

Certified according to DIN ISO 9001

Technical Datasheet



C-Flow Coriolis - KCE 5000 Series Mass Flow Meters

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Principle

Two parallel flow tubes inside the KCM flow meter are vibrating at their resonant frequency in opposite direction. Any mass flow passing through the tubes will delay the vibration at the incoming side and accelerate the vibration at the outgoing side. This causes a small time delay between both ends of the tube. This time delay is measured and used to calculate the mass flow through the tubes.

By measuring the resonant frequency of the tubes the mass of the medium and - given a constant volume inside the tubes - the specific gravity of the medium can be calculated.

As both effects are temperature dependent, the temperature is measured via a precise sensor for correcting the temperature effects of flow and density measurement.

As a consequence a coriolis mass flow meter measures directly mass flow, specific gravity and temperature of the medium. Knowing the mass flow and the specific gravity, also the volume flow can be calculated.

Application

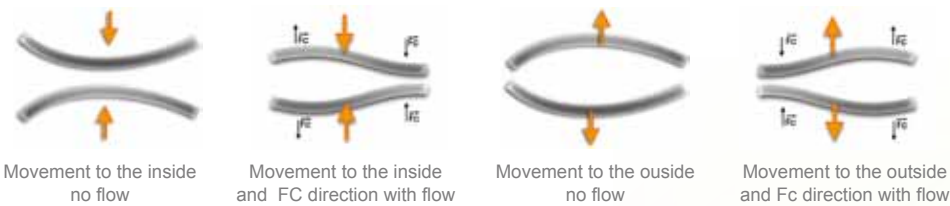
- For fluids (e.g. PU components, paints)
- Suitable for aggressive and contaminated media
- Measurement of mass flow, density, temperature and volume flow
- Excellent purging and sterilization qualities due to a construction free of dead spots
- Up to +180°C medium temperature
- Individual 8-point-calibration including report
- Ex protected as per ATEX and EMC tested

Special Features

- Pmax. 350 bar
- Short response time
- DKD calibration

Cycle of excursion (simplified)

Rotation and deformation of two parallel looped pipes by the coriolis force F_c .



The C-Flow

The C-Flow Coriolis Mass Meters consist of two components:

KCE Transmitter



KCM Transducer

Technical Data - KCM Transducer

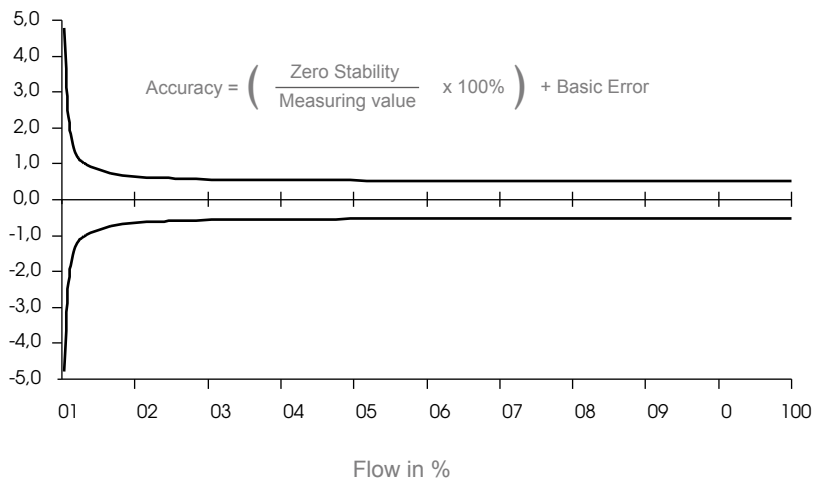
	KCM0300	KCM0600	KCM1500	KCM3000	KCM6000	TCM28k	KCM60k
Max. flow (kg/h)	300	600	1500	3000	6000	28 800	60 000
Min. flow (kg/h)	3	6	15	30	60	288	600
Max. flow (lb/min)	11.03	22.06	55.15	110.29	220.59	1060	2205.88
Min. flow (lb/min)	0.11	0.22	0.55	1.10	2.21	10,6	22.06
Basic Accuracy (% of flow reading)	0.5	0.5	0.2	0.15	0.5	0.15	0.5
Zero Stability (% of full scale)	0.02	0.02	0.01	0.01	0.01	0.01	0.02
Zero Drift (% f.s. per °C)	0.002	0.002	0.001	0.001	0.001	0.001	0.002
Repeatability (% of flow)	0.2	0.2	0.1	0.1	0.1	0.1	0.2
Density measuring range	0 - 4500 kg/m ³						
Density accuracy	± 0.002 kg/ltr						
Temperature accuracy	±1 °C ±0.5% of reading						
Process and Ambient							
Process connections	female thread 1/2" adaptors for flanges, diary and tri-clamp				flanges EN1092, ANSI B16.5, DIN2512		
Max. pressure	200 bar				40 bar	100 bar	40 bar
Max. pressure (Option)	350 bar						
Pressure Drop at max. flow H ₂ O	see diagramm						
Operating Density range	500 - 2500 kg/m ³						
Process temperature	-40 ... +125 °C				-40 ... +100 °C		
Ambient temperture	-20 ... +70 °C				-20 ... +60 °C		
Storage temperature	-40 ... +70 °C						
Electr. connections remote	screw type terminals						
Electr. connections compact.	none (internally connected to the electronics)						
Ingress Protection	IP67				IP65		
General							
Tube arrangement	2 serial	2 parallel	2 serial	2 parallel	2 parallel	2 parallel	2 parallel
tube inner diameter	4mm	4mm	8mm	8mm	12mm	18mm	34mm
tube material	stainless steel DIN 1.4571				ss 1.4404 / 1.4571		
housing material	stainless steel DIN 1.4571				cast iron	stainless steel	cast iron
Dimensions	see drawings						

EX-Protection

For KCM 0300 through KCM 3000 an ATEX certification is available for the compact version.

EX II 2G EEx Exd (ib) IIC T2-T4 TPS 07 ATEX, 282x

Accuracy in %

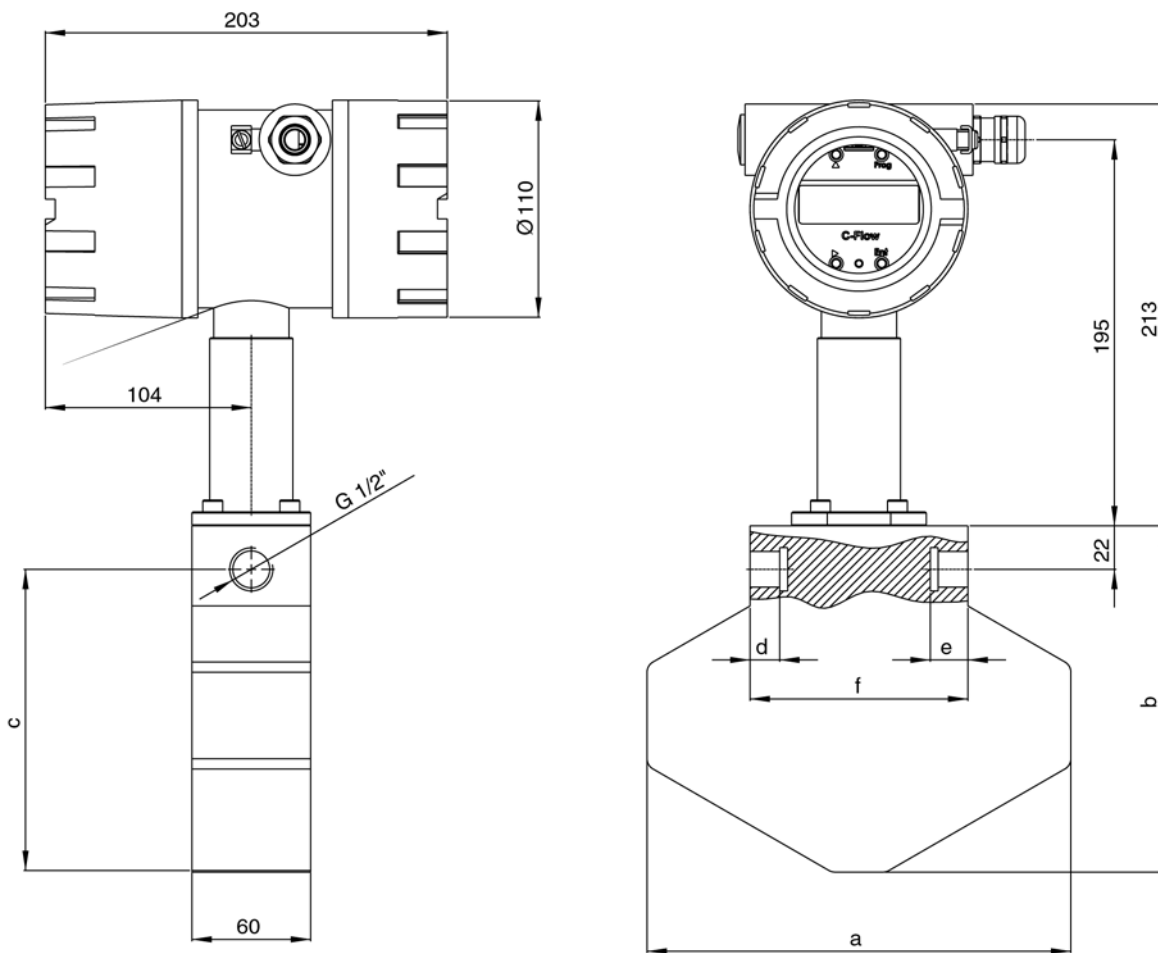


The diagram shows typical values. Individual values may be taken from the calibration records supplied with each meter.

Technical Data - KCE 5000 Transmitter

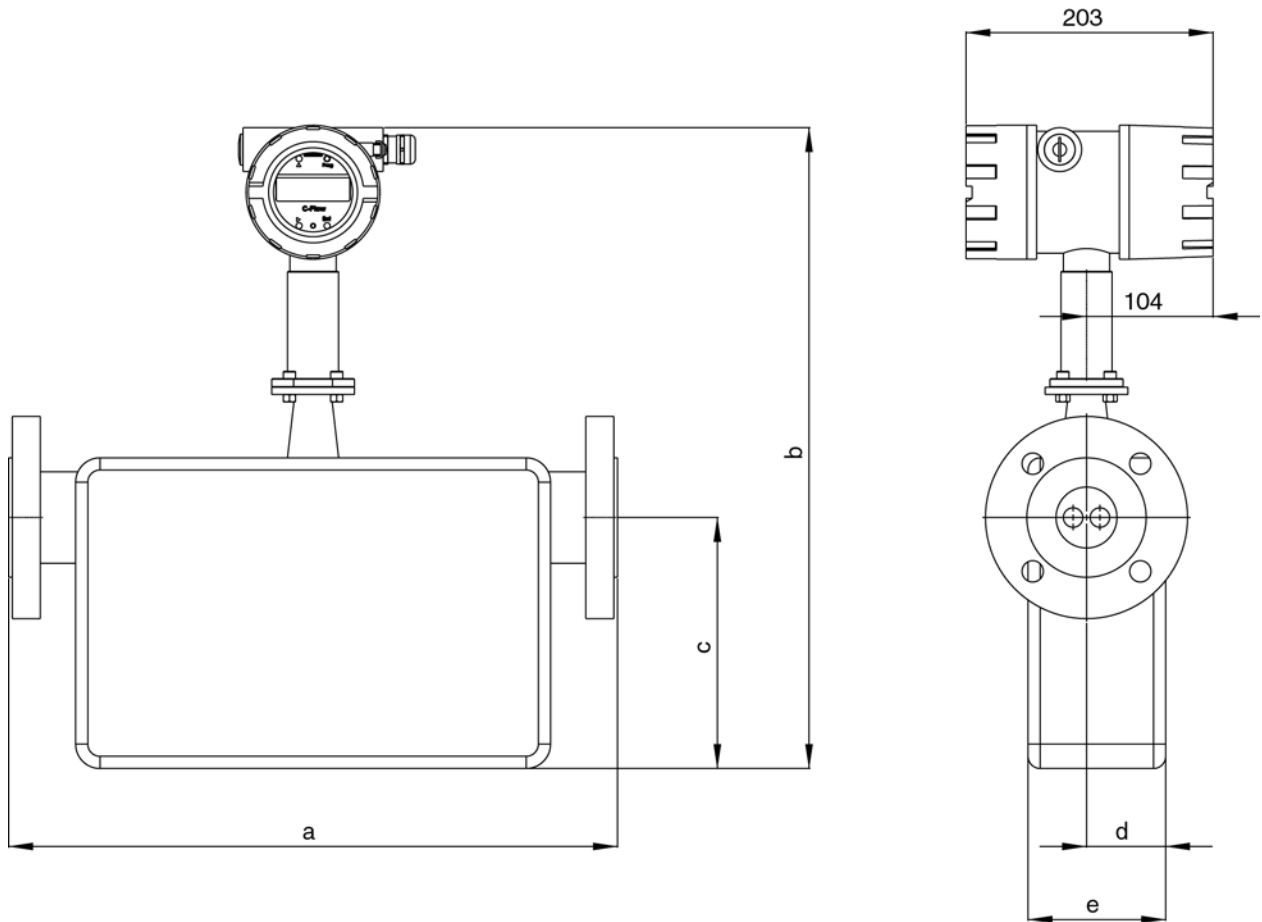
General	
Display:	Graphic, 128 x 32 dot
Supply voltage:	24 VDC, $\pm 15\%$
Programming:	via front keyboard and with magnet
Interface:	RS 485
EMC:	according to EN 50 081-2 and EN 50 082-2
Power consumption:	max. 2.5 W
<i>Exd housing:</i>	
Dimensions:	see drawing
Connections:	internal clamp terminals 1/2" female NPT cable gland
Material:	aluminium diecast
Protection class	IP 68
Weight:	approx. 2 kg
Temperature:	operating: -20 up to 50°C storage and transport: -20 up to 70°C
<i>Panel-mounted housing:</i>	
Dimensions:	96 x 96 x 135mm (h x w x d)
Connections:	rear screw type terminals
Material:	Noryl
Protection class:	front: IP 40, rear: IP 30
Weight:	approx. 500g
Temperature:	operation: 0 to 50°C storage and transport: -20 up to 70°C
Analog Outputs	
Two current outputs:	4-20 mA passive, two-wire isolated
Resolution:	14 bit
Linearity:	$\pm 0.05\%$ of full scale
Temperature drift:	0.05% per 10K
Load:	< 800 Ω
Output value:	programmable: flow, total, density, temperature
Pulse Output	
Frequency range:	0.5-5,000 Hz
Output signal:	active push pull output of flow rate or cycle output
Status In-and Output	
Status output	fault out info (push pull)
Control input	programmable

Dimensional drawing (mm) KCM 0300 to KCM 3000



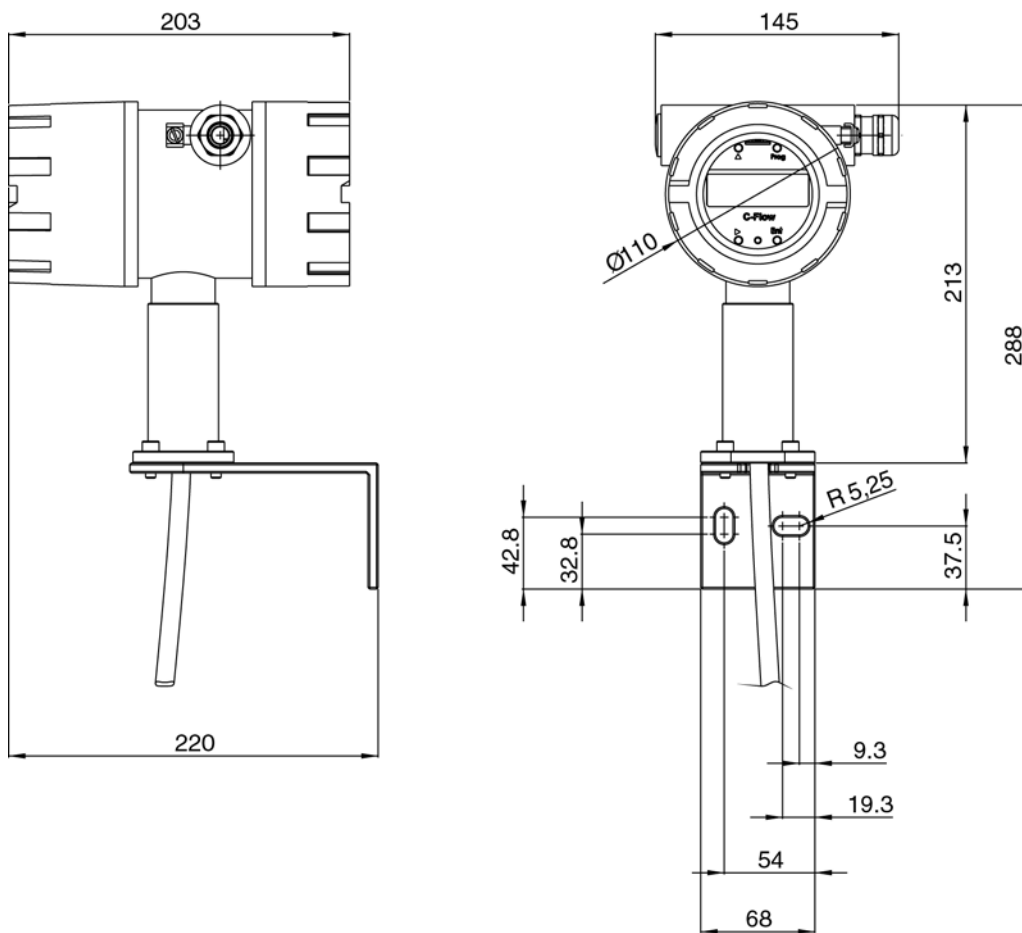
Type	a	b	c	d	e	f
KCM 0300	214	182	160	15	19	110
KCM 0600	214	182	160	15	19	87
KCM 1500	350	280	258	18	21	140
KCM 3000	350	280	258	18	21	140

Dimensional drawing (mm) KCM 6000 to KCM 60K



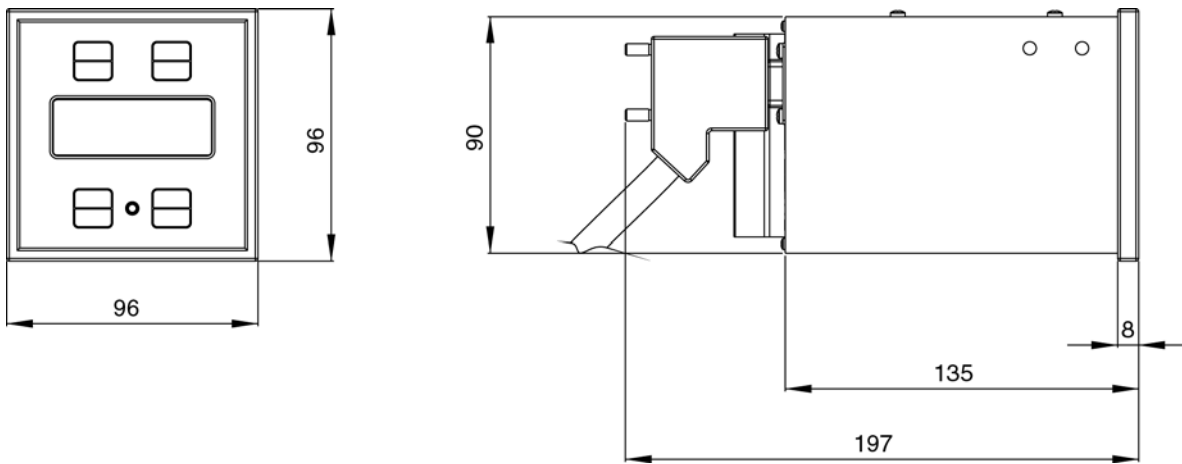
Type	a	b	c	f	g	Flange Ends
KCM 6000	400	450	173	65	113	DN 25 PN 40, ANSI 1" 300 1b
KCM 20K	500	491	206	65	113	DN 50 PN 40, ANSI 2" 300 1b
KCM 40K	600	577	290	77	137	DN 80 PN 40, ANSI 3" 300 1b
KCM 60K	600	577	290	77	137	DN 80 PN 40, ANSI 3" 300 1b

Dimensional drawing (mm) KCE 5000 - WG

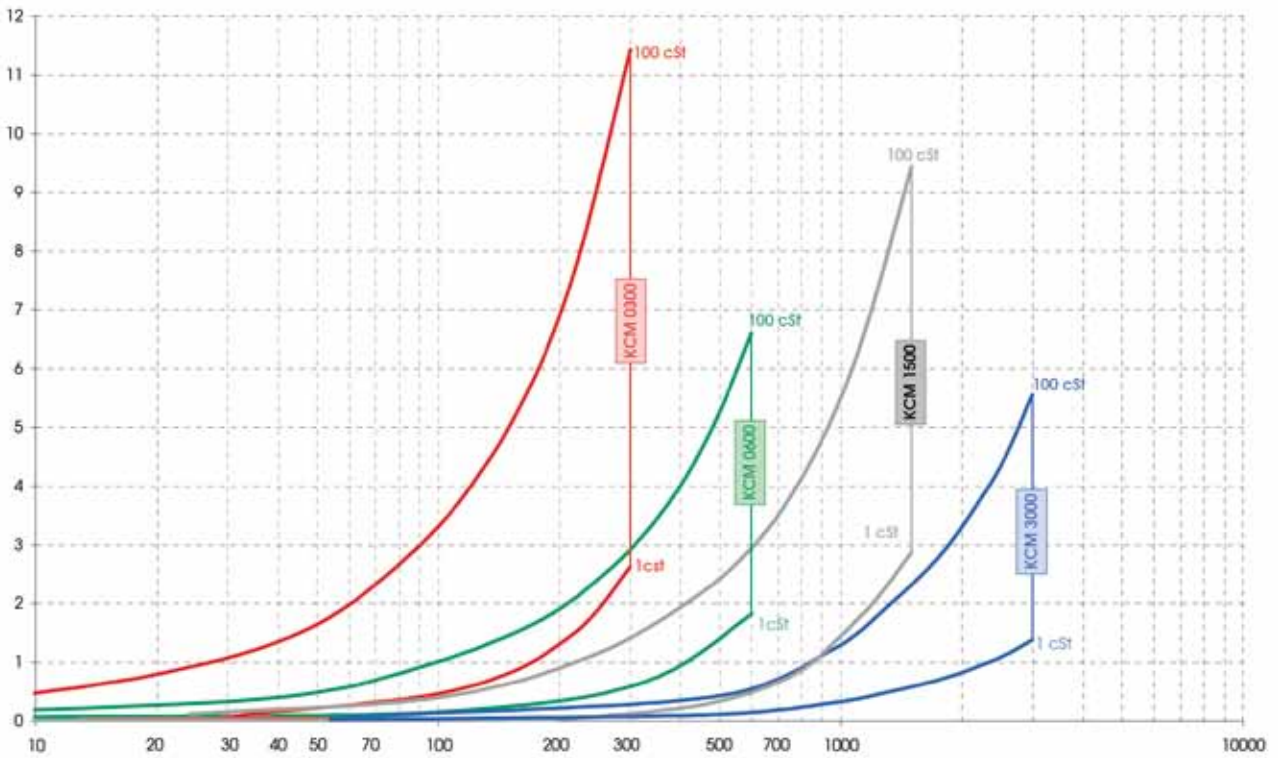


Type	a	b	c	d	e	f
KCM 0300	214	182	160	15	19	110
KCM 0600	214	182	160	15	19	87
KCM 1500	350	280	258	18	21	140
KCM 3000	350	280	258	18	21	140

Dimensional drawing (mm) Panel-Mounted Housing



Pressure drop in bar



Overview

Compact version with female threads and Exd housing



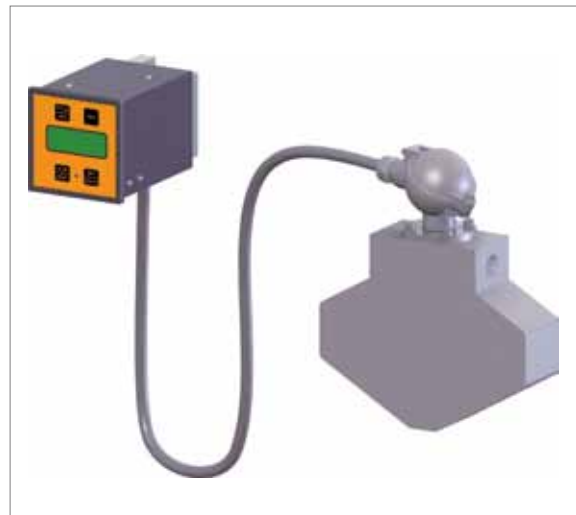
Compact version with flange ends and Exd housing



Exd housing for wall-mounting
(separated version, also with flange ends)



Remote panel-mounted housing
(separated version, also with flange ends)



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