

Coriolis Mass Flowmeter

For Hydrogen Dispensing Units
up to 1000 bar



TMU-W / UMC4



- Pressure resistant up to 1000 bar
- Measuring range 4 kg/min H₂
- 2 current output signals 4–20 mA
- Pulse- /frequency output
- Status output
- **OIML R139** accuracy class 1.5



Application

The TMU-W product line was specially developed for hydrogen filling applications for dispensing stations.

During fueling process, extremely high zero point and long term stability are required.

Its special design provides the highest possible stability and unrivaled measuring accuracy to the user.

Special materials and sophisticated engineering design methods like FEM, CFD, FSI and others were used to fulfil this task.

Technical Details

Sensor system:	TMU-W
System:	Coriolis TMU-W004: max. 4 kg/min H ₂ (P _{nom} 1000 bar)
Accuracy:	Gas: ±0.5 % of actual flowrate ± ZP stability
Wetted parts:	316 TI / 1.4571
Process connections:	6MF 9/16-18 UNF optional: ½" NPT (female); Hofer ⅞"
Sensor housing:	stainless steel 1.4301
Approval:	II 1G Ex ia IIC T6 .. T5 Ga
Max. process pressure:	TMU-W004: 1000 bar (20 °C)
Pressure loss @ Qmax.:	TMU-W004: ~15 bar (max) (±10 %)
Process temperature:	-40 ... +100 °C (H ₂ dispensers -40 ... +55 °C)
Ambient temperature:	-40 ... +55 °C
Ingress protection:	IP 67 (EN60529)



Transmitter

Model:	UMC4
Power supply:	19 - 36 V _{DC}
Signal outputs:	(galvanically separated) 2 x 4-20 mA HART®, passive (Standard or Ex „i“)
Analog:	
Pulse output (or Frequency output):	passive, via optocoupler as Frequency output max. 1 KHz
Status output:	passive, via optocoupler option: second pulse output 90° phase shifted
Ambient temperature:	-40 ... +55 °C
Ingress protection:	IP 68 (EN60529)
Ex classification:	II 2G Ex d [ia Ga] IIC T3 .. T4 Gb (protection class terminal compartment Ex d)
CE-Marking:	EMC-Guideline 2014/30/EU DIN EN61000-6-2:2011 immunity industrial environment DIN EN61000-6-3:2011 emission residential, commercial Ex-Guideline 2014/34/EU
Communication:	HART®
Approvals:	OIML - CS R139 - 2018



Order Details Sensor (Example: **TMU-W004 4500 A00 J0 10 0 H**)

Model	Wetted materials	Measuring range	Process connection / Installation length	Containment options	Heating/cooling
TMU-	W = stainless steel 1.4571 (316Ti)	004 = 4 kg/min	4500 = 6MF 9/16-18 UNF, max. 1000 bar / 347 mm 4550 = Hofer 7/8", max. 500 bar / 347 mm 6030 = 1/2" NPT (female), max. 500 bar / 347 mm XXXX = agency approved, customer specified	A = stainless steel containment, with overpressure blow-out, N ₂ filling nozzle X = agency approved, customer specified	0 = none A = heating / cooling plate X = agency approved, customer specified

Order Details Sensor (Example: **TMU-W004 4500 A00 J0 10 0 H**) (cont'd)

Connection for heating/cooling	Sensor configuration / Process temperature / Sensor cable connection	Approvals	Calibration flow	Calibration density ¹⁾	Supplementary equipment	Version
0 = none I = L12 compression fitting, DIN 2353 / DIN EN ISO 8434-1 K = DKO DN10 taper screw fitting, DIN 2353 / DIN EN ISO 8434-1 X = agency approved, customer specified	J = remote mount transmitter / -40...+140°F, -40...+60°C / plug-in connector Harting Han® R 23 IP66 X = agency approved, customer specified	0 = none L = ATEX / IECEx II 1/2G Exia IIC T6 - T5 Ga/Gb B = NEPSI Exia IIC T6 - T5 Ga/Gb	1 = standard, 3-point 2 = 10-point 3 = outside lab 7 = 7-point OIML calibration X = agency approved, customer specified	0 = none	0 = none X = with (separate specification required)	H = Heinrichs K = Kobold

¹⁾ not available with gas measurements

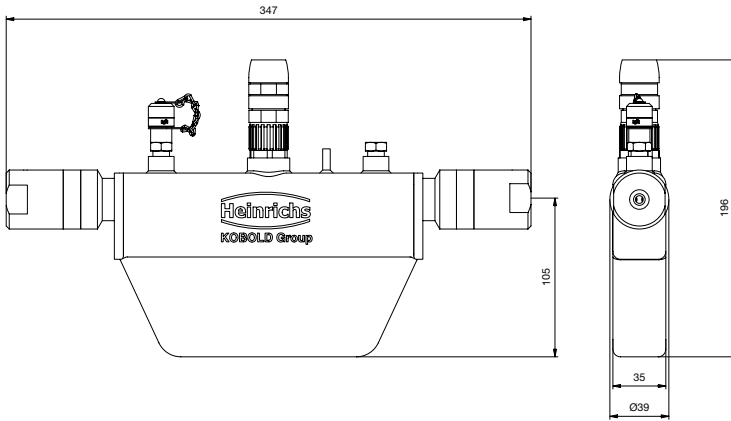
Order Details Transmitter (Example: **UMC4 D 1 2 A 0 0 H**)

Model	Mounting (Conduit port opening)	Display / Interface board	Power supply	Outputs	Approvals	Type of protection (signal output)	Version
UMC4	D = remote mount / terminal connection box, mounted (M20x1.5) ¹⁾ F = remote mount / terminal connections rack mount ¹⁾	1 = integral within transmitter housing, for ambient temperature up to 60°C	2 = 19 - 36 V _{DC} , 24 V _{AC} (+ 5% -20%) 50/60 Hz	A = analog output 1: 4 - 20 mA with HART® analog output 2: 4 - 20 mA pulse output: passive U _m =30 V _{DC} status output: passive U _m =30 V _{DC}	0 = none 2 = II (1)2G Ex d [ia Ga] IIC T3-T4 Gb (terminal compartment Ex d), ambient to 60°C 3 = II 3G Ex ec [ia Ga] IIC T3-T4 Gc (rack mount version), ambient to 60°C	0 = none 1 = Ex [ia Ga] intrinsically safe 2 = not intrinsically safe (not on rack mount transmitter)	H = Heinrichs K = Kobold

¹⁾ add-on price for option D & F (add-on per m cable; specify cable length in writing)

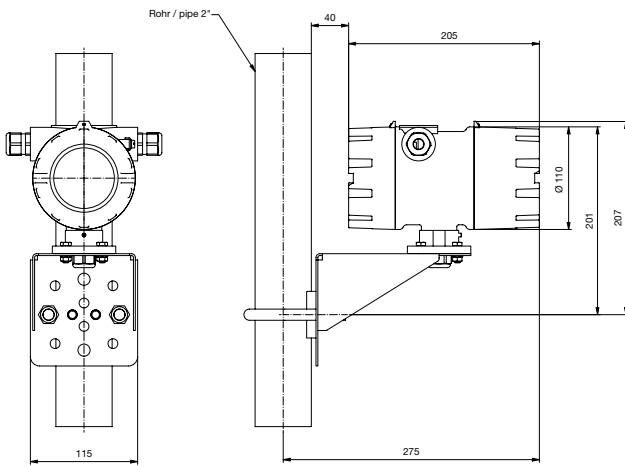
Dimensions [mm]

TMU-W004

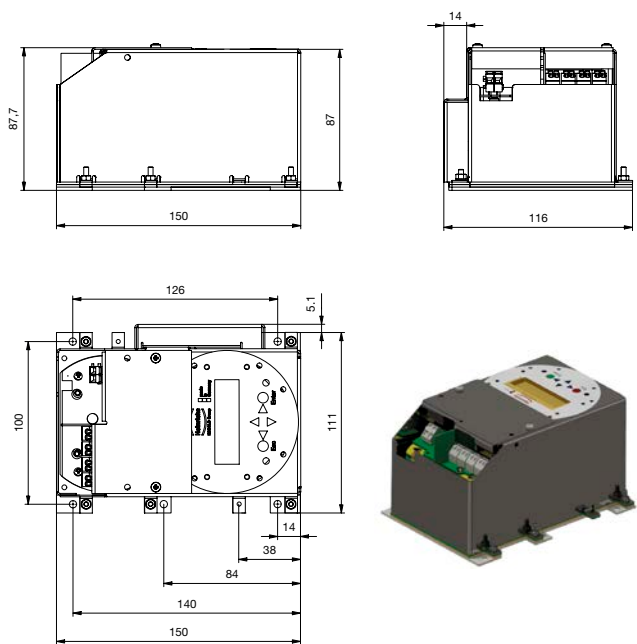


Transmitter UMC4

Field housing



Rack mount



Weight

Model	Weight	
	Sensor	Transmitter (UMC4)
TMU-W004	2,8 kg	4,5 kg