

# PRODUCT SUMMARY



Universal Plug-On Display  
with U-PACE



Coriolis Flow Meter  
for H2 Filling Stations



Ultrasonic Flow Meter



Magnetic Inductive Flow Meter



Positive Displacement Oval Gear  
Flow Meter



Digital Pressure Gauge



KofiCom-Modbus Adapter



Vortex Flow Meter

FLOW • PRESSURE • LEVEL • TEMPERATURE • PH-VALUE/REDOX • CONDUCTIVITY • HUMIDITY • TURBIDITY • DENSITY



# KOBOLD Messring GmbH

Home plant in Hofheim near Frankfurt, Germany

Founded in 1980 by Dipl.-Ing Klaus J. Kobold, KOBOLD is a global leader in the field of measurement and control technology. The KOBOLD brand is characterized by patented technology, high quality products, and exceptional customer service.

advance the field of instrumentation. They also work directly with customers to develop customized solutions for their exact needs and can create and build what other companies cannot.

From offices and production facilities in over 30 countries KOBOLD develops, manufactures, and distributes instrumentation for measuring, monitoring, and controlling flow, pressure, level, and temperature. Experienced engineers from a wide range of industrial sectors and disciplines develop ideal application solutions and

With such expertise and the ability to develop, manufacture, sell, and support the products, KOBOLD is uniquely positioned to quickly meet the changing needs of various industries with excellence.

## Product categories

**Flow**  
3 - 20

**Temperature**  
36 - 38

**Pressure**  
21 - 27

**Analysis**  
39 - 40

**Level**  
28 - 35

**Accessories**  
40 - 42

## Feature Icons

- QR code for product information
- High Quality/Low Cost
- Stainless steel design
- For chemicals
- Shock resistant
- Heating jacket
- Battery powered/external power supply
- Battery powered
- Sensor supply
- Installation under process conditions
- Scalable analogue output
- Rotatable display
- Configurable display
- Bi-directional
- Total and partial quantity counter
- Universal electronics
- Configurable outputs
- Operational with gloves
- Temperature and pressure measurement
- Temperature and flow measurement
- Energy measurement
- Space saver
- NFC



## KSV

### Variable Area-Plastic - Low Volume

Polysulfone/brass, polysulfone/stainless steel



- Water: 0.25 - 1.5 l/h ... 10 - 80 l/h
- Air: 20 - 80 NI/h ... 0.5 - 2.4 Nm<sup>3</sup>/h
- $t_{max}$  120 °C;  $p_{max}$  6 bar
- Connection: 1/8" NPT female thread
- Accuracy:  $\pm 6\%$  of full scale



## KFS

### Variable Area-Plastic - Low Volume

Acrylic/stainless steel



- Water: 4 - 50 cm<sup>3</sup>/min ... 1 - 10 l/min
- Air: 0.04 - 0.5 ... 100 - 700 l/min
- $t_{max}$  65 °C;  $p_{max}$  6.5 bar
- Connection: 1/8" NPT, 1" NPT female thread
- Accuracy:  $\pm 2... \pm 5\%$  of full scale



## KSK

### Variable Area - Plastic

Trogamide®, polysulfone



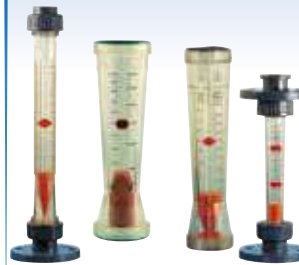
- Water: 1.5 - 11 l/h ... 100 - 1000 l/h
- Air: 0.15 - 0.45 ... 20 - 105 Nm<sup>3</sup>/h
- $t_{max}$  140 °C;  $p_{max}$  PN 10
- Connection: G 1/4 ... 1 female thread, glue-in connection
- Accuracy: cl. 4 according to VDI



## KSM

### Variable Area - Plastic

Trogamide®, polysulfone



- Water: 15 - 150 l/h ... 8000 - 60000 l/h
- Air: 0.8 - 5 Nm<sup>3</sup>/h ... 300 - 2500 Nm<sup>3</sup>/h
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: 1/2" ... 3 1/2"
- Accuracy: cl. 4 according to VDI



## KSR/SVN

### Variable Area - Low Volume - Switch

Stainless steel



- Water: 2 - 250 ml/min
- Air: 3 - 360 NI/h
- $t_{max}$  70 °C;  $p_{max}$  16 bar
- Connection: G 1/4, 1/4" NPT female thread



## KDF-9/KDG-9

### Variable Area - Low Volume

Stainless steel



- Water: 0.02 - 0.25 l/h ... 10 - 100 l/h
- Air: 2 - 20 NI/h ... 300 - 3000 NI/h
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: G 1/4, 1/4" NPT female thread
- Accuracy:  $\pm 3\%$   $q_G = 50\%$
- Option: inductive contacts, downstream pressure regulator, panel mounting, wall mounting



## KDF-2/KDG-2

### Variable Area - Low Volume

Stainless steel



- Water: 0.25 - 2.5 l/h ... 16 - 160 l/h
- Air: 0.5 - 5 NI/h ... 500 - 5000 NI/h
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: G 1/4, 1/4" NPT female thread, hose nozzle 8 mm
- Accuracy:  $\pm 2.5\%$   $q_G = 50\%$
- Option: inductive contacts, downstream pressure regulator, panel mounting, wall mounting



## URM

### Variable Area - Glass Cone - Thread Connection

Stainless steel, PVC



- Water: 0.25 - 2.5 l/h ... 2500 - 25000 l/h
- Air: 3.2 - 32 NI/h ... 32 - 320 Nm<sup>3</sup>/h
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: G 3/8 ... 3 male, G 1/4 ... 1 1/2 female
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$





# Flow Meters / Switches / Controllers

## URB

### Variable Area - Glass Cone

PVC



- Water: 10 - 100 l/h ... 100 - 1000 l/h
- Air: 0.32 - 3.2 Nm<sup>3</sup>/h ... 3.2 - 32 Nm<sup>3</sup>/h
- $t_{max}$  65 °C;  $p_{max}$  3 bar
- Connection: G 1/2 ... 1 1/4 male/female thread
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## UVR / UTR

### Variable Area - Glass Cone

Stainless steel, POM-C



- Water: 10 - 100 l/h ... 200 - 2000 l/h
- Air: 0.1 - 1 Nm<sup>3</sup>/h ... 5 - 50 Nm<sup>3</sup>/h
- $t_{max}$  100 °C;  $p_{max}$  10 bar
- Connection: G 3/8, G 1/2 female thread
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## URL

### Variable Area - Glass Cone - Loose Flange

PVC, PTFE



- Water: 1 - 10 l/h ... 250 - 2500 l/h
- Air: 0.025 - 0.25 Nm<sup>3</sup>/h ... 10 - 100 Nm<sup>3</sup>/h
- $t_{max}$  100 °C;  $p_{max}$  10 bar
- Connection: loose flange DN 15 ... 40
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## V31

### Variable Area - Glass Cone

Stainless steel, PVDF, PVC



- Water: 3 - 30 l/h ... 1000 - 10000 l/h
- Air: 36 - 360 NI/h ... 18 - 180 Nm<sup>3</sup>/h
- $t_{max}$  80 °C;  $p_{max}$  15 bar
- Connection: G 1/4 ... 2 female, flange DN 10 ... 65, ANSI 1/2 ... 2 1/2"
- Accuracy:  $\pm 1.6... \pm 2.5\%$   $q_G = 50\%$
- Option: up to 2 switching contacts



## URK

### Variable Area - Glass Cone - Fixed or Loose Flange

Stainless steel



- Water: 1 - 10 l/h ... 15000 - 50000 l/h
- Air: 0.02 - 0.2 Nm<sup>3</sup>/h ... 50 - 500 Nm<sup>3</sup>/h
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: flange DN 15 ... 80, ANSI 1/2 ... 3"
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## USR

### Manifold Valves for Multiple Installation (for liquids)

Brass



- Water: 0.04 - 0.4 ... 1 - 10 l/min
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection inlet: G1 or 1" NPT female
- Connection outlet: G 1/4, G 3/8, 1/4" NPT, 3/8" NPT female, hose  $\varnothing$ 10,  $\varnothing$ 13,  $\varnothing$ 15 mm
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## UTS

### Variable Area - Glass Cone (for gas burners)

Brass, stainless steel



- Air: 10 - 100 NI/h ... 0.3 - 3 Nm<sup>3</sup>/h
- $t_{max}$  65 °C;  $p_{max}$  3 bar
- Connection: M 18x1.5, G 1/4, 1/4" NPT
- Accuracy:  $\pm 2... \pm 2.5\%$   $q_G = 50\%$



## KDS

### Variable Area - Low Volume

Stainless steel



- Water: 0.1 - 1 l/h ... 20 - 200 l/h
- Air: 3 - 30 NI/h ... 600 - 6000 NI/h
- $t_{max}$  130 °C;  $p_{max}$  PN 40/63
- Connection: 1/4" NPT female thread
- Accuracy:  $\pm 3\%$   $q_G = 50\%$
- Options: analogue output 4 - 20 mA, inductive contacts, downstream pressure regulator





## DSV

### Variable Area

Brass, stainless steel



- Water: 0.25 - 1.25 l/min ... 10 - 130 l/min
- $t_{max}$  100 °C;  $p_{max}$  10 bar
- Connection: G ¼ ... 1 ¼, ¼ ... 1 ¼" NPT female
- Accuracy:  $\pm 4\%$  of full scale



## SWK

### Variable Area - Low Volume

Brass, stainless steel, PVC

Switch  
SWK-11



Meter/Switch  
SWK-22



Switch  
SWK-13



- Water: 0.05 - 1 l/min ... 13 - 24 l/min
- $t_{max}$  100 °C;  $p_{max}$  250 bar
- $t_{max}$  60 °C;  $p_{max}$  6 bar (SWK-13)
- Connection: G ½ female thread
- Accuracy:  $\pm 4\%$  of full scale



## BGK

### Variable Area - Low Volume

Stainless steel



- Water: 0.1 - 1 l/h ... 20 - 200 l/h
- Air: 3 - 30 NI/h ... 600 - 6000 NI/h
- $t_{max}$  130 °C;  $p_{max}$  PN40 (higher on request)
- Connection: DN 10, DN 15, DN 25, ANSI ½", ¾", 1"
- Accuracy:  $\pm 3\%$   $q_G = 50\%$
- Options: analogue output 4 - 20 mA, inductive contacts



## BGN

### Variable Area

Stainless steel, PTFE/stainless steel, special material on request



- Water: 0.5 - 5 l/h ... 13000 - 130000 l/h
- Air: 0.015 - 0.15 ... 290 - 2900 Nm³/h
- $t_{max}$  350 °C;  $p_{max}$  PN40 (higher on request)
- Connection: flange DN 15 ... 150, ANSI ½" ... 6", thread, special connections
- Accuracy:  $\pm 1.6... \pm 2.2\%$   $q_G = 50\%$
- Options: analogue output, BUS-Interface, heating jacket, contacts



## BGN - HIGH PRESSURE

### Variable Area

Stainless steel special material on request



- Water: 0.5 - 5 l/h ... 13000 - 130000 l/h
- Air: 0.03 - 0.19 ... 290 - 2900 Nm³/h
- $t_{max}$  350 °C;  $p_{max}$  600 bar
- Connection: flange DN 15 ... 150, ANSI ½" ... 6", thread, special connections
- Accuracy:  $\pm 1.6... \pm 2.2\%$   $q_G = 50\%$
- Options: analogue output, BUS-Interface, heating jacket, contacts



## BGF

### Variable Area - Mounting Position Independent

Stainless steel, PTFE/stainless steel, special material on request



- Water: 10 - 100 l/h ... 6000 - 60000 l/h
- Air: 0.3 - 3 Nm³/h ... 110 - 1100 Nm³/h
- $t_{max}$  200 °C;  $p_{max}$  PN40
- Connection: flange DN 15 ... 80, ANSI ½" ... 3", thread, special connections
- Accuracy:  $\pm 2\%$   $q_G = 50\%$
- Options: analogue output, BUS-Interface, heating jacket, contacts





# Flow Meters / Switches

## DSS

### Variable Area

Brass, stainless steel



- Water: 0.05 - 1 l/min ... 10 - 110 l/min
- $t_{max}$  100 °C;  $p_{max}$  **350 bar**
- Connection: G ¼ ... 1 ¼, ¼ ... 1 ¼" NPT female thread
- Accuracy:  $\pm 5\%$  of full scale



## SMV

### Variable Area

Brass, stainless steel



- Water: 0.1 - 1 l/min ... 10 - 110 l/min
- $t_{max}$  100 °C;  $p_{max}$  **350 bar**
- Connection: G ¼ ... 1 ¼, ¼ ... 1 ¼" NPT female thread
- Accuracy:  $\pm 5\%$  of full scale



## SMO / SMW

### Variable Area

Brass, stainless steel



- Water: 0.2 - 3 l/min ... 10 - 120 l/min
- $t_{max}$  100 °C;  $p_{max}$  **350 bar**
- Connection: G ¼ ... 1, ¼ ... ¾" NPT female thread
- Accuracy:  $\pm 5\%$  of full scale



## SMN

### Variable Area Switch

Brass, stainless steel



- Water: 1 - 100 l/min
- Fixed Switch point at  $\sim 1$  l/min falling flow
- $t_{max}$  100 °C;  $p_{max}$  **350 bar**
- Connection: 1" NPT, G1 female thread
- Accuracy:  $\pm 5\%$  of full scale



## VKP

### Viscosity Compensated - Plastic

Polysulfone



- Water: 2 - 20 l/min ... 20 - 100 l/min
- Oil: 1 - 18 l/min ... 10 - 75 l/min
- $t_{max}$  120 °C;  $p_{max}$  16 bar
- Connection: G ½, G ¾ female/male thread, G1, 1" NPT male thread soldered or glue-in connection
- Accuracy:  $\pm 5\%$  of full scale



## VKG

### Viscosity Compensated

Brass, stainless steel

...VKG



...VKG + BVB



- Viscosity range: 1 - 540 mm<sup>2</sup>/s
- Oil: 0.1 - 0.45 l/min ... 5 - 80 l/min
- $t_{max}$  100 °C;  $p_{max}$  12 bar
- Connection: G ¼ ... 1, ¼ ... 1" NPT
- Accuracy:  $\pm 4\%$  of full scale





## VKM

### Viscosity Compensated

Brass, stainless steel

...VKM



...VKM + BVB



...VKM + ADI



- Viscosity range: 1 - 540 mm<sup>2</sup>/s
- Oil: 0.01 - 0.07 l/min ... 8 - 80 l/min
- t<sub>max</sub> 100 °C; p<sub>max</sub> 350 bar
- Connection: G ¼ ... 1, ¼ ... 1" NPT
- Accuracy: ± 4 % of full scale

## BVB

### Manifold Valves for Multiple Installation

Aluminium



- t<sub>max</sub> 100 °C; p<sub>max</sub> PN 64
- Connection: G ½ female thread
- Suitable for models: VKA, VKM, DSV, VKG

## PSR

### Paddle Switch

Brass, stainless steel



- Water: 2.3 - 4.7 l/min ... 47.6 - 67.2 l/min
- t<sub>max</sub> 110 °C; p<sub>max</sub> 250 bar
- Connection: G ¼ ... 1 ½, ¼ ... 1 ½" NPT female thread

## PSE

### Paddle Switch

Brass, stainless steel



- Water: 68 - 90 l/min ... 383 - 533 l/min
- t<sub>max</sub> 110 °C; p<sub>max</sub> 250 bar
- Connection: G ½, ½" NPT male thread

## PPS

### Paddle Switch

Polysulfone



- Water: 18 - 36 l/min ... 72 - 108 l/min
- t<sub>max</sub> 105 °C; p<sub>max</sub> 10 bar
- Connection: G 1, 1" NPT male thread
- Accuracy: ± 20 % of reading

## LPS

### Paddle Switch - Air

Brass



- Air: 1 - 8 m/s
- t<sub>max</sub> 85 °C; p<sub>max</sub> atmospheric
- Connection: Connection plate

## FPS

### Paddle Bellow Switch

Brass, stainless steel



- Water: 0.17 - 0.85 m<sup>3</sup>/h ... 72.6 - 165.7 m<sup>3</sup>/h
- t<sub>max</sub> 120 °C; p<sub>max</sub> 30 bar
- Connection: G ½, G ¾ female thread, R 1, 1" NPT male thread



# Flow Meters / Switches

## DPT

### Paddle Torsion - Meter / Switch

Brass, stainless steel

Compact Electronics  
...C3



Digital Display  
...K



- Water: 5 - 30 l/min ... 850 - 1900 l/min
- $t_{max}$  80 °C;  $p_{max}$  PN 40
- Connection: G 3/8 ... 3, 3/4 ... 3" NPT female
- Accuracy:  $\pm 3\%$  of full scale



## TSK

### Flap Meter / Switch

Steel, stainless steel, PTFE, Hastelloy®



- Water: 0.5 - 3.5 m³/h ... 200 - 1500 m³/h
- $t_{max}$  300 °C;  $p_{max}$  PN 40
- Connection: wafer flange DN25 ... 500, ANSI 1 ... 20"
- Accuracy: from  $\pm 2.5\%$  of full scale
- Option: Analog output, switching output BUS - interfaces



## DRS

### Turbine Wheel - ...

Brass, stainless steel, PPO

Pulse Output  
...S0



Analogue Output  
...L3



... L4 + AUF

Compact Electronic  
...C3



Counter  
...+ ZED



- Water: 2 - 40 l/min
- $t_{max}$  150 °C;  $p_{max}$  200 bar
- Connection: G 1/2, G 3/4, 3/4" NPT
- Accuracy: from  $\pm 1.5\%$  of full scale



max 150 °C

max 150 °C



## TUR

### Turbine Wheel - ...

PVC, PVDF

Pulse Output  
TUR-1



Analogue Output  
TUR-2...M



Compact Electronics  
TUR-2...C3



Digital Display  
TUR-2...K



- Water: 0.2 - 5 m³/h ... 2.5 - 100 m³/h
- $t_{max}$  70 °C;  $p_{max}$  10 bar
- Connection: flange DN25 ... 100
- Accuracy:  $\pm 1\%$  of full scale





## DPE

### Turbine Wheel - ...

Brass, stainless steel

Pulse Output  
...F / L



Analogue Output  
...+ AUF



Compact Electro.  
...C3



Digital Display  
...+ ADI-1



Dosing Electronics  
...+ ZED



- Water: 5 - 30 l/min ... 50 - 750 l/min
- $t_{\max}$  80 °C;  $p_{\max}$  PN 40
- Connection: G 1/2 ... 3, 1/2 ... 3" NPT female thread, weld-on sleeve DN25 ... 80
- Accuracy:  $\pm 2.5\%$  of full scale

## DRB

### Turbine Wheel - ...

Brass, stainless steel

Pulse Output  
...F / L



Analogue Output  
...+ AUF



Compact Electro.  
...C3



Digital Display  
...+ ADI-1



Dosing Electronics  
...+ ZED



- Water: 5 - 30 l/min ... 50 - 750 l/min
- $t_{\max}$  80 °C;  $p_{\max}$  16 bar
- Connection: G 1/2 ... 3, 1/2 ... 3" NPT female thread, weld-on sleeve DN25 ... 80
- Accuracy:  $\pm 3\%$  of full scale

## TUV

### Turbine Wheel - Pulse Output

Stainless steel



- Water: 0.3 - 1.5 l/min ... 35 - 400 l/min
- $t_{\max}$  350 °C;  $p_{\max}$  630 bar
- Connection: G 1/4 ... 1 1/2 female thread
- Accuracy:  $\pm 1\%$  of reading



## SFL

### Turbine Wheel - Pulse Output

PVDF, Stainless steel



- Water: 0.5 - 20 l/min
- $t_{\max}$  90 °C;  $p_{\max}$  250 bar
- Connection: G 3/8
- Accuracy:  $\pm 1\%$  of full scale

## DOT

### Turbine Wheel

Stainless steel



- Water: 0.11 - 1.1 m³/h ... 270 - 2700 m³/h
- $t_{\max}$  120 °C;  $p_{\max}$  250 bar
- Connection: G 1/2 ... 2, 1/2 ... 2" NPT, flange DN 15 ... 300
- Accuracy:  $\pm 0.5\%$  (linearity)





# Flow Meters / Switches

## KFF-1 / KFG-1

### Rotating Vane - Low Volume

Brass, Ryton®



- Water: 15 - 100 ml/min ... 1 - 10 l/min
- Air: 10 - 50 ml/min ... 100 - 500 l/min
- $t_{max}$  50 °C;  $p_{max}$  35 bar
- Connection: hose connection 1/8" ... 1/2"
- Accuracy:  $\pm 3\%$  of full scale



## KFF-3 / KFG-3

### Rotating Vane - Low Volume

Brass, Ryton®



- Water: 13 - 100 ml/min ... 0.25 - 5 l/min
- Air: 10 - 50 Nml/min ... 2 - 10 NI/min
- $t_{max}$  50 °C;  $p_{max}$  35 bar
- Connection: hose connection 1/8" ... 1/2"
- Accuracy:  $\pm 3\%$  of full scale



## DPM

### Rotating Vane - Low Volume - ...

Brass, stainless steel

Pulse Output  
...F5



Analogue Output  
...L3 ... L4 + AUF



Compact Electronics  
...C3



Counter  
...+ ZED



- Water: 0.015 - 0.7 l/min ... 0.05 - 5 l/min
- $t_{max}$  80 °C;  $p_{max}$  16 bar
- Connection: G 1/8, G 1/4, 1/8" NPT, 1/4" NPT female thread
- Accuracy:  $\pm 1... \pm 2.5\%$  of full scale

## DPL

### Rotating Vane - Low Volume - ...

Polypropylene

Pulse Output  
...F5



Analogue Output  
...L3 ... L4 + AUF



Compact Electronic  
...C3



Counter  
...+ ZED



- Water: 0.025 - 0.5 l/min ... 1 - 25 l/min
- $t_{max}$  70 °C;  $p_{max}$  10 bar
- Connection: G 1/2 male thread, hose nozzle
- Accuracy:  $\pm 2.5\%$  of full scale

## DF

### Rotating Vane - ...

Trogamide®, polysulfone, brass, polypropylene, stainless steel

Pulse Output  
...H



Analogue Output  
...MA



Switch  
...WM



Digital Display  
...K



Counter  
...Z



Dosing Electronic  
...D



- Water: 0.08 - 0.5 l/min ... 40 - 160 l/min
- $t_{max}$  80 °C;  $p_{max}$  100 bar
- Connection: G 1/4 ... 1 1/2, 1/4 ... 1 1/2" NPT female thread, flange DN 15 ... 50, ANSI 1/2 ... 2"
- Accuracy:  $\pm 2.5\%$  of full scale



# Flow Meters / Switches

## DFT

### Rotating Vane - ...

Brass, PTFE  
Pulse Output  
11



Pulse Output  
13



Counter/Dosing Electronic  
13...E/G



- Water: 0.2 - 2 l/min ... 3 - 60 l/min
- $t_{max}$  80 °C;  $p_{max}$  16 bar
- Connection: G 1/4 ... 3/4, 1/4 ... 3/4" NPT female thread
- Accuracy:  $\pm 2.5\%$  of full scale

## DRH

### Rotating Vane - ...

POM, PVDF, brass, stainless steel  
Analogue Output  
...F / L



Analogue Output  
... + AUF



Compact Electronics  
...C3



Digit Disp / Counter / Dosing  
...E / G



- Water: 0.2 - 0.8 l/min ... 2.5 - 50 l/min
- $t_{max}$  80 °C;  $p_{max}$  100 bar
- Connection: G 3/8, G 1, 3/8" NPT, 1" NPT female thread
- Accuracy:  $\pm 2.5\%$  of full scale

## DRG

### Rotating Vane - ...

Polypropylene, brass, stainless steel  
Pulse/Analo. Output  
...F / L



Analogue Output  
... + AUF



Compact Electronics  
...C3



Digit Disp / Counter / Dosing  
...+ ADI-1/ZED



- Water: 0.5 - 12 l/min ... 10 - 140 l/min
- $t_{max}$  80 °C;  $p_{max}$  40 bar
- Connection: G 1/2 ... 1, 1/2 ... 1" NPT female thread
- Accuracy:  $\pm 3\%$  of full scale

## DTK

### Rotating Vane - Low Volume

Stainless steel



- Water: 0.05 - 0.6 l/min ... 1 - 12 l/min
- $t_{max}$  140 °C;  $p_{max}$  30 bar
- Connection: G 1/4, 1/4" NPT female thread
- Accuracy:  $\pm 2\%$  of full scale



# Flow Meters / Switches

## OVZ

### Oval Wheel - ...

POM, aluminium  
Pulse Output  
...I4



Analogue Output  
... L4 + AUF



Compact Electronics  
...C3



Dosing Electronics  
...+ ZED



- Viscosity range: 10 - 800 mm<sup>2</sup>/s
- Oil: 0.1 - 2.0 l/min ... 1.6 - 40 l/min
- t<sub>max</sub> 80 °C; p<sub>max</sub> 40 bar
- Connection: G 1/4 ... 3/4, 1/4 ... 3/4" NPT female thread
- Accuracy: ± 2.5 % of full scale

## DON

### Oval Wheel - ...

Aluminium, stainless steel  
Pulse- / Analogue Output



Digital Display  
...ZOK



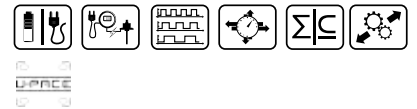
Universal Electronics  
...U-PACE



High Pressure  
...H



- Viscosity range: Up to 1 000 000 cP
- Oil: 0.5 - 36 l/h ... 150 - 2500 l/min
- t<sub>max</sub> 150 °C; p<sub>max</sub> 400 bar
- Connection: G 1/8 ... 4 female thread, 1/8" ... 4" NPT female thread, flange DN25 ... 100, ANSI 1 ... 4"
- Accuracy: ± 0.2 ... ± 1 % of reading



## DOE

### Oval Wheel - Pulse Output (OEM Version)

Stainless steel



- Viscosity range: up to 1000 cP
- Oil: 0.5 - 36 l/h ... 1 - 40 l/min
- Connection: G 1/8, G 1/4, 1/8" NPT, 1/4" NPT female
- Accuracy: ± 1 % of reading



## OME

### Screw Spindle - Meter

Aluminium



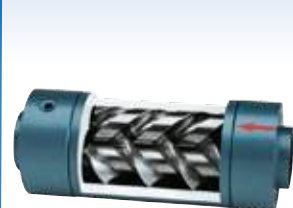
- Viscosity range: 1 - 5000 mm<sup>2</sup>/s
- Oil: 0.1 - 10 l/min ... 3.5 - 350 l/min
- t<sub>max</sub> 125 °C; p<sub>max</sub> 40 bar
- Connection: G 1/2 ... 1 1/2 female thread, flange DN 15 ... 40
- Accuracy: ± 0.1 % of reading



## OMG / OMH / OMS

### Screw Spindle - ...

Cast iron, stainless steel



- Viscosity range: 1 - 1x10<sup>6</sup> mm<sup>2</sup>/s
- Oil: 0.1 - 10 l/min ... 50 - 5000 l/min
- t<sub>max</sub> 200 °C; p<sub>max</sub> 400 bar
- Connection: G 1/2 ... 6 female thread, flange DN 15 ... 150
- Accuracy: ± 0.3 % of reading



## DZR

### Gear Wheel - Meter

Cast iron, stainless steel



- Viscosity range: 1 - 1 000 000 mm<sup>2</sup>/s
- Oil: 0.008 - 2 l/min ... 3 - 700 l/min
- t<sub>max</sub> 150 °C; p<sub>max</sub> 400 bar
- Connection: G 1/8 ... 1 female thread
- Accuracy: ± 0.3 ... ± 1 % of reading





# Flow Meters / Switches

## KZA

### Gear Wheel - Meter

Aluminium



- Viscosity range: 20 - 4000 mm<sup>2</sup>/s
- Oil: 0.02 - 4 l/min ... 1 - 200 l/min
- $t_{max}$  80 °C;  $p_{max}$  200 bar
- Connection: G 1/4 ... 1 female thread
- Accuracy:  $\pm 0.3... \pm 3\%$  of reading



## KAL - D

### Calorimetric - Indicator/Switch

Stainless steel



- Water: 0.04 - 2 m/s
- $t_{max}$  80 °C;  $p_{max}$  40 bar
- Connection: G 1/4, G 1/2, 1/4" NPT, 1/2" NPT, M12x1



## KAL

### Calorimetric - Meter/Switch

Stainless steel

Indicator  
...K



Meter  
...A(K)



- Water: 0.04 - 2 m/s
- $t_{max}$  120 °C;  $p_{max}$  100 bar
- Connection: G 1/4 ... 1 1/2, 1/4 ... 3/4" NPT, M12, Tri-Clamp<sup>®</sup>
- Accuracy:  $\pm 10\%$  of full scale [A(K)]



## KAL / KAL - E

### Calorimetric - Meter/Switch

Brass, stainless steel



- Water: 0.04 - 2 m/s
- $t_{max}$  120 °C;  $p_{max}$  100 bar
- Connection: G 1/4 ... 1 1/2, 1/4 ... 3/4" NPT, M12x1



## KAL - L

### Calorimetric - Switch

Brass



- Air: 1 - 20 m/s
- $t_{max}$  120 °C;  $p_{max}$  8 bar
- Connection: G 1/2, Rp 1/2, M18, flange, smooth shaft
- Accuracy:  $\pm 10\%$  of reading



## DVK

### Calorimetric - Meter/Switch

Stainless steel



- Air: 1 - 10 NI/min ... 50 - 500 NI/min
- $t_{max}$  50 °C;  $p_{max}$  15 bar
- Connection: G 1/4 ... 1/2
- Accuracy:  $\pm 5\%$  of full scale



## KAH

### Air velocity sensor

Polycarbonate



- Air: 0 ... 10/15/20 m/s
- Output signal: 0 - 10 V<sub>DC</sub> or 4 - 20 mA
- Supply voltage: 24 V<sub>AC/DC</sub>
- Connection: mounting adapter
- Accuracy:  $\pm (0.2 \text{ m/s} + 3\% \text{ of reading})$





# Flow Meters / Switches / Controllers

## MAS

### Mass - Flow Meter - Thermal

Nylon®, stainless steel



- Air: 0 - 10 Nml/min ... 0 - 500 NI/min
- $t_{max}$  50 °C;  $p_{max}$  35 bar
- Connection: ¼" NPT female thread, Swagelok®
- Accuracy: ± 1.5 % of full scale



## MAK

### Thermal Mass Flow Meter

Stainless steel



- Measuring range: 0 - 10 Nml/min ... 0 - 500 NI/min
- $t_{max}$  50 °C;  $p_{max}$  6 bar
- Connection: ¼" NPT, ¼" - ½" clamp connection
- Accuracy: ± 1.5 % of full scale
- Option: Needle Valve
- Selectable gases
- Analogue output (selectable), Counter, Modbus



## DMS

### Mass - Meter / Controller - Thermal

Stainless steel



- Air: 0.1 - 3.7 Nml/min ... 0 - 185 NI/min
- $t_{max}$  50 °C;  $p_{max}$  35 bar
- Connection: ¼" ... ½" NPT female thread, clamp connection
- Accuracy: ± 1 % of full scale



## KET

### Mass - Flow Meter - Thermal

Aluminium , stainless steel



- Measuring range: 0.1 - 50 ... 0.1 - 224 m/s
- $t_{max}$  80 °C;  $p_{max}$  40 bar
- Connection: G ½ ... 2, ½ ... 2" NPT female
- Accuracy: ± 1.5% of reading (Option: ± 1.0% of reading) ± 0.3% of full scale



## KEP - 1

### Thermal Mass Flow Meter

Stainless steel



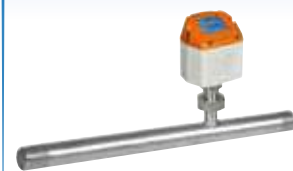
- Air: 0.1 - 50 ... 0.1 - 224 m/s
- $t_{max}$  110 °C;  $p_{max}$  50 bar
- Connection: G ½, ½" NPT male
- Accuracy: ± 1.5% of reading (Option: ± 1.0% of reading) ± 0.3% of full scale



## KEP - 2

### Thermal Mass Flow Meter

Stainless steel



- Air: 0.1 - 50 ... 0.1 - 224 m/s
- $t_{max}$  110 °C;  $p_{max}$  40 bar
- Connection: G ¼ ... 2, ¼ ... 2" NPT male thread, flange DN 15 ... 80, ANSI ½ ... 3"
- Accuracy: ± 1.5% of reading (Option: ± 1.0% of reading) ± 0.3% of full scale



## KEC-1/ KEC-3

### Mass - Flow Meter - Thermal

Stainless steel



- Air: 0.1 - 50 ... 0.1 - 224 m/s
- $t_{max}$  180 °C;  $p_{max}$  100 bar
- Connection: G ½, ½" NPT male thread, flange DN 15 ... 80
- Accuracy: ± 1.5% of reading (Option: ± 1.0% of reading) ± 0.3% of full scale



## KEC-2/ KEC-4

### Mass - Flow Meter - Thermal

Stainless steel



- Air: 0.1 - 50 ... 0.1 - 224 m/s
- $t_{max}$  180 °C;  $p_{max}$  40 bar
- Connection: G ¼ ... 2, ½ ... 2" NPT male thread, flange DN 15 ... 80, ANSI ½ ... 3"
- Accuracy: ± 1.5% of reading (Option: ± 1.0% of reading) ± 0.3% of full scale





## KME

### Mass - Flow Meter - Thermal

Aluminium



- Air: 0.2 - 76.3 ... 2.2 - 848.2 Nm<sup>3</sup>/h
- t<sub>max</sub> 60 °C; p<sub>max</sub> 16 bar
- Connection: G ½ ... 2, ½ ... 2" NPT male thread
- Accuracy: ± 3% of reading + 0.3 % of full scale



## TMU - W

### Coriolis Mass (for H2 filling stations and high pressure applications)

Stainless steel



- Measuring range: max. 4 kg/min H2 (p<sub>nom</sub> 1000 bar)
- Temperature range: -40 ... +100 °C (H2 dispenser -40 ... +55 °C)
- p<sub>max</sub> up to 1000 bar
- Connection: 6MF 9/16-18 UNF (optional: ½" NPT (female); Hofer 7/8")
- Accuracy: ± 0.5 % actual flowrate ± zero-point stability (gases), 0.1% for liquids + NP stability



## HPC

### Coriolis Mass - Mini

Stainless steel



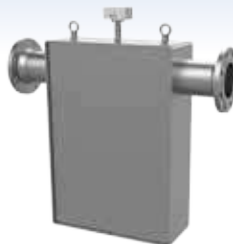
- Measuring range: 0 - 20 kg/h ... 0 - 50 kg/h
- t<sub>max</sub> 180 °C; p<sub>max</sub> PN 100/PN 320/PN 400
- Connection: ½" NPT, 6/8/10mm Gyrolok®/Swagelok®
- Accuracy: ± 0.1 % of reading +/- zero point stability



## TMU/UMC - 4

### Coriolis Mass

Stainless steel, Hastelloy®, Tantalum



- Water: 60 - 600 ... 400 000 - 2 200 000 kg/h
- t<sub>max</sub> 260 °C; p<sub>max</sub> PN 40 (up to 750 bar on request)
- Connection: flange DN 10 ... 400, ANSI ½ ... 16"
- Accuracy: ± 0.1 % of reading



## TMU - ... AC

### Coriolis Mass with Heating

Stainless steel, Hastelloy®



- Water: 60 - 600 ... 400 000 - 2 200 000 kg/h
- t<sub>max</sub> 260 °C; p<sub>max</sub> PN 40
- Connection: flange DN10 ... 400, ANSI ½ ... 16"
- Accuracy: ± 0.1 % of reading



## KPL

### Orifice Plate - Differential Pressure

Steel, stainless steel, Hastelloy® C, titanium, Monel®, Tantalum



- Ranges: for liquids, gases, steam according to ISO 5167 - 1
- Connection: DN 50 ... 600, ANSI 2 ... 24"
- t<sub>max</sub> 500 °C; p<sub>max</sub> PN 420/cl. 2500





# Flow Meters / Switches

## KPL-B/-F

### Orifice Plate - Differential Pressure

Steel, stainless steel, Hastelloy® C, titanium, Monel®, Tantalum



- Ranges: for liquids, gases, steam according to ISO 5167 - 1
- Connection: DN 50 ... 600, ANSI 2 ... 24"
- $t_{max}$  500 °C;  $p_{max}$  PN 420/cl. 2500



## ANU

### Pitot Tube - Differential Pressure

Stainless steel



- Connection: G 1 ... 1½", 1 ... 1½" NPT, DN 25 ... 80, ANSI 1 ... 3"
- Probe length: 50 ... 8000 mm (2 ... 315")
- $t_{max}$  1175 °C;  $p_{max}$  400 bar



## DUS

### Nozzle - Differential Pressure

Steel, stainless steel



- Nominal diameter: DN 50 ... 600 (2 ... 24")
- $t_{max}$  560 °C;  $p_{max}$  420 bar



## DVT

### Venturi tube - Differential Pressure

Steel, stainless steel



- Nominal diameter: DN 50 ... 1200 (2 ... 48")
- $t_{max}$  560 °C;  $p_{max}$  420 bar



## RCD

### Venturi Nozzle - Differential Pressure

Brass, stainless steel

Pointer Indicator ...Z



Compact Electronic ...C3



Digital Display ...K



- Water: 0.5 - 3.3 ... 300 - 2350 l/min
- Air: 0.5 - 5.35 ... 300 - 2750 Nm³/h
- $t_{max}$  100 °C;  $p_{max}$  PN 40
- Connection: G ½ ... 3, ½ ... 3" NPT female thread
- Accuracy:  $\pm 3\%$  of full scale



## MIK

### Magnetic Inductive - ...

PPS/stainless steel, PVDF/Hastelloy®, PPS/Hastelloy®, PVDF/Tantalum

Pulse Output ...F3



Analogue Output ... L4 + AUF



Monitor ...S3



Universal Electronics ...U-PACE



- Water: 10 - 500 ml/min ... 35 - 700 l/min
- $t_{max}$  80 °C;  $p_{max}$  10 bar
- Connection: G ½ ... 2¾ male thread
- Accuracy:  $\pm 2\%$  of full scale





## MIM

### Magnetic Inductive - All-Metal Design

Stainless steel

-40... 140 °C



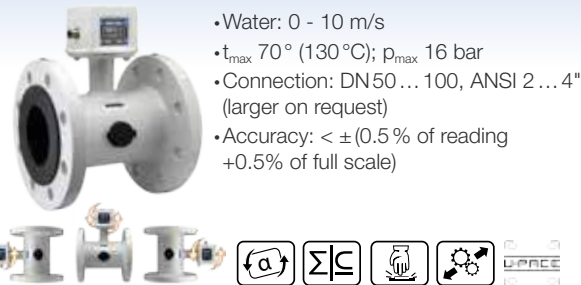
- Water: 10 - 1000 ml/min ... 3 - 650 l/min
- $t_{max}$  140 °C;  $p_{max}$  16 bar
- Connection: G 1/2 ... 2 male thread, NPT
- Accuracy:  $< \pm (0.8\% \text{ of reading} + 0.5\% \text{ of full scale})$



## MIS

### Magnetic Inductive - All-Metal Design

Lining: hard rubber, soft rubber, PTFE/PFA, EPDM, ceramics



- Water: 0 - 10 m/s
- $t_{max}$  70 ° (130 °C);  $p_{max}$  16 bar
- Connection: DN 50 ... 100, ANSI 2 ... 4" (larger on request)
- Accuracy:  $< \pm (0.5\% \text{ of reading} + 0.5\% \text{ of full scale})$



## PIT

### Magnetic Inductive - Insertion

Stainless steel / PTFE- or PFA-lining



- Water: 0.5 - 5 m/s or 1 - 10 m/s
- $t_{max}$  140 °C;  $p_{max}$  PN 40
- Connection: flange DN 40 ... 80, ANSI 2 ... 3", for pipelines DN 125 ... 2000
- Accuracy:  $\pm 1.5\% \text{ of reading} \pm 0.5\% \text{ of full scale}$
- IP 68
- Option: single dismantling device, dismantlable under pressure

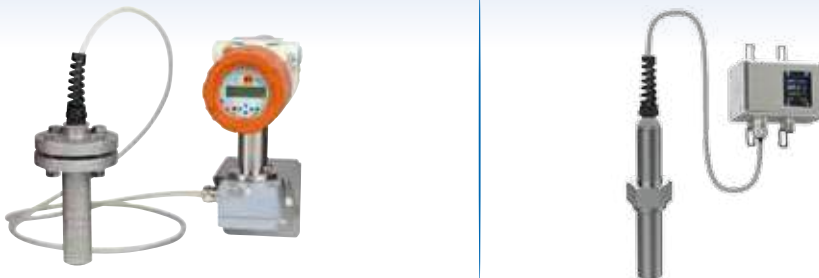


## PITe

### Magnetic Inductive - Insertion

Stainless steel

UMF2



- Water: 1 - 10 m/s
- $t_{max}$  100 °C;  $p_{max}$  PN 16
- Connection: weld-on nozzle  $\varnothing$  40 mm, sensor with union nut M52 x 2 for pipelines DN 50 ... 400, ANSI 2 ... 16"
- IP 65/IP 68 (UMF2); IP 65 (U-PACE)
- Accuracy:  $\pm 1.5\% \text{ of reading} (Q \geq 30\% \text{ of full scale})$ ,  $\pm 1.5\% \text{ of reading} \pm 2.5\% \text{ of full scale} (Q < 30\% \text{ of full scale})$



## EPS

### Magnetic Inductive

Lining: hard rubber, soft rubber, PTFE/PFA, EPDM, ceramics



- Water: 1 - 10 m/s
- $t_{max}$  150 °C;  $p_{max}$  PN 40
- Connection: flange DN 15 ... DN 1200, ANSI 1/2 ... 48", wafer type DN2 ... DN10, ANSI 1/2 ... 3/8", sanitary DN10 ... DN100, ANSI 1/8 ... 4"
- Accuracy:  $\pm 0.3\% \text{ of reading}$





# Flow Meters / Switches

## DVH

### Vortex - Meter

Stainless steel



- Water: max. 9.2 m/s
- Air/steam: max. 92 m/s
- $t_{max}$  400 °C;  $p_{max}$  PN 100;  $T_{min}$  -200 °C
- Connection: DN 15 ... 300, ANSI 1/2 ... 12"
- Option: integrated temperature and pressure sensor, wafer type
- Accuracy:  $\pm 0.7\%$  of reading (water)  
 $\pm 1\%$  of reading (gas/steam)
- BACnet®, Modbus® TCP/IP on request



## DVE

### Vortex - Meter - Insertion Version

Stainless steel



- Water: max. 9 m/s
- Air/steam: max. 90 m/s
- $t_{max}$  400 °C;  $p_{max}$  PN 100
- Connection: 2" NPT, DN 50, ANSI 2" mountable in NW50 ... NW600
- Option: integrated temperature and pressure sensor, Installation/removal device
- Accuracy:  $\pm 1.2\%$  of reading (water)  
 $\pm 1.5\%$  of reading (gas/steam)
- BACnet®, Modbus® TCP/IP on request



## DVZ

### Vortex - Compact...

PPS/brass, PPS/stainless steel

Pulse Output ...F3

Analogue Output ...L / ...L4 + AUF

Universal Elec. ...U-PACE

Counter ...E

Switch ...S3

Dosing Electronic ...G

- Water: 0.5 - 4.5 l/min ... 10 - 100 l/min
- $t_{max}$  80 °C;  $p_{max}$  20 bar
- Connection: G 1/4 ... 1, 1/4 ... 1" NPT
- Accuracy:  $\pm 2.5\%$  of full scale



## DOG - 4 / DOG - 6

### Oscillation - Meter / Switch

Stainless steel



- Air: 0.12 - 12 m³/h ... 60 - 6000 m³/h
- Pressure drop: max. 50 mbar
- $t_{max}$  120 °C (for EX 60 °C);  $p_{max}$  PN 40
- Connection: flange DN 25 ... 200, ANSI 1 ... 8"
- Accuracy:  $\pm 1.5\%$  of reading
- Analogue output
- Pulse output, counter, flow computer

\* Sponsored by the Federal Ministry of Economics and Technology on the basis of a resolution of the German Bundestag



## DUC

### Ultrasonic Flowmeter - Clamp on

Stationary · portable



- Media: ultrasonic conducting liquids
- Temperature measuring range: -40 ... 150 °C
- Flow velocities: 0 ...  $\pm 30$  m/s
- Pipe sizes: DN 10 ... DN 6000
- For the most common or sound-conducting materials like steel and plastics
- Heat quantity measurement
- Accuracy: up to 1%





## DUK

### Ultrasonic - ...

Brass, stainless steel  
Pulse Output  
...F3

Analogue Output  
... L4 + AUF

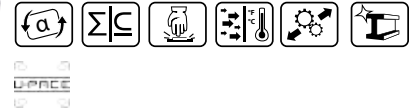
Universal Electronics  
...U-PACE



- Water: 0.01 - 10 l/min ... 2.5 - 630 l/min
- $t_{max}$  90°C;  $p_{max}$  16 bar
- **Turndown 250:1**
- Connection: G 1/2 ... 3 female thread
- Accuracy:  $\pm 0.7\%$  of full scale  
 $\pm 0.7\%$  of reading



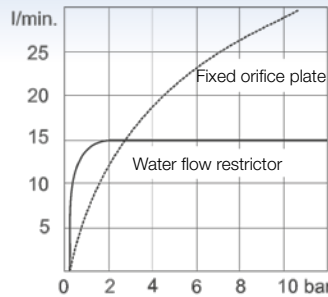
IO-Link



## REG

### Flow Restrictor

Brass, stainless steel



- Water: 0.5 - 560 l/min
- $t_{max}$  300°C;  $p_{max}$  200 bar
- Connection [single element]:  
G 1/2, G 3/4, 3/4" NPT
- Connection [multiple elements]:  
G 1 1/2 ... 2 1/2 flange DN 20 ... 100

## DAA/DAH

### Flow Indicator with Rotor

Brass, stainless steel



- Water: 0.4 - 4 l/min ... 8 - 100 l/min
- $t_{max}$  180°C;  $p_{max}$  16 bar
- Connection: G 1/4 ... 1 1/2,  
1/4 ... 1 1/2" NPT female thread



## DAF-1/-2

### Flow Indicator with Rotor

Brass, stainless steel



- Water: 0.03 - 0.1 l/min ... 5 - 150 l/min
- $t_{max}$  110°C;  $p_{max}$  16 bar
- Connection: G 1/8 ... 1 1/2,  
1/8 ... 1 1/2" NPT female thread,  
flange DN 15 ... 50, ANSI 1/2 ... 2"



## DKF

### Flow Indicator with Rotor

Brass



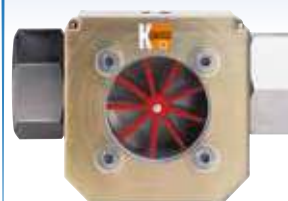
- Water: 0.14 - 2 l/min ... 1.8 - 83 l/min
- $t_{max}$  120°C;  $p_{max}$  6 bar
- Connection: G 1/8 ... 1,  
1/8 ... 1" NPT female thread



## DIH

### Flow Indicator with Rotor

Brass, stainless steel, POM



- Water: 0.2 - 0.5 l/min ... 1 - 50 l/min
- $t_{max}$  80°C;  $p_{max}$  16 bar
- Connection: G 3/8, G 1 female thread,  
3/8" NPT, 1" NPT





# Flow Meters/Indicators

## DIG

### Flow Indicator with Rotor

PP, brass, stainless steel



- Water: 0.5 - 12 l/min ... 3 - 80 l/min
- $t_{max}$  80 °C;  $p_{max}$  16 bar
- Connection: G 1/8 ... 1, 1/8 ... 1" NPT female thread



## DAR/DAK/DAT

### Flow Indicator with Rotor

Grey cast iron, cast steel, stainless steel



- $t_{max}$  260 °C;  $p_{max}$  40 bar
- Connection: G 1/4 ... 2, 1/4 ... 2" NPT female thread, flange DN 15 ... 200, ANSI 1/2 ... 8"



## DAI

### Sight glass flow indicator with rotor, flap, chain or ball

Carbon steel, stainless steel, PVC, PP, PVDF



- $t_{max}$  260 °C;  $p_{max}$  40 bar
- Connection: G 1/2 ... 3, 1/2" ... 3" NPT, DN 15 ... DN 200, ANSI 1/2" ... 8"



## DAZ

### Flow Indicator with Flap

Red cast iron



- Water/oil: 2.1 - 17 l/min ... 2.1 - 24 l/min
- $t_{max}$  200 °C;  $p_{max}$  16 bar
- Connection: G 1/2 ... 1 female thread



## DAB

### Flow Indicator with Ball

Red cast iron



- $t_{max}$  100 °C;  $p_{max}$  6 bar
- Connection: G 3/4 ... 2 female thread



## DKB

### Flow Indicator with Ball

Brass, stainless steel



- Water: 0.05 - 15 l/min ... 0.14 - 105 l/min
- $t_{max}$  200 °C;  $p_{max}$  16 bar
- Connection: G 1/8 ... 1 1/2, 1/8 ... 1" NPT female thread





## MAN - R

### Bourdon Tube Pressure Gauges - ...

Brass, stainless steel



- Measuring range: -1 ... 0 bar ... 0 ... +1 000 bar
- Housing: Ø 63, 80, 100, 160 mm
- Overload protected: 1.15 - 1.3 times
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy: cl. 1.0; 1.6



## MAN - R...S

### Bourdon Tube Pressure Gauges for Exceptional Safety

Stainless steel



- Measuring range: -0.6 ... 0 bar ... 0 ... +1 000 bar
- Housing: Ø 63, 100, 160 mm
- Overload protected: 1.3 times
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy: cl. 1,0
- Contact (NG100+160): up to 4 times (NG100 also for „Exceptional Safety“)
- Option: application specific design



## MAN - T

### Bourdon Tube - Refrigeration

Brass, stainless steel



- Measuring range: -1 ... +9 bar ... -1 ... +40 bar
- Housing: Ø 63, 80, 100 mm
- Overload protected: 1.3 times
- Connection: 7/16-20 UNF, G ¼ male thread
- Accuracy: cl. 1.0; 1.6



## MAN - K

### Capsule Element Pressure Gauges

Brass, stainless steel



- Measuring range: -10 ... 0 mbar ... 0 ... +600 mbar
- Housing: Ø 63, 80, 100, 160 mm
- Overload protected: 1.3 - 10 times
- Connection: G ¼, G ½ male thread
- Accuracy: cl. 1.6



## MAN - P

### Diaphragm Pressure Gauges

Stainless steel



- Measuring range: -16 ... 0 mbar ... 0 ... +40 bar
- Housing: Ø 100, 160 mm (Option: aluminium)
- Overload protected: 1.3 times
- Option: Overpressure 4 times, 10 times (max 40 bar)
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread, DIN/ANSI flange, DIN 11851
- Accuracy: cl. 1.6
- Contact: upto 4 times
- Option: application specific design



## MAN - C

### Diaphragm Pressure Gauges - Chemistry

Stainless steel



- Measuring range: -25 ... 0 mbar ... 0 ... +25 bar
- Housing: Ø 100 mm, 160 mm
- Overload protected: 1.3 times
- Connection: DIN, ANSI flange
- Accuracy: cl. 1.6
- Wetted parts ECTFE, PTFE



## MAN - V

### Pressure Transducer - Chemistry

Stainless steel



- Measuring range: -1 ... 0 bar ... 0 ... +600 bar
- Housing: Ø 100 mm
- Overload protected: 1.3 times
- Connection: G ½, ½" NPT male thread analogue output 4 - 20mA
- Accuracy: ≤ 0.5 % FS



## MAN - N...S

### Bourdon Tube Pressure Gauges - Exceptional Safety

Stainless steel



- Measuring range: -1 ... 0 bar ... 0 ... +1000 bar
- Housing: Ø 63, 80, 100, 160 mm
- Overload protected: 1.15 - 1.3 times
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy: cl. 1.0; 1.6



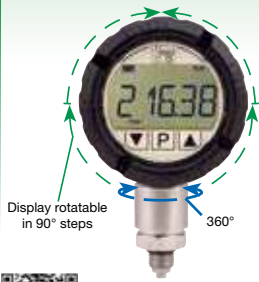


# Pressure Measurement

## MAN - SC

### Digital Pressure Gauge - Battery Powered

Stainless steel/PA glass fibre reinforced



- Measuring range: -0.6... 0 bar ... 0 ... +1 600 bar
- Fitting: Ø 80 mm
- Display: 5-digit LC-Display
- Overload protected: 1.5 - 3 times
- Connection: G ¼, G ½, ½" NPT, ½" NPT male
- Power supply: battery 9V
- Accuracy: cl. 0.5
- Option: Tare function, touch pads, peak value memory, protective rubber sleeve, temperature measuring



## MAN - LC

### Digital Pressure Gauge with IO-Link

Stainless steel/PA glass fibre reinforced



IO-Link

- Measuring range: -0.6... 0 bar ... 0 ... +1 600 bar
- Housing: Ø 80 mm
- Display: LC-Display
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male
- Power supply: 24 V<sub>DC</sub>
- Accuracy: cl. 0.5
- Option: Tare function, touchpads, peak memory, rubber protection sleeve, temperature measuring
- User configurable outputs option (upto 2 relay outputs possible)

## PUM

### U-Pipe Pressure Gauges

Glass



- Measuring range: -250...+250...-1500...+1500 mmWC
- Scale graduation: 2 mm
- Hose connection: Ø 7 mm
- Accuracy: ±0.2 mbar

## MAN - U

### Differential Pressure Gauge with double diaphragm

Stainless steel



- Measuring range: 0...+250 mbar...0...+25 bar
- Static pressure on both sides: 200 bar
- Housing: Ø 100 mm, 150 mm
- Connection: G ½, ½" NPT male, ¼" NPT female
- Accuracy: cl. 1.6

## MAN - Q

### Bourdon Tube Pressure Gauge

Brass, stainless steel



- Measuring range: -0.6... 0 bar ... 0 ... +1000 bar
- Housing: 96x96, 144x144 mm
- Overload protected: 1.3 times
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy: cl. 1.0
- Contact: upto 3 times
- Option: application-specific versions

## MAN - R HEAVY DUTY

### Bourdon Tube Pressure Gauge

Brass, stainless steel



- Measuring range: -600... 0 bar ... 0 ... +1000 bar
- Housing: Ø 100, 160 mm
- Overload protected: 1.3 times (Option multiple)
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy: cl. 1.0
- Contact: upto 4 times
- Option: application-specific versions
- Torsion-free + impact-resistant housing

## MAN - DG12R

### Differential Pressure Gauge with Bourdon Tube

Aluminium, steel



- Measuring range: 0...+1 bar...0...+60 bar
- Housing: Ø 160 mm
- Overload protected: 1.3 times - (short time)
- Connection: G ½ male thread
- Option: Contact
- Accuracy: cl. 1.6

## HND - P215 / - P126, - P236

### Hand-Held Pressure Measuring Device for Differential Pressure, 2 Sensors (Internal/External)



- Measuring range: +2.5 mbar ... +1000 bar depending on sensor
- Accuracy: ±0.1 % of full scale
- Measuring range: -100 ... +2000 mbar
- Accuracy: ±0.2 % of full scale
- Option: alarm, real-time clock





## PMP

### Differential Pressure Sensor - Thin Film



- Measuring range: 0 ... +50 mbar
- Power supply: 24 V<sub>AC/DC</sub>, 110 V<sub>AC</sub>, 230 V<sub>AC</sub>
- Display: 4-digit LED
- Connection: hose connection 6 x 8 mm



## PAD

### Differential Pressure Transmitter

Stainless steel, Monel®, Tantalum, Hastelloy®



- Measuring range: +0.75 mbar ... 413.70 bar
- Power supply: 12 ... 45 V<sub>DC</sub>
- Connection: ¼" NPT
- Accuracy: ±0.075 % of measuring span



## MAN - F

### Test Pressure Gauge with Bourdon Tube

Aluminium, brass, stainless steel



- Measuring range: -0.6 ... 0 bar ... 0 ... +2500 bar
- Housing: Ø 160, 250 mm
- Overload protected: 0.9 - 1.3 times
- Connection: G ½ male thread
- Accuracy: cl. 0.25; 0.6



## MAN - RF ... D

### Pressure Gauge with Membrane Diaphragm Seal

Stainless steel



- Measuring range: -1 ... 3 bar ... 0 ... +40 bar
- Housing: Ø 100 mm
- Connection: flange Ø 85 mm, LK 70 mm
- Accuracy: cl. 1.6
- Contact: upto 4 times
- Accessories: Weld-on flange, screw and gasket set
- Option: vibration damping, application-specific designs



## DRM

### Diaphragm, Capsule, Inline, Membrane Chemical Seals

Stainless steel, Tantalum, ECTFE



- Measuring range: 0 ... +0.6 bar ... 0 ... +1600 bar
- Filling: glycerine, paraffin- and silicone oil
- Connection: G/NPT/M-thread G ¼ ... G 1½ male thread, DIN, ANSI
- Diverse thread and flange connection, Tri-Clamp®, DIN 11851, SMS- and IDF-Norm
- Option: application-specific versions



## DRM

### Flange Diaphragm Seals

Stainless steel, Monel®, Tantalum, Hastelloy®, PTFE



- Standard version up to 350 °C / 40 bar: DN25 ... DN100, ANSI 1 ... 4"
- Special version up to 400 bar: up to DN200, ANSI 8"
- Flanges according to BS, JIS and GOST Standard
- All possible also with extended diaphragm



## MAN - RF ... DRM - 600

### Bourdon Tube Pressure Gauge + Membrane Diaphragm

Stainless steel



- Measuring range: 0 ... +4 bar ... 0 ... +1600 bar
- Housing: Ø 63, 100, 160 mm
- Connection: G/NPT/M-thread G ¼ ... G 1½ male thread
- Accuracy: cl 1.6 (NG63 = 2.5)
- Option: application-specific versions



## MAN - RF ... MZB - 711 ... DRM

### Pressure Gauge + Diaphragm Seal upto 350°C

Stainless steel



- Measuring range: 0 ... +4 bar ... 0 ... +600 bar
- Housing: Ø 63, 100, 160 mm
- Connection G/NPT/M-thread G ¼ ... G 1½ male thread, DIN, ANSI, Tri-Clamp®, DIN 11851, SMS/IDF-Norm
- Accuracy: cl 1.6 (NG63 = 2.5)
- Contact (NG100+160): upto 4 times
- Option: application-specific versions





# Pressure Measurement

## MAN - RF ... M1 ... DRM - 620

### Pressure Gauge with Membrane Diaphragm

Stainless steel



- Measuring range: 0 ... +1 bar ... 0 ... +40 bar
- Housing: Ø 100, 160 mm
- Diverse thread and flange connection, Tri-Clamp®, DIN 11851, SMS- and IDF-Norm
- Accuracy: cl. 1.6



## MAN - RF ... DRM - 502

### Pressure Gauge with In-Line Diaphragm

Stainless steel



- Measuring range: +1.6 ... +40 bar ... +2.5 ... +40 bar
- Housing: Ø 100, 160 mm
- Connection: Tri-Clamp® ½ ... 2", hygienic connection ISO DN 15 ... 50
- Accuracy: cl. 1.6



## MAN - RF ... M21 ... DRM - 602

### Cont. Pres. Gauge + Membrane Diaphragm Seal DIN 11851

Stainless steel



- Measuring range: 0 ... +1 bar ... 0 ... +40 bar
- Housing: Ø 100, 160 mm
- Connection: DIN 11851 DN 20 ... 100
- Accuracy: cl. 1.6



## MAN - RF ... DRM - 603

### Pressure Gauge + Membrane Diaphragm Seal, DIN 11851

Stainless steel



- Measuring range: 0 ... +1 bar ... 0 ... +40 bar
- Housing: Ø 100 mm
- Connection: DIN 11851 DN 25 ... 100
- Accuracy: cl. 1.6



## MAN - RF ... DRM - 613

### Pressure Gauge + Diaphragm Seal Clamp Connection

Stainless steel



- Measuring range: 0 ... +2.5 bar ... 0 ... +10 bar
- Housing: Ø 100 mm
- Connection: Tri-Clamp® 1 ... 3"
- Accuracy: cl. 1.6



## MAN - RF ... P21 ... DRM - 600

### Cont. Pressure Gauge + Membrane Diaphragm

Stainless steel



- Measuring range: 0 ... +160 bar ... 0 ... +800 bar
- Housing: Ø 100 mm
- Connection: Diaphragm seal thread G ¾ male thread
- Silicone-free
- Accuracy: cl. 1.6
- Contact: Pneumatic, magnetic spring contact
- Option: application-specific versions



## MAN - SC ... DRM - 189

### Digi. Press. Gauges + Diaphragm Seals (f. homogenizing mach.)

Stainless steel



- Measuring range: 0 ... +100 bar ... 0 ... +1000 bar
- Housing: Ø 80 mm
- Membrane: flush mounted
- Connection: for block flange/thread
- Accuracy: cl. 1.0
- Tara function, touchpads, peak memory
- Option: Temperature measurement



## SEN ... DRM - 600

### Pressure Sensor with Diaphragm Seal

Stainless steel



- Measuring range: 0 ... +6 bar ... 0 ... +600 bar
- $t_{max}$  70 °C
- Connection: G ½ ... G 1½ male, stainless steel
- Option: Plug-on Display
- Accuracy: cl. 1.0





## SEN... DRM - 189

### Press. Sensor + Diaphragm Seals (for homogenizing machines)

Stainless steel



- Measuring range: 0...+100 bar...0...+1000 bar
- Membrane: flush mounted
- $t_{max}$  100°C
- Connection: for block flange/thread
- Option: Plug-on Display
- Accuracy: cl. 1.0



## MAN - SC... DRM - 630

### Digi. Pressure Gauge + Membrane Diaphragm Seal

PVC



- Measuring range: 0...+1.6 bar...0...+10 bar
- Housing: Ø 80 mm
- Connection: G ¼, G ½, ½" NPT female
- Accuracy: cl. 1.0
- Tara function, touchpads, peak memory
- Option: Temperature measurement



## MAN - RD... DRM - 632

### Pressure Gauge with Membrane Diaphragm Seal PVDF

PVDF



- Measuring range: 0...+1.6 bar...0...+16 bar
- Housing: Ø 63 mm
- Connection: G ¼, G ½, ½" NPT female
- Accuracy: cl. 2.5



## PDA

### Pressure Sensor with Ceramic Cell

Stainless steel



- Measuring range: -1...0 bar...0...+700 bar
- $t_{max}$  80°C
- Display: 3-digit LED
- Connection: G ¼, G ½, ¼" NPT, ½" NPT male thread
- Accuracy:  $\pm 0.5... \pm 1\%$  of full scale



## PAS

### Pressure Transmitter

Stainless steel, Hastelloy®-C, Tantalum



- Measuring range: -1...+600 bar
- Power supply: 12...45 V<sub>DC</sub>
- Connection: ½" NPT female
- Accuracy:  $\pm 0.075\%$  of calibrated span



## PAS... N

### Pressure Transmitter with Diaphragm Seal

Stainless steel, Monel®, Tantalum, Hastelloy®, PTFE



- Measuring range: 0...+250 mbar...0...+600 bar
- $t_{max}$  200°C
- Connection: thread or with flange (nominal size 15...100)
- Accuracy:  $\pm 0.075\%$  of calibrated span + influence of diaphragm seal



## PAS... N

### Pressure Transmitter with Diaphragm Seal

Stainless steel, Monel®, Tantalum, Hastelloy®, PTFE



- Measuring range: 0...+250 mbar...0...+600 bar
- $t_{max}$  350°C
- Connection: thread or flange (nominal size 15...100)
- Accuracy:  $\pm 0.075\%$  of calibrated span + influence of diaphragm seal



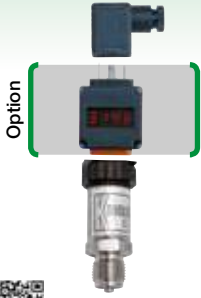


# Pressure Measurement

## SEN - 8

### Pressure Sensor with Ceramic Cell

Stainless steel



- Measuring range: 0 ... +0.6 bar ... 0 ... +800 bar
- $t_{max}$  85 °C (Option:  $t_{max}$  125 °C)
- Connection: G 1/4 ... G 2, NPT, 7/16 UNF
- Overload protected: 1.2 - 2 times (max. 800 bar)
- Accuracy: cl. 0.5
- Output: 4 ... 20 mA, 0 ... 10 V
- Cable and plug connection (IP65 to IP68)
- Option: plug-on Display, absolute pressure, application-specific versions



## SEN - 8

### Pressure Sensor with Ceramic Cell

Stainless steel



- Measuring range: 0 ... +0.6 bar ... 0 ... +800 bar
- $t_{max}$  85 °C (Option:  $t_{max}$  125 °C)
- Connection: G 1/4 ... G 2, NPT, 7/16 UNF
- Overload protected: 1.5 - 8 times (max. 800 bar)
- Accuracy: cl. 0.5
- Output: 4 ... 20 mA, 0 ... 10 V
- Cable and plug connection (IP65 to IP68)
- Option: Heavy Duty (plug protection), application-specific versions



## SEN - 96

### Pressure Sensor with Ceramic Cell

Stainless steel



- Measuring range: -1 ... 0 bar ... 0 ... +600 bar
- Overload protected: 1.3 - 5 times
- Connection: G 1/4, 1/2, 1/4" NPT, 1/2" NPT male thread
- Option: Plug-on Display
- Accuracy:  $\leq \pm 0.5\%$  of full scale



## SEN - 98 / - 99

### Pressure Sensor with Ceramic Cell

Stainless steel



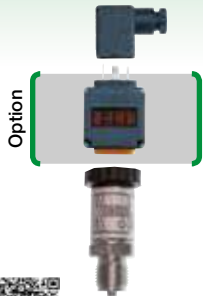
- Measuring range: -1 ... 0 bar ... 0 ... +600 bar (rel)  
0 ... 1 bar ... 0 ... +25 bar (abs)
- Overload protected: 1.3 - 5 times
- Connection: G 1/4, 1/2, 1/4" NPT, 1/2" NPT male thread
- Option: Plug-on Display
- Accuracy:  $\pm 0.5\%$  of measuring range



## SEN - 3276, - 3277

### Pressure Sensor - Piezoresistive

Stainless steel



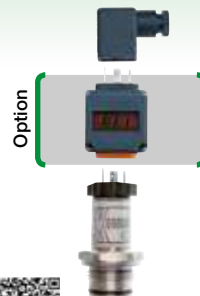
- Measuring range: -1 ... 0 bar ... 0 ... +25 bar
- Membrane: internal
- Overload protected: 2 - 3.5 times
- Connection: G 1/4, 1/2, 1/4" NPT, 1/2" NPT male thread
- Option: Plug-on Display, absolute pressure
- Accuracy: cl. 0.25; 0.5
- Oil-, fat free
- LABS-free



## SEN - 3251, - 3252

### Pressure Sensor Industrial Piezoresistive - Flush Mounted

Stainless steel



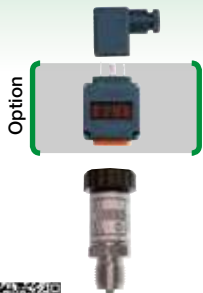
- Measuring range: -1 ... 0 bar ... 0 ... +25 bar
- Membrane: flush mounted
- Overload protected: 2 - 3.5 times
- Connection: G 1/2, G 1 male thread
- Option: Plug-on Display
- Accuracy: cl. 0.25; 0.5
- Absolute pressure
- Oil-, fat free
- LABS-free



## SEN - 3376, - 3377

### Pressure Sensor Industrial Thin Film

Stainless steel



- Measuring range: 0 ... +40 bar ... 0 ... +1000 bar
- Membrane: internal
- Overload protected: 1.5 - 3 times
- Connection: G 1/4, 1/2, 1/4" NPT, 1/2" NPT male thread
- Option: Plug-on Display, absolute pressure
- Accuracy: cl. 0.25; 0.5



## SEN - 3344, - 3386

### Pressure Sensor Piezoresistive/Thin Film - Flush Mounted

Stainless steel



- Measuring range: 0 ... +40 bar ... 0 ... +600 bar
- Membrane: flush mounted
- Connection: G 1/2 male thread
- Option: Plug-on Display
- Accuracy: cl. 0.25; 0.5





## HND

### Pressure Hand-Held Unit - ...

for External Sensors  
... -P210, -215



with 2 Integrated Sensors  
... -P121, -123, -126



with 1 Integrated Sensor  
... -P129, -P239



- Measuring range: -1.999 ... +2.5 mbar ... 0 ... +1000 bar (sensor dependent)
- Accuracy:  $\pm 0.1\%$  of full scale
- Measuring range: -1 ... +25 mbar ... -100 ... +2000 mbar
- Accuracy:  $\pm 0.2\%$  of full scale
- Measuring range: 0 ... +1300 mbar (abs)
- Accuracy:  $\pm 0.2\%$  of full scale
- Option: logger, alarm



## PDD

### Pressure Switch with Ceramic Cell

Stainless steel



- Measuring range: -1 ... 0 bar ... 0 ... +700 bar
- $t_{max}$  80 °C
- Display: 3-digit LED
- Overload protected: 1.5 - 3 times
- Connection: G 1/4, G 1/2, 1/4" NPT, 1/2" NPT male thread
- Accuracy:  $\pm 0.5\% \dots \pm 1\%$  of full scale

## SCH - PSB

### Differential Pressure Switch for neutral gases

Plastic



- Switching range: 20 ... 300 Pa ... 200 ... 1000 Pa
- Connection: stub 6 mm
- $t_{max}$  70 °C
- Micro switch

## PSD

### Electronic Pressure Switch -

Stainless steel



- Measuring range: -1 ... +1.5 bar ... 0 ... +600 bar
- Display: 4-digit LED
- Connection: G 1/4 male thread, others with adapter
- Accuracy:  $\pm 0.5\%$  of full scale



## MZB - 712 / ...

### Accessories, Adapter for Elec. Press. Switch - PSD

Stainless steel



- Connection: G 1/2, 1/4", 3/8" male thread or NPT, 7/16-20 UNF DIN 3866, G 1/2 DIN 3852-E, M 20 x 1.5



## MZB

### Pressure Gauges Accessories

Brass, steel, stainless steel



Shut off cocks and valves, syphons, cooling elements, throttle and overpressure protection equipment, adapters



## AUF

### Plug-On Display



- Input: 4 - 20 mA ; 2-wire or 3-wire
- 4-digit red LED, without additional power supply
- Option: Open-Collector, various colours





# Level Switches

**M**

## Float Magnet Switch

Brass, stainless steel, PVC, PPH, PVDF



- Density: min. 0.5 kg/dm<sup>3</sup>
- t<sub>max</sub> 150 °C; p<sub>max</sub> 100 bar
- Connection: thread G/NPT, flange DIN/ANSI



**MS**

## Float Magnet Switch

Brass, stainless steel, PVC, PPH, PVDF



- Density: min. 0.6 kg/dm<sup>3</sup>
- t<sub>max</sub> 150 °C; p<sub>max</sub> 100 bar
- Connection: thread G/NPT, flange DIN/ANSI



**NBA/NBE**

## Float Bypass Switch

Aluminium, stainless steel



- Density: min. 0.65 kg/dm<sup>3</sup>
- t<sub>max</sub> 150 °C; p<sub>max</sub> 10 bar
- Connection: G 3/8 female thread, R 1/2 male thread



**NKP**

## Level Switch - Plastic

Polypropylene, PVDF



- Density: min. 0.6 kg/dm<sup>3</sup>
- t<sub>max</sub> 100 °C; p<sub>max</sub> 10 bar
- Connection: G 1/2, 1/2" NPT, M 16



**RFS**

## Float Switch

Stainless steel



- Density: min. 0.7 kg/dm<sup>3</sup>
- t<sub>max</sub> 120 °C; p<sub>max</sub> 10 bar
- Connection: 1/2" NPT male thread



**NV**

## Float Switch

Brass, stainless steel



- Density: min. 0.7 kg/dm<sup>3</sup>
- t<sub>max</sub> 110 °C; p<sub>max</sub> 16 bar
- Connection: G 3/4 male, M27 x 1.5 male



**NSP/NAB**

## Float Switch (for liquids)

Polypropylene



- Density: min. 0.5 kg/dm<sup>3</sup>
- t<sub>max</sub> 85 °C; p<sub>max</sub> 3,5 bar
- Connection: cable



**NAS**

## Level Switch (for bulk materials)

Polypropylene



- Density: min. 0.3 kg/dm<sup>3</sup>
- t<sub>max</sub> 85 °C; p<sub>max</sub> 3,5 bar
- Connection: cable





## NSM

### Float Switch

Polypropylene



- Density: min. 0.6 kg/dm<sup>3</sup>
- $t_{\max}$  95 °C;  $p_{\max}$  3 bar
- Connection: cable



## NEC

### Float Switch

Polypropylene, Hypalon®



- Density: 0.7 ... 1.15 kg/dm<sup>3</sup>
- $t_{\max}$  85 °C;  $p_{\max}$  4 bar
- Connection: cable



## NST

### Float Switch

PTFE



- Density: min. 0.79 kg/dm<sup>3</sup>
- $t_{\max}$  150 °C;  $p_{\max}$  1 bar
- Connection: cable



## NSE

### Float Switch

Stainless steel



- Density: min. 0.8 kg/dm<sup>3</sup>
- $t_{\max}$  150 °C;  $p_{\max}$  15 bar
- Connection: G ½ male thread



## NGS

### Dual Magnet Float Switch

Stainless steel



- Density: min. 0.7 kg/dm<sup>3</sup>
- $t_{\max}$  250 °C;  $p_{\max}$  25 bar
- Connection: square box flange, DIN-flange, DN80/100, BSP 2", 2" NPT



## NES

### Conductive Switch

Stainless steel, Hastelloy®, titanium/Coating: polypropylene, PTFE



- $t_{\max}$  150 °C;  $p_{\max}$  30 bar
- Connection: G ½, G 1 ½ male thread



## NEH

### Conductive Suspended Electrodes

Stainless steel, Hastelloy®, titanium, rubber hose, PVC, PTFE



- Cable: rubber hose, PTFE
- $t_{\max}$  150 °C;  $p_{\max}$  6 bar
- Connection: G ½, G 1 ½ male thread



## NEW

### Conductive Switch

Stainless steel, Hastelloy®, titanium/Coating: PTFE



- $t_{\max}$  60 °C;  $p_{\max}$  atmospheric
- Connection: G 1, G 1 ½ male thread





# Level Switches

## NEK

### Conductive Switch

PP, PPS



- $t_{max}$  85 °C;  $p_{max}$  20 bar
- Connection: R 3/4 male, 3/4" NPT male
- Open-Collector or relay



## LNK

### Conductive Switch

Stainless steel, PEEK



- Measuring range: 4 - 1500 mm
- $t_{max}$  100 °C (150 °C for CIP);  $p_{max}$  10 bar
- Connection: G 1/2 male, G 1 male, hygienic installation system LZE



## LNK-K

### Conductive Switch Compact Probe

Stainless steel, PEEK



- Measuring range: 4 - 1500 mm
- $t_{max}$  150 °C;  $p_{max}$  10 bar
- Connection: G 1/2 male, hygienic installation system LZE
- Open-Collector



## NE - 104, - 304

### Electrode Relays for Conductive Switches



- max 2 limit contacts or
- max 2 Min/Max control switches
- Switch capacity: max. 250 V<sub>AC</sub>, 5 A, 600 VA



## NE - 204

### Electrode Relay Overfill Protection



- 1 limit contact
- Switch capacity: max. 250 V<sub>AC</sub>, 5 A, 600 VA



## NE - 5048

### Electrode Relays for Conductive Switches



- 1 limit signal or 1 min/max controller
- Supply: 24...240 V<sub>AC</sub>/V<sub>DC</sub>
- Switch capacity: max. 250 V<sub>AC</sub>, 8A, 2000 VA, 240 W (DC)



## LNM

### Microwave - Switch (for liquids)

Stainless steel, PEEK



- $t_{max}$  100 °C (150 °C for CIP);  $p_{max}$  10 bar
- Connection: G 1/2 male thread, hygienic installation system LZE
- Open-Collector



## LNZ

### Capacitive Switch (for liquids)

Stainless steel, PEEK



- $t_{max}$  100 °C (150 °C for CIP);  $p_{max}$  10 bar
- Connection: G 1/2 male thread, hygienic installation system LZE
- Open-Collector





## NCW

### Capacitive Switch (for liquids)

Stainless steel, PVDF



- $t_{max}$  200 °C;  $p_{max}$  30 bar
- Connection: G 1, G 2 male thread, adapter: G 1¼, G 1½, weld-in sleeve
- 1 relay, SPDT



## NWS

### Turning Fork Switch (for liquids)

Stainless steel



- $t_{max}$  130 °C (150 °C for CIP);  $p_{max}$  45 bar
- Viscosity: max. 5000 mm<sup>2</sup>/s
- Connection: R- / NPT-thread, DIN- / ANSI-flange, Tri-Clamp®, DIN 11851, DIN 11864, DRD



## NSV

### Vibration Switch (for bulk materials)

Stainless steel



- Switching range: 230 - 3000 mm
- Density: 0.06 kg/dm<sup>3</sup>
- $t_{max}$  80 °C;  $p_{max}$  25 bar
- Connection: G 1½ male thread
- 1 relay, SPDT



## NVI

### Vibration Switch (for bulk materials)

Stainless steel, PE-coating for cable



- Probe length: up to 20 m
- Density: 0.05 kg/dm<sup>3</sup>
- $t_{max}$  160 °C;  $p_{max}$  25 bar
- Connection: G 1½, 1½" NPT male thread
- 1 relay, SPDT



## OPT

### Optical Switch (for liquids)

Polypropylene, stainless steel, sensor: polysulfone



- $t_{max}$  80 °C;  $p_{max}$  10 bar
- Connection: G ½, ½" NPT male thread or M 14 with bulkhead nut
- Open-Collector



## NMF

### Diaphragm Switch (for bulk materials)

Neoprene®, FPM, steel, stainless steel



- $t_{max}$  200 °C;  $p_{max}$  1 bar (over-pressure secure)
- Connection: flange





# Level Switches / Meters

## NIR - 9 / NIR - E9

### Rotation Vane Switch (for bulk materials)

Stainless steel

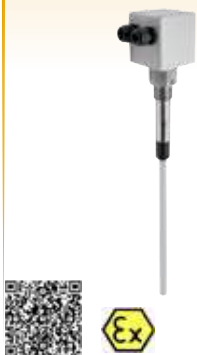


- Measuring range: 65 - 1000 mm
- $t_{max}$  200 °C;  $p_{max}$  0.5 bar
- Connection: G 1 male thread, adapter: G 1¼, G 1½, round flange, weld-in sleeve
- 1 relay, SPDT

## NSC

### Capacitive Level Switch (for bulk materials)

Stainless steel, PTFE

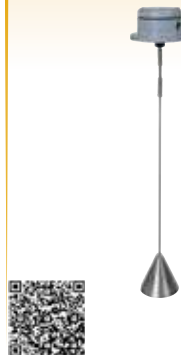


- Measuring range: 265 - 3000 mm
- $t_{max}$  80 °C;  $p_{max}$  0.5 bar
- Connection: G 1 male, adapter: G 1¼, G 1½, round flange, weld-in sleeve
- 1 relay, SPDT

## PLS

### Pendulum Level Monitor (for bulk materials)

Aluminium, EPDM



- Pendulum length up to 2000 mm
- $t_{max}$  80 °C;  $p_{max}$  -0.1 ... +0.5 bar
- Process connection: aluminium flange
- Contact: max. 250 V<sub>AC</sub>/15 A

## MM

### Float Transducer - Reed Chain

Stainless steel, PVC-U, PP, PVDF



- Measuring range: 300 - 6000 mm
- Density: min. 0.4 kg/dm<sup>3</sup>
- $t_{max}$  130 °C;  $p_{max}$  30 bar
- Connection: G ¾ ... 2 male, ¾ ... 2" NPT male, flange DN 40 ... 125, ANSI 1 ½ ... 4"
- Accuracy: ± 10 mm

## NMT

### Float Magnetostrictive

Stainless steel



- Measuring range: 300 - 4000 mm
- Density: 0.7 - 1.0 kg/dm<sup>3</sup>
- $t_{max}$  -20 ... +70 °C;  $p_{max}$  PN 10
- Connection: G 2, 2" NPT male thread
- Analogue output
- Accuracy: ± 1 mm

## NMS

### Magnetostrictive Level Transmitter - Compact Line

Stainless steel, PFA



- Insertion length: 300 - 3000 mm
- Density: min 0.4 kg/dm<sup>3</sup>
- $t_{max}$  90 °C;  $p_{max}$  25 bar
- Connection: G, NPT, Tri-clamp, flange
- Analogue output
- Accuracy: ± 1 mm

## NMB

### Magnetostrictive Level Transmitter - Expert Line

Stainless steel, PFA



- Insertion length: 300 - 15000 mm
- Density: min 0.4 kg/dm<sup>3</sup>
- Connection: G, NPT, Tri-clamp, flange
- Analogue output, display (optional)
- Accuracy: ± 1 mm (optional ± 0,1 mm)



## NMC

### Capacitive Measurement

Stainless steel, PVDF



- Measuring range: 265 - 4000 mm
- $t_{max}$  200 °C;  $p_{max}$  30 bar
- Connection: G 1, G 2 male thread, adapter: G 1¼, G 1½, weld-in sleeve
- Analogue output
- Measuring error: <1.5% of probe length



## SZM

### Bypass Glass Gauge

Stainless steel



- Measuring range: 370 - 3080 mm
- $t_{max}$  100 °C;  $p_{max}$  10 bar
- Connection: flange DN 15 ... 50, ANSI ½ ... 2", union nut G ½, ½" NPT, welding fitting



## NZJ

### Mini - Bypass - Level Gauge

Aluminium, stainless steel



- Installation length: 100 - 540 mm
- Scale length: 60 - 500 mm
- $t_{max}$  100 °C;  $p_{max}$  16 bar
- Connection: G ¼ male thread, ¼" NPT male thread



## NBK - M

### Mini Bypass with Roller Indicator

Stainless steel



- Measuring length: 200 - 3000 mm
- Density: 0.8 - 1.0 kg/dm<sup>3</sup>
- $t_{max}$  200 °C;  $p_{max}$  PN 40
- Connection: flange DN 10 ... 25, ANSI ½ ... 1"
- Accuracy: ± 1 mm (transmitter)



**HART**  
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## NBK - 03, -06, -07, -10

### Bypass with Roller Indicator

Stainless steel



- Measuring length: 300 - 5500 mm over 5500 mm 2-piece or multipart
- Density: min. 0.54 kg/dm<sup>3</sup>
- $t_{max}$  400 °C;  $p_{max}$  PN 100
- Accuracy: ± 1 mm (transmitter)



**HART**  
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## NBK - 31, -32, -33

### Bypass with Roller Indicator - High pressure

Stainless steel



- Measuring length: 300 - 5500 mm
- Density: min. 0.54 kg/dm<sup>3</sup>
- $t_{max}$  100 °C;  $p_{max}$  PN 320
- Accuracy: ± 1 mm (transmitter)



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## NBK - ATEX

### Bypass with Roller Indicator

Stainless steel



- Measuring length: 300 - 5500 mm over 5500 mm 2-piece or multipart
- Density: min. 0.54 kg/dm<sup>3</sup>
- $t_{max}$  400 °C;  $p_{max}$  PN 100
- Accuracy: ± 10 mm (transmitter)



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## NBK - 04

### Bypass Over - Top Tank Measurement

Stainless steel



- Measuring length: 300 - 4000 mm
- Density: min. 0.43 kg/dm<sup>3</sup>
- $t_{max}$  120 °C;  $p_{max}$  PN 16
- Connection: flange DN 50/65, ANSI 2", 2½"
- Accuracy: ± 10 mm (transmitter)



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# Level Switches / Meters

## NBK - 16

### Bypass Level Roller Indicator Measurement - Plastic PP



- Measuring length: 200 - 4000 mm
- Density: min. 0.59 kg/dm<sup>3</sup>
- t<sub>max</sub> 80 °C; p<sub>max</sub> 4 bar
- Connection: flange DN 20 ... 50, ANSI ¾ ... 2"
- Accuracy: ± 10 mm (transmitter)



## NBK - 01

### Bypass Roller Indicator Low Cost

Stainless steel



- Measuring length: 300 - 5500 mm
- Density: 0.78 ... 1.18 kg/dm<sup>3</sup>
- t<sub>max</sub> 120 °C; p<sub>max</sub> PN 16
- Accuracy: ± 1 mm (transmitter)



## NBK - 19

### Bypass Roll Measuring Rope

PVC



- Measuring length: 0.2 - 4.8 m
- Density: 1 kg/dm<sup>3</sup>
- t<sub>max</sub> 60 °C; p<sub>max</sub> atmospheric
- Accuracy: ± 1 mm (transmitter)



## NBK - R, - RH, - RV, - RN, - RS, - RE, - RD

### Limit Contact for Bypass Measurement

Stainless steel, aluminium, polycarbonate



- t<sub>max</sub> 350 °C



## NGM

### Guided Wave Radar (TDR) (for process industry)

Stainless steel, PTFE

Rod Sensor



Coax Probe



Rope Probe



- Measuring range: 100 - 3000 mm (Rod)
- t<sub>max</sub> 250 °C; p<sub>max</sub> 40 bar
- Measuring range: 100 - 6000 mm (Coax)
- t<sub>max</sub> 250 °C; p<sub>max</sub> 40 bar
- Measuring range: 1000 - 20000 mm (Rope)
- t<sub>max</sub> 150 °C; p<sub>max</sub> 40 bar
- Connection: thread, flange
- Analogue output, switching output
- Accuracy: ± 3 mm or 0.03 % of measured value



## NGR

### Guided Wave Radar (TDR) (for machines / factory automation)

Stainless steel

Rod Probe



IO-Link

Wire Probe



- Measuring range [Rod Probe]: 200 - 2000 mm (liquids)
- Measuring range [Wire Probe]: 200 - 4000 mm (liquids)
- t<sub>max</sub> 100 °C; p<sub>max</sub> 10 bar
- Connection: G ¾, ¾" NPT male
- Analogue output, switching outputs
- Accuracy: ± 5 mm



## NRE - 4 / - 7

### Radar Level Transmitter, 80 GHz (TDR) (f. process industry)

Stainless steel PP, PVDF, PTFE  
NRE-4 (Expert Line)



NRE-7 (Compact Line)



- Measuring range: 0...30m
- $t_{max}$  180 °C;  $p_{max}$  40 bar (NRE - 4)
- $t_{max}$  80 °C;  $p_{max}$  3 bar (NRE - 7)
- Connection: thread, flange
- Analogue output + relay
- Accuracy:  $\pm 2$  mm



## NUS - 4

### Ultrasonic - Measurement - Expert Line

PP, PVDF



HART

- Measuring range: 0.2 - 25 m (liquids)  
0.2 ... 10 m (bulk)
- $t_{max}$  90 °C;  $p_{max}$  3 bar abs
- Connection: G 1½, G2, 1½" NPT,  
2" NPT male, DN80, DN125, DN150,  
ANSI 3", 5", 6"
- Analogue output
- Accuracy:  $\pm 0.2\%$  of reading  
 $\pm 0.05\%$  of full scale

## NUS - 7

### Ultrasonic Measurement - Compact Line

PP, PVDF



HART

- Measuring range: 0.25 - 6 m (liquids)
- $t_{max}$  80 °C;  $p_{max}$  3 bar abs
- Connection: G2, 2" NPT
- Analogue output
- Accuracy:  $\pm 0.2\%$  of reading  
 $\pm 0.05\%$  of full scale

## BA

### Displacement Level Meter

Stainless steel



HART



- Measuring range: 300 - 6000 mm
- Density range: 400 - 2000 g/l
- $t_{max}$  250 °C;  $p_{max}$  PN40
- Connection: flange DN 50, ANSI 2"
- Analogue output, 2 limit contacts
- Accuracy:  $\pm 5$  mm



## PAD - ... N

### Differential Pressure Transmitter with Diaphragm Seal

Stainless steel, Monel®, Tantalum, Hastelloy®, PTFE



Ex HART



- Level:  
0 ... +2500 mmWC ... 0 ... +150 mWC
- $t_{max}$  200 °C
- Connection: flange via neck tube  
DN50 or bigger
- Accuracy:  $\pm 0.075\%$  of calibrated span  
+ influence of diaphragm seal

## NTB

### Deep - Well Probe

Stainless steel, cable polyurethane



HART

- Measuring range: 0 - 1 ... 0 - 350 mWC
- Analogue output
- Cable length: max. 400 m
- Accuracy:  $\pm 0.5\%$  of full scale

## NPF

### Hydrostatic Diaphragm Measurement

Stainless steel



- Measuring range: 0 - 600 ...  
0 - 10 000 mmWC
- $t_{max}$  80 °C
- Connection: G ½ male, ½" NPT,  
DN50 ... DN100, ANSI 2 ... 4"
- Accuracy:  $\pm 1.6\%$  of full scale



# Temperature Switches / Indicators

## TWR

### Bimetal Switch

Brass, stainless steel



- Switching range: 30 ... 118 °C
- $t_{max}$  150 °C;  $p_{max}$  64 bar
- Connection: G 3/4 male thread



## TWS

### Bimetal Switch (OEM)

Stainless steel



- Switching range: -15 ... +160 °C
- $t_{max}$  160 °C;  $p_{max}$  60 bar
- Connection: G 1/2 ... G 3/4, NPT, M14x 1,5



## TBS

### Bimetal Temperature Switch

Brass, stainless steel



- Switching range: 10 ... 100 °C
- $t_{max}$  120 °C;  $p_{max}$  25 bar
- Connection: G 1/4 ... G 1 1/2, 1/4" ... 1 1/2" NPT male thread



## TDD

### Temperature Switch Digital

Stainless steel



- Measuring range: -50 ... +125 °C
- $p_{max}$  80 bar
- Connection: G 1/2, G 3/4, 1/2" NPT, 3/4" NPT male thread, smooth probe  $\varnothing$  6 mm
- 2 limit contacts
- Accuracy:  $\pm 0.5$  °C (-10 ... +85 °C)



## TNF-Q

### Remote Thermometer DIN 16205 / DIN 16206

Stainless steel



- Measuring range: -40 ... +600 °C
- Housing: 96x96, 144x144 mm
- $p_{max}$  25 bar
- Connection: G 1/4 ... 1, 1/4" ... 1" NPT, DIN 11851, Tri-Clamp®, Wendel
- Accuracy: cl. 1.0
- Contact: up-to 4 times
- Option: application-specific versions



## TBE

### Bi-Metallic Thermometer

Stainless steel



- Measuring range: -50 ... +50 °C ... 0 ... +600 °C
- $p_{max}$  15 bar
- Connection: G 1/2 ... 3/4, 1/2" ... 3/4" NPT, fixed, rotatable, slidable
- Accuracy: cl. 1.0



## TND

### Shaft Thermometer (for Diesel engines)

Steel, stainless steel



- Measuring range: 0 ... +800 °C
- $p_{max}$  25 bar
- Connection: G 1/2, G 3/4 male thread
- Accuracy: cl. 1.0; 1.6



## TNS / TNF

### Shaft / Capillary Thermometers DIN 16205 / DIN 16206

Stainless steel



- Measuring range: -40 ... +600 °C
- $p_{max}$  25 bar
- Connection: G 1/2 ... 1, 1/2" ... 1" NPT, DIN 11851, Tri-Clamp®, helix probe
- Accuracy: cl. 1.0; 1.6



## TNS / TNF

### Safety Thermometer with Contacts

Stainless steel



- Measuring range: -40 ... +600 °C
- $p_{max}$  25 bar
- Connection: G 1/2 ... 1, 1/2" ... 1" NPT, DIN 11851, Tri-Clamp®, helix probe
- Accuracy: cl. 1.0; 1.6



## TWL - 0

### Thermowells (for shaft, capillary + resistance thermometer)

Stainless steel, special materials



- $t_{max}$  800 °C;  $p_{max}$  250 bar
- Connection: thread, flange, welding sleeve



# Temperature Switches / Indicators

## TDA

### Electronic Temperature Sensor

Stainless steel



- Measuring range:  $-50 \dots +125 \text{ }^\circ\text{C}$
- $p_{\max}$  80 bar
- Connection: G 1/2, G 3/4, 1/2" NPT, 3/4" NPT male thread, smooth probe  $\varnothing$  6 mm
- Analogue output, limit contact
- Accuracy:  $\pm 0.5 \text{ }^\circ\text{C}$  ( $-10 \dots +85 \text{ }^\circ\text{C}$ )



## TIN-SS/-SH

### Infrared Thermometer

Stainless steel



- Measuring range:  $-50 \dots +975 \text{ }^\circ\text{C}$
- Analogue output, thermocouple J,K
- Accuracy:  $\pm 1 \%$



## TSA

### Temperature Sensor

Brass, stainless steel



Option

- Measuring range:  $-40 \dots +150 \text{ }^\circ\text{C}$
- $t_{\max}$   $150 \text{ }^\circ\text{C}$ ;  $p_{\max}$  25 bar
- Connection: G 1/4 ... 1, 1/4 ... 1" NPT
- Accuracy: from  $0.7 \text{ }^\circ\text{C}$



## TWC-N/-P

### OEM Temperature Sensors



- Measuring range (TWC-N):  $-40 \dots 200 \text{ }^\circ\text{C}$
- Accuracy:  $\pm 0.2 \text{ }^\circ\text{C}$  for R25 reference,  $\pm 0.1 \text{ }^\circ\text{C}$  for medical application
- Measuring range (TWC-P):  $-196 \dots 600 \text{ }^\circ\text{C}$
- Accuracy: F0,15 (A) or F0,3 (B) IEC 60751,  $\pm 0.1 \text{ }^\circ\text{C}$  with PCBA calibration



## TNK

### Resistance Thermometer

Brass, bronze, stainless steel



- Measuring range:  $-80 \dots +150 \text{ }^\circ\text{C}$
- $t_{\max}$   $150 \text{ }^\circ\text{C}$ ;  $p_{\max}$  50 bar
- Connection: M18x1.5, G 1/2, 1/2" NPT
- Accuracy: F0,15 (A) or F0,3 (B)



## MMA

### Screw-In Resistance Thermometer

Stainless steel



- Measuring range:  $-198 \dots +250 \text{ }^\circ\text{C}$  (configurable)
- $p_{\max}$  36 bar
- Accuracy:  $< 0.5 \%$  of span



## LTS-A/K

### Resistance Temperature Probe with Connection Box



- Measuring range:  $-50 \dots +250 \text{ }^\circ\text{C}$
- $p_{\max}$  10 bar
- Connection: G 1/2, M12x1.5 male, hygienic installation system LZE
- Pt100, 4 - 20 mA
- Accuracy: F0,15 (A)



## TWP

### Pipe Temperature Sensor

Stainless steel, electropolished



- Dead-zone-free, temperature measurement
- Measuring range:  $-20 \dots +200 \text{ }^\circ\text{C}$
- CIP-/SIP compliance
- Connection: DIN 11851 (DIN 11887) DN 15...80 Tri-Clamp<sup>®</sup> ISO 2852 DN 1/2" ... 2 1/2"
- Housing: DIN head form B or stainless steel
- Option: PT 100 / Option: 4...20 mA





# Temperature Switches / Indicators

## MWD

### Industrial - Resistance Thermometer

Stainless steel



- Measuring range: -70 ... +250 °C ... -200 ... +600 °C
- $p_{max}$  30 bar
- Accuracy: F0,15 (A) or F0,3 (B)



## MWE

### Screw-In Resistance Thermometer

Stainless steel



- Measuring range: -70 ... +250 °C
- $p_{max}$  30 bar
- Accuracy: F0,15 (A) or F0,3 (B)



## MWA

### Contact Resistance Thermometer

Stainless steel



- Measuring range: -20 ... +260 °C
- Accuracy: F0,15 (A) or F0,3 (B)



## TWL

### Resistance Temperature Measuring Unit

Stainless steel



- Measuring range: -80 ... +600 °C
- $p_{max}$  250 bar
- Connection: thread, flange, weld-in sleeve
- Pt 100, 4 - 20 mA
- Accuracy: F0,15 (A) or F0,3 (B)



## TWL-T

### Room Thermometer

Aluminium, polycarbonate



- Measuring range: -40 ... +80 °C
- Wall socket
- Pt 100, 4 - 20 mA
- Accuracy: F0,15 (A) or F0,3 (B)



## TTL

### Immersion Thermocouples

Stainless steel, alloys



- Measuring range: -200 ... +1100 °C
- $p_{max}$  250 bar
- Connection: thread, flange, weld-in sleeve
- 4 - 20 mA
- Accuracy: cl. 1.0 or 2.0



## MTE

### Screw-In Thermocouples with Compensating Lead

Stainless steel



- Measuring range: -200 ... +600 °C
- Connection: G 1/2, M 10 x 1
- Accuracy: cl. 1.0





## APM - 1

### Transmitter for pH-Value and ORP



- Outputs: 1 binary, 2 analogue
- Switch output: 2 relays with adjustable setpoints

## HND - R

### Hand-Held Measurement Device (f. pH value, Redox and temperature)



- Measuring range: pH: 0...14; Redox: -1999...+2000 mV; temperature: -5...+80 °C
- Accuracy: pH:  $\pm 0.01$ ; Redox:  $\pm 0.1\%$  of full scale; temperature:  $\pm 0.2$  °C



## APS

### pH-Combined Electrodes

Glass, plastic



- Measuring range: pH 0...14
- $t_{\max}$  135 °C;  $p_{\max}$  10 bar
- Diaphragm: PTFE-ring, ceramic

## ACM - 1

### Transmitter for Specific Conductivity



- Measuring range: 0...200 mS/cm
- Outputs: 1 binary, 2 analogue
- Switch output: 2 relays with adjustable setpoints

## ACS

### Conductivity Measuring Cells

Stainless steel, graphite



- Measuring range: 0.05  $\mu$ S/cm...15 mS/cm
- $t_{\max}$  135 °C;  $p_{\max}$  16 bar
- Process connection: G  $\frac{3}{4}$  male thread



## LCI

### Inductive Conductivity Measuring System

PEEK, PVDF, stainless steel



- Measuring range: 0...2000 mS/cm
- $t_{\max}$  140 °C;  $p_{\max}$  10 bar
- Integrated Pt 100
- Accuracy:  $\pm 0.5... \pm 1\%$  of full scale



## HND - C

### Hand-Held Conductivity Measuring Unit



- Measuring range: 0...200  $\mu$ S/cm...0...200 mS/cm
- Resistance, salinity, TDS
- Accuracy: from  $\pm 0.1\%$



## AFK - G2

### Humidity/Temperature Transmitter



- Measuring range: 0...100 % rH, 0...+200 °C
- $t_{\max}$  200 °C;  $p_{\max}$  25 bar
- Outputs: 2 x 4 - 20 mA
- Accuracy:  $\pm 2\%$  rH

## AFA - G

### Humidity Transmitter with Display



- Measuring range: 5...95 % rH; 0...60 °C
- $t_{\max}$  80 °C
- Outputs: 4 - 20 mA
- Accuracy:  $\pm 2\%$  rH

## AFK - A / - F

### Humidity/Temperature Transmitter



- Measuring range: 0...100 % rH; -80...+200 °C
- $t_{\max}$  200 °C;  $p_{\max}$  25 bar
- Outputs: voltage, current outputs
- Accuracy:  $\pm 1.5$  rH;  $\pm 0.15$  K
- Interchangeable or permanently connected transmitters/probes

## AFS - G

### Hygrostat, Humidity Annex Switch



- Measuring range: 30...100 % rH
- $t_{\max}$  60 °C
- Switch output: 1 SPDT
- Accuracy: 3 % rH

## AFB

### Humidity/Temperature Transmitter



- Measuring range: 0...100 % rH; -40...+125 °C
- $t_{\max}$  125 °C;  $p_{\max}$  atmospheric
- Outputs: voltage, current outputs
- Accuracy:  $\pm 0.2\%$  rH; 0.35 K
- Option: USB-interface



# Analysis / Accessories

## HND - F

### Hand-Held Humidity Precision Measuring Unit



- Measuring range: 0 ... 100% rH
- Pt1000 integrated
- Accuracy:  $\pm 0,1 - 0,2\%$

## AFO

### Industrial Oil Moisture Sensor

Stainless steel



- Measuring range: 0 ... 1 a<sub>w</sub>; ppm; temperature
- t<sub>max</sub> 100 °C; p<sub>max</sub> 300 bar
- Outputs: 2x 4 - 20 mA
- Accuracy: up to  $\pm 0,02 a_w$



## ATA - K / ATT - K / ATS - K

### Turbidity Measuring System

Stainless steel



- Measuring range: 0 ... 500 ppm; 0 ... 4 CU, 0 ... 10 - 200 FTU
- t<sub>max</sub> 150 °C; p<sub>max</sub> 16 bar
- Outputs: 4 - 20 mA
- Accuracy:  $\pm 2\%$  of full scale

## ATL

### Turbidity Probe

Stainless steel



- Measuring range: 0 ... 500 ppm; 0 ... 4 CU
- t<sub>max</sub> 90 °C; p<sub>max</sub> 10 bar
- Outputs: 4 - 20 mA
- Accuracy:  $\pm 2\%$  of full scale

## DWF

### Density Meter

Stainless steel



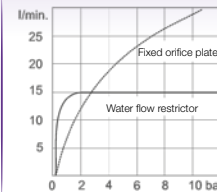
- Measuring range: 700 ... 1900 g/l
- t<sub>max</sub> 150 °C
- Process connection: flange DN 25 ... 50, ANSI 1 ... 2"
- Option: transmitter contacts



## REG

### Constant Flow Valves

Brass, stainless steel



- Water: 0.5 - 560 l/min
- t<sub>max</sub> 300 °C; p<sub>max</sub> 200 bar
- Connection [single element]: G 1/2, G 3/4, 3/4" NPT
- Connection [multiple elements]: G 1 1/2 ... 2 1/2 flange DN 20 ... 100

## KUG -TB, -AG, -IK, -VN, -VL, -ZE, -ZF, -ZG, -PD

### Ball Valves

Brass, stainless steel



- t<sub>max</sub> 180 °C; p<sub>max</sub> PN 64
- G 1/4 ... 3 female thread
- Hand lever, 1, 2 and 3 piece versions
- T- and L-bore

## KUG -VO, -VK

### Flange - Ball Valves

Grey cast iron, stainless steel

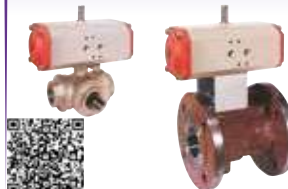


- t<sub>max</sub> 180 °C; p<sub>max</sub> PN 40
- Flange DN 15 ... 200

## KUP

### Ball Valves with Pneumatic Actuator

Grey cast iron, brass, stainless steel



- t<sub>max</sub> 120 °C; p<sub>max</sub> PN 16
- G 1/2 ... 4 female thread
- Control pressure: 6 - 8 bar, single or double acting
- T- and L-bore

# Accessories/Relays

## KLA

### Butterfly Valves

Aluminium, GGG-40



- $t_{max}$  180 °C;  $p_{max}$  PN 16
- Flange DN 40 ... 300
- Seals: NBR, FKM, EPDM



## KLP

### Butterfly Valves with Pneumatic Actuator

Aluminium, GGG-40



- $t_{max}$  160 °C;  $p_{max}$  PN 16
- Flange DN 40 ... 300
- Seals: EPDM, FKM
- Control pressure: 6 - 8 bar, double acting or spring resetting



## NAD ...

### Needle Valve

Brass, stainless steel

Needle Valve  
-AC

Needle Valve  
-M, -Z

Angle Seat Valves  
-AD, -BE

Outlet Globe Valves  
-AB, -BF



- $t_{max}$  400 °C;  $p_{max}$  PN 250
- G 1/8 ... 3, 1/8 ... 1" NPT

## MFR/MFT

### Flange Magnetic Filter

Bronze, brass, grey cast iron



- $t_{max}$  200 °C;  $p_{max}$  PN 40
- G 1/4 ... 4, flange DN 50 ... 200
- Filter grade: 50 ... 800  $\mu$ m



## KUR-TD, -MR

### Check Valves

Red cast iron, brass, stainless steel



- $t_{max}$  110 °C;  $p_{max}$  PN 25
- G 1/4 ... 4 female thread



## KOFICOM-MB

### Interface/Converter KofiCom-Modbus-RTU

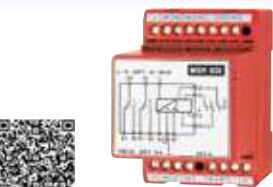


- KofiCom-Interface (U-PACE/MAN-LC compatible)
- Connection: M12x1 (both ends)
- Cable length: 500mm (both ends)



## MSR

### Pulse-Contact Protection Relay



- Input: potential-free contacts
- Output: 1 or 2 relays, SPDT



## KFD-2/KFA-6

### Isolation Switching Amplifier for Initiators



- Input: Initiators (Namur), potential-free contacts
- Output: 1 relay, SPDT



## AUF

### Plug-On Display



- Input: 4 - 20 mA, pulses
- Output: 4 - 20 mA, switch output PNP
- 4-digit red LED, without additional power supply
- Option: Open-Collector, various colours



## DAG-A/S/M

### Digital - Panel Mount - Indicators



- Input: current, voltage, temperature, frequency
- Output: pulse, 2x analogue
- Limit contacts
- Min/Max-memory





# Control Devices and Relays

## ZMC

### Electronic Multi-Channel Controller



- Input: Up to 72 analogue/ digital 0-5 (10)V / 0 (4)-20 mA Or thermocouples / Pt100, Pt500, Pt1000 / resistance 0-300 Ω (3 kΩ)
- Interface: up to 2x USB / 3x RS485 / 1x Ethernet
- Sensor supply: 1x 24 V<sub>DC</sub> / 200 mA max.
- Up to 300 000 000 data records



## ADI - 1 / ADI - 1 ... S

### Universal Indicator



- Input: current, voltage, frequency
- Analogue output
- 2 limit contacts
- Sensor supply



## POD

### Universal Plug-On Display with U-PACE



- Input: frequency, current, voltage (e.g. electronics L343, L303, F300, EHV)
- Output: 2 x freely configurable
- Connection: M12
- Without additional power for connected sensors

IO-Link



## ZOK

### Industrial Dosing, Counter and Flow Indicator



- Input: frequency
- Analogue output
- Limit contacts
- Impulse output
- Sensor supply
- Battery powered



## ZOE

### Industrial Counter and Flow Indicator



- Input: frequency
- Pulse output
- Sensor supply
- Battery powered



## ZED - K

### Electronic for Measuring and Monitoring



- Input: frequency
- Analogue output
- 2 limit contacts
- Sensor supply

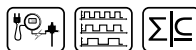


## ZED - D / - Z

### Batch Controller / Counter Electronics



- Input: frequency, control input
- Analogue output
- 2 limit contacts
- Sensor supply



## DAG - Z2

### Counter Electronics / Batch Controller



- Input: 3 x PNP / NPN
- 2 limit contacts
- Sensor supply



## DAG - T4

### Universal Panel Meter



- Input: current, voltage, Pt 100, thermocouples
- 2 limit contacts
- Sensor supply



## ZLS - 2

### Electronic Multi - Channel Data Logger



- 8 x input: 0 - 5(10)V/0(4) - 20 mA or thermocouples / Pt 100, Pt 500, Pt 1000
- Interface: 1 x USB, 1 x RS485
- Sensor supply



# Model Register

Model	Page	Model	Page	Model	Page	Model	Page	Model	Page
ACM	39	DPT	8	KUP	40	NMC	33	SMO/SMW	6
ACS	39	DRB	9	KUR	41	NMF	31	SMV	6
ADI	42	DRG	11	KZA	13	NMS	32	SWK	5
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AFB	39	DRM	23 - 25	LNK	30	NPF	35	TBE	36
AFK	39	DRS	8	LNM	30	NRE	35	TBS	36
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AFS	39	DSV	5	LPS	7	NSE	29	TDD	36
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ATA	40	DUS	16	MAN	21 - 25	NSV	31	TNK	37
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DAG	41, 42	KDF/KDG	3	MWD	38	PAS	25	URK	4
DAI	20	KDS	4	MWE	38	PDA	25	URL	4
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DAR	20	KEP	14	NAD	41	PIT	17	USR	4
DAT	20	KET	14	NAS	28	PITe	17	UTS	4
DAZ	20	KFA	41	NBA/NBE	28	PLS	32	UVR/UTR	4
DF	10	KFD	41	NBK	33, 34	PMP	23	V31	4
DFT	11	KFF	10	NCW	31	POD	42	VKG	6
DIG	20	KFG	10	NE	30	PPS	7	VKM	7
DIH	19	KFS	3	NEC	29	PSD	27	VKP	6
DKB	20	KLA	41	NEH	29	PSE	7	ZED	42
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DPM	10	KUG	40	NMB	32	SMN	6		

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