INDUMART Canada
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Turbine Flow Meter - liquid applications

SERIES: FTT20

CE

- UP TO 0.2% ACCURACY
- 4...20 mA AND/OR PULSE OUTPUT
- HART COMMUNICATION (OPTION)
- MODBUS RS-485 INTERFACE (OPTION)

INTRODUCTION

Indumart *FTT20 series* of Liquid Turbine Flow Transmitters are accurate instruments for measuring flow rate and flow volume of low to medium viscosity liquids in a pipe and produce electrical signals (pulse or current or both) proportional to the flow rate. These flowmeters are offered in various sizes and flow ranges to suit both industrial, municipal and OEM applications.

When liquid flows through the turbine housing of the *FTT20 flowmeter*, it results in spinning of an internal rotor. As the rotor spins, an electrical signal is generated in the coil. This signal is then converted into engineering units (liters, cubic meters, gallons etc.) on the local display.

The instrument consists of two parts 1) flow sensor, 2) signal converter. The flow instrument can be supplied as the flow sensor only, without the converter/display, or it can be supplied complete with the converter. The converter with LCD indications for the flow rate and flow volume is used for configuration of the flowmeter parameters such as output scaling, total flow reset, damping, etc.

The converter can be supplied to perform with either 24VDC or Lithium battery and also it can be ordered to work with both (dual power supply - battery and 24 VDC). The converter with solely the battery as power supply (model XB) can be used for indication only, while that with 24 VDC power supply can be used for both indication and output generation. For critical applications with possibility of 24 VDC power interruption, in order to keep registering the total flow and observe the flowrate, when the 24 VDC supply is interrupted, the converter with dual power supply can be ordered.

The flowmeter is constructed from stainless steel that can be ordered with threaded, flanged, wafer or sanitary connections. The rotor is made of 420 stainless steel (13% Cr) which has excellent resistance against corrosion and very high hardness to preserve the exact shape of the rotor and ensure optimum accuracy. Optionally the rotor can be ordered as CD4MCu which is highly resistant to stress-corrosion cracking and against nitric, sulphuric and chlorinated liquids.

When in usage, the inlet and outlet pipes must be fully filled with the liquids and the bubbles must be entrained from the liquid (also no cavitation). The flow entering into the flowmeter must be without pulsation, therefore a minimum straight pipe length of at least 10 times of the internal diameter of the pipe must be allowed for the inlet and at least 5 times of the internal diameter of the pipe must be allowed for the outlet of the flow meter. As standard, straight runs and filter are included in the length for flowmeters with ½" thread. For other flowmeters with threaded connection, the straight runs are optional feature that, if required, it must be included in the customer's order.

The standard flow ranges are given in the table. If the extended flow ranges or a special flowrate are required, it must be specified in the order.

Optionally, the FTT20 transmitters may also have RS-485 digital interface and HART communication.

SPECIFICATIONS

Accuracy (of the rate)	1% (std.), 0.5%or 0.2% (option)
Measured Value	Flow rate and total flow volume
Liquid Viscosity	1...10 CST, low viscosity liquids
Signal Output	4...20 mA, 1...3000 Hz pulse
Supply power	24 VDC, Lithium Battery
Damping Time	1...10 seconds
Total Flow	6-digit display + 2 decimals
Process Connection	Thread, flange, wafer, sanitary
Electric Connection	Gland for converter, DIN connection for sensor only units
Liquid Temperature	Non freezing -20...130 °C (std.) -20...+150 °C (option)
Sensor Housing	304 stainless steel (std.) 316 stainless steel (option)
Rotor Material	420 stainless steel (13% Cr) CD4MCu (option)
Bearing & Shaft	Tungsten Carbide
Converter Housing	Die-cast aluminum coated with polyurethane paint
Communication	Modbus (RTU) RS485 (option)
Baud Rate	1200...19600 Hz
Default Data Format	9600, n, 8, 1
Ambient Temperature	-10...+55 °C
Environ. Protection	IP65

	Nominal Size (mm)	Thread Size (NPT or G)	Standard Flow Range (m^3/h)	Extended Flow Range (m^3/h)
Thread Connection	4	½"	0.04 to 0.25	0.04 to 0.4
	6	½"	0.1 to 0.6	0.06 to 0.6
	10	½"	0.2 to 1.2	0.15 to 1.5
	15	1"	0.6 to 6	0.4 to 8
	20	1"	0.8 to 8	0.45 to 9
	25	1¼"	1 to 10	0.5 to 10
	32	2"	1.5 to 15	0.8 to 15
	40	2"	2 to 20	1 to 20
	50	2½"	4 to 40	2 to 40

Maximum pressure for thread connection is 6.3 MPa (9000 psi).

	Nominal Size (mm)	(inch)	‡ Rating for DIN (MPa)	Standard Flow Range (m^3)	Extended Flow Range (m^3)
Flange (ANSI* or DIN)	15	½"	2.5	0.6 to 6	0.4 to 8
	20	¾"	2.5	0.8 to 8	0.45 to 9
	25	1"	2.5	1 to 10	0.5 to 10
	32	1¼"	2.5	1.5 to 15	0.8 to 15
	40	1½"	2.5	2 to 20	1 to 20
	50	2"	2.5	4 to 40	2 to 40
	65	2½"	1.6	7 to 70	4 to 70
	80	3"	1.6	10 to 100	5 to 100
	100	4"	1.6	20 to 200	10 to 200
	125	5"	1.6	25 to 250	13 to 250
	150	6"	1.6	30 to 300	15 to 300
	200	8"	1.6	80 to 800	40 to 800

*ANSI flange Rating of 150#, 300# and 600# are available.
‡ Other pressure ratings for DIN flanges for up to 25 MPa (3600 psi) are also available.
Wafer connections are also available for 15 to 100 mm sizes .

Converters for Model FTT20

Converter Model	Power Supply		Display	Output				HART
	Battery	24 VDC		Pulse	4..20 mA 2-Wire	4..20 mA 3-wire	RS485	
XB	●		●					
CX		●	●		●			
CB	●	●	●		●			
DX		●	●		●		●	
DB	●	●	●		●		●	
HX		●	●		●			●
HB	●	●	●		●			●
KX		●	●		●		●	●
KB	●	●	●		●		●	●
MX		●	●			●	●	
MB	●	●	●			●	●	
PX		●	●	●			●	
PB	●	●	●	●			●	
RX		●	●	●	●		●	
RB	●	●	●	●	●		●	
SX		●	●	●	●			
SB	●	●	●	●	●			

ORDER CODES

Model: **FTT20** ☐ - ☐☐☐ - ☐☐☐☐ - ☐

OUTPUT SIGNAL[1]
- 4...20 mA + Pulse[2] — CP
- 4...20 mA — CA
- Pulse — PA
- Pulse[1] (with DIN Connector) — PD

ACCURACY
- 1% of Rate (std.) — 0
- 0.5% of Rate (option) — 1
- 0.2% of Rate (option) — 2

CONVERTER / DISPLAY
- Not Required — XX
- Required[2, 3] - Select from the Table — - -

FLOW RANGE
- Standard — 0
- Extended — 1
- Other (please specify) — 2

NOMINAL SIZE
Select from the table in mm.
It must be written in 3 digits.
Example: for 6 mm use code 006. — ---

PROCESS CONNECTION
- Thread[4] — TD
- DIN Flange (standard rating) — DS
- DIN Flange (other rating, specify) — DX
- ANSI Flange (150# RF) — N1
- ANSI Flange (300# RF) — N3
- ANSI Flange (other, specify) — NX
- Sanitary — SA
- Wafer — WF

BODY MATERIAL
- 304 Stainless Steel (Std.) — 0
- 316 Stainless Steel (Option) — 1

PROCESS TEMPERATURE
- 120 °C Maximum — 0
- 150 °C Maximum — 1

OPTION
- None — -
- CD4MCu Rotor — R

[1]The models with output signals of 4..20 mA + Pulse (CP), 4..20 mA (CA) and Pulse (PA) are all supplied with an aluminum enclosure. The model with pulse output (PD) is supplied with a DIN connector.

[2]Converter/display must be ordered for the unit with mA+pulse (CP) output.

[3]When ordering converters/display, please specify in your order the measuring unit for the flow rate. Total flow will also be displayed in the same volumetric unit. Converter/display must be ordered for the unit with mA+pulse (CP) output.

[4]Please mention NPT or BSP threads in your order. As standard, straight runs and filter are included in the length for flowmeters with ½" thread. For other flowmeters with threaded connection, the straight runs are optional feature that must be included in the customer's order and then confirmed by Indumart.

Example: **FTT20CA-0CX0-040TD00 m^3/h**

4...20 mA Output, 1% Accuracy, Dual Power 4..20 mA (2-wire) Converter, Standard Flow Range (2 to 20 m^3/h), 40 mm Dia., 2" Threaded Connection, 304 SS Body, 120 °C Max. Temp.