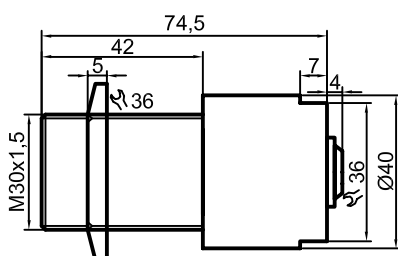
Technical data

Operating distance S_n [mm]	15
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M30-Y
Art.-No.	IA 0120
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK/Brass
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314
- 20 m PTFE-cable with VA screen grid lead and connectors Art. No. 193315



All specifications are subject to change without notice. (05/2004)



Inductive High-Temperature Sensors Series - 250



Housing M32 x 1.5

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK
- For an ambient temperature of max. 250 °C

Certificate:



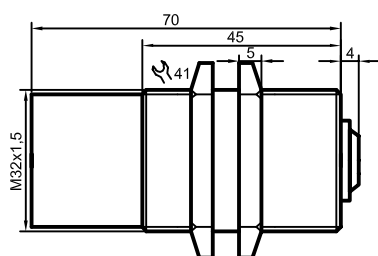
Technical data

Operating distance S_n [mm]	20
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M32-Y
Art.-No.	IA 0122
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314
- 20 m PTFE-cable with VA screen grid lead and connectors Art. No. 193315





Inductive High-Temperature Sensors Series - 250



Housing M32 x 1.5

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK/VA
- For an ambient temperature of max. 250 °C

Certificate:



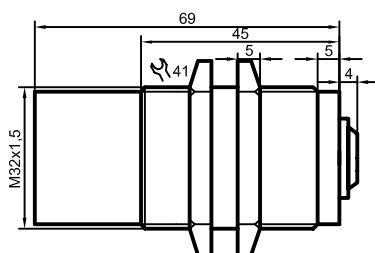
Technical data

Operating distance S_n [mm]	20
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-M32-PEEK/VA-Y
Art.-No.	IA 0124
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK/VA No. 1.4305
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314
- 20 m PTFE-cable with VA screen grid lead and connectors Art. No. 193315



All specifications are subject to change without notice. (05/2004)



Inductive High-Temperature Sensors Series - 250



Housing 40 x 40 x 56 mm

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK/AL
- For an ambient temperature of max. 250 °C

Certificate:



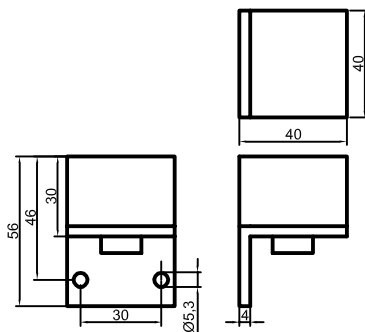
Technical data

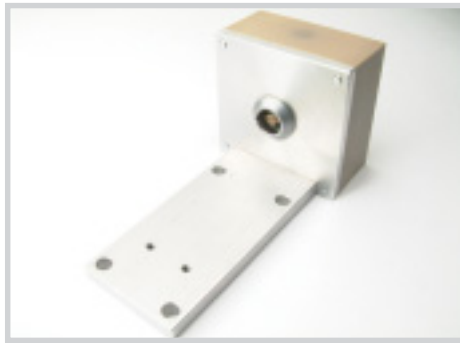
Operating distance S_n [mm]	25
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-C25-Y
Art.-No.	IA 0115
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK/AL
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314
- 20 m PTFE-cable with VA screen grid lead and connectors Art. No. 193315





Inductive High-Temperature Sensors Series - 250



Housing 55 x 55 x 56 mm

- For connection to the evaluation unit ISA-...-Y5
- Housing material: PEEK/AL
- For an ambient temperature of max. 250 °C

Certificate:



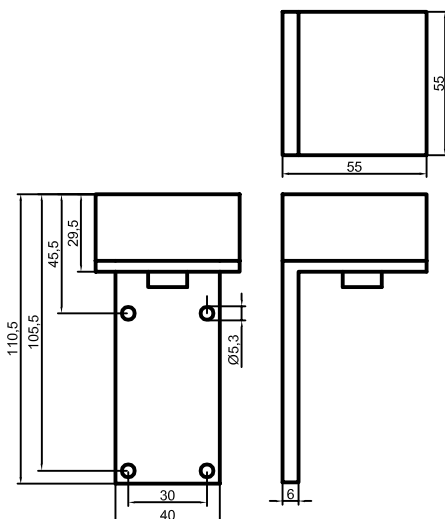
Technical data

Operating distance Sn [mm]	35
Sensing distance adjustable at the evaluation unit	-
Mounting: flush/ non-flush	non-flush
Type	IS-250-C35-Y
Art.-No.	IA 0121
Permitted ambient temperature	-70...+250°C
Enclosure rating IEC 529	IP 67
Connection for inductive evaluation units ISA-...	metal flange connector
Housing material	PEEK/AL
Active surface	PEEK

Connection cable is not delivered with the probe (see page 86).

Order specifications:

- 2 m PTFE-cable with VA screen grid lead and connectors Art. No. 193312
- 5 m PTFE-cable with VA screen grid lead and connectors Art. No. 193313
- 10 m PTFE-cable with VA screen grid lead and connectors Art. No. 193314
- 20 m PTFE-cable with VA screen grid lead and connectors Art. No. 193315



All specifications are subject to change without notice. (05/2004)



Evaluation Unit For Inductive High-Temperature Sensors Series - 250 • PNP



Housing 98.5 x 64 x 34.5 mm

- For connection to inductive high-temperature sensors IS-250-...
- Housing material: AL

Certificate:



Technical data

Operating distance S_n [mm], flush Mounting

-

Electrical version

4-pin DC

Output

antivalent

Type PNP

ISA-10-250-A-Y5-M12

ISA-10-250-A-Y5-M18

ISA-10-250-A-Y5-M22

Art.-No.

IA 0133

IA 0132

IA 0131

Connection diagram No.

6

6

6

Type PNP

ISA-10-250-A-Y5-M30/M32

ISA-10-250-A-Y5-C25

ISA-10-250-A-Y5-C35

Art.-No.

IA 0130

IA 0114

IA 0129

Connection diagram No.

6

6

6

Operating voltage (U_B)

10...35 V DC

Output current max. (I_o)

2 x 250 mA

Load current min.

-

Voltage drop max. (U_d)

≤ 2.5 V

Permitted residual ripple max.

10 %

No-load current (I_o)

typ. 15 mA

Frequency of operating cycles max.

50 Hz

Permitted ambient temperature

-25...+70°C

LED-display

-

Protective circuit

built-in

Degree of protection IEC 529

IP 67

Connection

metal flange connector
M12 x 1

Housing material

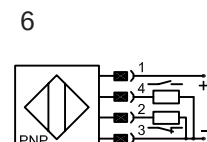
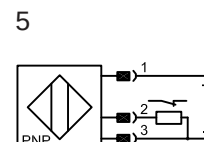
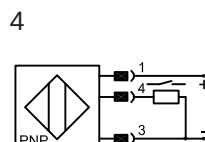
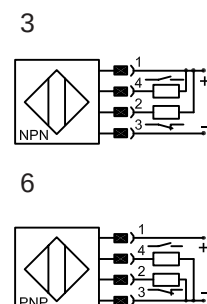
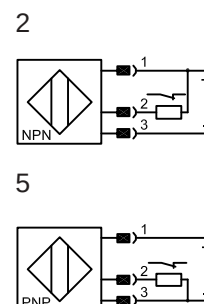
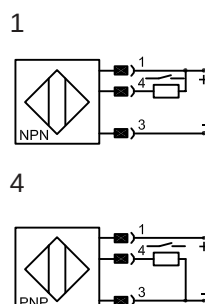
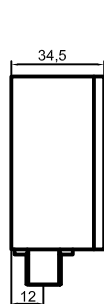
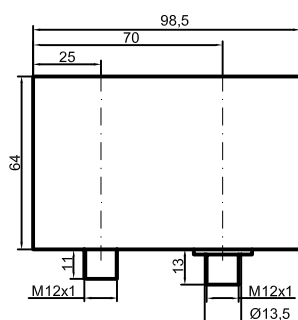
AL

Active surface

-

Lid

-



All specifications are subject to change without notice. (09/2004)

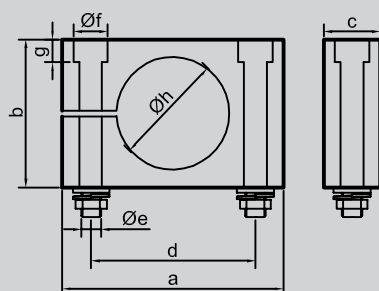
FEMALE CONNECTORS

Sensor	Female Connector		Article-No.	LED	IP	Connection	Cable-	Sensor	Version
Type	No.	Fig.		green/ yellow		[mm ²]	length [m]	+ length [mm]	Connector
pn-p	5		191300	+	65	3 x 0.5/Pg 7 clampable	-	26	Y3, Y5
np-n	6		191350						
pn-p/np-n	9		191500	-	67	4 x 0.75/Pg 9 clampable	-	28	Y3, Y5
AC/DC	9a		191550	-	67	4 x 0.75/Pg 9 clampable	-	28	Y1
pn-p/np-n	16		191900	-	67	3 x 0.34	2,5	17	Y3, Y5
pn-p/np-n	18		192000	-	67	3 x 0.34	5	35	Y3, Y5
pn-p	21		192150	+	67	3 x 0.34	5	18	Y3, Y5
np-n	22		192200						
pn-p/np-n	36		192900	-	67	4 x 0.25	5	31	Y3, Y5 antivalent
pn-p/np-n	38		193000	-	67	4 x 0.25	5	17	Y3, Y5 antivalent
pn-p/np-n	45		193210	-	67	3 x 0.25	5	29	Y7, Y8
pn-p	46		193220	+	67	3 x 0.25	5	12	Y7, Y8
pn-p/np-n	47		193230	-					
pn-p/np-n	49a		193345	-	68	5 x 0.25	2	20	Y10
pn-p/np-n AC/DC	50		193350	-	67	5 x 0.25	2	18	Y1, Y9

All specifications are subject to change without notice. (05/2004)

MOUNTING BLOCKS

Dimension:



Art.-No.	Block No.	Ø Sensor [mm]	a	b	c	d	Ø e	Ø f	g	Ø h	Nuts
190150	131	10	30	20	10	20	4,3	8	4,5	10	M4
190200	132	11	30	20	10	20	4,3	8	4,5	11	M4
190250	133	20	45	30	15	30	5,3	9	6	20	M5
190300	134	22	45	30	15	30	5,3	9	6	22	M5
190350	135	30	60	45	15	45	5,3	9	6	30	M5
190400	136	32	60	45	15	45	5,3	9	6	32	M5
190450	137	34	60	45	15	45	5,3	9	6	34	M5
190030	138	40	80	65	15	65	5,3	9	6	40	M5
190050	139	50	80	65	15	65	5,3	9	6	50	M5
190100	140	64	95	80	15	80	5,3	9	6	64	M5

Dimensions "a" to "h" in mm

FEMALE CONNECTOR, SCREENED



Connection cable

For inductive high-temperature sensors with Lemo-connector and screened cable

2 m Art.-No. 193312
 5 m Art.-No. 193313
 10 m Art.-No. 193314
 20 m Art.-No. 193315

All specifications are subject to change without notice. (05/2004)

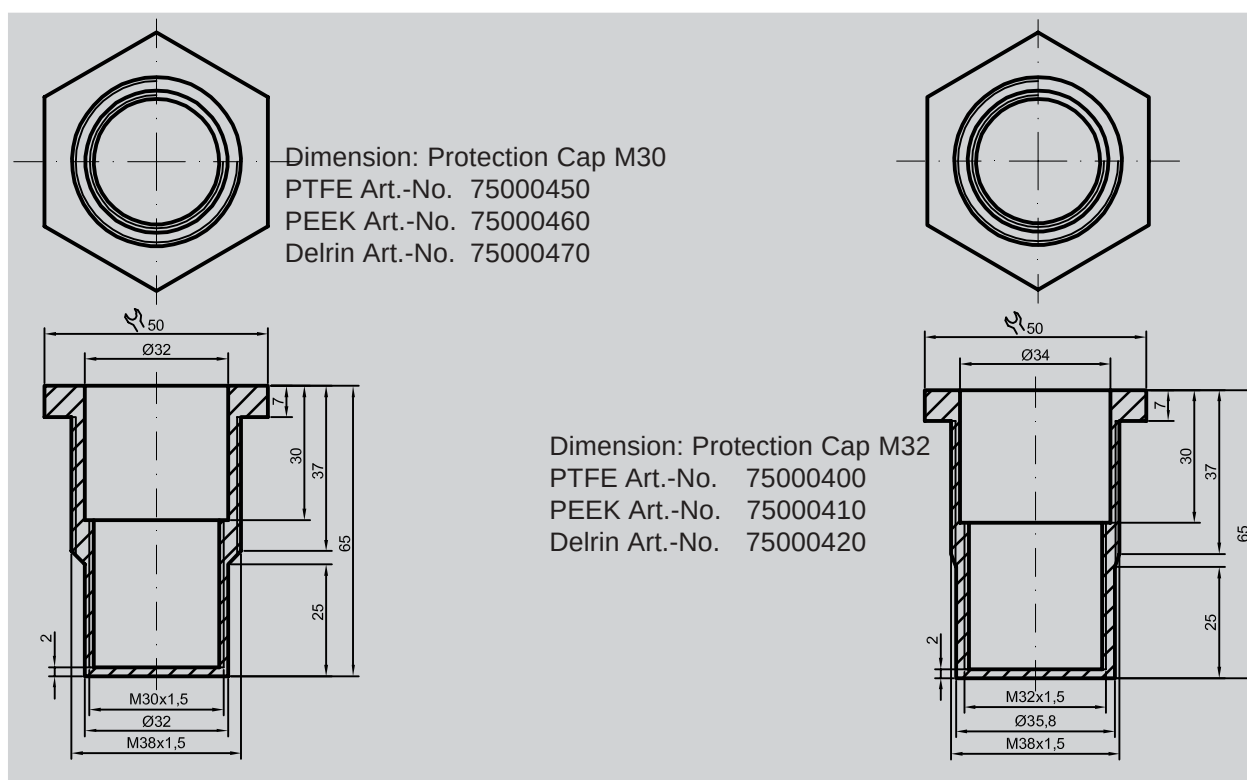
PROTECTION CAPS AND PROTECTION SETS

Example: Protection Caps M30/M32 PTFE



PROTECTION CAP

The PTFE protection cap (PEEK and Delrin are also available) is designed for applications where the detected material is highly abrasive, e.g. granules. It is a protection cap for the front cap of the sensor. In the case of damage due to abrasion one only has to change the protection cap and the sensor remains in good condition.



Example: Protection Set M32



Protection Set M18 Art.-No. 196305
 Protection Set M30 Art.-No. 196302
 Protection Set M32 Art.-No. 196301

PROTECTION SET

The PTFE protection set M32 x 1.5 consists of an internally threaded cover, a Pg9-screwing for cable entry and a rubber gasket between the cover and the sensor. This protection cover serves as improvement to the degree of protection, against infiltration of liquids, for example in applications where the sensor is totally immersed in liquids. The resistance of the material still needs to be checked.

The thread of the sensor has to be sealed, for example with PTFE sealing-tape. The protection cover has to be screwed totally up to the end, and then the Pg-screw has to be fixed.

NORMS

The products of Rechner Industrie-Elektronik GmbH are designed and checked in accordance with the standards and specifications, DIN - VDE - IEC, for electric and electronic instruments. For new and revised products the newest standards are always used.

Effective standards for proximity switches and sensors:

DIN VDE 0660 Part 208:

Low-voltage switchgear - additional requirements for inductive proximity switches.

DIN VDE 0660 Part 209

Low-voltage switchgear and controlgear, control switches - additional requirements for proximity switches used in safety-related applications.

DIN VDE 0660 Part 212 (Replaces DIN 19234)

Istrumentation and control technology - electrical position sensors - DC interface for position sensors and switching amplifiers

European Standards

EN 60947-5-2 Low Voltage Switchgear Part 5

Control circuit devices and switching elements, section 2: proximity switches

EN 60947-5-6

Control circuit devices and switching elements, proximity sensors - DC interface for proximity sensors and switching amplifiers (NAMUR)

International Standards

IEC 947-5-2 Low-voltage switchgear and controlgear Part 5

Control circuit devices and switching elements - Section 2, proximity switches

Draft IEC 61934

Control circuit devices and switching elements DC interface for proximity sensors and switching amplifiers (NAMUR)

Standards On Explosion Protection

DIN EN 50014

Electrical apparatus for potentially explosive environments.
General requirements.

DIN EN 50020

Electrical apparatus for potentially explosive environments.
Intrinsic safety „i“

EN 60079-10

Electrical apparatus for potentially explosive environments.
Classification of hazardous areas.

EN 60079-14

Electrical apparatus for potentially explosive environments.
Classification of hazardous areas (mines excepted).

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NORMS

Norms for quality assurance (QS)

DIN ISO 9000-9004 (EN 29000-29 004)

Quality assurance (QA) for products and services

DIN ISO 9001

Quality assurance in design/development, production, installation and servicing

DIN ISO 9002

Quality assurance in production

DIN ISO 9003

Quality assurance for final testing only

DIN ISO 9004

Quality management and elements of a quality management system

RECHNER Industrie-Elektronik-GmbH is certified according to DIN ISO 9001:2000.

CE - Marking

The CE marking represents the manufacturer's confirmation that the identified product conforms to applicable standards and directives throughout Europe. The following regulations apply to the RECHNER products.

89/336/EWG

EMC Directive (EN 60 947-5-2)

73/23/EWG

Low-voltage Directive (compare with VDE 0160, product standard EN 60947-5-2)

Directive 94/9/EG

Equipment and Protection Systems designed for use in potentially explosive environments

RECHNER Industrie-Elektronik GmbH certifies the conformity of its products with each of the applicable directives in a Manufacturer's Declaration. In addition RECHNER has a laboratory accredited by DATech for testings according to IEC/EN 60947-5-2 and also an accredited EMC laboratory.

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SPECIFICATION FOR EXPLOSION PROTECTION

	European Union	North America
Division of Hazards	Explosive mixtures in Group1: mines susceptible to fire damp Group2: areas other than mines	Explosive mixtures of air with CLASS I: Gases and vapours CLASS II: Dust CLASS III: Fibers
Ignition Hazards due to Sparks	Classification of the protection types intrinsic safety/ flame-proof enclosure according to minimum ignition current/limit gap with reference to the minimum ignition energy of representative gases: Group I Methane Group IIA Propane Group IIB Ethylene Group IIC Hydrogen, Acetylene This classification also partially applies to the type of protection „n“ (zone 2 equipment)	Division of CLASS according to ignition energy: CLASS I Group A Acetylene B Hydrogen C Ethylene D Methane CLASS II Group E Metal dust F Coal dust G Grain dust CLASS III No grouping
Ignition Hazards due to Hot Surfaces	Classification into temperature according to IEC 79-8 for maximum surface temperatures at an ambient temperature of 40°C under failure conditions: T1 ≤ 450°C T2 ≤ 300°C T3 ≤ 200°C T4 ≤ 135 °C T5 ≤ 100°C T6 ≤ 85°C	
Division of Hazardous Areas	The following are classified according to the probability of the occurrence of an explosive atmosphere: For gases, fumes and vapours: (EN 60079-10) Zone 0 constant or long term 1 occasional 2 rare and short term for dusts: (EN 1127-1) Zone 20 constant or long term or frequent 21 occasional 22 short term or accumulation or layers of dust Note (see IEC 79-10): constant or long term > 1000 h/year, occasionally represents 10...1000 h/year, rare or short term < 10h/year	
Safety data	For the ratings of combustible gases and vapours as a basis for classification according to ignition energy, ignition temperature and flash point, see: Redeker, Nabert, Schön/Safety Ratings of Combustible Gases and Vapours	for gases and dusts } Division 1 } Division 2 NFPA 497 M CSA Nr. C22-1
Certification Authorities	PTB Physikalisch-Technische Bundesanstalt BVS Bergbauversuchsstrecke BASEEFA British Approvals Service for Electrical Equipment in Flammable Atmosphere and others	UL Underwriters Laboratories, USA FM Factory Mutual Research, USA CSA Canadian Standards Association
Installation Requirements	DIN EN 60079-14 (VDE 0165 Part 1) for explosive gas environments DIN EN 50281-1-2 (VDE 0165 Part 2) for environments with flammable dust	NFPA 70 National Electrical Code Art. 500 NFPA 493 Standard for Intrinsically safe operations ...

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100310	IAS-10-M8-Ö-Y7	24	190050	Mounting block No. 139 50D, PA	86
100500	IAS-10-A11-S	22	190100	Mounting block No. 140 64D, PA	86
101010	IAS-10-A11-Ö	22	190150	Mounting block No. 131 10D, PA	86
101200	IAS-10-A21-S	25	190200	Mounting block No. 132 11D, PA	86
101250	IAS-10-A21-Ö	25	190250	Mounting block No. 133 20D, PA	86
101700	IAS-10-A12-S	27	190300	Mounting block No. 134 22D, PA	86
101900	IAS-10-A12-Ö	27	190350	Mounting block No. 135 30D, PA	86
102300	IAS-10-A12-S-Y5	28	190400	Mounting block No. 136 32D, PA	86
102350	IAS-10-A12-Ö-Y5	28	190450	Mounting block No. 137 34D, PA	86
102400	IAS-10-A22-S	30	191300	Female connector No. 5, angled	85
102500	IAS-10-A22-Ö	30	191350	Female connector No. 6, angled	85
103001	IAS-10-A22-S-Y5	31	191500	Female connector No. 9, angled	85
103050	IAS-10-A22-Ö-Y5	31	191550	Female connector No. 9A, angled	85
103060	IAS-10-A13-A	34	191900	Female connector No. 16, angled	85
103068	IAS-10-A13-A-Y5	36	192000	Female connector No. 18, straight	85
103100	IAS-10-A13-S	34	192150	Female connector No. 21, angled	85
103200	IAS-10-A13-Ö	34	192200	Female connector No. 22, angled	85
105750	IAS-10-A13-IL	35	192900	Female connector No. 36, straight	85
105751	IAS-10-A13-IL-Y3	37	193000	Female connector No. 38, angled	85
105780	IAS-10-A23-A	39	193210	Female connector No. 45, straight	85
105785	IAS-10-A23-A-Y3	41	193220	Female connector No. 46, angled	85
105800	IAS-10-A23-S	39	193230	Female connector No. 47, angled	85
106600	IAS-10-A23-S-Y3	41	193312	Female connector IS-HT, 2 m, screened	86
108350	IAS-10-A23-IL	40	193313	Female connector IS-HT, 5 m, screened	86
108380	IAS-10-A14-A	45	193314	Female connector IS-HT, 10 m, screened	86
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108400	IAS-10-A14-S	45	193345	Female connector No. 49a, angled	85
109200	IAS-10-A14-S-Y3	46	193350	Female connector No. 50, angled	85
109300	IAS-10-A14-Ö-Y3	46	196301	Protection set M32/PTFE	87
110950	IAS-10-A14-IL	47	196302	Protection set M30/PTFE	87
110980	IAS-10-A24-A	49	196305	Protection set M18/PTFE	87
110985	IAS-10-A24-A-Y3	50	200500	IAS-20-A11-S	22
111000	IAS-10-A24-S	49	201200	IAS-20-A21-S	25
111800	IAS-10-A24-S-Y3	50	201700	IAS-20-A12-S	27
113550	IAS-10-A24-IL	51	201900	IAS-20-A12-Ö	27
113610	IAS-10-04-S	16	202300	IAS-20-A12-S-Y5	28
113650	IAS-10-04-Ö	16	202400	IAS-20-A22-S	30
114010	IAS-10-M5-S	17	202500	IAS-20-A22-Ö	30
114110	IAS-10-M5-Ö	17	203050	IAS-20-A22-Ö-Y5	31
114400	IAS-10-M5-S-Y7	18	203060	IAS-20-A13-A	34
114450	IAS-10-M5-Ö-Y7	18	203067	IAS-20-A13-A-Y5	36
114500	IAS-10-6.5/15-S	19	203100	IAS-20-A13-S	34
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114610	IAS-10-6.5-Ö-LED	20	205785	IAS-20-A23-A-Y3	41
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115000	IAS-10-6.5-Ö-Y7	21	208385	IAS-20-A14-A-Y3	46
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116900	IAS-10-23-S-M22	43	210985	IAS-20-A24-A-Y3	50
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ISA-10-250-A-Y5-M12	IA0133	84			
ISA-10-250-A-Y5-M18	IA0132	84			
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Mounting block No. 131 10D, PA	190150	86			
Mounting block No. 132 11D, PA	190200	86			
Mounting block No. 133 20D, PA	190250	86			
Mounting block No. 134 22D, PA	190300	86			
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