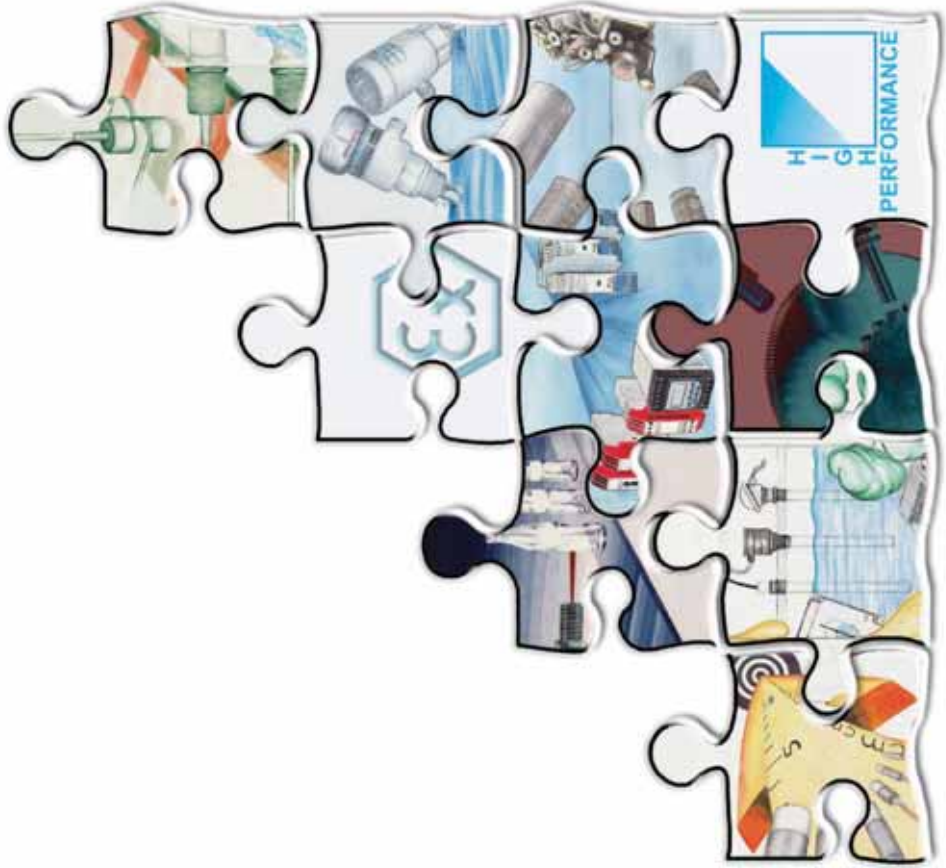


## SHORTFORM CATALOGUE



Registration No.: 1327-01



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

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**Edition February 2009**

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

All specifications are subject to change without notice. (03/2009)

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## GENERAL INFORMATION

Dear Partner,

*Thank you for your interest in our company and products. There are all kinds of sensing tasks. Solving them requires products and innovations based on many years of experience. Our sensors reliably acquire the critical data you need. They help optimise your production and automation processes and can help to ensure your competitive edge.*

*With this summary short form catalogue we offer you a small over-view of our wide-reaching product range. The presented selection of sensors and evaluation units are just a fraction of our product program. Though the choice of the products has been made such that with them many applications can be solved. If you wish for more detailed information please ask for our corresponding catalogue or the complete binder.*

Following you will find a short description of the different product groups:

**Capacitive sensors (KAS)** react to metals and non-metals that exceed a specific capacitance on approaching the active surface.

The sensing distance with respect to a specific material is greater the higher the dielectric constant.

The sensors are used to detect objects, for counting functions and for all types of level monitoring applications (liquid and solid materials).



**Inductive sensors (IAS)** feature transistorised oscillators whose power consumption is influenced by the approach of metals and other electrically conductive materials such as carbon.

Non-conductive metals can also achieve this effect. These devices can be used as limit switches and position sensors for monitoring and positioning applications in machines and installations as well as pulse generators for counter systems, distance measurements, speed control and many other applications.



Our product range comprise:



of **ATEX certified products**.  
For the ATEX products we provide a separate catalogue.

- **Capacitive Proximity Sensors**
- **Inductive Proximity Sensors**
- **Magneto-Resistive Sensors**
- **Capacitive Sensors with long Sensing Distance; KXS-Extreme Series**
- **Capacitive Filling Level Systems**
- **Flow Sensors**
- **Power Supplies and Isolating Switching Amplifiers**

Furthermore we have a large number of **ATEX certified products**. For the ATEX products we provide a separate catalogue.

For applications where there are hot ambient condition, we offer inductive and capacitive sensors with integrated electronics which dependent on the model can be used for applications with ambient temperature of **+100 °C, +120 °C and even up to +160 °C**.

Moreover for extreme ambient or product temperatures up to **+250 °C** we have **high temperature sensors** with remote electronics.



## GENERAL INFORMATION

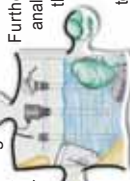
The **magneto resistive sensors (MRS)** detect the movement of ferromagnetic materials, by means of the change of the magnetic flow. They are available with (Series 350) or without (series 300) detection of direction of rotation. They are suitable for rotary speed sensing, for detection of gearwheels and for standstill control. Areas of use can be heavy construction engines, rail vehicles, large diesel engines and -turbines. Rotary speed sensing is possible with gear wheels from module 1, with a max. switching frequency of 15 kHz.



**KXS Systems are used for applications where the sensing distances of standard sensors are not sufficient.**

A further feature is the **Duplex- or Triplex-operation. With the corresponding evaluation unit it is possible to adjust 1, 2 or 3 switching points with only one sensor.**

The **Capacitive Filling Level Systems (KFS.../KFA.../KFX...)** operate according to the three-electrode principle. With this principle the container or an additional electrode serve as a counter-electrode to the probe electrodes. For this reason it is necessary with this system that the container is of a conductive material or a „substitute electrode“ is fixed to the container wall, e.g. copper foil. These systems are available with probes for analogue filling level measurement or for detection of 1, 2, 3 or 4 measuring points. The position of the switching points and the analogue measuring area is user-definable within the possible effective range and therefore it can be determined for optimal matching of each application. Level measurements of bulk material, liquids or pastes are possible with a dielectric constant as of  $\epsilon_r$  1,1.



The **EG...-130... series control units** contain a DC-side short-circuit-protected power pack, voltage stabiliser and output relay.

These control units can be actuated by all 2, 3 and 4-wire sensors with PNP, NPN, NO, NC or antivalent functions, i. e. our series IAS-10..., IAS-20..., IAS-60..., KAS-70..., KAS-80..., KAS-90..., and SW-600.

The **capacitive sensors** with extreme long sensing distance (**KXS.../KXA.../KXB.../KXC...**) are based on the three-electrode measuring principle. This measuring principle allows much larger sensing distances compared to the two-electrode principle of common capacitive sensors (KAS), up to 10-times the norm. Although one achieves essentially larger switching distances with these capacitive systems, the size of the sensors is small.



**KXS Systems are used for applications where the sensing distances of standard sensors are not sufficient.**

The **non-flush** mountable sensors are designed for applications, in which the medium to be monitored comes in direct contact with the sensor. In such level monitoring systems, the sensor head is completely immersed in the powder, granulate or liquid.



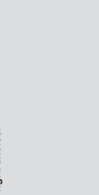
The **switching function of the sensors are mentioned in the type code:**  
 „S“ = normally open  
 „Ö“ = normally closed  
 „A“ = antivalent (normally open / normally closed)

Furthermore we have sensors with analogue output. These sensors have the description „IL“ in the type code and supply a proportional output signal corresponding to the distance of an object to the active surface in the form of a 4 and 20 mA current output. As an object approaches, this current decreases to a minimum of 2.5 mA. The analogue sensors are particularly suitable for measurement and control engineering applications and are PLC-compatible.

## APPLICATION EXAMPLES

Capacitive Sensors detect all kind of materials, liquids, bulk material, or objects.

For level control non-flush mountable Sensors are recommended. For detection at a distance the flush mountable sensors are the right choice.



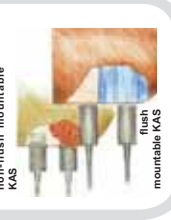
Counting of objects with capacitive sensors (KAS) e.g. jars of mustard



Position control of transported tins with inductive sensors (IAS)



Filling level detection with capacitive sensors (KAS) non-flush mountable



Analogue measurements in the automobile industry with capacitive sensors (KAS) e.g. position of the indicator



Capacitive sensors of the KXS-Extreme series are based on the three-electrode principle. With this measuring principle, one electrode is removed to the outside. The protective conductor potential PE - i.e. the machine and system ground - is connected to the measurement electrode. The evaluation takes place with remote electronics.

KXS sensors can be used for level measurement of granulate, bulk material including measurement through non-metal partitions. Furthermore as limit switches, contactless position switches for monitoring and positioning, as pulse generator for counting axes and for many other applications.

The capacitive filling level measurement is based on the three-electrode principle. Here the container or an additional electrode serves as a counter-electrode to the probe electrodes. This system that the container is of a conductive material or a „substitute electrode“ is fixed to the container wall, e.g. copper foil.

Filling level measurements in containers or tubes up to 5 m in diameter are possible. Maximum length of the probes 2 m

Detection of the content of a cardboard package e.g. tins with capacitive sensors (KAS)



Inductive sensors (IAS) and magneto resistive Sensors (MRS) detect metal objects in machines, plants and vehicles. They serve as pulse generator for speed controls, position controls, distance and counting measurements.



Level control in a container with glass with capacitive sensors of the KXS-Extreme series



TRUE- or PEER-Level probe (KFS) for detection of granules



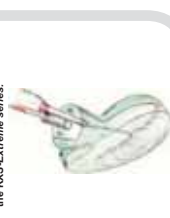
Content control of tablets in blister packages with capacitive sensors (KAS)



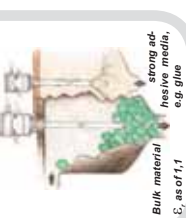
Detection of a gear wheel or cam wheel with inductive sensors (IAS) or magneto resistive sensors (MRS)



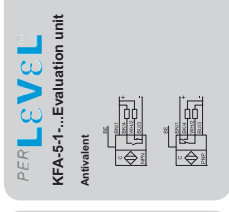
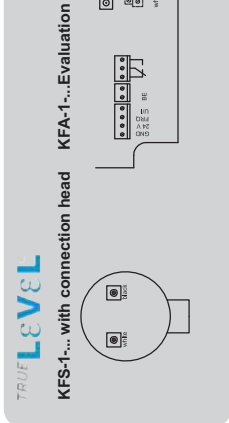
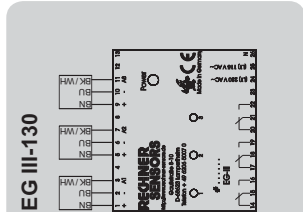
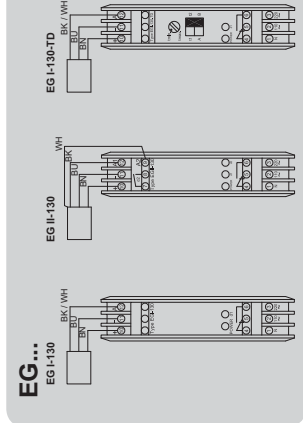
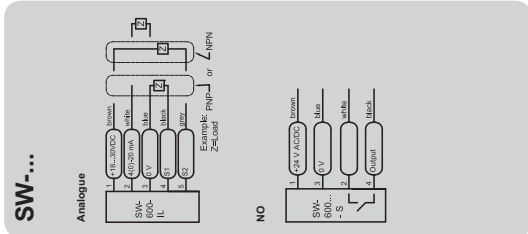
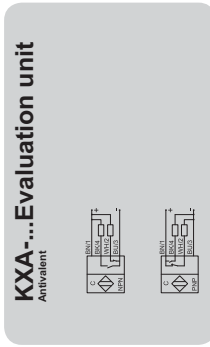
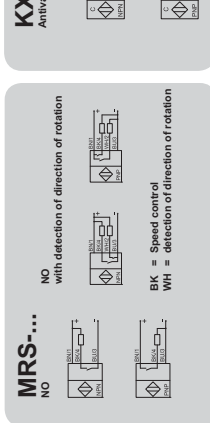
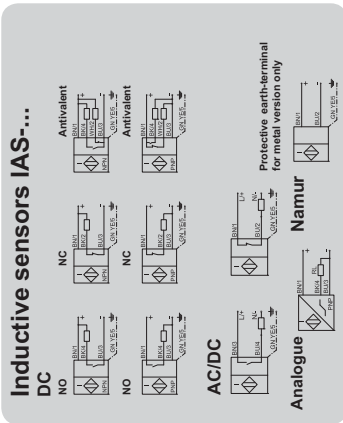
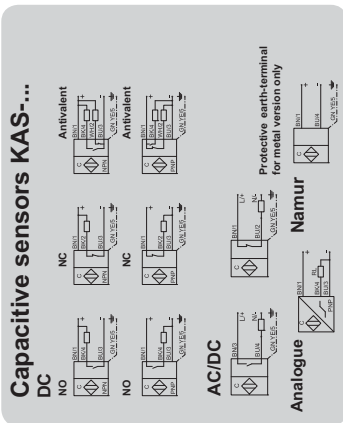
Overflow protection of casts, for example for plastic lenses for glasses with capacitive sensors of the KXS-Extreme series.



Level control of different media with TRUE- or PEER-Level rod probes with connection head (KFX)



CONNECTION DIAGRAMS



CAPACITIVE SENSORS KAS

Housing	M 8 x 1	M 12 x 1	M 12 x 1	M 12 x 1	M 12 x 1
<b>Technical data</b>	Non-flush mountable	Flush mountable	Flush mountable	Flush mountable	Non-flush mountable
Sensing distance Sn	2 mm	2 mm	2 mm	2 mm	4 mm
Sensing distance min./max. adjustable	0...4 mm	0...6 mm	0...6 mm	0...6 mm	0.5...10 mm
Type NPN normally open (NO)					
Type NPN normally closed (NC)					
Type NPN antivalent (NO + NC)		KAS-70-A12-A			KAS-70-A12-A-Y5
Type PNP normally open (NO)		KAS-80-A12-S			
Type PNP normally closed (NC)					
Type PNP antivalent (NO + NC)		KAS-80-A12-A			KAS-80-A12-A-Y5
Type NPN/PNP NO/NC switchable					
Type AC/DC normally open					
Type AC/DC normally closed					
Operating voltage (U <sub>0</sub> )	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC
Output current (I <sub>0</sub> )	150 mA	250 mA / 2 x 250 mA	250 mA / 2 x 250 mA	250 mA / 2 x 250 mA	2 x 250 mA
No load current (I <sub>0</sub> )	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA
Frequency of operating cycles max.	500 Hz	500 Hz	500 Hz	500 Hz	500 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
LED display	Yes	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67	IP 67
Connection	Flange connector M 8 x 1	Flange connector M 12 x 1	Flange connector M 12 x 1	Flange connector M 12 x 1	Flange connector M 12 x 1
Housing material	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE	PTFE	PTFE	PTFE	PTFE
Lid		PA / PPO			
Certifications	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA
*with sealed potentiometer screw					
<b>Dimensions:</b>					

Connection diagram see page 7  
Female connector M 12 see page 17

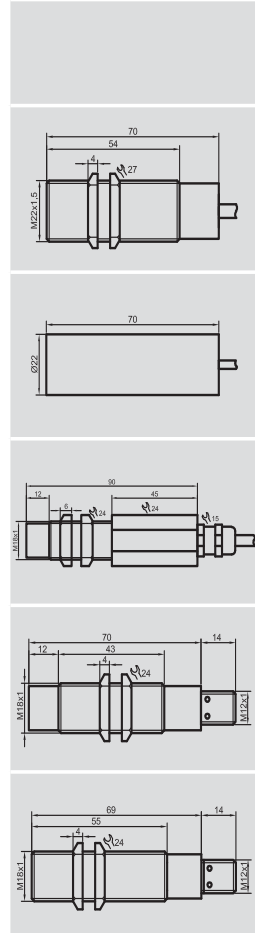
CAPACITIVE SENSORS KAS

M 18 x 1	M 18 x 1	M 18 x 1	Ø 22 mm	M 22 x 1,5

Flush mountable	Non-flush mountable	Flush mountable	Flush mountable
5 mm	8 mm	8 mm	8 mm
0.5...10 mm	0.5...15 mm	0.5...15 mm	0.5...15 mm
KAS-70-A13-A-Y5	KAS-70-A23-A-Y5	KAS-70-20-A	KAS-70-20-A-M22
KAS-80-A13-A-Y5	KAS-80-A23-A-Y5	KAS-80-20-S	KAS-80-20-A-M22

10...35 VDC	10...35 VDC	10...35 VDC	10...35 VDC
2 x 250 mA	2 x 250 mA	250 mA / 2 x 250 mA	2 x 250 mA
Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA
300 Hz	50 Hz	300 Hz	300 Hz
-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
IP 67	IP 67	IP 67	IP 67

Flange connector M 12 x 1	Flange connector M 12 x 1	2 m Cable and protection set	2 m Cable	2 m Cable
Brass	Brass	PTFE	Brass	Brass
PTFE	PTFE	PTFE / PVDF	PTFE	PTFE
			PA / PPO	PA / PPO
CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA



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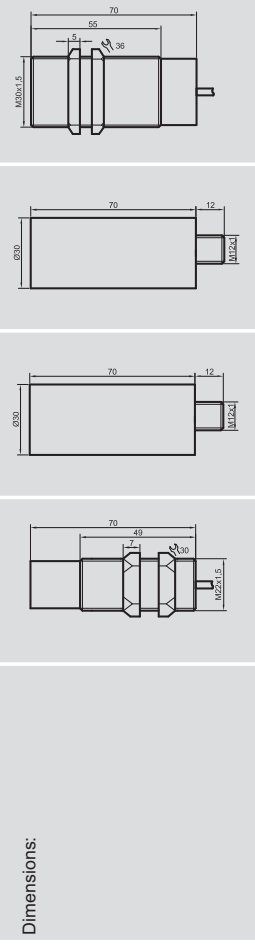
CAPACITIVE SENSORS KAS

Housing	M 22 x 1,5	Ø 30 mm	Ø 30 mm	M 30 x 1,5

Technical Data	Non-flush mountable	Flush mountable	Non-flush mountable	Flush mountable
Operating distance Sn	12 mm	20 mm	25 mm	10 mm
Operating distance min./max. adjustable	5...20 mm	0.5...30 mm	1...40 mm	0.5...25 mm
Type NPN NO	KAS-70-23-S-M22			
Type NPN NC				
Type NPN antivalent (NO + NC)	KAS-70-23-A-M22	KAS-70-30-A-Y5	KAS-70-35-A-Y5	KAS-70-A14-A
Type PNP NO	KAS-80-23-S-M22			KAS-80-A14-S
Type PNP NC				
Type PNP antivalent (NO + NC)	KAS-80-23-A-M22	KAS-80-30-A-Y5	KAS-80-35-A-Y5	KAS-80-A14-A
Type AC/DC - S/O switchable				
Type AC/DC NO				
TYPE AC/DC NC				

Operating voltage (U <sub>i</sub> )	10...35 VDC	10...35 VDC	10...35 VDC	10...35 VDC
Output current max. (I <sub>o</sub> )	250 mA / 2 x 250 mA	2 x 250 mA	2 x 250 mA	250 mA / 2 x 250 mA
No-load current (I <sub>o</sub> )	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA
Frequency of operating cycles max.	50 Hz	200 Hz	50 Hz	200 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
LED-display	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67

Connection	2 m Cable	Flange connector M 12 x 1	Flange connector M 12 x 1	2 m Cable
Housing material	PA / PPO	Brass	Brass	Brass
Active surface	PA / PPO	PTFE	PTFE	PTFE
Lid	PA / PPO	PA / PPO	PA / PPO	PA / PPO
Certification	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA
*with sealed potentiometer screw				



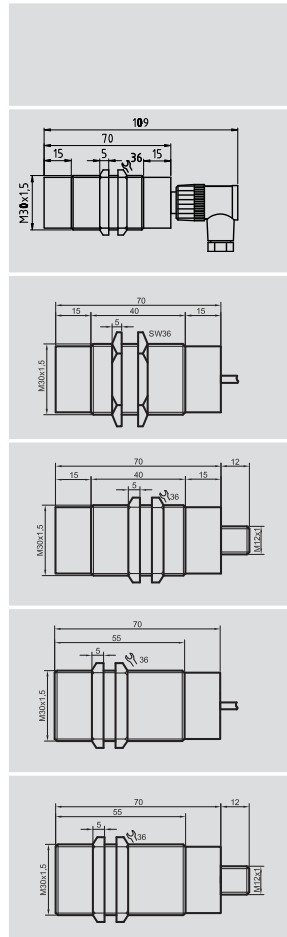
Dimensions:

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Connection diagram see page 7  
Female connector M12 see page 17

CAPACITIVE SENSORS KAS

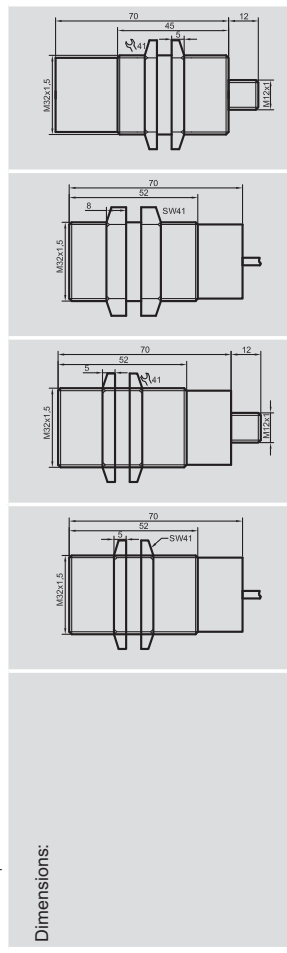
M 30 x 1,5	M 30 x 1,5	M 30 x 1,5	M 30 x 1,5	M 30 x 1,5	M 30 x 1,5
Flush mountable 10 mm 0.5...25 mm	Flush mountable 10 mm 0.5...25 mm	Non-flush mountable 15 mm 1...30 mm	Non-flush mountable 15 mm 1...30 mm	Non-flush mountable 15 mm 2...20 mm	Non-flush mountable 15 mm 2...20 mm
KAS-70-A14-A-Y5	KAS-70-A14-A-K KAS-80-A14-S-K	KAS-70-A24-A-Y5 KAS-80-A24-S-K	KAS-70-A24-A-Y5 KAS-80-A24-S-K	KAS-70-30-A-M32 KAS-80-30-S-M32	KAS-70-30-A-M32 KAS-80-30-S-M32
KAS-80-A14-A-Y5	KAS-80-A14-A-K	KAS-80-A24-A-Y5	KAS-80-A24-A-K	KAS-70-30-A-M32-Y5 KAS-80-30-A-M32-Y5	KAS-70-30-A-M32-Y5 KAS-80-30-A-M32-Y5
10...35 VDC 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C	10...35 VDC 250 mA / 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C	10...35 VDC 2 x 250 mA Typ. 10 mA 50 Hz -25...+70 °C	10...35 VDC 250 mA / 2 x 250 mA Typ. 10 mA 50 Hz -25...+70 °C	10...35 V DC 250 mA / 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C	10...35 V DC 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C
Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67
Flange connector M 12 x 1 Brass PTFE PA / PPO	2 m Cable PA / PPO PA / PPO PA / PPO	Flange connector M 12 x 1 Brass PTFE PA / PPO	2 m Cable PA / PPO PA / PPO PA / PPO	2 m Cable Brass PTFE PA / PPO	2 m Cable PA / PPO PA / PPO PA / PPO
CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA



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CAPACITIVE SENSORS KAS

Housing	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5
Operating distance Sn Operating distance min./max. adjustable Type NPN NO Type NPN NC Type NPN antivalent (NO + NC) Type PNP NO Type PNP NC Type PNP antivalent (NO + NC) Type NPN/PNP/NO/NC switchable Type AC/DC NO TYPE AC/DC NC	Flush mountable 20 mm 0.5...30 mm KAS-70-30-S-M32	Flush mountable 15 mm 2...20 mm	Flush mountable 20 mm 0.5...30 mm KAS-70-30-A-M32-Y5	Flush mountable 15 mm 2...20 mm	Non-flush mountable 25 mm 1...40 mm KAS-70-34-A-M32-PTFE/VA-Y5
Operating voltage (U <sub>i</sub> ) Output current max. (I <sub>o</sub> ) No-load current (I <sub>o</sub> ) Frequency of operating cycles max. Permitted ambient temperature LED-display Protective circuit Norm Degree of protection IEC 60529*	10...35 V DC 250 mA / 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C Yes Yes EN 60947-5-2 IP 67	20...250 V AC / DC 330 mA < 2.5 mA 50 Hz -25...+70 °C Yes Yes EN 60947-5-2 IP 67	10...35 V DC 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C Yes Yes EN 60947-5-2 IP 67	20...250 V AC / DC 330 mA Typ. 2.5 mA 25 Hz -25...+70 °C Yes Yes EN 60947-5-2 IP 67	10...35 V DC 2 x 250 mA Typ. 10 mA 200 Hz -25...+70 °C Yes Yes EN 60947-5-2 IP 67
Connection Housing material Active surface Lid Certification	Flange connector M 12 x 1 Brass PTFE PA / PPO	2 m Cable PA / PPO PA / PPO PA / PPO	Flange connector M 12 x 1 Brass PTFE PA / PPO	2 m Cable PA / PPO PA / PPO PA / PPO	Flange connector M 12 x 1 VA No. 1.4305 PTFE PA / PPO CE, RoHS, UL/CSA
*with sealed potentiometer screw					

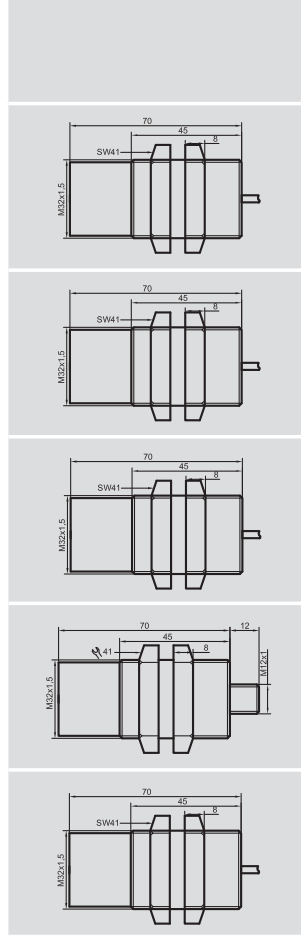


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Connection diagram see page 7  
Female connector M12 see page 17

## CAPACITIVE SENSORS KAS

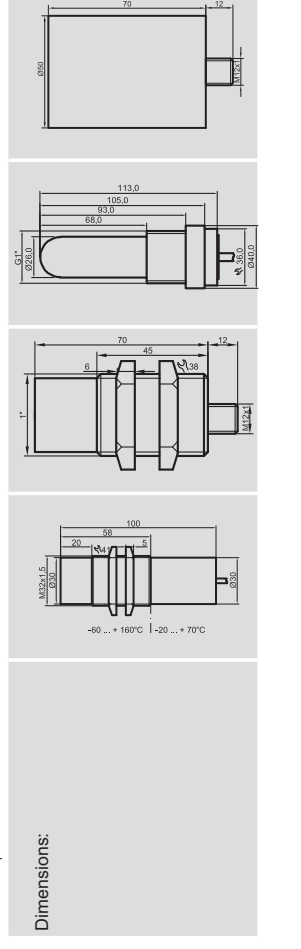
M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5
Non-flush mountable 25 mm 1...40 mm KAS-70-35-S-M32	Non-flush mountable 25 mm 3...30 mm KAS-70-35-A-M32 KAS-80-35-S-M32	Non-flush mountable 25 mm 3...30 mm KAS-70-35-A-M32-PTFE-100°C KAS-80-35-S-M32	Non-flush mountable 25 mm 3...25 mm KAS-90-32-S-M32 KAS-90-32-O-M32	Non-flush mountable 25 mm 1...40 mm KAS-70-35-A-M32-PTFE-100°C KAS-80-35-A-M32-PTFE-100°C	Non-flush mountable 25 mm 1...40 mm KAS-70-35-A-M32-PTFE-100°C KAS-80-35-A-M32-PTFE-100°C
10...35 V DC 250 mA / 2 x 250 mA Typ. 10 mA 50 Hz -25...+70 °C Yes Yes	10...35 V DC 400 mA Typ. 15 mA 50 Hz -25...+70 °C Yes Yes	10...35 V DC 400 mA Typ. 15 mA 50 Hz -25...+70 °C Yes Yes	20...250 V AC/DC 330 mA Typ. 2.5 mA 25 Hz -25...+70 °C Yes Yes	10...35 V DC 2 x 250 mA Typ. 10 mA 50 Hz -25...+70 °C Yes Yes	10...35 V DC 2 x 250 mA Typ. 10 mA 50 Hz -25...+70 °C Yes Yes
EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67
2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS, UL/CSA	2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS	2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS	2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS	2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS, UL/CSA	2 m Cable PA / PPO PA / PPO PA / PPO CE, RoHS, UL/CSA



All specifications are subject to change without notice. (03/2009)





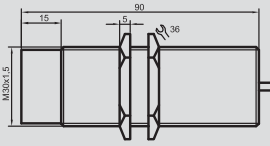
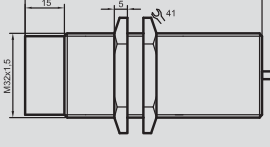
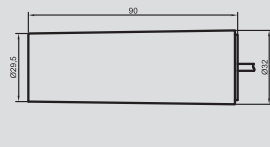
## CAPACITIVE SENSORS KAS

Housing	M 32 x 1,5	1"	Ø 26 mm / 1"	Ø 50 mm
CE				
<b>Technical Data</b>	Non-flush mountable 15 mm 2...20 mm	Non-flush mountable 25 mm 1...40 mm	Non-flush mountable 5 mm 0...20 mm	Flush mountable 30 mm 1...50 mm
Operating distance Sn				
Operating distance min./max. adjustable				
Type NPN NO				
Type NPN NC				
Type NPN antivalent (NO + NC)				
Type PNP NO				
Type PNP NC				
Type PNP antivalent (NO + NC)				
Type NPN/PNP-NO/NC switchable				
Type AC/DC NO				
TYPE AC/DC NC				
Operating voltage (U <sub>i</sub> )	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC
Output current max. (I <sub>o</sub> )	400 mA	2 x 250 mA	2 x 250 mA	2 x 250 mA
No-load current (I <sub>o</sub> )	Typ. 15 mA	Typ. 10 mA	< 15 mA	Typ. 10 mA
Frequency of operating cycles max.	50 Hz	50 Hz	50 Hz	100 Hz
Permitted ambient temperature	See below	-25...+70 °C	-25...+100 °C	-25...+70 °C
LED-display	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67
Connection	2 m Cable	Flange connector M 12 x 1	2 m Cable	Flange connector M 12 x 1
Housing material	VA No. 1.4305	Brass	PTFE	PA / PPO
Active surface	PTFE	PTFE	PTFE	PA / PPO
Lid	PA / PPO	PA / PPO	PA / PPO	PA / PPO
Certification	CE, RoHS	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA
*with sealed potentiometer screw				



All specifications are subject to change without notice. (03/2009)

CAPACITIVE SENSORS KAS WITH RELAY OUTPUT SERIES 95

Housing	M 30 x 1,5	M 32 x 1,5	Ø 32 mm
			
			
<b>Technical data</b>	Non-flush mountable	Non-flush mountable	Non-flush mountable
Sensing distance S <sub>n</sub>	15 mm	20 mm	20 mm
Sensing distance min./max. adjustable	2...20 mm	2...25 mm	2...25 mm
Type	KAS-95-A24-1CO-K-POM-TD	KAS-95-32-1CO-K-M32-POM-TD	KAS-95-32-1CO-K-POM-TD
Electrical version	5 wire AC / DC	5 wire AC / DC	5 wire AC / DC
Output function	Relay 1 CO	Relay 1 CO	Relay 1 CO
Certificates	CE, RoHS	CE, RoHS	CE, RoHS
Operating voltage (U <sub>i</sub> )	20...250 V AC / DC	20...250 V AC / DC	20...250 V AC / DC
Time delay	Adjustable 1 sec...10 min.	Adjustable 1 sec...10 min.	Adjustable 1 sec...10 min.
On-delay	Switchable	Switchable	Switchable
Off-delay	Switchable	Switchable	Switchable
Load max. AC (I, U)	1 A, 250 V	1 A, 250 V	1 A, 250 V
Load max. DC (I, U, P)	1 A, 220 V, 60 W	1 A, 220 V, 60 W	1 A, 220 V, 60 W
Power consumption (I <sub>o</sub> )	2,1 mA	2,1 mA	2,1 mA
Switching frequency max.	2 Hz	2 Hz	2 Hz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C
LED display	Yellow	Yellow	Yellow
Protective circuit	Built-in	Built-in	Built-in
Degree of protection IEC 60529*	IP 67*	IP 67*	IP 67*
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Connection	2 m Cable, PVC, 5 x 0,34 mm <sup>2</sup>	2 m Cable, PVC, 5 x 0,34 mm <sup>2</sup>	2 m Cable, PVC, 5 x 0,34 mm <sup>2</sup>
Housing material	POM	POM	POM
Active surface	POM	POM	POM
Lid	POM	POM	POM
*With sealed potentiometer screw			
<b>Dimensions:</b>			

All specifications are subject to change without notice. (03/2009)

CAPACITIVE SENSORS KAS SERIES 26

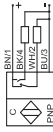
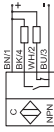
Capacitive Sensors - Series 26  
Series 70 - NPN  
Series 80 - PNP



EasyTeach



- Housing Ø = 26 mm / 1 1/2"
- Housing material: PP / PBT
- Level sensor with EasyTeach function
- Clear text display
- Suitable for food and pharmaceutical applications
- Plastic part (PP) which will be in contact with the product to be detected is FDA conforme (Code of Federal Regulation, title 21, chapter 1, part 177.1520)
- SIP / CIP 121 ° C
- Sensor length max. 2000 mm.



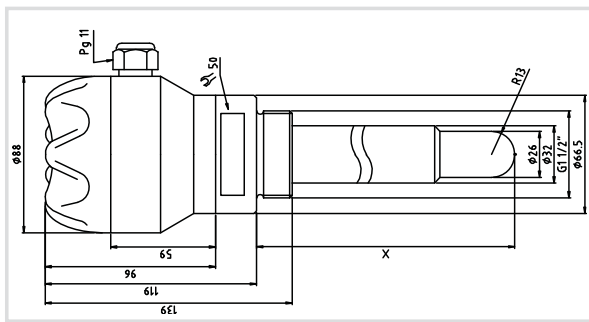
Sensor length „X“ (mm)	Type NPN	Art.No.	Type PNP	Art.No.
200	KAS-70-26-A-200-PP-1/2"-PH-ET	KA0781	KAS-80-26-A-200-PP-1/2"-PH-ET	KA0780
280	KAS-70-26-A-280-PP-1/2"-PH-ET	KA0776	KAS-80-26-A-280-PP-1/2"-PH-ET	KA0758
400	KAS-70-26-A-400-PP-1/2"-PH-ET	KA0783	KAS-80-26-A-400-PP-1/2"-PH-ET	KA0782
800	KAS-70-26-A-800-PP-1/2"-PH-ET	KA0785	KAS-80-26-A-800-PP-1/2"-PH-ET	KA0784
1200	KAS-70-26-A-1200-PP-1/2"-PH-ET	KA0787	KAS-80-26-A-1200-PP-1/2"-PH-ET	KA0786



Certificate: **CE**

Technical data

Operating distance S <sub>n</sub>	Non-flush mountable
Operating distance min./max. adjustable	5 mm
Electrical version	0...20 mm
Output	4-pin DC
Operating voltage (U <sub>o</sub> )	Antivalent (NO + NC)
Output current max. (I <sub>o</sub> )	10...35 V DC
Voltage drop max. (U <sub>d</sub> )	2 x 250 mA
Permitted residual ripple max.	≤ 2.0 V
No-load current (I <sub>o</sub> )	10%
Frequency of operating cycles max.	Typ. 10 mA
Permitted ambient temperature	2 Hz
LCD-display	0...+70° C / Sensor CIP 121° C (zero-current)
Protective circuit	Reflective
Degree of protection IEC 60529 - Sensor	Built-in
Connection head	IP 68
Norm	IP 65
Connection	EN 60947-5-2
Housing material	Screw terminals 1,5 mm <sup>2</sup>
Active surface	PP
Connection head	PP
	PBT glasfibre reinforced

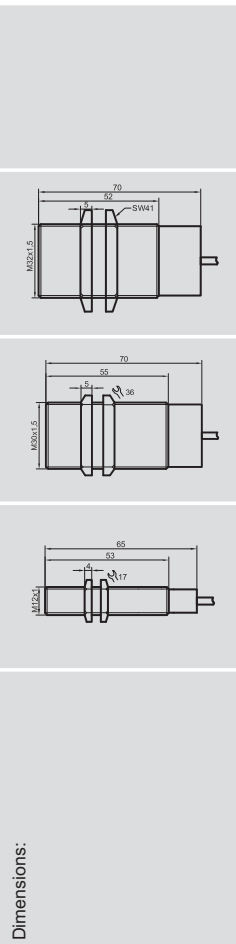


All specifications are subject to change without notice. (03/2009)



**CAPACITIVE SENSORS KAS WITH ANALOGUE OUTPUT**

Housing	M 12 x 1	M 30 x 1,5	M 32 x 1,5	Female Connector M12
				
<b>Technical Data</b>	Flush mountable	Flush mountable	Flush mountable	
Operating range	0...5 mm	0...20 mm	0...30 mm	
Linear range adjustable	0...3.5 mm	0...14 mm	0...20 mm	
Type analogue 3-wire	KAS-80-A12-IL	KAS-80-A14-L	KAS-80-30-L-M32	Female Connector No. 57
				4-pins for
				Flange connector M 12 x 1
				Y3 or Y5 NPN / PNP
Operating voltage (U <sub>L</sub> )	15...30 V DC	15...30 V DC	15...30 V DC	
Output current (I <sub>L</sub> )	2.5...> 20 mA	2.5...> 20 mA	2.5...> 20 mA	
No-load current (I <sub>0</sub> )	Typ. 40 mA	Typ. 40 mA	Typ. 40 mA	
Load resistor	R <sub>L</sub> = 0...300 Ohm	R <sub>L</sub> = 0...300 Ohm	R <sub>L</sub> = 0...300 Ohm	
Permitted ambient temperature	0...+60 °C	0...+60 °C	0...+60 °C	
LED-display	Yes	Yes	Yes	
Protective circuit	Yes	Yes	Yes	
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	
Connection	2 m Cable	2 m Cable	2 m Cable	5 m Cable
Housing material	Brass	Brass	Brass	Brass
Active surface	PTFE	PTFE	PTFE	PTFE
Lid	PA / PPO	PA / PPO	PA / PPO	PA / PPO
Certification	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE
	*With sealed potentiometer screw			

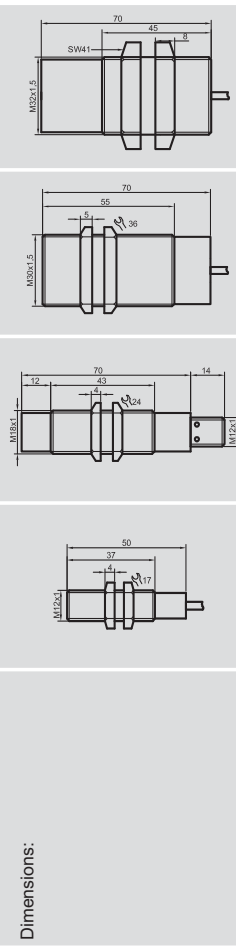


Connection diagram see page 7

**CAPACITIVE SENSORS KAS - NAMUR - ATEX**

Sensors for use in areas with the risk of explosion, ATEX zone 1

Housing	M 12 x 1	M 18 x 1	M 30 x 1,5	M 32 x 1,5
				
				
<b>Technical data</b>	Flush mountable	Non-flush mountable	Flush mountable	Non-flush mountable
Sensing distance Sn	2 mm	8 mm	10 mm	18 mm
Sensing distance min./max. adjustable	1...5 mm	2...10 mm	2...15 mm	3...20 mm
Type NAMUR	KAS-40-A12-N	KAS-40-A23-N-Y5	KAS-40-A14-N	KAS-40-35-N-M32-PTFE
Art.-No.	400 200	KA 0560	400 400	402 300
Certification	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA
ATEX Certification No.	DMT 03 ATEX E 048	DMT 03 ATEX E 048	DMT 03 ATEX E 048	DMT 03 ATEX E 048
ATEX	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6
IECEX Certification No.	IECEX-BVS 07.0031	IECEX-BVS 07.0031	IECEX-BVS 07.0031	IECEX-BVS 07.0031
IECEX	Ex ia IIC T1-T6	Ex ia IIC T1-T6	Ex ia IIC T1-T6	Ex ia IIC T1-T6
Operating voltage (U <sub>L</sub> )	U <sub>L</sub> = 15 V DC	U <sub>L</sub> = 15 V DC	U <sub>L</sub> = 15 V DC	U <sub>L</sub> = 15 V DC
Output current active surface free	> typ. 1.5 mA	> typ. 1.5 mA	> typ. 1.5 mA	> typ. 1.5 mA
Output current active surface covered	< typ. 2.5 mA	< typ. 2.5 mA	< typ. 2.5 mA	< typ. 2.5 mA
Selfinductance (L)	0.2 mH	0.2 mH	0.2 mH	0.2 mH
LED display	No	Yes	Yes	No
Norm	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6
Connection	2 m Cable, 2 x 0.14 mm <sup>2</sup>	Flange connector M 12 x 1	2 m Cable, 2 x 0.75 mm <sup>2</sup>	2 m Cable, 2 x 0.75 mm <sup>2</sup>
Housing material	VA No. 1.4305	Brass	Brass	PTFE
Active surface	PTFE	PTFE	PTFE	PTFE
Lid	PA / PPO	-	PA / PPO	PA / PPO
	*With sealed potentiometer screw			

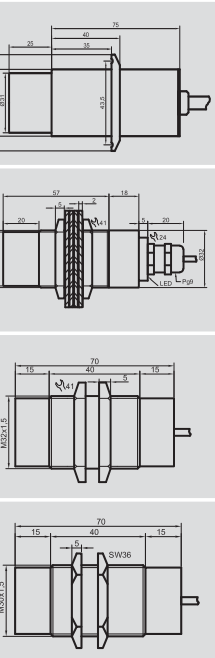


## CAPACITIVE SENSORS KAS - ATEX - ZONE 20

Sensors for use in areas with risk of explosion, ATEX zone 20







Housing	M 30 x 1,5	M 32 x 1,5	M 32 x 1,5	M 32 x 1,5	Tri-Clamp
 					
<b>Technical data</b>	Non-flush mountable	Non-flush mountable	Non-flush mountable	Non-flush mountable	Non-flush mountable
Sensing distance Sn	15 mm	20 mm	20 mm	20 mm	20 mm
Sensing distance min./max. adjustable	3...25 mm	3...30 mm	3...30 mm	3...30 mm	3...30 mm
Type NPN antivalent (NO + NC)	KAS-70-A24-A-SIE-X-N	KAS-70-34-A-M2-SIE-X-N	KAS-80-34-A-M2-SIE-X-N	KAS-80-34-35700-A-PIPE/VA-SIE-X-N	KAS-80-34-35700-A-PIPE/VA-SIE-X-N
Type PNP antivalent (NO + NC)	KAS-80-A24-A-SIE-X-N	KAS-80-34-A-M2-SIE-X-N	KAS-80-35-A-M2-SIE-X-N		
Certification	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA	CE, RoHS, UL/CSA
ATEX Certification No.	DMT 01 ATEX E 157	DMT 01 ATEX E 157	DMT 01 ATEX E 157	DMT 01 ATEX E 157	DMT 01 ATEX E 157
ATEX	EX II 1D IP67 T 101 °C EX II 2G EEx m II T4	EX II 1D IP67 T 101 °C EX II 2G EEx m II T4	EX II 1D IP67 T 101 °C EX II 2G EEx m II T4	EX II 1D IP67 T 101 °C EX II 2G EEx m II T4	EX II 1D IP67 T 101 °C EX II 2G EEx m II T4
IECEX Certification No.	IECEX BVS 07.0015	IECEX BVS 07.0015	IECEX BVS 07.0015	IECEX BVS 07.0015	IECEX BVS 07.0015
IECEX	Ex ID A2021 IP67 T 101 °C Ex mb II T4	Ex ID A2021 IP67 T 101 °C Ex mb II T4	Ex ID A2021 IP67 T 101 °C Ex mb II T4	Ex ID A2021 IP67 T 101 °C Ex mb II T4	Ex ID A2021 IP67 T 101 °C Ex mb II T4
Operating voltage (U <sub>i</sub> )	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Output current max. (I <sub>o</sub> )	2 x 150 mA	2 x 150 mA	2 x 150 mA	2 x 150 mA	2 x 150 mA
No-load current (I <sub>o</sub> )	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles max.	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Permitted ambient temperature	-25...+70 °C	-20...+70 °C	-20...+90 °C	-20...+90 °C	-20...+90 °C
LED display	Yes	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60629*	IP 67	IP 67	IP 67	IP 67	IP 67
Connection	3 m Cable, 5 x 0,34 mm <sup>2</sup>	3 m Cable, 5 x 0,34 mm <sup>2</sup>	3 m Cable, 5 x 0,34 mm <sup>2</sup>	3 m Cable, 5 x 0,34 mm <sup>2</sup>	3 m Cable, 5 x 0,34 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305
Active surface	PTFE	PTFE	PTFE	PTFE	PTFE
Lid	PC	PC	PC	PC	PC
*With sealed potentiometer screw					

Dimensions:

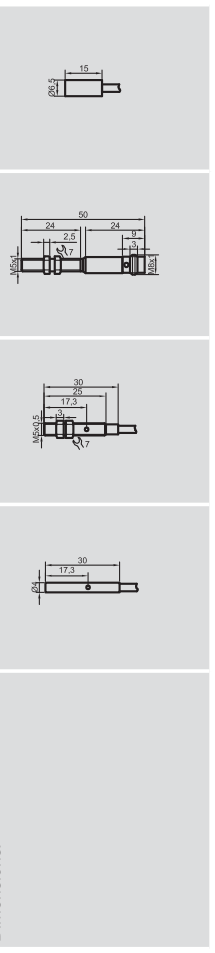


All specifications are subject to change without notice. (03/2009)

## INDUCTIVE SENSORS IAS







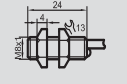
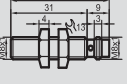

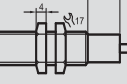
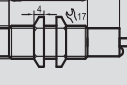
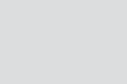
Housing	Ø 4 mm	M 5 x 0,5	M 5 x 0,5	M 5 x 0,5	Ø 6,5 mm
					
<b>Technical Data</b>	Flush mountable	Flush mountable	Flush mountable	Flush mountable	Flush mountable
Operating distance Sn [mm]	0,8 mm	0,8 mm	0,8 mm	0,8 mm	1,5 mm
Type NPN NO	IAS-20-04-S	IAS-20-M5-S	IAS-20-M5-S	IAS-20-M5-S	
Type NPN NC	IAS-20-04-O	IAS-20-M5-O	IAS-20-M5-O	IAS-20-M5-O	
Type NPN antivalent (NO + NC)					
Type PNP NO	IAS-10-04-S	IAS-10-M5-S	IAS-10-M5-S-Y7	IAS-10-6,5/15-S	
Type PNP NC	IAS-10-04-O	IAS-10-M5-O	IAS-10-M5-O-Y7	IAS-10-6,5/15-O	
Type PNP antivalent (NO + NC)					
Type AC/DC NO					
Type AC/DC NC					
Operating voltage (U <sub>i</sub> )	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC
Output current max. (I <sub>o</sub> )	150 mA	150 mA	150 mA	150 mA	150 mA
No-load current (I <sub>o</sub> )	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA	Typ. 10 mA
Frequency of operating cycles max.	2 kHz	2 kHz	1 kHz	1 kHz	1 kHz
Permitted ambient temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
LED-display	Yes	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67	IP 67
Connection	2 m Cable 3 x 0,14 mm <sup>2</sup>	2 m Cable 3 x 0,14 mm <sup>2</sup>	2 m Cable 3 x 0,14 mm <sup>2</sup>	2 m Cable 3 x 0,14 mm <sup>2</sup>	2 m Cable 3 x 0,14 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305
Active surface		PA / PPO	PA / PPO	PA / PPO	PVC
Lid					
*With sealed potentiometer screw					

Dimensions:








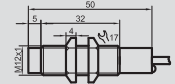


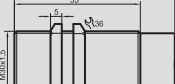
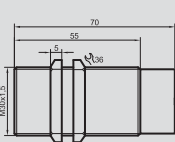
All specifications are subject to change without notice. (03/2009)

INDUCTIVE SENSORS IAS

M 8 x 1	M 8 x 1	Ø 11 mm	M 12 x 1	M 12 x 1	M 12 x 1
					
Flush mountable 1,5 mm	Flush mountable 1,5 mm	Non-flush mountable 5 mm	Flush mountable 2 mm	Flush mountable 2 mm	Non-flush mountable 4 mm
			IAS-20-A12-S IAS-20-A12-O	IAS-20-A12-S IAS-20-A12-O	IAS-20-A22-S IAS-20-A22-O
IAS-10-M8-S IAS-10-M8-O	IAS-10-M8-S-Y7 IAS-10-M8-O-Y7	IAS-10-A12-S IAS-10-A12-O	IAS-10-A12-S IAS-10-A12-O	IAS-10-A22-S IAS-10-A22-O	
10...35 VDC 150 mA Typ. 10 mA 1 kHz -25...+70 °C	10...35 VDC 150 mA Typ. 10 mA 1 kHz -25...+70 °C	10...35 VDC 150 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 VDC 150 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 VDC 150 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 VDC 150 mA Typ. 15 mA 2 kHz -25...+70 °C
Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67
2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305	Flange connector M 8 x 1 VA No. 1.4305	5 m Cable 3 x 0,14 mm <sup>2</sup> PTFE	2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305	2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305	2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305
PVC	PVC	PTFE	PA / PPO	PA / PPO	PA / PPO
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
					

All specifications are subject to change without notice. (03/2009)

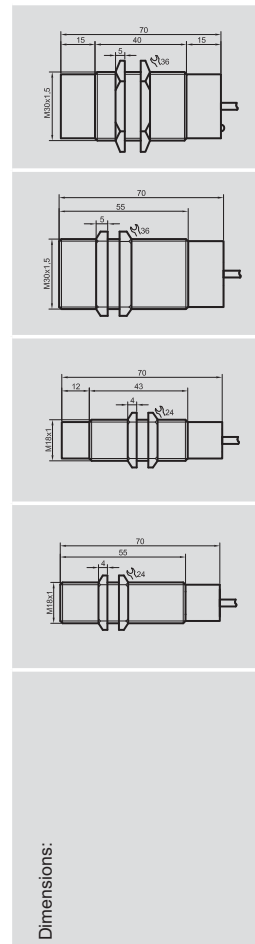
INDUCTIVE SENSORS IAS

Housing	M 12 x 1	M 18 x 1	M 18 x 1	M 18 x 1	M 30 x 1,5
					
CE	Non-flush mountable 4 mm	Flush mountable 5 mm	Flush mountable 5 mm	Flush mountable 5 mm	Flush mountable 10 mm
		IAS-20-A13-S IAS-20-A13-A	IAS-20-A13-S IAS-20-A13-A	IAS-20-A14-S IAS-20-A14-A	IAS-20-A14-S IAS-20-A14-A
Type NPN NO Type NPN NC Type NPN antivalent (NO + NC) Type PNP NO Type PNP NC Type PNP antivalent (NO + NC)	IAS-10-A22-S-100°C	IAS-10-A13-S IAS-10-A13-O IAS-10-A13-A	IAS-10-A13-S IAS-10-A13-O IAS-10-A13-A	IAS-10-A13-S IAS-10-A13-O IAS-10-A13-A	IAS-10-A14-S IAS-10-A14-A
Type AC/DC NO Type AC/DC NC		IAS-60-A13-S IAS-60-A13-O	IAS-60-A13-S IAS-60-A13-O	IAS-60-A13-S IAS-60-A13-O	IAS-60-A13-S IAS-60-A13-O
Operating voltage (U <sub>L</sub> ) Output current max. (I <sub>O</sub> ) No-load current (I <sub>0</sub> ) Frequency of operating cycles max. Permitted ambient temperature LED-display Protective circuit	10...35 V DC 150 mA Typ. 15 mA 2 kHz -25...+100 °C	10...35 V DC 250 mA / 2 x 250 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 V DC 250 mA / 2 x 250 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 V DC 250 mA / 2 x 250 mA Typ. 15 mA 2 kHz -25...+70 °C	10...35 V DC 250 mA / 2 x 250 mA Typ. 15 mA 1 kHz -25...+70 °C
Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67
Degree of protection IEC 60529*	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67	EN 60947-5-2 IP 67
Connection	2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305	2 m Cable 3 x 0,14 mm <sup>2</sup> VA No. 1.4305	2 m Cable 3 x 0,34 mm <sup>2</sup> Brass	2 m Cable 3 x 0,34 mm <sup>2</sup> Brass	2 Cable Brass
Housing material	PTFE	PA / PPO	PA / PPO	PA / PPO	PVC
Active surface	PA / PPO	PA / PPO	PA / PPO	PA / PPO	PA / PPO
Lid	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Certification	*with sealed potentiometer screw				
Dimensions:					

All specifications are subject to change without notice. (03/2009)

**INDUCTIVE SENSORS IAS WITH ANALOGUE OUTPUT**

Housing	M 18 x 1	M 18 x 1	M 30 x 1,5	M 30 x 1,5
				
<b>Technical Data</b>	Flush mountable	Non-flush mountable	Flush mountable	Non-flush mountable
Operating range (mm)	0...5 mm	0...8 mm	0...10 mm	0...15 mm
Linear range (mm)	1,5...5 mm	3...8 mm	3...10 mm	5...15 mm
Type analogue 2-wire	IAS-10-A13-IL	IAS-10-A23-IL	IAS-10-A14-IL	IAS-10-A24-IL
Type analogue 3-wire	105 750	108 350	110 950	113 550
Art.No.				
Operating voltage (U <sub>1</sub> )	15...30 V DC	15...30 V DC	15...30 V DC	15...30 V DC
Output current (I <sub>1</sub> )	2,5...>20 mA	2,5...>20 mA	2,5...>20 mA	2,5...>20 mA
No-load current (I <sub>0</sub> )	Typ. 40 mA	Typ. 40 mA	Typ. 40 mA	Typ. 40 mA
Load resistor	R <sub>L</sub> = 0...300 Ohm	R <sub>L</sub> = 0...300 Ohm	R <sub>L</sub> = 0...300 Ohm	R <sub>L</sub> = 0...300 Ohm
Permitted ambient temperature	0...+60 °C	0...+60 °C	0...+60 °C	0...+60 °C
LED-display	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67
Connection	2 m Cable 3 x 0,34 mm <sup>2</sup>	2 m Cable 3 x 0,34 mm <sup>2</sup>	2 m Cable 3 x 0,75 mm <sup>2</sup>	2 m Cable 3 x 0,75 mm <sup>2</sup>
Housing material	Brass	Brass	Brass	Brass
Active surface	PTFE	PTFE	PTFE	PTFE
Lid	PA / PPO	PA / PPO	PA / PPO	PA / PPO
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
*With sealed potentiometer screw				

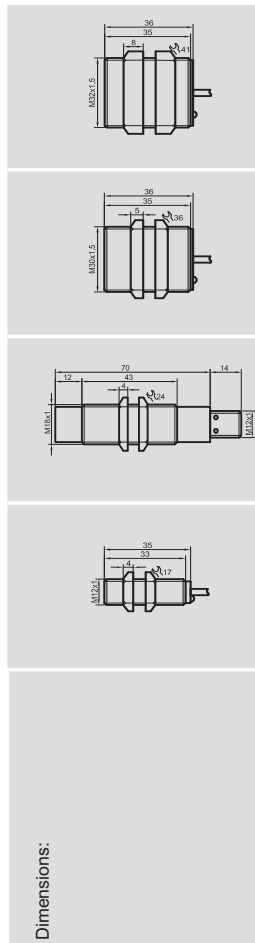


Connection diagram see page 7

**INDUKTIVE SENSOREN IAS - NAMUR - ATEX - IECEx**






Sensors for use in areas with the risk of explosion, ATEX zone 1

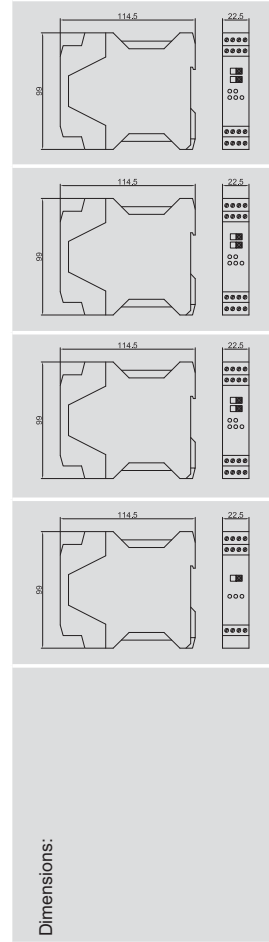
Housing	M 12 x 1	M 18 x 1	M 30 x 1,5	M 32 x 1,5
				
				
<b>Technical data</b>	Flush mountable	Non-flush mountable	Flush mountable	Non-flush mountable
Sensing distance Sn	2 mm	8 mm	10 mm	15 mm
Type NAMUR	IAS-30-A12-N	IAS-30-A23-N-PTFE/MS-Y5	IAS-30-A14-N	IAS-30-3E-N-MS2
Art.-No.	300 100	IA 0192	300 500	302 800
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
ATEX Certification No.	DMT 03 ATEX E 048	DMT 03 ATEX E 048	DMT 03 ATEX E 048	DMT 03 ATEX E 048
IECEX Certification No.	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6	Ex II 2G EEx ia IIC T1-T6
IECEX	IECEX BVS 07.0031	IECEX BVS 07.0031	IECEX BVS 07.0031	IECEX BVS 07.0031
Operating voltage (U <sub>1</sub> )	U = 15 V DC	U = 15 V DC	U = 15 V DC	U = 15 V DC
Output current active surface free	> typ. 2 mA	> typ. 2 mA	> typ. 2 mA	> typ. 2 mA
Output current active surface covered	< typ. 1,5 mA	< typ. 1,5 mA	< typ. 1,5 mA	< typ. 1,5 mA
Selfinductance (L)	2 mH	2 mH	2 mH	2 mH
Permitted ambient temperature	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
LED display	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes
Norm	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6	EN 60947-5-6
Degree of protection IEC 60529*	IP 67	IP 67	IP 67	IP 67
Connection	2 m Cable, 2 x 0,14 mm <sup>2</sup>	Flange connector M 12 x 1	2 m Cable, 2 x 0,75 mm <sup>2</sup>	2 m Cable, 2 x 0,75 mm <sup>2</sup>
Housing material	Brass	Brass	Brass	PA / PPO
Active surface	PA / PPO	PTFE	PVC	PA / PPO
Lid	PA / PPO	-	PA / PPO	PA / PPO
*With sealed potentiometer screw				



Connection diagram see page 7  
Female connector M 12 see page 17

ISOLATING SWITCHING AMPLIFIER - ATEX

Housing	99 x 114,5 x 22,5 mm	99 x 114,5 x 22,5 mm	99 x 114,5 x 22,5 mm	99 x 114,5 x 22,5 mm
				
<b>Technical Data</b>				
Operating voltage (U <sub>i</sub> )	230 V AC ± 10 % 48...62 Hz	115 V AC ± 10 % 48...62 Hz	230 V AC ± 10 % 48...62 Hz	20...30 V DC
Output function	1 x potential-free change-over contact	2 x potential-free change-over contact	2 x potential-free change-over contact	2 x potential-free change-over contact
Contact rating each relay AC max.	250 V AC / 5 A / 100 VA	250 V AC / 5 A / 100 VA	250 V AC / 5 A / 100 VA	250 V AC / 5 A / 100 VA
Contact rating each relay DC max.	24 V DC / 8 A / 50 W	24 V DC / 8 A / 50 W	24 V DC / 8 A / 50 W	24 V DC / 8 A / 50 W
<b>Type</b>	<b>N-131/1-01</b>	<b>N-131/2-02</b>	<b>N-131/2-01</b>	<b>N-131/2-10</b>
Art.-No.	N 00005	N 00002	N 00001	N 00003
Certification	CE, ATEX, UL	CE, ATEX, UL	CE, ATEX, UL	CE, ATEX, UL
ATEX Certification No.	TUV 02 ATEX 1869	TUV 02 ATEX 1869	TUV 02 ATEX 1869	TUV 02 ATEX 1869
ATEX	II (1) G D [EEx ia] IIC / IIB	II (1) G D [EEx ia] IIC / IIB	II (1) G D [EEx ia] IIC / IIB	II (1) G D [EEx ia] IIC / IIB
No-load current (I <sub>0</sub> )	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA
No-load voltage max. (U <sub>0</sub> )	10,5 V DC	10,5 V DC	10,5 V DC	10,5 V DC
Short circuit current max. (I <sub>sc</sub> )	26 mA	26 mA	26 mA	26 mA
Outer inductance max. (L <sub>0</sub> )	[EEx ia] IIC 45 mH / IIB 160 mH	[EEx ia] IIC 45 mH / IIB 160 mH	[EEx ia] IIC 45 mH / IIB 160 mH	[EEx ia] IIC 45 mH / IIB 160 mH
Outer capacitance max. (C <sub>0</sub> )	[EEx ia] IIC 2,41 µF / IIB 16,8 µF	[EEx ia] IIC 2,41 µF / IIB 16,8 µF	[EEx ia] IIC 2,41 µF / IIB 16,8 µF	[EEx ia] IIC 2,41 µF / IIB 16,8 µF
Actuating signal	NAMUR DIN 19234 or EN 60947-5-6	NAMUR DIN 19234 or EN 60947-5-6	NAMUR DIN 19234 or EN 60947-5-6	NAMUR DIN 19234 or EN 60947-5-6
Permitted ambient temperature	-20...+60 °C	-20...+60 °C	-20...+60 °C	-20...+60 °C
Display	Red / yellow and green	Red / yellow and green	Red / yellow and green	Red / yellow and green
Degree of protection IEC 60529	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20
Connection	Screw terminals	Screw terminals	Screw terminals	Screw terminals



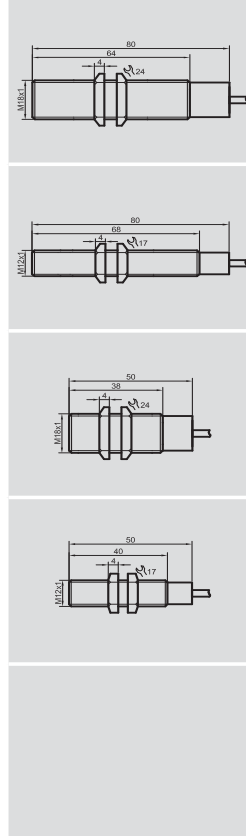
All specifications are subject to change without notice. (03/2009)

Connection diagram see page 7

MAGNETO RESISTIVE SENSORS MRS

Housing	M 12 x 1	M 18 x 1	M 12 x 1	M 18 x 1
				
<b>Technical data</b>				
Operating distance Sn	1,5 mm	3 mm	1 mm	2,5 mm
Detection of direction of rotation	No	No	Yes	Yes
Type NPN NO	MRS-300-M12-20-S	MRS-300-M18-20-S	MRS-350-M12-20-S	MRS-350-M18-20-S
Type NPN NC				
Type PNP NO	MRS-300-M12-10-S	MRS-300-M18-10-S	MRS-350-M12-10-S	MRS-350-M18-10-S
Type PNP NC				
Operating voltage (U <sub>i</sub> )	10...35 V DC	10...35 V DC	10...35 V DC	10...35 V DC
Output current max. (I <sub>0</sub> )	250 mA	250 mA	2 x 250 mA	2 x 250 mA
No-load current (I <sub>0</sub> )	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA	Typ. 15 mA
Frequency of operating cycles min./max.	0.5 Hz/15 kHz	0.5 Hz/15 kHz	0.5 Hz/10 kHz	0.5 Hz/10 kHz
Permitted ambient temperature	-40...+125 °C	-40...+125 °C	-40...+125 °C	-40...+125 °C
LED-Display	Yes	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes	Yes
Norm	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
Degree of protection IEC 60529	IP 67	IP 67	IP 67	IP 67
Connection	2 m Cable 3 x 0,14 mm <sup>2</sup>	2 m Cable 3 x 0,34 mm <sup>2</sup>	2 m Cable 4 x 0,14 mm <sup>2</sup>	2 m Cable 4 x 0,34 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4404	VA No. 1.4305	VA No. 1.4404
Active surface	VA No. 1.4305	VA No. 1.4404	VA No. 1.4305	VA No. 1.4404
Lid	PEEK	PEEK	PEEK	PEEK
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS

**Dimensions:**



All specifications are subject to change without notice. (03/2009)

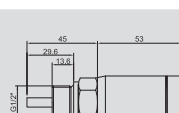
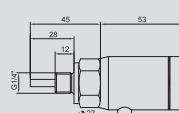
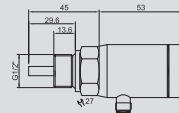
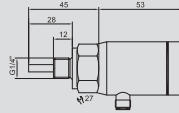
Connection diagram see page 7

FLOW SENSORS SW

Housing	G 1/4"	G 1/2"	G 3/4"	G 1"
				
<b>Technical data</b>				
Measuring range (cm/s), dependent on material	1-300 cm/s (H <sub>2</sub> O: 150 cm/s)	1-300 cm/s (H <sub>2</sub> O: 150 cm/s)	1-300 cm/s (H <sub>2</sub> O: 150 cm/s)	1-300 cm/s (H <sub>2</sub> O: 150 cm/s)
Switching point adjustable	Yes	Yes	Yes	Yes
Hysteresis adjustable	Yes	No	No	No
Repeat accuracy	1 %	1 %	1 %	1 %
Type analogue 4(0) - 20 mA	SW-600-G1/2/28-IL	SW-600-G1/2/28-IL	SW-600-G3/4/28-S	SW-600-G1/28-S
Operating voltage (U <sub>1</sub> )	18...30 V DC	18...30 V DC	24 V AC/DC ± 10 %	24 V AC/DC ± 10 %
Switching outputs	PNP NPN max. 300 mA in total	PNP NPN max. 300 mA in total	Relay contact (NO) max. 200 mA	Relay contact (NO) max. 200 mA
No-load current (I <sub>0</sub> )	Typ. 60 mA	Typ. 60 mA	Typ. 60 mA	Typ. 60 mA
Response-time	Typ. 2 s	Typ. 2 s	Typ. 2 s	Typ. 2 s
Temperature gradient	Typ. 4 K/s	Typ. 4 K/s	Typ. 4 K/s	Typ. 4 K/s
Operating pressure	100 bar	100 bar	100 bar	100 bar
Permitted ambient temperature	0...+70 °C	0...+70 °C	0...+70 °C	0...+70 °C
Display	LCD-display/LED	LCD-display/LED	Yes	Yes
Degree of protection IEC 60529	IP 67	IP 67	IP 67	IP 67
Connection	Flange connector M 12 x 1	Flange connector M 12 x 1	Flange connector M 12 x 1	Flange connector M 12 x 1
Housing material	VA No. 1.4504	VA No. 1.4504	VA No. 1.4504	VA No. 1.4504
Material in contact with medium	VA No. 1.4571	VA No. 1.4571	VA No. 1.4571	VA No. 1.4571
Lid	Mineral glass tempered	Mineral glass tempered	PA	PA
Magnet	Cobalt-Samarium	Cobalt-Samarium	CE, RoHS	CE, RoHS
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS






Dimensions:

All specifications are subject to change without notice. (03/2009)

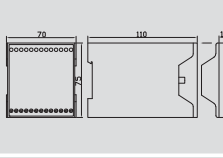
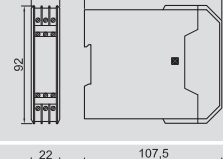
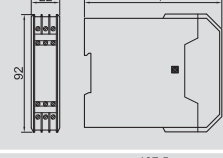
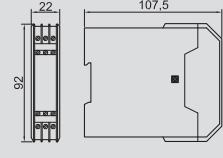


Connection diagram see page 7

POWER SUPPLIES EG...

Housing	22 x 92 x 107,5 mm	22 x 92 x 107,5 mm	22 x 92 x 107,5 mm	75 x 70 x 110 mm
				
<b>Technical Data</b>				
Operating voltage (U <sub>1</sub> )	115/230 V AC ± 15 % 40...60 Hz	115/230 V AC ± 15 % 40...60 Hz	115/230 V AC ± 15 % 40...60 Hz	115/230 V AC ± 15 % 40...60 Hz
No-load current (I <sub>0</sub> )	Typ. 20 mA	Typ. 40 mA	Typ. 20 mA	Typ. 40 mA
Output function	1 x potential-free change-over contact	1 x potential-free change-over contact / 1 x potential-free NO	1 x potential-free change-over contact	3 x potential-free change-over contact
Contact rating each relay max.	250 V AC / 6 A	250 V AC / 6 A	250 V AC / 6 A	250 V AC / 6 A
Type	EG H-130	EG H-130	EG H-130-TD	EG H-130
Art.-No.	522 000	522 300	522 100	NA 0002
Actuating voltage (U <sub>1</sub> )	24 V DC ± 20 %	24 V DC ± 20 %	24 V DC ± 20 %	24 V DC ± 20 %
Actuating current max. (I <sub>1</sub> )	60 mA	60 mA	60 mA	100 mA
Residual ripple acc. to DIN 41 755 max.	2 %	2 %	2 %	2 %
Actuating signal	PNP or NPN	PNP or NPN	PNP or NPN	PNP or NPN
Permitted ambient temperature	-25...+80 °C	-25...+80 °C	-25...+80 °C	-25...+70 °C
LED-display	Yes	Yes	Yes	Yes
Energising and de-energising delay	-	-	-	t <sub>1</sub> = 0.1...5 s / t <sub>2</sub> = 2...60 s
Degree of protection IEC 60529	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20	Housing: IP 30 Connections: IP 20
Connection	Screw terminal	Screw terminal	Screw terminal	Screw terminal
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS

Dimensions:

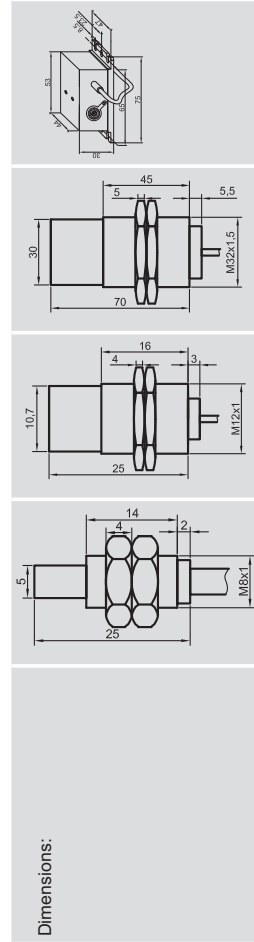


All specifications are subject to change without notice. (03/2009)

Connection diagram see page 7

CAPACITIVE SENSORS KXS-EXTREME

Housing	M 8 x 1	M 12 x 1	M 32 x 1,5	Evaluation unit
<b>Technical Data</b>	Flush mountable / Non-flush mountable	Flush mountable / Non-flush mountable	Flush mountable / Non-flush mountable	
Operating distance Sn [mm]	7 mm	15 mm	80 mm	
Operating distance min./max. adjustable	0...10 mm	1...25 mm	5...120 mm	
Mini Sensor	KXS-M8/25	KXS-M12/25		
Evaluation unit MINI Sensor NPN antivalent			KXA-5-1-N-A-MINI	
Evaluation unit MINI Sensor PNP antivalent			KXA-5-1-P-A-MINI	
Sensor			KXS-M32/70	
Evaluation unit NPN antivalent			KXA-5-1-N-A	
Evaluation unit PNP antivalent			KXA-5-1-P-A	
Operating voltage (U <sub>o</sub> )	-	-	-	18...36 V DC
Output current max. (I <sub>o</sub> )	-	-	-	2 x 250 mA
No-load current (I <sub>o</sub> )	-	-	-	Typ. 50 mA
Frequency of operating cycles max.	-	-	-	50 Hz
Permitted ambient temperature	-70...+250 °C	-70...+250 °C	-70...+250 °C	-25...+55 °C
LED-display	-	-	-	Yes
Protective circuit	-	-	-	Yes
Degree of protection IEC 60529	IP 67	IP 67	IP 67	IP 54
Connection	2 m FEP, Triax	2 m FEP, Triax	2 m FEP, Triax	2 m Cable 4 x 0,14 mm <sup>2</sup>
Housing material	VA No. 1.4305	VA No. 1.4305	VA No. 1.4305	PA / PPO
Active surface	PTFE	PTFE	PTFE	-
Certification	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS

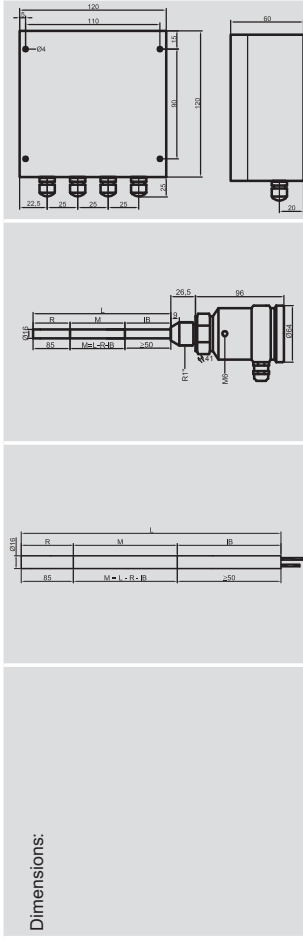


Connection diagram see page 7

CAPACITIVE LEVEL MEASURING SYSTEMS TRUE LEVEL

- With analogue output

Housing	Ø 16 mm	Ø 16 mm / 1"	Evaluation unit
<b>Technical Data</b>	Measuring range begins from 85 mm, related to the probe tip	Measuring range begins from 85 mm, related to the probe tip	
Active zone [mm]			
Analogue probe	KFS-1-L-M-Y75	KFS-1-L-M-VA-1*	
With connection head	-	Yes	
Analogue evaluation unit for M* = 200 mm			KFA-1-200-IL-4-KL-Y70
Analogue evaluation unit for M* = 500 mm			KFA-1-500-IL-4-KL-Y70
Analogue evaluation unit for M* = 1000 mm			KFA-1-1000-IL-4-KL-Y70
Analogue evaluation unit for M* = 2000 mm			KFA-1-2000-IL-4-KL-Y70
Operating voltage (U <sub>o</sub> )	-	-	18...36 V DC
Analogue output	-	-	4...20 mA
Power consumption (output No-load)	-	-	Typ. 3,5 W
Permitted ambient temperature	-	-	-25...+55 °C
Permitted ambient temperature (for active zone)	-70...+250 °C	-70...+150 °C	-
LED-Display	-	-	Yes
Protective circuit	-	-	Yes
Degree of protection IEC 60529 (probe/housing) (screwing) cable connection	IP 67	IP 67 IP 54	IP 54
Connecting	2 m coax-cable with SMB-connectors	SMB-sockets within the connection head	Screw terminal and SMB-sockets
Housing material	GFK	GFK	ABS
Active zone	GFK	GFK	-
Pressure	-	25 bar	-
Certification	CE, RoHS	CE, RoHS	CE, RoHS



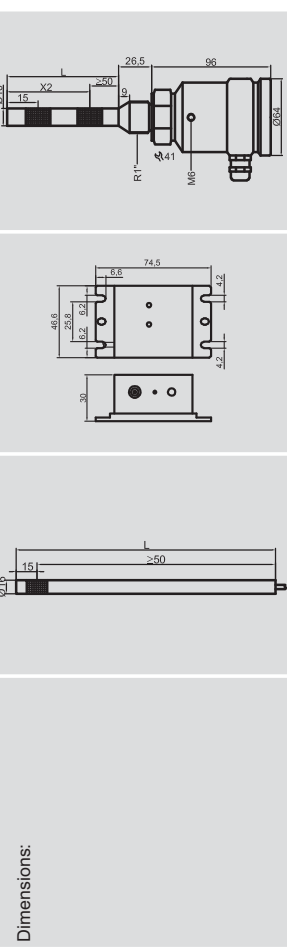
Connection diagram see page 7

All specifications are subject to change without notice. (03/2009)

## CAPACITIVE LEVEL MEASURING SYSTEMS

- With limit value switching point(s)

Housing	Ø 16 mm	Evaluation unit	Compact filling level probe
<b>Technical Data</b>			
Active Zone [mm]	10...25 mm, related to the probe tip	-	10...25 mm, related to the probe tip + 1 x type specific X2
Probe	KFS-5-1-L-15-Y55	-	-
Evaluation unit (NPN antivalent)	KFA-5-1-N-A-Y50	-	-
Evaluation unit (PNP antivalent)	KFA-5-1-P-A-Y50	-	-
Compact filling level probe (NPN NO)	-	-	KFX-5-2-L-15/X2-N-S-VA-1*
Compact filling level probe (NPN NC)	-	-	KFX-5-2-L-15/X2-N-O-VA-1*
Compact filling level probe (PNP NO)	-	-	KFX-5-2-L-15/X2-P-S-VA-1*
Compact filling level probe (PNP NC)	-	-	KFX-5-2-L-15/X2-P-O-VA-1*
Operation voltage (U <sub>op</sub> )	18...36 V DC	-	18...36 V DC
Output current max. (I <sub>o</sub> )	2 x 250 mA	-	2 x 250 mA
No-load current (I <sub>o</sub> )	Typ. 50 mA	-	Typ. 50 mA
Frequency of operating cycles max.	4 Hz	-	4 Hz
Permitted ambient temperature	-25...+55 °C	-	-25...+55 °C
Permitted ambient temperature (for active zone)	-70...+250 °C	-	-25...+100 °C
LED-Display	Yes	Yes	Yes
Protective circuit	Yes	Yes	Yes
Degree of protection (IEC 60529)	IP 67	IP 54	IP 67
Connection	2 m coax-cable with coax-connector	2 m Cable 4 x 0,14 mm <sup>2</sup>	Clamp terminal within the connection head
Housing material	GFK	PA / PPO	VA No. 1 4571
Active zone	GFK	-	GFK
Pressure	CE, RoHS	-	25 bar
Certification	CE, RoHS	CE, RoHS	CE, RoHS



Connection diagram see page 7

## PRODUCT REPORT

**High Performance – the standard for RECHNER's capacitive proximity sensors**

Rechner has proved once again, that supreme achievement is possible, when the customer's demands are merged with their innovation and long-standing experience. High Performance, just two words that accurately describe the new generation of standard sensors. Capacitive sensors with 3 times higher sensing distance than the norm, high temperature stability up to 100 °C and excellent EMC-characteristics. The sensing



distance is medium optimised, so that with just one adjustment it is possible to detect a variety of products. The series comprise capacitive sensors in cylindrical size from M 8 x 1 mm to 64 mm in diameter, with both flush and non-flush mountable models.

Also ranging among the standard are chemical resistant and food-grade sensors in PTFE or PTFE/stainless steel housings.



sensors are available with various process connections, such as TriClamp, G1" and MZZ.

Now this series has been extended with the new Easy Teach range. This new range has housing lengths that can reach deeper into the containers. These sensors have a G1/2" process connection. Thanks to the EasyTeach function the adjustment is made with just one push button.

The clear text display assist with the adjustment. These capacitive level sensors are available up to 2000 mm in length.

Like the rest of the 26 family they are suitable for use in both wet and dry areas. They are ideal for use in industries such as the chemical industry or food processing.

**Capacitive Sensors – EasyTeach – With Clear Text Display!**



**The Top-Team In The Ex-Area**  
RECHNER-Sensors have a wide reaching program of Ex-protected sensors. The product family comprise capacitive and inductive proximity sensors in cylindrical size from 6.5 to 40 mm in diameter. NAMUR sensors and proximity sensors with NPN or PNP transistors output rank among the standard.

The capacitive filling level systems TrueLevel and PerLevel with up to 2000 mm probe length are also available with ATEX certificates



With the Ex-protected isolation amplifiers the product range is complete.

The ATEX-certified units are available for areas with danger of gas explosion (Zone 0, 1 and 2) and for areas with danger of dust explosion (Zone 20, 21 and 22).

Being an ATEX certified firm, RECHNER can also offer sensors with a manufacturers declaration for both of these explosion danger areas.



delay. RECHNER's High Performance Technology is also incorporated into these sensors guaranteeing the best in quality and reliability.

Moreover the sensors have a low power consumption of only 2 mA. The sensors are available with body sizes of M 30 x 1.5, M 32 x 1.5 and in a slightly tapered smooth bodied sensor 32 mm in diameter. A PG36 pressure type connection is available as an accessory. The sensors can be connected to PLC's or the user can connect directly for control purposes to a max. 1 A.





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**INDUSTRIE-ELEKTRONIK**  
**GmbH Gaußstraße 8-10 68623 Lampertheim Germany**  
Tel. (0 62 06) 50 07-0 Fax (0 62 06) 50 07-36 Fax Intl. +49 (0) 62 06 50 07-20  
www.rechner-sensors.com e-mail: info@rechner-sensors.de