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**RECHNER  
SENSORS**

***CATALOGUE***

***CAPACITIVE  
SENSORS  
KAS***



**CE**



Registration No.: 1327-01



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

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# CAPACITIVE SENSORS KAS

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## TECHNOLOGY

Capacitive sensors, our abbreviation KAS, contain a transistor oscillator which is actuated when a defined capacitance is exceeded by the approach of metals, non-metals or liquids. The smaller its dielectric permittivity  $\epsilon_r$  the closer the medium has to be approached. This effect can also be achieved by detecting through non-metal materials, if the dielectric permittivity of the material to be detected is higher (approx. factor 5). 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 by capacitive sensors. The current change in the oscillator is caused without physical 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 sensing distance ( $S_n$ )  $\pm 10\%$ . The RECHNER capacitive sensors with 20-turn spindle potentiometer allow sensitivity adjustment greater or less than the nominal sensing distance. Under the best operating conditions (e.g. constant ambient conditions) a sensing distance up to the maximum specified value can be adjusted. The components of the KAS are mounted in plastic or metal casings and encapsulated with epoxy casting resin.

The plastics used for the housings are:

- ⇒ PA (polyamide) 6.6 glass-fibre reinforced
- ⇒ PA conductive (carboniferous)
- ⇒ PC (polycarbonate) (FDA 21 CFR 177.1580)
- ⇒ PEEK (polyetheretherketone) (FDA 21 CFR 177.2415)
- ⇒ PPO (polyphenylenoxide)
- ⇒ PTFE (polytetrafluor ethylene) (FDA 21 CFR 177.1550)
- ⇒ PVC (polyvinylchloride)
- ⇒ PVDF (polyvinylidenfluoride) (FDA 21 CFR 177.2510)
- ⇒ POM (polyoxymethylen)
- ⇒ PP (polypropylen) (FDA 21 CFR 177.1520)

And the metal housings are

- ⇒ brass / chrome or nickel-plated
- ⇒ VA stainless-steel, material No. 1.4301, No. 1.4305 or 1.4404 (FDA conforming)
- ⇒ 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.

**KAS** can be used in machines, systems and vehicles for level monitoring of liquids or bulk material, and also through non-metal windows. Further more as limit switches, contact-less position switches for monitoring and positioning, as pulse generator for counting tasks, distance and speed measurements and for many other applications (for examples of applications: see page 11).

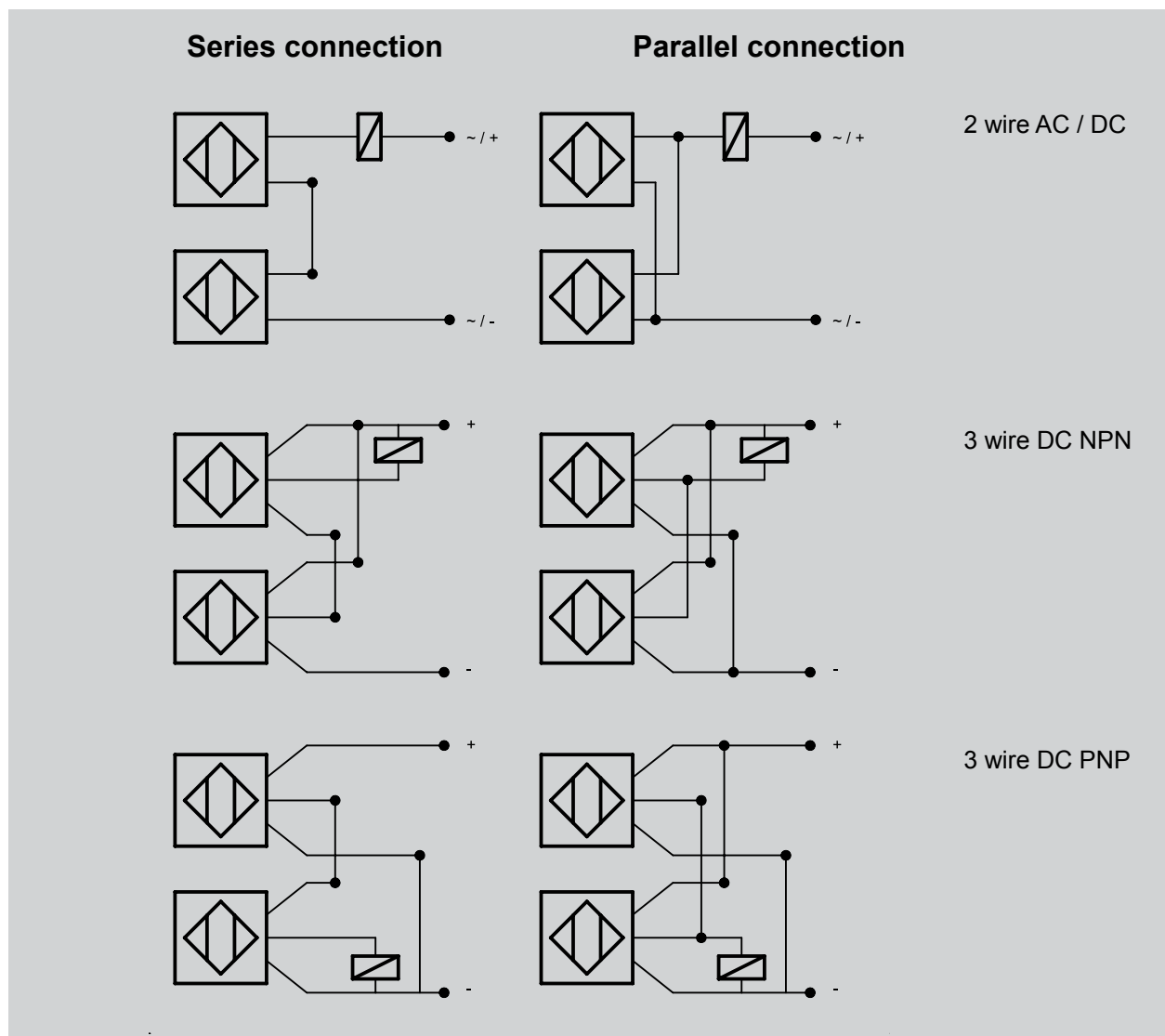


## TECHNOLOGY

**Wiring of the capacitive 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 near field power**, 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 incorrect operation.

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.

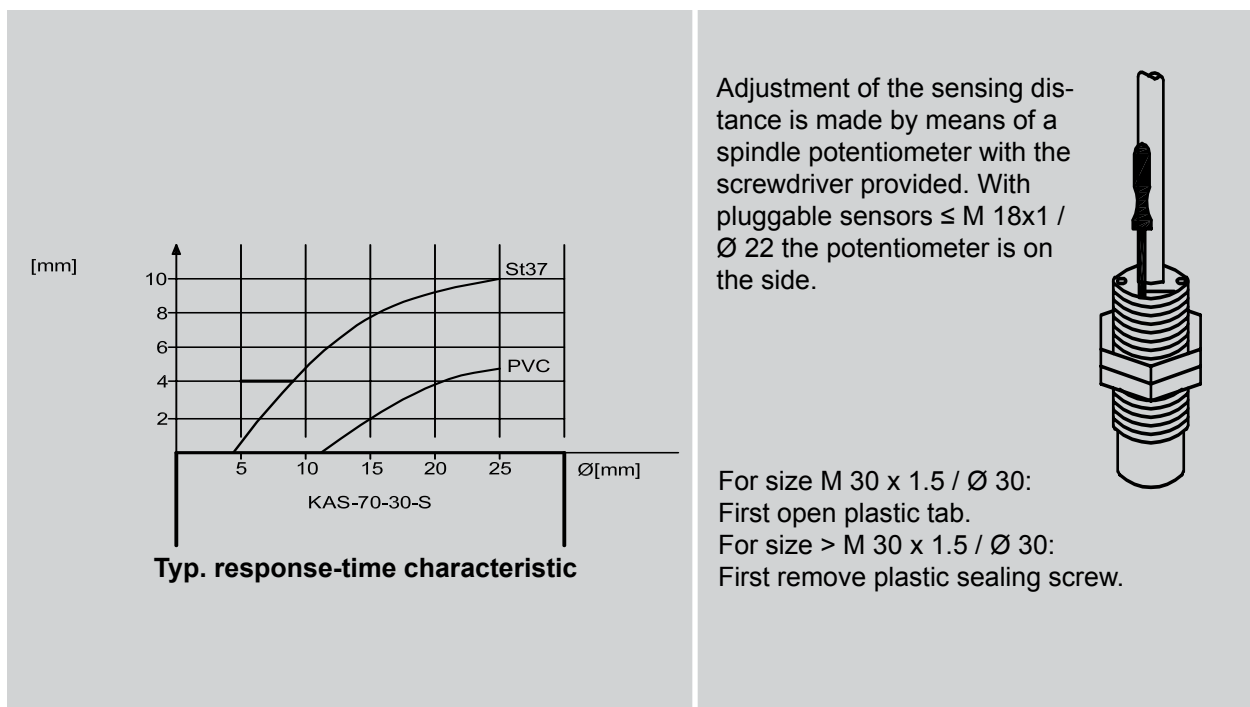


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## ADJUSTMENT

Analog capacitive 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 80 are designed with a 2-colour LED which facilitates adjustment. 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). In the case of series 40 for some types the current characteristic is inversely-proportional to the object-distance.

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  $\pm 10\%$ . 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 KAS 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.

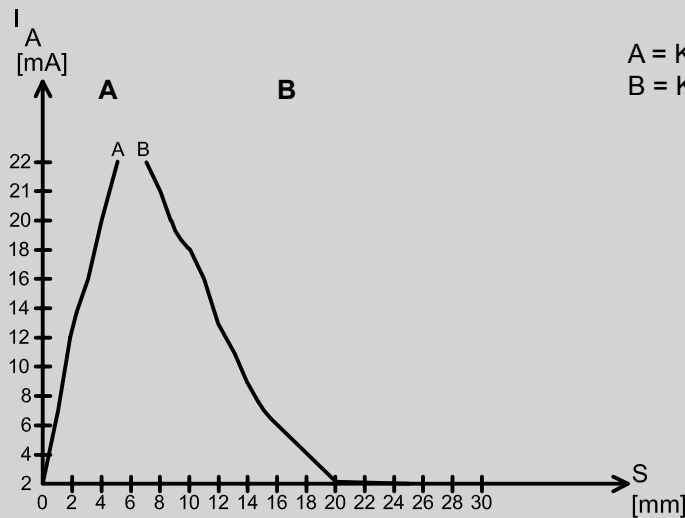


The possible sensing distance for a particular material is dependent on the dielectric permittivity  $\epsilon_r$  and can be worked out by means of the typical reduction factors:  
Sensing distance =  $S_n \times$  reduction factor.

Material:	FE 360	St 37	Water	Wheat	Wood	Glass	Oil	PVC	PE	Ceramic
Reduction factor approx.	1	1	1	0,8	0,7	0,6	0,4	0,4	0,37	0,3

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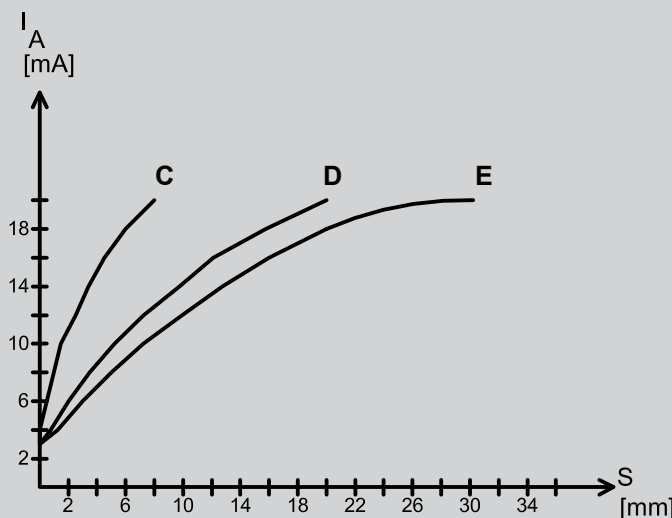
## TYPICAL CURVES



A = KAS-40-A13-IL, ATEX  
B = KAS-40-A24-IL-M30-V2A-StEx, ATEX

Parameter:  
 $T_u = 25\text{ }^\circ\text{C}$ ,  $U_B = 12\text{ V DC}$   
 Actuator  
 Steel St 37, 1 mm thick,  
 square, side length to  
 3 x diameter of the active  
 area, earthed.

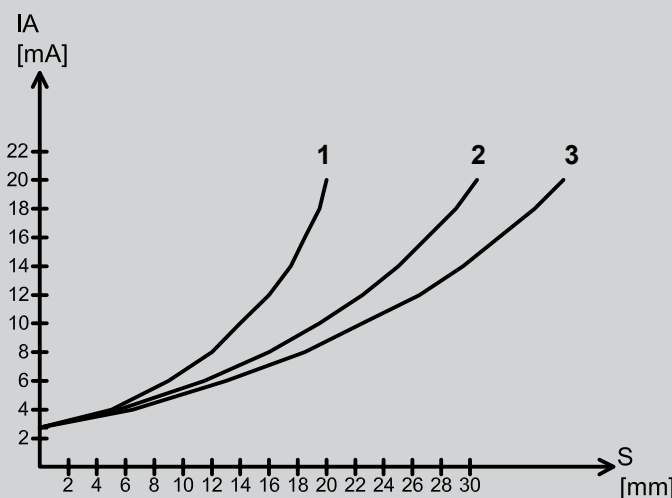
**Typ. curve of 2 wire analog sensors**



C = KAS-80-A13-IL  
 D = KAS-80-A14-IL  
 E = KAS-80-30-IL(-M32)

Parameter:  
 $T_u = 25\text{ }^\circ\text{C}$ ,  $U_B = 24\text{ V DC}$   
 Actuator  
 Steel St 37, 1 mm thick,  
 square, side length to  
 3 x diameter of the active  
 area, earthed.

**Typ. curve of 3 wire analogue sensors**



KAS-80-34-IL-M32-PTFE/Ms  
 1 = Adjustment 20 mm  
 2 = Adjustment 30 mm  
 3 = Adjustment 36 mm

Parameter:  
 $T_u = 25\text{ }^\circ\text{C}$ ,  $U_B = 24\text{ V DC}$   
 Actuator  
 Steel St 37, 1 mm thick,  
 square, side length to  
 3 x diameter of the active  
 area, earthed.

**3 wire analogue sensors with different adjustments**

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## MOUNTING

There are two different types of capacitive sensors:

1. **For flush mounting in metal or other materials.** These sensors can be mounted close together (see Fig. 1 and 3) and are specially designed for contact-less detection of solids or liquids through non-metal containers (max. wall-thickness 4 mm)
2. **For non-flush mounting in metal or other materials.** When mounting two or more sensors side by side a space / free zone must be provided (see Fig. 2 and 4). These sensors are designed for applications where the detecting material comes into contact with the active area of the sensor (e.g. level monitoring of bulk materials or liquids).

### Mounting

Fig.1

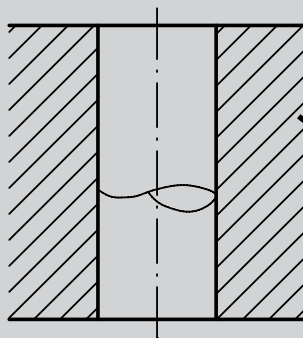
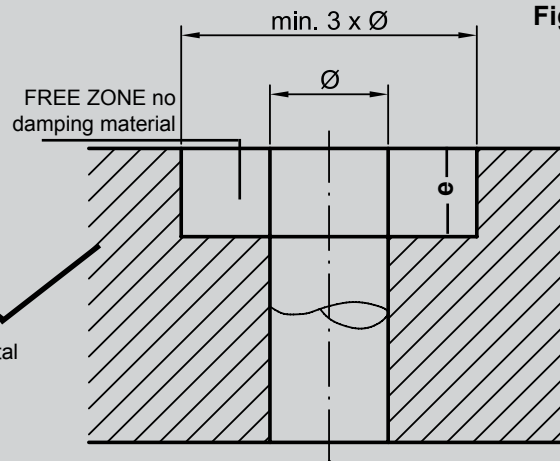


Fig.2



The dimension „e“ corresponds to the thread-free area of standard sensor types (-A21-...). Otherwise „e“ is  $\geq 25$  mm.

Fig.3

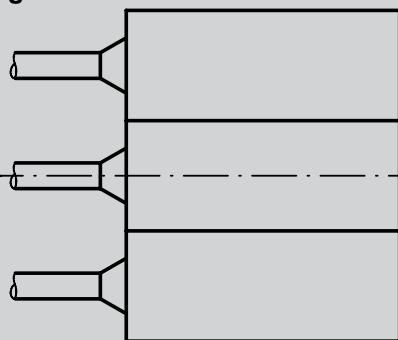
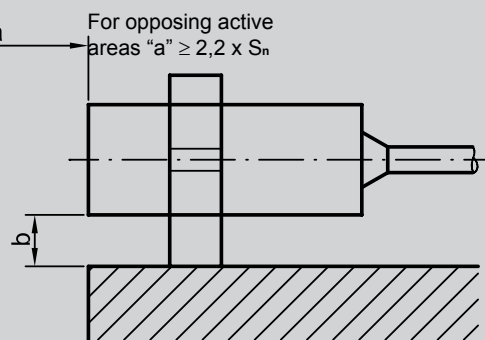


Fig.4



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

## MOUNTING

In order to prevent damage to the threaded sleeves when mounting, the material and version-dependent **maximum torque** should be taken into consideration. The values listed in the table are based on the use of the nuts supplied with the sensors.

Thread	Housing Material					
	PVC	PPO	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	1 Nm	0.2 Nm	15 Nm	15 Nm
M 18 x 1	-	3 Nm	1.7 Nm	0.5 Nm	28 Nm	40 Nm
M 22 x 1.5	12 Nm	10 Nm	6 Nm	1.4 Nm	32 Nm	50 Nm
M 30 x 1.5	-	8 Nm	8 Nm	2.5 Nm	82 Nm	150 Nm
M 32 x 1.5	-	13 Nm	13 Nm	3 Nm	110 Nm	180 Nm
G 1"	-	-	-	2,5 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	M 18 x 1	M 22 x 1.5	M 30 x 1.5	M 32 x 1.5
Maximum length	3 mm	6 mm	8 mm	12 mm	12 mm	12 mm	12 mm

## TECHNICAL TERMS

Unless otherwise specified technical data is as follows: +20 °C,  
 $U_B = 8 \text{ V DC}$  for KAS-40;  $U_B = 24 \text{ V DC}$  for KAS-70 and KAS-80 and  $U_B = 230 \text{ V AC}$  for KAS-90.

*Operating sensing distance /  $S_a$*

Within the operating sensing distance the sensor operates reliably taking into 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  $-5\text{ }^{\circ}\text{C}$ . 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.

### *Minimum sensing distance / $S_{min}$*

The minimum possible sensing distance, which can be adjusted by potentiometer and which can be used effectively in practical applications with reference to a medium with  $\epsilon_r \geq 80$ .

### *Maximum sensing distance / $S_{max}$*

The maximum possible sensing distance, which can be adjusted by potentiometer and which can be used effectively in practical applications with reference to a medium with  $\epsilon_r \geq 80$ . The sensors should only be used under constant ambient conditions, such as constant temperature, no humidity, and no deposits on the active face of the sensor.

### *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  $+20\text{ }^{\circ}\text{C}$  and rated voltage. Here the series variance is taken into consideration. Variation max.  $10\% \pm$  of  $S_n$ .

### *Reduction factors*

For materials other than metals (e.g. FE 360 or ST 37, Al, Cu) or water, the reduction factors shown in the table on page 6 should be taken into consideration.

### *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  $S_n$ .

### *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.

### *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: Level control in a container with non flush mountable sensors**



**Fig. 2: Glue line detection with flush mountable sensors**



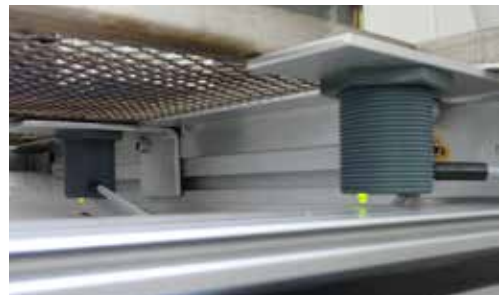
**Fig. 3 to 5:  
Level control of granules, powder or bulk material**



**Fig. 6: Level control or road salt**



**Fig. 7: Position control**



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## SERIES

The **series 40** contains capacitive 2-wire proximity signal generators according to NAMUR DIN 60947-5-6, also StEx-Versions for use in zone 20 (dust explosion protection). These sensors can be mounted in explosion hazardous areas when they are connected to approved isolating switching amplifiers with intrinsically safe control circuit [EExia] or [EExib], our series N-132. Depending on the isolating switching amplifier selected the NAMUR-sensors of this series can be used up to zone 0 (StEx-Versions also for zone 20). The data specified in the certificate of conformity of the selected isolating switching amplifier must be taken into consideration. The 2-wire analog sensors of this series can also be used in zone 0 if they are connected to an ATEX-certificated amplifier, such as our series N-132.

The transistor amplifier of our **series 120** has been designed especially for use with our **capacitive NAMUR mini-sensors** (e.g. *KAS-40-6/15-N*, *KAS-40-A11-N*, *KAS-40-18/5-N*). All sensors according to NAMUR are connectable (provided that the cable diameter corresponds to the connector), our *series IAS-30...* and *KAS-40...* The sensing distance is adjustable by means of a potentiometer, this also applies to capacitive sensors that have no adjustment on the body. The antivalent outputs (NO and NC function) are overload protected and are available as pnp or npn output. The strong PA 6.6 housing may be mounted with additional units side by side and is equipped with a two-colour LED display that monitors stand-by (green) operating condition (yellow). Sensor and amplifier may be connected by a plug contact (female connector is enclosed).

The **series 70** contains capacitive 3-wire or 4-wire proximity sensors with NPN digital output with NO, NC or antivalent function (NO and NC). Electronic circuits, PLC's, relays and our power supplies of series 130 can be activated directly. The sensors are reverse-polarity protected, overload-protected and have electronic short-circuit protection. StEx-versions with ATEX and IECEx certification for applications in zone 20, sensors for ambient temperatures up to +100 °C or for products with very high static charge complete the scope of the standard versions.

The **series 80** contains capacitive 3-wire or 4-wire proximity sensors with PNP digital output with NO, NC or antivalent function (NO and NC). Electronic circuits, PLC's, relays and our power supplies of series 130 can be activated directly. The sensors are reverse-polarity protected, overload-protected and have electronic short-circuit protection. StEx-versions with ATEX and IECEx certification for applications in zone 20, sensors for ambient temperatures up to +100 °C or for products with very high static charge complete the scope of the standard versions.

The **series 2000 quattro<sup>+3</sup>** contains capacitive 3-wire DC proximity sensors with **four output-functions**, **NPN-NO** and **PNP-NC** or, after resetting of the coding switch, **NPN-NC** and **PNP-NO**. Electronic circuits, PLC's and relays can be directly activated. Different housing materials are available, such as PA or PPO, PTFE, PTFE / brass or PTFE / VA. This series is completed by a version for medium temperatures up to **+160 °C**.

The **series 90** contains capacitive 2-wire AC / DC proximity sensors with thyristor digital output or FET-stage with NO and NC function. AC relays, conductors and solenoid valves can be directly activated. PLCs with AC inputs can also be connected so long as the minimum load current is taken into consideration. The sensors have a protective circuit against high induction voltages.

The **series 1000 duo<sup>-2</sup>** contains capacitive 2-wire a.c.-d.c. proximity sensors with NO and NC-function. The supply voltage range of 20...250 V AC / DC allows for applications in electronic circuits, PLC's as well as for conductors with AC supply voltage. The output functions (NO or NC) can be determined by means of a coding switch.



## SERIES

For increased requirements for the permitted ambient temperature range of our capacitive proximity sensors, we offer the series **up to +100 °C** with integrated electronics as a 3-Wire DC version (see series 70 and 80). The sensors are available with housings made of PTFE, PTFE / VA or PTFE / brass.

Sensors with quattro+<sup>3</sup> are available for temperatures up to **+160 °C (medium)** (see series 2000). Here too housing materials of PTFE and VA are used as standard.

For extreme ambient or product-temperature conditions, our series 250 (see series 250) or “KXS-Extreme” are available with **high temperature sensors up to +250 °C** and remote electronics (please ask for the KXS catalogue). The sensors of our series 250 are integrated in PTFE or PTFE / VA housings. The FEP-coated sensor cable, in the lengths 2 m and 5 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 a LED. The sensing distance adjustment should be made at operating temperature. Here the maximum specified sensing distance and the temperature drive must be taken into consideration.



## CYLINDRICAL HOUSING

	Pages
Capacitive sensors M 8 to Ø 11 mm	16 - 18
Capacitive sensors M 12	19 - 25
Capacitive sensors M 18	26 - 34
Capacitive sensors Ø 20 mm to M 22	35 - 41
Capacitive sensors Ø 30 mm	42 - 45
Capacitive sensors M 30	46 - 53
Capacitive sensors M 32	54 - 69
Capacitive sensors Ø 34 mm to Ø 64 mm	70 - 74

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## Capacitive Sensors

### Series 80 - PNP



Housing M 8 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.1...2.5 mm adjustable with 270° potentiometer
- With flange connector M 8 x 1



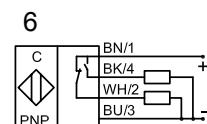
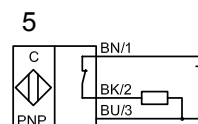
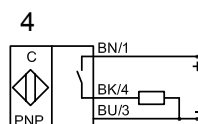
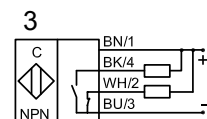
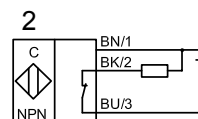
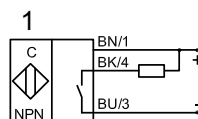
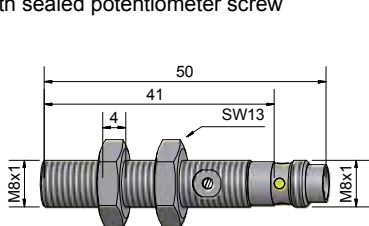
Certificate:

Technical data	Flush mountable
Operating distance $S_n$	1.5 mm
Operating distance min. / max. adjustable	0.1...2.5 mm
Electrical version	3 pin DC
Output function	Normally open
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A11-S-Y7</b>	
<b>Art.-No.</b>	
<b>KA 0736</b>	
Connection diagram No.	
4	
Operating voltage ( $U_B$ )	
10...35 V DC	
Output current max. ( $I_o$ )	
150 mA	
Voltage drop max. ( $U_d$ )	
≤ 2.0 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	
Yellow	
Protective circuit	
Built-in	
Degree of protection IEC 60529	
IP 67*	
Norm	
EN 60947-5-2	
Connection	
Flange connector M 8 x 1	
Housing material	
VA No. 1.4305	
Active surface	
PTFE (FDA 21 CFR 177.1550)	
Lid	
-	

**Accessories** (is delivered with the sensor) 2 pieces nuts M 8

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

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## Capacitive Sensors

### Series 80 - PNP



Housing M 8 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.5...4 mm adjustable with 270° potentiometer
- With flange connector M 8 x 1

Certificate:



#### Technical data

Non-flush mountable

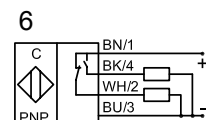
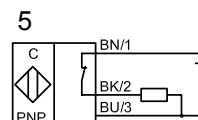
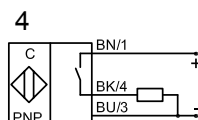
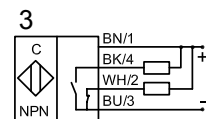
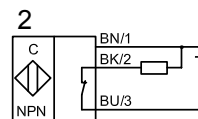
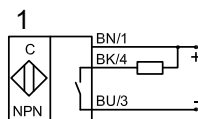
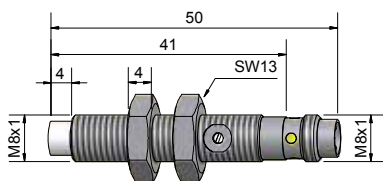
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0.5...4 mm
Electrical version	3 pin DC
Output function	Normally open
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A21-S-Y7</b>	
<b>Art.-No.</b>	
<b>800 130</b>	
Connection diagram No.	
4	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	150 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 8 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

#### Accessories (is delivered with the sensor)

2 pieces nuts M 8

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing Ø 11 mm

- Housing material: Brass
- Sensing distance 0.5...5 mm adjustable

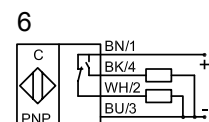
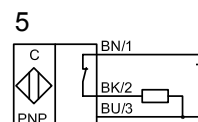
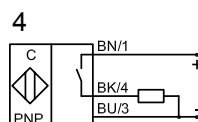
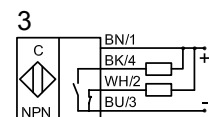
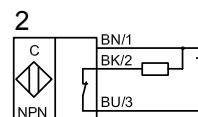
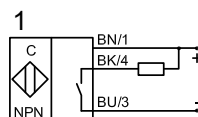
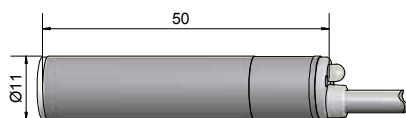


Certificate:

Technical data	Flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0.5...5 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-10-A</b>	
<b>Art.-No.</b>	
<b>KA 0045</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 4 x 0.14 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP



Housing M 12 x 1

- Housing material: Stainless steel VA
- Sensing distance 0...6 mm adjustable

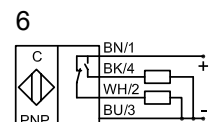
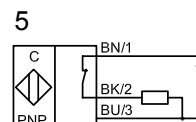
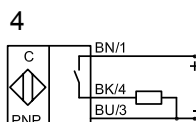
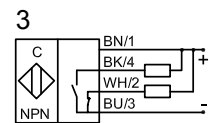
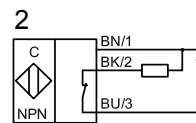
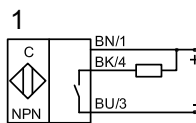
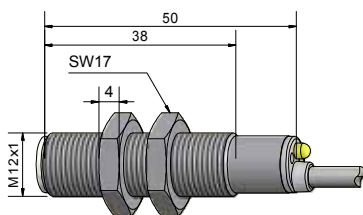
Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	2 mm	2 mm
Operating distance min. / max. adjustable	0...6 mm	0...6 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>		<b>KAS-70-A12-A</b>
<b>Art.-No.</b>		<b>700 150</b>
Connection diagram No.		3
<b>Type PNP</b>	<b>KAS-80-A12-S</b>	<b>KAS-80-A12-A</b>
<b>Art.-No.</b>	<b>800 200</b>	<b>800 150</b>
Connection diagram No.	4	6
Operating voltage ( $U_B$ )	10...35 V DC	10...35 V DC
Output current max. ( $I_e$ )	250 mA	2 x 250 mA
Voltage drop max. ( $U_d$ )	$\leq 2.0$ V	$\leq 2.0$ V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	500 Hz	500 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.14 mm <sup>2</sup>	2 m, PUR, 4 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 12	2 pieces nuts M 12

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



- Housing M 12 x 1
- Housing material: Stainless steel VA
  - Sensing distance 0...6 mm adjustable
  - With flange connector M 12 x 1

Certificate:

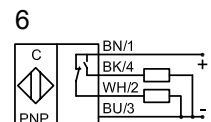
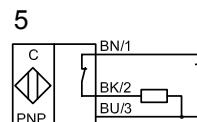
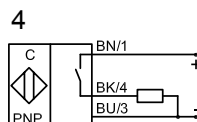
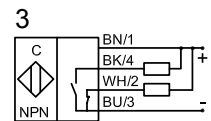
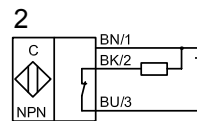
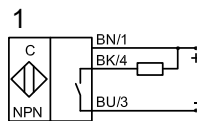
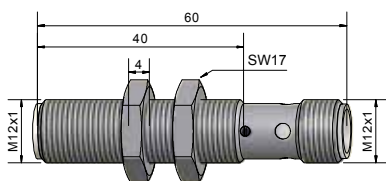


Technical data	Flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0...6 mm
Electrical version	4 pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A12-A-Y5</b>
<b>Art.-No.</b>	<b>700 724</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A12-A-Y5</b>
<b>Art.-No.</b>	<b>800 724</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes

**Accessories** (is delivered with the sensor) 2 pieces nuts M 12

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





**Capacitive Sensors with analogue output**  
**Series 80 - PNP**  
**Output current 4...20 mA**

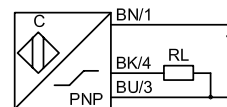
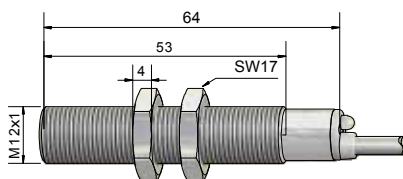
- Housing M 12 x 1
- Housing material: Brass
  - Operating range 0...5 mm

Certificate:



<b>Technical data</b>	Flush mountable
Operating range	0...5 mm
Linear range	0...3.5 mm
Electrical version	3-wire DC
Output function	Analogue
<b>Type Analogue PNP</b>	<b>KAS-80-A12-IL</b>
<b>Art.-No.</b>	<b>800 400</b>
Operating voltage ( $U_b$ )	15...30 V DC
Output current max. ( $I_o$ )	$\geq 20$ mA... $\leq 4$ mA
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	$\leq 40$ mA
Output current active surface free	$\geq 20$ mA
Output current active surface covered	$\leq 20$ mA... $\leq 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60 °C
LED-display	Yellow / green
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.14 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 12

\* With sealed potentiometer screw



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**Made in Germany**



## Capacitive Sensors

### Series 80 - PNP

Housing M 12 x 1

- Housing material: PTFE
- Applicable for detection of chemical aggressive media
- Also suitable for food applications
- Sensing distance 0...6 mm adjustable

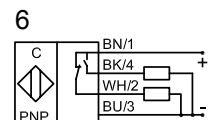
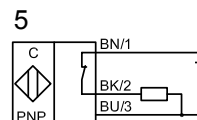
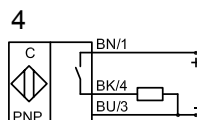
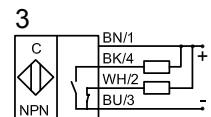
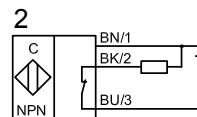
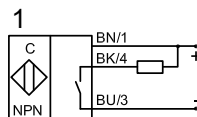
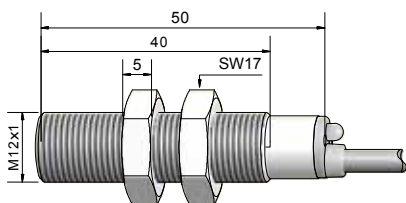


Certificate:



Technical data	Flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0...6 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A12-A-K-PTFE</b>	
<b>Art.-No.</b>	
<b>KA 0142</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	500 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 4 x 0.14 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 12	

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP



Housing M 12 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.5...10 mm adjustable

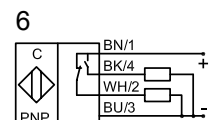
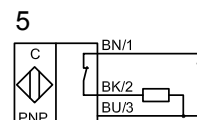
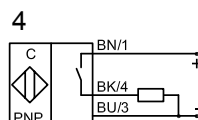
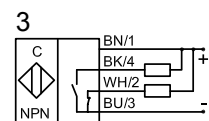
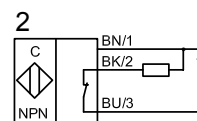
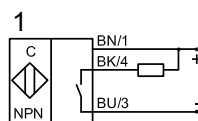
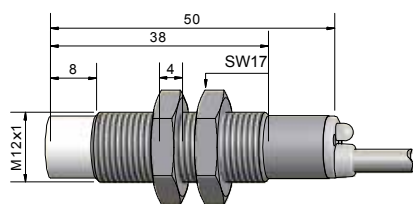
Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	4 mm	4 mm
Operating distance min. / max. adjustable	0.5...10 mm	0.5...10 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>		<b>KAS-70-A22-A</b>
<b>Art.-No.</b>		<b>700 735</b>
Connection diagram No.		3
<b>Type PNP</b>	<b>KAS-80-A22-S</b>	<b>KAS-80-A22-A</b>
<b>Art.-No.</b>	<b>800 750</b>	<b>800 735</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.14 mm <sup>2</sup>	2 m, PUR, 4 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 12	2 pieces nuts M 12

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

### Series 80 - PNP

Housing M 12 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.5...10 mm adjustable
- With flange connector M 12 x 1

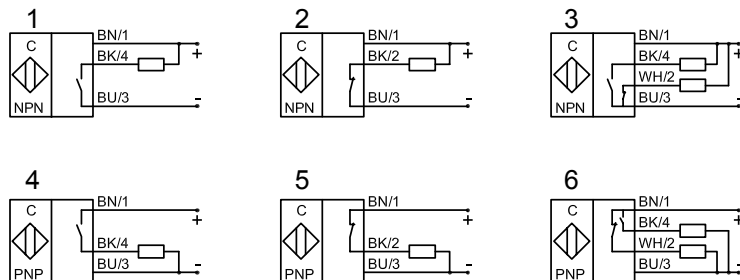
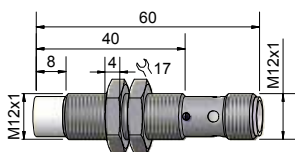


Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	4 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A22-A-Y5</b>	
<b>Art.-No.</b>	
<b>800 736</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	
2 pieces nuts M 12	
For matching connectors please see our selection of accessories.	

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing M 12 x 1

- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also suitable for food applications
- Sensing distance 0.5...10 mm adjustable

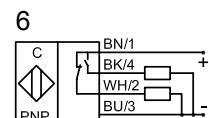
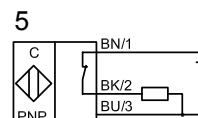
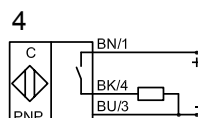
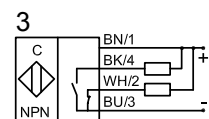
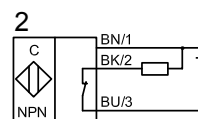
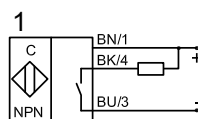
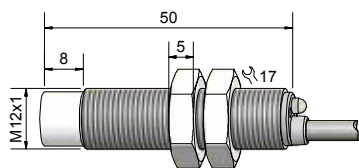
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	4 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A22-A-K-PTFE</b>	
<b>Art.-No.</b>	
<b>800 745</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 4 x 0.14 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 12	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors Series 80 - PNP



Housing M 18 x 1

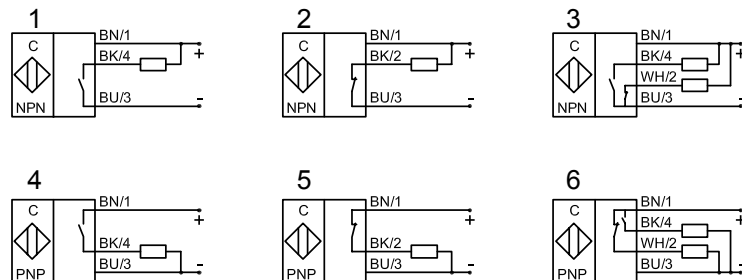
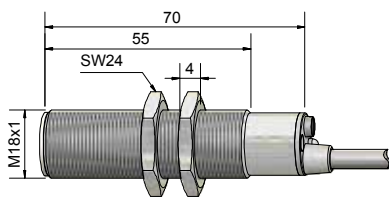
- Housing material: Brass
- Sensing distance 0.5...10 mm adjustable

Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	5 mm	5 mm
Operating distance min. / max. adjustable	0.5...10 mm	0.5...10 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>		
<b>Art.-No.</b>		
Connection diagram No.		
<b>Type PNP</b>	<b>KAS-80-A13-S</b>	<b>KAS-80-A13-A</b>
<b>Art.-No.</b>	<b>801 200</b>	<b>800 800</b>
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
Voltage drop max. ( $U_d$ )	≤ 2,0 V	≤ 2,0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	300 Hz	300 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0,34 mm <sup>2</sup>	2 m, PVC, 4 x 0,34 mm <sup>2</sup>
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)		
	2 pieces nuts M 18	2 pieces nuts M 18

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing M 18 x 1

- Housing material: Brass
- Sensing distance 0.5...10 mm adjustable
- With flange connector M 12 x 1

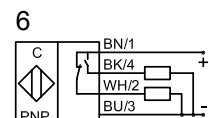
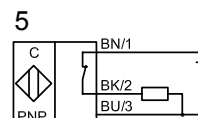
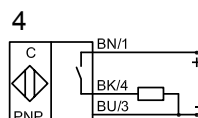
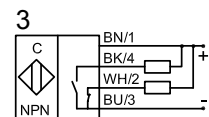
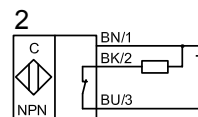
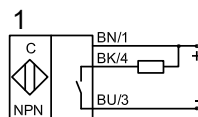
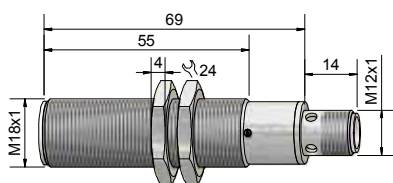
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A13-A-Y5</b>	
<b>Art.-No.</b>	
<b>801 981</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2,0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	300 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 18	
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw





## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



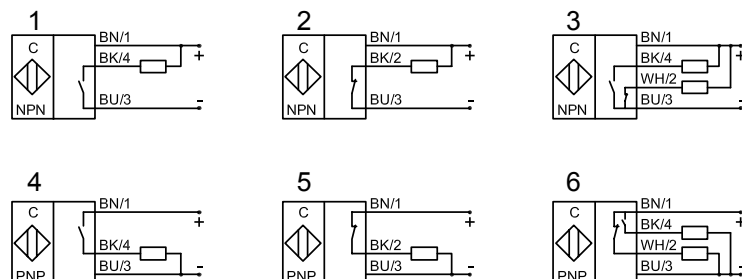
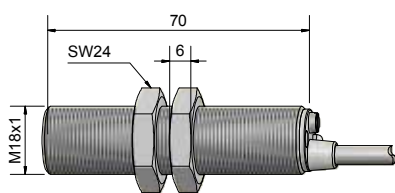
- Housing M 18 x 1
- Housing material: PA / PPO
  - Sensing distance 0.5...10 mm adjustable

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A13-A-K</b>
<b>Art.-No.</b>	<b>701 000</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A13-A-K</b>
<b>Art.-No.</b>	<b>801 000</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	300 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	<b>2 pieces nuts M 18</b>

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Serie 90 - AC / DC

Housing M 18 x 1

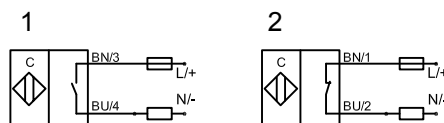
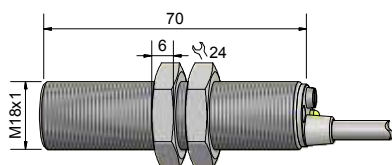
- Housing material: PA / PPO
- Sensing distance 1...10 mm adjustable

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	1...10 mm
Electrical version	2-wire AC / DC
Output function	Normally open
<b>Type</b>	<b>KAS-90-A13-S</b>
<b>Art.-No.</b>	<b>900 100</b>
Connection diagram No.	1
Operating voltage ( $U_b$ )	20...250 V AC / DC
Output current max. ( $I_o$ )	250 mA
Load current min.	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 18

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

### Series 80 - PNP



Housing M 18 x 1

- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Ideal for use in food applications
- Sensing distance 0.5...10 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE - protection set Art.-No. 196305

Certificate:



#### Technical data

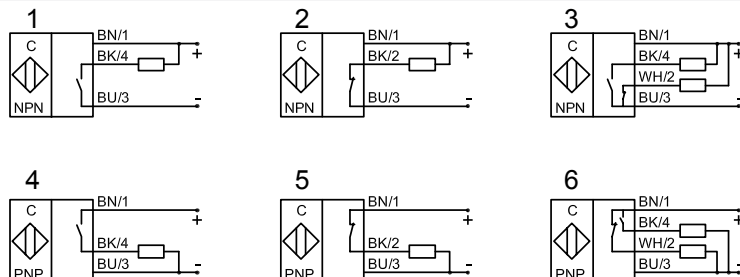
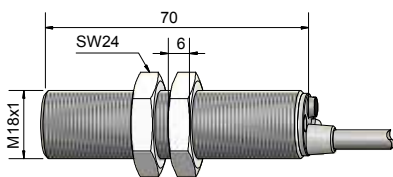
Flush mountable

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A13-A-K-PTFE</b>	
<b>Art.-No.</b>	
<b>801 020</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	300 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

**Accessories** (is delivered with the sensor)

2 pieces nuts M 18

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing M 18 x 1

- Housing material: Brass
- Sensing distance 0.5...15 mm adjustable

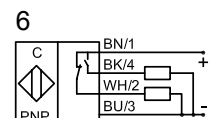
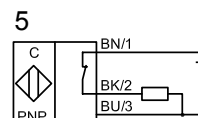
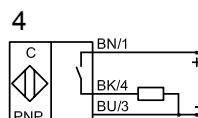
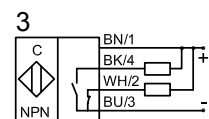
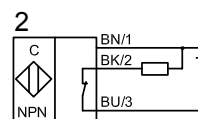
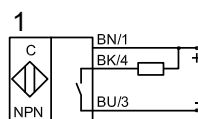
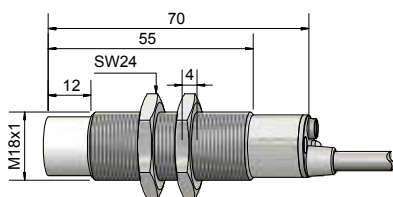
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	0.5...15 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A23-A</b>	
<b>Art.-No.</b>	
<b>803 200</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 18	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw





## Capacitive Sensors Series 80 - PNP



Housing M 18 x 1

- Housing material: Brass
- Sensing distance 0.5... 15 mm adjustable
- With flange connector M 12 x 1



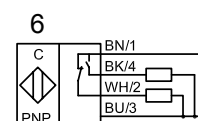
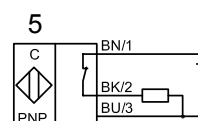
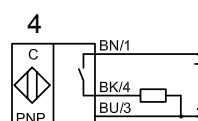
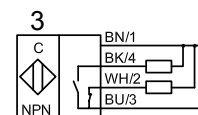
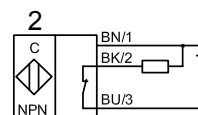
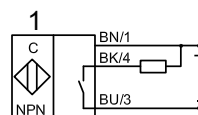
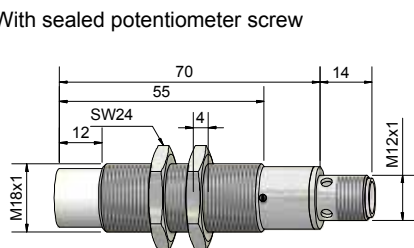
Certificate:

Technical data	Non-flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	0.5...15 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A23-A-Y5</b>	
<b>Art.-No.</b>	
<b>804 091</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes

**Accessories** (is delivered with the sensor) 2 pieces nuts M 18

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 90 - AC / DC

Housing M 18 x 1

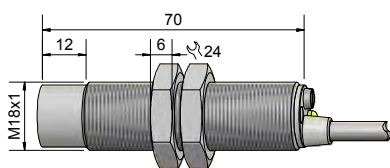
- Housing material: PA / PPO
- Sensing distance 0.5...12 mm adjustable

Certificate:

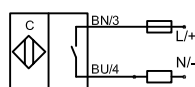


Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	8 mm	8 mm
Operating distance min. / max. adjustable	0.5...12 mm	0.5...12 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open	Normally closed
<b>Type</b>	<b>KAS-90-A23-S</b>	<b>KAS-90-A23-Ö</b>
<b>Art.-No.</b>	<b>900 300</b>	<b>900 400</b>
Connection diagram No.	1	2
Operating voltage ( $U_b$ )	20...250 V AC / DC	20...250 V AC / DC
Output current max. ( $I_o$ )	250 mA	250 mA
Load current min.	5 mA	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 18	2 pieces nuts M 18

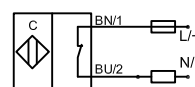
\* With sealed potentiometer screw



1



2





## Capacitive Sensors Series 80 - PNP



Housing M 18 x 1

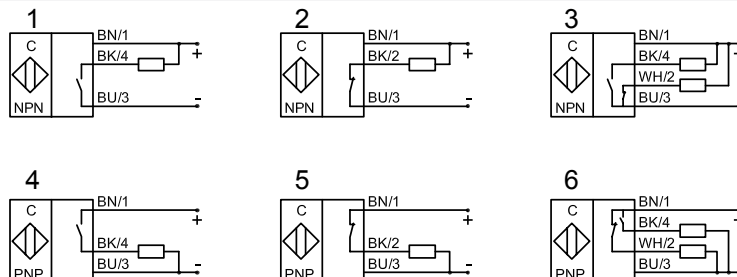
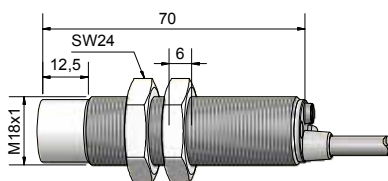
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Ideal for use in food applications
- Sensing distance 0.5...15 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE - protection set Art.-No. 196305

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	0.5...15 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	<b>KAS-80-A23-A-K-PTFE</b>
<b>Art.-No.</b>	<b>803 561</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 18

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing Ø 20 mm

- Housing material: PA / PPO
- Sensing distance 0.5...20 mm adjustable

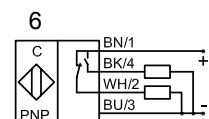
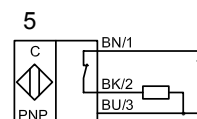
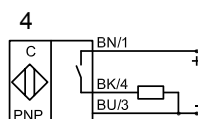
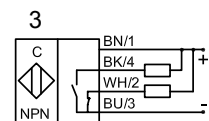
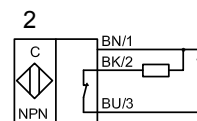
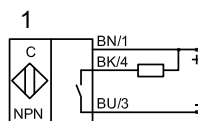
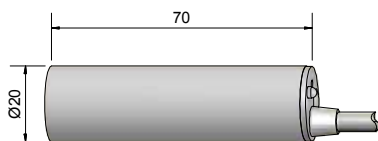
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	12 mm
Operating distance min. / max. adjustable	0.5...20 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-23-A</b>	
<b>Art.-No.</b>	
<b>812 800</b>	
Connection diagram No.	
<b>6</b>	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

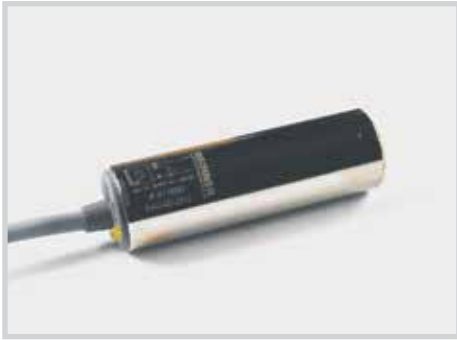
**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



- Housing Ø 22 mm
- Housing material: Brass
  - Sensing distance 0.5...15 mm adjustable

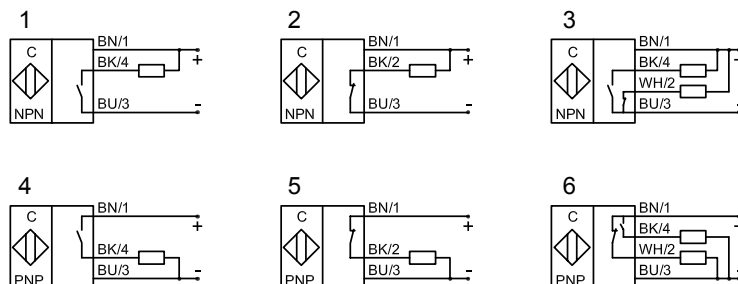
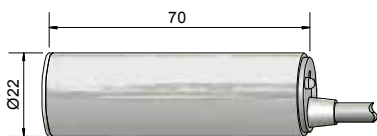
Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	8 mm	8 mm
Operating distance min. / max. adjustable	0.5...15 mm	0.5...15 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>		
<b>Art.-No.</b>		
Connection diagram No.		
<b>Type PNP</b>	<b>KAS-80-20-S</b>	<b>KAS-80-20-A</b>
<b>Art.-No.</b>	<b>811 800</b>	<b>811 600</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	300 Hz	300 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.34 mm <sup>2</sup>	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





**Capacitive Sensors with analogue output**  
**Series 80 - PNP**  
**Output current 4...20 mA**

- Housing Ø 22 mm
- Housing material: Brass
  - Operating range 0...10 mm

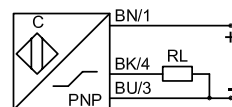
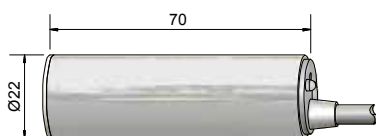
Certificate:



Technical data	Flush mountable
Operating range	0...10 mm
Linear range	0...7 mm
Electrical version	3-wire DC
Output function	Analogue
<b>Type Analogue PNP</b>	<b>KAS-80-20-IL</b>
<b>Art.-No.</b>	<b>812 200</b>
Operating voltage ( $U_B$ )	15...30 V DC
Output current max. ( $I_o$ )	$\geq 20 \text{ mA} \dots \leq 4 \text{ mA}$
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	$\leq 40 \text{ mA}$
Output current active surface free	$\geq 20 \text{ mA}$
Output current active surface covered	$\leq 20 \text{ mA} \dots \leq 4 \text{ mA}$
Load resistor	$R_L = 0...300 \text{ Ohm}$
Permitted ambient temperature	0...+60 °C
LED-display	Yellow / green
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.34 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Assessors</b> for mounting (is not delivered with the sensor) please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



**Made in Germany**



## Capacitive Sensors Series 90 - AC / DC

Housing Ø 22 mm

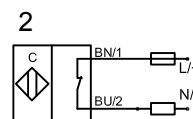
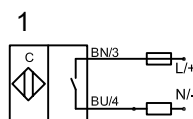
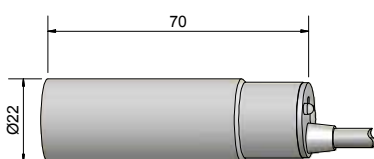
- Housing material: PA / PPO
- Sensing distance 2...8 mm adjustable

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	6 mm
Operating distance min. / max. adjustable	2...8 mm
Electrical version	2-wire AC / DC
Output function	Normally closed
<b>Type</b>	<b>KAS-90-20-Ö</b>
<b>Art.-No.</b>	<b>901 200</b>
Connection diagram No.	2
Operating voltage ( $U_B$ )	20...250 V AC / DC
Output current max. ( $I_e$ )	250 mA
Load current min.	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
<b>Assessors</b> for mounting (is not delivered with the sensor) please see our selection of accessories.	

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors Series 80 - PNP



Housing M 22 x 1.5

- Housing material: Brass
- Sensing distance 0.5...15 mm adjustable

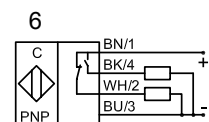
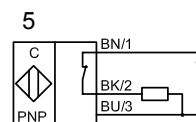
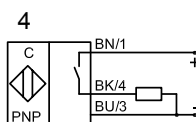
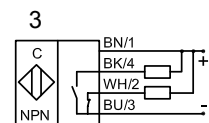
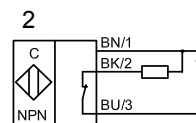
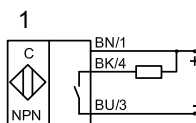
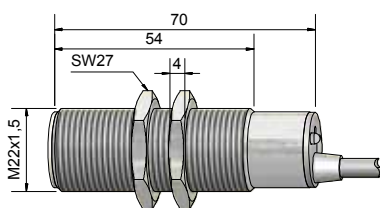
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	0.5...15 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-20-A-M22</b>	
<b>Art.-No.</b>	
<b>KA 0272</b>	
Connection diagram No.	
<b>6</b>	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10%
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	300 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 22	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



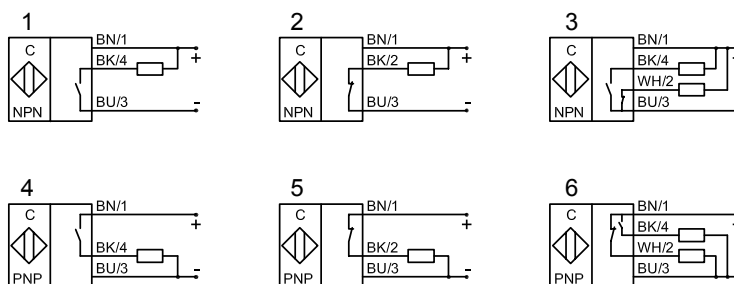
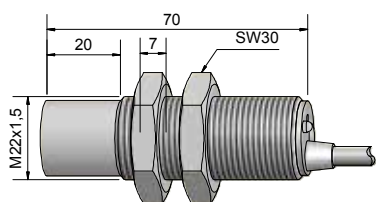
- Housing M 22 x 1.5
- Housing material: PA / PPO
  - Sensing distance 0.5...20 mm adjustable

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	12 mm	12 mm
Operating distance min. / max. adjustable	0.5...20 mm	0.5...20 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>	<b>KAS-70-23-S-M22</b>	
<b>Art.-No.</b>	<b>713 600</b>	
Connection diagram No.	1	
<b>Type PNP</b>	<b>KAS-80-23-S-M22</b>	<b>KAS-80-23-A-M22</b>
<b>Art.-No.</b>	<b>813 600</b>	<b>813 400</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.34 mm <sup>2</sup>	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 22	2 pieces nuts M 22

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP



Housing M 22 x 1.5

- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also suitable for food applications
- Sensing distance 0.5...20 mm adjustable

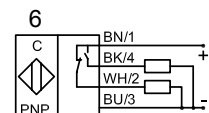
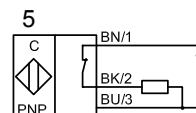
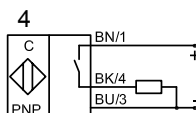
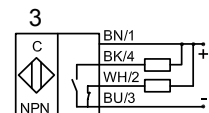
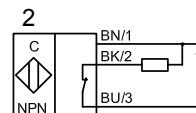
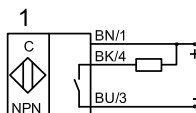
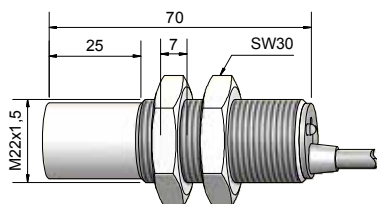
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	12 mm
Operating distance min. / max. adjustable	0.5...20 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-23-A-M22-PTFE</b>
<b>Art.-No.</b>	<b>712 900</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-23-A-M22-PTFE</b>
<b>Art.-No.</b>	<b>812 900</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 22

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



- Housing  $\varnothing$  30 mm
- Housing material: Brass
  - Sensing distance 0.5...30 mm adjustable

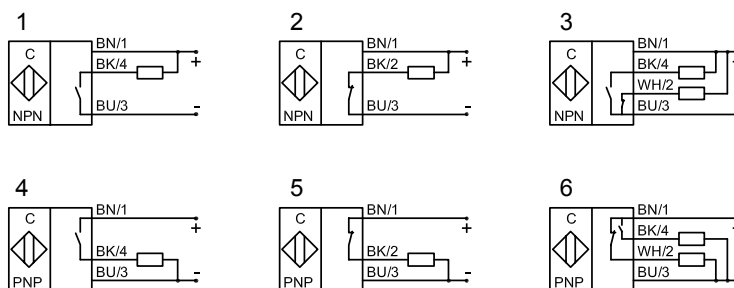
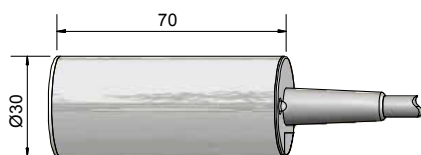
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-30-A</b>
<b>Art.-No.</b>	<b>714 200</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-30-A</b>
<b>Art.-No.</b>	<b>814 200</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	$\leq 2.0$ V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing Ø 30 mm

- Housing material: Brass
- Sensing distance 0.5...30 mm adjustable
- With flange connector M 12 x 1



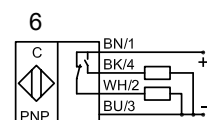
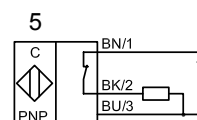
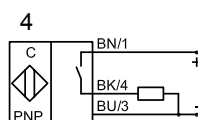
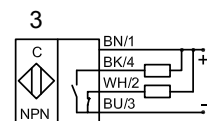
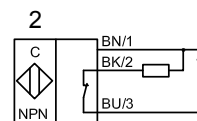
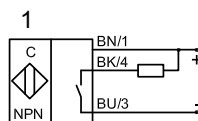
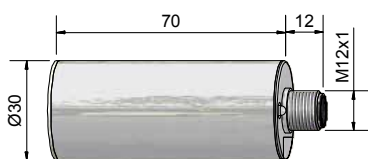
Certificate:

Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-30-A-Y5</b>	
<b>Art.-No.</b>	
<b>814 400</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing Ø 30 mm

- Housing material: PA / PPO
- Sensing distance 1...40 mm adjustable

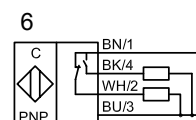
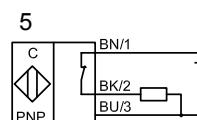
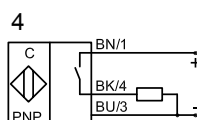
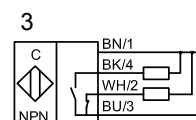
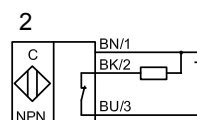
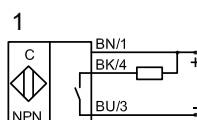
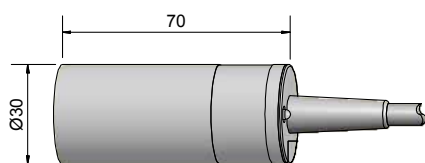


Certificate:

Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	3-wire DC
Output function	Normally open
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-S</b>	
<b>Art.-No.</b>	
<b>819 400</b>	
Connection diagram No.	
4	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Series 80 - PNP



- Housing  $\varnothing$  30 mm
- Housing material: PA / PPO
- Sensing distance 1...40 mm adjustable
- With flange connector M 12 x 1

Certificate:

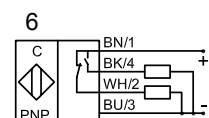
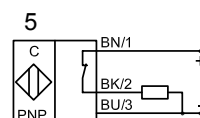
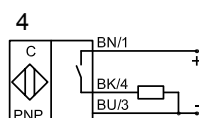
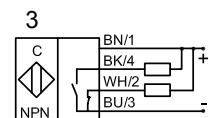
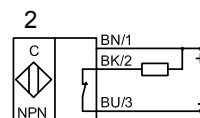
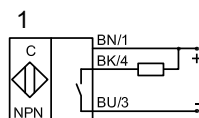
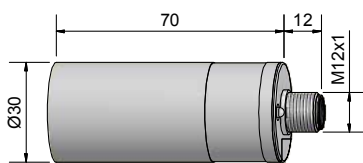


Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-A-Y5</b>	
<b>Art.-No.</b>	
<b>819 200</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	$\leq 2.0$ 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing M 30 x 1.5

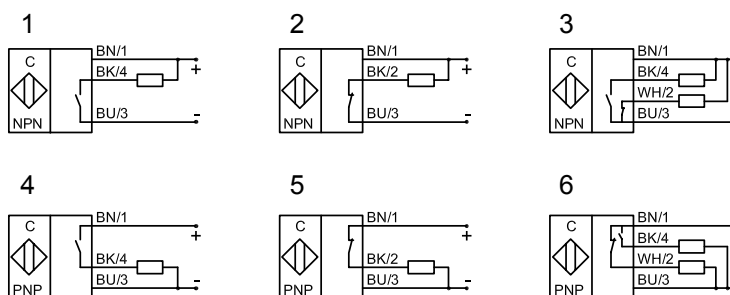
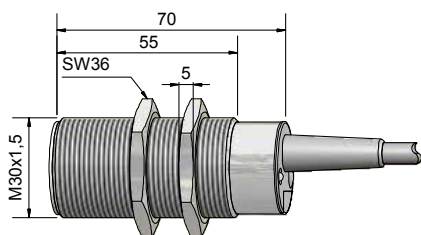
- Housing material: Brass
- Sensing distance 0,5...25 mm adjustable

Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	10 mm	10 mm
Operating distance min. / max. adjustable	0.5...25 mm	0.5...25 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>		
<b>Art.-No.</b>		
Connection diagram No.		
<b>Type PNP</b>	<b>KAS-80-A14-S</b>	<b>KAS-80-A14-A</b>
<b>Art.-No.</b>	<b>806 000</b>	<b>805 200</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	200 Hz	200 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)		
	2 pieces nuts M 30	2 pieces nuts M 30

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



Housing M 30 x 1.5

- Housing material: Brass
- Sensing distance 0,5...25 mm adjustable
- With flange connector M 12 x 1

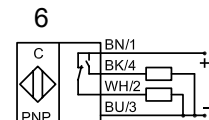
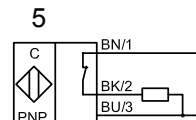
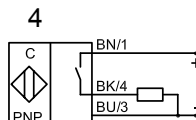
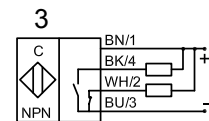
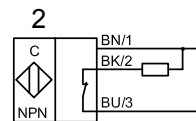
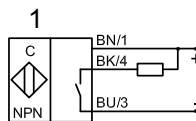
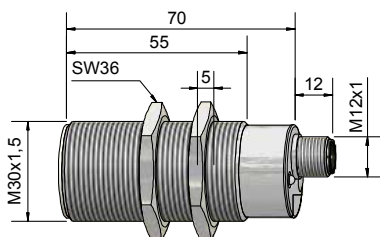
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	10 mm
Operating distance min. / max. adjustable	0.5...25 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A14-A-Y5</b>	
<b>Art.-No.</b>	
<b>805 400</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 30	
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors with analogue output Series 80 - PNP Output current 4...20 mA

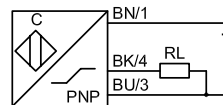
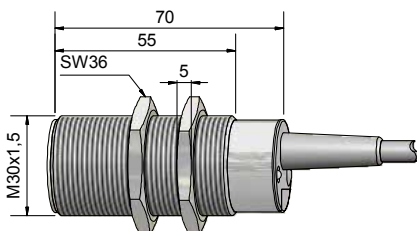
- Housing M 30 x 1.5
- Housing material: Brass
  - Operating range 0...20 mm



Certificate:

<b>Technical data</b>	Flush mountable
Operating range	0...20 mm
Linear range	0...14 mm
Electrical version	3-wire DC
Output function	Analogue
<b>Type Analogue PNP</b>	<b>KAS-80-A14-IL</b>
<b>Art.-No.</b>	<b>806 400</b>
Operating voltage ( $U_B$ )	15...30 V DC
Output current max. ( $I_o$ )	$\geq 20$ mA... $\leq 4$ mA
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	$\leq 40$ mA
Output current active surface free	$\geq 20$ mA
Output current active surface covered	$\leq 20$ mA... $\leq 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60 °C
LED-display	Yellow / green
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 30

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



Housing M 30 x 1.5

- Housing material: PA / PPO
- Sensing distance 0.5...25 mm adjustable

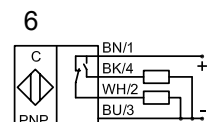
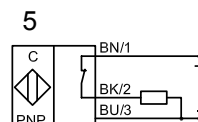
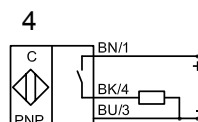
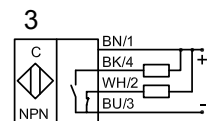
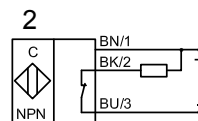
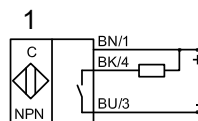
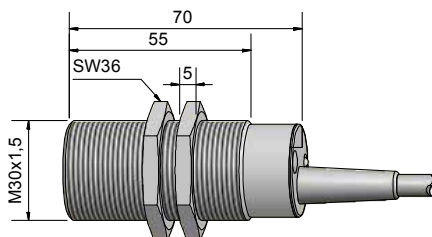
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	10 mm
Operating distance min. / max. adjustable	0.5...25 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A14-A-K</b>
<b>Art.-No.</b>	<b>705 600</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A14-A-K</b>
<b>Art.-No.</b>	<b>805 600</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	<b>2 pieces nuts M 30</b>

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



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## Capacitive Sensors Series 80 - PNP



Housing M 30 x 1.5

- Housing material: Brass
- Sensing distance 1...30 mm adjustable

Certificate:



### Technical data

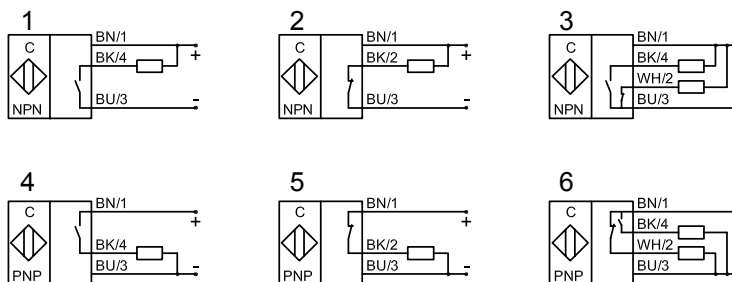
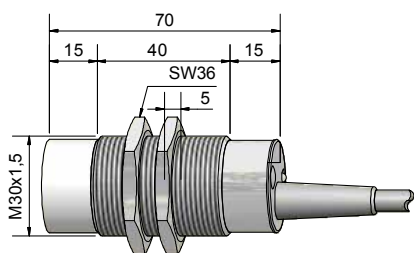
Non-flush mountable

Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	1...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	<b>KAS-80-A24-A</b>
<b>Art.-No.</b>	<b>808 000</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

**Accessories** (is delivered with the sensor)

2 pieces nuts M 30

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



Housing M 30 x 1.5

- Housing material: Brass
- Sensing distance 1...30 mm adjustable
- With flange connector M 12 x 1

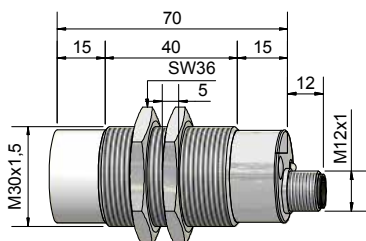
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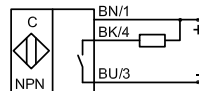
Technical data	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	1...30 mm
Electrical version	4- pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A24-A-Y5</b>
<b>Art.-No.</b>	<b>708 200</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A24-A-Y5</b>
<b>Art.-No.</b>	<b>808 200</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 30
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

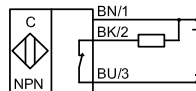
\* With sealed potentiometer screw



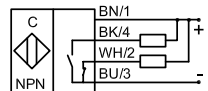
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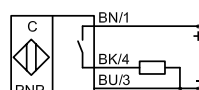
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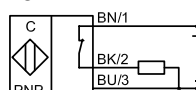
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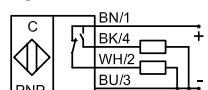
4



5



6



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## Capacitive Sensors Series 80 - PNP



Housing M 30 x 1.5

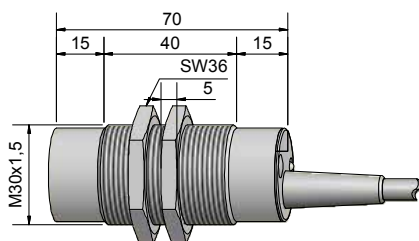
- Housing material: PA / PPO
- Sensing distance 1...30 mm adjustable

Certificate:

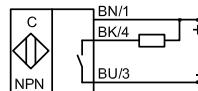


Technical data	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	1...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A24-A-K</b>	
<b>Art.-No.</b>	
<b>808 400</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	
2 pieces nuts M 30	

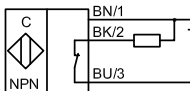
\* With sealed potentiometer screw



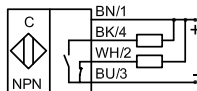
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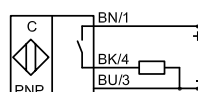
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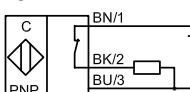
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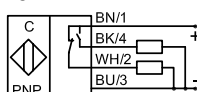
4



5



6



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Series 80 - PNP



Housing M 30 x 1.5

- Housing material: PA / PPO
- Sensing distance 1...30 mm adjustable
- With flange connector M 12 x 1

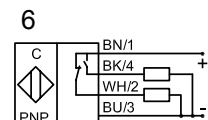
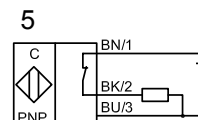
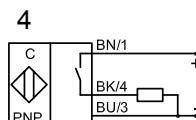
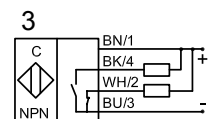
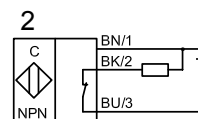
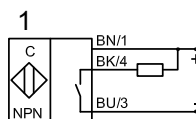
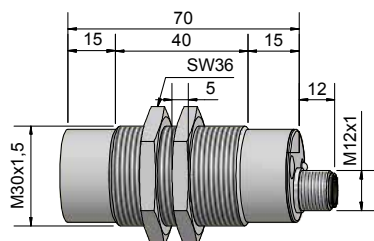
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	1...30 mm
Electrical version	4- pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A24-A-K-Y5</b>	
<b>Art.-No.</b>	
<b>808 600</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 30	
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



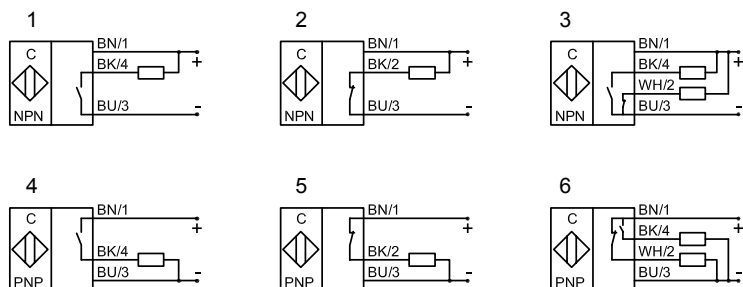
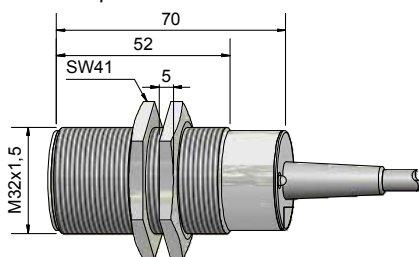
- Housing M 32 x 1.5
- Housing material: Brass
  - Sensing distance 0.5...30 mm adjustable

Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	20 mm	20 mm
Operating distance min. / max. adjustable	0.5...30 mm	0.5...30 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>	<b>KAS-70-30-S-M32</b>	<b>KAS-70-30-A-M32</b>
<b>Art.-No.</b>	<b>716 200</b>	<b>715 800</b>
Connection diagram No.	1	3
<b>Type PNP</b>	<b>KAS-80-30-S-M32</b>	<b>KAS-80-30-A-M32</b>
<b>Art.-No.</b>	<b>816 200</b>	<b>815 800</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10%	10%
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	200 Hz	200 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



Housing M 32 x 1.5

- Housing material: Brass
- Sensing distance 0.5...30 mm adjustable
- With flange connector M 12 x 1

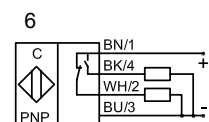
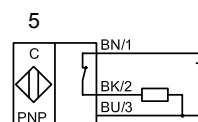
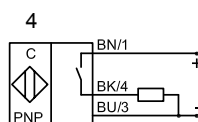
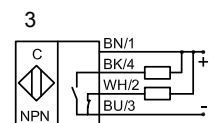
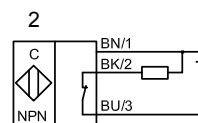
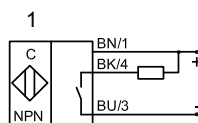
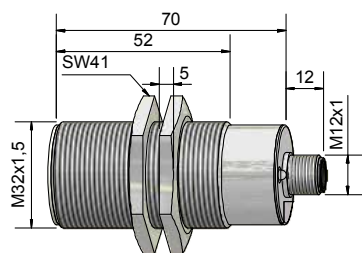
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-30-A-M32-Y5</b>
<b>Art.-No.</b>	<b>716 000</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-30-A-M32-Y5</b>
<b>Art.-No.</b>	<b>816 000</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	<b>2 pieces nuts M 32</b>
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors with analogue output Series 80 - PNP Output current 4...20 mA

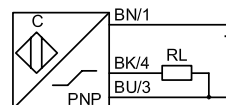
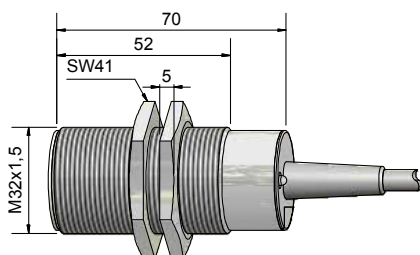
- Housing M 32 x 1.5
- Housing material: Brass
  - Operating range 0...30 mm



Certificate:

<b>Technical data</b>	Flush mountable
Operating range	0...30 mm
Linear range	0...20 mm
Electrical version	3-wire DC
Output function	Analogue
<b>Type Analogue PNP</b>	<b>KAS-80-30-IL-M32</b>
<b>Art.-No.</b>	<b>816 600</b>
Operating voltage ( $U_B$ )	15...30 V DC
Output current max. ( $I_o$ )	$\geq 20$ mA... $\leq 4$ mA
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	$\leq 40$ mA
Output current active surface free	$\geq 20$ mA
Output current active surface covered	$\leq 20$ mA... $\leq 4$ mA
Load resistor	$R_L = 0...300$ Ohm
Permitted ambient temperature	0...+60 °C
LED-display	Yellow / green
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 2000 - **quattro**<sup>3</sup>

Housing M 32 x 1.5

- Housing material: Brass
- Sensing distance 2...25 mm adjustable
- Multifunction sensor: NPN / PNP;  
NO / NC function switchable

Certificate:

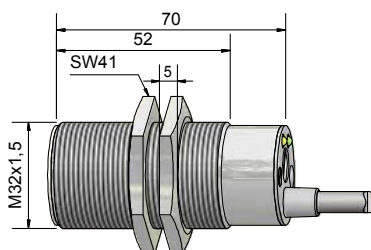


Quattro<sup>3</sup>Protect™

Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	2...25 mm
Electrical version	3-wire DC
Output function	NO / NC switchable
<b>Type NPN / PNP switchable</b>	<b>KAS-2000-30-M32</b>
<b>Art.-No.</b>	<b>770 600</b>
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	400 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories (is delivered with the sensor)</b>	<b>2 pieces nuts M 32</b>

\* With sealed potentiometer screw

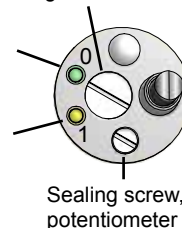
All specifications are subject to change without notice. (06/2014)



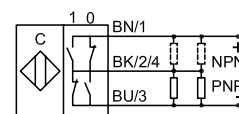
Sealing screw, change-over switch

LED green  
standby

LED yellow  
operating state



Sealing screw,  
potentiometer



Made in Germany



## Capacitive Sensors Series 2000 - **quattro**<sup>3</sup>

Housing M 32 x 1.5

- Housing material: Brass
- Sensing distance 2...25 mm adjustable
- Multifunction sensor: NPN / PNP;  
NO / NC function switchable
- With flange connector M 12 x 1

Certificate:



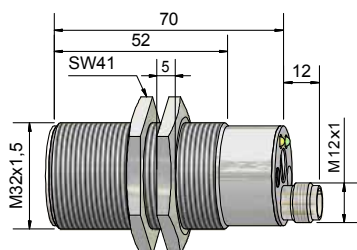
Quattro<sup>Exc</sup>Protect™

Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	2...25 mm
Electrical version	3-pin DC
Output function	NO / NC switchable
<b>Type NPN / PNP switchable</b>	<b>KAS-2000-30-M32-Y3</b>
<b>Art.-No.</b>	<b>770 603</b>
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_e$ )	400 mA
Voltage drop max. ( $U_g$ )	≤ 2.0 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	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

**Accessories** (is delivered with the sensor) 2 pieces nuts M 32

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw

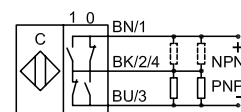


Sealing screw, change-over switch

LED green  
standby

LED yellow  
operating state

Sealing screw,  
potentiometer



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 90 - AC / DC

Housing M 32 x 1.5

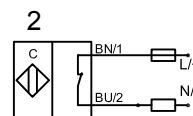
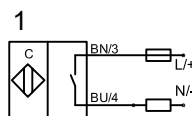
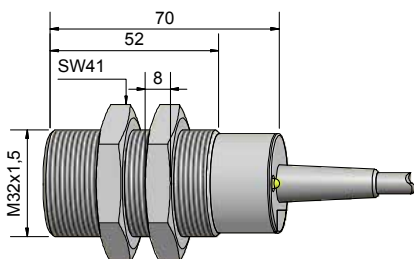
- Housing material: PA / PPO
- Sensing distance 2...20 mm adjustable

Certificate:



Technical data	Flush mountable	Flush mountable
Operating distance $S_n$	15 mm	15 mm
Operating distance min. / max. adjustable	2...20 mm	2...20 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open	Normally closed
<b>Type</b>	<b>KAS-90-30-S-M32</b>	<b>KAS-90-30-Ö-M32</b>
<b>Art.-No.</b>	<b>901 800</b>	<b>901 900</b>
Connection diagram No.	1	2
Operating voltage ( $U_B$ )	20...250 V AC / DC	20...250 V AC / DC
Output current max. ( $I_e$ )	330 mA (ETL = 250 mA)	330 mA (ETL = 250 mA)
Load current min.	5 mA	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 2 x 0.75 mm <sup>2</sup>	2 m, PVC, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany





## Capacitive Sensors Series 80 - PNP



Housing M 32 x 1.5

- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also ideal for food applications
- Sensing distance 0.5...30 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE- protection set Art.-No. 196301

Certificate:

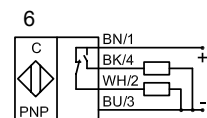
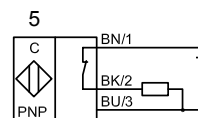
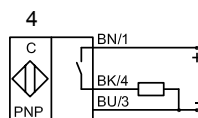
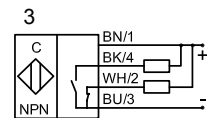
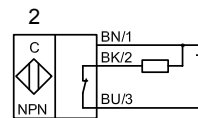
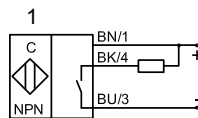
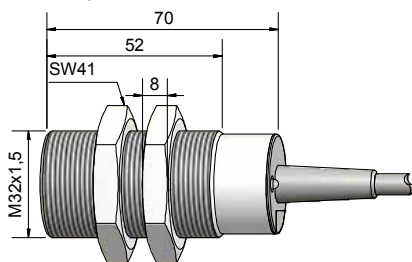


### Technical data

Flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	<b>KAS-80-30-A-K-M32-PTFE</b>
<b>Art.-No.</b>	<b>815 830</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.50 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Series 90 - AC / DC

Housing M 32 x 1.5

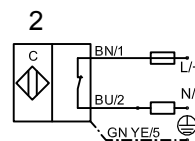
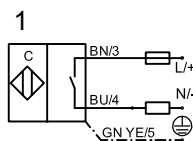
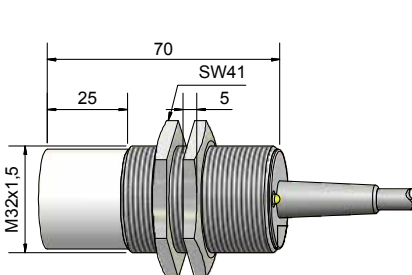
- Housing material: Brass
- Sensing distance 3...25 mm adjustable

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	20 mm	20 mm
Operating distance min. / max. adjustable	3...25 mm	3...25 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open	Normally closed
<b>Type</b>	<b>KAS-90-34-S-M32-PTFE/Ms</b>	<b>KAS-90-34-Ö-M32-PTFE/Ms</b>
<b>Art.-No.</b>	<b>903 200</b>	<b>903 300</b>
Connection diagram No.	1	2
Operating voltage ( $U_b$ )	20...250 V AC / DC	20...250 V AC / DC
Output current max. ( $I_e$ )	330 mA (ETL = 250 mA)	330 mA (ETL = 250 mA)
Load current min.	5 mA	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>	2 m, PVC, 3 x 0.75 mm <sup>2</sup>
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



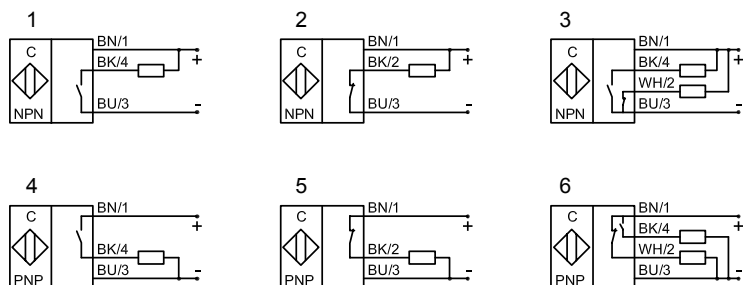
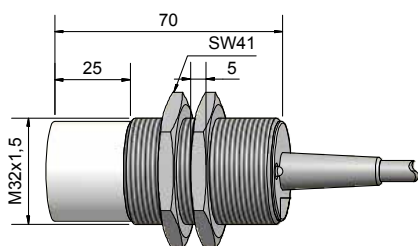
- Housing M 32 x 1.5
- Housing material: Stainless steel VA
  - Sensing distance 1...40 mm adjustable

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	25 mm	25 mm
Operating distance min. / max. adjustable	1...40 mm	1...40 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>	<b>KAS-70-34-S-M32-PTFE/V2A</b>	<b>KAS-70-34-A-M32-PTFE/V2A</b>
<b>Art.-No.</b>	<b>718 600</b>	<b>KA 0041</b>
Connection diagram No.	1	3
<b>Type PNP</b>	<b>KAS-80-34-S-M32-PTFE/V2A</b>	<b>KAS-80-34-A-M32-PTFE/V2A</b>
<b>Art.-No.</b>	<b>818 600</b>	<b>818 540</b>
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
Voltage drop max. ( $U_d$ )	≤ 2,0 V	≤ 2,0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>	2 m, PVC, 4 x 0.50 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP



Housing M 32 x 1.5

- Housing material: Stainless steel VA
- Sensing distance 1...40 mm adjustable
- With flange connector M 12 x 1

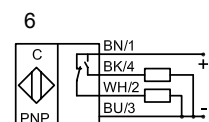
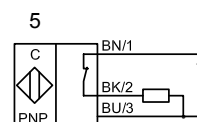
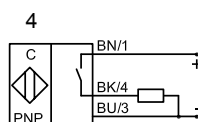
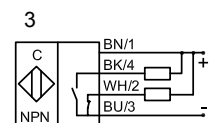
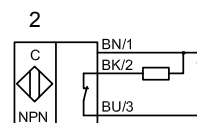
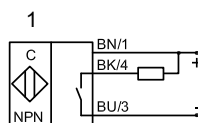
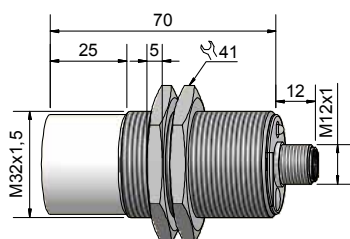
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-34-A-M32-PTFE/V2A-Y5</b>
<b>Art.-No.</b>	<b>718 555</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-34-A-M32-PTFE/V2A-Y5</b>
<b>Art.-No.</b>	<b>818 555</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	<b>2 pieces nuts M 32</b>
For matching connectors please see our selection of accessories.	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



**Made in Germany**



## Capacitive Sensors Series 2000 - **quattro**<sup>3</sup>

Housing M 32 x 1.5

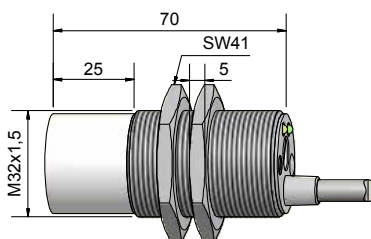
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable
- Multifunction sensor: NPN / PNP
- NO / NC function switchable

Certificate:



<b>Technical data</b>	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	3-wire DC
Output function	NO / NC switchable
<b>Type NPN / PNP switchable</b>	<b>KAS-2000-34-M32-PTFE/V2A</b>
<b>Art.-No.</b>	<b>771 000</b>
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	400 mA
Voltage drop max. ( $U_d$ )	≤ 2,0 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	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0,75 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32

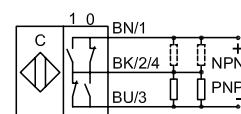
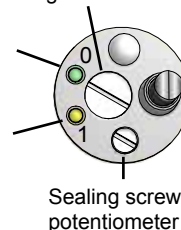
\* With sealed potentiometer screw



Sealing screw, change-over switch

LED green  
standby

LED yellow  
operating state



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP



Housing M 32 x 1.5

- Housing material: PA / PPO
- Sensing distance 1...40 mm adjustable

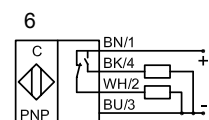
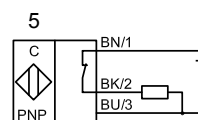
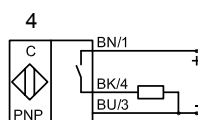
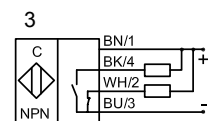
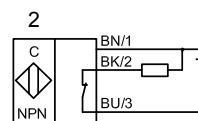
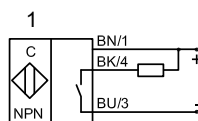
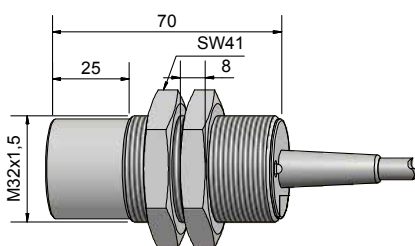
Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	25 mm	25 mm
Operating distance min. / max. adjustable	1...40 mm	1...40 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>	<b>KAS-70-35-S-M32</b>	<b>KAS-70-35-A-M32</b>
<b>Art.-No.</b>	<b>720 600</b>	<b>720 200</b>
Connection diagram No.	1	3
<b>Type PNP</b>	<b>KAS-80-35-S-M32</b>	<b>KAS-80-35-A-M32</b>
<b>Art.-No.</b>	<b>820 600</b>	<b>820 200</b>
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
Voltage drop max. ( $U_d$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



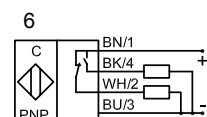
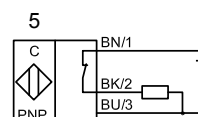
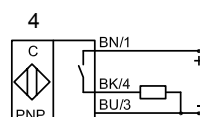
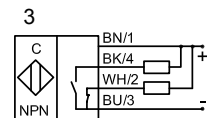
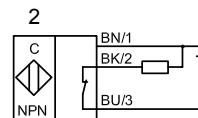
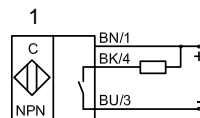
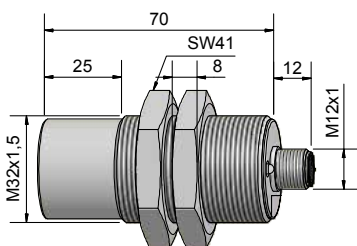
- Housing M 32 x 1.5
- Housing material: PA / PPO
  - Sensing distance 1...40 mm adjustable
  - With flange connector M 12 x 1

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-35-A-M32-Y5</b>
<b>Art.-No.</b>	<b>720 400</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-35-A-M32-Y5</b>
<b>Art.-No.</b>	<b>820 400</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the sensor)	<b>2 pieces nuts M 32</b>
For matching connectors please see our selection of accessories.	

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 2000 - **quattro**<sup>3</sup>

Housing M 32 x 1.5

- Housing material: PA / PPO
- Sensing distance 3...30 mm adjustable
- Multifunction sensor: NPN / PNP;  
NO / NC function switchable

Certificate:

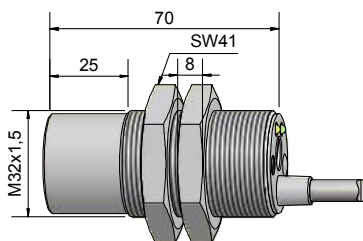


Quattro<sup>3</sup>Protect™

Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	3-wire DC
Output function	NO / NC switchable
<b>Type NPN / PNP switchable</b>	<b>KAS-2000-35-M32</b>
<b>Art.-No.</b>	<b>770 800</b>
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	400 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
<b>Accessories (is delivered with the sensor)</b>	<b>2 pieces nuts M 32</b>

\* With sealed potentiometer screw

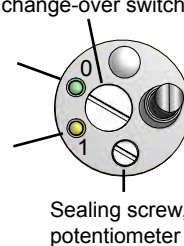
All specifications are subject to change without notice. (06/2014)



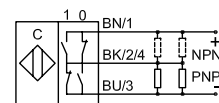
Sealing screw, change-over switch

LED green  
standby

LED yellow  
operating state



Sealing screw,  
potentiometer



Made in Germany



## Capacitive Sensors Series 90 - AC / DC

Housing M 32 x 1.5

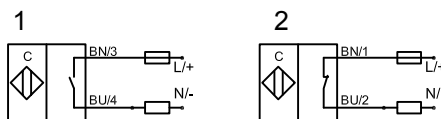
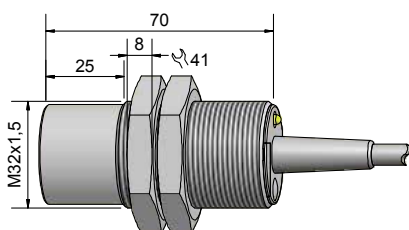
- Housing material: PA / PPO
- Sensing distance 3...25 mm adjustable

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	20 mm	20 mm
Operating distance min. / max. adjustable	3...25 mm	3...25 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open	Normally closed
<b>Type</b>	<b>KAS-90-32-S-M32</b>	<b>KAS-90-32-Ö-M32</b>
<b>Art.-No.</b>	<b>902 400</b>	<b>902 500</b>
Connection diagram No.	1	2
Operating voltage ( $U_B$ )	20...250 V AC/DC	20...250 V AC / DC
Output current max. ( $I_e$ )	330 mA (ETL = 250 mA)	330 mA (ETL = 250 mA)
Load current min.	5 mA	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 2 x 0.75 mm <sup>2</sup>	2 m, PVC, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
<b>Accessories</b> (is delivered with the sensor)	2 pieces nuts M 32	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Series 80 - PNP



Housing M 32 x 1.5

- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also suitable for food applications
- Sensing distance 1...40 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE- protection set Art.-No. 196301

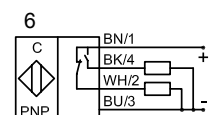
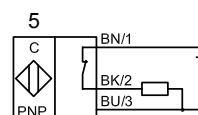
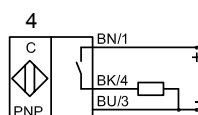
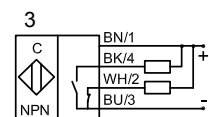
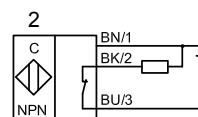
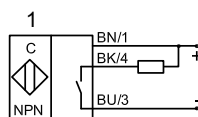
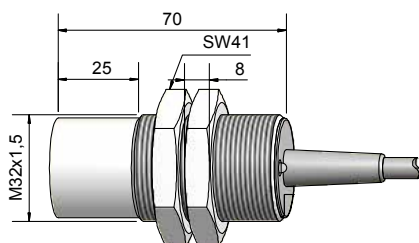
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-A-M32-PTFE</b>	
<b>Art.-No.</b>	
<b>820 300</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories (is delivered with the sensor)</b>	
2 pieces nuts M 32	

All specifications are subject to change without notice. (06/2014)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors Series 80 - PNP



- Housing  $\varnothing$  34 mm
- Housing material: PA / PPO
  - Sensing distance 0.5...30 mm adjustable

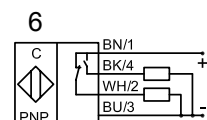
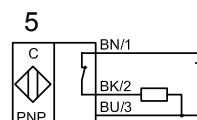
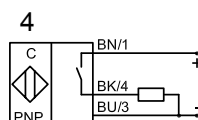
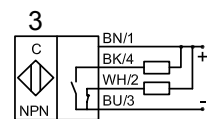
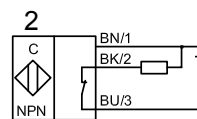
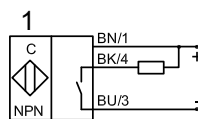
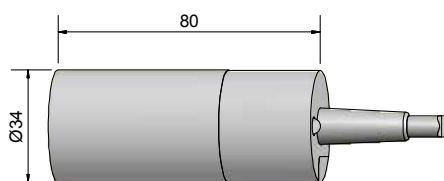
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-37-A</b>	
<b>Art.-No.</b>	
<b>824 500</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	$\leq 2.0$ V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	150 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

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## Capacitive Sensors Series 80 - PNP



- Housing Ø 34 mm
- Housing material: PA / PPO
  - Sensing distance 1...40 mm adjustable

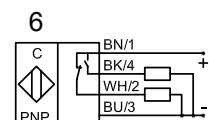
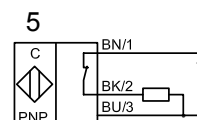
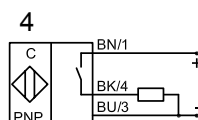
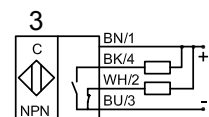
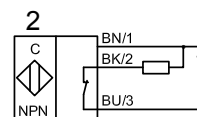
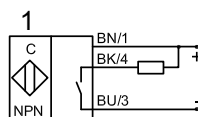
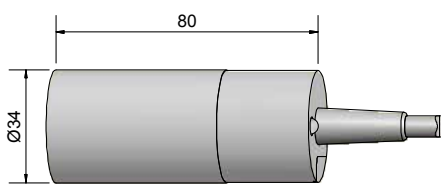
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-38-A</b>	
<b>Art.-No.</b>	
<b>825 300</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_0$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



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All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 90 - AC / DC

Housing Ø 34 mm

- Housing material: PA / PPO
- Sensing distance 3...30 mm adjustable

Certificate:

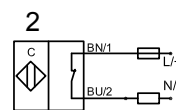
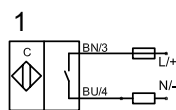
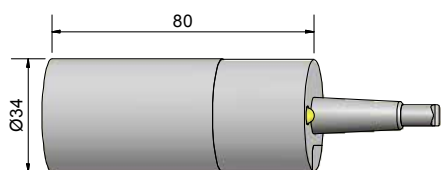


### Technical data

	Non-flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	2-wire AC / DC
Output function	Normally open
<b>Type</b>	<b>KAS-90-38-S</b>
<b>Art.-No.</b>	<b>904 000</b>
Connection diagram No.	1
Operating voltage ( $U_B$ )	20...250 V AC / DC
Output current max. ( $I_e$ )	330 mA (ETL = 250 mA)
Load current min.	5 mA
Voltage drop max. ( $U_d$ )	≤ 6 V
No-load current ( $I_o$ )	Typ. 2.5 mA
Frequency of operating cycles max.	25 Hz
Permitted ambient temperature	-25...+70 °C (ETL = +60 °C)
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP



- Housing Ø 50 mm
- Housing material: PA / PPO
- Sensing distance 1...50 mm adjustable
- With flange connector M 12 x 1

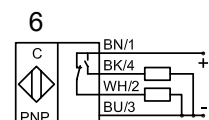
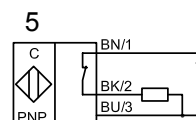
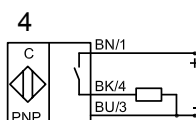
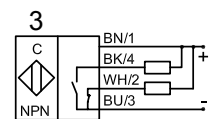
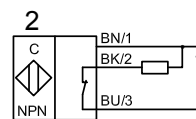
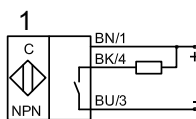
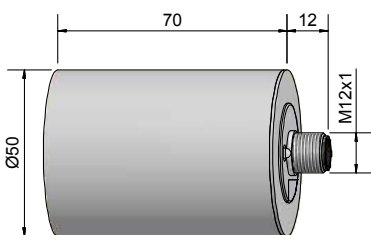
Certificate:



Technical data	Flush mountable
Operating distance $S_n$	30 mm
Operating distance min. / max. adjustable	1...50 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-50-A-Y5</b>	
<b>Art.-No.</b>	
<b>825 510</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	100 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



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## Capacitive Sensors Series 80 - PNP



- Housing  $\varnothing$  64 mm
- Housing material: PA / PPO
  - Sensing distance 5...70 mm adjustable

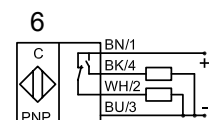
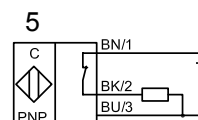
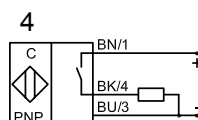
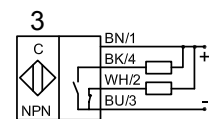
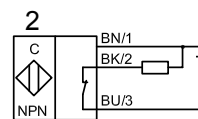
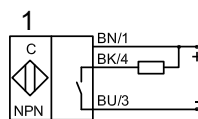
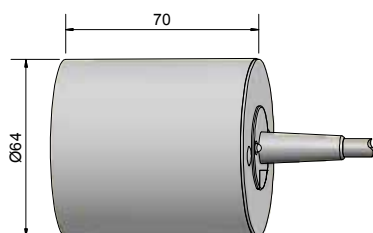
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	40 mm
Operating distance min. / max. adjustable	5...70 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-61-A</b>	
<b>Art.-No.</b>	
<b>828 100</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	$\leq 2.0$ 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)

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**SERIES 40 (NAMUR) • 70 / 80 • ATEX / IECEx**

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All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 NAMUR- StEx- ATEX

Housing M 30 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Sensing distance 2...20 mm adjustable

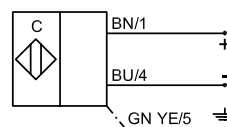
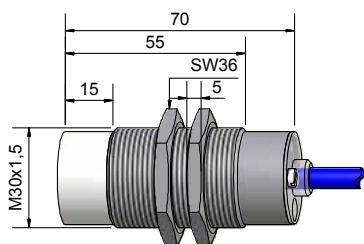
DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da



### Technical data

Operating distance $S_n$	Non-flush mountable 15 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-A24-N-StEx</b>
<b>Art.-No.</b>	<b>KA 0095</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection cable	3 m, PUR, 3 x 0.75 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 30

\* With sealed potentiometer screw



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## Capacitive Sensors Series 40 NAMUR- StEx- ATEX

Housing M 30 x 1.5

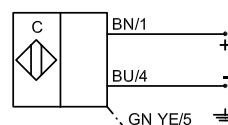
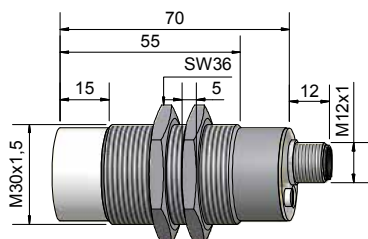
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Sensing distance 2...20 mm adjustable
- With flange connector M 12 x 1, 3-pin incl. protective wire pin

DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da



<b>Technical data</b>	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	2-pin DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-A24-N-Y10-StEx</b>
<b>Art.-No.</b>	<b>KA 0870</b>
Operating voltage ( $U_b$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 30, Protective clip
For matching connectors please see our selection of accessories.	

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors Series 40 NAMUR- StEx- ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Sensing distance 3...20 mm adjustable

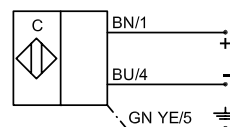
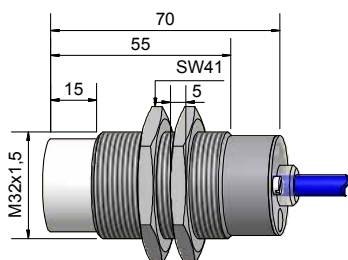
DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da



### Technical data

Operating distance $S_n$	Non-flush mountable 18 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-34-N-M32-StEx</b>
<b>Art.-No.</b>	<b>KA 0094</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection cable	3 m, PUR, 3 x 0.75 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 NAMUR- StEx- ATEX

Housing M 32 x 1.5

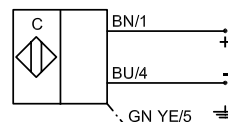
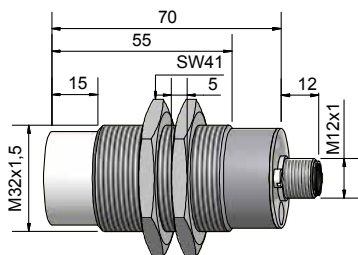
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Sensing distance 3...20 mm adjustable
- With flange connector M 12 x 1, 3-pin incl. protective wire pin

DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da



<b>Technical data</b>	Non-flush mountable
Operating distance $S_n$	18 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-pin DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-34-N-M32-Y10-StEx</b>
<b>Art.-No.</b>	<b>KA 0871</b>
Operating voltage ( $U_b$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32, Protective clip
For matching connectors please see our selection of accessories.	

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors Serie 40 - NAMUR - StEx - ATEX

Housing Ø 26 mm / G 1" / 40 mm

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 0...15 mm adjustable
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)

DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da

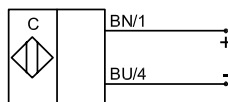
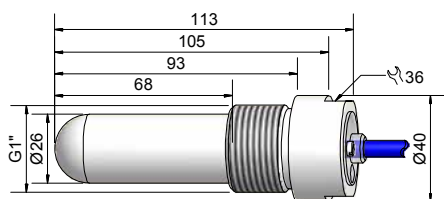


### Technical data

Non-flush mountable

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...15 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-26-N-K-G1"-PTFE-StEx</b>
<b>Art. No.</b>	<b>KA 0933</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 3 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	0...+70 °C / CIP 121 °C (zero-current)
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors Serie 40 - NAMUR - StEx - ATEX

Housing Ø 26 mm / G 1" / 40 mm

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 0...15 mm adjustable
- With flange, sealing can be made with a gasket or PTFE-tape (not supplied with the sensor).
- With flange connector M 12 x 1

DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga
Ex II 1D Ex ia IIIC T101°C Da	Ex ia IIIC T101°C Da



### Technical data

Non-flush mountable

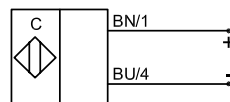
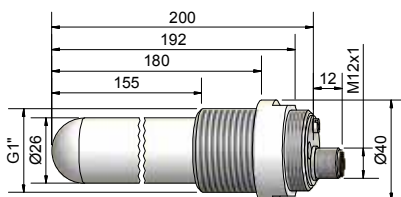
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...15 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-26-N-K-G1"-200-PTFE-Y5-StEx</b>
<b>Art. No.</b>	<b>KA 1231</b>
Operating voltage ( $U_b$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ 1.5 mA
Output current active surface covered	> typ. 3 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	0...+70 °C / CIP 121 °C (zero-current)
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)

**Accessories** (is delivered with the unit)

Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors

Series 70 - NPN - StEx- ATEX      Series 80 - PNP - StEx - ATEX

Housing M 30 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Sensing distance 3...25 mm adjustable

DMT 01 ATEX E 157	IECEX BVS 07.0015
II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>EX</sup>Protect™

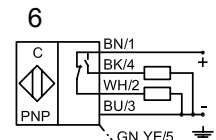
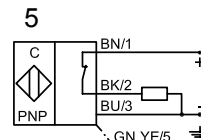
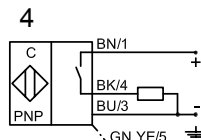
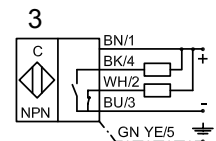
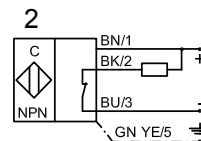
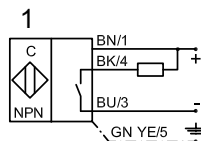
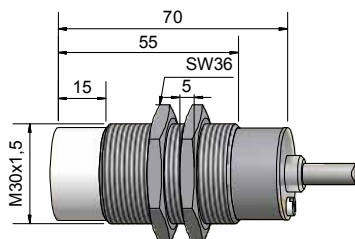
### Technical data

Operating distance $S_n$	Non-flush mountable 15 mm
Operating distance min. / max. adjustable	3...25 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A24-A-StEx</b>
<b>Art.-No.</b>	<b>KA 0085</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A24-A-StEx</b>
<b>Art.-No.</b>	<b>KA 0084</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 5 x 0.34 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

2 pieces nuts M 30

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors

Series 70 - NPN - StEx- ATEX      Series 80 - PNP - StEx - ATEX

Housing M 30 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- Sensing distance 3...25 mm adjustable
- With flange connector M 12 x 1, 5-pin incl. protective wire pin

DMT 01 ATEX E 157	IECEX BVS 07.0015
II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>Exc</sup>Protect™

### Technical data

Non-flush mountable

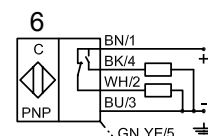
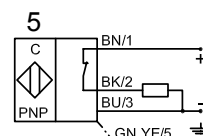
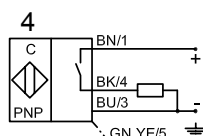
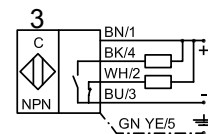
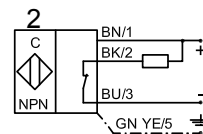
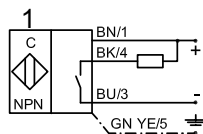
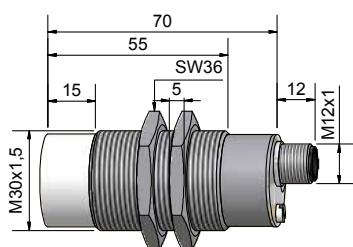
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	3...25 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-A24-A-Y10-StEx</b>
<b>Art.-No.</b>	<b>KA 0863</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-A24-A-Y10-StEx</b>
<b>Art.-No.</b>	<b>KA 0864</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

**Accessories** (is delivered with the unit)

2 pieces nuts M 30, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors

Series 70 - NPN - StEx- ATEX      Series 80 - PNP - StEx - ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Sensing distance 3...30 mm adjustable

DMT 01 ATEX E 157	IECEX BVS 07.0015
II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db

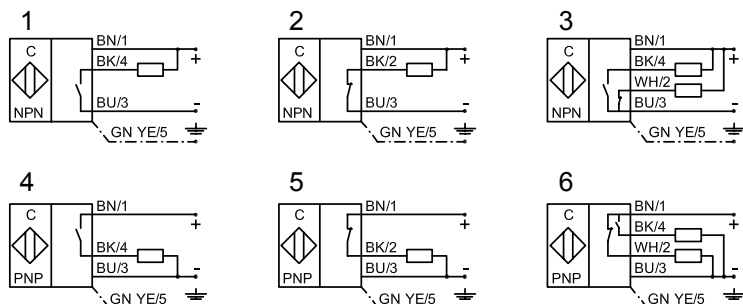
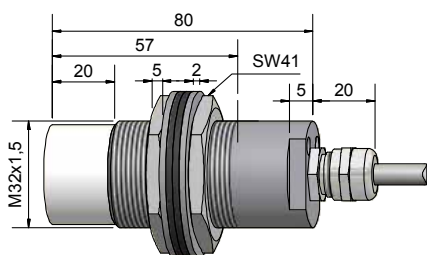


Quattro<sup>Exc</sup>Protect™

Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	20 mm	20 mm
Operating distance min./max. adjustable	3...30 mm	3...30 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open	Antivalent
<b>Type NPN</b>	<b>KAS-70-35-S-M32-StEx</b>	<b>KAS-70-35-A-M32-StEx</b>
<b>Art.-No.</b>	<b>KA 0090</b>	<b>KA 0089</b>
Connection diagram No.	1	3
<b>Type PNP</b>	<b>KAS-80-35-S-M32-StEx</b>	<b>KAS-80-35-A-M32-StEx</b>
<b>Art.-No.</b>	<b>KA 0087</b>	<b>KA 0086</b>
Connection diagram No.	4	6
Operating voltage ( $U_b$ )	10...30 V DC	10...30 V DC
Output current max. ( $I_o$ )	150 mA	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V	≤ 2.0 V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-20...+90 °C	-20...+90 °C
LED-display	Yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	3 m PVC, 4 x 0.75 mm <sup>2</sup>	3 m, PVC, 5 x 0.34 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	VA No. 1.4305	VA No. 1.4305
Media optimized	Yes	

**Accessories** (is delivered with the unit)      2 pieces nuts M 32, 2 pieces grommets, 2 pieces o-rings

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Sensing distance 3...30 mm adjustable

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>Exc</sup>Protect™

### Technical data

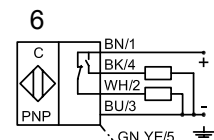
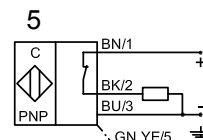
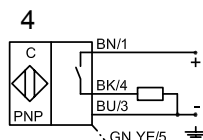
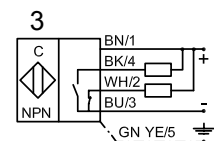
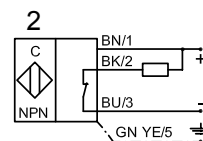
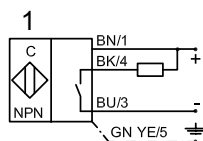
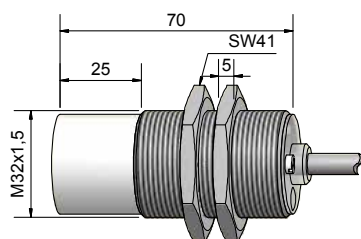
Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-34-A-M32-StEx</b>	
<b>Art.-No.</b>	
<b>KA 0356</b>	
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 5 x 0.34 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1, 5-pin incl. protective wire pin

DMT 01 ATEX E 157	IECEX BVS 07.0015
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



### Technical data

Non-flush mountable

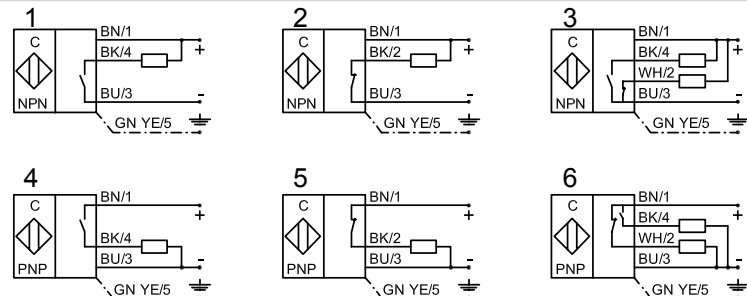
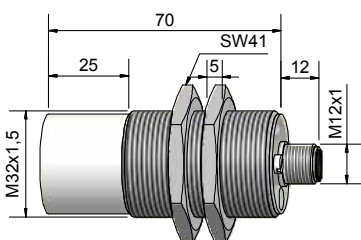
Operating distance $S_n$	20 mm
Operating distance min./max. adjustable	3...30 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-34-A-M32-Y10-StEx</b>	
<b>Art.-No.</b>	
<b>KA 0819</b>	
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

2 pieces nuts M 32, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: PTFE
- Sensing distance 3...30 mm adjustable

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



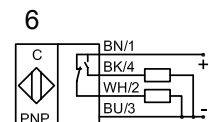
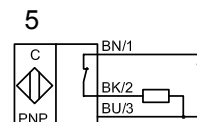
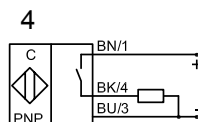
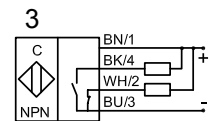
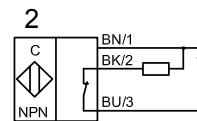
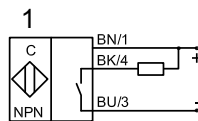
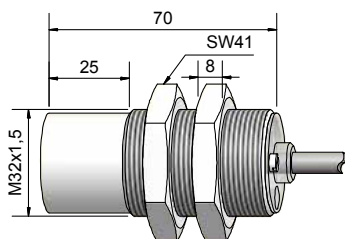
QuattroEtcProtect™

### Technical data

Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-A-K-M32-PTFE-StEx</b>	
<b>Art.-No.</b>	
<b>KA 0093</b>	
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



Made in Germany



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing M 32 x 1.5

- For use in areas with the risk of dust explosion, zone 20
- Housing material: PTFE
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1

DMT 01 ATEX E 157

IECEX BVS 07.0015

Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db

Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>Exc</sup>Protect™

### Technical data

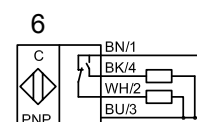
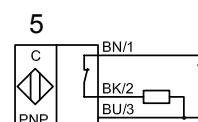
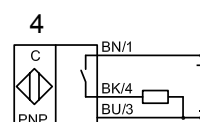
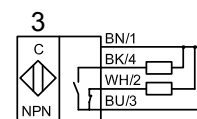
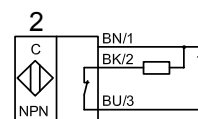
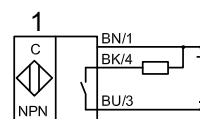
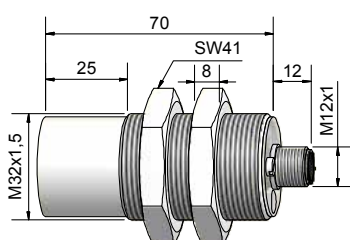
Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-A-K-M32-PTFE-Y5-StEx</b>	
<b>Art.-No. KA 0867</b>	
Connection diagram No. 6	
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

**Accessories** (is delivered with the unit) 2 pieces nuts M 32, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing G 1"

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Sensing distance 3...30 mm adjustable

DMT 01 ATEX E 157	IECEX BVS 07.0015
Ex II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>Exc</sup>Protect™

### Technical data

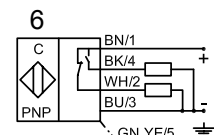
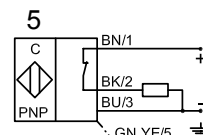
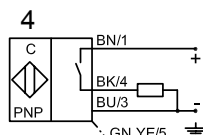
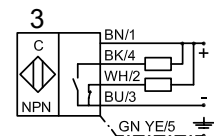
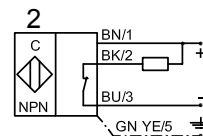
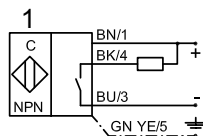
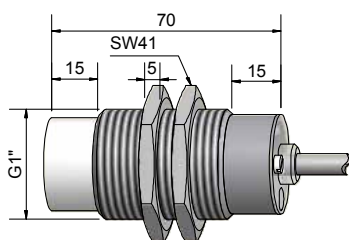
Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>Art.-No.</b>	
<b>KAS-80-34-A-G1"-StEx</b>	
<b>KA 0092</b>	
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 5 x 0.34 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

2 pieces nuts G 1"

\* With sealed potentiometer screw



Made in Germany





## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing G 1"

- For use in areas with the risk of dust explosion, zone 20
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1, 5-pin incl. protective wire pin

DMT 01 ATEX E 157

IECEX BVS 07.0015

Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db

Ex ta/tb IIIC T101°C Da/Db



Quattro<sup>Exc</sup>Protect™

### Technical data

Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-pin DC
Output function	Antivalent

### Type NPN

Art.-No.

Connection diagram No.

### Type PNP

KAS-80-34-A-G1"-Y10-StEx

Art.-No.

KA 0868

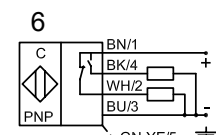
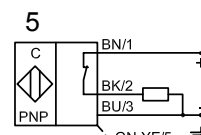
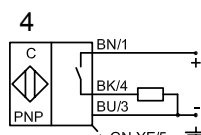
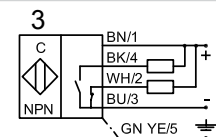
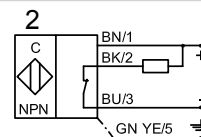
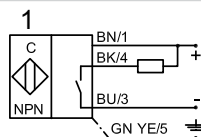
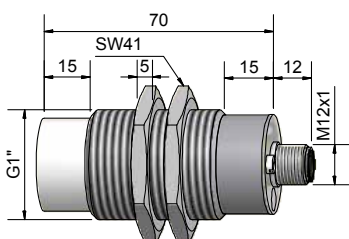
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	5 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

**Accessories** (is delivered with the unit)

2 pieces nuts G 1", Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

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## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing Tri-Clamp

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Sensing distance 3...30 mm adjustable
- Ideal for use in food applications

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



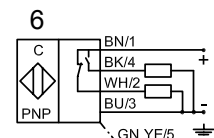
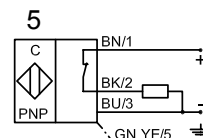
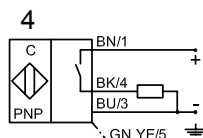
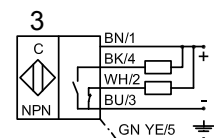
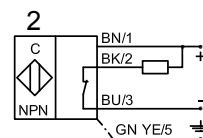
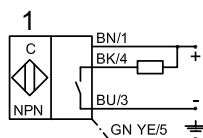
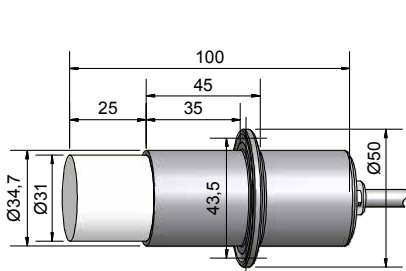
Quattro<sup>ESC</sup>Protect™

### Technical data

Non-flush mountable

Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	<b>KAS-80-34-35/100-A-PTFE/VA-StEx</b>
<b>Art.-No.</b>	<b>KA 0377</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+90 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	3 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	VA No. 1.4404
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 80 - PNP - StEx - ATEX

Housing Tri-Clamp

- For use in areas with the risk of dust explosion, zone 20
- Sensing distance 3...30 mm adjustable
- Ideal for use in food applications
- With flange connector M 12 x 1, 5-pin incl. protective wire pin

DMT 01 ATEX E 157	IECEX BVS 07.0015
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



### Technical data

Non-flush mountable

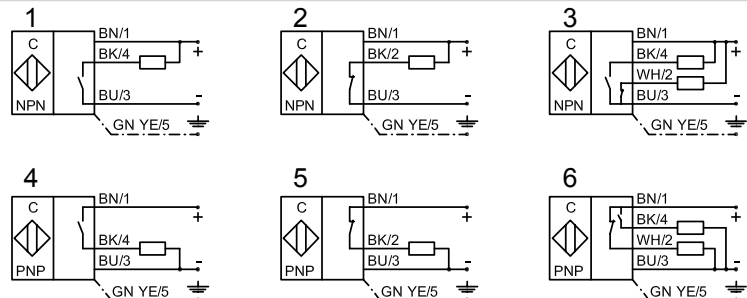
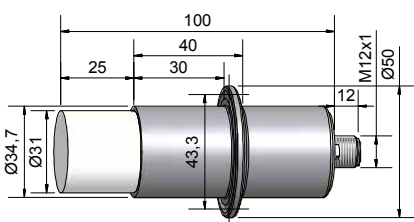
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-34-35/100-A-PTFE/VA-Y10-StEx</b>	
<b>Art.-No.</b>	
<b>KA 0869</b>	
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+90 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4404
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive sensors Series 70 - NPN - StEx - ATEX

Series 80 - PNP - StEx - ATEX

Housing Ø 26 mm / G 1" / 40 mm

- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material PTFE
- Sensing distance 0...20 mm adjustable
- Suitable for food and pharmaceutical applications
- With flange, sealing can be made with a gasket or PTFE-tape (not supplied with the sensor).

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2 G Ex mb IIC T4 Gb	Ex mb IIC T4 Gb
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



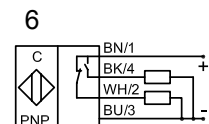
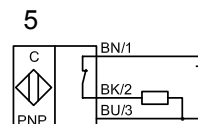
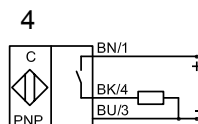
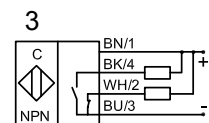
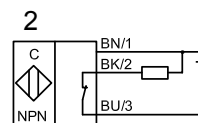
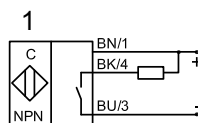
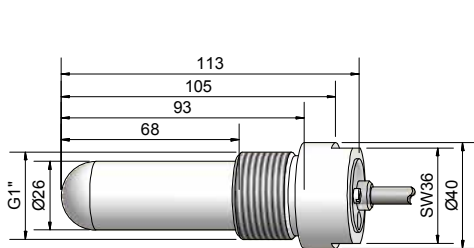
Quattro<sup>ETC</sup>Protect™

### Technical data

Non-flush mountable

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...20 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-26-A-K-G1"-PTFE-StEx</b>
<b>Art.-No.</b>	<b>KA 0824</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-26-A-K-G1"-PTFE-StEx</b>
<b>Art.-No.</b>	<b>KA 0264</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+90 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

\* With sealed potentiometer screw



Made in Germany



## Capacitive sensors Series 80 - PNP - StEx - ATEX

Housing Ø 26 mm / G 1" / 40 mm

- For use in areas with the risk of dust explosion, zone 20
- Housing material PTFE
- Sensing distance 0...20 mm adjustable
- Suitable for food and pharmaceutical applications
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)
- With flange connector m 12 x 1

DMT 01 ATEX E 157	IECEX BVS 07.0015
Ex II 1/2 D Ex ta/tb IIIC T101°C Da/Db	Ex ta/tb IIIC T101°C Da/Db



### Technical data

Non-flush mountable

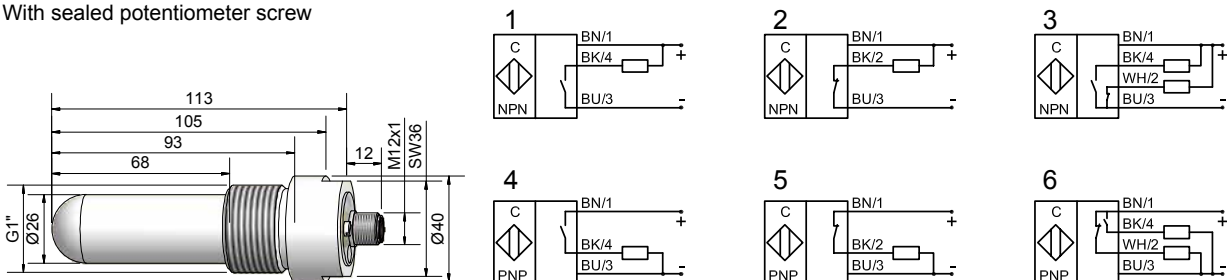
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...20 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-26-A-K-G1"-PTFE-Y5-StEx</b>	
<b>Art.-No. KA 0655</b>	
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 150 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+90 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
Media optimized	Yes

### Accessories (is delivered with the unit)

Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)

**SENSORS / ATEX WITH MANUFACTURER DECLARATION**

Pages:

Capacitive sensors, ATEX Zone 2, Zone 22, M 18	98 - 99
Capacitive sensors, ATEX Zone 2, Zone 22, M 32	100 - 101

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

### Series 80 - PNP

Housing M 18 x 1

- Housing material: PTFE
- Ideal of detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 0,5...10 mm adjustable
- II 3G EEx nA II T6 X, for use in zone 2
- II 3D IP67 T101° C X, for use in zone 22
- With flange connector M 12 x 1



Certificate:

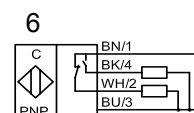
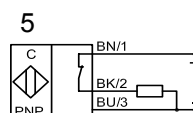
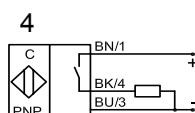
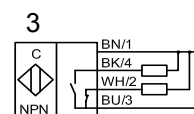
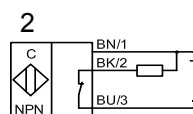
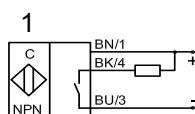
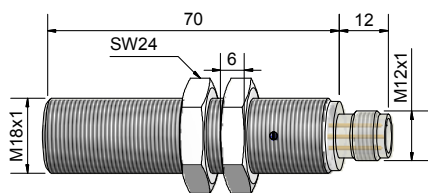


Technical data	Flush mountable
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0.5...10 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A13-A-K-PTFE-Y3-3G-3D</b>	
<b>Art.-No.</b>	
<b>KA 0799</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 200 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	300 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes

**Accessories** (is delivered with the unit) 2 pieces nuts M 18, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

### Series 80 - PNP

Housing M 18 x 1

- Housing material: Brass
- Sensing distance 0.5...15 mm adjustable
- II 3G EEx nA II T6 X, for use in zone 2
- II 3D IP67 T101° C X, for use in zone 22
- With flange connector M 12 x 1

Certificate:

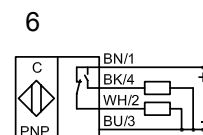
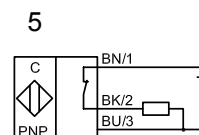
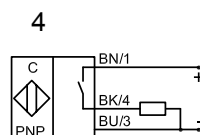
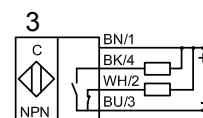
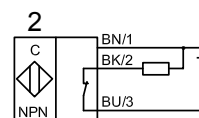
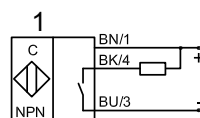
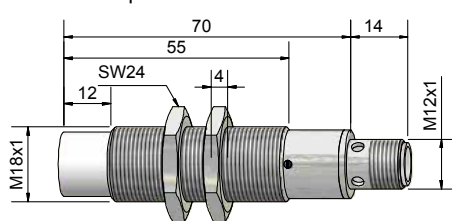


Technical data	Non-flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	0.5...15 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-A23-A-Y5-3G-3D</b>	
<b>Art.-No.</b>	
<b>KA 0527</b>	
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 200 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-
Media optimized	Yes

**Accessories** (is delivered with the unit) 2 pieces nuts M 18, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

### Series 80 - PNP

Housing M 32 x 1.5

- Housing material: Stainless steel
- Sensing distance 1...40 mm adjustable
- II 3G EEx nA II T6 X, for use in zone 2
- II 3D IP67 T101° C X, for use in zone 22
- With flange connector M 12 x 1



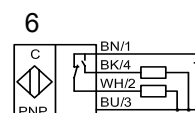
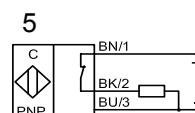
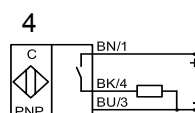
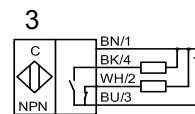
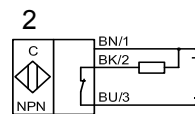
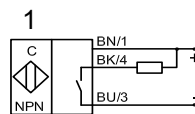
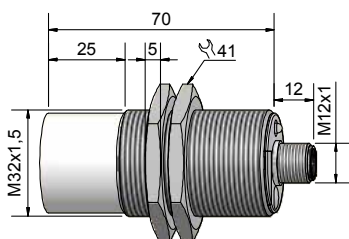
Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-34-A-M32-PTFE/V2A-Y5-3G-3D</b>	
<b>Art.-No.</b>	
<b>KA 0849</b>	
Connection diagram No.	
6	
Operating voltage ( $U_B$ )	10...30 V DC
Output current max. ( $I_o$ )	2 x 200 mA
Voltage drop max. ( $U_o$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

**Accessories** (is delivered with the unit) 2 pieces nuts M 32, Protective clip  
 For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors

### Series 80 - PNP

Housing M 32 x 1.5

- Housing material PPO
- Sensing distance 1...40 mm adjustable
- II 3G EEx nA II T6 X, for use in zone 2
- II 3D IP67 T101° C X, for use in zone 22
- With flange connector M 12 x 1

Certificate:

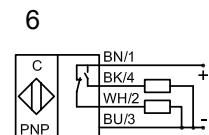
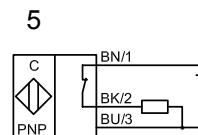
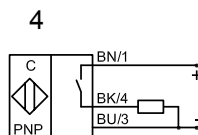
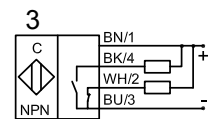
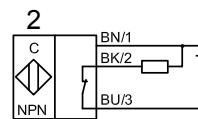
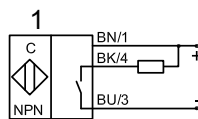
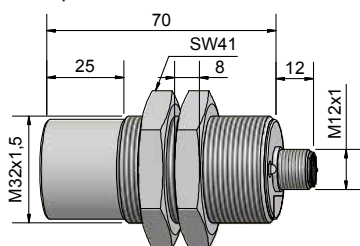


Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min. / max. adjustable	1...40 mm
Electrical version	4-pin DC
Output function	Antivalent
<b>Type NPN</b>	
<b>Art.-No.</b>	
Connection diagram No.	
<b>Type PNP</b>	
<b>KAS-80-35-A-M32-Y5-3G-3D</b>	
<b>Art.-No.</b>	
<b>KA 0610</b>	
Connection diagram No.	
6	
Operating voltage ( $U_b$ )	10...30 V DC
Output current max. ( $I_e$ )	2 x 200 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection	Flange connector M 12 x 1
Housing material	PPO
Active surface	PPO
Lid	PA / PPO
Media optimized	Yes

**Accessories** (is delivered with the unit) 2 pieces nuts M 32, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

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**NAMUR MINI ATEX SENSORS FOR EVALUATION UNIT N-132...**

Pages:

Capacitive sensors MINI, NAMUR, ATEX Zone 0, M 8	104
Capacitive sensors MINI, NAMUR, ATEX Zone 0, Ø 22 mm	105 - 106

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6

Housing M 8 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance  $S_n = 0.5 \text{ mm}$

Certificate:



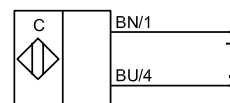
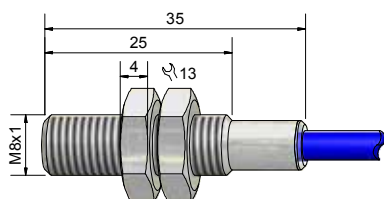
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



### Technical data

Flush mountable

Operating distance $S_n$	0.5 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-A11-N</b>
<b>Art. No.</b>	<b>400 100</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15 \text{ V DC}$
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 8



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6

Housing  $\varnothing$  22 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel
- Sensing distance 1...10 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

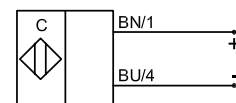
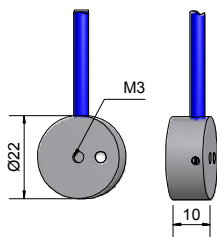


### Technical data

Flush mountable

Operating distance $S_n$	6 mm
Operating distance min. / max. adjustable	1...10 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-22/10-N</b>
<b>Art.-No.</b>	<b>406 120</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

Made in Germany



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6

Housing Ø 22 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 2...10 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

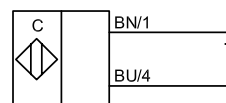
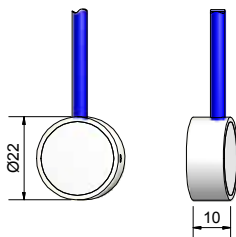


### Technical data

Flush mountable

Operating distance $S_n$	6 mm
Operating distance min. / max. adjustable	2...10 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-22/10-N-PTFE</b>
<b>Art.-No.</b>	<b>406 110</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

\* With sealed potentiometer screw



Made in Germany

All specifications are subject to change without notice. (06/2014)

**ATEX SERIES 40 (NAMUR) • ATEX / IECEx**

Pages:

Capacitive sensors NAMUR, ATEX Zone 0, M 12	108 - 113
Capacitive sensors NAMUR, ATEX Zone 0, M 18 to M 22	114 - 119
Capacitive sensors NAMUR, ATEX Zone 0, Ø 30 mm to 26 mm / G 1"	120 - 131

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 1...4 mm adjustable

Certificate:

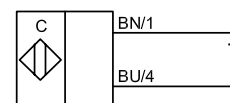
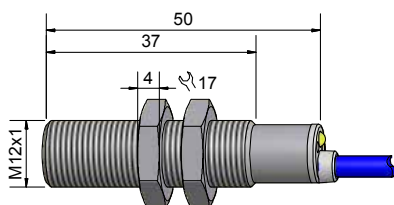


DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



Technical data	Flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	1...4 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A12-N</b>
<b>Art. No.</b>	<b>400 200</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 12

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)





## Capacitive Sensors Serie 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 1...5 mm adjustable
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga



### Technical data

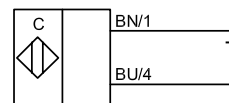
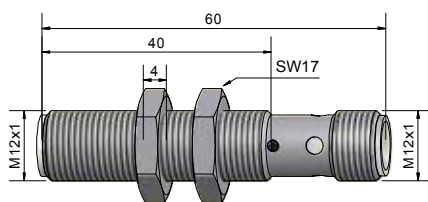
Flush mountable

Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	1...5 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A12-N-Y5</b>
<b>Art. No.</b>	<b>KA 0561</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

**Accessories** (is delivered with the unit) 2 pieces nuts M 12, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 1...6 mm adjustable

Certificate:



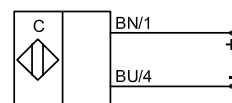
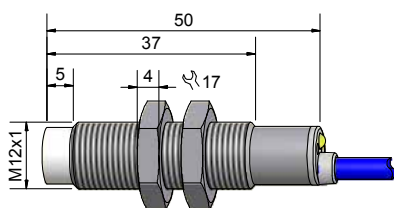
DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



### Technical data

	Non-flush mountable
Operating distance $S_n$	4 mm
Operating distance min. / max. adjustable	1...6 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A22-N</b>
<b>Art. No.</b>	<b>400 250</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 12

\* With sealed potentiometer screw



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## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 1...6 mm adjustable
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga



### Technical data

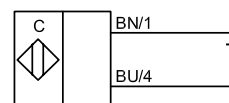
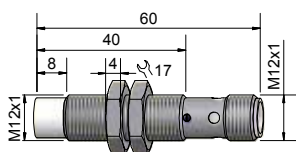
Non-flush mounting

Operating distance $S_n$	4 mm
Operating distance min./max. adjustable	1...6 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A22-N-Y5</b>
<b>Art. No.</b>	<b>KA 0562</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

**Accessories** (is delivered with the unit) 2 pieces nuts M 12, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PVC
- Sensing distance 1...6 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



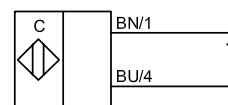
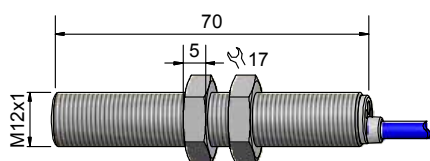
### Technical data

Non-flush mountable

Operating distance $S_n$	4 mm
Operating distance min. / max. adjustable	1...6 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-14-N-M12</b>
<b>Art. No.</b>	<b>400 705</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	5 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	PVC
Active surface	PVC
Lid	PA / PPO

<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 12
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\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 12 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 1...6 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

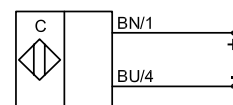
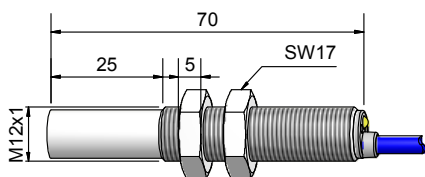


### Technical data

Non-flush mountable

Operating distance $S_n$	4 mm
Operating distance min./max. adjustable	1...6 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-14-N-M12-PTFE</b>
<b>Art. No.</b>	<b>400 900</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 12

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 18 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 1...8 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

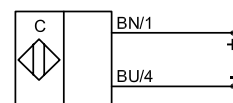
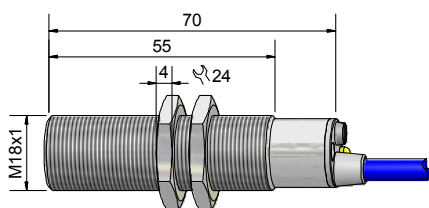


### Technical data

Flush mountable

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	1...8 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A13-N</b>
<b>Art. No.</b>	<b>400 300</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 18

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 18 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 1...8 mm adjustable
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga



### Technical data

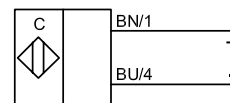
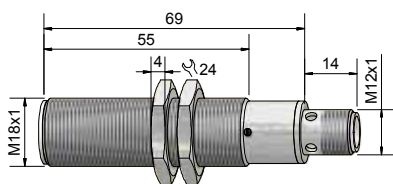
Flush mounting

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	1...8 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A13-N-Y5</b>
<b>Art. No.</b>	<b>KA 0559</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

**Accessories** (is delivered with the unit) 2 pieces nuts M 18, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 18 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...10 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

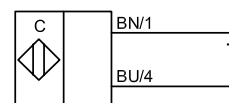
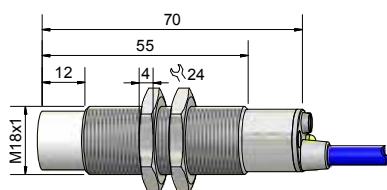


### Technical data

	Non-flush mountable
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	2...10 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A23-N</b>
<b>Art. No.</b>	<b>400 350</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 18
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\* With sealed potentiometer screw



**Made in Germany**

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## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 18 x 1

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...10 mm adjustable
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga



### Technical data

Non-flush mountable

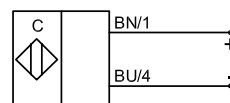
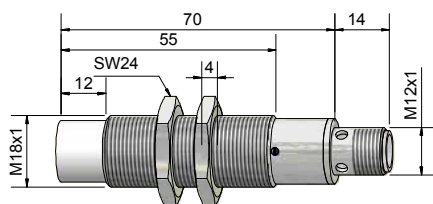
Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	2...10 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A23-N-Y5</b>
<b>Art. No.</b>	<b>KA 0560</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-

**Accessories** (is delivered with the unit)

2 pieces nuts M 18, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing Ø 22 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 2...8 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



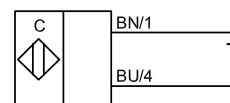
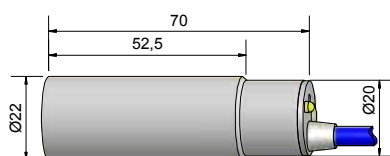
### Technical data

Flush mountable

Operating distance $S_n$	6 mm
Operating distance min. / max. adjustable	2...8 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-20-N</b>
<b>Art. No.</b>	<b>401 000</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6

Housing M 22 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 3...10 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

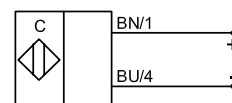
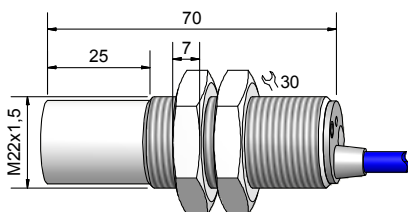


### Technical data

Non-flush mountable

Operating distance $S_n$	8 mm
Operating distance min. / max. adjustable	3...10 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-24-N-M22-PTFE</b>
<b>Art. No.</b>	<b>401 500</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 22

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing Ø 30 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...20 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

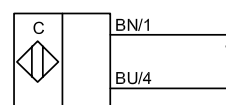
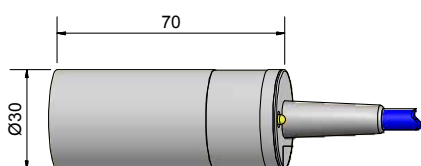


### Technical data

	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-35-N</b>
<b>Art. No.</b>	<b>402 000</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO

**Assessors** for mounting (is not delivered with the sensor) please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 30 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...15 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

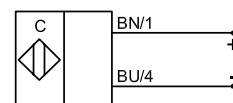
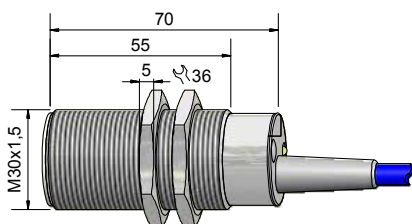


### Technical data

Flush mountable

Operating distance $S_n$	10 mm
Operating distance min. / max. adjustable	2...15 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A14-N</b>
<b>Art. No.</b>	<b>400 400</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 30

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Serie 40 - NAMUR EN 60947-5-6



Housing M 30 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...15 mm adjustable
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



### Technical data

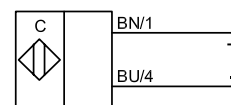
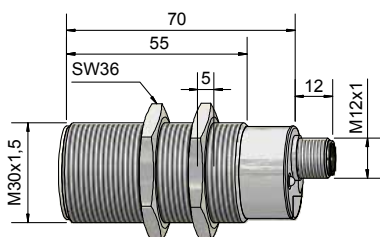
Flush mounting

Operating distance $S_n$	10 mm
Operating distance min. / max. adjustable	2...15 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A14-N-Y5</b>
<b>Art. No.</b>	<b>KA 0557</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

**Accessories** (is delivered with the unit) 2 pieces nuts M 30, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 30 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...20 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

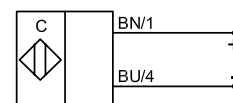
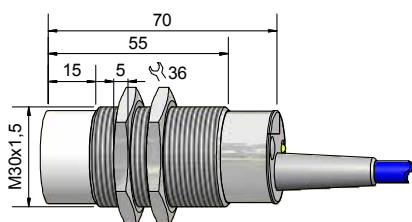


### Technical data

Non-flush mountable

Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A24-N</b>
<b>Art. No.</b>	<b>400 450</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR 2 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 30

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Serie 40 - NAMUR EN 60947-5-6



Housing M 30 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Operating range 2...20 mm
- With flange connector M 12 x 1

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



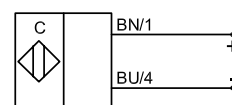
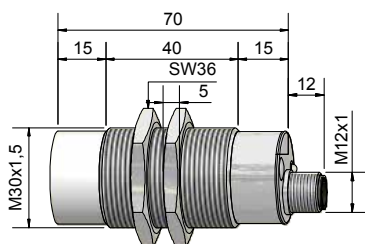
### Technical data

	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	2-pin DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-A24-N-Y5</b>
<b>Art. No.</b>	<b>KA 0558</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

**Accessories** (is delivered with the unit) 2 pieces nuts M 30, Protective clip

For matching connectors please see our selection of accessories.

\* With sealed potentiometer screw



**Made in Germany**

All specifications are subject to change without notice. (06/2014)





**Capacitive Sensors with analogue output**  
**Series 40 - NAMUR EN 60947-5-6**  
**Output current 20...4 mA**



Housing M 30 x 1.5

- For use in areas with the risk of gas explosion, zone 1
- Housing material: Brass
- Operating range 0...25 mm

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

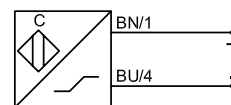
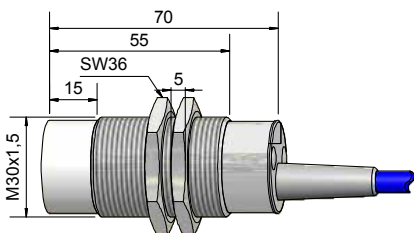


**Technical data**

Non-flush mountable

Operating range	0...25 mm
Linear range	2...20 mm
Electrical version	2-wire DC
Output function	Analogue
<b>Type Analogue</b>	<b>KAS-40-A24-IL</b>
<b>Art. No.</b>	<b>403 600</b>
Operating voltage (U <sub>B</sub> )	10 - 15 V DC, U <sub>i</sub> = 15 V DC
Power consumption active surface free	≤ 4 mA
Power consumption active surface covered	≥ 20 mA
Load resistor	R <sub>L</sub> 0...500 Ohm
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	0...+60 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-6
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 30

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 32 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...15 mm adjustable

Certificate:



DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



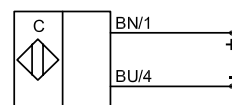
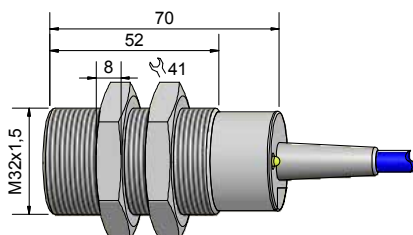
### Technical data

Flush mountable

Operating distance $S_n$	12 mm
Operating distance min. / max. adjustable	3...15 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-30-N-M32</b>
<b>Art. No.</b>	<b>401 700</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO

<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32
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\* With sealed potentiometer screw



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## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 32 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 3...20 mm adjustable

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

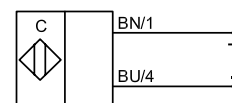
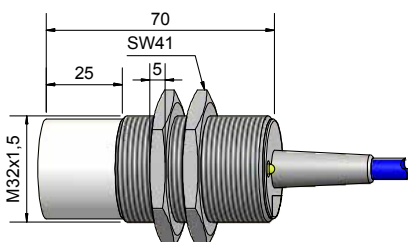


### Technical data

Non-flush mountable

Operating distance $S_n$	18 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-34-N-M32-PTFE/V2A</b>
<b>Art. No.</b>	<b>402 400</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



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**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 32 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...20 mm adjustable

Certificate:



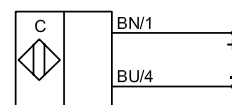
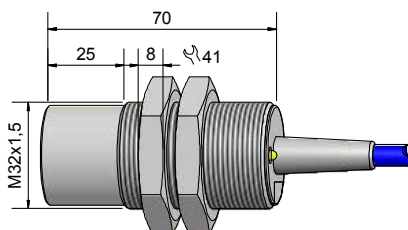
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga



### Technical data

	Non-flush mountable
Operating distance $S_n$	18 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-35-N-M32</b>
<b>Art. No.</b>	<b>402 100</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



**Made in Germany**

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## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing M 32 x 1.5

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 3...20 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE- protection set Art.-No. 196301

Certificate:



DMT 03 ATEX E 048

IECEx BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

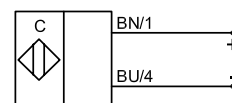
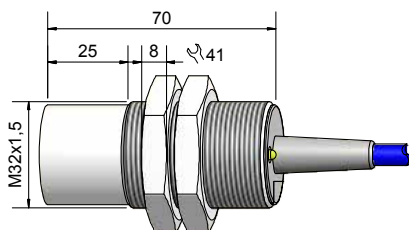


### Technical data

Non-flush mountable

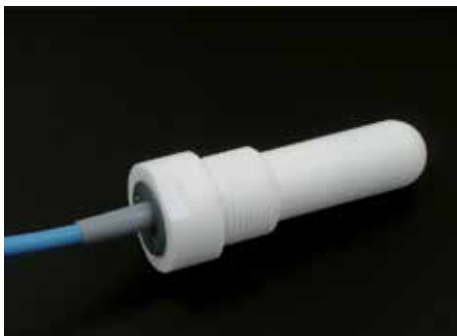
Operating distance $S_n$	18 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-35-N-M32-PTFE</b>
<b>Art. No.</b>	<b>402 300</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-20...+70 °C
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



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**Made in Germany**



## Capacitive Sensors Serie 40 - NAMUR EN 60947-5-6



Housing  $\varnothing$  26 mm / G1" / 40 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 0...15 mm adjustable
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)

Certificate:



DMT 03 ATEX E 048	IECEX BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

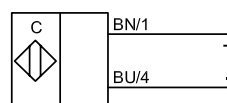
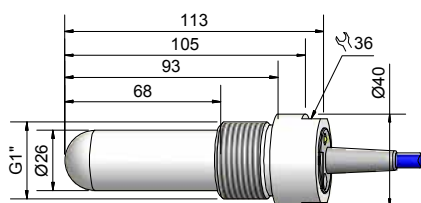


### Technical data

Non-flush mountable

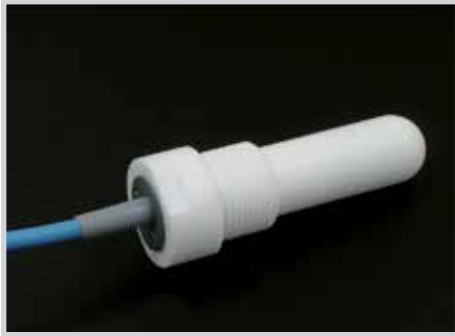
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...15 mm
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-26-N-PTFE-1"</b>
<b>Art. No.</b>	<b>KA 0740</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 3 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	0...+70 °C / CIP 121 °C (zero-current)
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

\* With sealed potentiometer screw



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## Capacitive Sensors Series 40 - NAMUR EN 60947-5-6



Housing  $\varnothing$  26 mm / G1" / 40 mm

- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 0...15 mm adjustable
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)

Certificate:



DMT 03 ATEX E 048

IECEX BVS 07.0031

Ex II 1G Ex ia IIC T1-T6 Ga

Ex ia IIC T1-T6 Ga

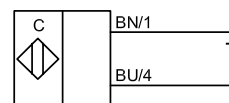
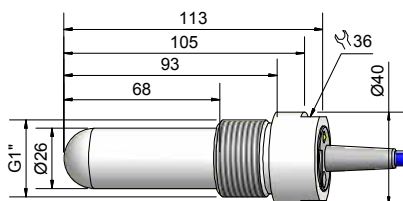


### Technical data

Non-flush mountable

Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	0...15 mm
Electrical version	2-wire DC
Output	NAMUR DIN 60947-5-6
<b>Type</b>	<b>KAS-40-26-N-PTFE-1"-100°C</b>
<b>Art. No.</b>	<b>KA 1230</b>
Operating voltage ( $U_B$ )	5 - 15 V DC, $U_i = 15$ V DC
Output current active surface free	< typ. 1.5 mA
Output current active surface covered	> typ. 3 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	0...+100 °C / CIP 121 °C (zero-current)
LED-display	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.75 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

\* With sealed potentiometer screw



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## NAMUR MINI SENSORS WITH EVALUATION UNIT

	Pages
Capacitive sensors Ø 6.5 mm	134
Capacitive sensors M 8	135 - 136
Capacitive sensors Ø 10 mm	137
Capacitive sensors Ø 18 mm	138
Evaluation unit TS-	139



All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors Series 40 - NAMUR

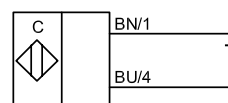
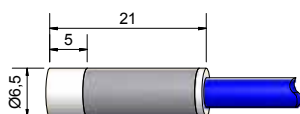
Housing Ø 6.5 mm

- Housing material: Stainless steel VA
- Sensing distance 0.5...3 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0.5...3 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-6.5/20-N</b>
<b>Art.-No.</b>	<b>400 480</b>
Operating voltage ( $U_B$ )	5...10 V DC
Output current active surface free	< Typ. 1.5 mA
Output current active surface covered	> Typ. 2.5 mA
Self-inductance (L)	390 mH
Self-capacitance (C)	210 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PTFE (FDA 21 CFR 177.1550)



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## Capacitive Sensors Series 40 - NAMUR

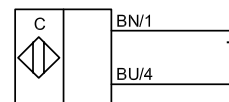
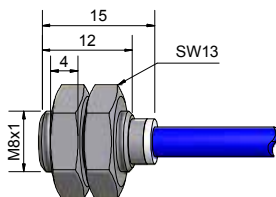
Housing M 8 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.2...2 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	1.5 mm
Operating distance min. / max. adjustable	0.2...2 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-2
<b>Type</b>	<b>KAS-40-M8/15-N</b>
<b>Art.-No.</b>	<b>405 150</b>
Operating voltage ( $U_B$ )	5...10 V DC
Output current active surface free	< Typ. 1.5 mA
Output current active surface covered	> Typ. 2.5 mA
Self-inductance (L)	390 mH
Self-capacitance (C)	210 nF
Permitted residual ripple max.	5%
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PTFE (FDA 21 CFR 177.1550)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 8



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## Capacitive Sensors Series 40 - NAMUR

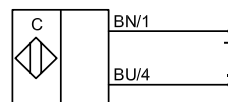
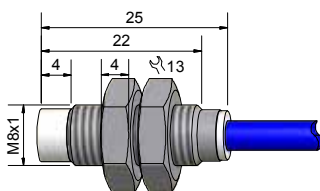
Housing M 8 x 1

- Housing material: Stainless steel VA
- Sensing distance 0.5...3 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	2 mm
Operating distance min. / max. adjustable	0.5...3 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-M8/25-N</b>
<b>Art. No.</b>	<b>400 490</b>
Operating voltage ( $U_B$ )	5...10 V DC
Output current active surface free	< Typ 1.5 mA
Output current active surface covered	> Typ. 2.5 mA
Self-inductance (L)	390 mH
Self-capacitance (C)	210 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.3405
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PTFE (FDA 21 CFR 177.1550)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 8



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## Capacitive Sensors Series 40 - NAMUR

Housing  $\varnothing$  10 mm

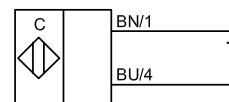
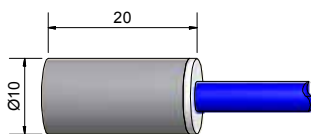
- Housing material: Stainless steel VA
- Sensing distance 1...4 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:

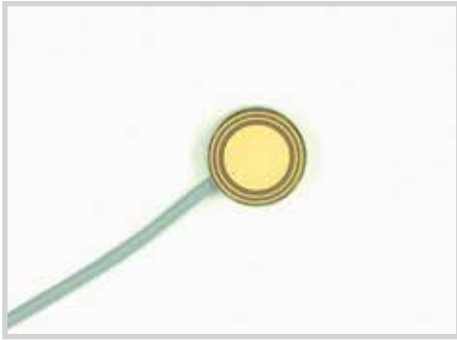


Technical data	Flush mountable
Operating distance $S_n$	2 mm
Operating distance min./max. adjustable	1...4 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-10/20-N</b>
<b>Art.-No.</b>	<b>KA 0313</b>
Operating voltage ( $U_B$ )	5...10 V DC
Output current active surface free	< Typ. 1.5 mA
Output current active surface covered	> Typ. 2.5 mA
Self-inductance (L)	390 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PVC, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PTFE (FDA 21 CFR 177.1550)

All specifications are subject to change without notice. (06/2014)



**Made in Germany**



## Capacitive Sensors Series 40 - NAMUR

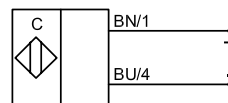
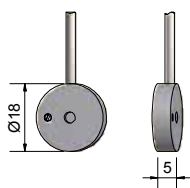
Housing Ø 18 mm

- Housing material: Stainless steel VA
- Sensing distance 1...8 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	5 mm
Operating distance min. / max. adjustable	1...8 mm
Electrical version	2-wire DC
Output function	NAMUR EN 60947-5-6
<b>Type</b>	<b>KAS-40-18/5-N</b>
<b>Art.-No.</b>	<b>KA 0308</b>
Operating voltage ( $U_B$ )	$U_i = 15$ V DC
Output current active surface free	< Typ. 1.5 mA
Output current active surface covered	> Typ. 2.5 mA
Self-inductance (L)	0.2 mH
Self-capacitance (C)	250 nF
Permitted residual ripple max.	5 %
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	-
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.14 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	Epoxy
Lid	-



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Certificate:



## Transistor Amplifier

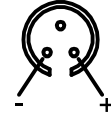
Series - NPN

Series - PNP

- For connection to NAMUR - Sensors of Series 30 and 40
- Not permitted for use in Ex area

Sensor operating voltage  $U_s \leq 6 \text{ V DC}$

Operating current  $I_s = 1 \dots 3 \text{ mA}$

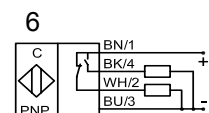
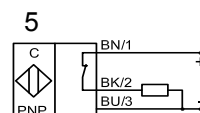
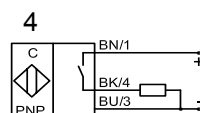
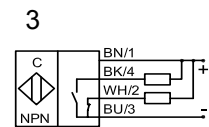
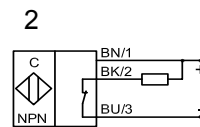
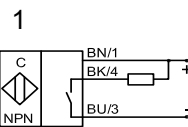
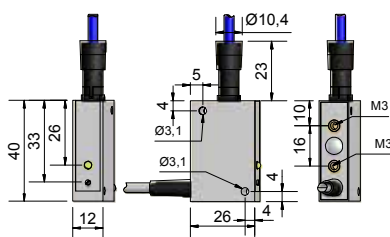


Plug pin connection  
View: soldering side

### Technical data

Electrical version	4-wire DC
Output	Antivalent (NO + NC)
<b>Type NPN</b>	<b>TS-120-NPN-A</b>
<b>Art.-No.</b>	<b>500 150</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>TS-120-PNP-A</b>
<b>Art.-No.</b>	<b>500 350</b>
Connection diagram No.	6
Operating voltage ( $U_o$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_o$ )	$\leq 2.0 \text{ V}$
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 10 mA
Frequency of operating cycles max.	2 kHz (dependent on Sensor)
Permitted ambient temperature	-25...+70 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 65
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.14 mm <sup>2</sup>
Housing material	PA 6.6
<b>Accessories</b> (is delivered with the unit)	Female connector

All specifications are subject to change without notice. (06/2014)



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## HIGH TEMPERATURE SENSORS

	Pages
Sensors M 12 - M 22 useable from -25...+100 °C	142
Sensors M 30 - M 32 useable from -25...+100 °C	143 - 144
Sensors useable from -60...+160 °C	145

All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN

Series 80 - PNP

Housing M 22 x 1.5

- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 0.5...20 mm adjustable
- Ideal for detection of chemically aggressive media
- Suitable for food applications

Certificate:



### Technical data

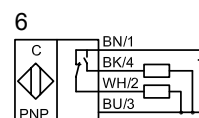
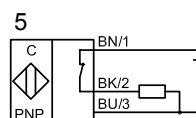
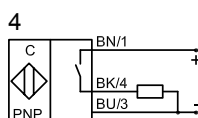
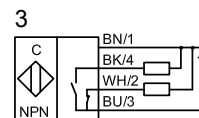
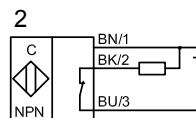
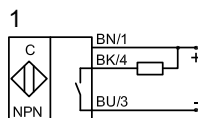
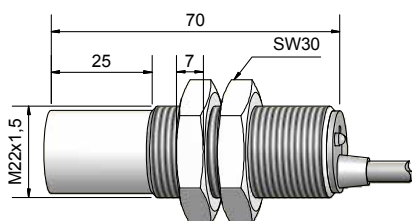
Non-flush mountable

Operating distance $S_n$	12 mm
Operating distance min. / max. adjustable	0.5...20 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-23-A-M22-PTFE-100°C</b>
<b>Art.-No.</b>	<b>712 910</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-23-A-M22-PTFE-100°C</b>
<b>Art.-No.</b>	<b>812 910</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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...+100 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.34 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

### Accessories (is delivered with the unit)

2 pieces nuts M 22

\* With sealed potentiometer screw



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All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP

Housing M 32 x 1.5

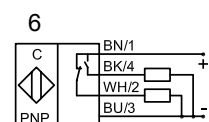
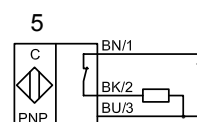
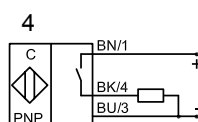
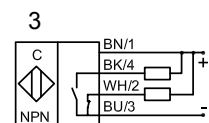
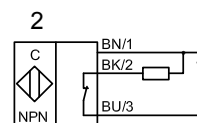
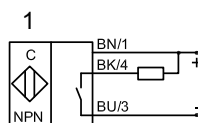
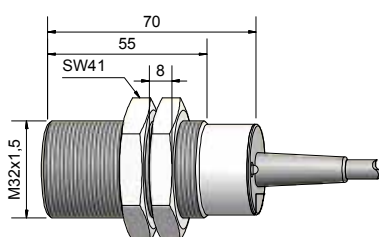
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 0.5...30 mm adjustable
- Ideal for detection of chemically aggressive media
- Suitable for food applications

Certificate:



Technical data	Flush mountable
Operating distance $S_n$	20 mm
Operating distance min. / max. adjustable	0.5...30 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-30-A-M32-PTFE-100°C</b>
<b>Art.-No.</b>	<b>715 831</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-30-A-M32-PTFE-100°C</b>
<b>Art.-No.</b>	<b>815 831</b>
Connection diagram No.	6
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_e$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	200 Hz
Permitted ambient temperature	-25...+100 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



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All specifications are subject to change without notice. (06/2014)



## Capacitive Sensors

Series 70 - NPN  
Series 80 - PNP



Housing M 32 x 1.5

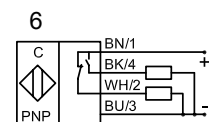
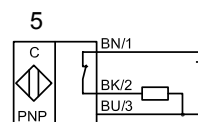
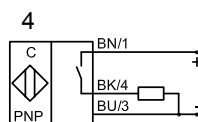
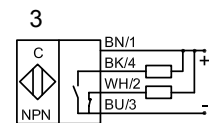
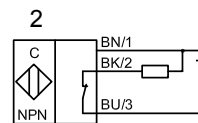
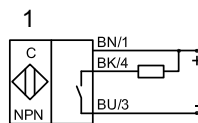
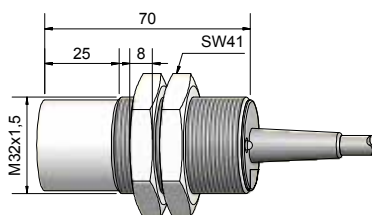
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 1...40 mm adjustable
- Ideal for detection of chemically aggressive media
- Suitable for food applications

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	25 mm
Operating distance min./max. adjustable	1...40 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KAS-70-35-A-M32-PTFE-100°C</b>
<b>Art.-No.</b>	<b>719 255</b>
Connection diagram No.	3
<b>Type PNP</b>	<b>KAS-80-35-A-M32-PTFE-100°C</b>
<b>Art.-No.</b>	<b>819 255</b>
Connection diagram No.	6
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 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...+100 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 4 x 0.5 mm <sup>2</sup>
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32

\* With sealed potentiometer screw



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## Capacitive Sensors | 3 Series 2000 -quattro

Housing M 32 x 1.5

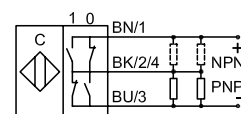
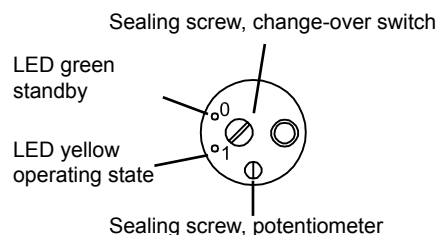
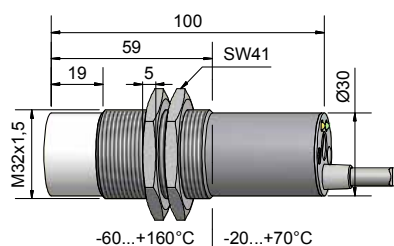
- Housing material: Stainless steel VA
- For level control with a product temperature up to +160 °C
- Sensing distance 2...20 mm adjustable
- Multifunction sensor: NPN / PNP;  
NO / NC function switchable

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	15 mm
Operating distance min./max. adjustable	2...20 mm
Electrical version	3-wire DC
Output	NO / NC function switchable
<b>Type NPN / PNP switchable</b>	<b>KAS-2000-34-M32-PTFE/V2A-160°C</b>
<b>Art.-No.</b>	<b>771 100</b>
Operating voltage ( $U_B$ )	10...35 V DC
Output current max. ( $I_o$ )	400 mA
Voltage drop max. ( $U_d$ )	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current ( $I_o$ )	Typ. 15 mA
Frequency of operating cycles max.	50 Hz
Permitted ambient temperature	-60...+160 °C / -20...+70 °C
LED-display	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67*
Norm	EN 60947-5-2
Connection cable	2 m, PUR, 3 x 0.75 mm <sup>2</sup>
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
<b>Accessories (is delivered with the unit)</b>	<b>2 pieces nuts M 32</b>

\* With sealed potentiometer screw



All specifications are subject to change without notice. (06/2014)

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## HIGH TEMPERATURE SENSORS SERIES KS-KSA

	Pages
Accessories	147
Sensors M 18	148 - 149
Evaluation unit DC for sensors M 18	150
Sensors M 32	151 - 152
Evaluation unit DC for sensors M 32	153
Evaluation unit DC and sensors fix connected	154
Evaluation unit AC	155

For further high temperature sensors, please see our catalogue of our „KXS-Extreme“ series. These sensors can be used for applications with an ambient temperature up to +250 °C or +800 °C.

## PLUG-IN CONNECTORS

For high temperature sensors with flange connector the following connection cables for connection of the evaluation unit KSA-250 and KSA-...-250-...-BB are available:

- Art.-No. 193300**    **Plug-in connector with 2 m cable**  
**Art.-No. 193301**    **Plug-in connector with 5 m cable**





## Capacitive high temperature sensors Series 250-M18/...

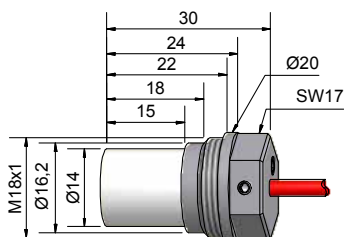
Housing M 18 x 1

- For connection to capacitive evaluation units KSA-...-14-...-BB
- Housing material: Stainless steel VA
- Useable for an ambient temperature -200...+250 °C
- Sensing distance 0...5 mm adjustable at the evaluation unit

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	3 mm
Operating distance adjustable	0...5 mm
<b>Type</b>	<b>KS-250-M18/30</b>
<b>Art.-No.</b>	<b>561 600</b>
Permitted ambient temperature	-200...+250 °C
Enclosure rating IEC 60529	IP 67
Norm	EN 60947-5-2
Connection cable with plug-in connector	0.8 m FEP, Triax
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)



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## Capacitive high temperature sensors Series 250-M18/...

Housing M 18 x 1

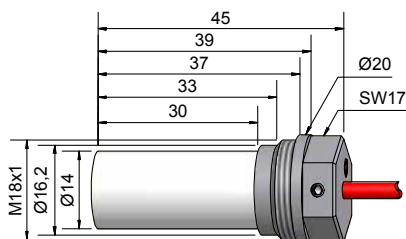
- For connection to capacitive evaluation units KSA-...-14-...-BB
- Housing material: Stainless steel VA
- Useable for an ambient temperature -200...+250 °C
- Sensing distance 0...5 mm adjustable at the evaluation unit

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	3 mm
Operating distance adjustable	0...5 mm
<b>Type</b>	<b>KS-250-M18/45</b>
<b>Art.-No.</b>	<b>561 650</b>
Permitted ambient temperature	-200...+250° C
Enclosure rating IEC 60529	IP 67
Norm	EN 60947-5-2
Connection cable with plug-in connector	0.8 m FEP, Triax
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)

All specifications are subject to change without notice. (06/2014)



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## Capacitive Evaluation Unit

Series 70-14-...-BB - NPN  
Series 80-14-...-BB - PNP

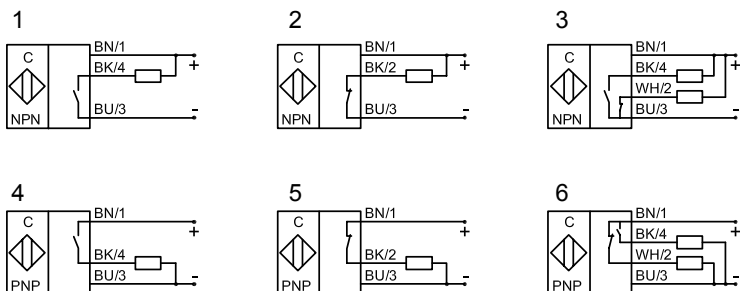
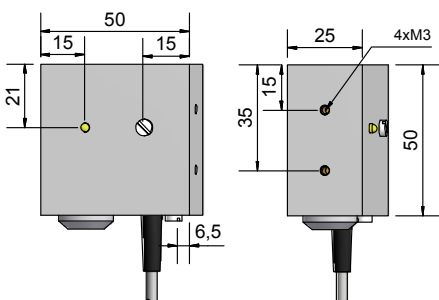
- Housing 50 x 50 x 25 mm
- For capacitive sensors KS-250-M18/...
  - Hysteresis adjustable

Certificate:



### Technical data

Electrical version	3-wire DC	3-wire DC
Output function	Normally open	Normally closed
<b>Type NPN</b>	<b>KSA-70-14-M18/30-S-BB</b>	
<b>Art.-No.</b>	<b>563 100</b>	
Connection diagram No.	1	
<b>Type PNP</b>	<b>KSA-80-14-M18/30-Ö-BB</b>	
<b>Art.-No.</b>	<b>563 700</b>	
Connection diagram No.	5	
Operating voltage ( $U_B$ )	10...35 V DC	10...35 V DC
Output current max. ( $I_o$ )	400 mA	400 mA
Voltage drop max. ( $U_d$ )	$\leq 2.5$ V	$\leq 2.5$ V
Permitted residual ripple max.	10 %	10 %
No-load current ( $I_o$ )	Typ. 10 mA	Typ. 10 mA
Frequency of operating cycles max.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 67	IP 67
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m PVC, 3 x 0.14 mm <sup>2</sup>	2 m PVC, 3 x 0.14 mm <sup>2</sup>
Housing material	PA	PA



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## Capacitive high temperature sensors Series 250

Housing M 32 x 1.5

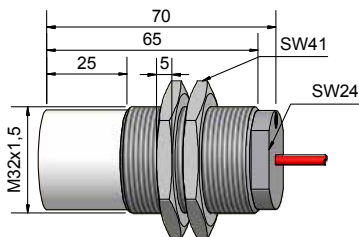
- For connection to capacitive evaluation units KSA-250 and KSA-...-250-...-A-...
- Housing material: Stainless steel VA No. 1.4305
- Useable for an ambient temperature -200...+250 °C
- Sensing distance 3...20 mm adjustable at the evaluation unit

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	12 mm	12 mm
Operating distance adjustable	3...20 mm	3...15 mm
<b>Type</b>	<b>KS-250-M32</b>	<b>KS-250-M32, 5 m</b>
<b>Art.-No.</b>	<b>562 500</b>	<b>562 510</b>
Permitted ambient temperature	-200...+250 °C	-200...+250 °C
Enclosure rating IEC 60529	IP 67	IP 67
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable with plug-in connector	2 m FEP, Triax	5 m FEP, Triax
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32	2 pieces nuts M 32

All specifications are subject to change without notice. (06/2014)



**Made in Germany**



## Capacitive high temperature sensors Series KS-250

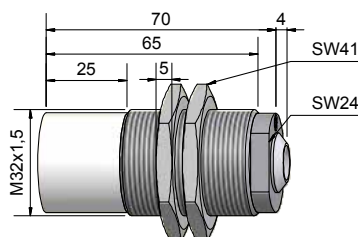
Housing M 32 x 1.5

- For connection to capacitive evaluation units KSA-250 and KSA-...-250-...-A-...
- Housing material: Stainless steel VA
- Useable for an ambient temperature -200...+250 °C
- Sensing distance 3...20 mm adjustable at the evaluation unit
- Connection cable and plug-in connector is supplied with the sensor

Certificate:



Technical data	Non-flush mountable	Non-flush mountable
Operating distance $S_n$	12 mm	12 mm
Operating distance adjustable	3...20 mm	3...15 mm
<b>Type</b>	<b>KS-250-M32-Y</b>	<b>KS-250-M32-Y, 5 m</b>
<b>Art.-No.</b>	<b>562 700</b>	<b>562 710</b>
Permitted ambient temperature	-200...+250 °C	-200...+250 °C
Enclosure rating IEC 60529	IP 67	IP 67
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable with plug-in connector	Triax socket and plug-in connector with 2 m FEP, Triax	Triax socket and plug-in connector with 5 m FEP, Triax
Housing material	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
<b>Accessories</b> (is delivered with the unit)	2 pieces nuts M 32	2 pieces nuts M 32
Connection cable available as spare part, for matching connection cable please see our selection of accessories.		



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## Capacitive Evaluation Unit

Series 70-250 - NPN  
Series 80-250 - PNP

Housing 75 x 47 x 30 mm  
• For capacitive sensors KS-250-M32(-Y)

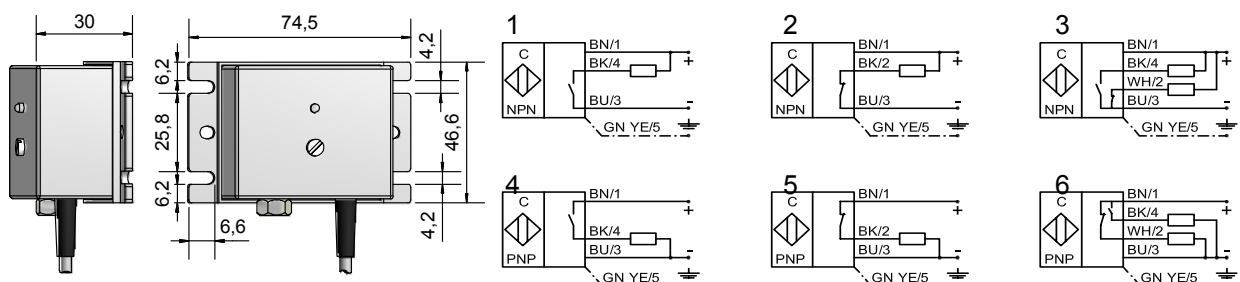
Certificate:



### Technical data

Electrical version	5-wire DC	5-wire DC
Output function	Antivalent	Antivalent
<b>Type NPN</b>	<b>KSA-70-250-A-M32-2m</b>	<b>KSA-70-250-A-M32-Y-2m</b>
<b>Art.-No.</b>	<b>AK 0003</b>	<b>AK 0007</b>
<b>Type PNP</b>	<b>KSA-70-250-A-M32-5m</b>	<b>KSA-70-250-A-M32-Y-5m</b>
<b>Art.-No.</b>	<b>AK 0004</b>	<b>AK 0008</b>
Connection diagram No.	3	3
<b>Type PNP</b>	<b>KSA-80-250-A-M32-2m</b>	<b>KSA-80-250-A-M32-Y-2m</b>
<b>Art.-No.</b>	<b>AK 0005</b>	<b>AK 0009</b>
<b>Type PNP</b>	<b>KSA-80-250-A-M32-5m</b>	<b>KSA-80-250-A-M32-Y-5m</b>
<b>Art.-No.</b>	<b>AK 0006</b>	<b>AK 0010</b>
Connection diagram No.	6	6
Operating voltage ( $U_B$ )	10...35 V DC	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA	2 x 250 mA
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.	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C
LED-display	Green / yellow	Green / yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 65	IP 65
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m PVC, 5 x 0.34 mm <sup>2</sup>	2 m PVC, 5 x 0.34 mm <sup>2</sup>
Housing material	PA	PA

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## Capacitive high temperature sensor with evaluation unit Series 70-250 - NPN Series 80-250 - PNP

Housing Sensor M 32 x 1,5 / evaluation unit 75 x 47 x 30 mm

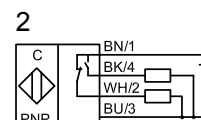
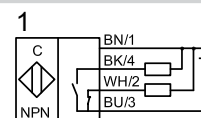
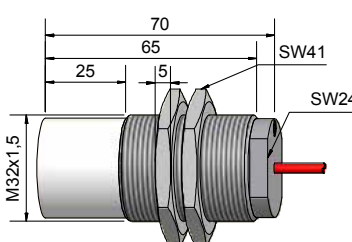
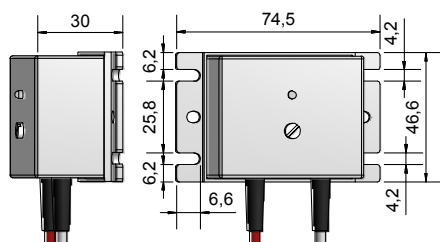
- Evaluation unit and sensor firmly connected via FEP cable with 2 m in length.
- Sensing distance 2...20 mm adjustable
- Sensor useable for an ambient temperature -200...+250 °C

Certificate:



Technical data	Non-flush mountable
Operating distance $S_n$	12 mm
Operating distance adjustable	3...20 mm
Electrical version	4-wire DC
Output function	Antivalent
<b>Type NPN</b>	<b>KS-250-M32 2,0 m &amp; KSA-70-250-A</b>
<b>Art.-No.</b>	<b>AKK 002</b>
Connection diagram No.	1
<b>Type PNP</b>	<b>KS-250-M32 2,0 m &amp; KSA-80-250-A</b>
<b>Art.-No.</b>	<b>AKK 001</b>
Connection diagram No.	2
Operating voltage ( $U_b$ )	10...35 V DC
Output current max. ( $I_o$ )	2 x 250 mA
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 (evaluation unit)	-25...+70 °C
Permitted ambient temperature (sensor)	-200...+250 °C
LED-display	Green / yellow
Protective circuit	Built-in
Degree of protection IEC 60529 (evaluation unit)	IP 65
Degree of protection IEC 60529 (sensor)	IP 67
Norm	EN 60947-5-2
Connection cable	2 m PUR, 4 x 0.14 mm <sup>2</sup>
Housing material (evaluation unit)	PA
Housing material (sensor)	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)

**Accessories** (is delivered with the unit) 2 pieces nuts M 32



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## Capacitive Evaluation Unit Series 250 - 115V / 230V AC

- Housing 40 x 70 x 110 mm  
 • For capacitive sensors KS-250-M22...M32

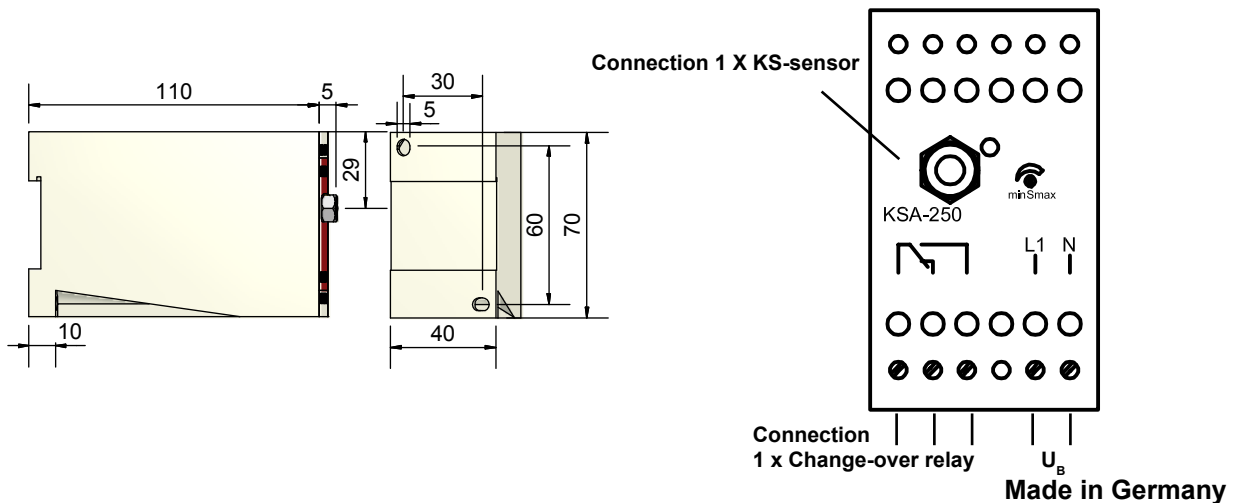
Certificate:
















### Technical data

Output function	1 x change-over contact	1 x change-over contact
<b>Type</b>	<b>KSA-250 for 2 m</b>	<b>KSA-250 for 2 m</b>
<b>Art.-No.</b>	<b>560 101</b>	<b>560 100</b>
<b>Type</b>	<b>KSA-250 for 5 m</b>	<b>KSA-250 for 5 m</b>
<b>Art.-No.</b>	<b>560 106</b>	<b>560 102</b>
Operating voltage ( $U_B$ )	90...130 V AC	200...250 V AC
Contact rating each relay max.	250 V / 6 A / 500 VA	250 V / 6 A / 500 VA
Power consumption	Typ. 3.5 VA	Typ. 3.5 VA
Permitted ambient temperature	-20...+60 °C	-20...+60 °C
LED-display	Yellow	Yellow
Protective circuit	Built-in	Built-in
Degree of protection IEC 60529	IP 20	IP 20
Norm	EN 60947-5-2	EN 60947-5-2
Connection	Screw terminals and Triax-socket	Screw terminals and Triax-socket
Housing material	ABS	ABS

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## FEMALE CONNECTORS

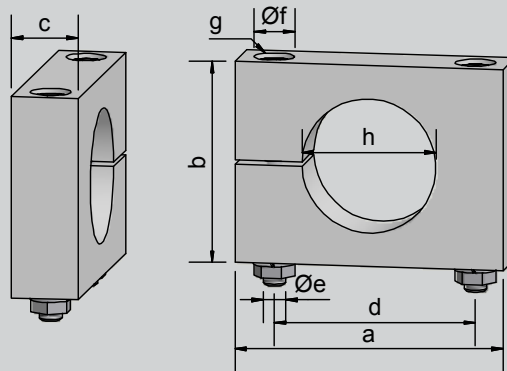
Sensor Type	Female connector		Article No.	LED Green/ yellow	IP	Connection [mm <sup>2</sup> ]	Cable- length [m]	Sensor + Length [mm]	Version Connector
	No.	Fig.							
pnp/npn	9		191500	-	67	4 x 0.75/ Pg 9 clampable	-	28	Y3, Y5 antivalent
AC/DC	9a		191550	-	67	4 x 0.75/ Pg 9 clampable	-	28	Y1
pnp/npn	16a		191910	-	67	4 x 0.34	5	17	Y3, Y5
pnp/npn	18		192000	-	67	3 x 0.34	5	35	Y3, Y5
pnp	21		192150	+	67	3 x 0.34	5	18	Y3, Y5
npn	22		192200						
pnp/npn	36		192900	-	67	4 x 0.25	5	31	Y3, Y5 antivalent
pnp/npn	38		193000	-	67	4 x 0.25	5	17	Y3, Y5 antivalent
pnp/npn	45		193210	-	67	3 x 0.25	5	29	Y7, Y8
pnp	46		193220	+	67	3 x 0.25	5	12	Y7, Y8
pnp/npn	47		193230	-					
pnp/npn	49a		193345	-	68	5 x 0.25	2	20	Y10
pnp/npn AC/DC	50		193350	-	67	5 x 0.25	2	18	Y1, Y9
pnp/npn	57a		193385		67	4 x 0.34	5	18	Y3, Y5 antivalent
NAMUR	58a		193386		67	2 x 0.34	5	18	Y3, Y5

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# 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, Material PA

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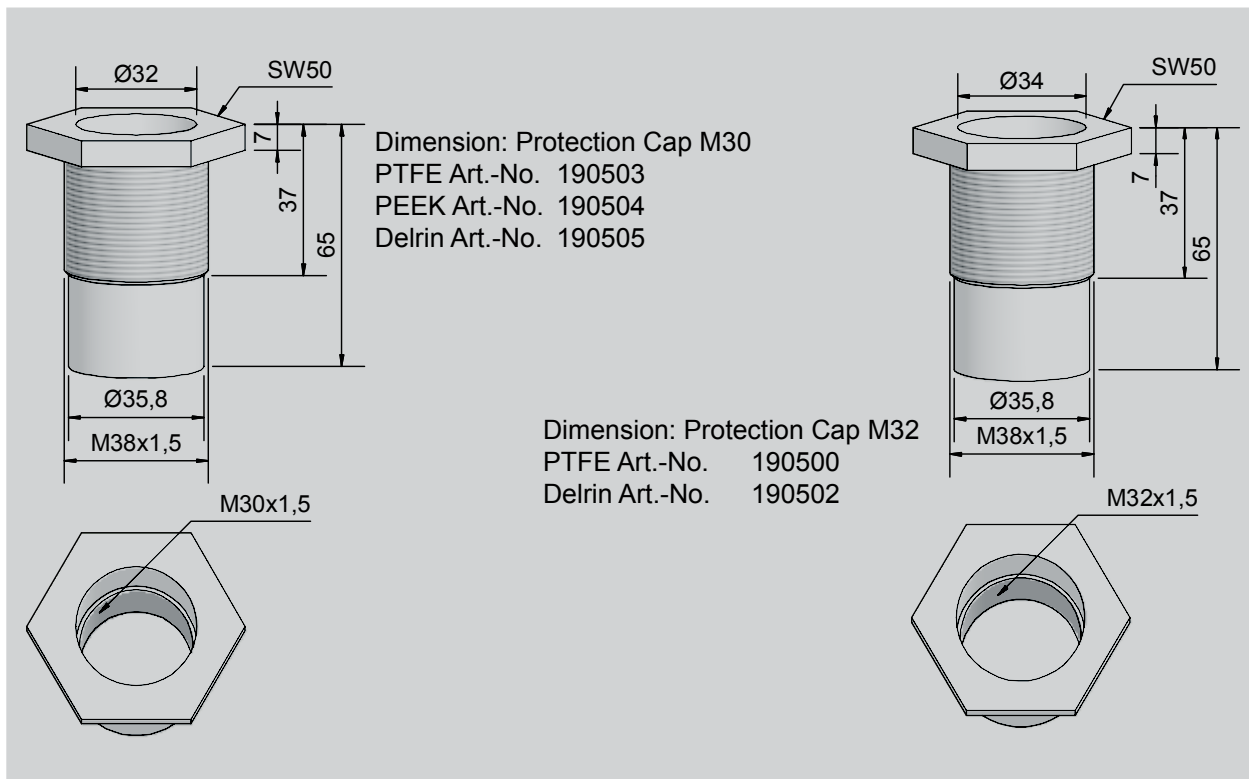
# PROTECTION CAPS AND PROTECTION SETS

Example: Protection Caps M30 / M32 PTFE

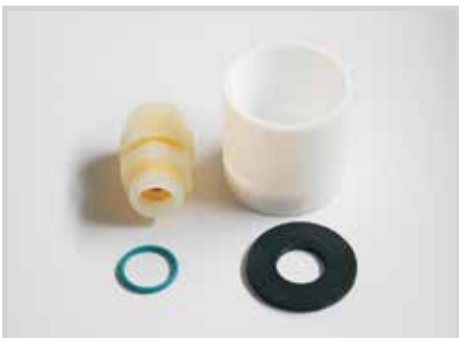


## PROTECTION CAP

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 face of the sensor. Where there is damage due to abrasion one only has to change the protection cap and the sensor remains on 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 M 32 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.

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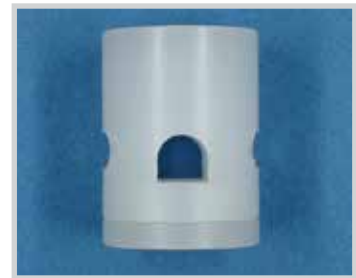
Sensor holder for tube mounting

- Housing material PP or PTFE
- Sensor holder for optimal tube mounting, e. g. for level control on bypass tubes
- Mechanically very solid
- Suitable for sensors in M18 x 1 (H-M18...) or M30 x 1.5 (H-M30...) body

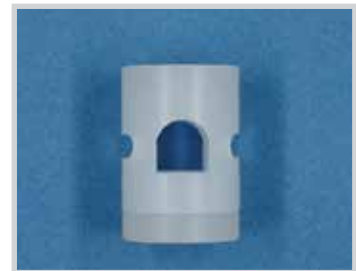
Art.-No.	Description	Material	Connection
196310	H-M30-1"-PP	PP	1" Tube
196311	H-M30-3/4"-PP	PP	3/4" Tube
196312	H-M30-1/2"-PP	PP	1/2" Tube
196313	H-M18-1/2"-PP	PP	1/2" Tube
196314	H-M18-6.5-PP	PP	D. 6.5 Tube
196315	H-M18-5.0-PP	PP	D. 5.0 Tube
196316	H-M30-1"-PTFE	PTFE	1" Tube
196317	H-M30-3/4"-PTFE	PTFE	3/4" Tube
196318	H-M30-1/2"-PTFE	PTFE	1/2" Tube
196319	H-M18-1/2"-PTFE	PTFE	1/2" Tube
196320	H-M18-6.5-PTFE	PTFE	D. 6.5 Tube
196321	H-M18-5.0-PTFE	PTFE	D. 5.0 Tube
196325	H-M32-3/4"-PP	PP	3/4" Tube



Holder for Sensor M30 - tube 3/4", PTFE



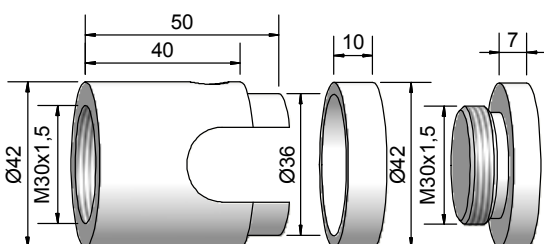
Holder for Sensor M30 - tube D 5.0, Nylon



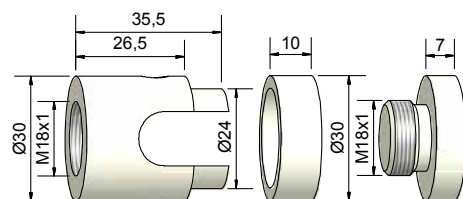
Holder for Sensor M18 - tube D.6.5, Nylon

## Dimensions

H-M30-3/4"(1/2")...



H-M18-6.5(5.0)...



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## 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:

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

Control circuit devices and switching elements - proximity switches

*EN 60947-5-6 Low-voltage switchgear and controlgear Part 5*

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 60079-0*

Explosive atmospheres - Part 0: Equipment - General requirements

*DIN EN 60079-10*

Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres

*DIN EN 60079-11*

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

*DIN EN 60079-15*

Electrical apparatus for potentially explosive gas atmospheres - Part 15: construction, test and marking of type of protection “n” electrical apparatus

*DIN EN 60079-18*

Electrical apparatus for potentially explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation “m” electrical apparatus

*EN 60079-14*

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

## 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 9001:2008.

### **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.

*2004/108/EG*

EMC Directive (EN 60 947-5-2)

*2006/95/EG*

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.

# SPECIFICATION FOR EXPLOSION PROTECTION

	European Union	North America
Division of Hazards	Explosive mixtures in Group 1: mines susceptible to fire damp Group 2: 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 DEKRA EXAM formerly DMT, BVS BASEEFA British Approvals Service for Elec- trical Equipment in Flammable Atmosphere and others	UL Underwriters Laboratories, USA FM Factory Mutual Research, USA CSA Canadian Standards Association ETL Electrical Testing Laboratories
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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## TYPE SELECTION IN ARTICLE NUMBER ORDER

Art.-No.	Description	Page	Art.-No.	Description	Page
190030	Mounting block PA No. 138 40D	157	402100	KAS-40-35-N-M32	128
190050	Mounting block PA No. 139 50D	157	402300	KAS-40-35-N-M32-PTFE	129
190100	Mounting block PA No. 140 64D	157	402400	KAS-40-34-N-M32-PTFE/V2A	127
190150	Mounting block PA No. 131 10D	157	403600	KAS-40-A24-IL	125
190200	Mounting block PA No. 132 11D	157	405150	KAS-40-M8/15-N	135
190250	Mounting block PA No. 133 20D	157	406110	KAS-40-22/10-N-PTFE	106
190300	Mounting block PA No. 134 22D	157	406120	KAS-40-22/10-N	105
190350	Mounting block PA No. 135 30D	157	500150	TS-120-NPN-A	139
190400	Mounting block PA No. 136 32D	157	500350	TS-120-PNP-A	139
190450	Mounting block PA No. 137 34D	157	560100	KSA-250 for 2m 200...250 V AC	155
190500	Protection cap M32 PTFE	160	560101	KSA-250 for 2m 90...130 V AC	155
190502	Protection cap M32 Delrin	160	560102	KSA-250 for 5m 200...250 V AC	155
190503	Protection cap M30 PTFE	160	560106	KSA-250 for 5m 90...130 V AC	155
190504	Protection cap M30 PEEK	160	561600	KS-250-M18/30	148
190505	Protection cap M30 Delrin	160	561650	KS-250-M18/45	149
191500	Female connector No. 9 M12	156	562500	KS-250-M32	151
191550	Female connector No. 9A M12	156	562510	KS-250-M32, 5 m	151
191910	Female connector No. 16a M12	156	562700	KS-250-M32-Y	152
192000	Female connector No. 18	156	562710	KS-250-M32-Y, 5 m	152
192150	Female connector No. 21 M12	156	563100	KSA-70-14-M18/30-S-BB	150
192200	Female connector No. 22	156	563700	KSA-80-14-M18/30-Ö-BB	150
192900	Female connector No. 36	156	700150	KAS-70-A12-A	19
193000	Female connector No. 38	156	700724	KAS-70-A12-A-Y5	20
193210	Female connector No. 45	156	700735	KAS-70-A22-A	23
193220	Female connector No. 46	156	701000	KAS-70-A13-A-K	28
193230	Female connector No. 47	156	705600	KAS-70-A14-A-K	49
193345	Female connector No. 49a M12	156	708200	KAS-70-A24-A-Y5	51
193350	Female connector No. 50	156	712900	KAS-70-23-A-M22-PTFE	41
193385	Female connector No. 57a M12	156	712910	KAS-70-23-A-M22-PTFE-100°C	142
193386	Female connector No. 58a M 12	156	713600	KAS-70-23-S-M22	40
196301	Sealing set M32/PTFE	160	714200	KAS-70-30-A	42
196302	Sealing set M30/PTFE	160	715800	KAS-70-30-A-M32	54
196305	Sealing set M18/PTFE	160	715831	KAS-70-30-A-M32-PTFE-100°C	143
196310	H-M30-1"-PP	161	716000	KAS-70-30-A-M32-Y5	55
196311	H-M30-3/4"-PP	161	716200	KAS-70-30-S-M32	54
196312	H-M30-1/2"-PP	161	718555	KAS-70-34-A-M32-PTFE/V2A-Y5	63
196313	H-M18-1/2"-PP	161	718600	KAS-70-34-S-M32-PTFE/V2A	62
196314	H-M18-6.5-PP	161	719255	KAS-70-35-A-M32-PTFE-100°C	144
196315	H-M18-5.0-PP	161	720200	KAS-70-35-A-M32	65
196316	H-M30-1"-PTFE	161	720400	KAS-70-35-A-M32-Y5	66
196317	H-M30-3/4"-PTFE	161	720600	KAS-70-35-S-M32	65
196318	H-M30-1/2"-PTFE	161	770600	KAS-2000-A30-M32	57
196319	H-M18-1/2"-PTFE	161	770603	KAS-2000-A30-M32-Y3	58
196320	H-M18-6.5-PTFE	161	770800	KAS-2000-35-M32	67
196321	H-M18-5.0-PTFE	161	771000	KAS-2000-34-M32-PTFE/V2A	64
196325	H-M32-3/4"-PP	161	771100	KAS-2000-34-M32-PTFE/V2A-160°C	145
400100	KAS-40-A11-N	104	800130	KAS-80-A21-S-Y7	17
400200	KAS-40-A12-N	108	800150	KAS-80-A12-A	19
400250	KAS-40-A22-N	110	800200	KAS-80-A12-S	19
400300	KAS-40-A13-N	114	800400	KAS-80-A12-IL	21
400350	KAS-40-A23-N	116	800724	KAS-80-A12-A-Y5	20
400400	KAS-40-A14-N	121	800735	KAS-80-A22-A	23
400450	KAS-40-A24-N	123	800736	KAS-80-A22-A-Y5	24
400480	KAS-40-6.5/20-N	134	800745	KAS-80-A22-A-K-PTFE	25
400490	KAS-40-M8/25-N	136	800750	KAS-80-A22-S	23
400705	KAS-40-14-N-M12, 5m	112	800800	KAS-80-A13-A	26
400900	KAS-40-14-N-M12-PTFE	113	801000	KAS-80-A13-A-K	28
401000	KAS-40-20-N	118	801020	KAS-80-A13-A-K-PTFE	30
401500	KAS-40-24-N-M22-PTFE	119	801200	KAS-80-A13-S	26
401700	KAS-40-30-N-M32	126	801981	KAS-80-A13-A-Y5	27
402000	KAS-40-35-N	120	803200	KAS-80-A23-A	32

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803561	KAS-80-A23-A-K-PTFE	34	AKK002	KS-250-M32 2,0 m & KSA-70-250-A	154
804091	KAS-80-A23-A-Y5	32	KA0041	KAS-70-34-A-M32-PTFE/V2A	62
805200	KAS-80-A14-A	46	KA0045	KAS-80-10-A	18
805400	KAS-80-A14-A-Y5	47	KA0084	KAS-80-A24-A-StEx	84
805600	KAS-80-A14-A-K	49	KA0085	KAS-70-A24-A-StEx	84
806000	KAS-80-A14-S	46	KA0086	KAS-80-35-A-M32-StEx	86
806400	KAS-80-A14-IL	48	KA0087	KAS-80-35-S-M32-StEx	86
808000	KAS-80-A24-A	50	KA0089	KAS-70-35-A-M32-StEx	86
808200	KAS-80-A24-A-Y5	51	KA0090	KAS-70-35-S-M32-StEx	86
808400	KAS-80-A24-A-K	52	KA0092	KAS-80-34-A-G1"-StEx	91
808600	KAS-80-A24-A-K-Y5	53	KA0093	KAS-80-35-A-K-M32-PTFE-StEx	89
811600	KAS-80-20-A	36	KA0094	KAS-40-34-N-M32-StEx	80
811800	KAS-80-20-S	36	KA0095	KAS-40-A24-N-StEx	78
812200	KAS-80-20-IL	37	KA0142	KAS-80-A12-A-K-PTFE	22
812800	KAS-80-23-A	35	KA0264	KAS-80-26-A-K-G1"-PTFE-StEx	95
812900	KAS-80-23-A-M22-PTFE	41	KA0272	KAS-80-20-A-M22	39
812910	KAS-80-23-A-M22-PTFE-100°C	142	KA0308	KAS-40-18/5-N	138
813400	KAS-80-23-A-M22	40	KA0313	KAS-40-10/20-N	137
813600	KAS-80-23-S-M22	40	KA0356	KAS-80-34-A-M32-StEx	87
814200	KAS-80-30-A	42	KA0377	KAS-80-34-35/100-A-PTFE/VA-StEx	93
814400	KAS-80-30-A-Y5	43	KA0527	KAS-80-A23-A-Y5-3D	99
815800	KAS-80-30-A-M32	54	KA0557	KAS-40-A14-N-Y5	122
815830	KAS-80-30-A-KM32-PTFE	60	KA0558	KAS-40-A24-N-Y5	124
815831	KAS-80-30-A-KM32-PTFE-100°C	143	KA0559	KAS-40-A13-N-Y5	115
816000	KAS-80-30-A-M32-Y5	55	KA0560	KAS-40-A23-N-Y5	117
816200	KAS-80-30-S-M32	54	KA0561	KAS-40-A12-N-Y5	109
816600	KAS-80-30-IL-M32	56	KA0562	KAS-40-A22-N-Y5	111
818540	KAS-80-34-A-M32-PTFE/V2A	62	KA0610	KAS-80-35-A-M32-Y5-3D	101
818555	KAS-80-34-A-M32-PTFE/V2A-Y5	63	KA0655	KAS-80-26-A-K-G1"PTFE-Y5-StEx	96
818600	KAS-80-34-A-M32-PTFE/V2A	62	KA0736	KAS-80-A11-S-Y7	16
819200	KAS-80-35-A-Y5	45	KA0740	KAS-40-26-N-PTFE-1"	130
819255	KAS-80-35-A-M32-PTFE-100°C	144	KA0799	KAS-80-A13-A-K-PTFE-Y3-3G	98
819400	KAS-80-35-S	44	KA0819	KAS-80-34-A-M32-Y10-StEx	88
820200	KAS-80-35-A-M32	65	KA0824	KAS-70-26-A-K-G1"-PTFE-StEx	95
820300	KAS-80-35-A-M32-PTFE	69	KA0849	KAS-80-34-A-M32-PTFE/V2A-Y5-3D	100
820400	KAS-80-35-A-M32-Y5	66	KA0863	KAS-70-A24-A-Y10-StEx	85
820600	KAS-80-35-S-M32	65	KA0864	KAS-80-A24-A-Y10-StEx	85
824500	KAS-80-37-A	70	KA0867	KAS-80-35-A-K-M32-PTFE-Y5-StEx	90
825300	KAS-80-38-A	71	KA0868	KAS-80-34-A-G1"-Y10-StEx	92
825510	KAS-80-50-A-Y5	73	KA0869	KAS-80-34-35/100-A-PTFE/VA-Y10-StEx	94
828100	KAS-80-61-A	74	KA0870	KAS-40-A24-N-Y10-StEx	79
900100	KAS-90-A13-S	29	KA0871	KAS-40-34-N-M32-Y10-StEx	81
900300	KAS-90-A23-S	33	KA0933	KAS-40-26-N-PTFE-1"-StEx	82
900400	KAS-90-A23-Ö	33	KA1230	KAS-40-26-N-PTFE-1"-100°C	131
901200	KAS-90-20-Ö	38	KA1231	KAS-40-26-N-200-PTFE-1"-Y5-StEx	83
901800	KAS-90-30-S-M32	59			
901900	KAS-90-30-Ö-M32	59			
902400	KAS-90-32-S-M32	68			
902500	KAS-90-32-Ö-M32	68			
903200	KAS-90-34-S-M32-PTFE/MS	61			
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AK0007	KSA-70-250-A-M32-Y-2m	153			
AK0008	KSA-70-250-A-M32-Y-5m	153			
AK0009	KSA-80-250-A-M32-Y-2m	153			
AK0010	KSA-80-250-A-M32-Y-5m	153			
AKK001	KS-250-M32 2,0 m & KSA-80-250-A	154			

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191910	Female connector No. 16a M12	156	KA0562	KAS-40-A22-N-Y5	111
192000	Female connector No. 18	156	400350	KAS-40-A23-N	116
192150	Female connector No. 21 M12	156	KA0560	KAS-40-A23-N-Y5	117
192200	Female connector No. 22	156	403600	KAS-40-A24-IL	125
192900	Female connector No. 36	156	400450	KAS-40-A24-N	123
193000	Female connector No. 38	156	KA0095	KAS-40-A24-N-StEx	78
193210	Female connector No. 45	156	KA0870	KAS-40-A24-N-Y10-StEx	79
193220	Female connector No. 46	156	KA0558	KAS-40-A24-N-Y5	124
193230	Female connector No. 47	156	405150	KAS-40-M8/15-N	135
193345	Female connector No. 49a M12	156	400490	KAS-40-M8/25-N	136
193350	Female connector No. 50	156	712900	KAS-70-23-A-M22-PTFE	41
193385	Female connector No. 57a M12	156	712910	KAS-70-23-A-M22-PTFE-100°C	142
193386	Female connector No. 58a M 12	156	713600	KAS-70-23-S-M22	40
191500	Female connector No. 9 M12	156	KA0824	KAS-70-26-A-PTFE-1"-StEx	95
191550	Female connector No. 9A M12	156	714200	KAS-70-30-A	42
196313	H-M18-1/2"-PP	161	715800	KAS-70-30-A-M32	54
196319	H-M18-1/2"-PTFE	161	715831	KAS-70-30-A-M32-PTFE-100°C	143
196315	H-M18-5.0-PP	161	716000	KAS-70-30-A-M32-Y5	55
196321	H-M18-5.0-PTFE	161	716200	KAS-70-30-S-M32	54
196314	H-M18-6.5-PP	161	KA0041	KAS-70-34-A-M32-PTFE/V2A	62
196320	H-M18-6.5-PTFE	161	718555	KAS-70-34-A-M32-PTFE/V2A-Y5	63
196310	H-M30-1"-PP	161	718600	KAS-70-34-S-M32-PTFE/V2A	62
196316	H-M30-1"-PTFE	161	720200	KAS-70-35-A-M32	65
196312	H-M30-1/2"-PP	161	719255	KAS-70-35-A-M32-PTFE-100°C	144
196318	H-M30-1/2"-PTFE	161	KA0089	KAS-70-35-A-M32-StEx	86
196311	H-M30-3/4"-PP	161	720400	KAS-70-35-A-M32-Y5	66
196317	H-M30-3/4"-PTFE	161	720600	KAS-70-35-S-M32	65
196325	H-M32-3/4"-PP	161	KA0090	KAS-70-35-S-M32-StEx	86
771000	KAS-2000-34-M32-PTFE/V2A	64	700150	KAS-70-A12-A	19
771100	KAS-2000-34-M32-PTFE/V2A-160°C	145	700724	KAS-70-A12-A-Y5	20
770800	KAS-2000-35-M32	67	701000	KAS-70-A13-A-K	28
770600	KAS-2000-A30-M32	57	705600	KAS-70-A14-A-K	49
770603	KAS-2000-A30-M32-Y3	58	700735	KAS-70-A22-A	23
KA0313	KAS-40-10/20-N	137	KA0085	KAS-70-A24-A-StEx	84
400705	KAS-40-14-N-M12, 5m	112	KA0863	KAS-70-A24-A-Y10-StEx	85
400900	KAS-40-14-N-M12-PTFE	113	708200	KAS-70-A24-A-Y5	51
KA0308	KAS-40-18/5-N	138	KA0045	KAS-80-10-A	18
401000	KAS-40-20-N	118	811600	KAS-80-20-A	36
406120	KAS-40-22/10-N	105	KA0272	KAS-80-20-A-M22	39
406110	KAS-40-22/10-N-PTFE	106	812200	KAS-80-20-IL	37
401500	KAS-40-24-N-M22-PTFE	119	811800	KAS-80-20-S	36
KA1231	KAS-40-26-N-200-PTFE-1"-Y5-StEx	83	812800	KAS-80-23-A	35
KA0740	KAS-40-26-N-PTFE-1"	130	813400	KAS-80-23-A-M22	40
KA1230	KAS-40-26-N-PTFE-1"-100°C	131	812900	KAS-80-23-A-M22-PTFE	41
KA0933	KAS-40-26-N-PTFE-1"-StEx	82	812910	KAS-80-23-A-M22-PTFE-100°C	142
401700	KAS-40-30-N-M32	126	813600	KAS-80-23-S-M22	40
402400	KAS-40-34-N-M32-PTFE/V2A	127	KA0264	KAS-80-26-A-K-G1"-PTFE-StEx	95
KA0094	KAS-40-34-N-M32-StEx	80	KA0655	KAS-80-26-A-K-G1"-PTFE-Y5-StEx	96
KA0871	KAS-40-34-N-M32-Y10-StEx	81	814200	KAS-80-30-A	42
402000	KAS-40-35-N	120	815830	KAS-80-30-A-KM32-PTFE	60
402100	KAS-40-35-N-M32	128	815831	KAS-80-30-A-KM32-PTFE-100°C	143
402300	KAS-40-35-N-M32-PTFE	129	815800	KAS-80-30-A-M32	54
400480	KAS-40-6.5/20-N	134	816000	KAS-80-30-A-M32-Y5	55
400100	KAS-40-A11-N	104	814400	KAS-80-30-A-Y5	43
400200	KAS-40-A12-N	108	816600	KAS-80-30-IL-M32	56
KA0561	KAS-40-A12-N-Y5	109	816200	KAS-80-30-S-M32	54
400300	KAS-40-A13-N	114	KA0377	KAS-80-34-35/100-A-PTFE/VA-StEx	93
KA0559	KAS-40-A13-N-Y5	115	KA0869	KAS-80-34-35/100-A-PTFE/VA-Y10-StEx	94
400400	KAS-40-A14-N	121	KA0092	KAS-80-34-A-G1"-StEx	91
KA0557	KAS-40-A14-N-Y5	122	KA0868	KAS-80-34-A-G1"-Y10-StEx	92
400250	KAS-40-A22-N	110	818540	KAS-80-34-A-M32-PTFE/V2A	62

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818555	KAS-80-34-A-M32-PTFE/V2A-Y5	63	900400	KAS-90-A23-Ö	33
KA0849	KAS-80-34-A-M32-PTFE/V2A-Y5-3D	100	900300	KAS-90-A23-S	33
KA0356	KAS-80-34-A-M32-StEx	87	561600	KS-250-M18/30	148
KA0819	KAS-80-34-A-M32-Y10-StEx	88	561650	KS-250-M18/45	149
KA0093	KAS-80-35-A-K-M32-PTFE-StEx	89	562500	KS-250-M32	151
KA0867	KAS-80-35-A-K-M32-PTFE-Y5-StEx	90	AKK002	KS-250-M32 2,0 m & KSA-70-250-A	154
820200	KAS-80-35-A-M32	65	AKK001	KS-250-M32 2,0 m & KSA-80-250-A	154
820300	KAS-80-35-A-M32-PTFE	69	562510	KS-250-M32, 5 m	151
819255	KAS-80-35-A-M32-PTFE-100°C	144	562700	KS-250-M32-Y	152
KA0086	KAS-80-35-A-M32-StEx	86	562710	KS-250-M32-Y, 5 m	152
820400	KAS-80-35-A-M32-Y5	66	560100	KSA-250 for 2m 200...250 V AC	155
KA0610	KAS-80-35-A-M32-Y5-3D	101	560101	KSA-250 for 2m 90...130 V AC	155
819200	KAS-80-35-A-Y5	45	560102	KSA-250 for 5m 200...250 V AC	155
819400	KAS-80-35-S	44	560106	KSA-250 for 5m 90...130 V AC	155
820600	KAS-80-35-S-M32	65	563100	KSA-70-14-M18/30-S-BB	150
KA0087	KAS-80-35-S-M32-StEx	86	AK0003	KSA-70-250-A-M32-2m	153
824500	KAS-80-37-A	70	AK0004	KSA-70-250-A-M32-5m	153
825300	KAS-80-38-A	71	AK0007	KSA-70-250-A-M32-Y-2m	153
825510	KAS-80-50-A-Y5	73	AK0008	KSA-70-250-A-M32-Y-5m	153
828100	KAS-80-61-A	74	563700	KSA-80-14-M18/30-Ö-BB	150
KA0736	KAS-80-A11-S-Y7	16	AK0005	KSA-80-250-A-M32-2m	153
800150	KAS-80-A12-A	19	AK0006	KSA-80-250-A-M32-5m	153
KA0142	KAS-80-A12-A-K-PTFE	22	AK0009	KSA-80-250-A-M32-Y-2m	153
800724	KAS-80-A12-A-Y5	20	AK0010	KSA-80-250-A-M32-Y-5m	153
800400	KAS-80-A12-IL	21	190150	Mounting block PA No. 131 10D	157
800200	KAS-80-A12-S	19	190200	Mounting block PA No. 132 11D	157
800800	KAS-80-A13-A	26	190250	Mounting block PA No. 133 20D	157
801000	KAS-80-A13-A-K	28	190300	Mounting block PA No. 134 22D	157
801020	KAS-80-A13-A-K-PTFE	30	190350	Mounting block PA No. 135 30D	157
KA0799	KAS-80-A13-A-K-PTFE-Y3-3G	98	190400	Mounting block PA No. 136 32D	157
801981	KAS-80-A13-A-Y5	27	190450	Mounting block PA No. 137 34D	157
801200	KAS-80-A13-S	26	190030	Mounting block PA No. 138 40D	157
805200	KAS-80-A14-A	46	190050	Mounting block PA No. 139 50D	157
805600	KAS-80-A14-A-K	49	190100	Mounting block PA No. 140 64D	157
805400	KAS-80-A14-A-Y5	47	190505	Protection cap M30 Delrin	160
806400	KAS-80-A14-IL	48	190504	Protection cap M30 PEEK	160
806000	KAS-80-A14-S	46	190503	Protection cap M30 PTFE	160
800130	KAS-80-A21-S-Y7	17	190502	Protection cap M32 Delrin	160
800735	KAS-80-A22-A	23	190500	Protection cap M32 PTFE	160
800745	KAS-80-A22-A-K-PTFE	25	196305	Sealing set M18/PTFE	160
800736	KAS-80-A22-A-Y5	24	196302	Sealing set M30/PTFE	160
800750	KAS-80-A22-S	23	196301	Sealing set M32/PTFE	160
803200	KAS-80-A23-A	31	500150	TS-120-NPN-A	139
803561	KAS-80-A23-A-K-PTFE	34	500350	TS-120-PNP-A	139
804091	KAS-80-A23-A-Y5	32			
KA0527	KAS-80-A23-A-Y5-3D	99			
808000	KAS-80-A24-A	50			
808400	KAS-80-A24-A-K	52			
808600	KAS-80-A24-A-K-Y5	53			
KA0084	KAS-80-A24-A-StEx	84			
KA0864	KAS-80-A24-A-Y10-StEx	85			
808200	KAS-80-A24-A-Y5	51			
901200	KAS-90-20-Ö	38			
901900	KAS-90-30-Ö-M32	59			
901800	KAS-90-30-S-M32	59			
902500	KAS-90-32-Ö-M32	68			
902400	KAS-90-32-S-M32	68			
903300	KAS-90-34-Ö-M32-PTFE/MS	61			
903200	KAS-90-34-S-M32-PTFE/MS	61			
904000	KAS-90-38-S	72			

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# SENSORS FOR INDUSTRIAL AUTOMATION

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