Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

High Performance Coriolis Mass-Flow Meter

for LOW FLOW applications

measuring • monitoring • analysing

HPC

HPC

Transmitter
UMC4

- Measuring range:
  0-20 … 0-50 kg/h
- Accuracy:
  liquids ±0.1 % of reading
  gases ±0.5 % of reading
  density ±0.005 g/cm³
  volume ±0.2 % of actual
- p_{max}: PN 400
- t_{max}: -40 … +180 °C
- Connection:
  ½" NPT female,
  Gyrolok®/Swagelok®
  6/8/10/12 mm
- Material:
  stainless steel, aluminium
- Features:
  vibration resistant, very robust flow body, wall mounting, desk-version

S5

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Application

For the measurement of very small flow rates it is common practice to use single pipe coriolis flow meters. However, with the use of just one measuring pipe the influence of external interferences increases dramatically, often necessitating a costly decoupling. The HPC uses a dual bent pipe measuring system. Furthermore the sensor coils are not mounted on the measuring pipes anymore rather than between the pipes. This provides the sensor with a significantly noise-reduced and predictable dynamic behavior, capable of working at higher frequencies, so further decoupling the sensor measurement from external vibrations.

With these characteristics the HPC coriolis sensor is therefore not only extremely accurate, but also particularly resistant against external interferences. The sensor is therefore very suited for very low flow measurements for all applications for nearly all liquids.

Function

The coriolis mass flow meter HPC is working acc. the coriolis principle. Mass Flow, density and temperature are being measured simultaneously. The volume flow can be calculated out this measurements. HPC mass flow sensors are only available with remote transmitter.

Features

- Precise measurements for very small measuring ranges
- Vibration resistant
- Very robust flow body
- Variable housing and mounting concept

Technical Details

Sensor

Process connection:	½" NPT female, G ½ female, Gyrolok®/ Swagelok® 6/8/10/12 mm
Nominal pressure:	PN 100/PN 320/PN 400
Process temperature:	-40 °C … +180 °C
Ambient temperature:	-20 °C … +60 °C
Explosion proof:	ATEX 19ATEX2096X BV/IECEx CML 19.0025X **Standard** II 1 G/II 1 D Ex ia IIC T4 Ga/Ex ia IIIC T135 °C Da, T_{amb} -40 … +60 °C **High temperature** II 1 G/II 1 D/II 2 D Ex ia IIC T4-T2 Ga/Ex ia IIC T135 °C Da/Ex ia IIC T190 °C/T240 °C Db T_{amb} -40 … +60 °C 19K4BO-0509X (HPC) KTL Ex ia IIC T4...T2 19-KA4BO-0510X (HPC) KTL Ex ia IIIC T135 °C 19-KA4BO-0512X (HPC) KTL Ex ia IIIC T190 °C/T240 °C
Protection:	IP 65 (EN60529)

Materials

Measuring pipes:	1.4571 (316 TI)
Flow body:	1.4404 (316 L)
Secondary containment:	aluminium, stainless steel

Measuring ranges

HPC-S01:	0-20 kg/h	ΔP @ Q_{max} = 0.8 bar
HPC-S02:	0-50 kg/h	ΔP @ Q_{max} = 0.20 bar

Reference conditions: acc. IEC 770: water @ 20 °C

Accuracy

Liquids:	±0.1 % of actual ± Z.S.
Gases:	±0.5 % of actual ± Z.S.
Density (liquids):	±0.005 g/cm³ incl. density calibration
Volume:	±0.2 % of actual ± Z.S. (dependant of transmitter)
Zero stability:	±0.02 % of Q_{max}
CE-Marking:	EMV-guide line 2004/108/EG EN 61000-6-3:2001 interference emission EN 61000-6-2:1999 interference immunity Ex-guide line 94/9/EG
Electrical conn.:	plug ODU Mini-Snap®, IP 68 (up to 80 °C process temp.) plug Harting HAN® R23 (100 - 180 °C process temp.) cable: 8 pole c/w plug

Transmitter

Model:	UMC4
Material:	aluminium (painted)
Mounting:	remote mounted
Power supply:	19 - 36 V_{DC}, 90 - 265 V_{AC}
Outputs:	galvanically isolated
ATEX/IEC-Ex:	II(1)2G Ex d [ia Ga] IIC T3-T4 Gb (terminal compartment Ex d), T_{amb}: -20 … +60 °C 12-KB4B0-0117X (UMC4) KTL Ex d [ia] IIC T4-T3

Available Transmitters UMC4 / UMC4-RM

Transmitter mounting:	Field housing local mounted or remote mounted via junction box (½"NPT(f), M20x1,5) or connector (Harting Han® R23). IP67 (EN60529) / NEMA6 Rack-mount design (RM) remote, via screw terminals. IP 20 (to be mounted in min. IP54 ATEX certified protective cabinet)
Power supply:	19 … 36 V_{DC} / 24 V_{AC} (+5% … -20%), 50/60 Hz 90 … 265 V_{AC}, 50/60 Hz

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Technical Details (cont'd)

Outputs

Each output circuit is galvanically isolated from each other as well as to ground.

Analogue: 1x 4…20 mA, passive, with HART®
1x 4…20 mA, passive
Mass flow, volume flow, density, temperature

Binary: passive via optocoupler
Pulse duration: 50 ms adjustable range 0,1…2000 ms

Status: passive via optocoupler
Forward-/Reverse flow, MIN/MAX flow rate, MIN/MAX density, MIN/MAX temperature, alarm, second pulse output (phase shifted to pulse 1 by 90°)

Certificate and Approvals for UMC4 / UMC4-RM

Field housing:

ATEX / IECEx: II (1)2G Ex d [ia Ga] IIC T4-T3 Gb
NEPSI: Ex db [ia Ga] IIC T4/T3 Gb

Type of protection: Ex d

Type of protection signal output:
- Ex [ia Ga] intrinsically safe
- Non-intrinsically safe

Rack mount design (RM):

ATEX / IECEx: II (1)3G Ex ec [ia Ga] IIC T6..T3 Gc

(to be mounted in min. IP54 ATEX certified protective cabinet)

Type of protection signal output:
- Ex [ia Ga] intrinsically safe
- Non-intrinsically safe

Order Details Flow Meter HPC (Example: **HPC-S 01-4020-10 A 1-P 0-1 1-0-H**)

Model / Wetted parts	Measuring range / sensor		Process connection		Nominal pressure	Sensor housing
HPC-S = flow body stainless steel 1.4404 (316L), measuring pipes stainless steel 1.4571 (316ti)	**01** = measuring range 0-20 kg/h, Sensor 1.5 mm **02** = measuring range 0-50 kg/h, Sensor 2 mm	-	**6030** = ½" NPT female, installation length 150 mm **6140** = 6 mm Swagelok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **6150** = 8 mm Swagelok®, via adaptor stainless steel, Installation length 150 mm + ~60 mm **6160** = 10 mm Swagelok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **6170** = 12 mm Swagelok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **8140** = 6 mm Gyrolok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **8150** = 8 mm Gyrolok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **8160** = 10 mm Gyrolok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **8170** = 12 mm Gyrolok®, via adaptor stainless steel, installation length 150 mm + ~60 mm **XXXX** = special on request, via adaptor	-	**10** = PN 100 **32** = PN 320 **40** = PN 400 **XX** = special on request	**A** = aluminium anodised, up to 120 °C temperature of medium

Mounting style		Sensor configuration / process temperature / connection to sensor	Approvals	
1 = pipe, direct mounted in piping, no additional fixation **2** = wall mount, including wall mounting **4** = desk mounting (liquids) - measuring tubes bottom-mounted, incl. cradle for placing on flat surfaces	-	**P** = remote mount transmitter / -40 ° to +80 °C (-40 °F to 176 °F) / ODU Mini Snap®, IP 68 **Q** = remote mount transmitter / -40 ° to +180 °C (-40 °F to 356 °F) / ODU Mini Snap®, IP 68	**0** = without	-
		R = remote mount transmitter (ATEX) / -40 ° to +80 °C (-40 °F to 176 °F) / connector (Harting Han® R 23), IP 66 **L** = remote mount transmitter (ATEX) / -40 ° to 180 °C (-40 °F to 356 °F) / connector (Harting Han® R 23), IP 66	**L** = ATEX / IEC-Ex: "II 1G Ex ia IIC T4 .. T2 Ga" and "II 1D Ex ia IIIC T 135 °C Da"	

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Order Details Flow Meter HPC (Example: **HPC-S 01-4020-10 A 1-P 0-1 1-0-H**) (cont'd)

Calibration mass-flow	Calibration density		Supplementary equipment		Design
1 = standard, 3-point **2** = 10-point **X** = customer specified	**1** = standard (3-point) **2** = special calibration (5-point) **X** = customer specified	-	**0** = without **X** = with (separate specification necessary)	-	**H** = Heinrichs

Order Details Transmitter UMC4 (Example: **UMC4- E 1 1 A 0 0K**)

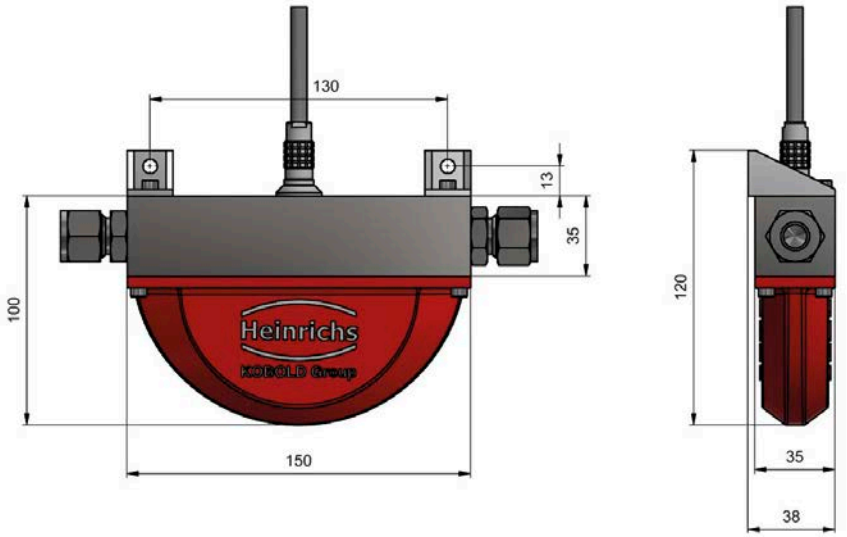
Model	Mounting / electrical connection to sensor / conduit port	Display / interface board	Power supply	Output signal
UMC4-	**E** = remote transmitter incl. 5 m cable, w/o junction box / M20x1.5 [1) 2)] **D**[3)] = remote transmitter with junction box / M20x1.5 [1) 2)] **F** = remote transmitter, with screw terminal for rack mounting, without conduit port opening, IP00	**1** = integral -20…+60 °C	**1**[5)] =90-265 V_{AC}, 50/60 Hz **2** = 19-36 V_{DC}, 24 V_{AC} (+5 % - -20 %), 50/60 Hz	**A** = analog output 1: 4-20 mA with HART®-protocol analog output 2: 4-20 mA pulse output: passive U_m = 30 V_{DC} status output: passive U_m = 30 V_{DC} **M**[5)6)] = Modbus (RTU via RS485)

Approvals	Protection type for signal output
0 = without **2**[5)] = II(1)2G Ex d [ia Ga] IIC T3-T4 Gb (protection class connection room Ex d), T_{amb} -20…+60 °C **3**[4)] = II (1)3G Ex ec [ia Ga] IIC T6..T3 Gc, Rack mount version, ATEX, IECEx, T_{amb} -20…55 °C	**0K** = without (ONLY without approval) **1K** = Ex ia **2K** = not intrinsically safe

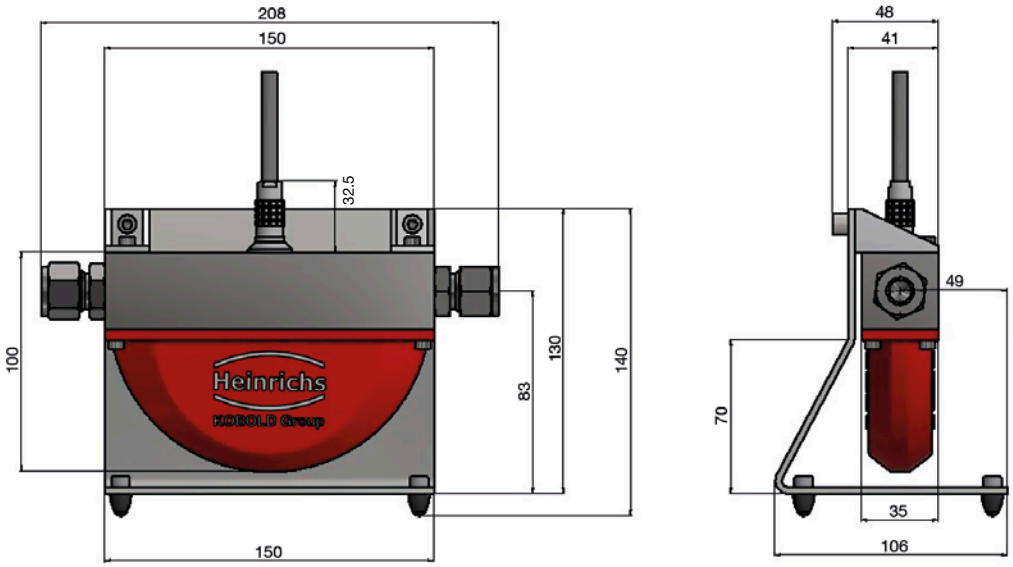
[1)] Incl. wall and pipe mount kit (2")
[2)] Cable glands to be ordered separately
[3)] Add-on price per m cable for option "D" (please specify cable length in clear text)
[4)] Only for option F
[5)] Not for option F
[6)] Not for Ex approval

Dimensions [mm]

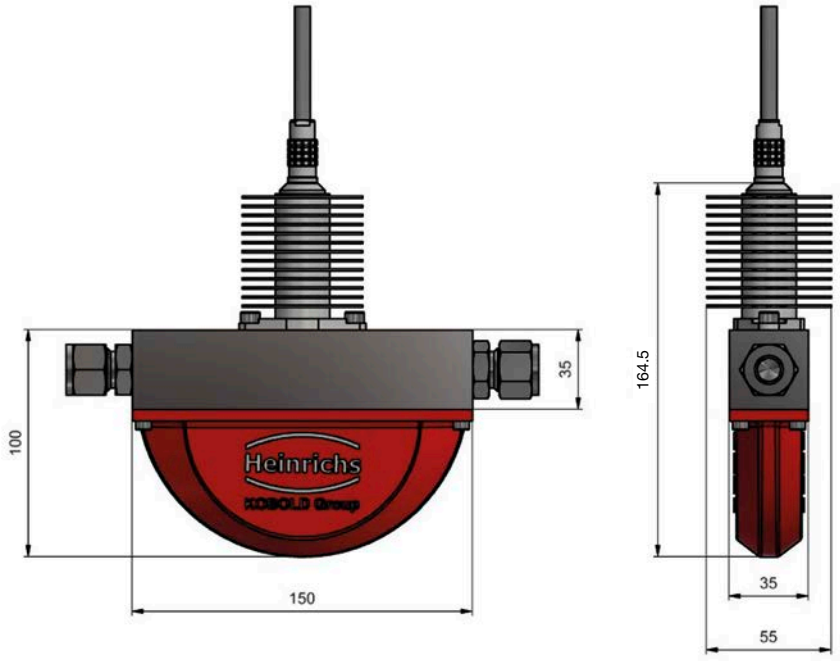
Inline- and wall mounting



Desk version, meas. pipes pointing downwards



Dimensions [mm] (cont'd)
High temperature version



Weight

		Weight	
		Sensor	Transmitter (UMC4)
Model	**DN**	kg [lbs]	kg [lbs]
HPC-S01	½" NPT female	1.8 [4.0]	
HPC-S02	½" NPT female	1.8 [4.0]	4.5 [9.9]