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RECHNER SENSORS

CATALOGUE

CAPACITIVE SENSORS KAS

Registration No.: 1327-01

Testing laboratory accredited according to
DIN EN ISO / IEC 17025 Reg.-No. DGA-PL-048/95-03

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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

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 ε_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 (Sn) ± 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).

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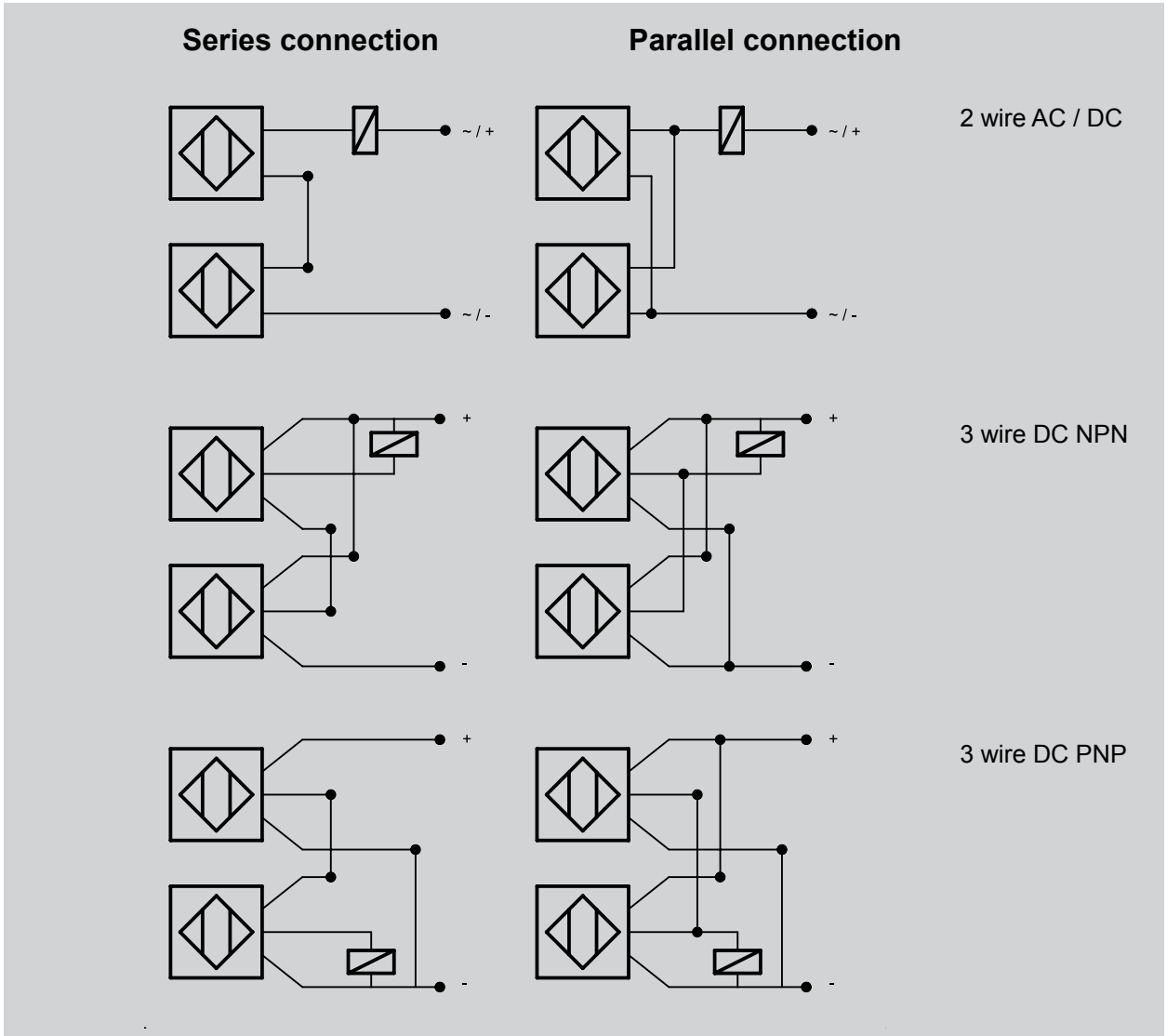
TECHNOLOGY

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.

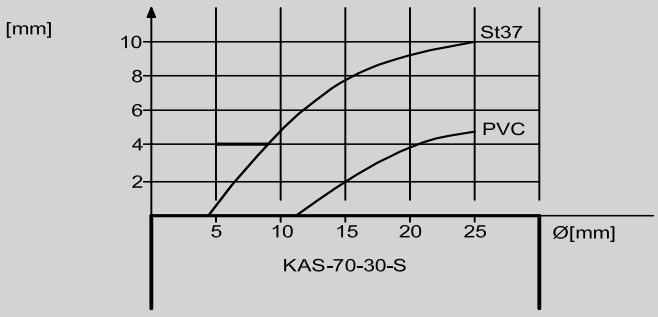
2- and 3-wire sensors with binary output can be used in series or parallel connection, similar to mechanical contacts. The type-typical voltage drop and the residual voltage $U_{d,}$ which must be multiplied in accordance with the number of sensors for series connection, must be noted. In the case of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



ADJUSTMENT

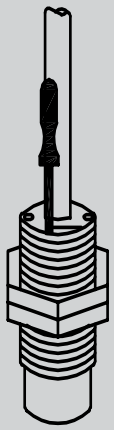
Analog capacitive sensors are equipped with a 20-turn spindle potentiometer. This allows adjustment of an application specific operating range between the **minimum distance "0 mm"** and the type-typical maximum value. Consequently, the full output current range (4…20 mA) is always present, regardless of the required measuring distance. The analog sensors of series 80 are designed with a 2-colour LED which facilitates adjustment. Outside the operating range I_A < 4 mA and I_A > 20 mA green light is emitted to display operational readiness. Within the operating range of 4…20 mA the LED is yellow. In the undamped state the output current value is > 20 mA and moves with the reduction of the object distance toward 4 mA (value at total damping approx. 2.5 mA). 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 ± 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 x Sn, depending on which value is greater. With a different material or a smaller surface of the actuating element, the sensing distance is smaller.



Typ. response-time characteristic

Adjustment of the sensing distance is made by means of a spindle potentiometer with the screwdriver provided. With pluggable sensors ≤ M 18x1 / Ø 22 the potentiometer is on the side.



For size M 30 x 1.5 / Ø 30:
First open plastic tab.
For size > M 30 x 1.5 / Ø 30:
First remove plastic sealing screw.

The possible sensing distance for a particular material is dependent on the dielectric permittivity ε_r and can be worked out by means of the typical reduction factors:
Sensing distance = Sn x 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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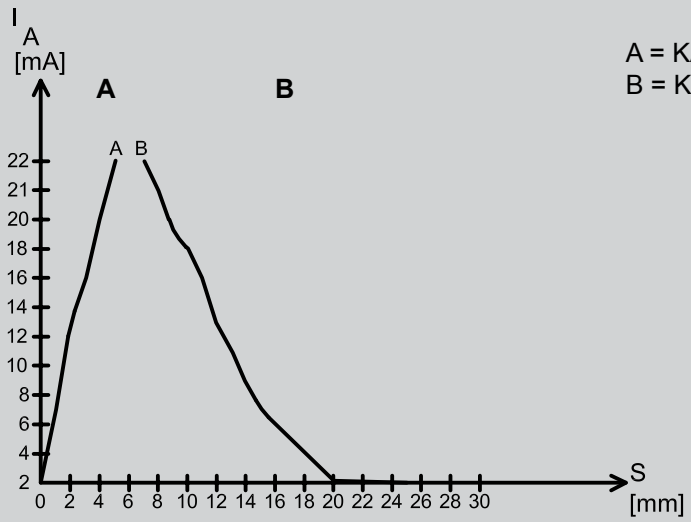
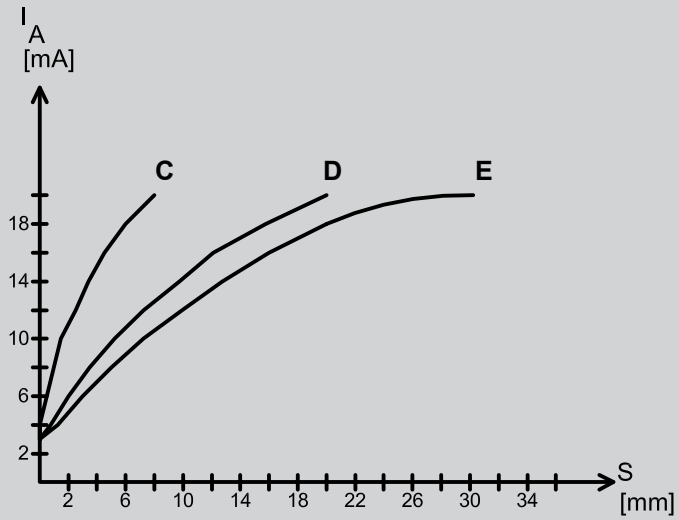
TYPICAL CURVES



Typ. curve of 2 wire analog sensors

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

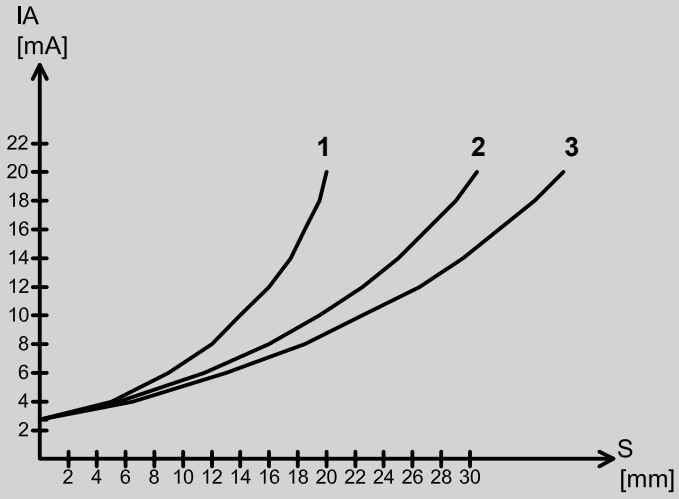
Parameter:
Tu = 25 °C, U_B = 12 V DC
Actuator
Steel St 37, 1 mm thick,
square, side length to
3 x diameter of the active
area, earthed.



Typ. curve of 3 wire analogue sensors

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

Parameter:
Tu = 25 °C, U_B = 24 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

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

Parameter:
Tu = 25 °C, U_B = 24 V DC
Actuator
Steel St 37, 1 mm thick,
square, side length to
3 x diameter of the active
area, earthed.

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

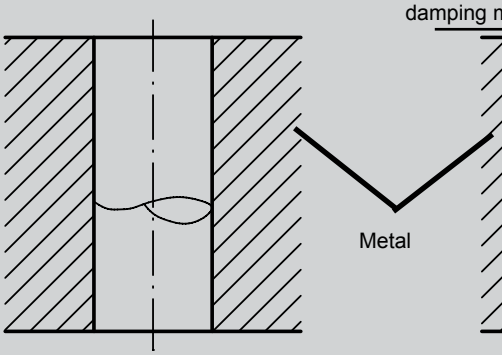
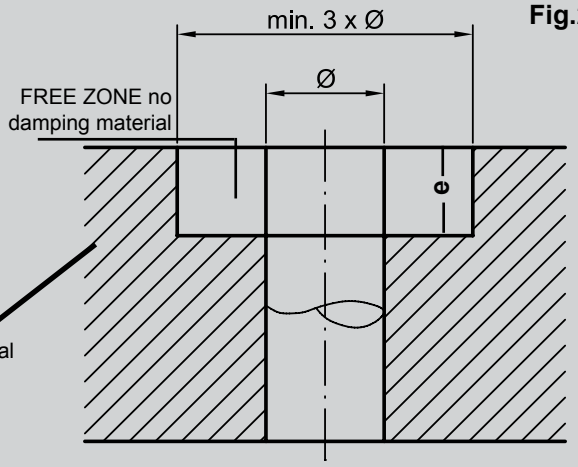


Fig.2



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

Fig.3

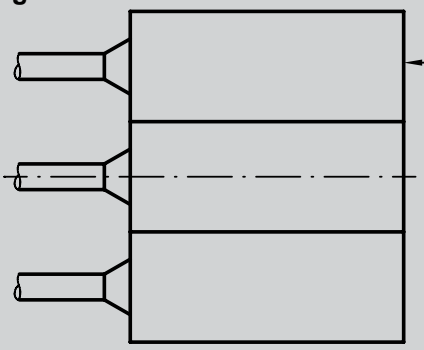
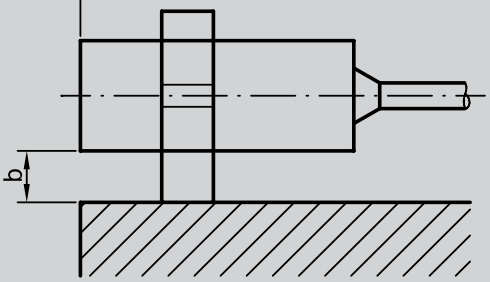


Fig.4



For **non-flush mountable** Sensors distance „b“ has to be ≥ 1,5 x S_n.

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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.

	Housing Material					
Thread	**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 V DC for KAS-40; U_B = 24 V DC for KAS-70 and KAS-80 and U_B = 230 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 x S_n.

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

TECHNICAL TERMS

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

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

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 $\varepsilon_r \geq 80$.

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 $\varepsilon_r \geq 80$. 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 °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 durst 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.

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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

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 1 (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 1 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+**[3] 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~**[2] 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+^{3} 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.

TYPE CODE KAS/TS

. . . – . . . – . . . – . . . – . . . – . . . – . . . – . . . – . . . – . . .

If existing
StEx-N = StEx according to ATEX

If existing
Y… = Flange connector

If existing
EST = Protection against static electrification
G = For strong adhesive media
100°C, 160°C,… = High temperature range

If existing
PTFE, PTFE/Ms,… = Housing material

If existing
M…, (G)1“ = Thread
KL = Terminal connection

If existing
K = Plastic housing

A = Antivalent function (NO / NC)
IL = Analogue function
N = NAMUR
Ö = NC
S = NO

A… = European standard
C…(-…) = Rectangular housing
(M)…/… = Diameter
NPN, PNP = Output function (for TS-… only)
14, 10, 38, 35,… = Version

40 = NAMUR DIN 60947-5-6/2-wire analogue
70 = 3 wire/4 wire DC NPN
80 = 3 wire/4 wire DC PNP/3-wire analogue
90 = 2 wire AC / DC
120 = TS-… / transistor amplifier 4 wire DC
1000 = 2 wire AC / DC NO / NC changeable
2000 = 3 wire DC NPN / PNP NO / NC changeable

StEx- or EST-Series and AC / DC sensors in metal housings have an earth wire. Pluggable versions have an additional pin.

KAS = Capacitive Proximity Sensor
TS = Transistor amplifier as evaluation unit for capacitive MINI sensors

TYPE CODE KS/KSA

. . . – . . . – . . . – . . . – . . . – . . . – . . . – . . .

If existing
Y = Flange connector

If existing
BB = Blackbox

If existing
PTFE,… = Housing material

If existing
A = Antivalent function (NO / NC)
S = NO
Ö = NC

If existing
M… = Diameter

250 = Series 250
14 = Series 250 for KS-Sensor Ø 14 mm

If existing
70 = 3 wire / 4 wire DC NPN
80 = 3 wire / 4 wire DC PNP

KS = Capacitive High Temperature Sensor
KSA = Capacitive High Temperature Evaluation Unit

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CYLINDRICAL HOUSING

Capacitive Sensors

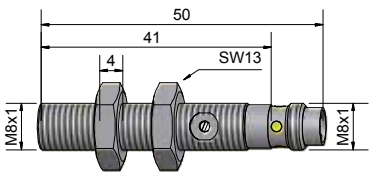
Series 80 - PNP

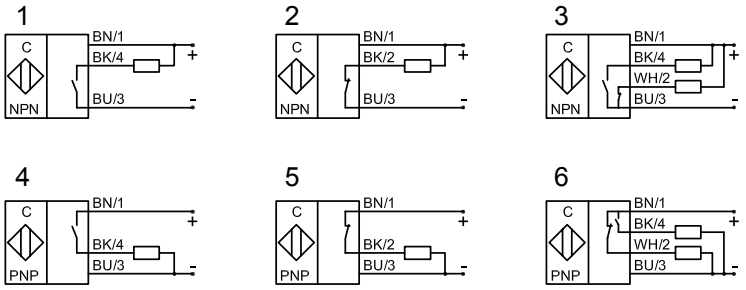
Housing M 8 x 1
- Housing material: Stainless steel VA
- Sensing distance 0.1…2.5 mm adjustable with 270° potentiometer
- With flange connector M 8 x 1

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 (NO)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A11-S-Y7**
Art.-No.	**KA 0736**
Connection diagram No.	4
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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	-

* With sealed potentiometer screw





Made in Germany

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Capacitive Sensors

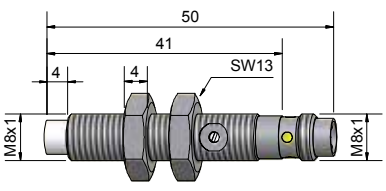
Series 80 - PNP

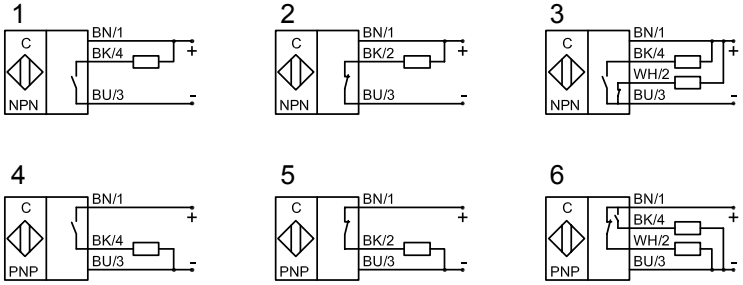
Housing M 8 x 1
- Housing material: Stainless steel VA
- Sensing distance 0.5…4 mm adjustable with 270° potentiometer
- With flange connector M 8 x 1

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 (NO)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A21-S-Y7**
Art.-No.	**800 130**
Connection diagram No.	4
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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	-

* With sealed potentiometer screw





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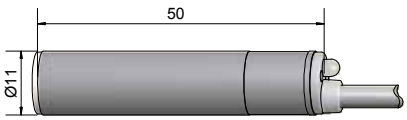
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

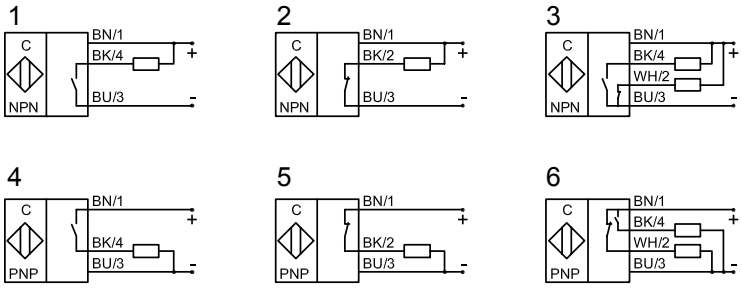
Housing Ø 11 mm
- Housing material: Brass
- Sensing distance 0.5…5 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-10-A**
Art.-No.	**KA 0040**
Connection diagram No.	3
Type PNP	**KAS-80-10-A**
Art.-No.	**KA 0045**
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, PUR, 4 x 0.14 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





All specifications are subject to change without notice. (04/2013)

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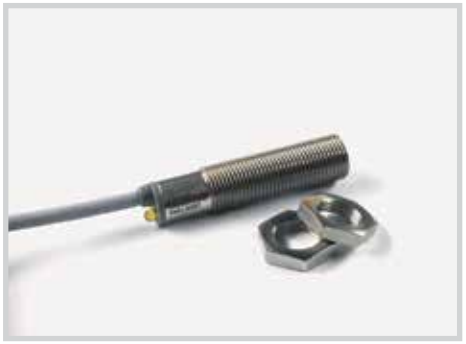


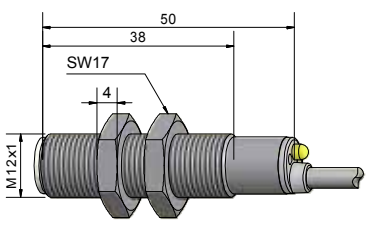
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

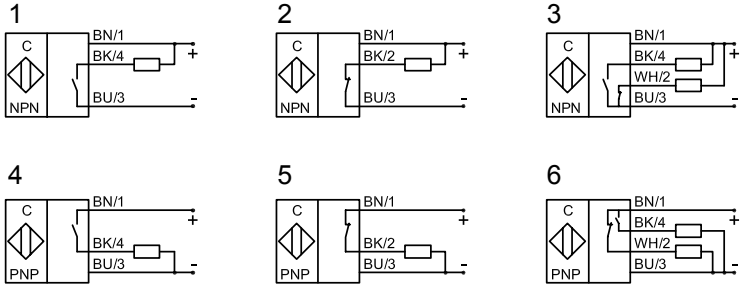
Housing M 12 x 1
- Housing material: Stainless steel VA
- Sensing distance 0…6 mm adjustable

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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A12-A**
Art.-No.		**700 150**
Connection diagram No.		3
Type PNP	**KAS-80-A12-S**	**KAS-80-A12-A**
Art.-No.	**800 200**	**800 150**
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)	≤ 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.	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 mm²	2 m, PUR, 4 x 0.14 mm²
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

* With sealed potentiometer screw





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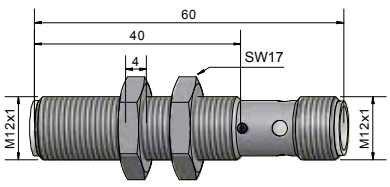
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

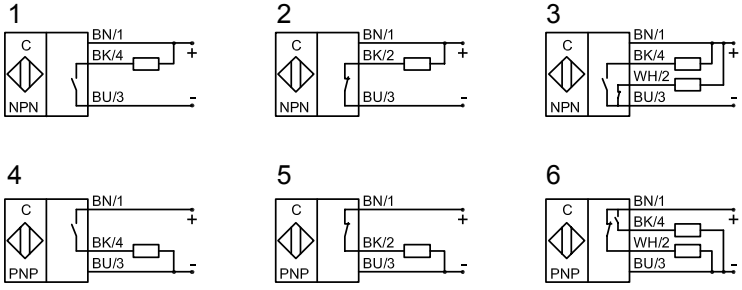
Housing M 12 x 1
- Housing material: Stainless steel VA
- Sensing distance 0…6 mm adjustable
- With flange connector M 12 x 1

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 (NO + NC)
Type NPN	**KAS-70-A12-A-Y5**
Art.-No.	**700 724**
Connection diagram No.	3
Type PNP	**KAS-80-A12-A-Y5**
Art.-No.	**800 724**
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.	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

* With sealed potentiometer screw





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Capacitive Sensors with analogue output

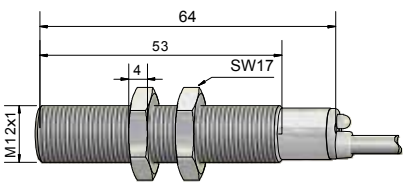
Series 80 - IL

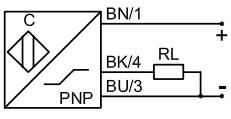
Housing M 12 x 1
- Housing material: Brass
- Operating range 0…5 mm

Certificate:

Technical data	Flush mountable
Operating range	0...5 mm
Linear range	0…3.5 mm
Electrical version	3-wire DC
Output function	Analogue
Type Analogue PNP	**KAS-80-A12-IL**
Art.-No.	**800 400**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA...≤ 4 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA...≤ 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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





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Capacitive Sensors

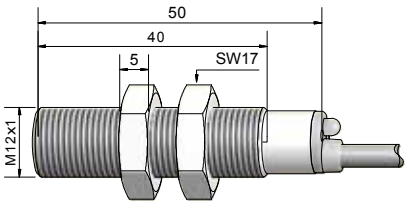
Series 80 - PNP

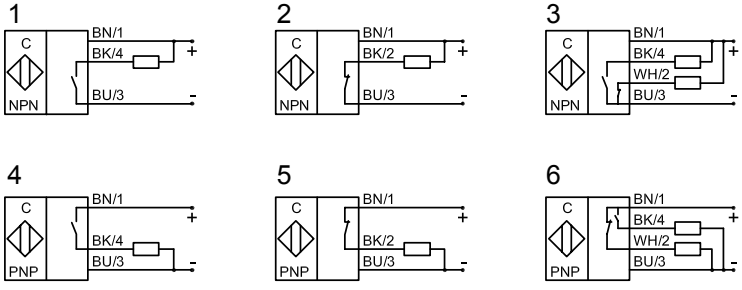
Housing M 12 x 1
- Housing material: PTFE
- Applicable for detection of chemical aggressive media
- Also suitable for food applications
- Sensing distance 0…6 mm adjustable

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A12-A-K-PTFE**
Art.-No.	**KA 0142**
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.	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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





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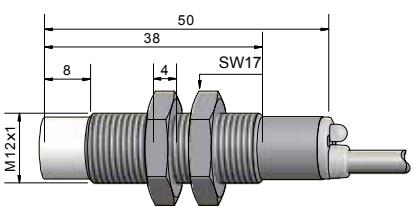
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

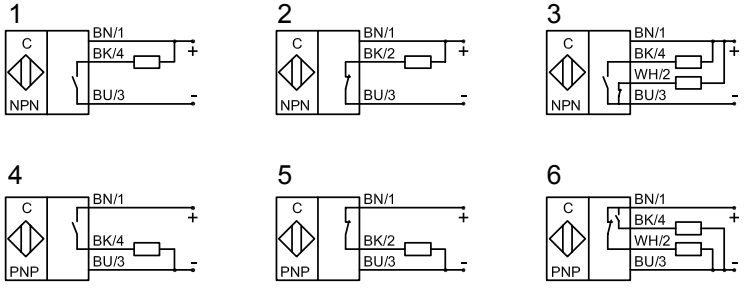
Housing M 12 x 1
- Housing material: Stainless steel VA
- Sensing distance 0.5…10 mm adjustable

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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A22-A**
Art.-No.		**700 735**
Connection diagram No.		3
Type PNP	**KAS-80-A22-S**	**KAS-80-A22-A**
Art.-No.	**800 750**	**800 735**
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)	≤ 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 mm²	2 m, PUR, 4 x 0.14 mm²
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

* With sealed potentiometer screw





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Capacitive Sensors

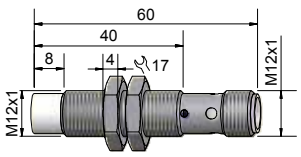
Series 80 - PNP

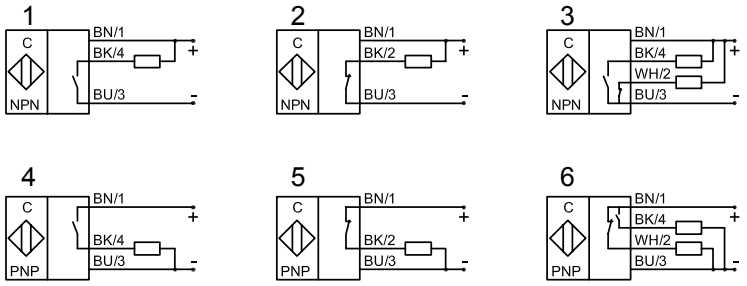
Housing M 12 x 1
- Housing material: Stainless steel VA
- Sensing distance 0.5…10 mm adjustable
- With flange connector M 12 x 1

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A22-A-Y5**
Art.-No.	**800 736**
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	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

* With sealed potentiometer screw





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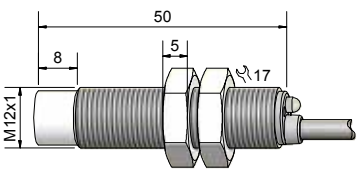
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

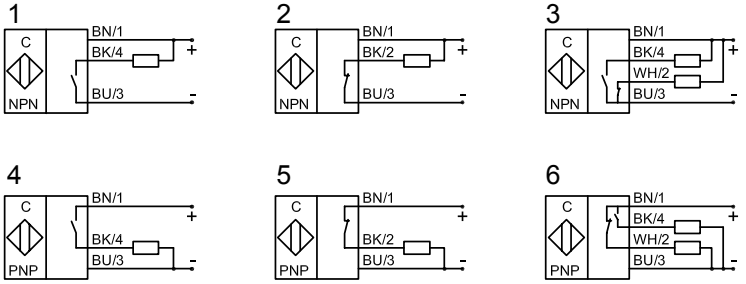
Housing M 12 x 1
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also suitable for food applications
- Sensing distance 0.5…10 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-A22-A-K-PTFE**
Art.-No.	**700 745**
Connection diagram No.	3
Type PNP	**KAS-80-A22-A-K-PTFE**
Art.-No.	**800 745**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





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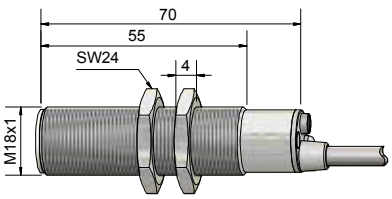
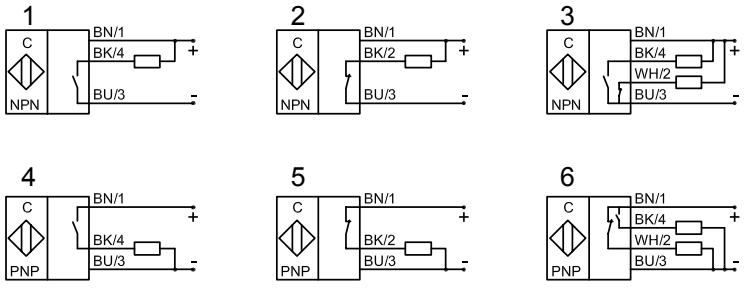
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A13-A**
Art.-No.		**700 800**
Connection diagram No.		3
Type PNP	**KAS-80-A13-S**	**KAS-80-A13-A**
Art.-No.	**801 200**	**800 800**
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)	≤ 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 mm²	2 m, PVC, 4 x 0,34 mm²
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





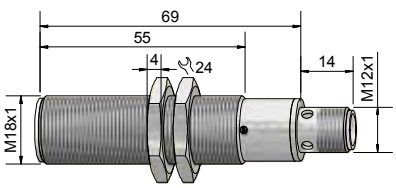
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

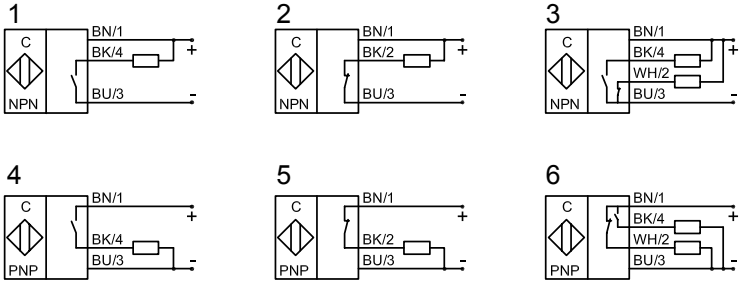
Housing M 18 x 1
- Housing material: Brass
- Sensing distance 0.5…10 mm adjustable
- With flange connector M 12 x 1

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 (NO + NC)
Type NPN	**KAS-70-A13-A-Y5**
Art.-No.	**701 981**
Connection diagram No.	3
Type PNP	**KAS-80-A13-A-Y5**
Art.-No.	**801 981**
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

* With sealed potentiometer screw





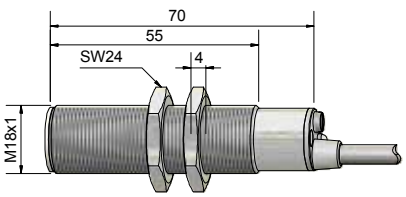
Capacitive Sensors with analogue output

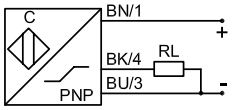
Series 80 - IL

Housing M 18 x 1
- Housing material: Brass
- Operating range 0...8 mm

Certificate:

Technical data	Flush mountable
Operating range	0...8 mm
Linear range	0...5 mm
Electrical version	3-wire DC
Output function	Analogue
Type Analogue PNP	**KAS-80-A13-IL**
Art.-No.	**801 600**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA...≤ 4 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA...≤ 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 0,34 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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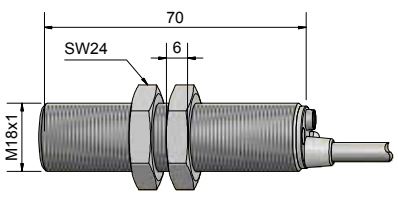
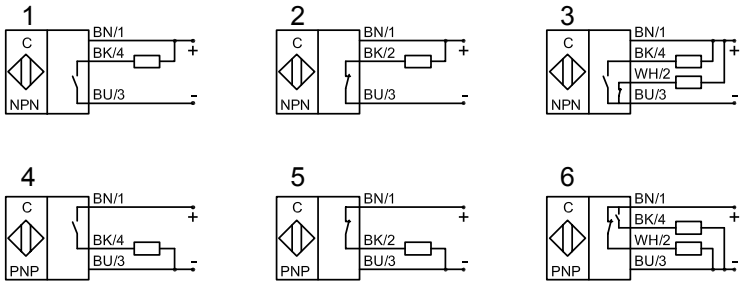
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO+NC)
Type NPN	**KAS-70-A13-A-K**
Art.-No.	**701 000**
Connection diagram No.	3
Type PNP	**KAS-80-A13-A-K**
Art.-No.	**801 000**
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 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes



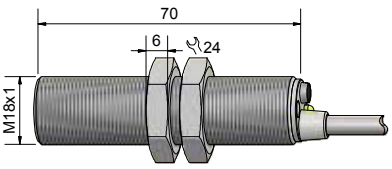


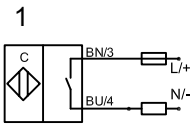
Capacitive Sensors
Serie 90 - AC / DC

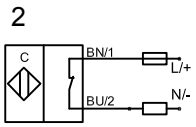
Housing M 18 x 1
- Housing material: PA / PPO
- Sensing distance 1…10 mm adjustable

Certificate:

Technical data	Flush mountable	Flush mountable
Operating distance S_n	5 mm	5 mm
Operating distance min. / max. adjustable	1...10 mm	1...10 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-A13-S**	**KAS-90-A13-Ö**
Art.-No.	**900 100**	**900 200**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PUR, 2 x 0.34 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO







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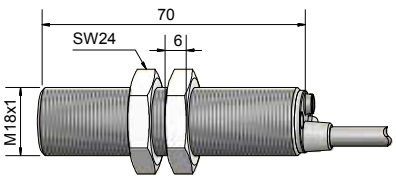
Capacitive Sensors

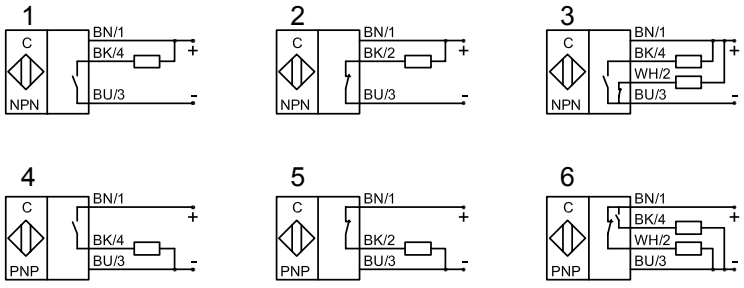
Series 80 - PNP

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A13-A-K-PTFE**
Art.-No.	**801 020**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes



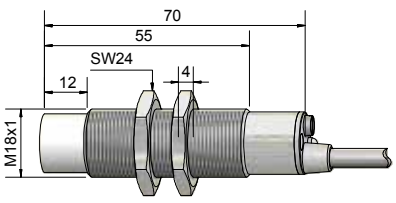


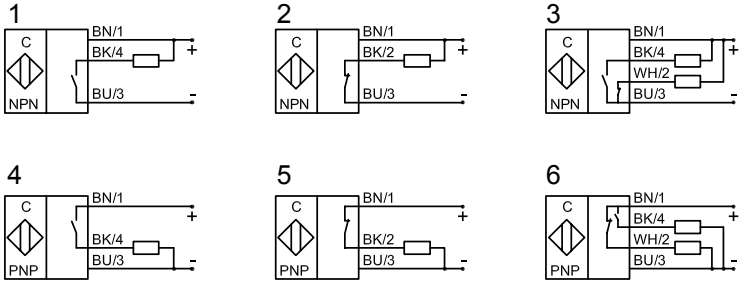
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing M 18 x 1
- Housing material: Brass
- Sensing distance 0.5…15 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...15 mm	0.5...15 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A23-A**
Art.-No.		**703 200**
Connection diagram No.		3
Type PNP	**KAS-80-A23-S**	**KAS-80-A23-A**
Art.-No.	**803 600**	**803 200**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.34 mm²
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





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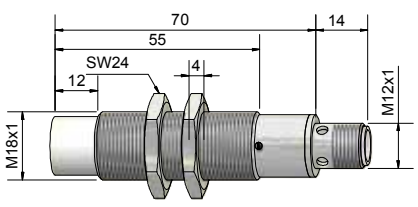
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

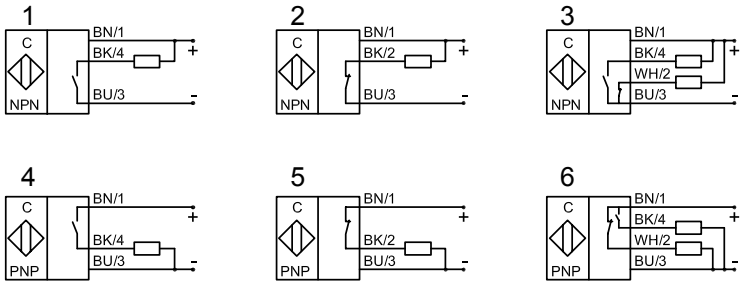
Housing M 18 x 1
- Housing material: Brass
- Sensing distance 0.5…15 mm adjustable
- With flange connector M 12 x 1

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 (NO + NC)
Type NPN	**KAS-70-A23-A-Y5**
Art.-No.	**704 091**
Connection diagram No.	3
Type PNP	**KAS-80-A23-A-Y5**
Art.-No.	**804 091**
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	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

* With sealed potentiometer screw



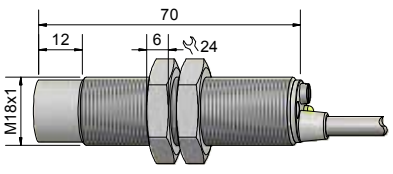


Capacitive Sensors
Series 90 - AC / DC

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 (NO)	Normally closed (NC)
Type	**KAS-90-A23-S**	**KAS-90-A23-Ö**
Art.-No.	**900 300**	**900 400**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PUR, 2 x 0.34 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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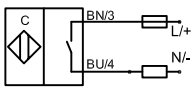

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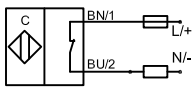

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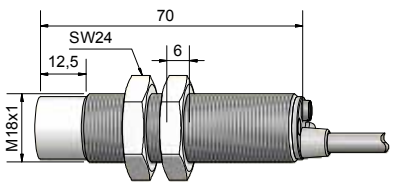
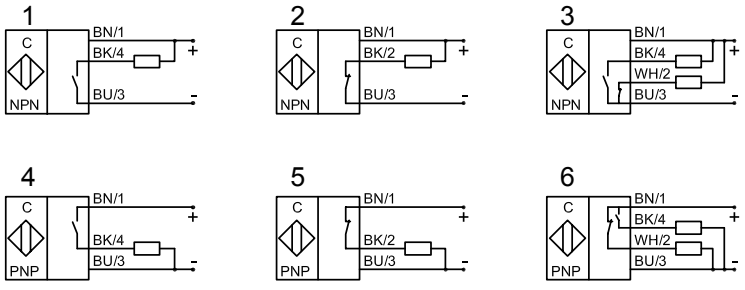
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-A23-A-K-PTFE**
Art.-No.	**703 561**
Connection diagram No.	3
Type PNP	**KAS-80-A23-A-K-PTFE**
Art.-No.	**803 561**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





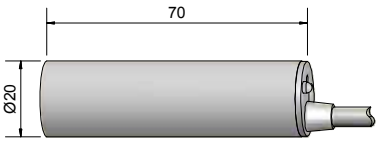
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

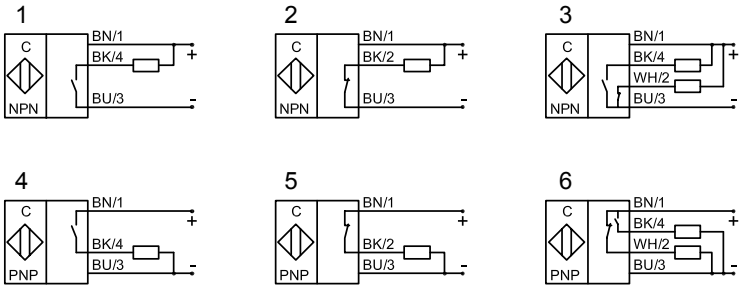
Housing Ø 20 mm
- Housing material: PA / PPO
- Sensing distance 0.5...20 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-23-A**
Art.-No.	**712 800**
Connection diagram No.	3
Type PNP	**KAS-80-23-A**
Art.-No.	**812 800**
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 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





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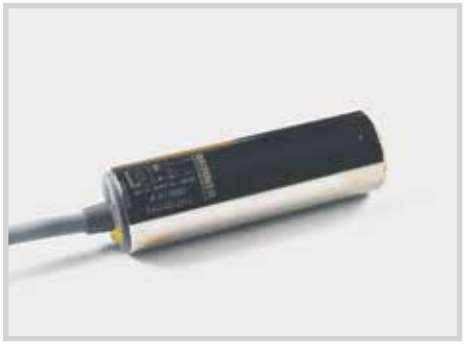


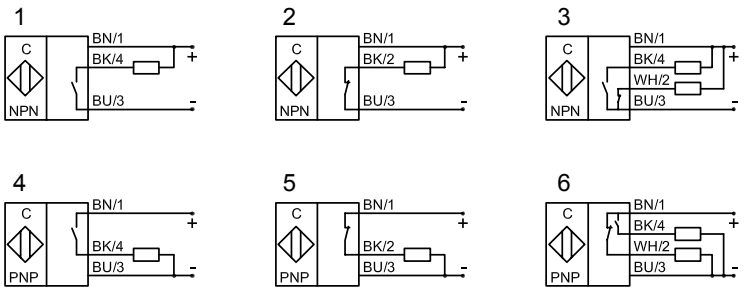
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-20-A**
Art.-No.		**711 600**
Connection diagram No.		3
Type PNP	**KAS-80-20-S**	**KAS-80-20-A**
Art.-No.	**811 800**	**811 600**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.34 mm²
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

* With sealed potentiometer screw



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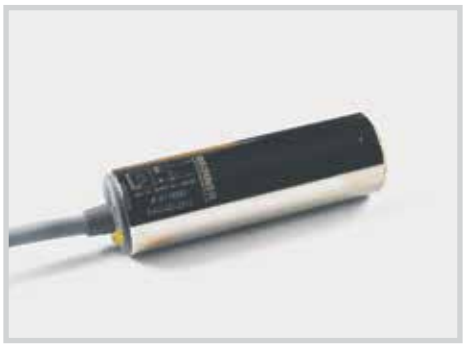


Capacitive Sensors with analogue output

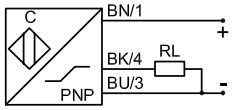
Series 80 - IL

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
Type Analogue PNP	**KAS-80-20-IL**
Art.-No.	**812 200**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA ... ≤ 4 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA ... ≤ 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 0.34 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw



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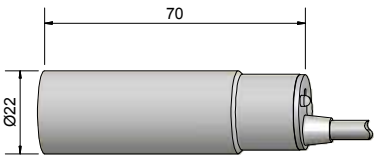
Capacitive Sensors
Series 90 - AC / DC

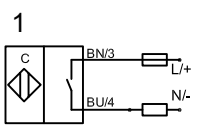
Housing Ø 22 mm
- Housing material: PA / PPO
- Sensing distance 2...8 mm adjustable

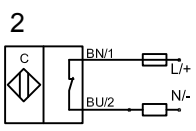
Certificate:

Technical data	Flush mountable	Flush mountable
Operating distance S_n	6 mm	6 mm
Operating distance min. / max. adjustable	2...8 mm	2...8 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-20-S**	**KAS-90-20-Ö**
Art.-No.	**901 100**	**901 200**
Connection diagram No.	1	2
Operating voltage (U_B)	20…250 V AC / DC	20…250 V AC / DC
Output current max. (I_e)	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 60529	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PUR, 2 x 0.34 mm²	2 m, PUR, 2 x 0.34 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO

* With sealed potentiometer screw







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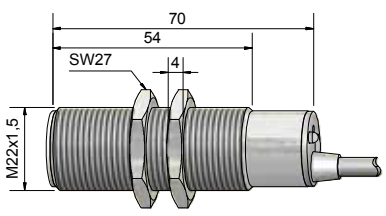
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

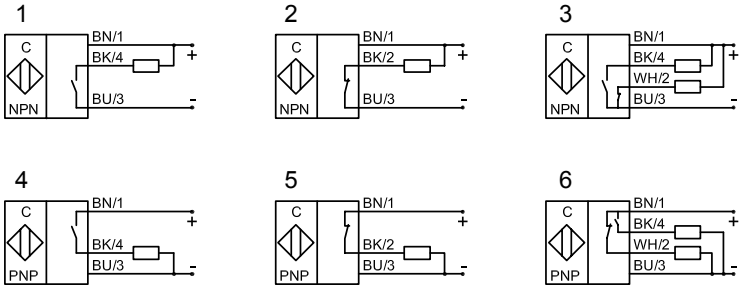
Housing M 22 x 1.5
- Housing material: Brass
- Sensing distance 0.5...15 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-20-A-M22**
Art.-No.	**KA 0273**
Connection diagram No.	3
Type PNP	**KAS-80-20-A-M22**
Art.-No.	**KA 0272**
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	3 m, PVC, 4 x 0.34 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





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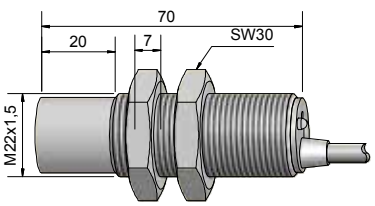
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

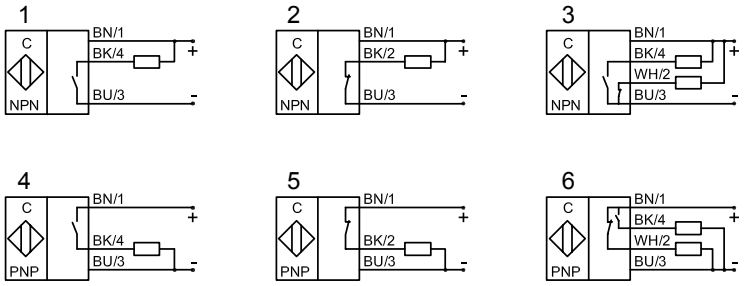
Housing M 22 x 1.5
- Housing material: PA / PPO
- Sensing distance 0.5...20 mm adjustable

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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-23-S-M22**	**KAS-70-23-A-M22**
Art.-No.	**713 600**	**713 400**
Connection diagram No.	1	3
Type PNP	**KAS-80-23-S-M22**	**KAS-80-23-A-M22**
Art.-No.	**813 600**	**813 400**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.34 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes

* With sealed potentiometer screw





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Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

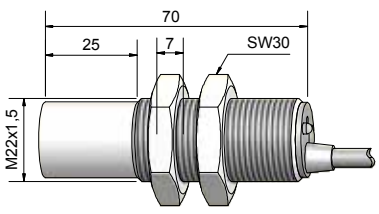
HP

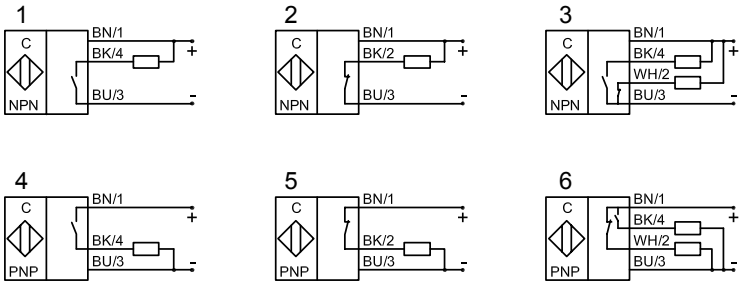
Housing M 22 x 1.5
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Also suitable for food applications
- Sensing distance 0.5...20 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-23-A-M22-PTFE**
Art.-No.	**712 900**
Connection diagram No.	3
Type PNP	**KAS-80-23-A-M22-PTFE**
Art.-No.	**812 900**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





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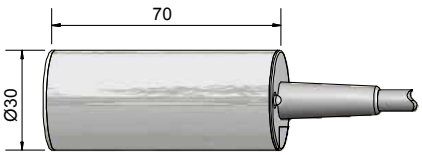
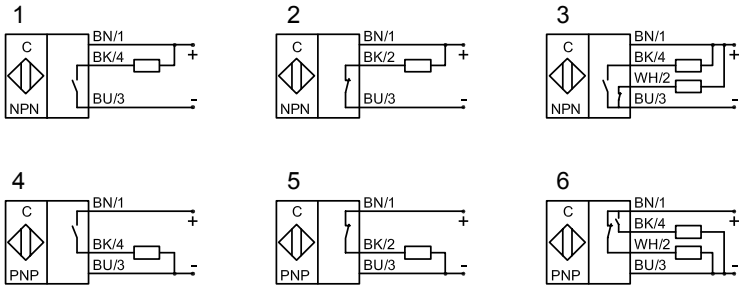
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 30 mm
- 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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-30-S**	**KAS-70-30-A**
Art.-No.	**714 600**	**714 200**
Connection diagram No.	1	3
Type PNP	**KAS-80-30-S**	**KAS-80-30-A**
Art.-No.	**814 600**	**814 200**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
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





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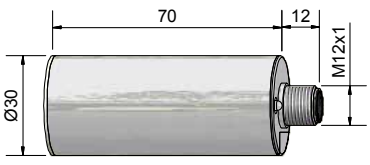
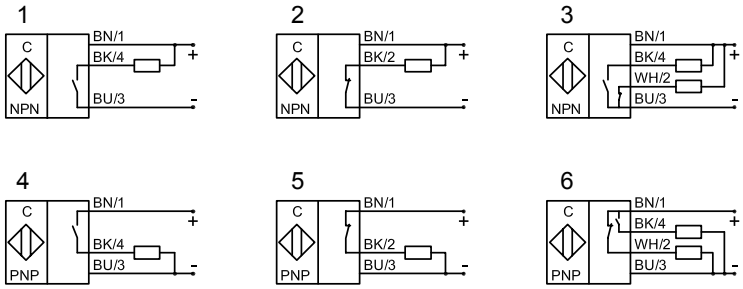
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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-wire DC
Output function	Antivalent (NO + NC)
Type NPN	**KAS-70-30-A-Y5**
Art.-No.	**714 400**
Connection diagram No.	3
Type PNP	**KAS-80-30-A-Y5**
Art.-No.	**814 400**
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





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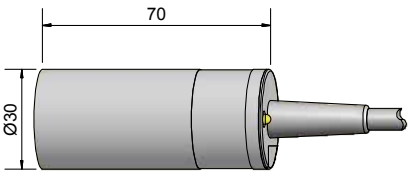
Capacitive Sensors
Series 90 AC/DC

Housing Ø 30 mm
- 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 (NO)	Normally closed (NC)
Type	**KAS-90-30-S**	**KAS-90-30-Ö**
Art.-No.	**901 500**	**901 600**
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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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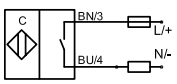

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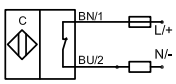

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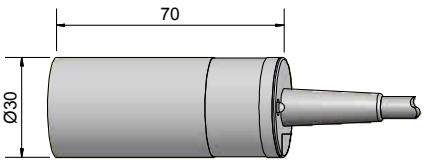
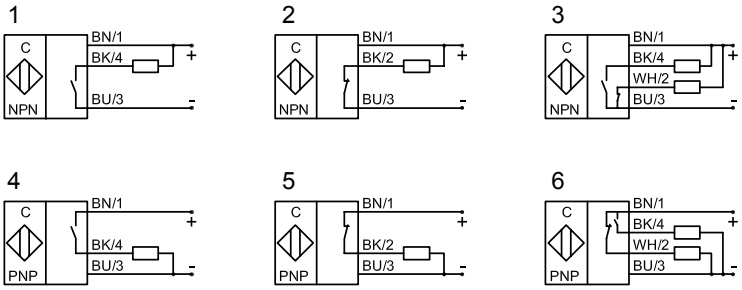
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 30 mm
- 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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-35-S**	**KAS-70-35-A**
Art.-No.	**719 400**	**719 000**
Connection diagram No.	1	3
Type PNP	**KAS-80-35-S**	**KAS-80-35-A**
Art.-No.	**819 400**	**819 000**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes





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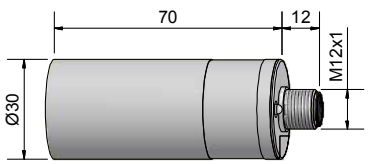
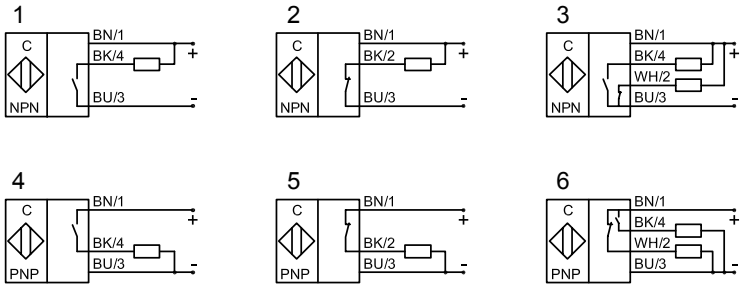
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 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 (NO + NC)
Type NPN	**KAS-70-35-A-Y5**
Art.-No.	**719 200**
Connection diagram No.	3
Type PNP	**KAS-80-35-A-Y5**
Art.-No.	**819 200**
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	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes





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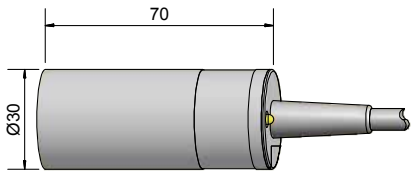
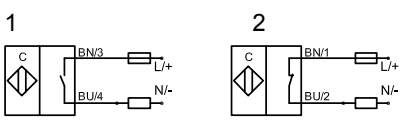
Capacitive Sensors
Series 90 AC / DC

Housing Ø 30 mm
- 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 (NO)	Normally closed (NC)
Type	**KAS-90-32-S**	**KAS-90-32-Ö**
Art.-No.	**902 100**	**902 200**
Connection diagram No.	1	2
Operating voltage (U_B)	20…250 V AC / DC	20…250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO





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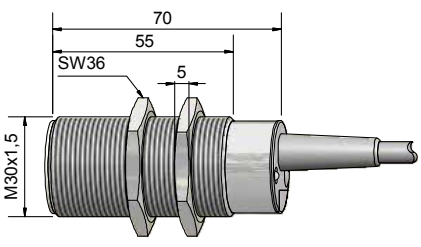
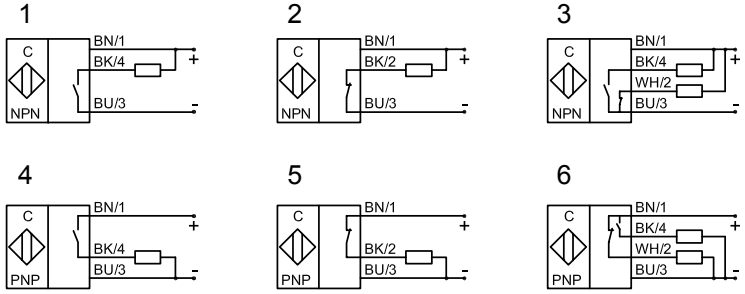
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A14-A**
Art.-No.		**705 200**
Connection diagram No.		3
Type PNP	**KAS-80-A14-S**	**KAS-80-A14-A**
Art.-No.	**806 000**	**805 200**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
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





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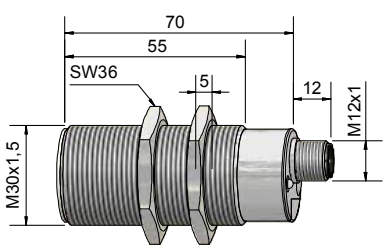
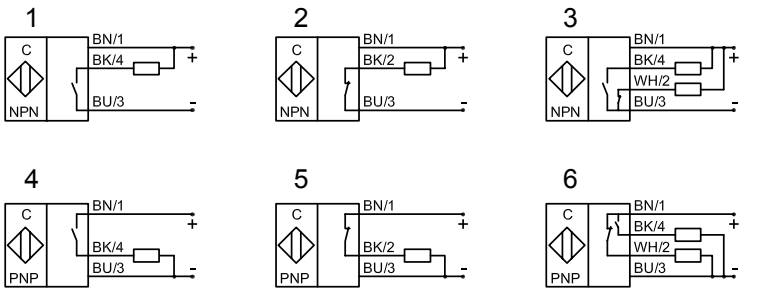
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-A14-A-Y5**
Art.-No.	**705 400**
Connection diagram No.	3
Type PNP	**KAS-80-A14-A-Y5**
Art.-No.	**805 400**
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





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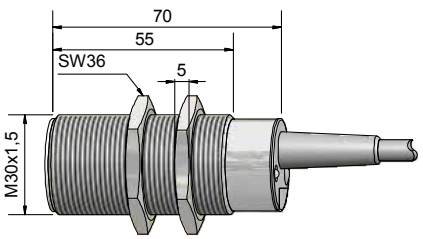
Capacitive Sensors with analogue output

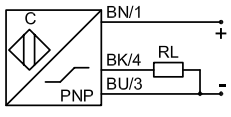
Series 80 - IL

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

Certificate:

Technical data	Flush mountable
Operating range	0...20 mm
Linear range	0…14 mm
Electrical version	3-wire DC
Output function	Analogue
Type Analogue PNP	**KAS-80-A14-IL**
Art.-No.	**806 400**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA...≤ 4 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA...≤ 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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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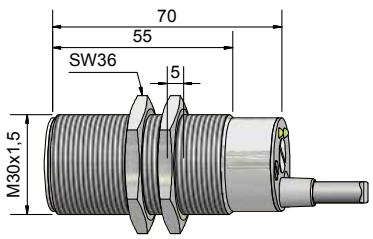
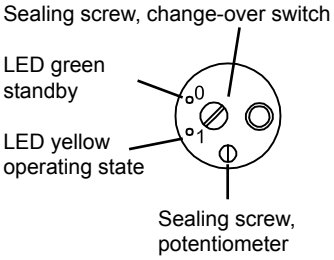
Capacitive Sensors
Series 2000 - quattro³

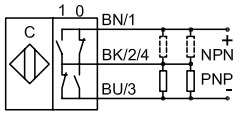
Housing M 30 x 1.5
- Housing material: Brass
- Sensing distance 2...20 mm adjustable
- Multifunction sensor: NPN / PNP; NO-/ NC function switchable

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

Technical data	Flush mountable
Operating distance S_n	10 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	3-wire DC
Output function	NO / NC switchable
Type NPN / PNP switchable	**KAS-2000-A14**
Art.-No.	**770 100**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 529	IP 67
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







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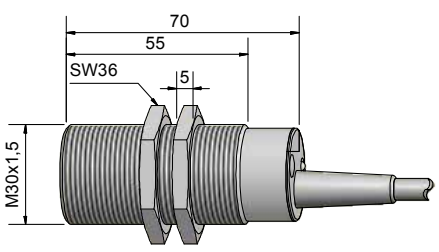
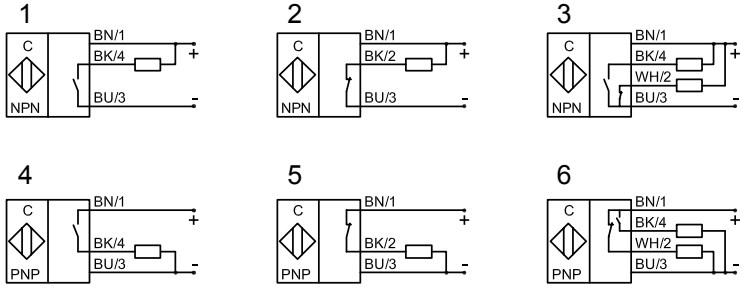
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 0.5...25 mm adjustable

Certificate:

Technical data	Flush mountable	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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A14-A-K**
Art.-No.		**705 600**
Connection diagram No.		3
Type PNP	**KAS-80-A14-S-K**	**KAS-80-A14-A-K**
Art.-No.	**807 200**	**805 600**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes





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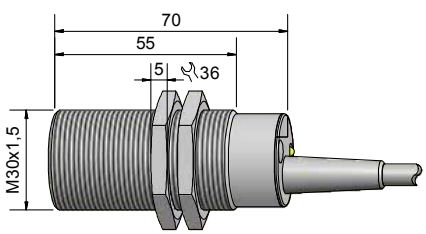
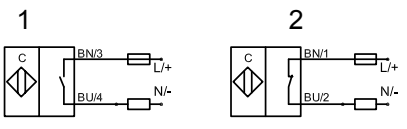
Capacitive Sensors
Series 90 - AC / DC

Housing M 30 x 1.5
- Housing material: PA / PPO
- 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 m
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-A14-S**	**KAS-90-A14-Ö**
Art.-No.	**900 500**	**900 600**
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 529	IP 67	IP 67
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 2 x 0.75 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO





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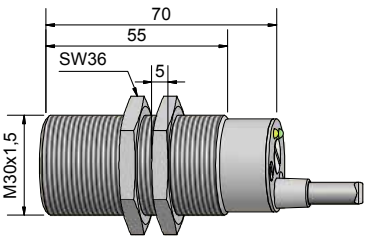
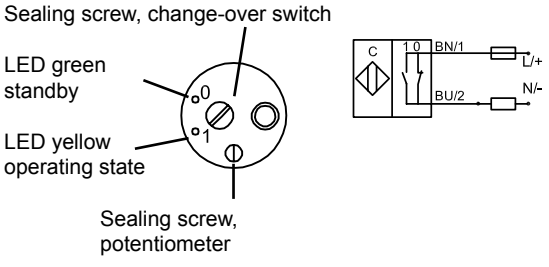
Capacitive Sensors
Series 1000 - AC / DC - duo²

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 2...15 mm adjustable
- NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroProtect™

Technical data	Flush mountable
Operating distance S_n	10 mm
Operating distance min. / max. adjustable	2...15 mm
Electrical version	2-wire AC / DC
Output function	NO / NC switchable
Type	**KAS-1000-A14-K**
Art.-No.	**945 000**
Operating voltage (U_B)	20...250 V AC / DC
Output current max. (I_e)	330 mA
Load current min.	5 mA
Voltage drop max. (U_d)	≤ 6 V
No-load current (I_o)	Typ. 2 mA
Frequency of operating cycles max.	25 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, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





All specifications are subject to change without notice. (04/2013)

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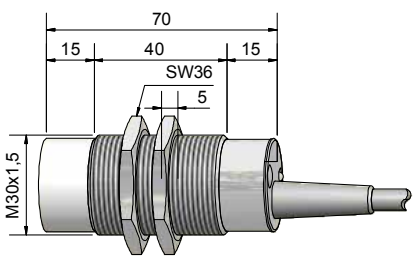
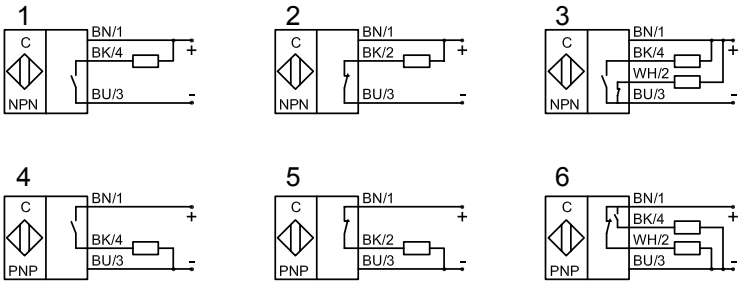
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-A24-A**
Art.-No.	**708 000**
Connection diagram No.	3
Type PNP	**KAS-80-A24-A**
Art.-No.	**808 000**
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, PVC, 4 x 0.5 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





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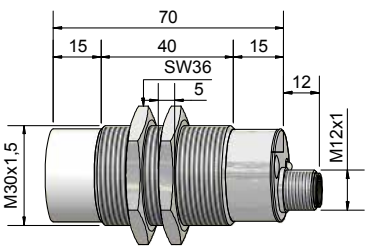
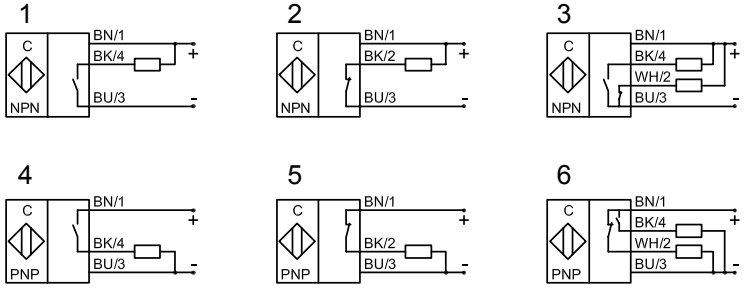
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing M 30 x 1.5
- Housing material: Brass
- Sensing distance 1...30 mm adjustable
- With flange connector M 12 x 1

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 (NO + NC)
Type NPN	**KAS-70-A24-A-Y5**
Art.-No.	**708 200**
Connection diagram No.	3
Type PNP	**KAS-80-A24-A-Y5**
Art.-No.	**808 200**
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





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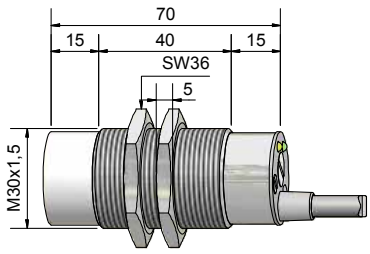
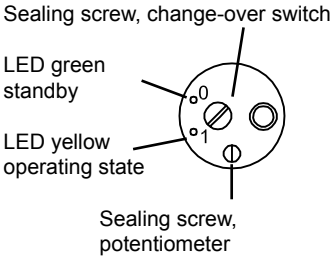
Capacitive Sensors
Series 2000 - quattro³

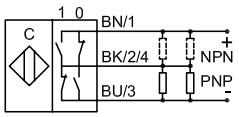
Housing M 30 x 1.5
- Housing material: Brass
- Sensing distance 3...25 mm adjustable
- Multifunction sensor: NPN / PNP; NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

Technical data	Non-flush mountable
Operating distance S_n	15 mm
Operating distance min. / max. adjustable	3...25 mm
Electrical version	3-wire DC
Output function	NO / NC switchable
Type NPN / PNP switchable	**KAS-2000-A24**
Art.-No.	**770 200**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 529	IP 67
Norm	EN 60947-5-2
Connection cable	2 m, PVC, 3 x 0.75 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







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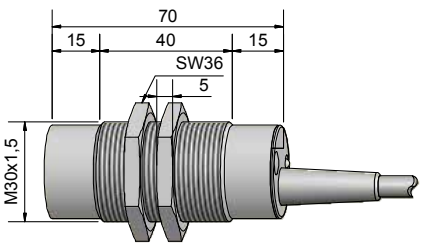
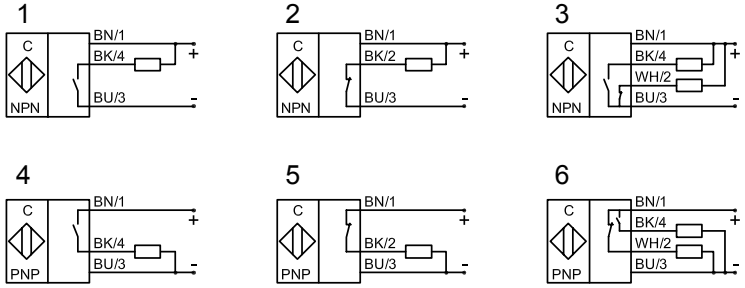
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 1...30 mm adjustable

Certificate:

Technical data	Non-flush mountable	Non-flush mountable
Operating distance S_n	15 mm	15 mm
Operating distance min. / max. adjustable	1...30 mm	1...30 mm
Electrical version	3-wire DC	4-wire DC
Output function	Normally open (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-A24-A-K**
Art.-No.		**708 400**
Connection diagram No.		3
Type PNP	**KAS-80-A24-S-K**	**KAS-80-A24-A-K**
Art.-No.	**809 600**	**808 400**
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)	≤ 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, PVC, 3 x 0.75 mm²	2 m, PVC, 4 x 0.5 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes





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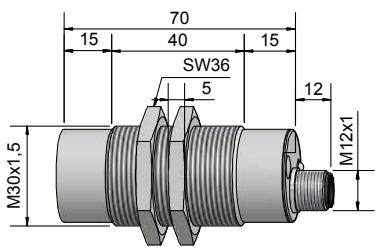
Capacitive Sensors

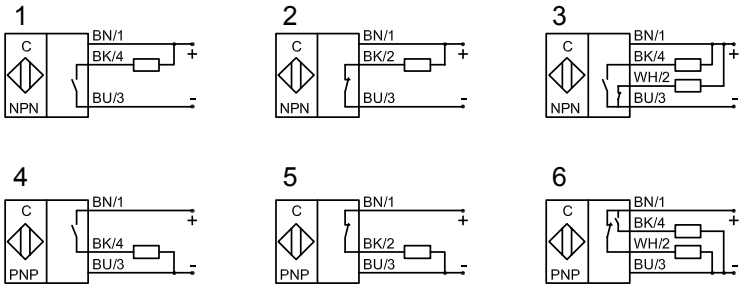
Series 80 - PNP

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 1...30 mm adjustable
- 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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A24-A-K-Y5**
Art.-No.	**808 600**
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





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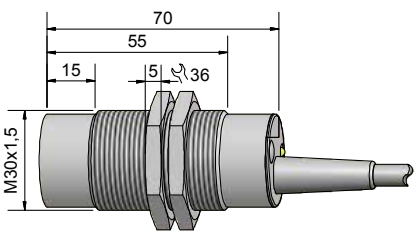
Capacitive Sensors
Series 90 - AC / DC

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 1...25 mm adjustable

Certificate:

Technical data	Non-flush mountable	Non-flush mountable
Operating distance S_n	15 mm	15 mm
Operating distance min. / max. adjustable	1...25 mm	1...25 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-A24-S**	**KAS-90-A24-Ö**
Art.-No.	**900 800**	**900 900**
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 529	IP 67	IP 67
Norm	EN 60947-5-2	EN 60947-5-2
Connection cable	2 m, PVC, 2 x 0.75 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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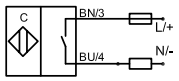

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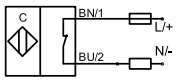

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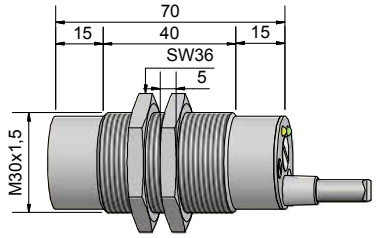
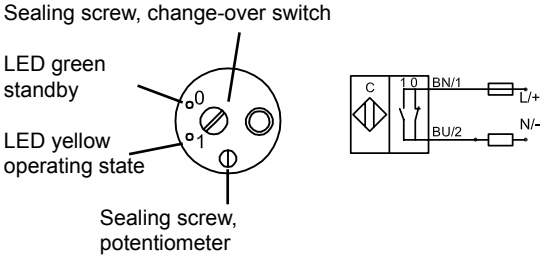
Capacitive Sensors
Series 1000 - AC / DC - duo

Housing M 30 x 1.5
- Housing material: PA / PPO
- Sensing distance 3...20 mm adjustable
- NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroProtect™

Technical data	Non-flush mountable
Operating distance S_n	15 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire AC / DC
Output function	NO / NC switchable
Type	**KAS-1000-A24-K**
Art.-No.	**945 100**
Operating voltage (U_B)	20...250 V AC / DC
Output current max. (I_e)	330 mA
Load current min.	5 mA
Voltage drop max. (U_d)	≤ 6 V
No-load current (I_o)	Typ. 2 mA
Frequency of operating cycles max.	25 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, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





All specifications are subject to change without notice. (04/2013)

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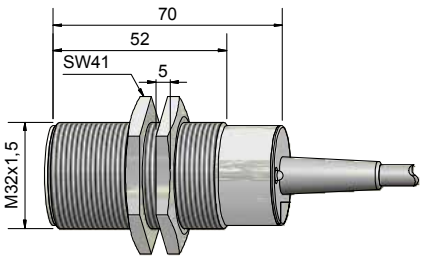
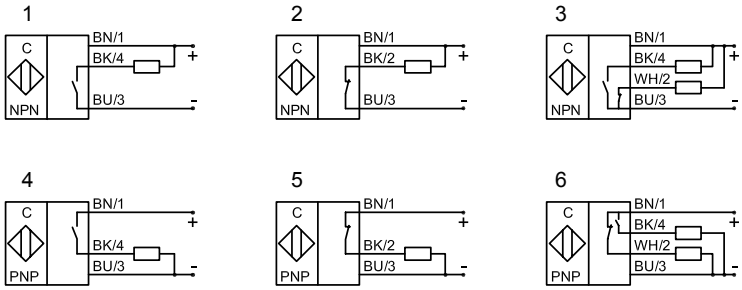
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-30-S-M32**	**KAS-70-30-A-M32**
Art.-No.	**716 200**	**715 800**
Connection diagram No.	1	3
Type PNP	**KAS-80-30-S-M32**	**KAS-80-30-A-M32**
Art.-No.	**816 200**	**815 800**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
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





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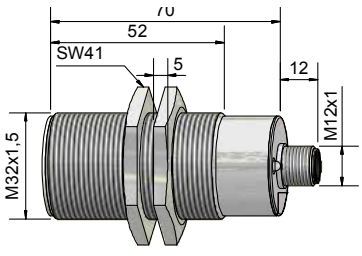
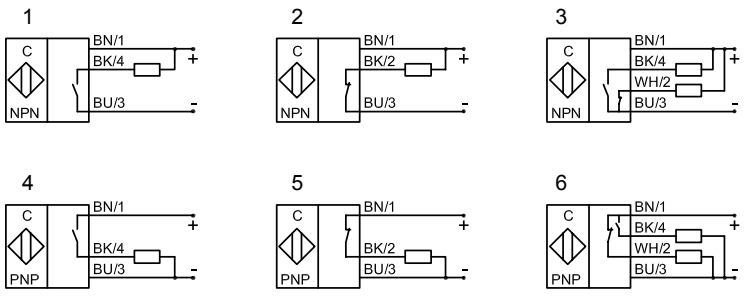
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-30-A-M32-Y5**
Art.-No.	**716 000**
Connection diagram No.	3
Type PNP	**KAS-80-30-A-M32-Y5**
Art.-No.	**816 000**
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





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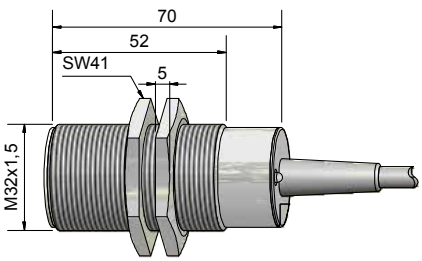
Capacitive Sensors with analogue output

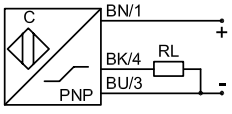
Series 80 - IL

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

Certificate:

Technical data	Flush mountable
Operating range	0...30 mm
Linear range	0...20 mm
Electrical version	3-wire DC
Output function	Analogue
Type Analogue PNP	**KAS-80-30-IL-M32**
Art.-No.	**816 600**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA...≤ 4mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA...≤ 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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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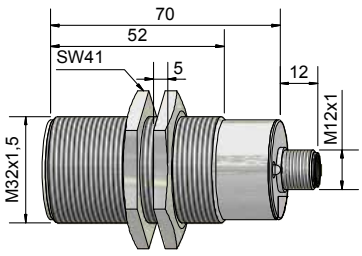
Capacitive Sensors with analogue output

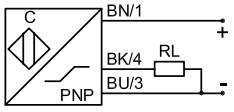
Series 80 - IL

Housing M 32 x 1.5
- Housing material: Brass
- Operating range 0...30 mm
- With flange connector M 12 x 1

Certificate:

Technical data	Flush mountable
Operating range	0...30 mm
Linear range	0...20 mm
Electrical version	3-pin DC
Output function	Analogue
Type Analogue PNP	**KAS-80-30-IL-M32-Y5**
Art.-No.	**816 700**
Operating voltage (U_B)	15...30 V DC
Output current max. (I_e)	≥ 20 mA...≤ 4 mA
Permitted residual ripple max.	5 %
No-load current (I_o)	≤ 40 mA
Output current active surface free	≥ 20 mA
Output current active surface covered	≤ 20 mA...≤ 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	Flange connector M 12 x 1
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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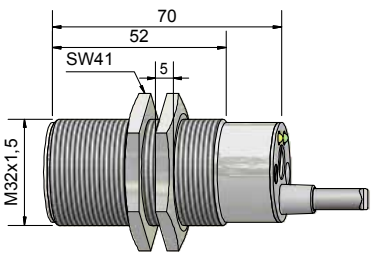
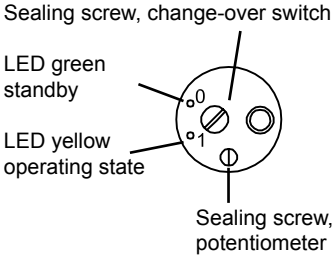
Capacitive Sensors
Series 2000 - quattro³

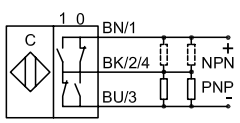
Housing M 32 x 1.5
- Housing material: Brass
- Sensing distance 2...25 mm adjustable
- Multifunction sensor: NPN / PNP; NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

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
Type NPN / PNP switchable	**KAS-2000-30-M32**
Art.-No.	**770 600**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







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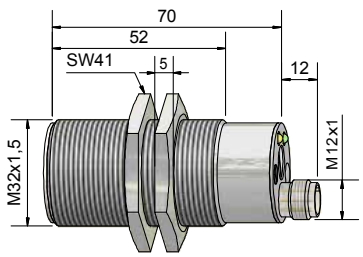
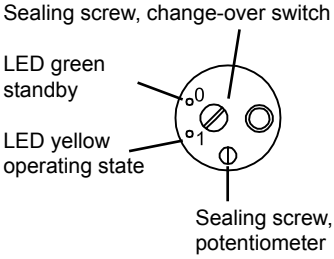
Capacitive Sensors
Series 2000 - quattro³

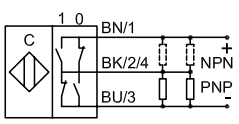
Housing M 32 x 1.5
- Housing material: Brass
- Sensing distance 2...25 mm adjustable
- Multifunction sensor: NPN / PNP; NO / NC function switchable
- With flange connector M 12 x 1

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

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
Type NPN / PNP switchable	**KAS-2000-30-M32-Y3**
Art.-No.	**770 603**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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	Flange connector M 12 x 1
Housing material	Bass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







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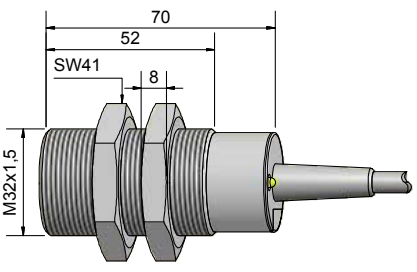
Capacitive Sensors
Series 90 - AC / DC

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 (NO)	Normally closed (NC)
Type	**KAS-90-30-S-M32**	**KAS-90-30-Ö-M32**
Art.-No.	**901 800**	**901 900**
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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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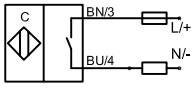

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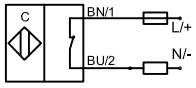

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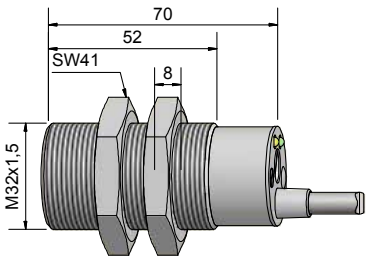
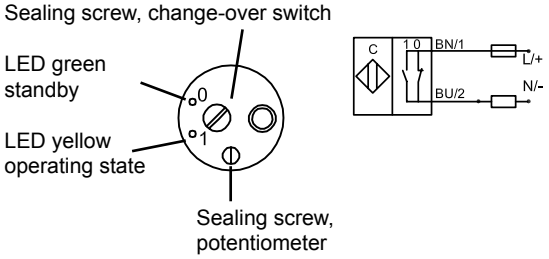
Capacitive Sensors
Series 1000 - AC / DC - duo²

Housing M 32 x 1.5
- Housing material: PA / PPO
- Sensing distance 2...20 mm adjustable
- NO- / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroProtect™

Technical data	Flush mountable
Operating distance S_n	15 mm
Operating distance min. / max. adjustable	2...20 mm
Electrical version	2-wire AC / DC
Output function	NO / NC switchable
Type	**KAS-1000-30-M32**
Art.-No.	**930 200**
Operating voltage (U_B)	20...250 V AC / DC
Output current max. (I_e)	330 mA
Load current min.	5 mA
Voltage drop max. (U_d)	≤ 6 V
No-load current (I_o)	Typ. 2 mA
Frequency of operating cycles max.	25 Hz
Permitted ambient temperature	-25...+70 °C
LED-display	Green & yellow
Protective circuit	Built-in
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PVC, 2 x 0.75 mm²
Norm	EN 60947-5-2
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





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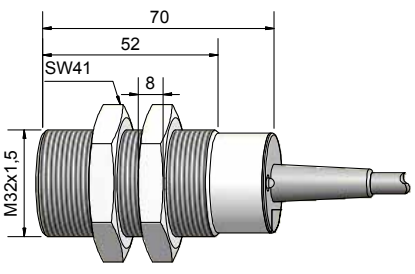
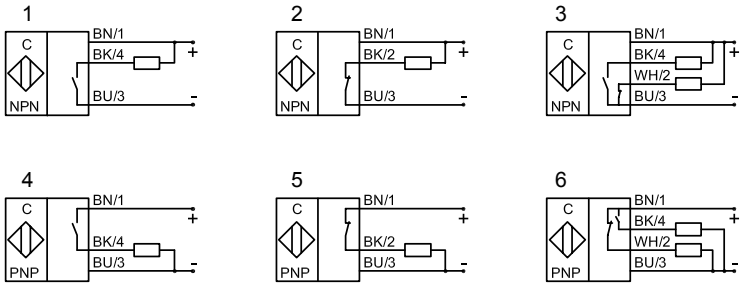
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-30-A-K-M32-PTFE**
Art.-No.	**715 830**
Connection diagram No.	3
Type PNP	**KAS-80-30-A-K-M32-PTFE**
Art.-No.	**815 830**
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 cable	2 m, PVC, 4 x 0.50 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





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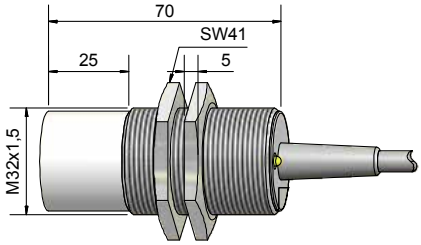
Capacitive Sensors
Series 90 - AC / DC

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 (NO)	Normally closed (NC)
Type	**KAS-90-34-S-M32-PTFE/Ms**	**KAS-90-34-Ö-M32-PTFE/Ms**
Art.-No.	**903 200**	**903 300**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 3 x 0.75 mm²
Housing material	Brass	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO	PA / PPO



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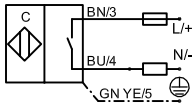

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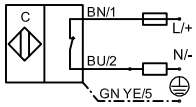

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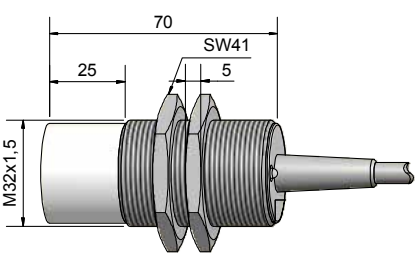
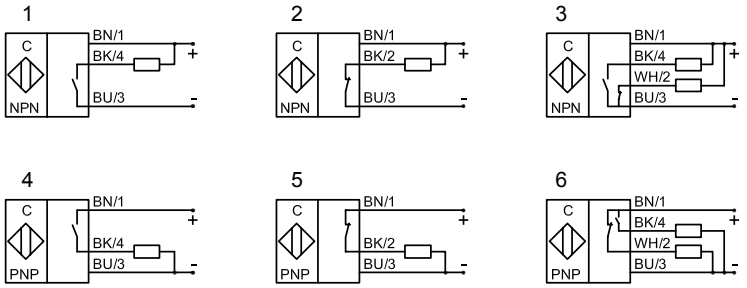
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-34-S-M32-PTFE/V2A**	**KAS-70-34-A-M32-PTFE/V2A**
Art.-No.	**718 600**	**KA 0041**
Connection diagram No.	1	3
Type PNP	**KAS-80-34-S-M32-PTFE/V2A**	**KAS-80-34-A-M32-PTFE/V2A**
Art.-No.	**818 600**	**818 540**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.50 mm²
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





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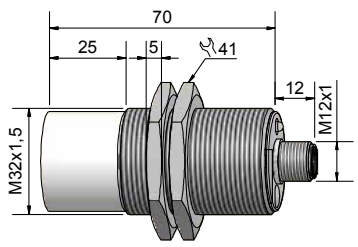
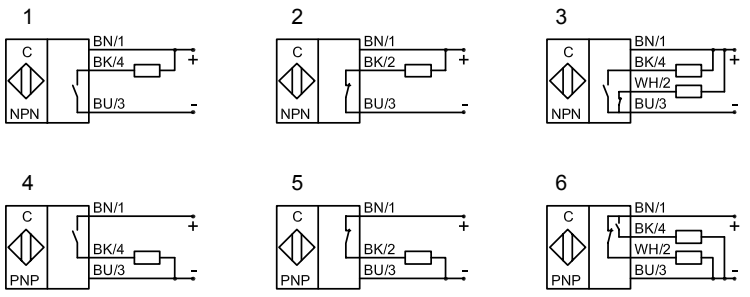
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-34-A-M32-PTFE/V2A-Y5**
Art.-No.	**718 555**
Connection diagram No.	3
Type PNP	**KAS-80-34-A-M32-PTFE/V2A-Y5**
Art.-No.	**818 555**
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





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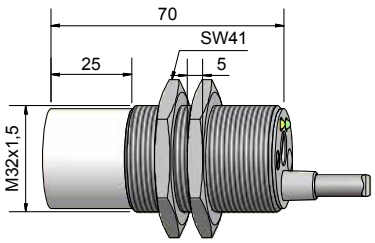
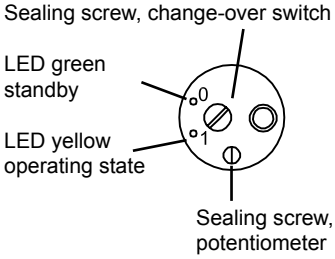
Capacitive Sensors
Series 2000 - quattro[3]

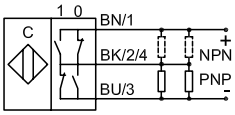
Housing M 32 x 1.5
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable
- Multifunction sensor: NPN / PNP
  NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroProtect™

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
Type NPN / PNP switchable	**KAS-2000-34-M32-PTFE/V2A**
Art.-No.	**771 000**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







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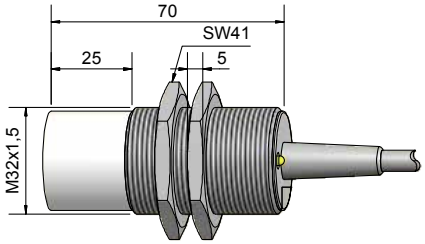
Capacitive Sensors
Series 90 - AC / DC

Housing M 32 x 1.5
- Housing material: Stainless steel VA
- 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 (NO)	Normally closed (NC)
Type	**KAS-90-34-S-M32-PTFE/V2A**	**KAS-90-34-Ö-M32-PTFE/V2A**
Art.-No.	**903 400**	**903 500**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 3 x 0.75 mm²
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



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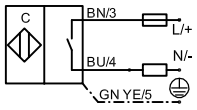

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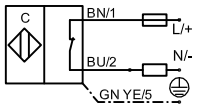

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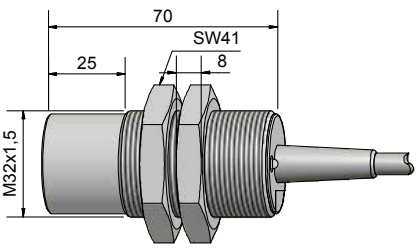
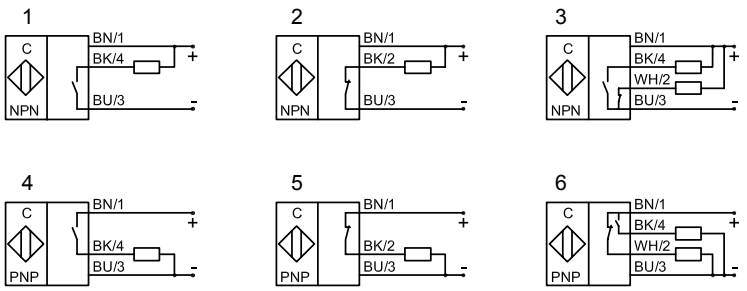
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-35-S-M32**	**KAS-70-35-A-M32**
Art.-No.	**720 600**	**720 200**
Connection diagram No.	1	3
Type PNP	**KAS-80-35-S-M32**	**KAS-80-35-A-M32**
Art.-No.	**820 600**	**820 200**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes





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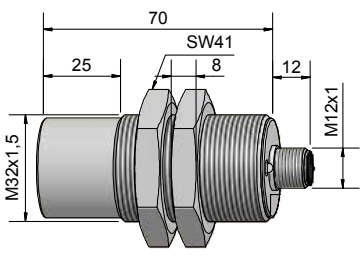
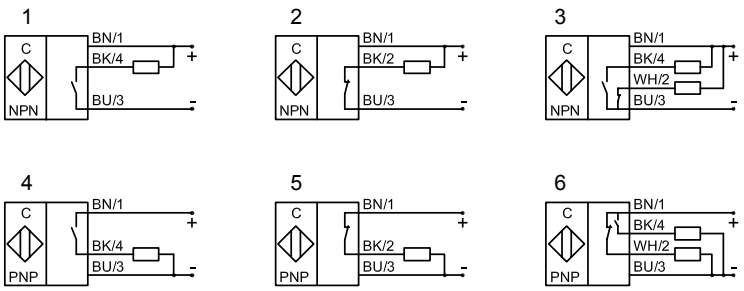
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-35-A-M32-Y5**
Art.-No.	**720 400**
Connection diagram No.	3
Type PNP	**KAS-80-35-A-M32-Y5**
Art.-No.	**820 400**
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	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes





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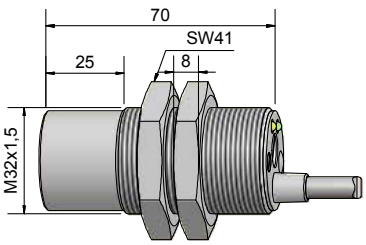
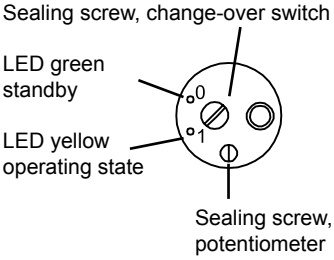
Capacitive Sensors
Series 2000 - quattro³

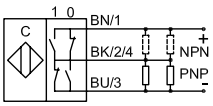
Housing M 32 x 1.5
- Housing material: PA / PPO
- Sensing distance 3...30 mm adjustable
- Multifunction sensor: NPN / PNP; NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

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
Type NPN / PNP switchable	**KAS-2000-35-M32**
Art.-No.	**770 800**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO







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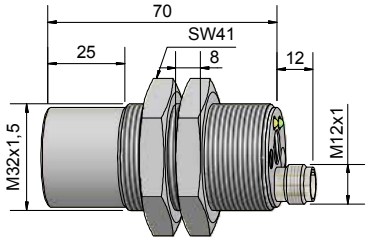
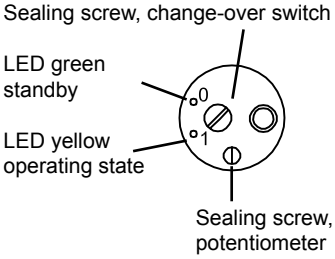
Capacitive Sensors
Series 2000 - quattro³

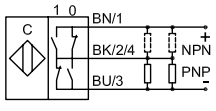
Housing M 32 x 1.5
- Housing material: PA / PPO
- Sensing distance 3...30 mm adjustable
- Multifunction sensor: NPN / PNP; NO / NC function switchable
- With flange connector M 12 x 1

Certificate: CE RoHS COMPLIANT QuattroExcProtect™

Technical data	Non-flush mountable
Operating distance S_n	25 mm
Operating distance min. / max. adjustable	3...30 mm
Electrical version	3-pin DC
Output function	NO / NC switchable
Type NPN / PNP switchable	**KAS-2000-35-M32-Y3**
Art.-No.	**770 802**
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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	Flange connector M 12 x 1
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO







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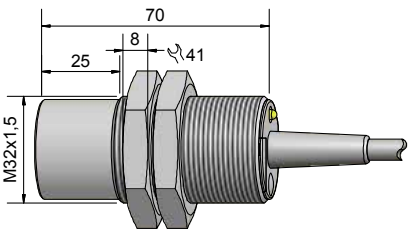
Capacitive Sensors
Series 90 - AC / DC

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 (NO)	Normally closed (NC)
Type	**KAS-90-32-S-M32**	**KAS-90-32-Ö-M32**
Art.-No.	**902 400**	**902 500**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC/DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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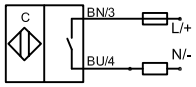

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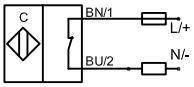

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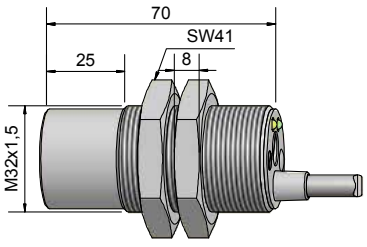
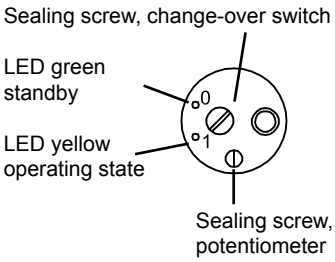
Capacitive Sensors
Series 1000 - AC / DC - duo

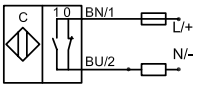
Housing M 32 x 1.5
- Housing material: PA / PPO
- Sensing distance 3...25 mm adjustable
- NO / NC function switchable

Certificate: CE RoHS COMPLIANT QuattroProtect™

Technical data	Non-flush mountable
Operating distance S_n	20 mm
Operating distance min. / max. adjustable	3...25 mm
Electrical version	2-wire AC / DC
Output function	NO / NC switchable
Type	**KAS-1000-32-M32**
Art.-No.	**930 400**
Operating voltage (U_B)	20...250 V AC / DC
Output current max. (I_e)	330 mA
Load current min.	5 mA
Voltage drop max. (U_d)	≤ 6 V
No-load current (I_o)	Typ. 2 mA
Frequency of operating cycles max.	25 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, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO







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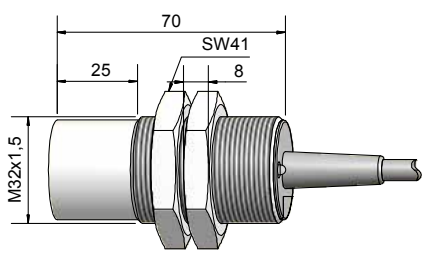
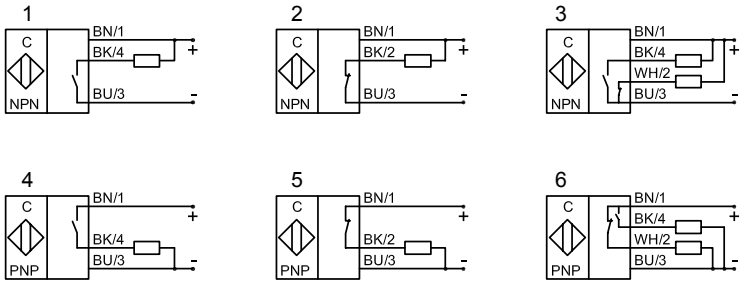
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-35-A-M32-PTFE**
Art.-No.	**720 300**
Connection diagram No.	3
Type PNP	**KAS-80-35-A-M32-PTFE**
Art.-No.	**820 300**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





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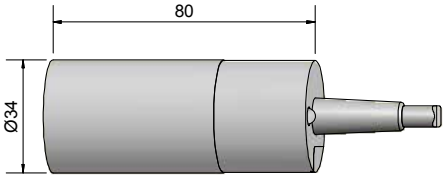
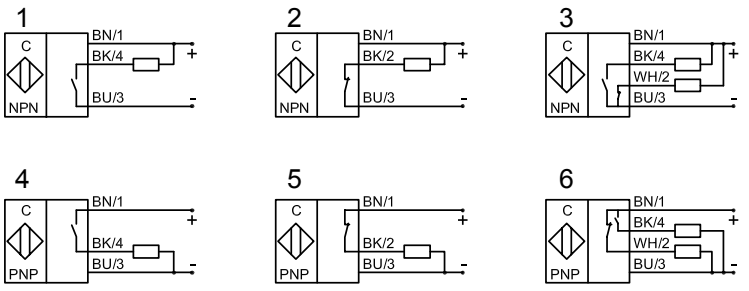
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 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 (NO + NC)
Type NPN	**KAS-70-37-A**
Art.-No.	**724 500**
Connection diagram No.	3
Type PNP	**KAS-80-37-A**
Art.-No.	**824 500**
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.	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 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes





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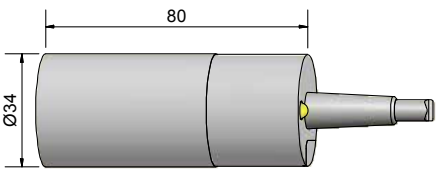
Capacitive Sensors
Series 90 - AC / DC

Housing Ø 34 mm
- Housing material: PA / PPO
- Sensing distance 2...25 mm adjustable

Certificate: CE, Intertek, RoHS COMPLIANT, Quattro Protect™

Technical data	Flush mountable	Flush mountable
Operating distance S_n	15 mm	15 mm
Operating distance min. / max. adjustable	2...25 mm	2...25 mm
Electrical version	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-37-S**	**KAS-90-37-Ö**
Art.-No.	**903 600**	**903 700**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO



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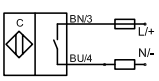

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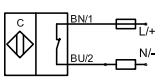

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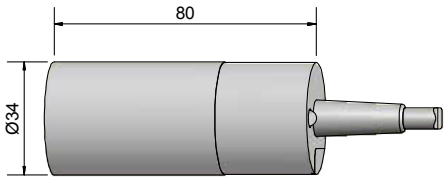
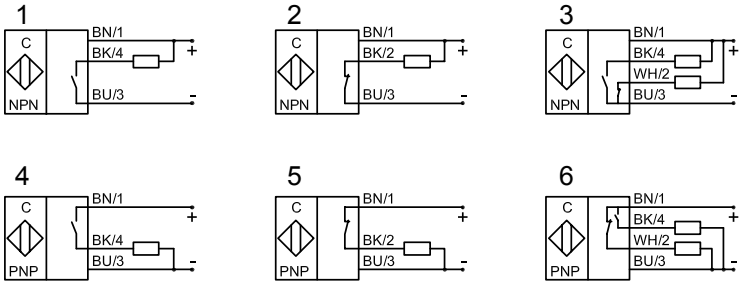
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 34 mm
- 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 (NO)	Antivalent (NO + NC)
Type NPN		**KAS-70-38-A**
Art.-No.		**725 300**
Connection diagram No.		3
Type PNP	**KAS-80-38-S**	**KAS-80-38-A**
Art.-No.	**825 400**	**825 300**
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)	≤ 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 mm²	2 m, PVC, 4 x 0.5 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO
Media optimized	Yes	Yes





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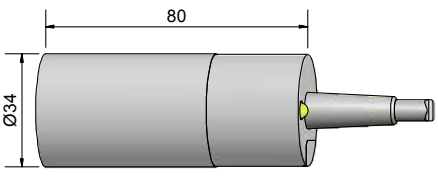
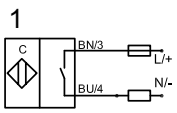
Capacitive Sensors
Series 90 - AC / DC

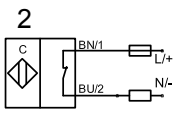
Housing Ø 34 mm
- Housing material: PA / PPO
- Sensing distance 3...30 mm adjustable

Certificate: CE, Intertek, RoHS compliant, Quattro 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	2-wire AC / DC	2-wire AC / DC
Output function	Normally open (NO)	Normally closed (NC)
Type	**KAS-90-38-S**	**KAS-90-38-Ö**
Art.-No.	**904 000**	**904 100**
Connection diagram No.	1	2
Operating voltage (U_B)	20...250 V AC / DC	20...250 V AC / DC
Output current max. (I_e)	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 mm²	2 m, PVC, 2 x 0.75 mm²
Housing material	PA / PPO	PA / PPO
Active surface	PA / PPO	PA / PPO
Lid	PA / PPO	PA / PPO







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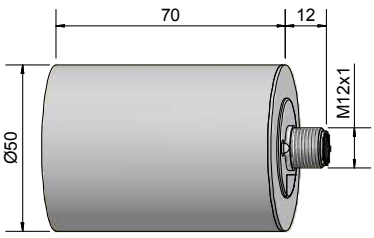
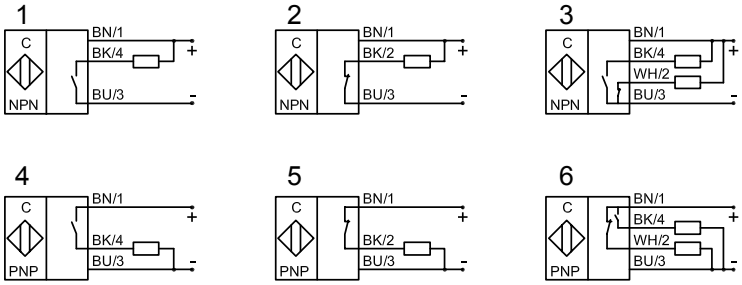
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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 (NO + NC)
Type NPN	**KAS-70-50-A-Y5**
Art.-No.	**725 510**
Connection diagram No.	3
Type PNP	**KAS-80-50-A-Y5**
Art.-No.	**825 510**
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





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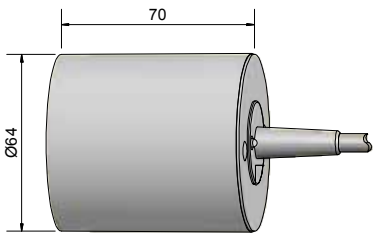
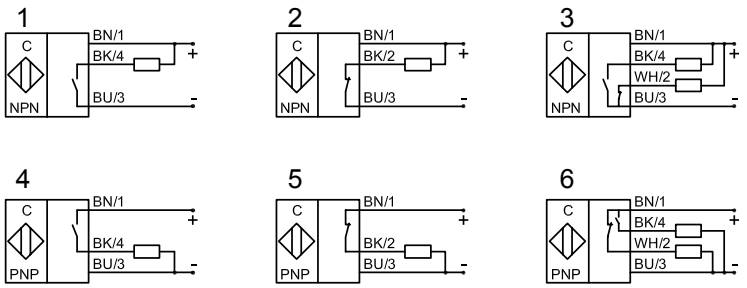
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing Ø 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 (NO + NC)
Type NPN	**KAS-70-61-A**
Art.-No.	**728 100**
Connection diagram No.	3
Type PNP	**KAS-80-61-A**
Art.-No.	**828 100**
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 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO
Media optimized	Yes





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ATEX/StEx SERIES 40 (NAMUR) • 70 / 80

Capacitive Sensors
Series 40 NAMUR- StEx- ATEX

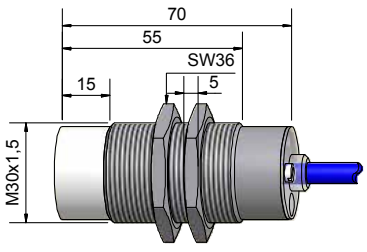
Housing M 30 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 2...20 mm adjustable

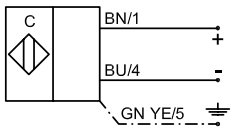
Certifications:

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

Intertek

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 EN 60947-5-6
Type	**KAS-40-A24-N-StEx-N**
Art.-No.	**KA 0095**
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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors
Series 40 NAMUR- StEx- ATEX

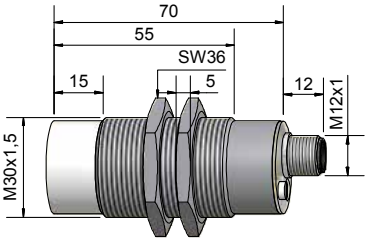
Housing M 30 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 2...20 mm adjustable
- With flange connector M 12 x 1

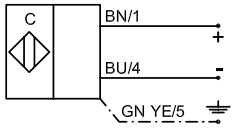
Certifications:

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

Intertek

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 EN 60947-5-6
Type	**KAS-40-A24-N-Y5-StEx-N**
Art.-No.	**KA 0870**
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)





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Capacitive Sensors
Series 40 NAMUR- StEx- ATEX

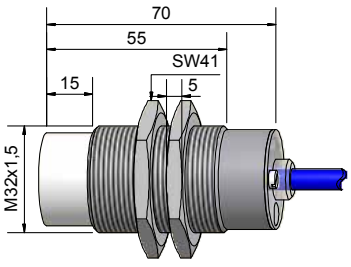
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 3...20 mm adjustable

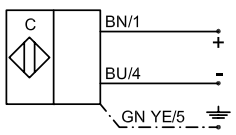
Certifications:

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

Intertek

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 EN 60947-5-6
Type	**KAS-40-34-N-M32-StEx-N**
Art.-No.	**KA 0094**
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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors
Series 40 NAMUR- StEx- ATEX

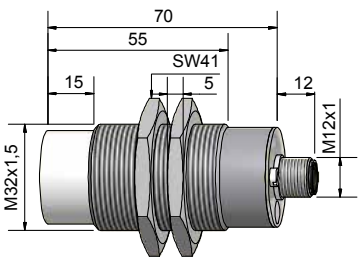
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 3...20 mm adjustable
- With flange connector M 12 x 1

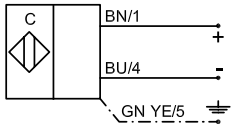
Certifications:

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

Intertek

Technical data	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
Type	**KAS-40-34-N-M32-Y5-StEx-N**
Art.-No.	**KA 0871**
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)





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

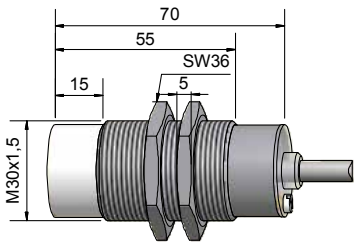
Housing M 30 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: Stainless steel VA
- Sensing distance 3...25 mm adjustable

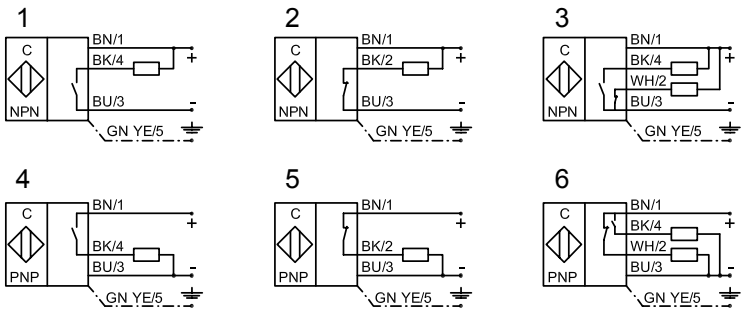
Certifications: CE RoHS IEC IECEx

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2G EEx m II T4	Ex mb II T4
Ex II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

Intertek

Technical data	Non-flush mountable
Operating distance S_n	15 mm
Operating distance min. / max. adjustable	3...25 mm
Electrical version	4-wire DC
Output function	Antivalent (NO + NC)
Type NPN	**KAS-70-A24-A-StEx-N**
Art.-No.	**KA 0085**
Connection diagram No.	3
Type PNP	**KAS-80-A24-A-StEx-N**
Art.-No.	**KA 0084**
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_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, 5 x 0.34 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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

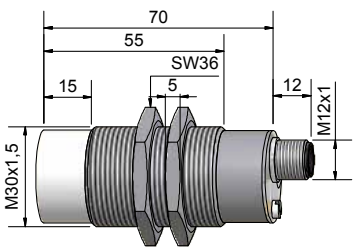
Housing M 30 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- Housing material: Stainless steel VA
- Sensing distance 3...25 mm adjustable
- With flange connector M 12 x 1

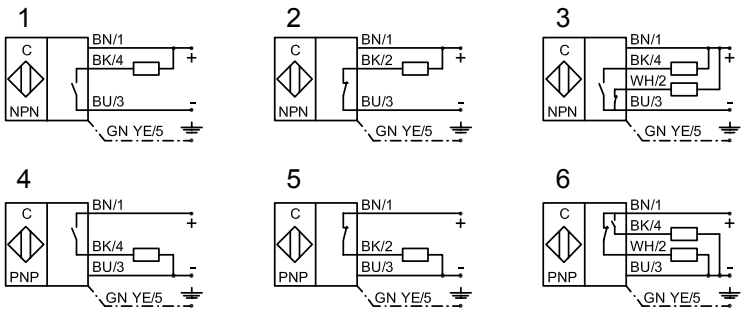
Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

Intertek

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 (NO + NC)
Type NPN	**KAS-70-A24-A-Y5-StEx-N**
Art.-No.	**KA 0863**
Connection diagram No.	3
Type PNP	**KAS-80-A24-A-Y5-StEx-N**
Art.-No.	**KA 0864**
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_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)





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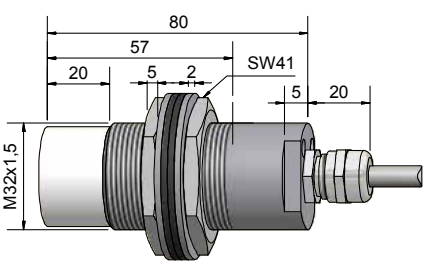
Capacitive Sensors
Series 70 - NPN - StEx- ATEX
Series 80 - PNP - StEx - ATEX

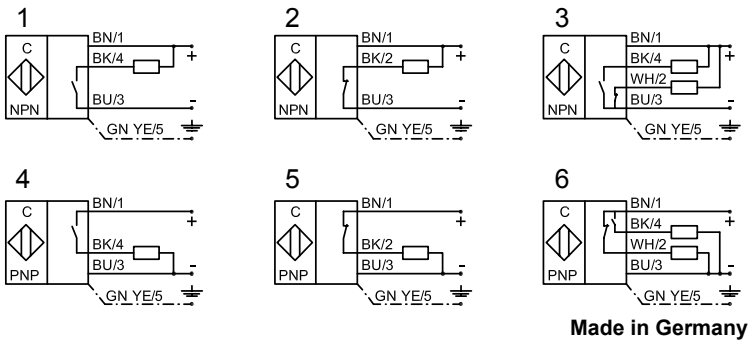
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2G EEx m II T4	Ex mb II T4
Ex II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO)	Antivalent (NO + NC)
Type NPN	**KAS-70-35-S-M32-StEx-N**	**KAS-70-35-A-M32-StEx-N**
Art.-No.	**KA 0090**	**KA 0089**
Connection diagram No.	1	3
Type PNP	**KAS-80-35-S-M32-StEx-N**	**KAS-80-35-A-M32-StEx-N**
Art.-No.	**KA 0087**	**KA 0086**
Connection diagram No.	4	6
Operating voltage (U_B)	10...30 V DC	10...30 V DC
Output current max. (I_e)	150 mA	2 x 150 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	-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 mm²	3 m, PVC, 5 x 0.34 mm²
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





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Capacitive Sensors

Series 80 - PNP - StEx - ATEX

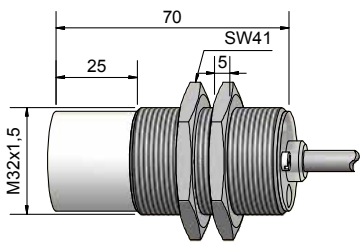
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable

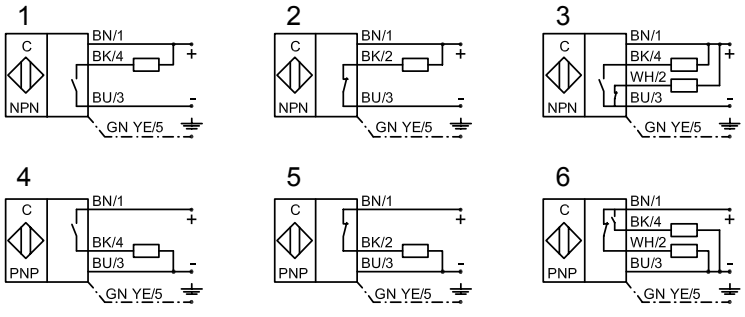
Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 2G EEx m II T4	Ex mb II T4
II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

Intertek

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-A-M32-StEx-N**
Art.-No.	**KA 0356**
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_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	-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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors

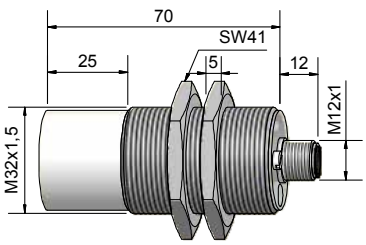
Series 80 - PNP - StEx - ATEX

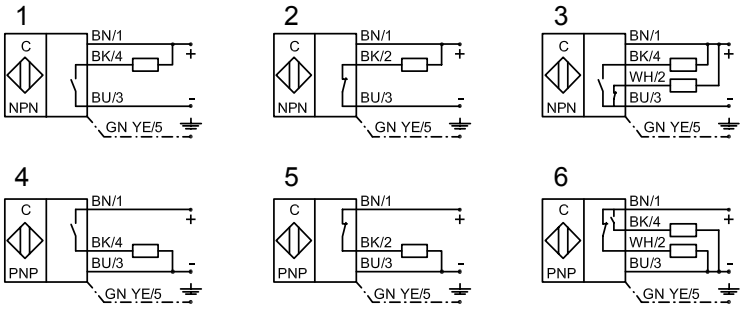
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-A-M32-Y5-StEx-N**
Art.-No.	**KA 0819**
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_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	-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)





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Capacitive Sensors

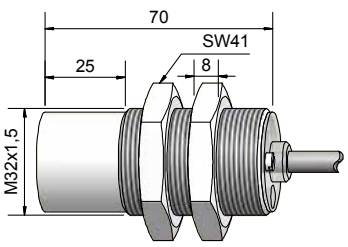
Series 80 - PNP - StEx - ATEX

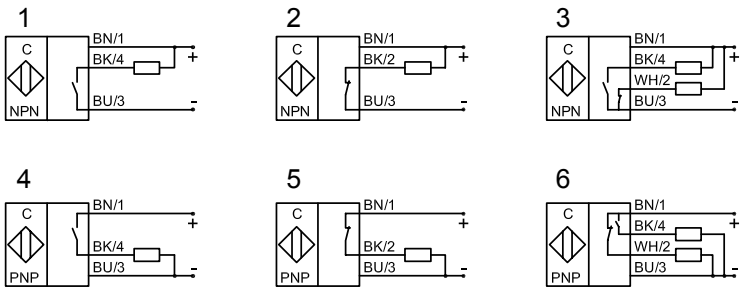
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: PTFE
- Sensing distance 3...30 mm adjustable

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 2G EEx m II T4	Ex mb II T4
II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-35-A-K-M32-PTFE-StEx-N**
Art.-No.	**KA 0093**
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_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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors

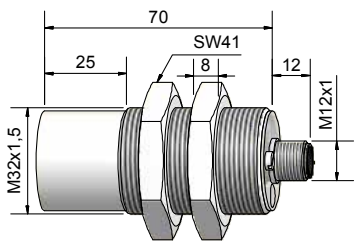
Series 80 - PNP - StEx - ATEX

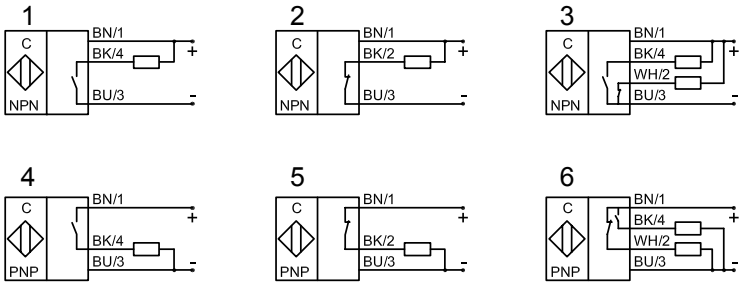
Housing M 32 x 1.5
- For use in areas with the risk of dust explosion, zone 20
- Housing material: PTFE
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-35-A-K-M32-PTFE-Y5-StEx-N**
Art.-No.	**KA 0867**
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_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	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





Made in Germany

Capacitive Sensors

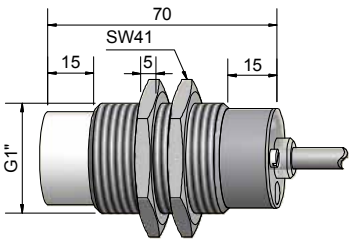
Series 80 - PNP - StEx - ATEX

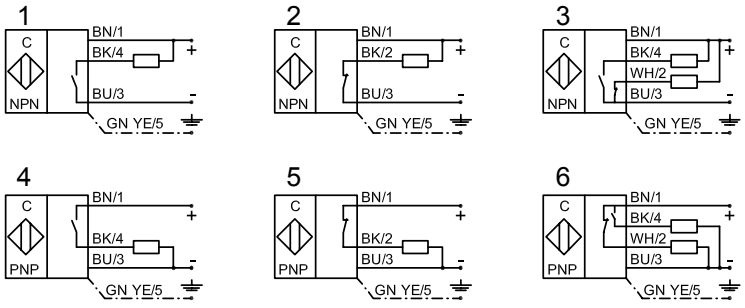
Housing 1“
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 2G EEx m II T4	Ex mb II T4
II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-A-G1”-StEx-N**
Art.-No.	**KA 0092**
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_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, 5 x 0.34 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors

Series 80 - PNP - StEx - ATEX

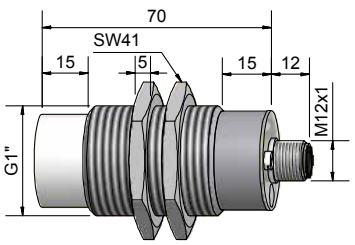
Housing 1“
- For use in areas with the risk of dust explosion, zone 20
- Housing material: Stainless steel VA
- Sensing distance 3...30 mm adjustable
- With flange connector M 12 x 1

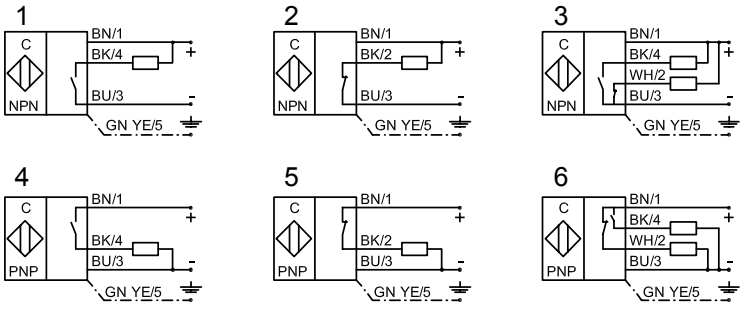
Certifications: CE RoHS IEC IECEx

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ⓔx II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

Intertek

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-A-G1”-Y5-StEx-N**
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_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)





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Capacitive Sensors

Series 80 - PNP - StEx - ATEX

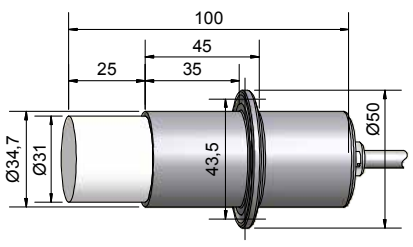
Housing Tri-Clamp
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material: Stainless steel VA No. 1.4404
- Sensing distance 3...30 mm adjustable
- Ideal for use in food applications

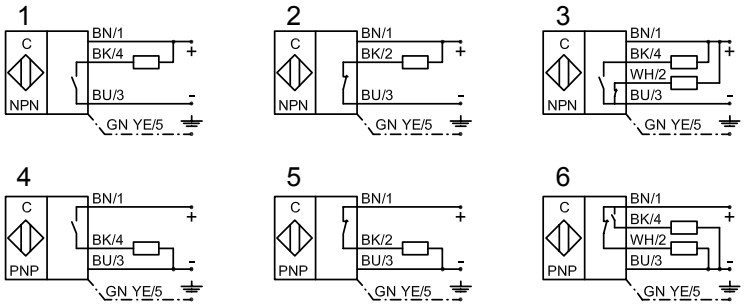
Certifications: CE RoHS IEC IECEx

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 2G EEx m II T4	Ex mb II T4
Ex II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

Intertek

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-35/100-A-PTFE/VA-StEx-N**
Art.-No.	**KA 0377**
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_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	-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 mm²
Housing material	VA No. 1.4404
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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Capacitive Sensors

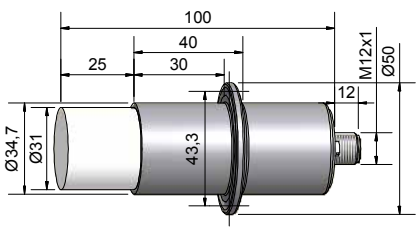
Series 80 - PNP - StEx - ATEX

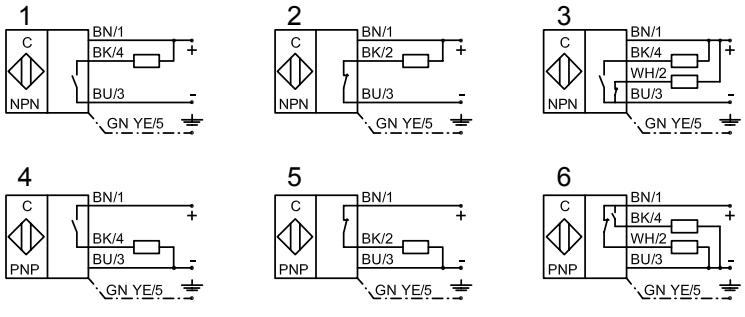
Housing Tri-Clamp
- For use in areas with the risk of dust explosion, zone 20
- Housing material: Stainless steel VA No. 1.4404
- Sensing distance 3...30 mm adjustable
- Ideal for use in food applications
- With flange connector M 12 x 1

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
Ex II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-35/100-A-PTFE/VA-Y5-StEx-N**
Art.-No.	**KA 0869**
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_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	-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)





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All specifications are subject to change without notice. (04/2013)

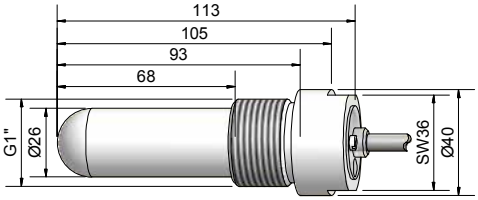
Capacitive sensors
Series 70 - NPN - StEx - ATEX
Series 80 - PNP - StEx - ATEX

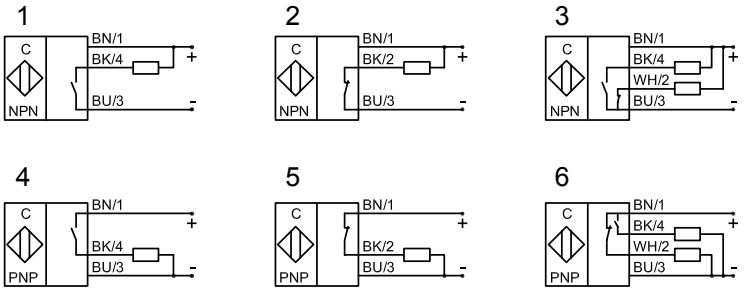
Housing Ø 26 mm / 1“ / 40 mm
- For use in areas with the risk of dust explosion, zone 20
- For use in areas with the risk of gas explosion, zone 1
- Housing material PTFE
- Sensing distance 0...20 mm adjustable
- Suitable for food and pharmaceutical applications
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 2G EEx m II T4	Ex mb II T4
II 1/2D IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	**KAS-70-26-A-PTFE-1“-StEx-N**
Art.-No.	**KA 0824**
Connection diagram No.	4
Type PNP	**KAS-80-26-A-PTFE-1”-StEx-N**
Art.-No.	**KA 0264**
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_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	-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 mm²
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





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Capacitive sensors

Series 80 - PNP - StEx - ATEX

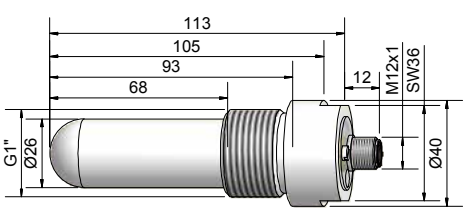
Housing Ø 26 mm / 1“ / 40 mm

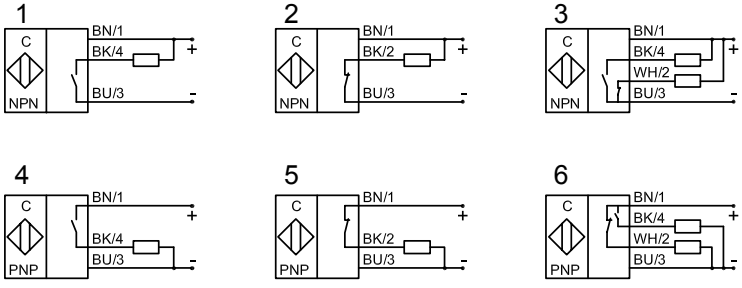
- For use in areas with the risk of dust explosion, zone 20
- Housing material PTFE
- Sensing distance 0...20 mm adjustable
- Suitable for food and pharmaceutical applications
- Special version with flange. Sealing can be made with a gasket or PTFE-tape (not supplied with the sensor)
- With flange connector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

Certifications:

DMT 01 ATEX E 157	IECEx BVS 07.0015
II 1/2D Ex tD A20/21 IP67 T101°C	Ex tD A20/21 IP 67 T101°C

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-26-A-PTFE-1”-Y5-StEx-N**
Art.-No.	**KA 0655**
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_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	-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





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SENSORS / ATEX WITH MANUFACTURER DECLARATION

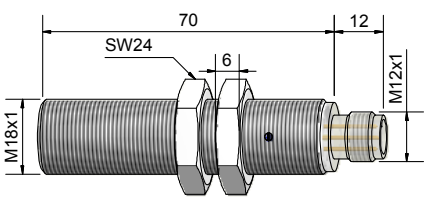
Capacitive Sensors

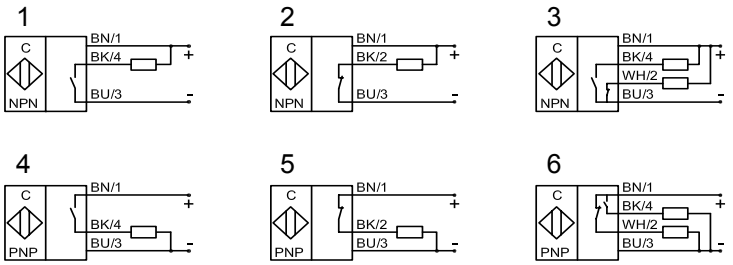
Series 80 - PNP

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
- Ⓔx II 3G EEx nA II T6 X, for use in zone 2
- With flange connector M 12 x 1

Certificate: CE RoHS COMPLIANT QuattroProtect™

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A13-A-K-PTFE-Y3-3G**
Art.-No.	**KA 0799**
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.	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





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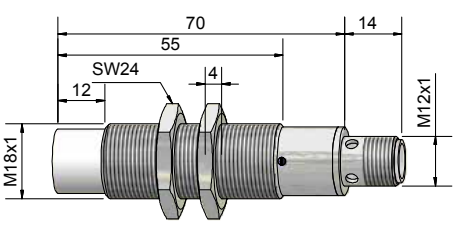
Capacitive Sensors

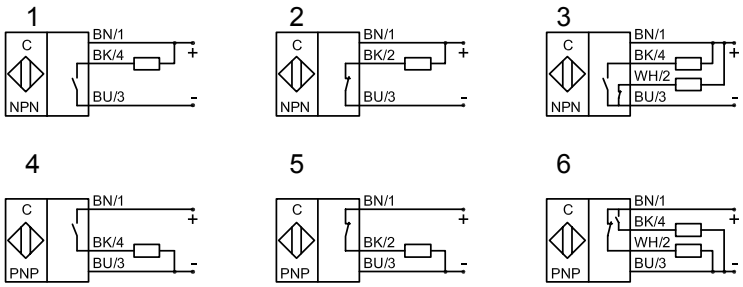
Series 80 - PNP

Housing M 18 x 1
- Housing material: Brass
- Sensing distance 0.5...15 mm adjustable
- Ⓔx 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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A23-A-Y5-3D**
Art.-No.	**KA 0527**
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	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





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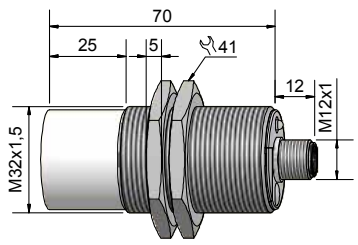
Capacitive Sensors

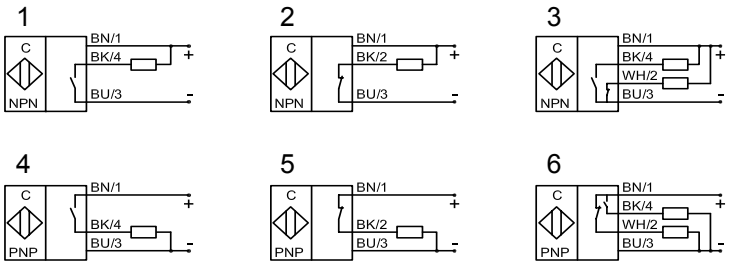
Series 80 - PNP

Housing M 32 x 1.5
- Housing material: Stainless steel
- Sensing distance 1...40 mm adjustable
- Ex 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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-34-A-M32-PTFE/V2A-Y5-3D**
Art.-No.	**KA 0849**
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	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





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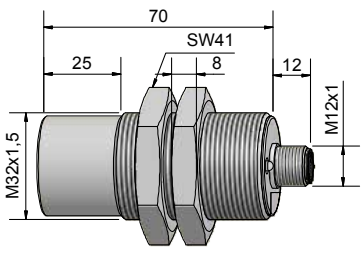
Capacitive Sensors

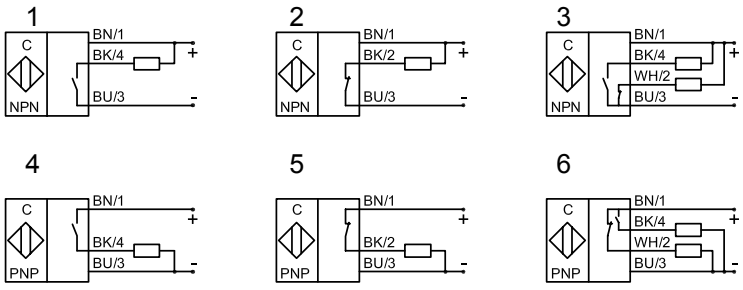
Series 80 - PNP

Housing M 32 x 1.5
- Housing material PPO
- Sensing distance 1...40 mm adjustable
- Ex II 3D IP67 T 101°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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-35-A-M32-Y5-3D**
Art.-No.	**KA 0610**
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





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

Pages:

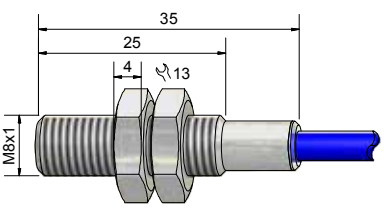
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

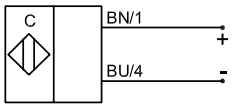
Housing M 8 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance Sn = 0.5 mm

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
Type	**KAS-40-A11-N**
Art. No.	**400 100**
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)	210 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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PC (FDA 21 CFR 177.1580)





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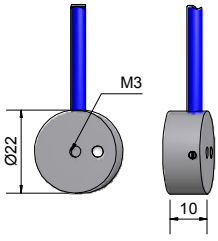
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

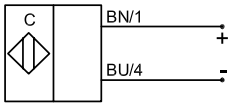
Housing Ø 22 mm
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel
- Sensing distance 1…10 mm adjustable

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
Type	**KAS-40-22/10-N**
Art.-No.	**406 120**
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)	210 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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-





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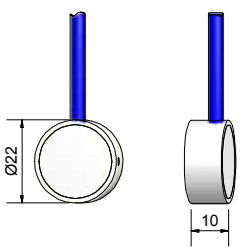
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

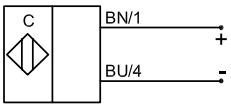
Housing Ø 22 mm
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Sensing distance 2…10 mm adjustable

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
Type	**KAS-40-22/10-N-PTFE**
Art.-No.	**406 110**
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)	210 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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-





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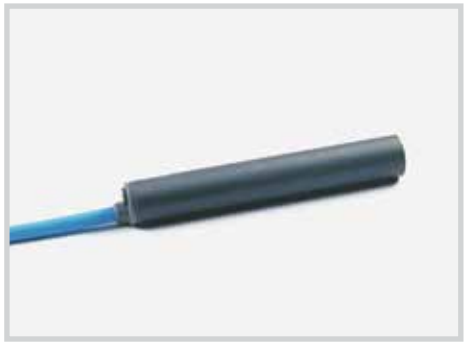
ATEX SERIES 40 (NAMUR)



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

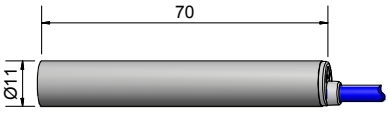
Housing Ø 11 mm
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PVC
- Sensing distance 1...6 mm adjustable

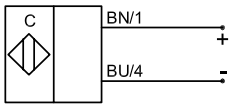
Certificate:

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
Type	**KAS-40-14-N**
Art. No.	**400 600**
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 mm²
Housing material	PVC
Active surface	PVC
Lid	PA / PPO

* With sealed potentiometer screw





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

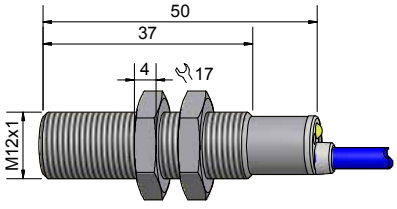
Housing M 12 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 1...4 mm adjustable

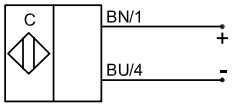
Certificate:

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
Type	**KAS-40-A12-N**
Art. No.	**400 200**
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	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





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

HP

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

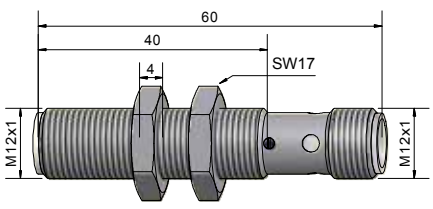
Certificate: CE RoHS COMPLIANT IEC IECEx

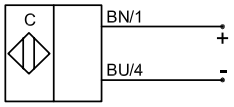
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

c ETL us Intertek

Technical data	Flush mounting
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
Type	**KAS-40-A12-N-Y5**
Art. No.	**KA 0561**
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	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	-

* With sealed potentiometer screw





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

HP

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

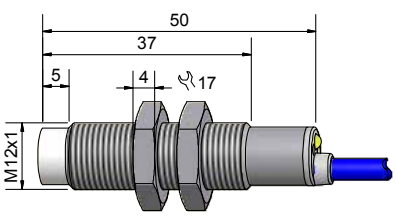
Certificate:

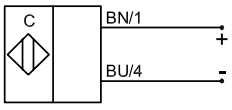
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

Intertek

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
Type	**KAS-40-A22-N**
Art. No.	**400 250**
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	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.14 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





Made in Germany

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

HP

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

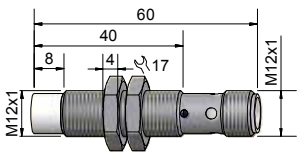
Certificate: CE RoHS COMPLIANT IEC IECEx

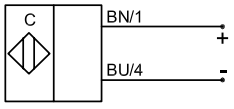
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

c ETL us Intertek

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
Type	**KAS-40-A22-N-Y5**
Art. No.	**KA 0562**
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	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	-

* With sealed potentiometer screw





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

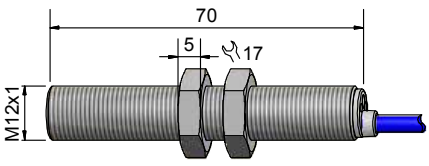
Housing M 12 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PVC
- Sensing distance 1...6 mm adjustable

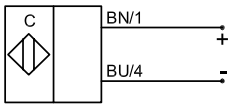
Certificate:

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
Type	**KAS-40-14-N-M12**
Art. No.	**400 705**
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	5 m, PVC, 2 x 0.14 mm²
Housing material	PVC
Active surface	PVC
Lid	PA / PPO

* With sealed potentiometer screw





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

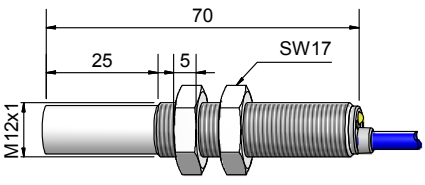
Housing M 12 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 1...6 mm adjustable

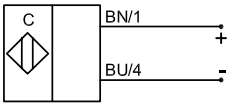
Certificate:

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
Type	**KAS-40-14-N-M12-PTFE**
Art. No.	**400 900**
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	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PVC, 2 x 0.34 mm²
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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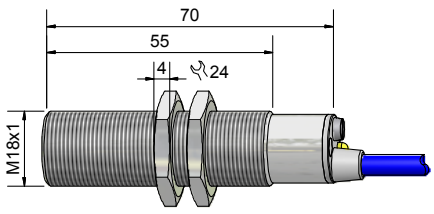
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

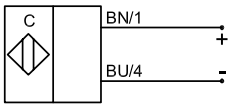
Housing M 18 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 1...8 mm adjustable

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
Type	**KAS-40-A13-N**
Art. No.	**400 300**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.34 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





Made in Germany

RECHNER SENSORS

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

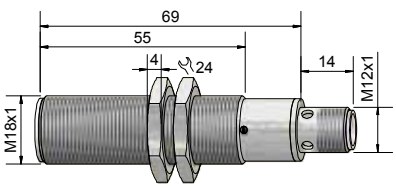
Housing M 18 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 1...8 mm adjustable
- With flange connector M 12 x 1

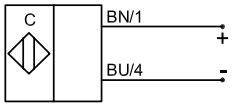
Certificate:

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
Type	**KAS-40-A13-N-Y5**
Art. No.	**KA 0559**
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	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	-

* With sealed potentiometer screw





Made in Germany

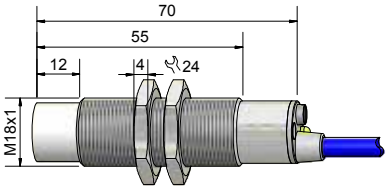
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

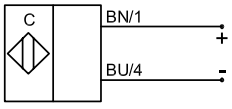
Housing M 18 x 1
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...10 mm adjustable

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
Type	**KAS-40-A23-N**
Art. No.	**400 350**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.34 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





Made in Germany

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

HP

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

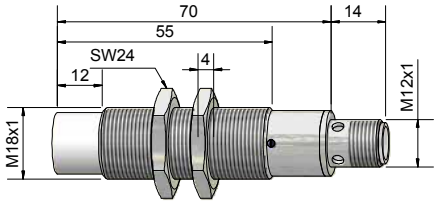
Certificate:

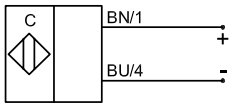
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

Intertek

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
Type	**KAS-40-A23-N-Y5**
Art. No.	**KA 0560**
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	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	-

* With sealed potentiometer screw





Made in Germany

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

HP

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

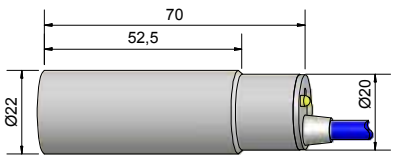
Certificate:

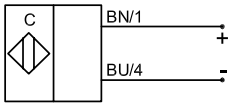
DMT 03 ATEX E 048	IECEx BVS 07.0031
Ex II 1G Ex ia IIC T1-T6 Ga	Ex ia IIC T1-T6 Ga

Intertek

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
Type	**KAS-40-20-N**
Art. No.	**401 000**
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	Yellow
Degree of protection IEC 60529	IP 67*
Connection cable	2 m, PUR, 2 x 0.34 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO

* With sealed potentiometer screw





Made in Germany

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

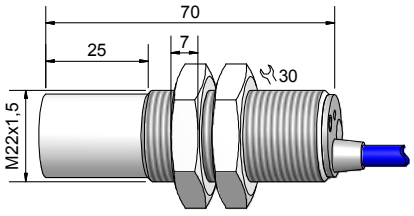
Housing M 22 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 3...10 mm adjustable

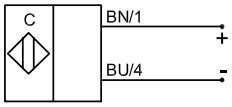
Certificate:

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
Type	**KAS-40-24-N-M22-PTFE**
Art. No.	**401 500**
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, PUR, 2 x 0.34 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





Made in Germany

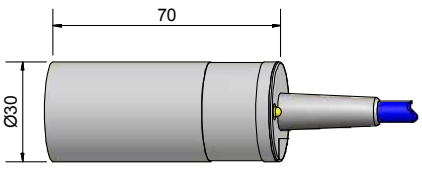
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

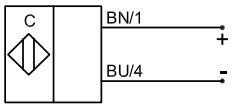
Housing Ø 30 mm
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...15 mm adjustable

Certificate:

DMT 03 ATEX E 048	IECEx BVS 07.0031
Ⓔx 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	3...15 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
Type	**KAS-40-30-N**
Art. No.	**401 600**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





Made in Germany

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

HP

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: CE RoHS IEC IECEx

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

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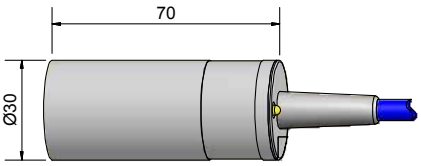
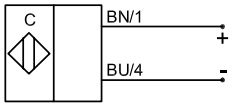
Technical data	Non-flush mountable
Operating distance S_n	15 mm
Operating distance min. / max. adjustable	3...20 mm
Electrical version	2-wire DC
Output function	NAMUR DIN 60947-5-6
Type	**KAS-40-35-N**
Art. No.	**402 000**
Operating voltage (U_B)	5 - 15 V DC, U_i = 15 V DC
Output current active surface 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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





Made in Germany

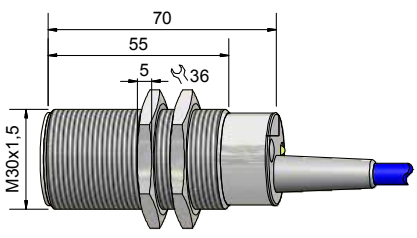
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

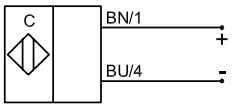
Housing M 30 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...15 mm adjustable

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
Type	**KAS-40-A14-N**
Art. No.	**400 400**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





Made in Germany

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

HP

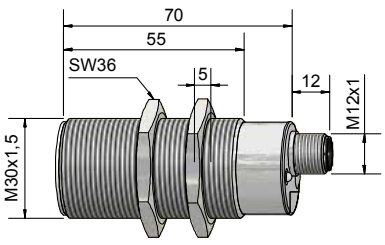
Housing M 30 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...15 mm adjustable
- With flange connector M 12 x 1

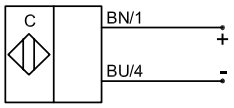
Certificate:

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

Intertek

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
Type	**KAS-40-A14-N-Y5**
Art. No.	**KA 0557**
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	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





Made in Germany

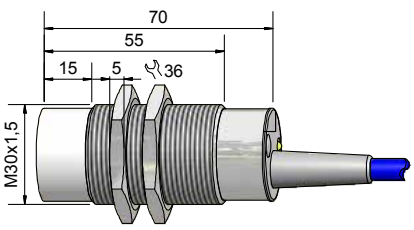
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

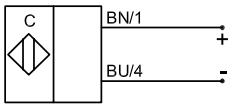
Housing M 30 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Sensing distance 2...20 mm adjustable

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
Type	**KAS-40-A24-N**
Art. No.	**400 450**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR 2 x 0.75 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





Made in Germany

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

HP

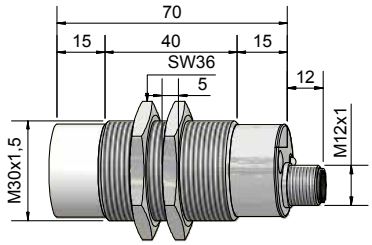
Housing M 30 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Operating range 2...20 mm
- With flange connector M 12 x 1

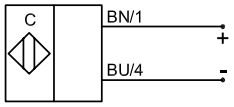
Certificate: CE RoHS COMPLIANT IEC IECEx

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

c ETL us Intertek

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
Type	**KAS-40-A24-N-Y5**
Art. No.	**KA 0558**
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	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





Made in Germany

Capacitive Sensors with analogue output
Series 40 - IL

HP

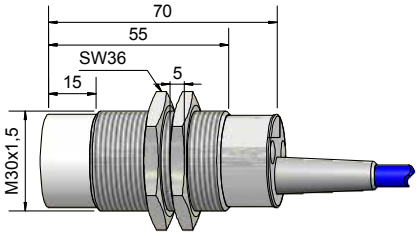
Housing M 30 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Brass
- Operating range 0...25 mm

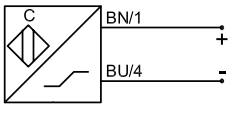
Certificate:

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

Intertek

Technical data	Non-flush mountable
Operating range	0...25 mm
Linear range	2...20 mm
Electrical version	2-wire DC
Output function	Analogue
Type Analogue	**KAS-40-A24-IL**
Art. No.	**403 600**
Operating voltage (U_B)	10 - 15 V DC, U_i = 15 V DC
Power consumption active surface free	≤ 4 mA
Power consumption active surface covered	≥ 20 mA
Load resistor	R_L 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 mm²
Housing material	Brass
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





Made in Germany

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

HP

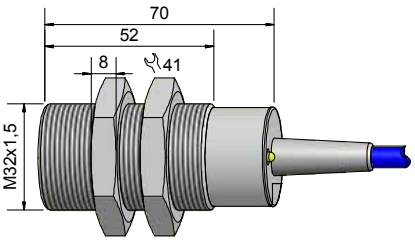
Housing M 32 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...15 mm adjustable

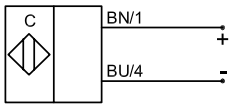
Certificate: CE RoHS COMPLIANT IEC IECEx

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

c ETL us Intertek

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
Type	**KAS-40-30-N-M32**
Art. No.	**401 700**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





All specifications are subject to change without notice. (04/2013)

Made in Germany

RECHNER Industrie-Elektronik GmbH • Gaußstraße 8-10 • D-68623 Lampertheim • Tel. +49 (0) 62 06 50 07-0 • Fax +49 (0) 62 06 50 07-20 • email info@rechner-sensors.de • www.rechner-sensors.com

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

HP

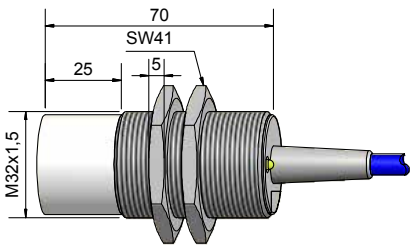
Housing M 32 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: Stainless steel VA
- Sensing distance 3...20 mm adjustable

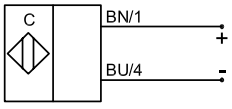
Certificate:

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

Intertek

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
Type	**KAS-40-34-N-M32-PTFE/V2A**
Art. No.	**402 400**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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

HP

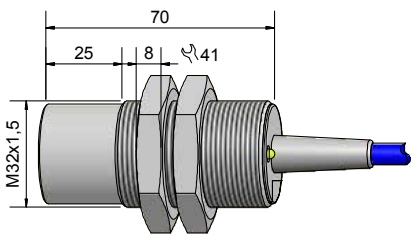
Housing M 32 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PA / PPO
- Sensing distance 3...20 mm adjustable

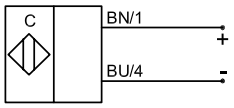
Certificate: CE RoHS COMPLIANT IEC IECEx

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

Intertek

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
Type	**KAS-40-35-N-M32**
Art. No.	**402 100**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	PA / PPO
Active surface	PA / PPO
Lid	PA / PPO





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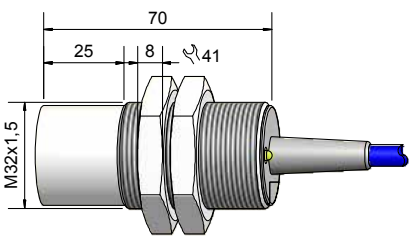
Capacitive Sensors
Series 40 - NAMUR EN 60947-5-6

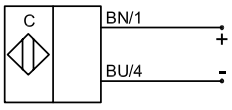
Housing M 32 x 1.5
- For use in areas with the risk of gas explosion, zone 0
- Housing material: PTFE
- Ideal for detection of chemically aggressive media
- Suitable for food applications
- Sensing distance 3...20 mm adjustable
- Option: Total chemical resistance is given when ordering the sensor with PTFE cable and PTFE- protection set Art.-No. 196301

Certificate:

DMT 03 ATEX E 048	IECEx BVS 07.0031
Ⓔx 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
Type	**KAS-40-35-N-M32-PTFE**
Art. No.	**402 300**
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	Yellow
Degree of protection IEC 60529	IP 67
Connection cable	2 m, PUR, 2 x 0.75 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO





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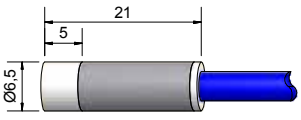
NAMUR MINI SENSORS WITH EVALUATION UNIT

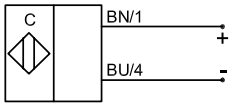
Capacitive Sensors
Series 40 - NAMUR

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
Type	**KAS-40-6.5/20-N**
Art.-No.	**400 480**
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 mm²
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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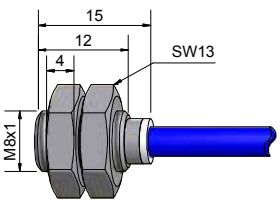
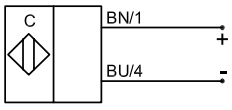
Capacitive Sensors
Series 40 - NAMUR

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
Type	**KAS-40-M8/15-N**
Art.-No.	**405 150**
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 mm²
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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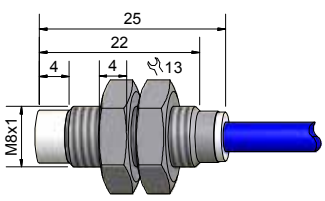
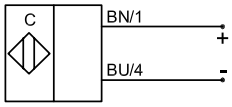
Capacitive Sensors
Series 40 - NAMUR

Housing M 8 x 1
- Housing material: Stainless steel VA
- Sensing distance 0.5…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
Type	**KAS-40-M8/25-N**
Art. No.	**400 490**
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 mm²
Housing material	VA No. 1.3405
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PTFE (FDA 21 CFR 177.1550)





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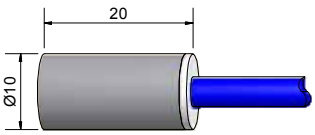
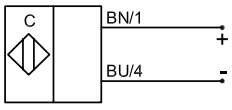
Capacitive Sensors
Series 40 - NAMUR

Housing Ø 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
Type	**KAS-40-10/20-N**
Art.-No.	**KA 0313**
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 mm²
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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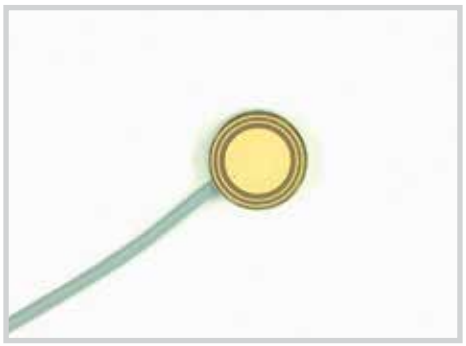
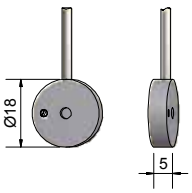


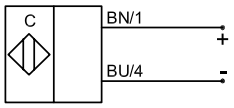
Capacitive Sensors
Series 40 - NAMUR

Housing 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
Type	**KAS-40-18/5-N**
Art.-No.	**KA 0308**
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 mm²
Housing material	VA No. 1.4305
Active surface	Epoxy
Lid	-





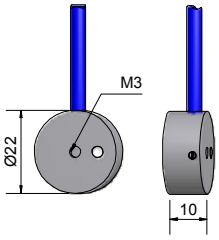
Made in Germany

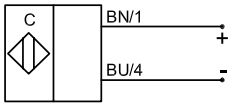
Capacitive Sensors
Series 40 - NAMUR

Housing Ø 22 mm
- Housing material: Stainless steel
- Sensing distance 1…10 mm adjustable, if used in connection with the switching amplifier TS-120...

Certificate:

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
Type	**KAS-40-22/10-N**
Art.-No.	**KA 0802**
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)	210 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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	-





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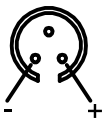
Transistor Amplifier
Series - NPN
Series - PNP

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

Sensor operating voltage U_s ≤ 6 V DC
Operating current I_s = 1…3 mA



Plug pin connection
View: soldering side

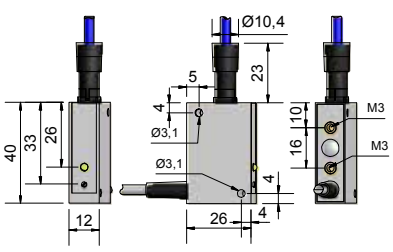
Certificate:

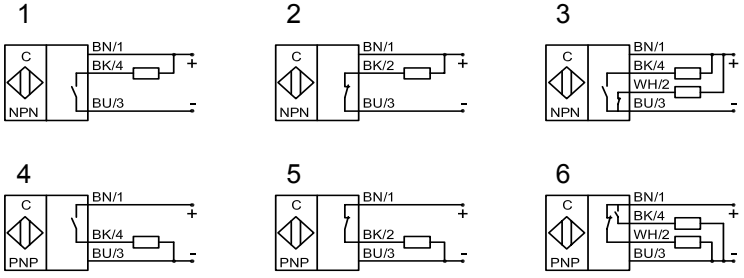
CE

RoHS COMPLIANT

Technical data

Electrical version	4-wire DC
Output	Antivalent (NO + NC)
Type NPN	**TS-120-NPN-A**
Art.-No.	**500 150**
Connection diagram No.	3
Type PNP	**TS-120-PNP-A**
Art.-No.	**500 350**
Connection diagram No.	**6**
Operating voltage (U_B)	10…35 V DC
Output current max. (I_e)	2 x 250 mA
Load current min.	-
Voltage drop max. (U_d)	≤ 2.0 V
Permitted residual ripple max.	10 %
No-load current (I_o)	Typ. 10 mA
Frequency of operating cycles max.	2 kHz (dependend 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 mm²
Housing material	PA 6.6
Active surface	-
Lid	-

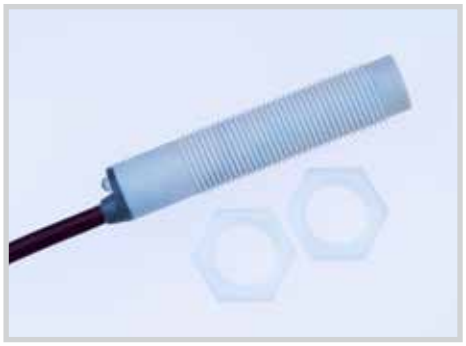




Made in Germany

All specifications are subject to change without notice. (04/2013)

HIGH TEMPERATURE SENSORS



Capacitive Sensors

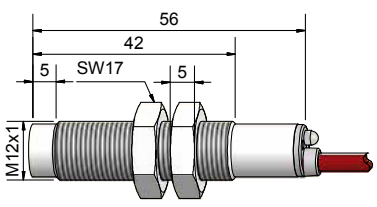
Series 80 - PNP

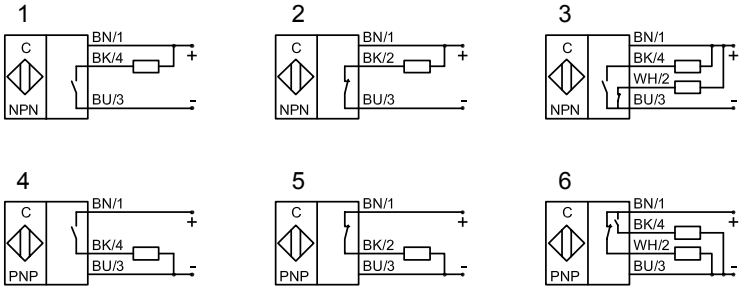
Housing M 12 x 1
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 0.5...10 mm adjustable

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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A22-A-K-PTFE-100°C**
Art.-No.	**800 757**
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…+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, Silicone, 4 x 0.14 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





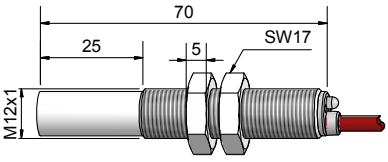
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

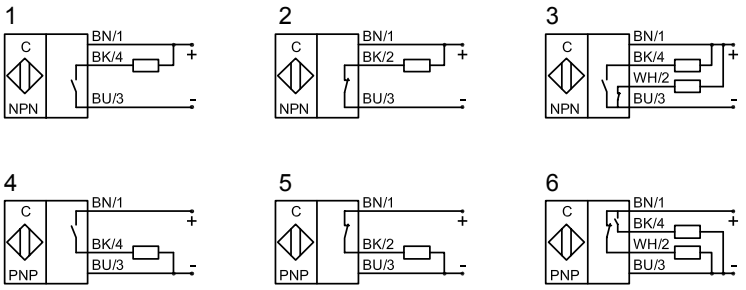
Housing M 12 x 1
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 0.5...10 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-14-A-M12-PTFE-100°C**
Art.-No.	**710 751**
Connection diagram No.	3
Type PNP	**KAS-80-14-A-M12-PTFE-100°C**
Art.-No.	**810 751**
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…+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, Silicone, 4 x 0.14 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes

* With sealed potentiometer screw





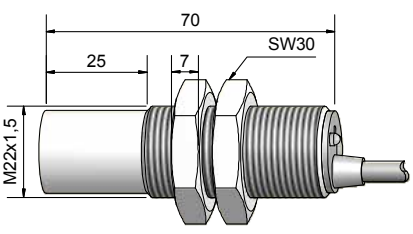
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

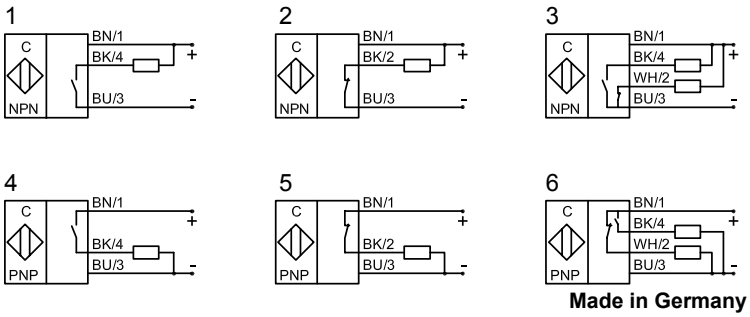
Housing M 22 x 1.5
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 0.5...20 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-23-A-M22-PTFE-100°C**
Art.-No.	**712 910**
Connection diagram No.	3
Type PNP	**KAS-80-23-A-M22-PTFE-100°C**
Art.-No.	**812 910**
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…+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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO

* With sealed potentiometer screw





Made in Germany

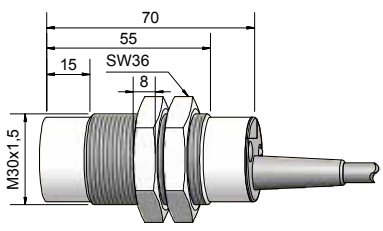
Capacitive Sensors

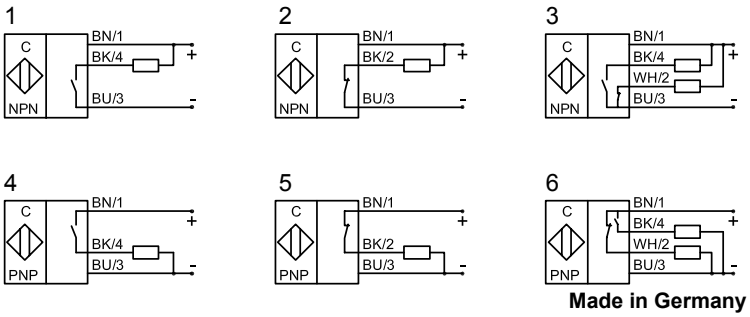
Series 80 - PNP

Housing M 30 x 1.5
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- 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 (NO + NC)
Type NPN	
Art.-No.	
Connection diagram No.	
Type PNP	**KAS-80-A24-A-K-PTFE-100°C**
Art.-No.	**808 410**
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…+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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





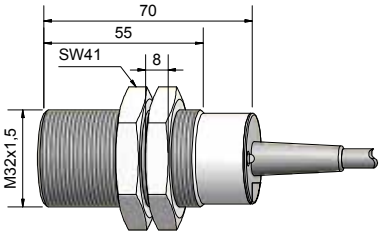
Made in Germany

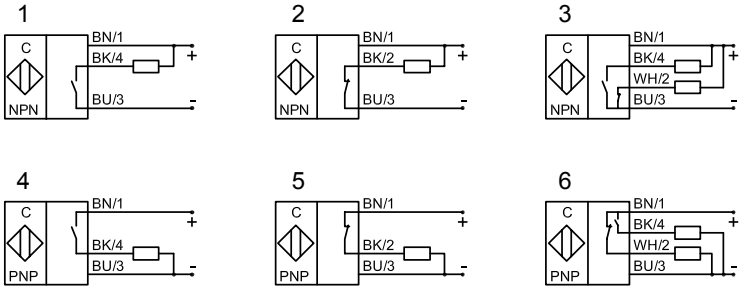
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

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

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 (NO + NC)
Type NPN	**KAS-70-30-A-M32-PTFE-100°C**
Art.-No.	**715 831**
Connection diagram No.	3
Type PNP	**KAS-80-30-A-M32-PTFE-100°C**
Art.-No.	**815 831**
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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





All specifications are subject to change without notice. (04/2013)

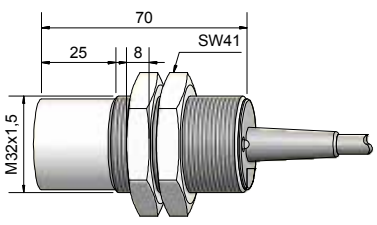
Made in Germany

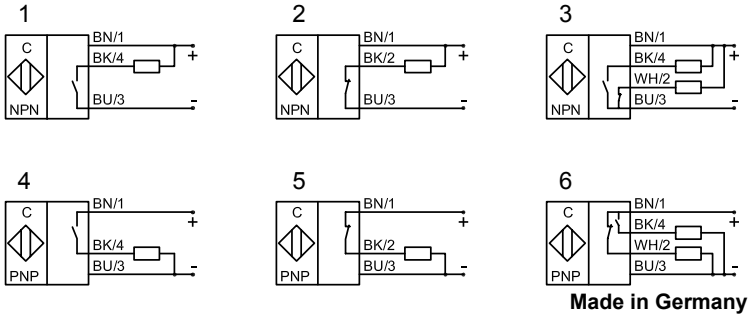
Capacitive Sensors
Series 70 - NPN
Series 80 - PNP

Housing M 32 x 1.5
- Housing material: PTFE
- Useable for an ambient temperature up to +100 °C
- Sensing distance 1...40 mm adjustable

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 (NO + NC)
Type NPN	**KAS-70-35-A-M32-PTFE-100°C**
Art.-No.	**719 255**
Connection diagram No.	3
Type PNP	**KAS-80-35-A-M32-PTFE-100°C**
Art.-No.	**819 255**
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…+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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO
Media optimized	Yes





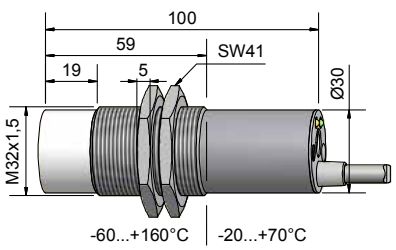
Made in Germany

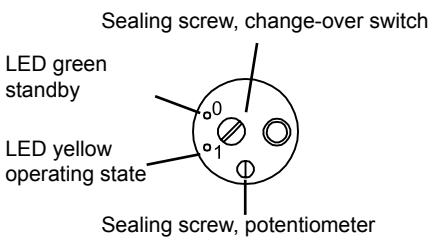
Capacitive Sensors
Series 2000 quattro³

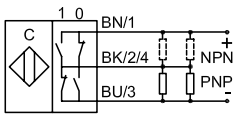
Housing M 32 x 1.5
- Housing material: Stainless steel VA
- For level control with a product temperature up to +160 °C
- Sensing distance 2...20 mm adjustable
- Multifunction sensor: NPN / PNP;
  NO / NC function switchable

Certificate: CE RoHS COMPLIANT

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
Type NPN / PNP switchable	**KAS-2000-34-M32-PTFE/V2A-160°C**
Art.-No.	**771 100**
Operating voltage (U_B)	10…35 V DC
Output current max. (I_e)	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 mm²
Housing material	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







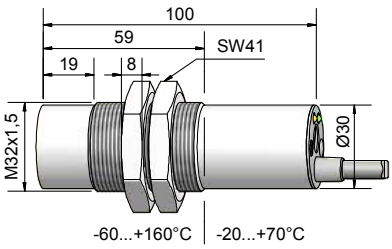
Made in Germany

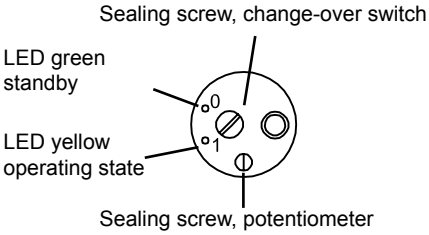
Capacitive Sensors
Series 2000 - quattro³

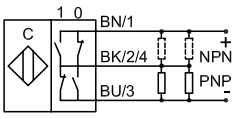
Housing M 32 x 1.5
- Housing material: PTFE
- For level control with a product temperature up to +160 °C
- Sensing distance 2...20 mm adjustable
- Multifunction sensor: NPN / PNP;
  NO / NC function switchable

Certificate: CE RoHS COMPLIANT

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
Type NPN / PNP switchable	**KAS-2000-35-M32-PTFE-160°C**
Art.-No.	**771 200**
Operating voltage (U_B)	10…35 V DC
Output current max. (I_e)	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 mm²
Housing material	PTFE (FDA 21 CFR 177.1550)
Active surface	PTFE (FDA 21 CFR 177.1550)
Lid	PA / PPO







Made in Germany

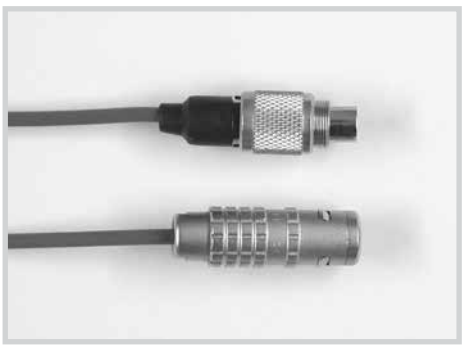
HIGH TEMPERATURE SENSORS SERIES KS-KSA

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

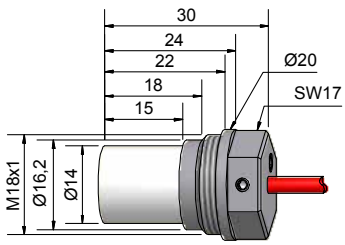


Capacitive high temperature sensors KS
Series 250-M18/...

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: CE RoHS COMPLIANT

Technical data	Non-flush mountable
Operating distance S_n	3 mm
Operating distance adjustable	0...5 mm
Type	**KS-250-M18/30**
Art.-No.	**561 600**
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)



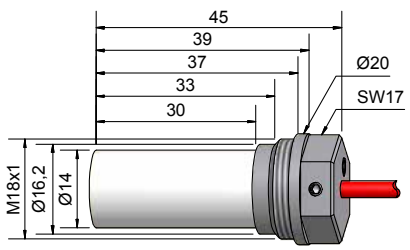
Made in Germany

Capacitive high temperature sensors KS
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
Type	**KS-250-M18/45**
Art.-No.	**561 650**
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)



Made in Germany

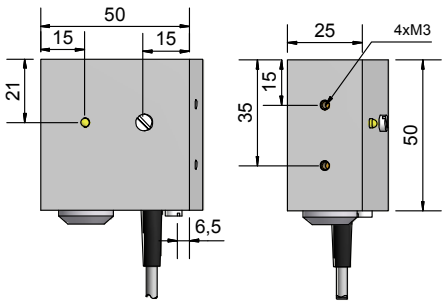
Capacitive Evaluation Unit KSA
Series 70-14-...-BB - NPN
Series 80-14-...-BB - PNP

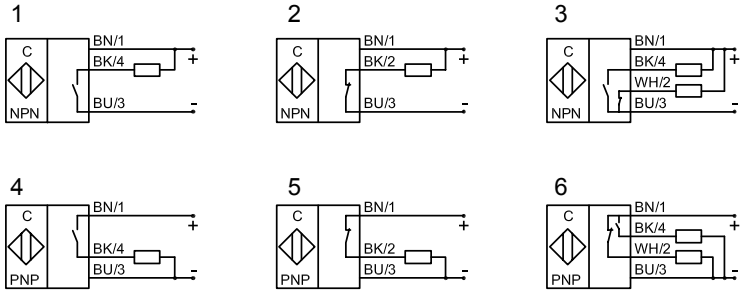
Housing 50 x 50 x 25 mm
- For capacitive sensors KS-250-M18/...
- Hysteresis adjustable

Certificate: CE RoHS COMPLIANT

Technical data

Electrical version	3-wire DC	3-wire DC
Output function	Normally open (NO)	Normally closed (NC)
Type NPN	**KSA-70-14-M18/30-S-BB**	**KSA-70-14-M18/30-Ö-BB**
Art.-No.	**563 100**	**563 300**
Connection diagram No.	1	2
Type PNP	**KSA-80-14-M18/30-S-BB**	**KSA-80-14-M18/30-Ö-BB**
Art.-No.	**563 500**	**563 700**
Connection diagram No.	4	5
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_e)	400 mA	400 mA
Voltage drop max. (U_d)	≤ 2.5 V	≤ 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 mm²	2 m PVC, 3 x 0.14 mm²
Housing material	PA	PA





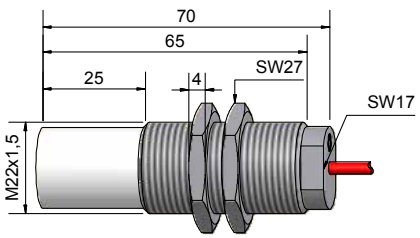
Made in Germany

Capacitive high temperature sensors KS
Series 250

Housing M 22 x 1.5
- For connection to capacitive evaluation units KSA-250 and KSA-...-250-...-BB
- Housing material: Stainless steel VA
- Useable for an ambient temperature -200...+250 °C
- Sensing distance 2...10 mm adjustable at the evaluation unit

Certificate: CE RoHS COMPLIANT

Technical data	Non-flush mountable	Non-flush mountable
Operating distance S_n	6 mm	6 mm
Operating distance adjustable	2...10 mm	2...10 mm
Type	**KS-250-M22**	**KS-250-M22, 5 m**
Art.-No.	**562 100**	**562 150**
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)



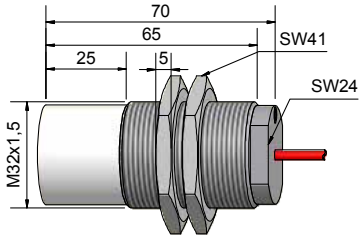
Made in Germany

Capacitive high temperature sensors KS
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
Type	**KS-250-M32**	**KS-250-M32, 5 m**
Art.-No.	**562 500**	**562 510**
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)



Made in Germany

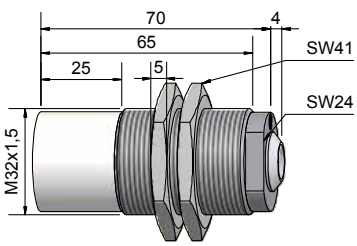
Capacitive high temperature sensors KS
Series KS-250

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: CE RoHS COMPLIANT

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
Type	**KS-250-M32-Y**	**KS-250-M32-Y, 5 m**
Art.-No.	**562 700**	**562 710**
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)

Connection cable available as spare part (see page 163)



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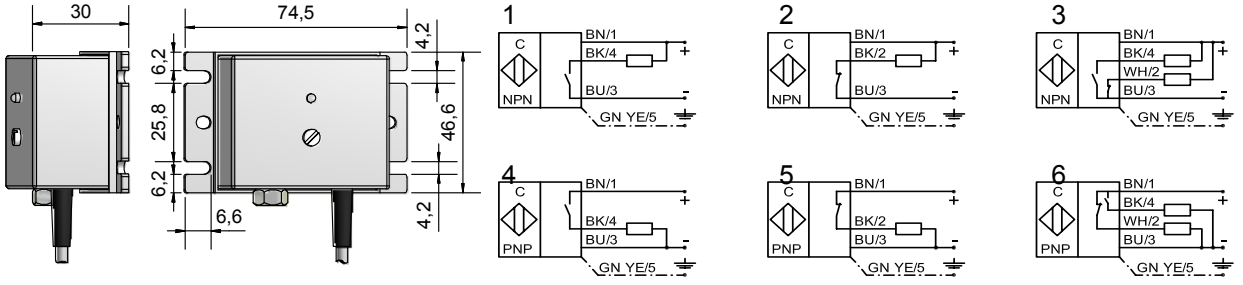
Capacitive Evaluation Unit KSA
Series 70-250 - NPN
Series 80-250 - PNP

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 (NO + NC)	Antivalent (NO + NC)
Type NPN	**KSA-70-250-A-M32-2m**	**KSA-70-250-A-M32-Y-2m**
Art.-No.	**AK 0003**	**AK 0007**
Type PNP	**KSA-70-250-A-M32-5m**	**KSA-70-250-A-M32-Y-5m**
Art.-No.	**AK 0004**	**AK 0008**
Connection diagram No.	3	3
Type PNP	**KSA-80-250-A-M32-2m**	**KSA-80-250-A-M32-Y-2m**
Art.-No.	**AK 0005**	**AK 0009**
Type PNP	**KSA-80-250-A-M32-5m**	**KSA-80-250-A-M32-Y-5m**
Art.-No.	**AK 0006**	**AK 0010**
Connection diagram No.	6	6
Operating voltage (U_B)	10...35 V DC	10...35 V DC
Output current max. (I_e)	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 mm²	2 m PVC, 5 x 0.34 mm²
Housing material	PA	PA



Made in Germany

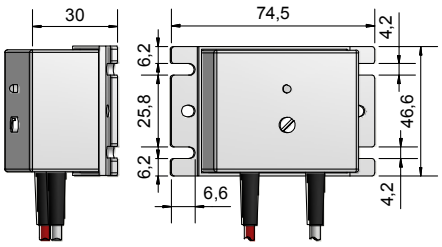
All specifications are subject to change without notice. (04/2013)

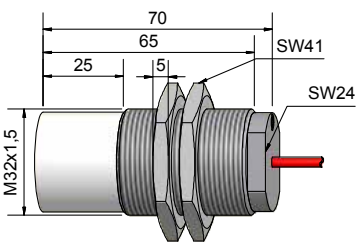
Capacitive high temperature sensor with evaluation unit
Series 70-250 - NPN
Series 80-250 - PNP

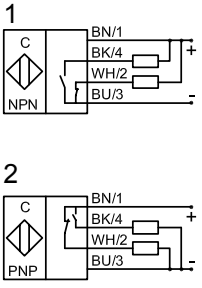
Housing Sensor M 32 x 1,5 / evaluation unit 75 x 47 x 30 mm
- Evaluation unit and sensor firmly connected via FEP cable with 2 m in length.
- Sensing distance 2...20 mm adjustable
- Sensor useable for an ambient temperature -200...+250 °C

Certificate: CE RoHS COMPLIANT

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 (NO + NC)
Type NPN	**KS-250-M32 2,0 m & KSA-70-250-A**
Art.-No.	**AKK 002**
Connection diagram No.	1
Type PNP	**KS-250-M32 2,0 m & KSA-80-250-A**
Art.-No.	**AKK 001**
Connection diagram No.	2
Operating voltage (U_B)	10...35 V DC
Output current max. (I_e)	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 mm²
Housing material (evaluation unit)	PA
Housing material (sensor)	VA No. 1.4305
Active surface	PTFE (FDA 21 CFR 177.1550)







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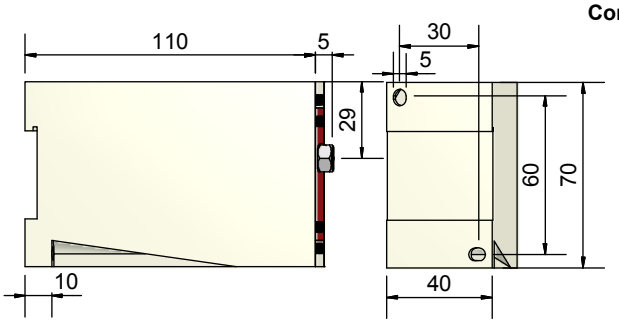
Capacitive Evaluation Unit - KSA
Series 250 - 115V / 230V AC

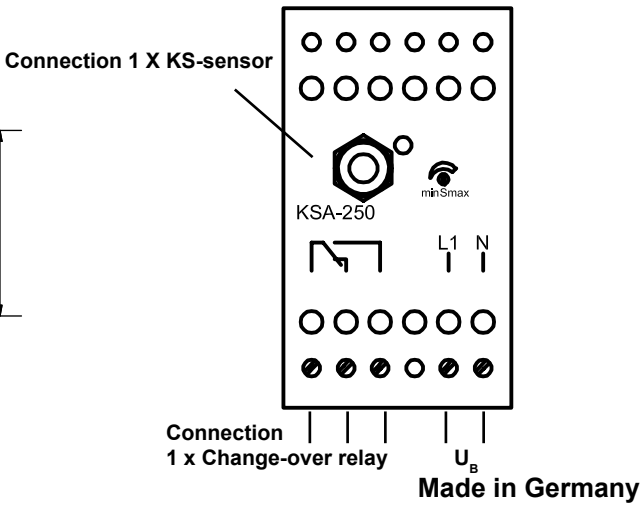
Housing 40 x 70 x 110 mm
- For capacitive sensors KS-250-M22...M32

Certificate:

Technical data

Output function	1 x change-over contact	1 x change-over contact
Type	**KSA-250 for 2 m**	**KSA-250 for 2 m**
Art.-No.	**560 101**	**560 100**
Type	**KSA-250 for 5 m**	**KSA-250 for 5 m**
Art.-No.	**560 106**	**560 102**
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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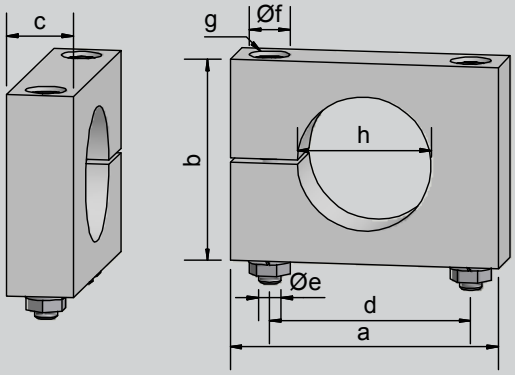
FEMALE CONNECTORS

Sensor	Female connector		Article No.	LED	IP	Connection	Cable-length	Sensor + Length	Version
Type	No.	Fig.		Green/ yellow		[mm²]	[m]	[mm]	Connector
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

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

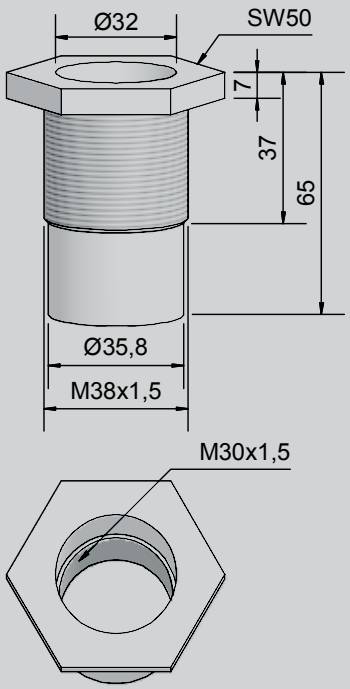
Dimensions „a” to „h” in mm, Material PA

PROTECTION CAPS AND PROTECTION SETS

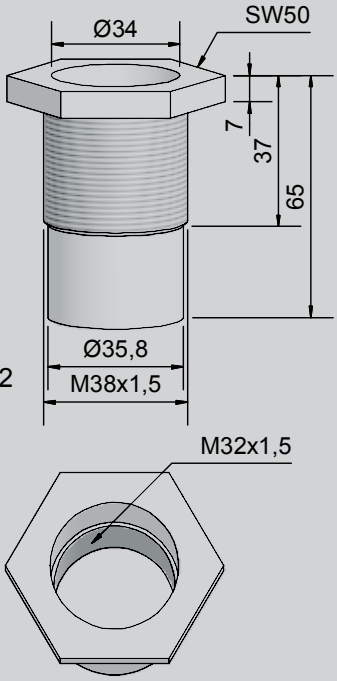
Example: Protection Caps M30 / M32 PTFE

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.

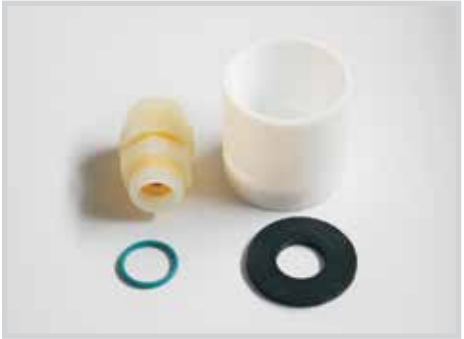


Dimension: Protection Cap M30
PTFE Art.-No. 190503
PEEK Art.-No. 190504
Delrin Art.-No. 190505



Dimension: Protection Cap M32
PTFE Art.-No. 190500
PEEK Art.-No. 190501
Delrin Art.-No. 190502

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.

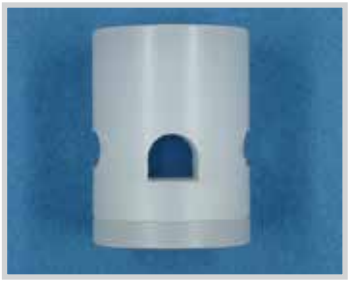
The thread of the sensor has to be sealed, for example with PTFE sealing- tape. The protection cover has to be screwed totally up to the end, and then the Pg-screw has to be fixed.

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

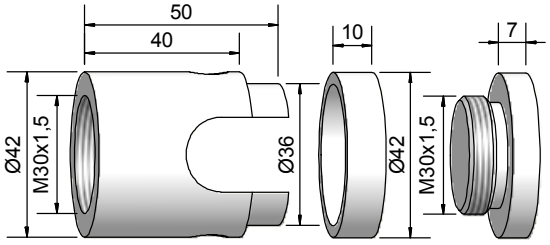


Holder for Sensor M30 - tube D 5.0, Nylon

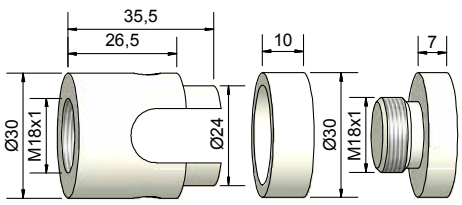
Holder for Sensor M18 - tube D.6.5, Nylon

Dimensions

H-M30-3/4“(1/2“)...



H-M18-6.5(5.0)...



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. In addition RECHNER has a laboratory accredited by DAkkS for testings according to IEC/EN 60947-5-2 and also an accredited EMC laboratory.

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 for gases and dusts } Division 1 } Division 2 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	NFPA 497 M CSA Nr. C22-1
Certification Authorities	PTB Physikalisch-Technische Bundesanstalt DEKRA EXAM formerly DMT, BVS BASEEFA British Approvals Service for Electrical Equipment in Flammable Atmosphere and others	UL Underwriters Laboratories, USA FM Factory Mutual Research, USA CSA Canadian Standards Association 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...

TYPE SELECTION IN ARTICLE NUMBER ORDER

TYPE SELECTION IN ARTICLE NUMBER ORDER

TYPE SELECTION IN TYPE DESCRIPTION ORDER

TYPE SELECTION IN TYPE DESCRIPTION ORDER

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