

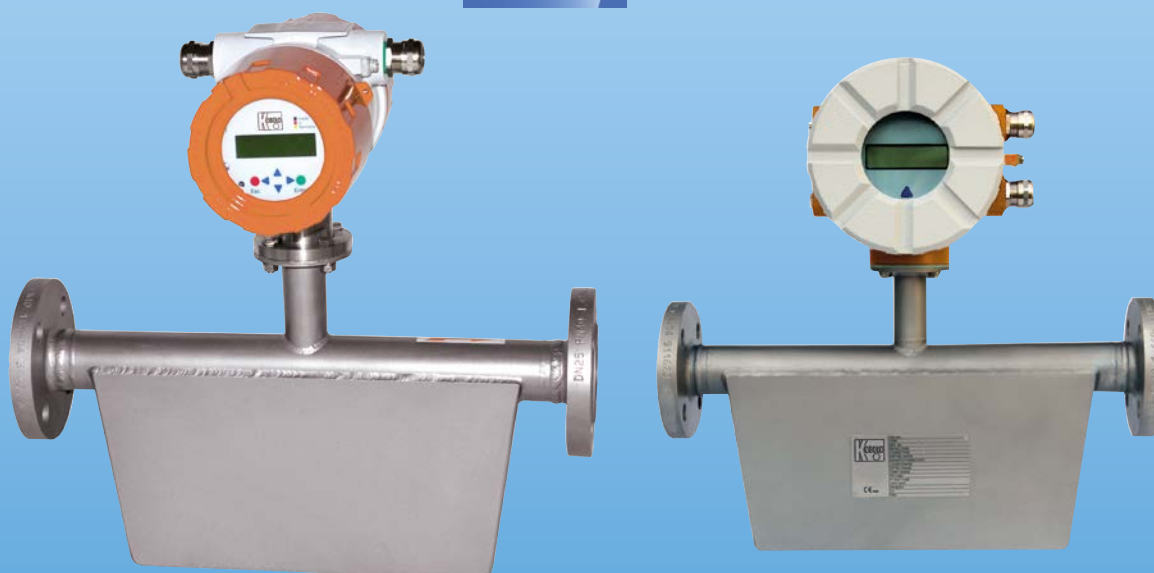


## Coriolis Massflowmeter for liquids and gas



measuring  
•  
monitoring  
•  
analysing

TMU



- Measuring range:  
0 - 60 kg/h ... 0 - 2200 t/h water
- Accuracy:  $\pm 0.1\%$  of reading  
 $\pm$ zero point stability (from liquids up to TMU-x040)
- $p_{\max}$ : PN 40;  $t_{\max}$ : -40... +260 °C
- Connection: flange DN 10... DN 400,  
1/2" ... 14" class 150/300
- Material: 1.4404 (316 L) / 1.4571 (316 Ti)/  
Hastelloy C-22
- Options: contacts, analogue output with HART®,  
PROFIBUS® PA, Fieldbus Foundation™ or Modbus RTU



SS

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### Description

The Kobold Mass Flow Meter model TMU utilizes the Coriolis principle of operation to measure mass flow. Density and temperature are simultaneously monitored and volumetric flow is additionally calculated with these parameters. The TMU Series is available with a direct mounted transmitter or in a remote mounted configuration. The unit can be used to meter nearly all liquid or gaseous media and was especially designed to operate in many standard applications. It is applied in many different industrial branches. The TMU Series is also used for precise dosing as well as in loading and unloading applications. Approvals for service in custody transfer (fiscal metering) applications are also available.

### Application Areas

- chemical industry
- petrochemical industry
- food industry
- oil industry
- gas industry

### Technical Details

#### Sensor

Measuring principle: Coriolis  
Measurable media: liquids and gases

#### Materials

- flow tubes, splitter, flanges: stainless steel 1.4404 (316 L) / 1.4571 (316 Ti) Hastelloy C-22

- housing: stainless steel 1.4301 (304) up to TMU-x040 St 37.2 / 1.4301 (304) from TMU-x050

Process connections: acc. to EN 1092, ASME B16.5, DIN 2512, special connections on request


Nominal pressure: PN 40, ASME CI 150 / 300 higher pressures on request

Process temperature: -40 ... +260 °C

Ambient temperature: -20 ... +60 °C (standard) -20 ... +80 °C (with approval 5 or 6 and removable, separate board)

Protection: IP 66/68 (EN60529)

#### Certificates and approvals

- explosion protection: sensor circuits: intrinsically safe DMT 01 ATEX E 149 X  II ½ G EEx ia IIC T6-T2 (approval for zone 0 inside flow tubes available)

- CE-marking: pressure equipment directive 97 / 23 / EG

### Transmitter UMC3

#### Material

- housing: aluminium (painted)

- display cover: safety glass

Mounting: integrated or remote mounted (junction box or plug in connector)

Power supply: 19 - 36 V<sub>DC</sub>, 24 V<sub>AC</sub> ±20 %, 90 - 265 V<sub>AC</sub>

Outputs: galvanically isolated

Current: 2 x 0 (4) - 20 mA

Binary 1: active, potential free 24 V =, max. 200 mA  
passive, optocoupler, U<sub>i</sub> = 30 V, I<sub>i</sub> = 200 mA, P<sub>i</sub> = 3 W

Frequency: 1 KHz

Binary 2: passive, optocoupler, U<sub>i</sub> = 30 V, I<sub>i</sub> = 200 mA, P<sub>i</sub> = 3 W

Status: passive, optocoupler, U<sub>i</sub> = 30 V, I<sub>i</sub> = 200 mA, P<sub>i</sub> = 3 W

Input binary: counter reset

Ambient temperature: -20 ... +60 °C (standard) -20 ... +80 °C (remote mounted transmitter with approvals 5 and 6)

Protection: IP 68 (EN60529)

Communication: HART® PROFIBUS® PA Fieldbus Foundation™ Modbus RTU (RS 485)

### Transmitter UMC4

#### Material

- housing: aluminium (painted)

Mounting: integrated or remote mounted (junction box or cable)

Power supply: 19 - 36 V<sub>DC</sub> 24 V<sub>AC</sub> + 5 % / -20 %, 50/60 Hz 90 - 265 V<sub>AC</sub>, 50/60 Hz

#### Output signals

All signal outputs: galvanically isolated

Analogue output: 2 x 4 - 20 mA passive

Current output 1: mass flow, volume flow, density, temperature (when using HART® protocol, output 1 is assigned to mass flow)

Current output 2: mass flow, volume flow, density, temperature

**Technical Details** (continuation)

Pulse output	
Binary 1:	pulse duration, standard 50 ms, adjustable from 0,1 ... 2000 ms pulse/pause ratio 1:1 (if the set pulse duration is below limit) as frequency output: max. 1 KHz passive, optocoupler, $U_{nom}: 24\text{ V}, U_i = 30\text{ V},$ $I_i = 60\text{ mA}, P_i = 1,8\text{ W}$
Pulse value:	settable in decade increments of selected pulse unit (e. g. kg or m <sup>3</sup> )
Status:	forward flow, reverse flow, MIN/MAX flow rate, MIN/MAX density, MIN/MAX temperature, alarm, second pulse output (out of phase by 90°) passive, optocoupler, $U_{nom}: 24\text{ V}, U_i = 30\text{ V},$ $I_i = 60\text{ mA}, P_i = 1,8\text{ W}$
Ambient temperature:	-20 ... +60 °C (standard) below 0 °C the readability of the LC-display is limited
Protection:	IP 68 (EN60529)
Communication:	HART®
<b>Accuracy</b>	
Liquid:	±0,1 % of reading ±zero point stability up to TMU-x040 ±0,15 % of reading

	±zero point stability from TMU-x050
Gas:	±0,5 % of reading ±zero point stability
Density (liquid):	±0,005 g/cm <sup>3</sup> with density calibration ±0,001 g/cm <sup>3</sup> with special density calibration for TMU-x015, TMU-x025 and TMU-x040 ±0,002 g/cm <sup>3</sup> with special density calibration for other models
Volume:	±0,2 % of reading ±zero point stability

**Certifications and Approvals****Sensor**

Intrinsically safe sensor circuits

II 1/2G Ex ia IIC T6-T2

II 1/2G Ex ia IIC T6-T2

(Zone 0 is permitted in the measuring tube)

**FM** IS/I/1/ABCD/T\*: CD 06100**CSA** IS/I/1/ABCD/T\*: CD 06101**NEPSI Approval** Cert. No. GYJ06476X**GOST-R****UMC-3**

05 ATEX E 021 X

II (1)2G EEx de [ia] IIC/IIB T6-T3

II (1)2G EEx d [ia] IIC/IIB T6-T3

**FM** XP-AIS/I/1/ABCD/T\*: CD 06100**CSA** XP-AIS/I/1/CD/T\*: CD 06101**NEPSI Approval** Cert. No. GYJ06477**GOST-R****UMC-4**

10 ATEX E 110 X

II (1)2G Ex d [ia Ga] IIC T4-T3 Gb

IEC Ex

**Measuring Ranges**

Model	Min. measuring range kg/h [lbs/min]	Max. measuring range kg/h [lbs/min]	Nominal ( $\Delta p = 1\text{ bar}$ ) kg/h [lbs/min]	Zero point stability (of range) kg/h [lbs/min]
TMU-x008	60 [2.2]	600 [22,0]	330 [12.1]	0.06 [0.002]
TMU-x010	250 [9.2]	2500 [91,9]	1150 [42.3]	0.25 [0.01]
TMU-x015	1200 [44.1]	12000 [440,9]	5250 [192.9]	1.2 [0.04]
TMU-x025	3000 [110.2]	30 000 [1102,3]	20 000 [734.9]	3 [0.1]
TMU-x040	6000 [220.5]	60 000 [2204,6]	55 000 [2020.9] <sup>1)</sup>	6 [0.2]
TMU-x050	20 000 [734.9]	80 000 [2939,4]	74 000 [2719.0]	8 [0.3]
TMU-x080	25 000 [918.6]	120 000 [4409,2]	118 000 [4335.7] <sup>2)</sup>	12 [0.4]
TMU-x100	30 000 [1102.3]	200 000 [7348,6]	200 000 [7348.6] <sup>3)</sup>	20 [0.7]
TMU-x150	60 000 [2204.6]	460 000 [16 901,8]	460 000 [16 901.8] <sup>3)</sup>	46 [1.7]
TMU-x200	150 000 [5511.5]	700 000 [25 720,2]	700 000 [25 720.2] <sup>4)</sup>	70 [2.6]
TMU-x250	300 000 [11 022.9]	1 500 000 [55 114,6]	1 350 000 [49 603.2]	150 [5.5]
TMU-x300	400 000 [14 697,2]	2 200 000 [80 834,8]	1 900 000 [69 811.9]	220 [8.1]

Reference condition: according to IEC 770: Water at 20 °C

<sup>1)</sup> ( $\Delta p = 0.87\text{bar}$ )<sup>2)</sup> ( $\Delta p = 0.95\text{bar}$ )<sup>3)</sup> ( $\Delta p = 0.93\text{bar}$ )<sup>4)</sup> ( $\Delta p = 0.66\text{bar}$ )



Order Details Sensor (Example: TMU-S008 6010 A00 A 0 1 0)

Model/ Material	Sensor/Measuring range	Process connection <sup>1)</sup>	Containment	Heating/ Cooling
<b>TMU-S..</b> stainless steel  <b>TMU-H..</b> Hastelloy C-22	<b>008</b> = DN8, 0 - 600 kg/h (min. 0 - 60 kg/h)	<b>6010</b> = ¼" NPT IG <b>6030</b> = ½" NPT IG <b>301B</b> = flange DN10 PN40 <sup>2)</sup> <b>201R</b> = flange ½" Class 150 RF <sup>3)</sup> <b>241R</b> = flange ½" Class 600 RF <sup>3)</sup> <b>226R</b> = flange 2" Class 300 RF <b>XXXX</b> = Special (please specify in clear text)	<b>A</b> = standard containment 1.4301 <sup>1)</sup>  <b>B</b> = standard containment with drain connection ½" NPT female	<b>0</b> = without  <b>A</b> = heating plate (up to TMU040)  <b>B</b> = heating loop (from TMU040)
	<b>010</b> = DN10, 0 - 2500 kg/h (min. 0 - 250 kg/h)	<b>6010</b> = ¼" NPT IG <b>6030</b> = ½" NPT IG <b>301B</b> = flange DN10 PN40 <sup>2)</sup> <b>305B</b> = flange DN15 PN40 <sup>2)</sup> <b>309B</b> = flange DN25 PN40 <sup>2)</sup> <b>201R</b> = flange ½" Class 150 RF <sup>3)</sup> <b>241R</b> = flange ½" Class 600 RF <sup>3)</sup> <b>202R</b> = flange ¾" Class 150 RF <sup>3)</sup> <b>242R</b> = flange ¾" Class 600 RF <sup>3)</sup> <b>223R</b> = flange 1" Class 300 RF <sup>3)</sup> <b>225R</b> = flange 1½" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>015</b> = DN15, 0 - 12 000 kg/h (min. 0 - 1200 kg/h)	<b>6030</b> = ½" NPT IG <b>305B</b> = flange DN15 PN40 <sup>2)</sup> <b>309B</b> = flange DN25 PN40 <sup>2)</sup> <b>321B</b> = flange DN50 PN40 <sup>2)</sup> <b>201R</b> = flange ½" Class 150 RF <sup>3)</sup> <b>241R</b> = flange ½" Class 600 RF <sup>3)</sup> <b>202R</b> = flange ¾" Class 150 RF <sup>3)</sup> <b>242R</b> = flange ¾" Class 600 RF <sup>3)</sup> <b>203R</b> = flange 1" Class 150 RF <sup>3)</sup> <b>243R</b> = flange 1" Class 600 RF <sup>3)</sup> <b>225R</b> = flange 1½" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>025</b> = DN25, 0 - 30 000 kg/h (min. 0 - 3000 kg/h)	<b>309B</b> = flange DN25 PN40 <sup>2)</sup> <b>317B</b> = flange DN40 PN40 <sup>2)</sup> <b>321B</b> = flange DN50 PN40 <sup>2)</sup> <b>202R</b> = flange ¾" Class 150 RF <sup>3)</sup> <b>242R</b> = flange ¾" Class 600 RF <sup>3)</sup> <b>203R</b> = flange 1" Class 150 RF <sup>3)</sup> <b>243R</b> = flange 1" Class 600 RF <sup>3)</sup> <b>205R</b> = flange 1½" Class 150 RF <sup>3)</sup> <b>245R</b> = flange 1½" Class 600 RF <sup>3)</sup> <b>206R</b> = flange 2" Class 150 RF <sup>3)</sup> <b>226R</b> = flange 2" Class 300 RF <b>XXXX</b> = Special (please specify in clear text)		

<sup>1)</sup> stainless steel 1.4301 from sensor 040 steel for sensor 050 and bigger

<sup>2)</sup> flange according to DIN EN1092-1 form B1

<sup>3)</sup> ASME B16.5-2003



**Order Details Sensor (Example: TMU-S008 6010 A00 A 0 1 0)** (Continuation)

Model/ Material	Sensor/Measuring range	Process connection <sup>1)</sup>	Containment	Heating/ Cooling
<b>TMU-S..</b> stainless steel  <b>TMU-H..</b> Hastelloy C-22	<b>040</b> = DN40, 0 - 60 000 kg/h (min. 0 - 6000 kg/h)	<b>317B</b> = flange DN40 PN40 <sup>2)</sup> <b>321B</b> = flange DN50 PN40 <sup>2)</sup> <b>331B</b> = flange DN80 PN40 <sup>2)</sup> <b>205R</b> = flange 1 ½" Class 150 RF <sup>3)</sup> <b>245R</b> = flange 1 ½" Class 600 RF <sup>3)</sup> <b>226R</b> = flange 2" Class 300 RF <b>206R</b> = flange 2" Class 150 RF <sup>3)</sup> <b>228R</b> = flange 3" Class 300 RF <sup>3)</sup> <b>250R</b> = flange 4" Class 600 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)	<b>A</b> = standard containment 1.4301 <sup>1)</sup>  <b>B</b> = standard containment with drain connection ½" NPT female	<b>0</b> = without  <b>A</b> = heating plate (up to TMU040)  <b>B</b> = heating loop (from TMU040)
	<b>050</b> = DN50, 0 - 80 000 kg/h (min. 0 - 20 000 kg/h)	<b>317B</b> = flange DN40 PN40 <sup>2)</sup> <b>321B</b> = flange DN50 PN40 <sup>2)</sup> <b>331B</b> = flange DN80 PN40 <sup>2)</sup> <b>335B</b> = flange DN100 PN16 <sup>2)</sup> <b>205R</b> = flange 1 ½" Class 150 RF <sup>3)</sup> <b>245R</b> = flange 1 ½" Class 600 RF <sup>3)</sup> <b>206R</b> = flange 2" Class 150 RF <sup>3)</sup> <b>226R</b> = flange 2" Class 300 RF <sup>4)</sup> <b>208R</b> = flange 3" Class 150 RF <sup>3)</sup> <b>248R</b> = flange 3" Class 600 RF <sup>3)</sup> <b>210R</b> = flange 4" Class 150 RF <sup>3)</sup> <b>230R</b> = flange 4" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>080</b> = DN80, 0 - 120 000 kg/h (min. 0 - 25 000 kg/h)	<b>321B</b> = flange DN50 PN40 <sup>2)</sup> <b>331B</b> = flange DN80 PN40 <sup>2)</sup> <b>335B</b> = flange DN100 PN16 <sup>2)</sup> <b>340B</b> = flange DN125 PN16 <sup>2)</sup> <b>345B</b> = flange DN150 PN16 <sup>2)</sup> <b>206R</b> = flange 2" Class 150 RF <sup>3)</sup> <b>246R</b> = flange 2" Class 600 RF <sup>3)</sup> <b>208R</b> = flange 3" Class 150 RF <sup>3)</sup> <b>248R</b> = flange 3" Class 600 RF <sup>3)</sup> <b>210R</b> = flange 4" Class 150 RF <sup>3)</sup> <b>230R</b> = flange 4" Class 300 RF <sup>3)</sup> <b>211R</b> = flange 5" Class 150 RF <sup>3)</sup> <b>231R</b> = flange 5" Class 300 RF <sup>3)</sup> <b>212R</b> = flange 6" Class 150 RF <sup>3)</sup> <b>232R</b> = flange 6" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>100</b> = DN100, 0 - 200 000 kg/h (min. 0 - 30 000 kg/h)	<b>331B</b> = flange DN80 PN40 <sup>2)</sup> <b>335B</b> = flange DN100 PN16 <sup>2)</sup> <b>345B</b> = flange DN150 PN16 <sup>2)</sup> <b>208R</b> = flange 3" Class 150 RF <sup>3)</sup> <b>248R</b> = flange 3" Class 600 RF <sup>3)</sup> <b>210R</b> = flange 4" Class 150 RF <sup>3)</sup> <b>230R</b> = flange 4" Class 300 RF <sup>3)</sup> <b>212R</b> = flange 6" Class 150 RF <sup>3)</sup> <b>232R</b> = flange 6" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		

<sup>1)</sup> stainless steel 1.4301 from sensor 040 steel for sensor 050 and bigger

<sup>2)</sup> flange according to DIN EN1092-1 form B1

<sup>3)</sup> ASME B16.5-2003



Order Details Sensor (Example: TMU-S008 6010 A00 A 0 1 0) (Continuation)

Model/ Material	Sensor/Measuring range	Process connection <sup>1)</sup>	Containment	Heating/ Cooling
<b>TMU-S..</b> stainless steel  <b>TMU-H..</b> Hastelloy C-22	<b>150</b> = DN150, 0 - 460 000 kg/h (min. 0 - 60 000 kg/h)	<b>335B</b> = flange DN100 PN16 <sup>2)</sup> <b>345B</b> = flange DN150 PN16 <sup>2)</sup> <b>350B</b> = flange DN200 PN16 <sup>2)</sup> <b>210R</b> = flange 4" Class 150 RF <sup>3)</sup> <b>230R</b> = flange 4" Class 300 RF <sup>3)</sup> <b>212R</b> = flange 6" Class 150 RF <sup>3)</sup> <b>232R</b> = flange 6" Class 300 RF <sup>3)</sup> <b>213R</b> = flange 8" Class 150 RF <sup>3)</sup> <b>233R</b> = flange 8" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)	<b>A</b> = standard containment 1.4301 <sup>1)</sup>  <b>B</b> = standard containment with drain connection ½" NPT female	<b>0</b> = without  <b>A</b> = heating plate (up to TMU040)  <b>B</b> = heating loop (from TMU040)
	<b>200</b> = DN200, 0 - 700 000 kg/h (min. 0 - 150 000 kg/h)	<b>345B</b> = flange DN150 PN16 <sup>2)</sup> <b>350B</b> = flange DN200 PN16 <sup>2)</sup> <b>356B</b> = flange DN250 PN16 <sup>2)</sup> <b>212R</b> = flange 6" Class 150 RF <sup>3)</sup> <b>232R</b> = flange 6" Class 300 RF <sup>3)</sup> <b>213R</b> = flange 8" Class 150 RF <sup>3)</sup> <b>233R</b> = flange 8" Class 300 RF <sup>3)</sup> <b>214R</b> = flange 10" Class 150 RF <sup>3)</sup> <b>234R</b> = flange 10" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>250</b> = DN250, 0 - 1 500 000 kg/h (min. 0 - 300 000 kg/h)	<b>350B</b> = flange DN200 PN16 <sup>2)</sup> <b>356B</b> = flange DN250 PN16 <sup>2)</sup> <b>363B</b> = flange DN300 PN16 <sup>2)</sup> <b>213R</b> = flange 8" Class 150 RF <sup>3)</sup> <b>233R</b> = flange 8" Class 300 RF <sup>3)</sup> <b>214R</b> = flange 10" Class 150 RF <sup>3)</sup> <b>234R</b> = flange 10" Class 300 RF <sup>3)</sup> <b>215R</b> = flange 12" Class 150 RF <sup>3)</sup> <b>235R</b> = flange 12" Class 300 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		
	<b>300</b> = DN300, 0 - 2 200 000 kg/h (min. 0 - 400 000 kg/h)	<b>355B</b> = flange DN250 PN10 <sup>2)</sup> <b>362B</b> = flange DN300 PN10 <sup>2)</sup> <b>369B</b> = flange DN350 PN10 <sup>2)</sup> <b>375B</b> = flange DN400 PN10 <sup>2)</sup> <b>214R</b> = flange 10" Class 150 RF <sup>3)</sup> <b>234R</b> = flange 10" Class 300 RF <sup>3)</sup> <b>215R</b> = flange 12" Class 150 RF <sup>3)</sup> <b>235R</b> = flange 12" Class 300 RF <sup>3)</sup> <b>216R</b> = flange 14" Class 150 RF <sup>3)</sup> <b>236R</b> = flange 14" Class 300 RF <sup>3)</sup> <b>217R</b> = flange 16" Class 150 RF <sup>3)</sup> <b>XXXX</b> = Special (please specify in clear text)		

<sup>1)</sup>stainless steel 1.4301 from sensor 040 steel for sensor 050 and bigger

<sup>2)</sup>flange according to DIN EN1092-1 form B1

<sup>3)</sup>ASME B16.5-2003



**Order Details Sensor** (continuation)

Connection for heating / cooling	Sensor / Process temperature / Thread junction box	Approvals	Calibration massflow	Calibration density
<b>0</b> = without <b>A</b> = with Ermeto EO12 <b>B</b> = with Swagelok 12mm <b>C</b> = with DN15 PN40 acc. to DIN EN 1092-1 form B1 <b>D</b> = with flange 1/2" class 150 RF ASME B16,5 <b>E</b> = with 1/2" NPT female <b>F</b> = with DN25 PN40 acc. to DIN EN 1092-1 form B1 <b>G</b> = with flange 1" class 150 RF ASME B 16,5 <b>H</b> = with 1" NPT female	<b>A</b> = integrated transmitter, -20...+100 °C <b>B</b> = integrated transmitter, -20...+150 °C <b>C</b> <sup>2)</sup> = remote mounted transmitter, -40...+100 °C, 1/2" NPT <b>D</b> <sup>2)</sup> = remote mounted transmitter, -40...+180 °C, 1/2" NPT <b>E</b> <sup>2)</sup> = remote mounted transmitter, -40...+260 °C, 1/2" NPT <b>F</b> <sup>2)</sup> = remote mounted transmitter, -40...+100 °C, M 20x1,5 <b>G</b> <sup>2)</sup> = remote mounted transmitter, -40...+180 °C, M 20x1,5 <b>H</b> <sup>2)</sup> = remote mounted transmitter, -40...+260 °C, M 20x1,5	<b>0</b> = without <b>A</b> =  II 1/2 G EEx ia IIC T6 - T2 <b>B</b> = NEPSI	<b>1</b> = standard, 3-point <b>2</b> = 10-point <b>3</b> = outside lab	<b>0</b> = without <b>1</b> = standard, 3-point <b>2</b> = special, 5-point

<sup>1)</sup> other flange-form or ANSI-flange on request

<sup>2)</sup> please order cable glands separately, see accessories

**Necessary details for dimensioning the TMU instrument**

- medium
- process temperature min./max.
- ambient temperature min./max.
- measuring range
- operating pressure
- viscosity
- density

**Order Details Transmitter UMC3 (UMC3 - A 0 1 A 0 0 K)**

Model	Mounting/connection to sensor/Thread cable connection	Display / Interface board Power	Power supply	Outputs
UMC3-	<b>A</b> = integrated transmitter/-/ 1/2" NPT <b>B</b> = integrated transmitter/-/ M 20x1,5 <b>C</b> <sup>1)</sup> = remote mounted transmitter/ terminal block with 1/2" NPT/ 1/2" NPT <b>D</b> <sup>1)</sup> = remote mounted transmitter terminal block with M20x1,5/ M20x1,5 <b>E</b> <sup>1)</sup> = remote mounted transmitter plug-in connector Harting Han® R23/1/2" NPT <b>F</b> <sup>1)</sup> = remote mounted transmitter plug-in connector Harting Han® R23/M20x1,5	<b>0</b> = without <b>1</b> = integrated in transmitter housing, ambient temperature up to 60 °C <b>2</b> <sup>2)</sup> = remotable, separate board plus panel mounting adapter set	<b>1</b> = 90 - 265 V <sub>AC</sub> , 50/60 Hz <b>2</b> = 19 - 36 V <sub>DC</sub> , 24 V <sub>AC</sub> (± 20 %), 50/60 Hz	<b>A</b> = analogue output, 0 (4) - 20 mA with/without HART®, pulse output passive U <sub>m</sub> = 30 V <sub>DC</sub> , status output passive U <sub>m</sub> = 30 V <sub>DC</sub> <b>B</b> <sup>3)</sup> = analogue output 0 (4) - 20 mA with/without HART®, pulse output active 24 V <sub>DC</sub> , status output passive U <sub>m</sub> = 30 V <sub>DC</sub> <b>D</b> <sup>4)</sup> = PROFIBUS PA (EEx ia IIC), without analogue and binary outputs <b>E</b> = PROFIBUS® DP V1 without analogue and binary outputs <b>F</b> <sup>5)</sup> = Modbus® RTU (RS485 analogue output 0 (4) - 20 mA <b>J</b> = Fieldbus Foundation™



**Order details Transmitter UMC3** (continuation)

Approvals	Protection signal output
0 = without	0 = without
1 = $\text{Ex}$ II(1)2G Eex de [ia] IIB/IIC T3-T6 ambient temperature up to 60 °C	1 = EEX ia 2 = EEx e (not intrinsically safe)
2 = $\text{Ex}$ II(1)2G Eex d [ia] IIB/IIC T3-T6 ambient temperature up to 60 °C	
4 = NEPSI ambient temperature up to 60 °C	
5 = $\text{Ex}$ II(1)2G Eex de [ia] IIB/IIC T3-T6 ambient temperature up to 80 °C	
6 = $\text{Ex}$ II(1)2G Eex de [ia] IIB/IIC T3-T6 ambient temperature up to 80 °C	

- <sup>1)</sup> - incl. wall mounting bracket, pipe mounting bracket must be ordered separately (see accessories)
- connection cable (sensor to transmitter) and cable gland must be ordered separately (see accessories)
- <sup>2)</sup> connection cable must be ordered separately
- <sup>3)</sup> signal output in EEX ia not possible
- <sup>4)</sup> not available with approval 3 and 4
- <sup>5)</sup> not available with approval 3, 4, 5, or 6 not with signal output protection 2

**Order details Transmitter UMC4** (Example: UMC4 - B 1 1 A 0

Model	Mounting/ Thread power supply output	Display / Interface board	Power supply	Outputs
UMC4-	B = integrated transmitter / M20x1,5 D <sup>1)</sup> = remote mounted transmitter, terminal block mounted / M20x1,5 (specify cable length in clear text) E <sup>1)</sup> = remote mounted transmitter, transmitter with 5 m cable / M20x1,5	1 = integrated in transmitter housing, ambient temperature up to 60 °C	1 = 90 - 265 V <sub>AC</sub> , 50/60 Hz 2 = 19 - 36 V <sub>DC</sub> , 24 V <sub>AC</sub> (± 20 %), 50/60 Hz	A = analogue output, 0 (4) - 20 mA with/without HART®, pulse output passive U <sub>m</sub> = 30 V <sub>DC</sub> , status output passive U <sub>m</sub> = 30 V <sub>DC</sub>

Approvals	Protection signal output
0 = without	0 = without
2 = $\text{Ex}$ II(1)2G Eex d [ia] IIB/IIC T3-T6 ambient temperature up to 60 °C	1 = EEX ia 2 = EEx e (not intrinsically safe)

- <sup>1)</sup> - incl. wall mounting bracket, pipe mounting bracket must be ordered separately (see accessories)
- connection cable (sensor to transmitter) and cable gland must be ordered separately (see accessories)

**Order Details Accessories** (Example: TMK - BL KK 005)

Order number	Model	Version	Cable length / Application area
TMK-	BL = connection cable	KK = sensor-transmitter with connection cable SK = sensor-transmitter cable end 1: plug (Harting Han® R23) cable end 2: cable connect SS = plug connection on both sides (Harting Han® R23) UB = transmitter-interface board plug connection	<b>Cable length</b> 005 = 5 meter 010 = 10 meter 015 = 15 meter 030 = 30 meter 075 = 75 meter 150 = 150 meter 300 = 300 meter XXX = special length
	V = cable gland set	AU = integrated transmitter GU = remote mounted transmitter	<b>Application area</b> NEM 20 = not Ex, M 20 x1,5 NENPT = not Ex, 1/2" NPT DEIAM 20 = EEx de - EEx ia, M 20 x1.5 DEIANPT = EEx de - EEx ia, 1/2" NPT DEEM 20 = EEx de - EEx e, M 20 x1.5 DEENPT = EEx de - EEx e, 1/2" NPT
TM-	ROHRMONT = accessory for 2" pipe mounting		





**Installation Length**

Model	A (Installation Length)								
	end connection	mm	[inch]	end connection	mm	[inch]	end connection	mm	[inch]
TMU-x008	DN10	360	[14.2]	¼" NPT (f)	300	[11.8]	½" CI150	366	[14.4]
	-	-	-	½" NPT (f)	300	[11.8]	½" CI600	375	[14.8]
TMU-x010	DN10	390	[15.4]	DN15	396	[15.6]	DN25	424	[16.7]
	¼" NPT (f)	300	[11.8]	½" CI150	416	[16.4]	¾" CI150	350	[13.8]
	½" NPT (f)	300	[11.8]	½" CI600	425	[16.7]	¾" CI600	360	[14.2]
TMU-x015	DN15	515	[20.3]	DN25	520	[20.5]	DN50	586	[23.1]
	½" NPT (f)	450	[17.7]	½" CI150	535	[21.1]	¾" CI150	546	[21.5]
	-	-	-	½" CI600	546	[21.5]	¾" CI600	556	[21.9]
TMU-x025	DN25	632	[24.9]	DN40	642	[25.3]	DN50	500	[19.7]
	¾" CI150	657	[25.9]	1" CI150	664	[26.1]	1½" CI150	676	[26.6]
	¾" CI600	667	[26.3]	1" CI600	676	[26.6]	1½" CI600	692	[27.2]
TMU-x040	DN40	770	[30.3]	DN50	776	[30.6]	DN80	600	[23.6]
	1½" CI150	804	[31.7]	2" CI150	810	[31.9]	-	-	-
	1½" CI600	820	[32.3]	2" CI600	828	[32.6]	-	-	-
TMU-x050	DN40	1018	[40.1]	DN50	1024	[40.3]	DN80	1025	[41.1]
	DN100	804	[31.7]	-	-	-	-	-	-
	1½" CI150	1050	[41.3]	2" CI150	1053	[41.5]	3" CI150	1066	[42.0]
	1½" CI600	1066	[42.0]	2" CI600	1072	[42.2]	3" CI600	1091	[43.0]
TMU-x080	DN50	1176	[46.3]	DN80	1196	[47.1]	DN100	1184	[46.6]
	DN125	925	[43.1]	DN150	on request	-	-	-	
	2" CI150	1207	[47.5]	3" CI150	1218	[48.0]	4" CI150	1230	[48.4]
	2" CI600	1226	[48.3]	3" CI600	1243	[48.9]	4" CI300	1250	[49.2]
TMU-x100	DN80	1370	[53.9]	DN100	1358	[53.5]	DN150	1090	[42.9]
	3" CI150	1388	[54.6]	4" CI150	1400	[55.1]	6" CI150	1154	[45.4]
	3" CI300	on request	4" CI300	1420	[55.9]	6" CI300	1173	[46.2]	
	3" CI600	1413	[55.6]	4" CI600	on request	6" CI600	on request		
TMU-x150	DN100	1726	[68.0]	DN150	1732	[68.2]	DN200	1448	[57.0]
	4" CI150	1770	[69.7]	6" CI150	1796	[70.7]	8" CI150	1525	[60.0]
	4" CI300	1790	[70.5]	6" CI300	1815	[71.5]	8" CI300	1545	[60.8]
	4" CI600	on request	6" CI600	on request	8" CI600	on request			
TMU-x200	DN150	2184	[86.0]	DN200	2198	[86.5]	DN250	1850	[73.4]
	6" CI150	2250	[88.6]	8" CI150	2270	[89.4]	10" CI150	1925	[75.8]
	6" CI300	2270	[89.4]	8" CI300	2287	[90.0]	10" CI300	1957	[77.1]
	6" CI600	on request	8" CI600	on request	10" CI600	on request			
TMU-x250	DN200	2268	[89.3]	DN250	2284	[89.9]	DN300	1900	[74.8]
	8" CI150	2348	[92.4]	10" CI150	2348	[92.4]	12" CI150	1945	[76.6]
	8" CI300	2363	[93.0]	10" CI300	2375	[93.5]	12" CI300	1977	[77.8]
	8" CI600	on request	10" CI600	on request	12" CI600	on request			
TMU-x300	DN250	2913	[114.7]	DN300	2925	[115.2]	DN350	2933	[115.5]
	DN400	on request	-	-	-	-	-	-	
	10" CI150	2976	[117.2]	12" CI150	2995	[117.9]	14" CI150	3020	[118.9]
	10" CI300	3008	[118.4]	12" CI300	3030	[119.3]	14" CI300	3050	[120.1]
	10" CI600	on request	12" CI600	on request	14" CI600	on request			

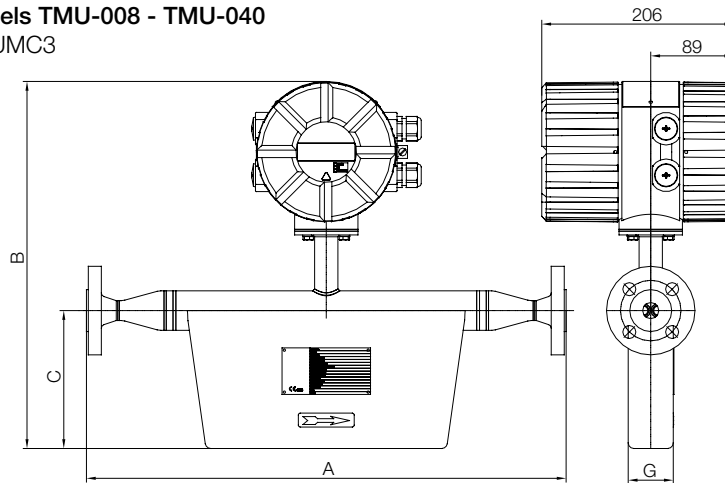
**Dimensions**

**Dimensions with Transmitter UMC3**

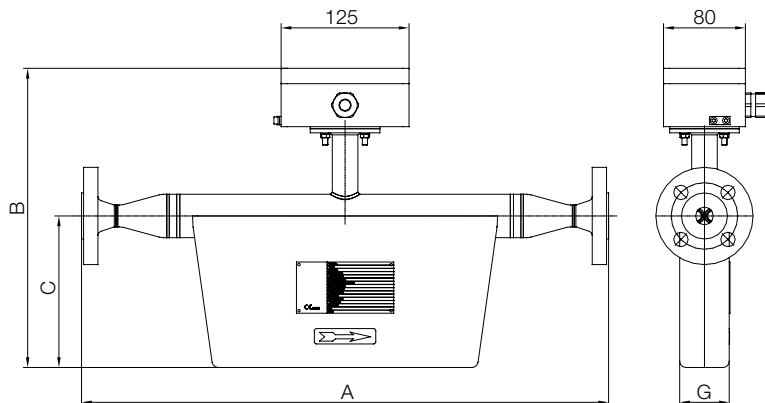
Model	B										C		G	
	Integrated transmitter					Remote mounted transmitter								
	-40...+100 °C (-40...+212 °F)		-40...+150 °C (-40...+302 °F)		-40...+100 °C (-40...+212 °F)		-40...+180 °C (-40...+356 °F)		-40...+260 °C (-40...+500 °F)					
	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]
TMU-x008	328	[12.9]	430	[16.9]	228	[9.0]	330	[13]	430	[16.9]	85	[3.3]	40	[1.6]
TMU-x010	343	[13.5]	445	[17.5]	243	[9.6]	345	[13.6]	445	[17.5]	100	[3.9]	40	[1.6]
TMU-x015	395	[15.6]	497	[19.6]	295	[11.6]	397	[15.6]	497	[19.6]	148	[5.8]	48	[1.9]
TMU-x025	460	[18.1]	562	[22.1]	360	[14.2]	462	[18.2]	562	[22.1]	200	[7.9]	74	[2.9]
TMU-x040	528	[20.8]	630	[24.8]	428	[16.9]	530	[20.9]	630	[24.8]	255	[10.0]	101	[4.0]
TMU-x050	1010	[39.8]	1112	[43.8]	910	[35.8]	1012	[39.8]	1112	[43.8]	615	[24.2]	230	[9.1]
TMU-x080	1210	[47.6]	1312	[51.7]	1110	[43.7]	1212	[47.7]	1312	[51.7]	800	[31.5]	250	[9.8]
TMU-x100	1230	[48.4]	1332	[52.4]	1130	[44.5]	1232	[48.5]	1332	[52.4]	815	[32.1]	270	[10.6]
TMU-x150	1560	[61.4]	1662	[65.4]	1460	[57.5]	1562	[61.5]	1662	[65.4]	1070	[42.1]	380	[15.0]
TMU-x200	1720	[67.7]	1822	[71.7]	1620	[63.8]	1722	[67.8]	1822	[71.7]	1210	[47.6]	400	[15.7]
TMU-x250	1860	[73.2]	1962	[77.2]	1760	[69.3]	1862	[73.3]	1962	[77.2]	1300	[51.2]	550	[21.7]
TMU-x300	1865	[73.4]	1967	[77.4]	1765	[69.5]	1867	[73.5]	1967	[77.4]	1400	[55.1]	510	[20.1]

**Standardversion Models TMU-008 - TMU-040**

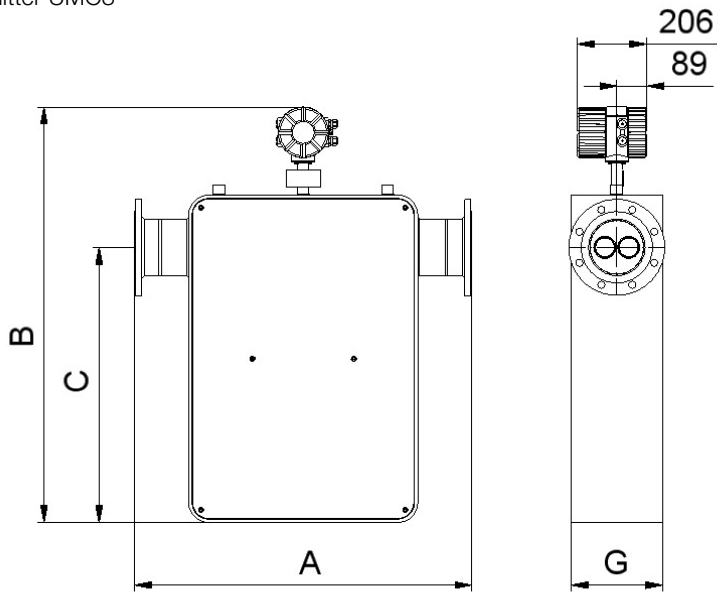
Integrated transmitter UMC3



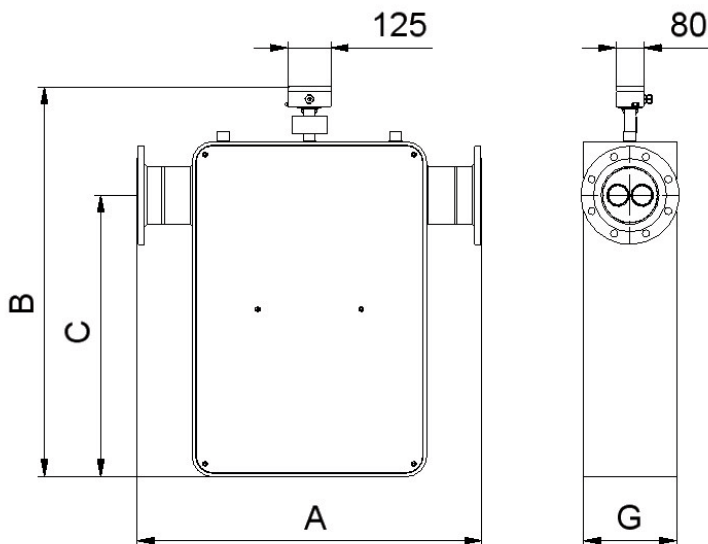
Remote mounted transmitter



Standard version Models TMU-050 - TMU-300  
Integrated transmitter UMC3



Remote mounted transmitter

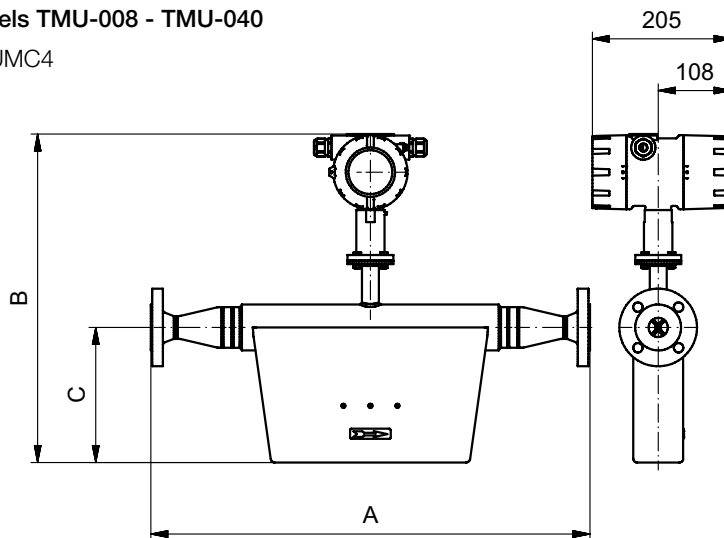


Dimensions with Transmitter UMC4

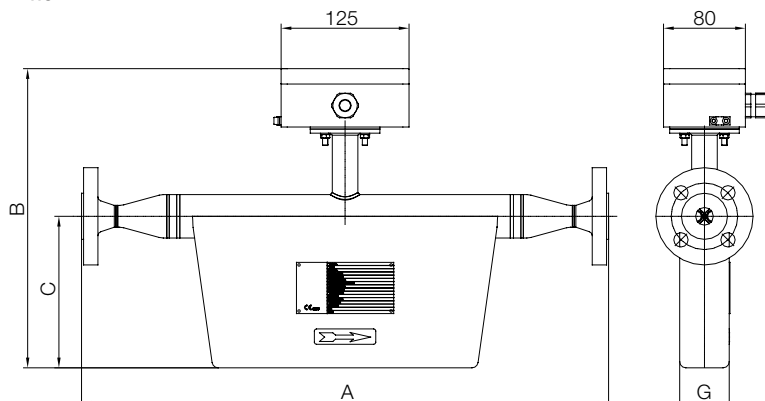
Model	B										C		G	
	Integrated transmitter					Remote mounted transmitter								
	-40...+100 °C (-40...+212 °F)		-40...+150 °C (-40...+302 °F)		-40...+100 °C (-40...+212 °F)		-40...+180 °C (-40...+356 °F)		-40...+260 °C (-40...+500 °F)					
	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]	mm	[inch]
TMU-x008	359	[14.1]	461	[18.1]	256	[10.1]	358	[14.1]	458	[18.0]	85	[3.3]	40	[1.6]
TMU-x010	374	[14.7]	476	[18.7]	271	[10.7]	373	[14.7]	473	[18.6]	100	[3.9]	40	[1.6]
TMU-x015	426	[16.8]	528	[20.8]	323	[12.7]	425	[16.7]	525	[20.7]	148	[5.8]	48	[1.9]
TMU-x025	491	[19.3]	593	[23.3]	388	[15.3]	490	[19.3]	590	[23.2]	200	[7.9]	74	[2.9]
TMU-x040	559	[22.0]	661	[26.0]	456	[18.0]	558	[22.0]	658	[25.9]	255	[10.0]	101	[4.0]
TMU-x050	1041	[41.0]	1143	[45.0]	938	[36.9]	1040	[40.9]	1140	[44.9]	615	[24.2]	230	[9.1]
TMU-x080	1241	[48.9]	1343	[52.9]	1138	[44.8]	1240	[48.8]	1340	[52.8]	800	[31.5]	250	[9.8]
TMU-x100	1261	[49.6]	1363	[53.7]	1158	[45.6]	1260	[49.6]	1360	[53.5]	815	[32.1]	270	[10.6]
TMU-x150	1591	[62.6]	1693	[66.7]	1488	[58.6]	1590	[62.6]	1690	[66.5]	1070	[42.1]	380	[15.0]
TMU-x200	1751	[68.9]	1853	[73.0]	1648	[64.9]	1750	[68.9]	1850	[72.8]	1210	[47.6]	400	[15.7]
TMU-x250	1891	[74.4]	1993	[78.5]	1788	[70.4]	1890	[74.4]	1990	[78.3]	1300	[51.2]	550	[21.7]
TMU-x300	1896	[74.6]	1998	[78.7]	1793	[70.6]	1895	[74.6]	1995	[78.5]	1400	[55.1]	510	[20.1]

Standardversion Models TMU-008 - TMU-040

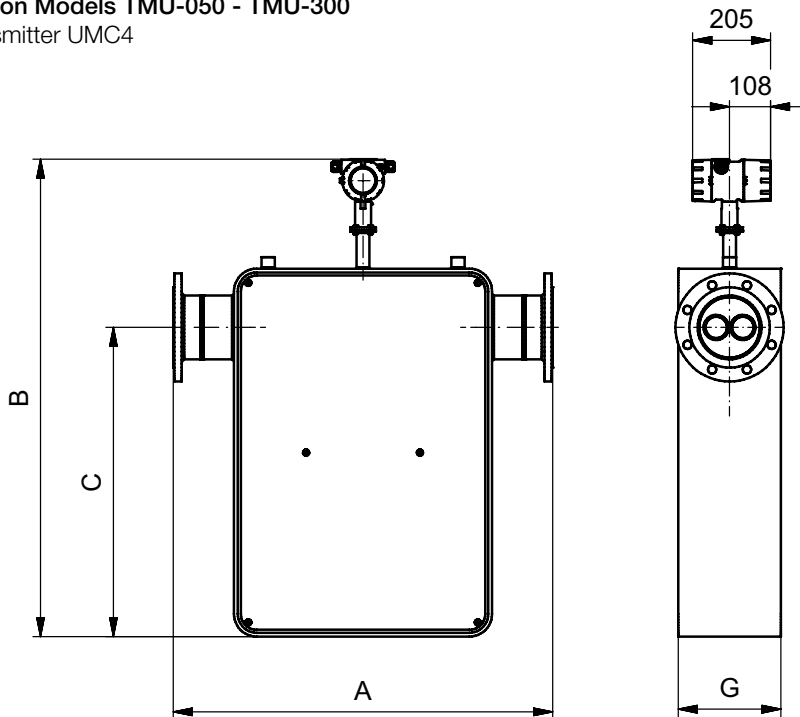
Integrated transmitter UMC4



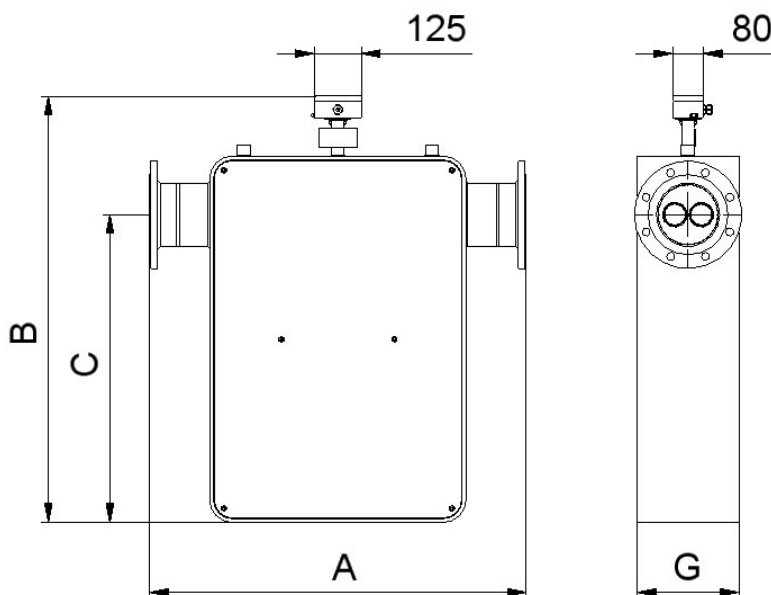
Remote mounted transmitter



**Standard version Models TMU-050 - TMU-300**  
 Integrated transmitter UMC4



Remote mounted transmitter



Dimensions with heating jacket/heating coil on request.