

Liquid Turbine Flow meter

Model: MDTF1

Applications

- Universal measuring principle for low viscosity liquids
- Hydraulics
- Water, diesel, gasoline,
- The liquid turbine measuring principle is used in a wide range of different branches of industry, chemicals, petrochemicals, oil and gas, food, and – no less importantly – in custody transfer applications. Liquid turbine flowmeters can measure virtually all fluids: cleaning agents, fuels, vegetable oils, solvents, silicon oils, fruit solutions, vinegar, alcohol

Special features

- Flow measurement up to 800 m³/h
- Process pressures up to 350 bar
- Fluid temperature up to 150 °C
- Pulse output linear with flow rate and 10:1 rangeability(4-20 mA output) (turndown) ensure custody transfer accuracy
- Communication: HART, PROFIBUS DP/PA, FOUNDATION Fieldbus, MODBUS RS485
- Turbine materials: 316 L, Hastelloy C, Hastelloy B, Titanium, Tantalum

Description

- | | |
|-----------------------|--|
| ■ Accuracy class | 1% - 0.5% or 0.2% of rate |
| ■ Liquid Viscosity | 1...10 CST |
| ■ Flow unite | liter, m ³ , metric Ton or USG per second, minute or hour (the user should specify the required flow unit while ordering); also percent of the measurement range could be displayed |
| ■ Ambient Temperature | Converter: -15 ... 50 °C (for socket type) -20... 60 °C (for Ex type) |
| ■ Turbine materials | 316L, Hastelloy C, Hastelloy B, Ti, Ta, Pt/Iridium alloy, Stainless steel, painting tungsten carbide |
| ■ Nominal diameter | DN 4 mm to DN 200 mm |
| ■ Communication | Rs485 (Modbus protocol), HART, PROFIBUS DP/PA, FOUNDATION Fieldbus |
| ■ Output signal | 4 - 20 mA, Pulse or alarm (option) |
| ■ Frequency output | 1...5000 Hz, 36 VDC max. & 250 mA max. |
| ■ Baud rate | 1200...19600 Hz |
| ■ Pulse Output | 1...3000 Hz |
| ■ Pulse Output Width | Can be set by the user |
| ■ Alarm Outputs | High & Low limits, Transistor output, maximum 250 mA @ 36 VDC
When high and low limits are reached a bell-like icon will be displayed on the lcd |
| ■ Load resistance | 4 - 20 mA, 0 - 500Ω |
| ■ LCD display | Instantaneous flow, Flow velocity, Percentage, Empty pipe ratio, Forward and reverse accumulation, Alarm display |
| ■ Damping Type | 1...10 second |
| ■ Total flow | 6 digit display + 2 decimal point |
| ■ Liquid temp. | Non freezing -20 ...150 °C |
| ■ Rotor material | 420 stainless steel (13%Cr) CD 4 MC u (option) |



- **Bearing material** Tungsten carbide
- **Body material** 304 stainless steel, 316 stainless steel (option)
- **Protection** IP 65

MDTF1 Series

Designed from DN 4 mm to 200 mm in size with a flow range of 0.04 m³/h to 800 m³/h, these meters are factory-configured and calibrated to international standards to provide the user with assurance of both quality and performance of the meter. A calibration certificate is included with each flowmeter shipped to the users.

Pressure Class Selection

Code	Pressure Class	Code	Pressure Class	Code	Pressure Class
P2	2 MPa	P8	16 MPa	P14	30 MPa
P4	4 MPa	P10	20 MPa	P16	35 MPa
P6	6 MPa	P12	25 MPa	Cu	Customer

"

Diameter selection

Model	Tube Diameter (mm)	Connection NPT or inch	Rated Pressure (Bar)	Minimum / Maximum Flow (m³/h)		Model	Tube Diameter (mm)	Connection inch	Rated Pressure (Bar)	Minimum / Maximum Flow (m³/h)	
				Standard	Extended					Standard	Extended
Thread Conection						Flange Type					
M1	4	1/2"	60	0.04...0.25	0.04...0.4	M9	15	1/2"	25	0.6...6	0.4...8
M2	6	1/2"	60	0.1...0.6	0.06...0.6	M10	20	3/4"	25	0.8...8	0.45...9
M3	10	1/2"	60	0.2...1.2	0.15...1.5	M11	25	1 "	25	1...10	0.5...10
M4	15	1"	60	0.6...6	0.4...8	M12	32	1 1/4"	25	1.5...15	0.8...15
M5	20	1"	60	0.8...8	0.45...9	M13	40	1 1/2"	25	2...20	1...20
M6	25	1 1/4"	60	1...10	0.5...10	M14	50	2"	25	4...40	2...40
M7	32	2"	60	1.5...15	0.8...15	M15	65	2 1/2"	16	7...70	4...70
M8	40	2"	60	2...20	1...20	M16	80	3"	16	10...100	5...100
M0	50	2 1/2"	60	4...40	2...40	M17	100	4"	16	20...200	10...200
ANSI flange rating of 150#, 300# and 600# are available. other pressure ratings for DIN flanges for up to 3600 psi are also available						M18	125	5"	16	25...250	13...250
						M19	150	6"	16	30...300	15...300
						M20	200	8"	16	80...800	40...800



MDTF 1 Liquid Turbine Flow meter

ORDERING CODE	Example: MDTF 1	M6	S	F	A	L	B1	L	B	N	M	D
Nominal Diameter please see the diameter selection table												
Please specify	M6											
Flow Range												
S - Standard			S									
E - Extended												
C - Customer												
Process Connection												
F - Flange				F								
S - Sanitary												
T - Thread												
W - Wafer												
O - Other												
Flang Type												
D - DIN Please specify PN												
A - ASME Please specify class					A							
C - Customer												
Converter - Indicator												
N - Without												
L - Local indication						L						
W - Wall - Mounting box converter - Indicator												
Body Material												
B1 - Carbon steel							B1					
B2 - 304 Stainless steel												
B3 - 316 Stainless steel												
Wet Part Material												
L - Tantalum								L				
C - 2CR13												
D - CD 4 MCU												
H - Hastelloy C												
B - Hastelloy B												
T - Titanium												
V - 316L Stainless steel												
M - Monel												
P - Pt / Iridium alloy												
O - Other												
Accuracy												
For N type convertor												
D- 2.5% (for DN4)												
E- 1.5%(for DN6)												
F- 1%(for DN10&15)												
For L type convertor												
A - 1%												
B - 0.5%									B			
C - 0.2%												
OutPut												
A - 4 ~ 20 mA with EX case												
N - Not required only totalizer										N		
U - 4 ~ 20 mA. Frequency / pulse												
M - Modbus RS485												
P - Pulse with EX case												
D - Pulse with DIN conector												
C - Customer												
Digital Communication												
N - No Communication												
M - Modbus RS485											M	
H - Hart												
F - Foundation fieldbus												
P - Profibus DP/PA												
G - GPRS												
Power Supply												
A - 85 ~ 250 VAC												
D - 20 ~ 36 VDC												D
B - Battery power												
Z - Dual power (battery and 24 VDC)												



ORDERING CODE	Example: MDTF 1	P	T2	N	Note
Protection Grade					
E - IP 68 Explosion - proof					
P - IP 68		P			
I - IP 65					
Temperature Rating					
T1 - (-20...80°C)					
T2 - (-20...120°C)			T2		
T3 - (-20...150°C)					
Infrared Remote Control					
N - Not required				N	
R - Required					
Other					

■ PLEASE SPECIFY THE FOLLOWING INFORMATION WHEN YOU INQUIRE.

(Fill in the form below to the extent possible. Further details will be finalized in later consultation.)

- Fill in the blanks. Tick the boxes ☐ that apply.

1. Sensor unit			
2. Process fluid (※1)	Name: _____	SP. gr : _____	Viscosity : _____ Concentration : _____ %
3. Flow range	Maximum _____	Normal _____	Full scale _____ ☐ kg/h ☐ Others _____
4. Fluid temperature	Maximum _____ °C	Normal _____ °C	Min. _____ °C
5. Operating pressure	Maximum _____ MPa	Normal _____ MPa	Min. _____ MPa
6. Ambient temperature	Maximum _____ °C	Min. _____ °C	
7. Fluid flow direction	☐ Left→Right ☐ Right→Left ☐ Bottom→Top (☐ Top →Bottom)		
8. Nominal size	_____ mm or _____ inch		
9. Required accuracy	± _____ % of reading ± _____ % of full scale		
10. Process connection	☐ Flange connection (Flange rating) ☐ Ferrule connection ☐ Screw connection		
11. Explosion proof	☐ Not required ☐ TIIS ☐ ATEX ☐ IECEx ☐ KCs ☐ CSA ☐ EAC ☐ NEPSI ☐ ITRI		
12. Power supply	☐ V ☐ AC ☐ DC		
13. Output specifications	Pulse output	☐ Volt. pulse: [0]: 1.5V [1]: 13VDC min. Out. impedance: 2.2kΩ	
		☐ Open drain output (equivalent to open collector output) [Min.10V to Maximum 30V, 50mADC, ON resistance 0.6Ω or less]	
		☐ Output frequency: Any point from 0.1 to 10000Hz at full scale	
	Analog output	4 to 20mADC Maximum load: 500Ω 2 outputs from instant. flow rate (mass, volume), temp. or density (option)	
	Additional damping	0 to 200s. (variable)	
Alarm output	Slug flow High _____ g/mL Low _____ g/mL		
14. Communication protocol	☐ HART ☐ FOUNDATION fieldbus ☐ PROFIBUS ☐ Modbus (Address: _____)		
15. Transmission length	Sensor unit (_____) m	Transmitter (_____) m	Receiving instrument
16. Receiver	☐ Totalizer ☐ Indicator ☐ Recorder ☐ Flow controller ☐ Batch controller ☐ Density computer ☐ Computer ☐ Others		
17. Dedicated cable length	In case of Remote-mount type _____ m		
18. In case of separate type transmitter	☐ Stanchion type w/bracket and 2" U bolt		
19. No. of units required			
20. Application			
21. Other considerations			
22. Cable gland	☐ Standard ☐ ATEX directive compliant ☐ ATEX directive compliant for earthed cable		
23. Maritime certification			



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