

# RECHNER SENSORS

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

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## SHORTFORM CATALOGUE

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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.

Our product range comprise:

- **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.

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.



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.

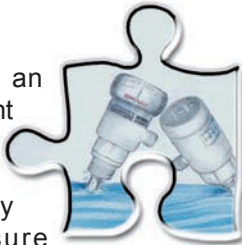


They are suitable for rotary speed sensing, for detection of gearwheels and for standstill control. Areas of use can be heavy construction engines, rail vehicles, large diesel engines and -turbines. Rotary speed sensing is possible with gear wheels from module 1, with a max. switching frequency of 15 kHz.

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The **SW-600 series** is a range of **flow sensors** based on the calorimetric measuring principle. This principle is based on the physical effect that flowing medium absorbs heat energy. The cooling of the sensor tip by the flowing medium is registered and electronically evaluated.

Flow sensors are an essential component of processing- and operation plants in systems technology in order to ensure operational safety. They are used for detection of liquid media and for coolant supply as well as for operation control at pumps.



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.

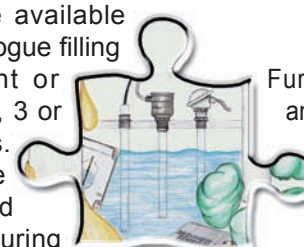
The **capacitive sensors** with extreme long sensing distance (**KXS.../KXA...**) are based on the three-electrode measuring principle. This measuring principle allows much larger sensing distances compared to the two-electrode principle of common capacitive sensors (KAS), up to 10-times the norm. Although 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.**



**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.**

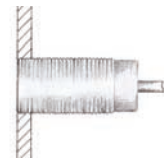
The **Capacitive Filling Level Systems (KFS.../KFA.../KFX...)** operate according to the three-electrode principle. With this principle the container or an additional electrode serve as a counter-electrode to the probe electrodes. For this reason it is necessary with this system that the container is 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.



**For the selection of the right type along with the technical specifications the following parameters are important:**

There are two different types of capacitive and inductive sensors. Sensors for flush mounting or models for non-flush mounting where the sensor has an exposed head.

**Flush mountable** sensors are particularly suitable for detecting solid objects without direct contact and for sensing liquid or solid levels through non-metals partitions.



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

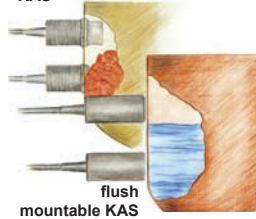
Capacitive Sensors detect all kind of materials, liquids, bulk material, or objects.

For level control non-flush mountable Sensors are recommended.

For detection at a distance the flush mountable sensors are the right choice.

Filling level detection with capacitive sensors (KAS)

non-flush mountable KAS



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



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



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



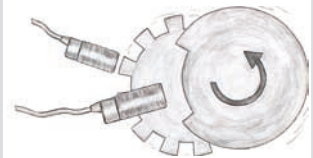
Analogue measurements in the automobile industry with capacitive sensors (KAS) e.g. position of the indicator



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.

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



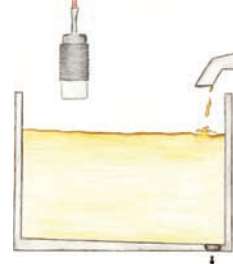
Position control of transported tins with inductive sensors (IAS)



Capacitive sensors of the KXS-Extreme-series operate on the basis of 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 potential - is now also used as a measurement electrode. The evaluation takes place with remote electronics.

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

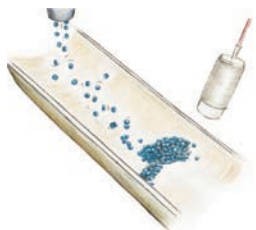
Level control in a container with glue with capacitive sensors of the KXS-Extreme series



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



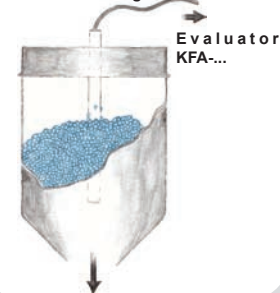
Detection of accumulations during the production of small parts with capacitive sensors of the KXS-Extreme series



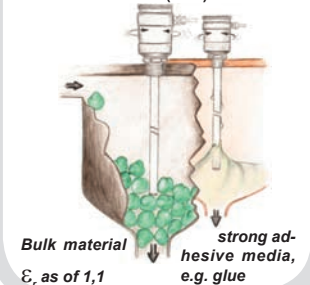
The capacitive filling level measuring systems (KFS/KFA; KFX) operate according to the three-electrode principle. Here the container or an additional electrode serves as a counter-electrode to the probe electrodes. For this reason it is essential with this system that the container is of a conductive material or a „substitute electrode“ is fixed to the container wall, e.g. copper foil.

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

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



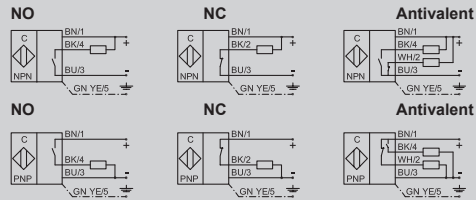
Level control of different rod media with TRUE- or PER Level rod probes with connection head (KFX)



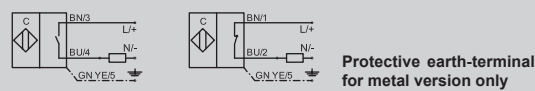
## CONNECTION DIAGRAMS

### Capacitive sensors KAS-...

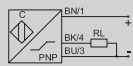
DC



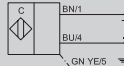
AC/DC



Analogue

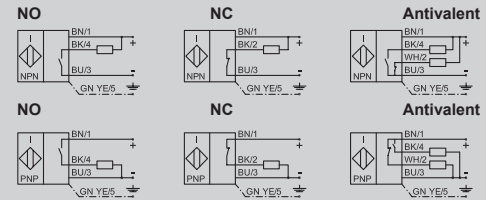


Namur

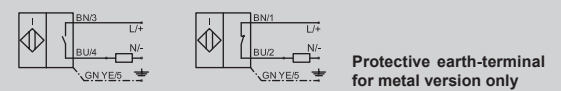


### Inductive sensors IAS-...

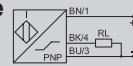
DC



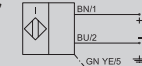
AC/DC



Analogue

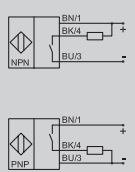


Namur



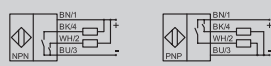
### MRS-...

NO



NO

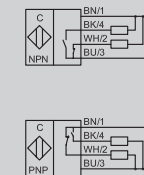
with detection of direction of rotation



BK = Speed control  
WH = detection of direction of rotation

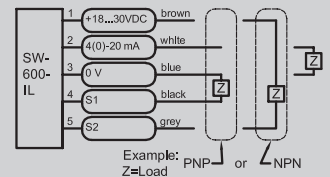
### KXA-...Evaluation unit

Antivalent



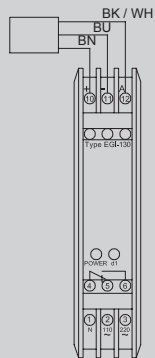
### SW-...

Analogue

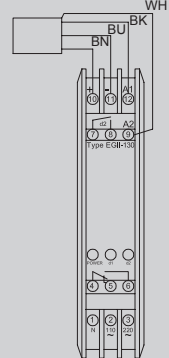


### EG...

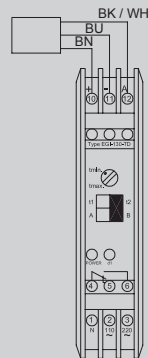
EG I-130



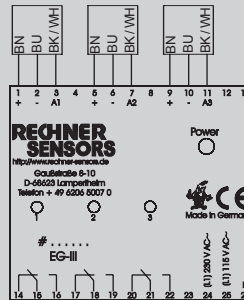
EG II-130



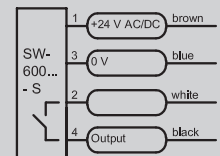
EG I-130-TD



### EG III-130



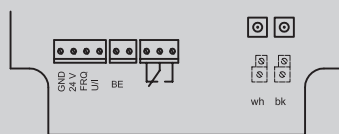
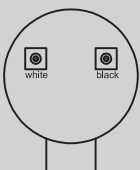
NO



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

TRUE LEVEL

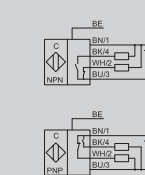
KFS-1-... with connection head    KFA-1-...Evaluation unit



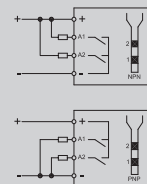
PER LEVEL

KFA-5-1-...Evaluation unit    KFX-...Compact filling level probe

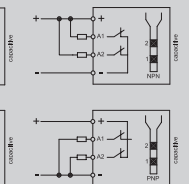
Antivalent



NO



NC

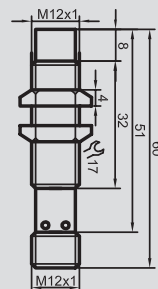
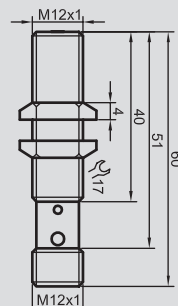
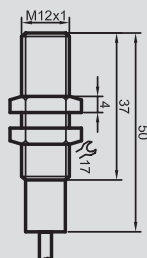
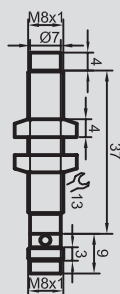


## CAPACITIVE SENSORS KAS

| Housing   | M 8 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   | Non-flush mountable   |
| Sensing distance $S_n$  | 2 mm  | 2 mm  | 2 mm  | 4 mm  |
| Sensing distance min./max. adjustable   | 0...4 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-A21-S-Y7   | KAS-80-A12-S  |   |   |
| Type PNP normally closed (NC)   |   |   |   |   |
| Type PNP antivalent (NO + NC)   |   | KAS-80-A12-A  | KAS-80-A12-A-Y5   | KAS-80-A22-A-Y5   |
| Type NPN/PNP NO/NC switchable   |   |   |   |   |
| Type AC/DC normally open  |   |   |   |   |
| Type AC/DC normally closed  |   |   |   |   |
| Operating voltage ( $U_B$ )   | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  |
| Output current ( $I_o$ )  | 150 mA  | 250 mA / 2 x 250 mA   | 2 x 250 mA  | 2 x 250 mA  |
| No load current ( $I_o$ )   | Typ. 10 mA  | Typ. 10 mA  | Typ. 10 mA  | Typ. 10 mA  |
| Frequency of operating cycles max.  | 50 Hz   | 500 Hz  | 500 Hz  | 50 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  | Flange connector M 8 x 1  | 2 m Cable   | 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   |
| Active surface  | PTFE  | PTFE  | PTFE  | PTFE  |
| Lid   | -   | PA / PPO  | -   | -   |
| Certifications  | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  |

\*with sealed potentiometer screw

### Dimensions:

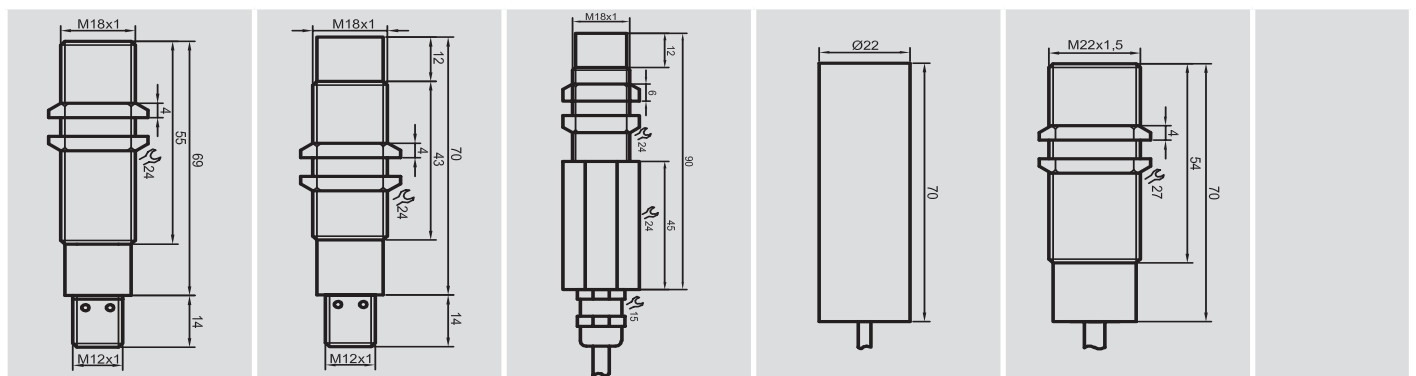


Connection diagram see page 7  
Female connector M 12 see page 17



## 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       | Non-flush mountable               | Flush mountable     | Flush mountable  |  |
| 5 mm                      | 8 mm                      | 8 mm                              | 8 mm                | 8 mm             |  |
| 0,5...10 mm               | 0,5...15 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-A23-S-K-PTFE-IP68          | KAS-80-20-S         |                  |  |
|                           |                           |                                   |                     |                  |  |
| KAS-80-A13-A-Y5           | KAS-80-A23-A-Y5           |                                   | KAS-80-20-A         | KAS-80-20-A-M22  |  |
|                           |                           |                                   |                     |                  |  |
|                           |                           |                                   |                     |                  |  |
| 10...35 V DC              | 10...35 V DC              | 10...35 V DC                      | 10...35 V DC        | 10...35 V DC     |  |
| 2 x 250 mA                | 2 x 250 mA                | 250 mA                            | 250 mA / 2 x 250 mA | 2 x 250 mA       |  |
| Typ. 10 mA                | Typ. 10 mA                | Typ. 10 mA                        | Typ. 10 mA          | Typ. 10 mA       |  |
| 300 Hz                    | 50 Hz                     | 50 Hz                             | 300 Hz              | 300 Hz           |  |
| -25...+70 °C              | -25...+70 °C              | -25...+70 °C                      | -25...+70 °C        | -25...+70 °C     |  |
| Yes                       | Yes                       | Yes                               | Yes                 | Yes              |  |
| Yes                       | Yes                       | Yes                               | Yes                 | Yes              |  |
| EN 60947-5-2              | EN 60947-5-2              | EN 60947-5-2                      | EN 60947-5-2        | EN 60947-5-2     |  |
| IP 67                     | IP 67                     | IP 68                             | IP 67               | IP 67            |  |
| Flange connector M 12 x 1 | Flange connector M 12 x 1 | 2 m PTFE-Cable and protection set | 2 m Cable           | 2 m Cable        |  |
| Brass                     | Brass                     | PTFE                              | Brass               | Brass            |  |
| PTFE                      | PTFE                      | PTFE                              | PTFE                | PTFE             |  |
| -                         | -                         | PTFE / PVDF                       | PA / PPO            | PA / PPO         |  |
| CE, RoHS, UL/CSA          | CE, RoHS, UL/CSA          | CE, RoHS, UL/CSA                  | CE, RoHS, UL/CSA    | CE, RoHS, UL/CSA |  |

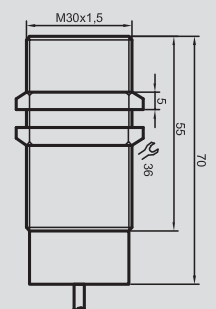
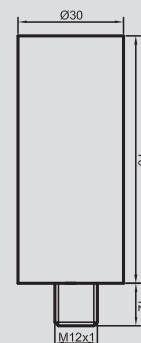
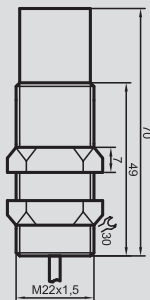


## CAPACITIVE SENSORS KAS

| Housing   | M 22 x 1,5  | Ø 30 mm   | Ø 30 mm   | M 30 x 1,5  |
|---|---|---|---|---|
|  |  |  |  |  |
| <b>Technical Data</b>   | 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/Ö switchable   |   |   |   |   |
| Type AC/DC NO   |   |   |   |   |
| TYPE AC/DC NC   |   |   |   |   |
| Operating voltage (U <sub>B</sub> )   | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  |
| Output current max. (I <sub>B</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>0</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   | PA / PPO  | Brass   |
| Active surface  | PA / PPO  | PTFE  | PA / PPO  | 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

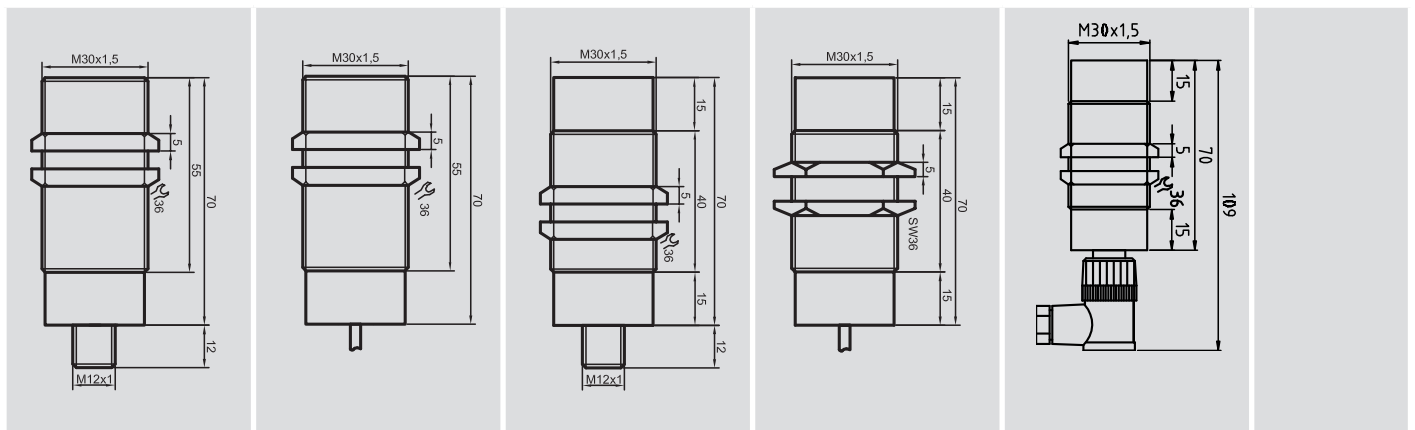
### Dimensions:



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  |   |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| Flush mountable   | Flush mountable   | Non-flush mountable   | Non-flush mountable  | Non-flush mountable   |   |
| 10 mm   | 10 mm   | 15 mm   | 15 mm  | 15 mm   |   |
| 0,5...25 mm   | 0,5...25 mm   | 1...30 mm   | 1...30 mm  | 2...20 mm   |   |
|   |   |   |  |   |   |
| KAS-70-A14-A-Y5   | KAS-70-A14-A-K<br>KAS-80-A14-S-K  | KAS-70-A24-A-Y5   | KAS-70-A24-A-K<br>KAS-80-A24-S-K   |   |   |
|   |   |   |  |   |   |
| KAS-80-A14-A-Y5   | KAS-80-A14-A-K  | KAS-80-A24-A-Y5   | KAS-80-A24-A-K   | KAS-90-A24-uC-SI/Ö-NL-Y1  |   |
|   |   |   |  |   |   |
|   |   |   |  |   |   |
| 10...35 V DC  | 10...35 V DC  | 10...35 V DC  | 10...35 V DC   | 20...250 V AC / DC  |   |
| 2 x 250 mA  | 250 mA / 2 x 250 mA   | 2 x 250 mA  | 250 mA / 2 x 250 mA  | 330 mA  |   |
| Typ. 10 mA  | Typ. 10 mA  | Typ. 10 mA  | Typ. 10 mA   | < 2,5 mA  |   |
| 200 Hz  | 200 Hz  | 50 Hz   | 50 Hz  | 25 Hz   |   |
| -25...+70 °C  | -25...+70 °C  | -25...+70 °C  | -25...+70 °C   | -25...+70 °C  |   |
| Yes   | Yes   | Yes   | Yes  | Yes   |   |
| Yes   | Yes   | Yes   | Yes  | Yes   |   |
| EN 60947-5-2  | EN 60947-5-2  | EN 60947-5-2  | EN 60947-5-2   | EN 60947-5-2  |   |
| IP 67   | IP 67   | IP 67   | IP 67  | IP 67   |   |
| Flange connector M 12 x 1   | 2 m Cable   | Flange connector M 12 x 1   | 2 m Cable  | Flange connector M 12 x 1   |   |
| Brass   | PA / PPO  | Brass   | PA / PPO   | PA / PPO  |   |
| PTFE  | PA / PPO  | PTFE  | PA / PPO   | PA / PPO  |   |
| PA / PPO  | PA / PPO  | PA / PPO  | PA / PPO   | PA / PPO  |   |
| CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA   | CE, RoHS  |   |



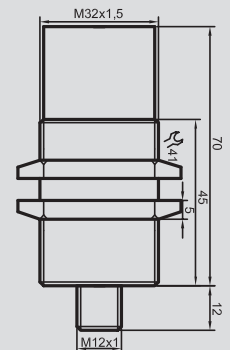
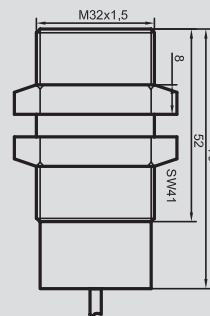
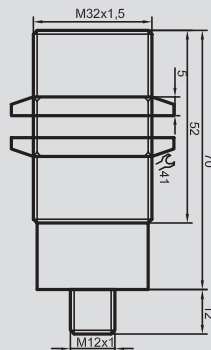
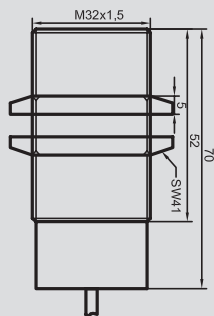
All specifications are subject to change without notice. (03/2009)

## CAPACITIVE SENSORS KAS

| Housing   | M 32 x 1,5  | M 32 x 1,5  | M 32 x 1,5  | M 32 x 1,5  |
|---|---|---|---|---|
|  |  |  |  |  |
| <b>Technical Data</b>   | Flush mountable   | Flush mountable   | Flush mountable   | Non-flush mountable   |
| Operating distance $S_n$  | 20 mm   | 20 mm   | 15 mm   | 25 mm   |
| Operating distance min./max. adjustable   | 0,5...30 mm   | 0,5...30 mm   | 2...20 mm   | 1...40 mm   |
| Type NPN NO   | KAS-70-30-S-M32   |   |   |   |
| Type NPN NC   |   |   |   |   |
| Type NPN antivalent (NO + NC)   | KAS-70-30-A-M32   | KAS-70-30-A-M32-Y5  |   | KAS-70-34-A-M32-PTFE/V2A-Y5   |
| Type PNP NO   | KAS-80-30-S-M32   |   |   |   |
| Type PNP NC   |   |   |   |   |
| Type PNP antivalent (NO + NC)   | KAS-80-30-A-M32   | KAS-80-30-A-M32-Y5  |   | KAS-80-34-A-M32-PTFE/V2A-Y5   |
| Type NPN/PNP-NO/NC switchable   |   |   |   |   |
| Type AC/DC NO   |   |   | KAS-90-30-S-M32   |   |
| TYPE AC/DC NC   |   |   | KAS-90-30-Ö-M32   |   |
| Operating voltage ( $U_B$ )   | 10...35 V DC  | 10...35 V DC  | 20...250 V AC/DC  | 10...35 V DC  |
| Output current max. ( $I_o$ )   | 250 mA / 2 x 250 mA   | 2 x 250 mA  | 330 mA  | 2 x 250 mA  |
| No-load current ( $I_o$ )   | Typ. 10 mA  | Typ. 10 mA  | Typ. 2,5 mA   | Typ. 10 mA  |
| Frequency of operating cycles max.  | 200 Hz  | 200 Hz  | 25 Hz   | 50 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   | 2 m Cable   | Flange connector M 12 x 1   |
| Housing material  | Brass   | Brass   | PA / PPO  | VA No. 1.4305   |
| Active surface  | PTFE  | PTFE  | PA / PPO  | PTFE  |
| Lid   | PA / PPO  | PA / PPO  | PA / PPO  | PA / PPO  |
| Certification   | CE, RoHS, UL/CSA  | CE, RoHS, UL/CSA  | CE, RoHS  | CE, RoHS, UL/CSA  |

\*with sealed potentiometer screw

### Dimensions:

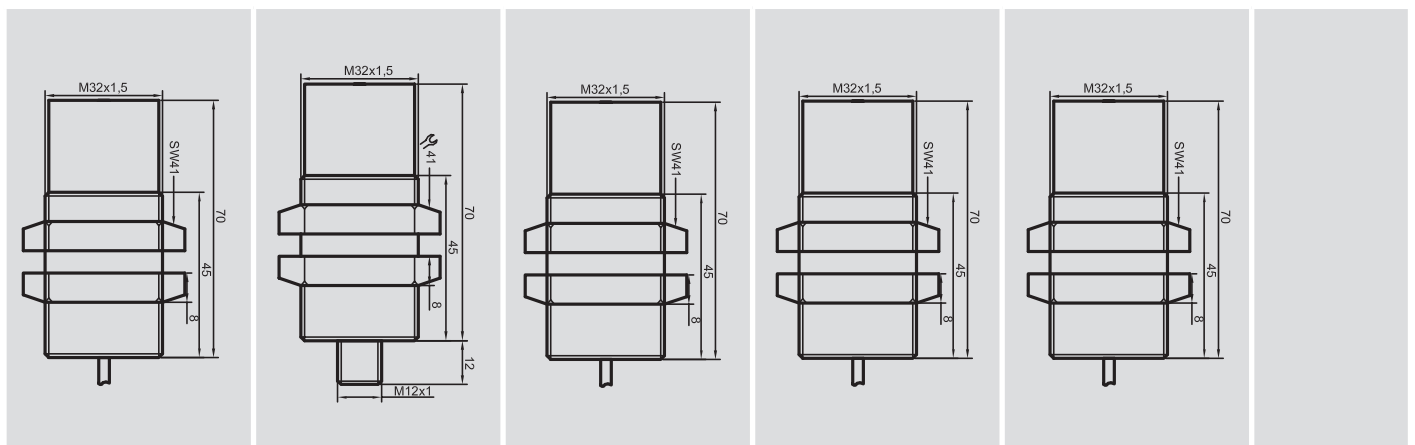


All specifications are subject to change without notice. (03/2009)

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                 |  |
|---------------------|---------------------------|---------------------|---------------------|----------------------------|--|
|                     |                           |                     |                     |                            |  |
| Non-flush mountable | Non-flush mountable       | Non-flush mountable | Non-flush mountable | Non-flush mountable        |  |
| 25 mm               | 25 mm                     | 25 mm               | 20 mm               | 25 mm                      |  |
| 1...40 mm           | 1...40 mm                 | 3...30 mm           | 3...25 mm           | 1...40 mm                  |  |
| KAS-70-35-S-M32     |                           |                     |                     |                            |  |
| KAS-70-35-A-M32     | KAS-70-35-A-M32-Y5        |                     |                     | KAS-70-35-A-M32-PTFE-100°C |  |
| KAS-80-35-S-M32     |                           |                     |                     |                            |  |
|                     |                           |                     |                     |                            |  |
| KAS-80-35-A-M32     | KAS-80-35-A-M32-Y5        |                     |                     | KAS-80-35-A-M32-PTFE-100°C |  |
|                     |                           | KAS-2000-35-M32     |                     |                            |  |
|                     |                           |                     | KAS-90-32-S-M32     |                            |  |
|                     |                           |                     | KAS-90-32-Ö-M32     |                            |  |
| 10...35 V DC        | 10...35 V DC              | 10...35 V DC        | 20...250 V AC/DC    | 10...35 V DC               |  |
| 250 mA / 2 x 250 mA | 2 x 250 mA                | 400 mA              | 330 mA              | 2 x 250 mA                 |  |
| Typ. 10 mA          | Typ. 10 mA                | Typ. 15 mA          | Typ. 2,5 mA         | Typ. 10 mA                 |  |
| 50 Hz               | 50 Hz                     | 50 Hz               | 25 Hz               | 50 Hz                      |  |
| -25...+70 °C        | -25...+70 °C              | -25...+70 °C        | -25...+70 °C        | -25...+100 °C              |  |
| Yes                 | Yes                       | Yes                 | Yes                 | Yes                        |  |
| Yes                 | Yes                       | Yes                 | Yes                 | Yes                        |  |
| EN 60947-5-2        | EN 60947-5-2              | EN 60947-5-2        | EN 60947-5-2        | EN 60947-5-2               |  |
| IP 67               | IP 67                     | IP 67               | IP 67               | IP 67                      |  |
| 2 m Cable           | Flange connector M 12 x 1 | 2 m Cable           | 2 m Cable           | 2 m Cable                  |  |
| PA / PPO            | PA / PPO                  | PA / PPO            | PA / PPO            | PTFE                       |  |
| PA / PPO            | PA / PPO                  | PA / PPO            | PA / PPO            | PTFE                       |  |
| PA / PPO            | PA / PPO                  | PA / PPO            | PA / PPO            | PA / PPO                   |  |
| CE, RoHS, UL/CSA    | CE, RoHS, UL/CSA          | CE, RoHS            | CE, RoHS            | CE, RoHS, UL/CSA           |  |



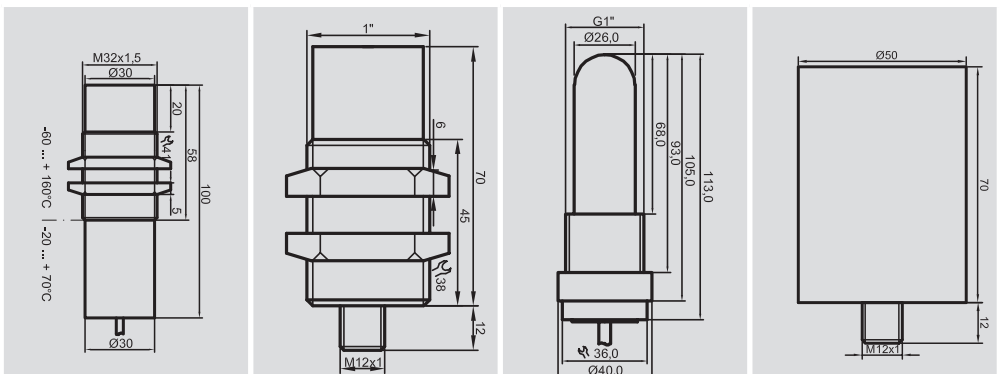
All specifications are subject to change without notice. (03/2009)

## CAPACITIVE SENSORS KAS

| Housing   | M 32 x 1,5  | 1"  | Ø 26 mm / 1"  | Ø 50 mm   |
|---|---|---|---|---|
|  |  |  |  |  |
| <b>Technical Data</b>   | Non-flush mountable   | Non-flush mountable   | Non-flush mountable   | Flush mountable   |
| Operating distance Sn   | 15 mm   | 25 mm   | 5 mm  | 30 mm   |
| Operating distance min./max. adjustable   | 2...20 mm   | 1...40 mm   | 0...20 mm   | 1..50 mm  |
| Type NPN NO   |   |   |   |   |
| Type NPN NC   |   |   |   |   |
| Type NPN antivalent (NO + NC)   |   |   | KAS-70-26-A-PTFE-1"-100°C   | KAS-70-50-A-Y5  |
| Type PNP NO   |   |   |   |   |
| Type PNP NC   |   |   |   |   |
| Type PNP antivalent (NO + NC)   |   | KAS-80-34-A-1"-PTFE/Ms-Y5   | KAS-80-26-A-PTFE-1"-100°C   | KAS-80-50-A-Y5  |
| Type NPN/PNP-NO/NC switchable   | KAS-2000-34-M32-PTFE/V2A-160°C  |   |   |   |
| Type AC/DC NO   |   |   |   |   |
| TYPE AC/DC NC   |   |   |   |   |
| Operating voltage (U <sub>B</sub> )   | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  |
| Output current max. (I <sub>e</sub> )   | 400 mA  | 2 x 250 mA  | 2 x 250 mA  | 2 x 250 mA  |
| No-load current (I <sub>0</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

### Dimensions:



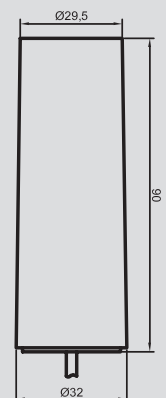
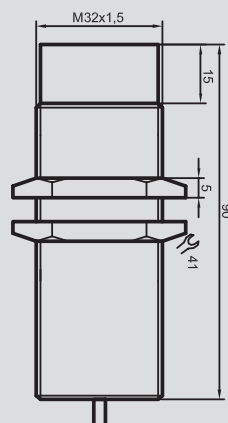
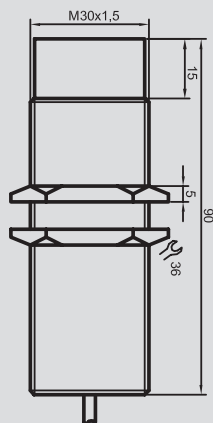
Connection diagram see page 7  
Female connector M 12 see page 17

# 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 Sn                   | 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>B</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>0</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

## Dimensions:



## CAPACITIVE SENSORS KAS SERIES 26

EasyTeach



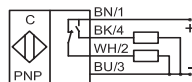
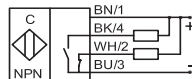
### Capacitive Sensors - Series 26

Series 70 - NPN

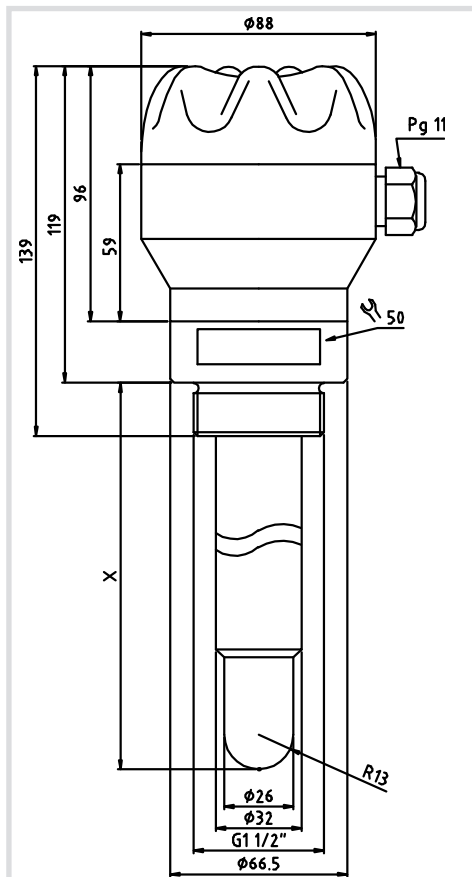
Series 80 - PNP

Housing  $\varnothing = 26 \text{ mm} / 1\frac{1}{2}''$

- 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-1½“-PH-ET  | KA0781  | KAS-80-26-A-200-PP-1½“-PH-ET  | KA0780  |
| 280                    | KAS-70-26-A-280-PP-1½“-PH-ET  | KA0776  | KAS-80-26-A-280-PP-1½“-PH-ET  | KA0758  |
| 400                    | KAS-70-26-A-400-PP-1½“-PH-ET  | KA0783  | KAS-80-26-A-400-PP-1½“-PH-ET  | KA0782  |
| 800                    | KAS-70-26-A-800-PP-1½“-PH-ET  | KA0785  | KAS-80-26-A-800-PP-1½“-PH-ET  | KA0784  |
| 1200                   | KAS-70-26-A-1200-PP-1½“-PH-ET | KA0787  | KAS-80-26-A-1200-PP-1½“-PH-ET | KA0786  |



Certificate:



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

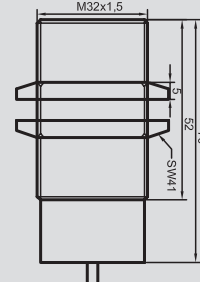
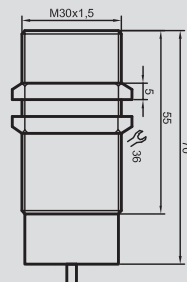
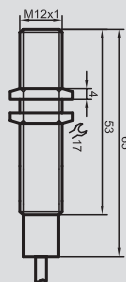


# CAPACITIVE SENSORS KAS WITH ANALOGUE OUTPUT

| 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-IL               | KAS-80-30-IL-M32            |                           |
|                                 |                             |                             |                             | Female Connector No. 57   |
|                                 |                             |                             |                             | 4-pins for                |
|                                 |                             |                             |                             | Flange connector M 12 x 1 |
|                                 |                             |                             |                             | Y3 or Y5 NPN / PNP        |
| Operating voltage ( $U_b$ )     | 15...30 V DC                | 15...30 V DC                | 15...30 V DC                |                           |
| Output current ( $I_o$ )        | 2,5...> 20 mA               | 2,5...> 20 mA               | 2,5...> 20 mA               |                           |
| No-load current ( $I_o$ )       | Typ. 40 mA                  | Typ. 40 mA                  | Typ. 40 mA                  |                           |
| Load resistor                   | $R_L = 0...300 \text{ Ohm}$ | $R_L = 0...300 \text{ Ohm}$ | $R_L = 0...300 \text{ Ohm}$ |                           |
| 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                       |                           |
| Active surface                  | PTFE                        | PTFE                        | PTFE                        |                           |
| Lid                             | PA / PPO                    | PA / PPO                    | PA / PPO                    |                           |
| Certification                   | CE, RoHS, UL/CSA            | CE, RoHS, UL/CSA            | CE, RoHS, UL/CSA            | CE                        |

\*with sealed potentiometer screw






## Dimensions:



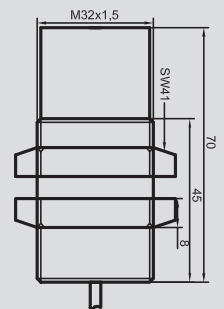
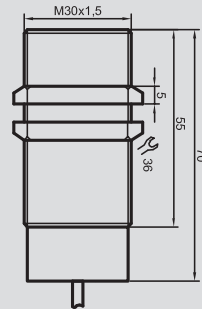
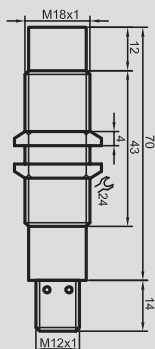
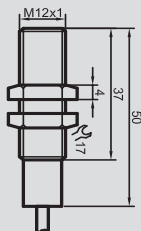
Connection diagram see page 7

## 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 $S_n$  | 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 ( $U_B$ )   | $U = 15$ V DC   | $U = 15$ V DC   | $U = 15$ V DC   | $U = 15$ 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  |   |   |   |   |

### Dimensions:



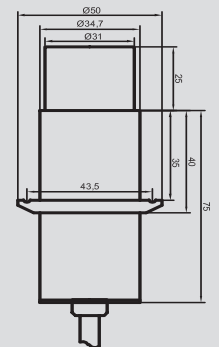
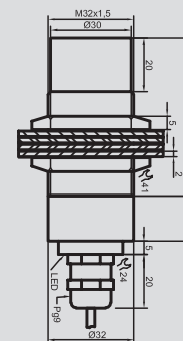
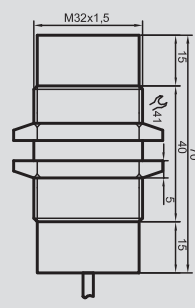
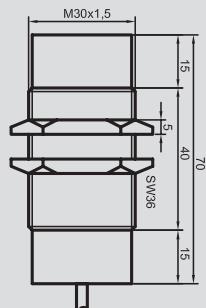
# CAPACITIVE SENSORS KAS - ATEX - ZONE 20

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                                     | Tri-Clamp                                      |
|---------------------------------------|--|--|--|--|
|                                       |  |  |  |  |
| <b>Technical data</b>                 | Non-flush mountable                            | Non-flush mountable                            | Non-flush mountable                            | Non-flush mountable                            |
| Sensing distance Sn                   | 15 mm  | 20 mm  | 20 mm  | 20 mm  |
| Sensing distance min./max. adjustable | 3...25 mm                                      | 3...30 mm                                      | 3...30 mm                                      | 3...30 mm                                      |
| Type NPN antivalent (NO + NC)         | KAS-70-A24-A-StEx-N                            | KAS-70-34-A-M32-StEx-N                         |  |  |
| Type PNP antivalent (NO + NC)         | KAS-80-A24-A-StEx-N                            | KAS-80-34-A-M32-StEx-N                         | KAS-80-35-A-M32-StEx-N                         | KAS-80-34-35/100-A-PTFE/VA-StEx-N              |
| Certification                         | 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                              |
| ATEX                                  | EX II 1D IP67 T 101 °C<br>EX II 2G EEx m II T4 | EX II 1D IP67 T 101 °C<br>EX II 2G EEx m II T4 | EX II 1D IP67 T 101 °C<br>EX II 2G EEx m II T4 | EX II 1D IP67 T 101 °C<br>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                                 | Ex tD A20/21 IP67 T 101 °C<br>Ex mb II T4      | Ex tD A20/21 IP67 T 101 °C<br>Ex mb II T4      | Ex tD A20/21 IP67 T 101 °C<br>Ex mb II T4      | Ex tD A20/21 IP67 T 101 °C<br>Ex mb II T4      |
| Operating voltage (U <sub>0</sub> )   | 10...30 V DC                                   | 10...30 V DC                                   | 10...30 V DC                                   | 10...30 V DC                                   |
| Output current max. (I <sub>0</sub> ) | 2 x 150 mA                                     | 2 x 150 mA                                     | 2 x 150 mA                                     | 2 x 150 mA                                     |
| No-load current (I <sub>0</sub> )     | 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  |
| Permitted ambient temperature         | -25...+70 °C                                   | -20...+70 °C                                   | -20...+90 °C                                   | -20...+90 °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                            | 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                                  |
| Active surface                        | PTFE   | PTFE   | PTFE   | PTFE   |
| Lid                                   | PC   | PC   | VA No. 1.4305                                  | PC   |

\*with sealed potentiometer screw

## Dimensions:

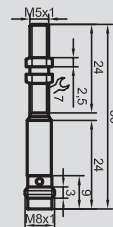
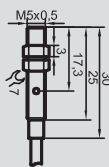
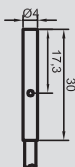


## INDUCTIVE SENSORS IAS

| Housing   | Ø 4 mm  | 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   |
| Operating distance $S_n$ [mm]   | 0,8 mm  | 0,8 mm  | 0,8 mm  | 1,5 mm  |
| Type NPN NO   | IAS-20-04-S   | IAS-20-M5-S   |   |   |
| Type NPN NC   | IAS-20-04-Ö   | IAS-20-M5-Ö   |   |   |
| 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-Ö   | IAS-10-M5-Ö   | IAS-10-M5-Ö-Y7  | IAS-10-6.5/15-Ö   |
| Type PNP antivalent (NO + NC)   |   |   |   |   |
| Type AC/DC NO   |   |   |   |   |
| Type AC/DC NC   |   |   |   |   |
| Operating voltage ( $U_B$ )   | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  | 10...35 V DC  |
| Output current max. ( $I_o$ )   | 150 mA  | 150 mA  | 150 mA  | 150 mA  |
| No-load current ( $I_o$ )   | 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   |
| 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 3 x 0,14 mm <sup>2</sup>  | 2 m Cable 3 x 0,14 mm <sup>2</sup>  | Flange connector M 8 x 1  | 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   |
| Active surface  | -   | PA / PPO  | PA / PPO  | PVC   |
| Lid   | -   | -   | -   | -   |
| Certification   | CE, RoHS  | CE, RoHS  | CE, RoHS  | CE, RoHS  |

\*With sealed potentiometer screw

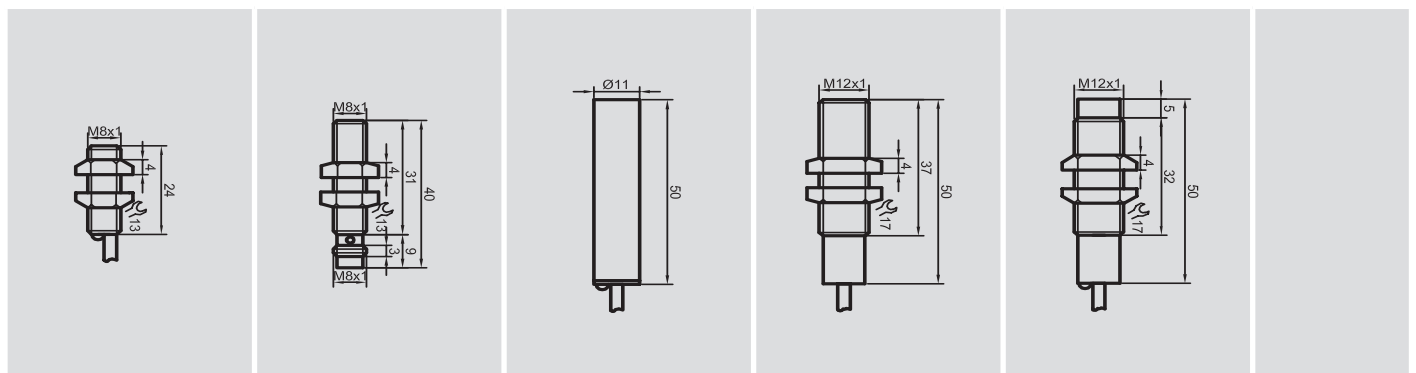
### Dimensions:



Connection diagram see page 7

## INDUCTIVE SENSORS IAS

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



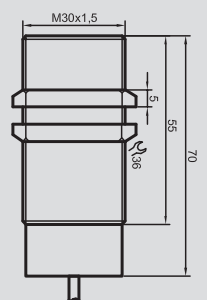
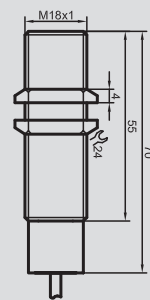
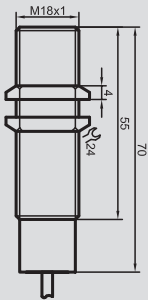
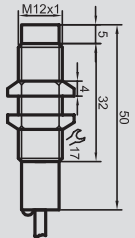
All specifications are subject to change without notice. (03/2009)

## INDUCTIVE SENSORS IAS

| Housing   | M 12 x 1  | M 18 x 1  | M 18 x 1  | M 30 x 1,5  |
|---|---|---|---|---|
|  |  |  |  |  |
| <b>Technical Data</b>   | Non-flush mountable   | Flush mountable   | Flush mountable   | Flush mountable   |
| Operating distance $S_n$ [mm]   | 4 mm  | 5 mm  | 5 mm  | 10 mm   |
| Type NPN NO   |   | IAS-20-A13-S  |   | IAS-20-A14-S  |
| Type NPN NC   |   |   |   |   |
| Type NPN antivalent (NO + NC)   |   | IAS-20-A13-A  |   | IAS-20-A14-A  |
| Type PNP NO   | IAS-10-A22-S-100°C  | IAS-10-A13-S  |   | IAS-10-A14-S  |
| Type PNP NC   |   | IAS-10-A13-Ö  |   |   |
| Type PNP antivalent (NO + NC)   |   | IAS-10-A13-A  |   | IAS-10-A14-A  |
| Type AC/DC NO   |   |   | IAS-60-A13-S  |   |
| TYPE AC/DC NC   |   |   | IAS-60-A13-Ö  |   |
| Operating voltage ( $U_B$ )   | 10...35 V DC  | 10...35 V DC  | 20...250 V AC/DC  | 10...35 V DC  |
| Output current max. ( $I_o$ )   | 150 mA  | 250 mA / 2 x 250 mA   | 300 mA  | 250 mA / 2 x 250 mA   |
| No-load current ( $I_o$ )   | Typ. 15 mA  | Typ. 15 mA  | Typ. 3,5 mA   | Typ. 15 mA  |
| Frequency of operating cycles max.  | 2 kHz   | 2 kHz   | 25 Hz   | 1 kHz   |
| Permitted ambient temperature   | -25...+100 °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 3 x 0,14 mm <sup>2</sup>  | 2 m Cable   | 2 m Cable 3 x 0,34 mm <sup>2</sup>  | 2 m Cable   |
| Housing material  | VA No. 1.4305   | Brass   | Brass   | Brass   |
| Active surface  | PTFE  | PA / PPO  | PA / PPO  | PVC   |
| Lid   | PA / PPO  | PA / PPO  | PA / PPO  | PA / PPO  |
| Certification   | CE, RoHS  | CE, RoHS  | CE, RoHS  | CE, RoHS  |

\*with sealed potentiometer screw

### Dimensions:



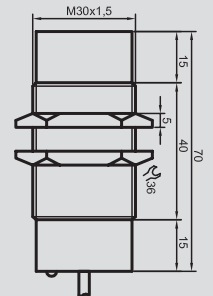
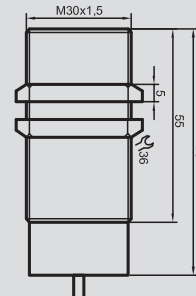
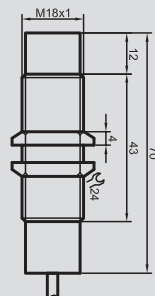
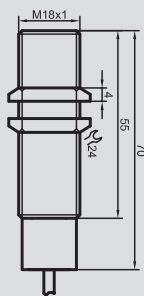
Connection diagram see page 7

# 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            |                                    |                                    |                                    |                                    |
| Type analogue 3-wire            | IAS-10-A13-IL                      | IAS-10-A23-IL                      | IAS-10-A14-IL                      | IAS-10-A24-IL                      |
| Art.-No.                        | 105 750                            | 108 350                            | 110 950                            | 113 550                            |
| Operating voltage ( $U_B$ )     | 15...30 V DC                       | 15...30 V DC                       | 15...30 V DC                       | 15...30 V DC                       |
| Output current ( $I_B$ )        | 2,5...>20 mA                       | 2,5...>20 mA                       | 2,5...>20 mA                       | 2,5...>20 mA                       |
| No-load current ( $I_0$ )       | Typ. 40 mA                         | Typ. 40 mA                         | Typ. 40 mA                         | Typ. 40 mA                         |
| Load resistor                   | $R_L = 0...300 \text{ Ohm}$        | $R_L = 0...300 \text{ Ohm}$        | $R_L = 0...300 \text{ Ohm}$        | $R_L = 0...300 \text{ Ohm}$        |
| 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

## Dimensions:



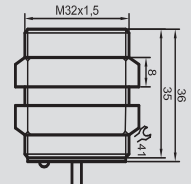
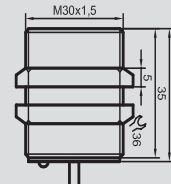
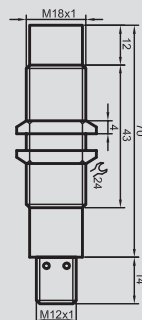
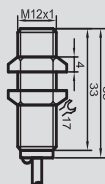
Connection diagram see page 7

## 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 $S_n$  | 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-30-35-N-M32   |
| 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   |
| 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 ( $U_B$ )   | $U_i = 15$ V DC   | $U_i = 15$ V DC   | $U_i = 15$ V DC   | $U_i = 15$ 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  |   |   |   |   |

Dimensions:



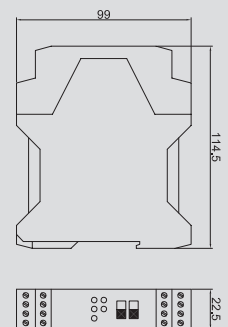
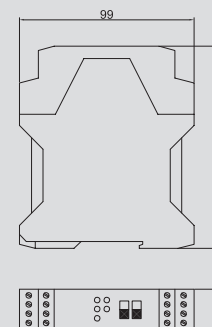
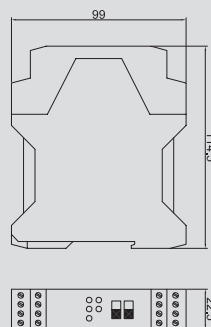
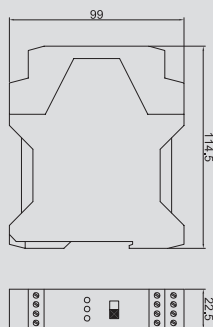
Connection diagram see page 7  
Female connector M 12 see page 17



## 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                        |
|--|---|--|--|---|
|  |   |  |  |   |
| Technical Data   |   |  |  |   |
| Operating voltage ( $U_s$ )  | 230 V AC $\pm$ 10 %<br>48...62 Hz           | 230 V AC $\pm$ 10 %<br>48...62 Hz            | 115 V AC $\pm$ 10 %<br>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.<br>Contact rating each relay DC max. | 250 V AC / 5 A/100 VA<br>24 V DC/ 8 A/ 50 W | 250 V AC / 5 A/ 100 VA<br>24 V DC/ 8 A/ 50 W | 250 V AC / 5 A/ 100 VA<br>24 V DC/ 8 A/ 50 W | 250 V AC / 5 A/100 VA<br>24 V DC/ 8 A/ 50 W |
| Type   | <b>N-131/1-01</b>                           | <b>N-131/2-01</b>                            | <b>N-131/2-02</b>                            | <b>N-131/2-10</b>                           |
| Art.-No.   | N 00005                                     | N 00001                                      | N 00002                                      | N 00003                                     |
| Certification  | CE, ATEX, UL                                | CE, ATEX, UL                                 | CE, ATEX, UL                                 | CE, ATEX, UL                                |
| ATEX Certification No.   | TÜV 02 ATEX 1869                            | TÜV 02 ATEX 1869                             | TÜV 02 ATEX 1869                             | TÜV 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 ( $I_s$ )  | Typ. 15 mA                                  | Typ. 15 mA                                   | Typ. 15 mA                                   | Typ. 15 mA                                  |
| No-load voltage max. ( $U_s$ )   | 10,5 V DC                                   | 10,5 V DC                                    | 10,5 V DC                                    | 10,5 V DC                                   |
| Short circuit current max. ( $I_k$ )                                   | 26 mA                                       | 26 mA  | 26 mA  | 26 mA                                       |
| Outer inductance max. ( $L_o$ )  | [EExia] IIC 45 mH/ IIB 160 mH               | [EExia] IIC 45 mH/ IIB 160 mH                | [EExia] IIC 45 mH/ IIB 160 mH                | [EExia] IIC 45 mH/ IIB 160 mH               |
| Outer capacitance max. ( $C_o$ )                                       | [EExia] IIC 2,41 $\mu$ F/ IIB 16,8 $\mu$ F  | [EExia] IIC 2,41 $\mu$ F/ IIB 16,8 $\mu$ F   | [EExia] IIC 2,41 $\mu$ F/ IIB 16,8 $\mu$ F   | [EExia] IIC 2,41 $\mu$ F/ IIB 16,8 $\mu$ F  |
| Actuating signal   | NAMUR DIN 19234 or<br>EN 60947-5-6          | NAMUR DIN 19234 or<br>EN 60947-5-6           | NAMUR DIN 19234 or<br>EN 60947-5-6           | NAMUR DIN 19234 or<br>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<br>Connections: IP 20        | Housing: IP 30<br>Connections: IP 20         | Housing: IP 30<br>Connections: IP 20         | Housing: IP 30<br>Connections: IP 20        |
| Connection   | Screw terminals                             | Screw terminals                              | Screw terminals                              | Screw terminals                             |

### Dimensions:

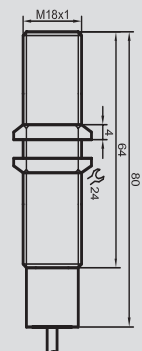
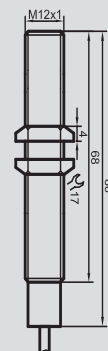
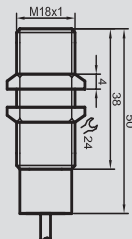
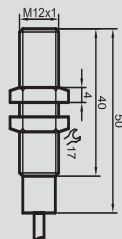


Connection diagram see page 7

## 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>                   | Flush mountable                    | Flush mountable                    | Flush mountable                    | Flush mountable                    |
| Operating distance $S_n$                | 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 ( $U_B$ )             | 10...35 V DC                       | 10...35 V DC                       | 10...35 V DC                       | 10...35 V DC                       |
| Output current max. ( $I_o$ )           | 250 mA                             | 250 mA                             | 2 x 250 mA                         | 2 x 250 mA                         |
| No-load current ( $I_o$ )               | 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:

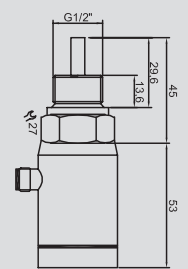
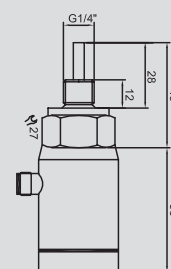
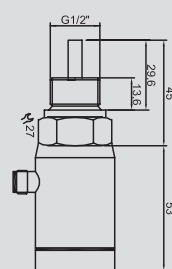
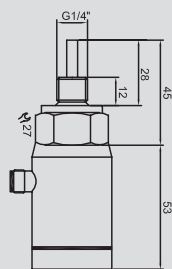


Connection diagram see page 7

## FLOW SENSORS SW






| Housing                                       | G 1/4"                                  | G 1/2"                                  | G 1/4"                                  | G 1/2"                                  |
|---|---|---|---|---|
|   |   |   |   |   |
| <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                                     | Yes                                     | No                                      | No                                      |
| Repeat accuracy                               | 1 %                                     | 1 %                                     | 1 %                                     | 1 %                                     |
| Type analogue 4(0) - 20 mA                    | SW-600-G1/4-IL                          | SW-600-G1/2-IL                          |   |   |
| Type NO                                       |   |   | SW-600-G1/4-S                           | SW-600-G1/2-S                           |
| Operating voltage (U <sub>B</sub> )           | 18...30 V DC                            | 18...30 V DC                            | 24 V AC/DC ± 10 %                       | 24 V AC/DC ± 10 %                       |
| Switching outputs                             | PNP, NPN<br>max. 300 mA in total        | PNP, NPN<br>max. 300 mA in total        | Relay contact (NO)<br>max. 200 mA       | Relay contact (NO)<br>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                         |   |   |
| Certification                                 | CE, RoHS                                | CE, RoHS                                | CE, RoHS                                | CE, RoHS                                |

### Dimensions:

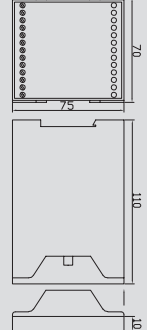
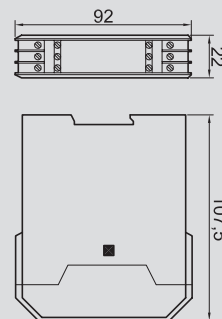
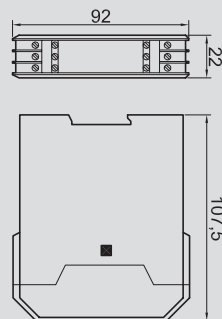
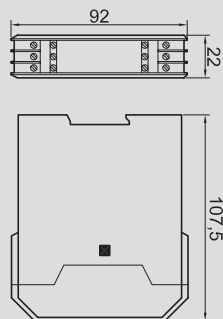


Connection diagram see page 7

## 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 ( $U_B$ )   | 115/230 V AC $\pm$ 15 %<br>40...60 Hz   | 115/230 V AC $\pm$ 15 %<br>40...60 Hz   | 115/230 V AC $\pm$ 15 %<br>40...60 Hz   | 115/230 V AC $\pm$ 15 %<br>40...60 Hz   |
| No-load current ( $I_0$ )   | Typ. 20 mA  | Typ. 40 mA  | Typ. 20 mA  | Typ. 40 mA  |
| Output function   | 1 x potential-free<br>change-over contact   | 1 x potential-free<br>change-over contact /<br>1 x potential-free NO              | 1 x potential-free<br>change-over contact   | 3 x potential-free<br>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  |
| <b>Type</b>   | <b>EG I-130</b>   | <b>EG II-130</b>  | <b>EG I-130-TD</b>  | <b>EG III-130</b>   |
| <b>Art.-No.</b>   | <b>522 000</b>  | <b>522 300</b>  | <b>522 100</b>  | <b>NA 0002</b>  |
| Actuating voltage ( $U_B$ )   | 24 V DC $\pm$ 20 %  | 24 V DC $\pm$ 20 %  | 24 V DC $\pm$ 20 %  | 24 V DC $\pm$ 20 %  |
| Actuating current max. ( $I_g$ )  | 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  | -   | -   | $t_1 = 0,1...5$ s / $t_2 = 2...60$ s  | -   |
| Degree of protection IEC 60529  | Housing: IP 30<br>Connections: IP 20  | Housing: IP 30<br>Connections: IP 20  | Housing: IP 30<br>Connections: IP 20  | Housing: IP 30<br>Connections: IP 20  |
| Connection  | Screw terminal  | Screw terminal  | Screw terminal  | Screw terminal  |
| Certification   | CE, RoHS  | CE, RoHS  | CE, RoHS  | CE, RoHS  |

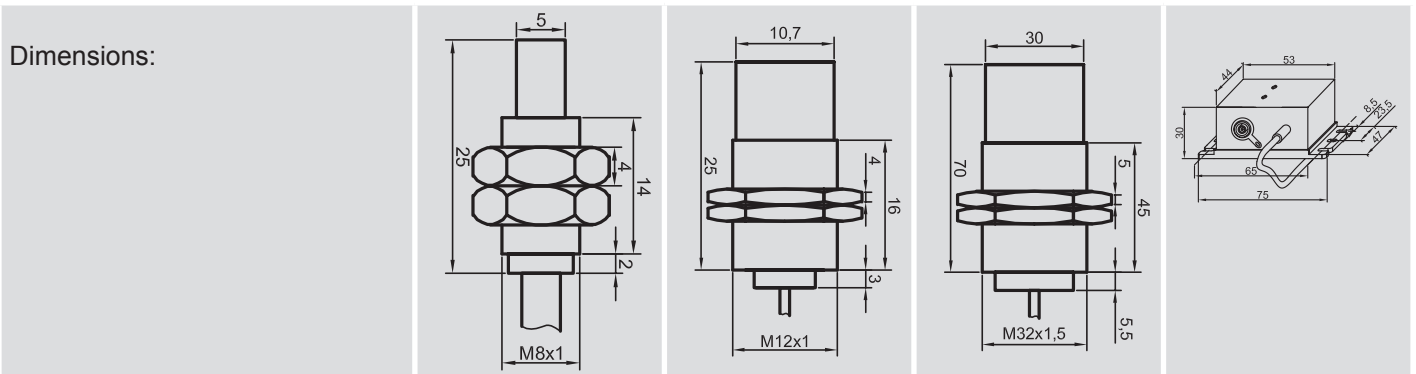
### Dimensions:



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 $S_n$ [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 ( $U_b$ )                | -                                     | -                                     | -                                     | 18...36 V DC                       |
| Output current max. ( $I_e$ )              | -                                     | -                                     | -                                     | 2 x 250 mA                         |
| No-load current ( $I_o$ )                  | -                                     | -                                     | -                                     | 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                           |







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

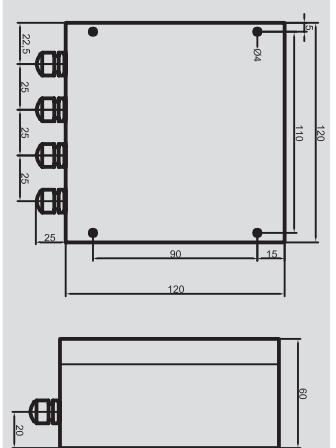
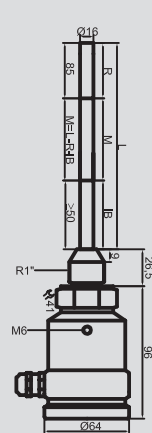
Connection diagram see page 7

## CAPACITIVE LEVEL MEASURING SYSTEMS TRUE LEVEL®

- With analogue output

| Housing   | Ø 16 mm   | Ø 16 mm / 1"   | Evaluation unit   |
|---|---|--|---|
|  |  |  |  |
| <b>Technical Data</b>   |   |  |   |
| Active zone [mm]  | Measuring range begins from 85 mm, related to the probe tip                       | Measuring range begins from 85 mm, related to the probe tip                        |   |
| 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>B</sub> )   | -   | -  | 18...36 V DC  |
| Analogue output   | -   | -  | 4...20 mA   |
| Power consumption (outputs No-load)   | -   | -  | Typ. 3,5 W  |
| Permitted ambient temperature   | -   | -25...+100 °C  | -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<br>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   | VA No. 1.4571  | ABS   |
| Active zone   | GFK   | GFK  | -   |
| Pressure  | -   | 25 bar   | -   |
| Certification   | CE, RoHS  | CE, RoHS   | CE, RoHS  |

### Dimensions:

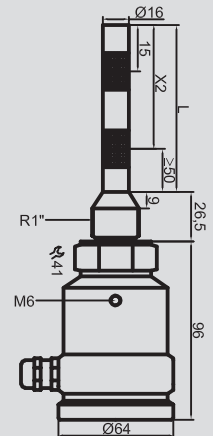
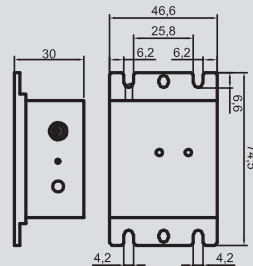


Connection diagram see page 7

- 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-Ö-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-Ö-VA-1"                                 |
| Operation voltage (U <sub>e</sub> )             | -                                    | 18...36 V DC                       | 18...36 V DC  |
| Output current max. (I <sub>e</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   |
| Protective circuit                              | -                                    | 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  | -                                    | -                                  | 25 bar  |
| Certification                                   | CE, RoHS                             | CE, RoHS                           | CE, RoHS  |

**Dimensions:**



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.

### 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 transistor 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.



### Capacitive Sensor - an all round performance ensures everything runs well!

The 26 series from RECHNER was originally designed to cope with the problems of very adhesive products. It turns out that these sensors have excellent characteristics for general use in level control. Typically they overcome the problems caused by products sticking to the sensor and the need for continual re-adjustment.

The semi-round sensor tip is a striking feature of this series. The electronics are based on RECHNER's High Performance Technology and guarantees high quality and reliability. The

sensors are available with various process connections, such as Triclamp, G1" and M22.

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 G1½" 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!

### Versatile – Capacitive Sensors With Relay Output

RECHNER's series 95 capacitive sensors with relay output are incredibly versatile level probes. The universal supply voltage range from 20...250 V AC/DC, the simple mounting and installation and the potential-free relay output are all key benefits for the user. Further advantages are provided by the integrated intelligent micro controller technology. This allows various options, like adjustable time relay (from 1 sec. up to 10 min.) and changeable on- or off-

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.





## TYPE SELECTION IN ARTICLE NUMBER ORDER

| Art.-No. | Type description        | Page | Art.-No. | Type description               | Page | Art.-No. | Type description                  | Page |
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| 100110   | IAS-10-M8-S             | 21   | 522000   | EG I-130                       | 28   | 818555   | KAS-80-34-A-M32-PTFE/V2A-Y5       | 12   |
| 100200   | IAS-10-M8-S-Y7          | 21   | 522100   | EG I-130-TD                    | 28   | 819200   | KAS-80-35-A-Y5                    | 10   |
| 100300   | IAS-10-M8-Ö             | 21   | 522300   | EG II-130                      | 28   | 819255   | KAS-80-35-A-M32-PTFE-100°C        | 13   |
| 100310   | IAS-10-M8-Ö-Y7          | 21   | 544120   | SW-600-G¼"/28-IL               | 27   | 820200   | KAS-80-35-A-M32                   | 13   |
| 101700   | IAS-10-A12-S            | 21   | 544140   | SW-600-G½"/28-IL               | 27   | 820400   | KAS-80-35-A-M32-Y5                | 13   |
| 101900   | IAS-10-A12-Ö            | 21   | 544220   | SW-600-G¼"/28-S                | 27   | 820600   | KAS-80-35-S-M32                   | 13   |
| 102400   | IAS-10-A22-S            | 21   | 544240   | SW-600-G½"/28-S                | 27   | 825510   | KAS-80-50-A-Y5                    | 14   |
| 102417   | IAS-10-A22-S-100°C      | 22   | 601000   | IAS-60-A13-S                   | 22   | 901800   | KAS-90-30-S-M32                   | 12   |
| 102500   | IAS-10-A22-Ö            | 21   | 601200   | IAS-60-A13-Ö                   | 22   | 901900   | KAS-90-30-Ö-M32                   | 12   |
| 103060   | IAS-10-A13-A            | 22   | 700150   | KAS-70-A12-A                   | 8    | 902400   | KAS-90-32-S-M32                   | 13   |
| 103100   | IAS-10-A13-S            | 22   | 700724   | KAS-70-A12-A-Y5                | 8    | 902500   | KAS-90-32-Ö-M32                   | 13   |
| 103200   | IAS-10-A13-Ö            | 22   | 701981   | KAS-70-A13-A-Y5                | 9    | AF0004   | KFA-5-1-P-A-Y50                   | 31   |
| 105750   | IAS-10-A13-IL           | 23   | 704091   | KAS-70-A23-A-Y5                | 9    | AF0005   | KFA-5-1-N-A-Y50                   | 31   |
| 108300   | IAS-10-A14-A            | 22   | 704500   | KAS-70-A14-A-Y5                | 11   | AF0014   | KFA-1-200-IL-4-KL-Y70             | 30   |
| 108350   | IAS-10-A23-IL           | 23   | 705200   | KAS-70-A14-A                   | 10   | AF0015   | KFA-1-500-IL-4-KL-Y70             | 30   |
| 108400   | IAS-10-A14-S            | 22   | 705600   | KAS-70-A14-A-K                 | 11   | AF0016   | KFA-1-1000-IL-4-KL-Y70            | 30   |
| 110950   | IAS-10-A14-IL           | 23   | 708200   | KAS-70-A24-A-Y5                | 11   | AF0017   | KFA-1-2000-IL-4-KL-Y70            | 30   |
| 113550   | IAS-10-A24-IL           | 23   | 708400   | KAS-70-A24-A-K                 | 11   | IA0192   | IAS-30-A23-N-PTFE/Ms-Y5           | 24   |
| 113610   | IAS-10-04-S             | 20   | 711600   | KAS-70-20-A                    | 9    | KA...    | KAS-70-26-A-PTFE-1"-100°C         | 14   |
| 113650   | IAS-10-04-Ö             | 20   | 713400   | KAS-70-23-A-M22                | 10   | KA...    | KAS-70-34-A-M32-StEx-N            | 19   |
| 114010   | IAS-10-M5-S             | 20   | 713600   | KAS-70-23-S-M22                | 10   | KA0084   | KAS-80-A24-A-StEx-N               | 19   |
| 114110   | IAS-10-M5-Ö             | 20   | 714400   | KAS-70-30-A-Y5                 | 10   | KA0085   | KAS-70-A24-A-StEx-N               | 19   |
| 114400   | IAS-10-M5-S-Y7          | 20   | 715800   | KAS-70-30-A-M32                | 12   | KA0086   | KAS-80-35-A-M32-StEx-N            | 19   |
| 114450   | IAS-10-M5-Ö-Y7          | 20   | 716000   | KAS-70-30-A-M32-Y5             | 12   | KA0272   | KAS-80-20-A-M22                   | 9    |
| 114500   | IAS-10-6.5/15-S         | 20   | 716200   | KAS-70-30-S-M32                | 12   | KA0273   | KAS-70-20-A-M22                   | 9    |
| 114650   | IAS-10-6.5/15-Ö         | 20   | 718555   | KAS-70-34-A-M32-PTFE/V2A-Y5    | 12   | KA0277   | KAS-80-26-A-PTFE-1"-100°C         | 14   |
| 115308   | IAS-10-14-S-PTFE,5m     | 21   | 719200   | KAS-70-35-A-Y5                 | 10   | KA0356   | KAS-80-34-A-M32-StEx-N            | 19   |
| 193385   | Female connector Nr. 57 | 17   | 719255   | KAS-70-35-A-M32-PTFE-100°C     | 13   | KA0377   | KAS-80-34-35/100-A-PTFE/VA-StEx-N | 19   |
| 201700   | IAS-20-A12-S            | 21   | 720200   | KAS-70-35-A-M32                | 13   | KA0528   | KAS-80-34-A-1"-PTFE/Ms-Y5         | 14   |
| 201900   | IAS-20-A12-Ö            | 21   | 720400   | KAS-70-35-A-M32-Y5             | 13   | KA0560   | KAS-40-A23-N-Y5                   | 18   |
| 202400   | IAS-20-A22-S            | 21   | 720600   | KAS-70-35-S-M32                | 13   | KA0744   | KAS-95-32-1CO-K-M32-POM-TD        | 15   |
| 202500   | IAS-20-A22-Ö            | 21   | 725510   | KAS-70-50-A-Y5                 | 14   | KA0748   | KAS-95-A24-1CO-K-POM-TD           | 15   |
| 203060   | IAS-20-A13-A            | 22   | 770800   | KAS-2000-35-M32                | 13   | KA0758   | KAS-80-26-A-280-PP-11/2"-PH-ET    | 16   |
| 203100   | IAS-20-A13-S            | 22   | 771100   | KAS-2000-34-M32-PTFE/V2A-160°C | 14   | KA0761   | KAS-95-32-1CO-K-POM-TD            | 15   |
| 208380   | IAS-20-A14-A            | 22   | 800130   | KAS-80-A21-S-Y7                | 8    | KA0776   | KAS-70-26-A-280-PP-11/2"-PH-ET    | 16   |
| 208400   | IAS-20-A14-S            | 22   | 800150   | KAS-80-A12-A                   | 8    | KA0780   | KAS-80-26-A-200-PP-11/2"-PH-ET    | 16   |
| 213610   | IAS-20-04-S             | 20   | 800200   | KAS-80-A12-S                   | 8    | KA0781   | KAS-70-26-A-200-PP-11/2"-PH-ET    | 16   |
| 213650   | IAS-20-04-Ö             | 20   | 800400   | KAS-80-A12-IL                  | 17   | KA0782   | KAS-80-26-A-400-PP-11/2"-PH-ET    | 16   |
| 214010   | IAS-20-M5-S             | 20   | 800724   | KAS-80-A12-A-Y5                | 8    | KA0783   | KAS-70-26-A-400-PP-11/2"-PH-ET    | 16   |
| 214110   | IAS-20-M5-Ö             | 20   | 800736   | KAS-80-A22-A-Y5                | 8    | KA0784   | KAS-80-26-A-800-PP-11/2"-PH-ET    | 16   |
| 300100   | IAS-30-A12-N            | 24   | 801981   | KAS-80-A13-A-Y5                | 9    | KA0785   | KAS-70-26-A-800-PP-11/2"-PH-ET    | 16   |
| 300500   | IAS-30-A14-N            | 24   | 803666   | KAS-80-A23-S-K-PTFE-IP68       | 9    | KA0786   | KAS-80-26-A-1200-PP-11/2"-PH-ET   | 16   |
| 302800   | IAS-30-35-N-M32         | 24   | 804091   | KAS-80-A23-A-Y5                | 9    | KA0787   | KAS-70-26-A-1200-PP-11/2"-PH-ET   | 16   |
| 360100   | MRS-300-M12-10-S        | 26   | 805200   | KAS-80-A14-A                   | 10   | KA0788   | KAS-90-A24-uC-S/Ö-NL              | 11   |
| 360300   | MRS-300-M12-20-S        | 26   | 805400   | KAS-80-A14-A-Y5                | 11   | KF...    | KFS-1-"L"-M"-VA-1"                | 30   |
| 360500   | MRS-300-M18-10-S        | 26   | 805600   | KAS-80-A14-A-K                 | 11   | KF...    | KFS-1-"L"-M"-Y75                  | 30   |
| 360700   | MRS-300-M18-20-S        | 26   | 806000   | KAS-80-A14-S                   | 10   | KF...    | KFS-5-1-"L"-15-Y55                | 31   |
| 360900   | MRS-350-M12-10-S        | 26   | 806400   | KAS-80-A14-IL                  | 17   | KF...    | KFX-5-2-"L"-15/X2-N-Ö-VA-1"       | 31   |
| 361100   | MRS-350-M12-20-S        | 26   | 807200   | KAS-80-A14-S-K                 | 11   | KF...    | KFX-5-2-"L"-15/X2-N-S-VA-1"       | 31   |
| 361300   | MRS-350-M18-10-S        | 26   | 808200   | KAS-80-A24-A-Y5                | 11   | KF...    | KFX-5-2-"L"-15/X2-P-Ö-VA-1"       | 31   |
| 361500   | MRS-350-M18-20-S        | 26   | 808400   | KAS-80-A24-A-K                 | 11   | KF...    | KFX-5-2-"L"-15/X2-P-S-VA-1"       | 31   |
| 400200   | KAS-40-A12-N            | 18   | 809600   | KAS-80-A24-S-K                 | 11   | N00001   | N-131/2-01                        | 25   |
| 400400   | KAS-40-A14-N            | 18   | 811600   | KAS-80-20-A                    | 9    | N00002   | N-131/2-02                        | 25   |
| 402300   | KAS-40-35-N-M32-PTFE    | 18   | 811800   | KAS-80-20-S                    | 9    | N00003   | N-131/2-10                        | 25   |
| 498001   | KXS-M8/25               | 29   | 813400   | KAS-80-23-A-M22                | 10   | N00005   | N-131/1-01                        | 25   |
| 498002   | KXS-M12/25              | 29   | 813600   | KAS-80-23-S-M22                | 10   | NA0002   | EG III-130                        | 28   |
| 498005   | KXS-M32/70              | 29   | 814400   | KAS-80-30-A-Y5                 | 10   |          |                                   |      |
| 498501   | KXA-5-1-N-A             | 29   | 815800   | KAS-80-30-A-M32                | 12   |          |                                   |      |
| 498503   | KXA-5-1-P-A             | 29   | 816000   | KAS-80-30-A-M32-Y5             | 12   |          |                                   |      |
| 498503   | KXA-5-1-P-A-MINI        | 29   | 816200   | KAS-80-30-S-M32                | 12   |          |                                   |      |
| 498505   | KXA-5-1-N-A-MINI        | 29   | 816600   | KAS-80-30-IL-M32               | 17   |          |                                   |      |

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

## TYPE SELECTION IN TYPE DESCRIPTION ORDER

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| 522000   | EG I-130                        | 28   | KA0781   | KAS-70-26-A-200-PP-11/2"-PH-ET    | 16   | 805600   | KAS-80-A14-A-K              | 11   |
| 522100   | EG I-130-TD                     | 28   | KA0776   | KAS-70-26-A-280-PP-11/2"-PH-ET    | 16   | 805400   | KAS-80-A14-A-Y5             | 11   |
| 522300   | EG II-130                       | 28   | KA0783   | KAS-70-26-A-400-PP-11/2"-PH-ET    | 16   | 806400   | KAS-80-A14-IL               | 17   |
| NA0002   | EG III-130                      | 28   | KA0785   | KAS-70-26-A-800-PP-11/2"-PH-ET    | 16   | 806000   | KAS-80-A14-S                | 10   |
| 193385   | Female connector Nr. 57         | 17   | KA...    | KAS-70-26-A-PTFE-1"-100°C         | 14   | 807200   | KAS-80-A14-S-K              | 11   |
| 113650   | IAS-10-04-Ö                     | 20   | 715800   | KAS-70-30-A-M32                   | 12   | 800130   | KAS-80-A21-S-Y7             | 8    |
| 113610   | IAS-10-04-S                     | 20   | 716000   | KAS-70-30-A-M32-Y5                | 12   | 800736   | KAS-80-A22-A-Y5             | 8    |
| 115308   | IAS-10-14-S-PTFE,5m             | 21   | 714400   | KAS-70-30-A-Y5                    | 10   | 804091   | KAS-80-A23-A-Y5             | 9    |
| 114650   | IAS-10-6.5/15-Ö                 | 20   | 716200   | KAS-70-30-S-M32                   | 12   | 803666   | KAS-80-A23-S-K-PTFE-IP68    | 9    |
| 114500   | IAS-10-6.5/15-S                 | 20   | 718555   | KAS-70-34-A-M32-PTFE/V2A-Y5       | 12   | 808400   | KAS-80-A24-A-K              | 11   |
| 101900   | IAS-10-A12-Ö                    | 21   | KA...    | KAS-70-34-A-M32-StEx-N            | 19   | KA0084   | KAS-80-A24-A-StEx-N         | 19   |
| 101700   | IAS-10-A12-S                    | 21   | 720200   | KAS-70-35-A-M32                   | 13   | 808200   | KAS-80-A24-A-Y5             | 11   |
| 103060   | IAS-10-A13-A                    | 22   | 719255   | KAS-70-35-A-M32-PTFE-100°C        | 13   | 809600   | KAS-80-A24-S-K              | 11   |
| 105750   | IAS-10-A13-IL                   | 23   | 720400   | KAS-70-35-A-M32-Y5                | 13   | 901900   | KAS-90-30-Ö-M32             | 12   |
| 103200   | IAS-10-A13-Ö                    | 22   | 719200   | KAS-70-35-A-Y5                    | 10   | 901800   | KAS-90-30-S-M32             | 12   |
| 103100   | IAS-10-A13-S                    | 22   | 720600   | KAS-70-35-S-M32                   | 13   | 902500   | KAS-90-32-Ö-M32             | 13   |
| 108300   | IAS-10-A14-A                    | 22   | 725510   | KAS-70-50-A-Y5                    | 14   | 902400   | KAS-90-32-S-M32             | 13   |
| 110950   | IAS-10-A14-IL                   | 23   | 700150   | KAS-70-A12-A                      | 8    | KA0788   | KAS-90-A24-uC-S/Ö-NL        | 11   |
| 108400   | IAS-10-A14-S                    | 22   | 700724   | KAS-70-A12-A-Y5                   | 8    | KA0744   | KAS-95-32-1CO-K-M32-POM-TD  | 15   |
| 102500   | IAS-10-A22-Ö                    | 21   | 701981   | KAS-70-A13-A-Y5                   | 9    | KA0761   | KAS-95-32-1CO-K-POM-TD      | 15   |
| 102400   | IAS-10-A22-S                    | 21   | 705200   | KAS-70-A14-A                      | 10   | KA0748   | KAS-95-A24-1CO-K-POM-TD     | 15   |
| 102417   | IAS-10-A22-S-100°C              | 22   | 705600   | KAS-70-A14-A-K                    | 11   | AF0016   | KFA-1-1000-IL-4KL-Y70       | 30   |
| 108350   | IAS-10-A23-IL                   | 23   | 704500   | KAS-70-A14-A-Y5                   | 11   | AF0017   | KFA-1-2000-IL-4-kl-Y70      | 30   |
| 113550   | IAS-10-A24-IL                   | 23   | 704091   | KAS-70-A23-A-Y5                   | 9    | AF0014   | KFA-1-200-IL-4-kl-Y70       | 30   |
| 114110   | IAS-10-M5-Ö                     | 20   | 708400   | KAS-70-A24-A-K                    | 11   | AF0015   | KFA-1-500-IL-4-kl-Y70       | 30   |
| 114450   | IAS-10-M5-Ö-Y7                  | 20   | KA0085   | KAS-70-A24-A-StEx-N               | 19   | AF0005   | KFA-5-1-N-A-Y50             | 31   |
| 114010   | IAS-10-M5-S                     | 20   | 708200   | KAS-70-A24-A-Y5                   | 11   | AF0004   | KFA-5-1-P-A-Y50             | 31   |
| 114400   | IAS-10-M5-S-Y7                  | 20   | 811600   | KAS-80-20-A                       | 9    | KF...    | KFS-1-"L"-M"-VA-1"          | 30   |
| 100300   | IAS-10-M8-Ö                     | 21   | KA0272   | KAS-80-20-A-M22                   | 9    | KF...    | KFS-1-"L"-M"-Y75            | 30   |
| 100310   | IAS-10-M8-Ö-Y7                  | 21   | 811800   | KAS-80-20-S                       | 9    | KF...    | KFS-5-1-"L"-15-Y55          | 31   |
| 100110   | IAS-10-M8-S                     | 21   | 813400   | KAS-80-23-A-M22                   | 10   | KF...    | KFX-5-2-"L"-15/X2-N-Ö-VA-1" | 31   |
| 100200   | IAS-10-M8-S-Y7                  | 21   | 813600   | KAS-80-23-S-M22                   | 10   | KF...    | KFX-5-2-"L"-15/X2-N-S-VA-1" | 31   |
| 213650   | IAS-20-04-Ö                     | 20   | KA0786   | KAS-80-26-A-1200-PP-11/2"-PH-ET   | 16   | KF...    | KFX-5-2-"L"-15/X2-P-Ö-VA-1" | 31   |
| 213610   | IAS-20-04-S                     | 20   | KA0780   | KAS-80-26-A-200-PP-11/2"-PH-ET    | 16   | KF...    | KFX-5-2-"L"-15/X2-P-S-VA-1" | 31   |
| 201900   | IAS-20-A12-Ö                    | 21   | KA0758   | KAS-80-26-A-280-PP-11/2"-PH-ET    | 16   | 498501   | KXA-5-1-N-A                 | 29   |
| 201700   | IAS-20-A12-S                    | 21   | KA0782   | KAS-80-26-A-400-PP-11/2"-PH-ET    | 16   | 498505   | KXA-5-1-N-A-MINI            | 29   |
| 203060   | IAS-20-A13-A                    | 22   | KA0784   | KAS-80-26-A-800-PP-11/2"-PH-ET    | 16   | 498503   | KXA-5-1-P-A                 | 29   |
| 203100   | IAS-20-A13-S                    | 22   | KA0277   | KAS-80-26-A-PTFE-1"-100°C         | 14   | 498503   | KXA-5-1-P-A-MINI            | 29   |
| 208380   | IAS-20-A14-A                    | 22   | 815800   | KAS-80-30-A-M32                   | 12   | 498002   | KXS-M12/25                  | 29   |
| 208400   | IAS-20-A14-S                    | 22   | 816000   | KAS-80-30-A-M32-Y5                | 12   | 498005   | KXS-M32/70                  | 29   |
| 202500   | IAS-20-A22-Ö                    | 21   | 814400   | KAS-80-30-A-Y5                    | 10   | 498001   | KXS-M8/25                   | 29   |
| 202400   | IAS-20-A22-S                    | 21   | 816600   | KAS-80-30-IL-M32                  | 17   | 360100   | MRS-300-M12-10-S            | 26   |
| 214110   | IAS-20-M5-Ö                     | 20   | 816200   | KAS-80-30-S-M32                   | 12   | 360300   | MRS-300-M12-20-S            | 26   |
| 214010   | IAS-20-M5-S                     | 20   | KA0377   | KAS-80-34-35/100-A-PTFE/VA-StEx-N | 19   | 360500   | MRS-300-M18-10-S            | 26   |
| 302800   | IAS-30-35-N-M32                 | 24   | KA0528   | KAS-80-34-A-1"-PTFE/MS-Y5         | 14   | 360700   | MRS-300-M18-20-S            | 26   |
| 300100   | IAS-30-A12-N                    | 24   | 818555   | KAS-80-34-A-M32-PTFE/V2A-Y5       | 12   | 360900   | MRS-350-M12-10-S            | 26   |
| 300500   | IAS-30-A14-N                    | 24   | KA0356   | KAS-80-34-A-M32-StEx-N            | 19   | 361100   | MRS-350-M12-20-S            | 26   |
| IA0192   | IAS-30-A23-N-PTFE/MS-Y5         | 24   | 820200   | KAS-80-35-A-M32                   | 13   | 361300   | MRS-350-M18-10-S            | 26   |
| 601200   | IAS-60-A13-Ö                    | 22   | 819255   | KAS-80-35-A-M32-PTFE-100°C        | 13   | 361500   | MRS-350-M18-20-S            | 26   |
| 601000   | IAS-60-A13-S                    | 22   | KA0086   | KAS-80-35-A-M32-StEx-N            | 19   | N00005   | N-131/1-01                  | 25   |
| 771100   | KAS-2000-34-M32-PTFE/V2A-160°C  | 14   | 820400   | KAS-80-35-A-M32-Y5                | 13   | N00001   | N-131/2-01                  | 25   |
| 770800   | KAS-2000-35-M32                 | 13   | 819200   | KAS-80-35-A-Y5                    | 10   | N00002   | N-131/2-02                  | 25   |
| 402300   | KAS-40-35-N-M32-PTFE            | 18   | 820600   | KAS-80-35-S-M32                   | 13   | N00003   | N-131/2-10                  | 25   |
| 400200   | KAS-40-A12-N                    | 18   | 825510   | KAS-80-50-A-Y5                    | 14   | 544120   | SW-600-G¼"/28-IL            | 27   |
| 400400   | KAS-40-A14-N                    | 18   | 800150   | KAS-80-A12-A                      | 8    | 544220   | SW-600-G¼"/28-S             | 27   |
| KA0560   | KAS-40-A23-N-Y5                 | 18   | 800724   | KAS-80-A12-A-Y5                   | 8    | 544140   | SW-600-G½"/28-IL            | 27   |
| 711600   | KAS-70-20-A                     | 9    | 800400   | KAS-80-A12-IL                     | 17   | 544240   | SW-600-G½"/28-S             | 27   |
| KA0273   | KAS-70-20-A-M22                 | 9    | 800200   | KAS-80-A12-S                      | 8    |          |                             |      |
| 713400   | KAS-70-23-A-M22                 | 10   | 801981   | KAS-80-A13-A-Y5                   | 9    |          |                             |      |
| 713600   | KAS-70-23-S-M22                 | 10   | 805200   | KAS-80-A14-A                      | 10   |          |                             |      |
| KA0787   | KAS-70-26-A-1200-PP-11/2"-PH-ET | 16   |          |                                   |      |          |                             |      |



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