

Certified according to DIN EN ISO 9001

Technical Datasheet



HM...TC-R

Turbine Flow Meters
for Solvents and Di-Water

Application

Turbine flow meters serve to accurate measurement of continuous and discontinuous flow rate values. This turbine flow meter is most suited for liquids with low viscosity, such as for example water, solvents, cleaning agents and light oils.

The large range of different pipe connections and structural sizes allows using these flow meters in various applications and in various industrial sectors.

Applications

- Tap and demineralised water
- Fuels
- Detergents
- Isopropyl
- Fuel oil
- Solvents

Principle and Design

The turbine flow meters KEM are indirect volume counters built on the principle of using the counter with the Woltmann turbine impeller. The energy coming flow the liquid flow sets in motion a centrally and rotatably mounted rotor. The number of the rotor revolutions is directly proportional to the volumetric liquid flow. The speed of rotation of the turbine rotor is contactlessly sensed through the wall of the flow meter body. The impulses generated by each turbine blade correspond to a certain accurate volumetric flow of the measured medium.

The number of pulses for a certain period of time corresponds to the value of the medium flow rate expressed, for example, in litres per minute. The lightweight turbine wheel allows quick response to changes in the value of the medium flow rate (< 50 m/s).

Features



- Compact Design
- High Resolution
- Dynamic measuring system
- Ex-protection according to ATEX 100 / IEC Ex / CSA
- Highquality materials 1.4571 / 1.4460

Technical Data

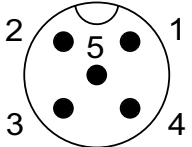
Type	Measuring range, l/min		K-Factor, pulses/l ⁽¹⁾	max. Pressure, bar	Frequency, in Hz ⁽¹⁾	Weight, kg
HM 003 TC-R*	0.3	to 1.5	32,500	630	1,100	0.8
HM 004 TC-R*	0.5	to 4	24,000	630	1,700	0.8
HM 005 TC-R*	0.8	to 6	17,800	630	1,700	0.8
HM 006 TC-R*	1.2	to 10	12,000	630	2,100	0.8
HM 007 TC-R*	2	to 20	5,200	630	1,800	0.8
HM 013 TC-R*	8.5	to 85	900	400	1,300	1.3

1) The data on K-factors and maximum frequencies are average values at 1mm²s. The numbers of pulses and frequencies at higher viscosities may vary. Exact values can be found in individual calibration records.

* Detailed type code on request



General	
Linearity	± 1% of actual flow (1 mm ² /s)
Repeatability	± 0.1%
Materials	Housing: as per DIN 1.4305 (SS303) Internal elements: as per DIN 1.4460 (SS329) Bearing: Carbide
Medium temperature	-40 °C to +80 °C (T3) -40 °C to +60 °C (T4)
Dimensions	See drawing (page 4)
Electrical Data	
Supply voltage	8 to 30 V DC
Output	Push Pull / NAMUR I _{out} max 20 mA; duty cycle 1:1
Connection	plug M12x1, 5-pin, A-Codierung
Ingress protection	IP 67
Ex-protection ATEX: CSA: IEC Ex: oder: ATEX:	 II 2G Ex ia IIC T4; BVS 13 ATEX E 052 Class 1, Zone 0 AEx ia IIC T4 Class 1, Division 1, Groups A, B, C, D: Ex ia IIC T4 Ex ia IIC T4 Gb, IEC Ex BVS 13.0066  II 3G Ex nA IIC T4

Pin assignments

Typ	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	
P/P	+ UB	GND	GND	fout	PE	
NAMUR	+ UB	OV/GND				

Ordering Code

HM00*/TC-R/S-01-TF_500-Ex

Ex-protection:
 Ex = ATEX:  II 2G Ex ia IIC T4
 IEC Ex
 CSA
 Exn = ATEX:  II 3G Ex nA IIC T4

Scaling factor:
 *** = Scaling factor 1
 002 = Scaling factor 2
 ...
 016 = Scaling factor 16
 500 = max. output frequency < 500 Hz

carrier frequency

S-01 = Housing stainless steel

R = Bolting

TC = Bearing gauge slide (carbide)

00* = Nominal size of measuring turbine

HM = measuring turbine

Safety specifications

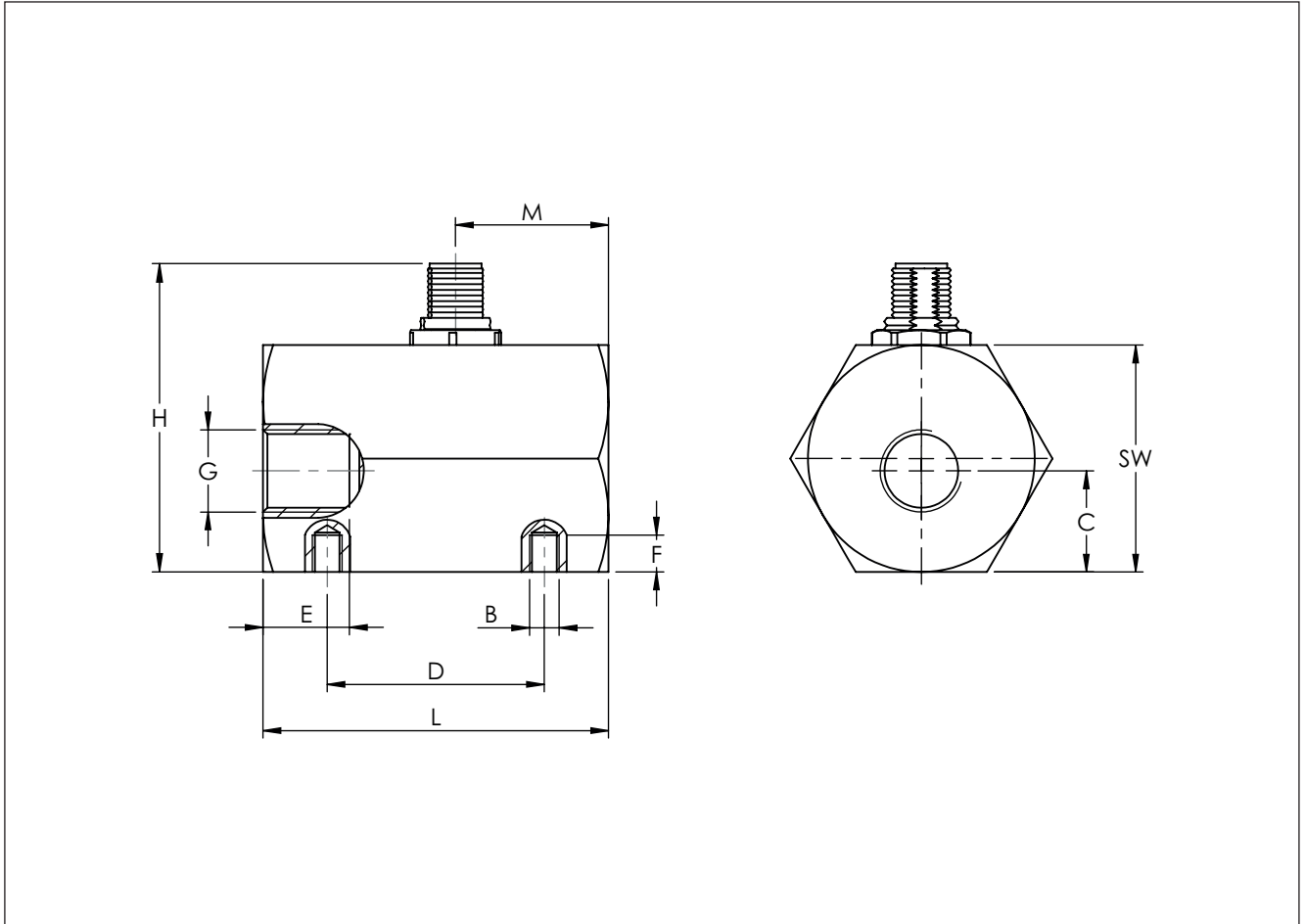
Supply circuit Pin 1, 2 and 3

U_i = 30 V/DC
 I_i = 120 mA
 P_i = 850 mW
 C_i = 8 nF
 L_i = 5 µH

Supply circuit Pin 3 and 4

U_i = 30 V/DC
 I_i = 24,6 mA
 P_i = 185 mW
 C_i = 8 nF
 L_i = 5 µH

Dimensional Drawings (mm) - HM...TC-R



HM Type	B	C	D	E	F	G ³⁾	H	L	M	SW
HM 003 TC-R*	M6	20.5	44	14	7.5	G1/4"	62.5	63	24	46
HM 004 TC-R*	M6	20.5	44	14	7.5	G1/4"	62.5	63	24	46
HM 005 TC-R*	M6	20.5	44	14	7.5	G3/8"	62.5	70	28	46
HM 006 TC-R*	M6	20.5	44	14	7.5	G3/8"	62.5	70	28	46
HM 007 TC-R*	M6	20.5	44	14	7.5	G3/8"	62.5	74	30	46
HM 013 TC-R*	M6	30	44	16	10	G3/4"	77.5	97	32	60

1) See "Pickup Selection" table (P. 3)

2) Please notice: total height is calculated by adding up the height (H) and the height of the pickup (separate data sheet) and subtract the bore hole depth (T)

* Detailed type code on request

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