

Tangential Turbine Flowmeter for Liquid and Gas Services

FT Series

DESCRIPTION & FEATURES

- A high-resolution volumetric flow sensing device.
- Capable of measuring extremely low flow rates in liquid or gas:
 - 0.010 ACFM in Gas
 - 0.005 GPM in Liquid
- RF Modulated Carrier pickoff with digital output
- Low drag magnetic pickoff with 15 mV peak to peak
- FT series flow transducer is a unique volumetric device. It is a dual orifice design to direct a stream of fluid tangent to a low mass/balanced rotor and a precision bearing to provide maximum sensitivity.
- This geometry eliminates the need for flow straighteners and allows for greater repeatability.

MATERIAL OF CONSTRUCTION

- Housing: 316 SS
- Internal wetted parts: 316 SS
- Rotor: 17-4 PH or 430F SS
- Ball Bearings: 440C Stainless Steel or Hybrid Ceramic
- O-Ring: Teflon, Viton, Buna N, or any other material specified by customer

Dynamic Response:

- 10 msec or less for Liquid
For gas service meter, it depends on gas density
- Recommended filtration: 10 to 100 micron
- Maximum Operating Pressure: 5800 psi (400 Bar)
- Compact size: 3" end to end with 1/2" FNPT or 1/2" AN/MS internal thread

APPLICATIONS

FT Series low flow sensing capability makes it an ideal instrument for following applications:

- Mixing and blending of chemical additives
- Purging of gases
- Numerous leak detection application
- Fuel flowmetering
- Pharmaceutical products
- Automotive and aerospace

SPECIFICATIONS

ACCURACY	LIQUID SERVICE ^①	GAS SERVICE ^②
Calibration (Traceable to NIST / Primary Standard)	± 0.05% of Reading	± 0.03% of Reading
Repeatability	± 0.1% of Reading	± 0.2% of Reading
linearity with linearizing electronics	± 0.1% of Reading	± 0.1% of Reading
Pressure Drop	< 10 psid (700 mBar) at max flowrate	< 8 IWC (20 mBar) at max flowrate
Viscosity	Max Viscosity 50 cst Recommended	Not Applicable
Temperature Range	-450°F TO 350°F	-450°F TO 350°F

FLOW RANGE– TABLE I

Model Code	Normal 10 : 1		Extended ^③	
	Liquid GPM	Gas ACFM	Liquid GPM	Gas ACFM
FT-1	0.20-2.00	N/A	0.10-2.00	N/A
FT-2	0.10-1.00	0.10-1.00	0.05-1.25	0.05-1.00
FT-3	0.07-0.70	0.07-0.70	0.02-0.80	0.04-0.80
FT-4	0.02-0.20	0.025-0.25	0.01-0.25	0.015-0.25
FT-5	0.01-0.10	0.015-0.150	0.005-0.15	0.01-0.15

^① Data is based on tests with Water at 70°F and 14.7 PSIA

^② Data is based on tests with Air at 70°F and 14.7 PSIA

^③ Requires a pre-amplifier / signal conditioner

PART NUMBERING SYSTEM

TW 10 point in Water

TA 10 point in Air

TS 10 point in Solvent

TB 10 point in Oil Blend ⁽⁴⁾

XW 20 point in Water

XA 20 point in Air

XS 20 point in Solvent

XB 20 point in Oil Blend ⁽⁴⁾

U2 10 points each with min & max Viscosity ⁽⁴⁾

U3 10 points each with min, normal & max Viscosity ⁽⁴⁾

R1 10 points, 1 pressure } Reynolds Number Calibration

R2 10 points, 2 pressure } Provide Temperature and Pressure

R3 10 points, 3 pressure } (Min/Max)

Refer Table I

Model Code

Process Connection

Calibration

Bearing

Pickoff

M1 Female - 8MS thread
N1 Female 1/2" NPT thread
F1 150# ANSI RF Flange
F2 300# ANSI RF Flange
F3 600# ANSI RF Flange
F4 900# ANSI RF Flange

B Ball Bearing 440C SS
C Ball Bearing Hybrid Ceramic

RF Modulated Carrier

R1 2-pin MS connector, 250°F

R2 2-wire, flying leads, 250°F

R3 2-pin MS connector, 750°F

R4 2 Wire, Flying Leads 750°F

R5 CSA Explosion Proof, 250°F (2-wire)

R6 RTD, MS Connector, (4 pin)°F

R7 RTD, flying leads, 250°F (4 wire)

R8 RTD, MS Connector, 750°F (4 pin)

R9 RTD, flying leads, 750°F (4 wire)

R10 Intrinsically Safe, MS connector (2 pin)

R11 Intrinsically Safe, flying leads, (2 wire)

R12 3-Pin MS connector, digital output 250 °F

R13 3-wire, digital output 250 °F

R14 3-Pin, intrinsically safe, digital output

R15 3-wire, intrinsically safe, digital output

Magnetic

M1 2-pin MS Connector, 300°F

M2 2-wire, flying leads, 300°F

M3 2-pin MS Connector, 750°F max

M4 2-wire, flying leads, 750°F max

M5 CSA Explosion Proof, 300°F (2 wire)

M6 RTD MS Connector 300°F (4 pin)

M7 RTD flying leads 300°F (4 pin)

M8 RTD MS Connector 750°F (4 pin)

M9 RTD flying leads 750°F max (4 wire)

M10 Intrinsically Safe, MS connector, (2 pin)

M11 Intrinsically Safe, flying leads, (2 wire)

M12 3-Pin MS connector, digital output, 250°F

M13 3-Wire, digital output, 250°F

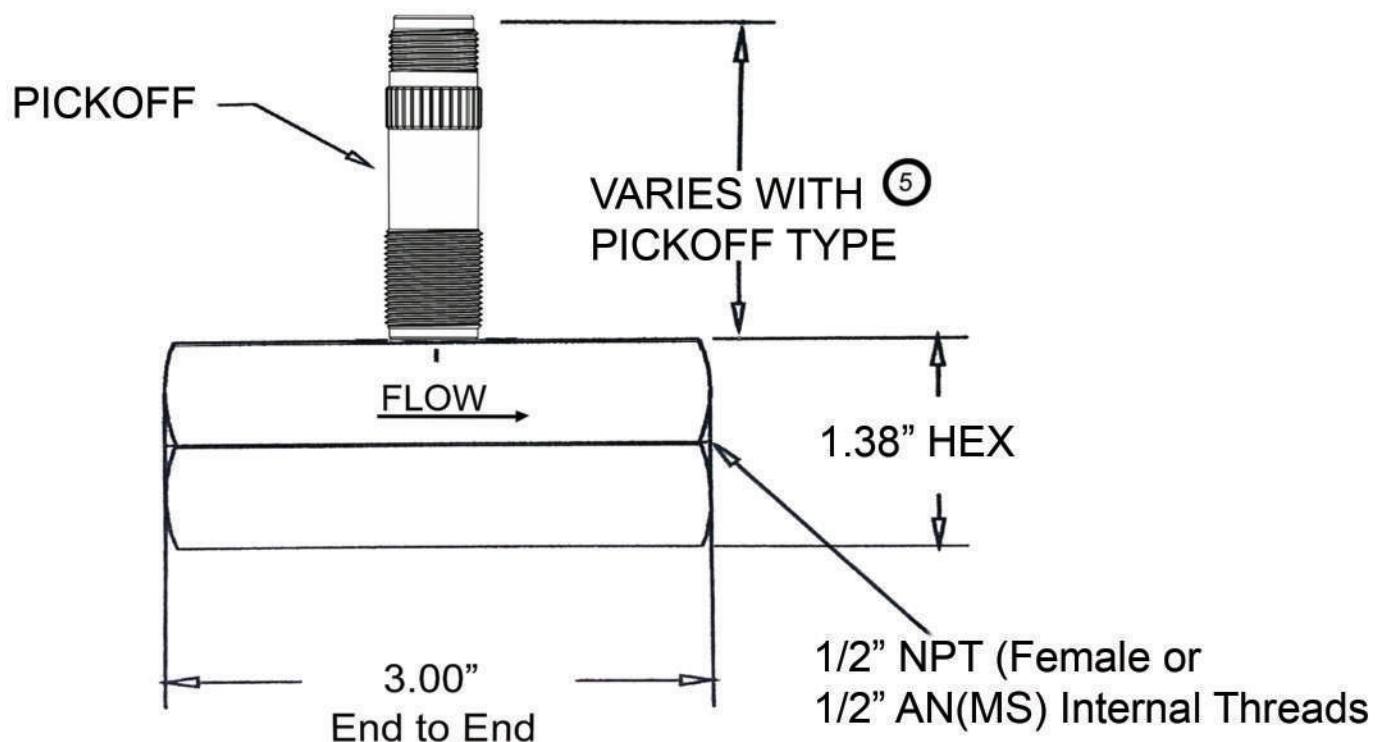
M14 3-Pin MS connector, Intrinsically safe digital output, -40 to 85°C

M15 3-Wire, Intrinsically safe, digital output, -40 to 85°C

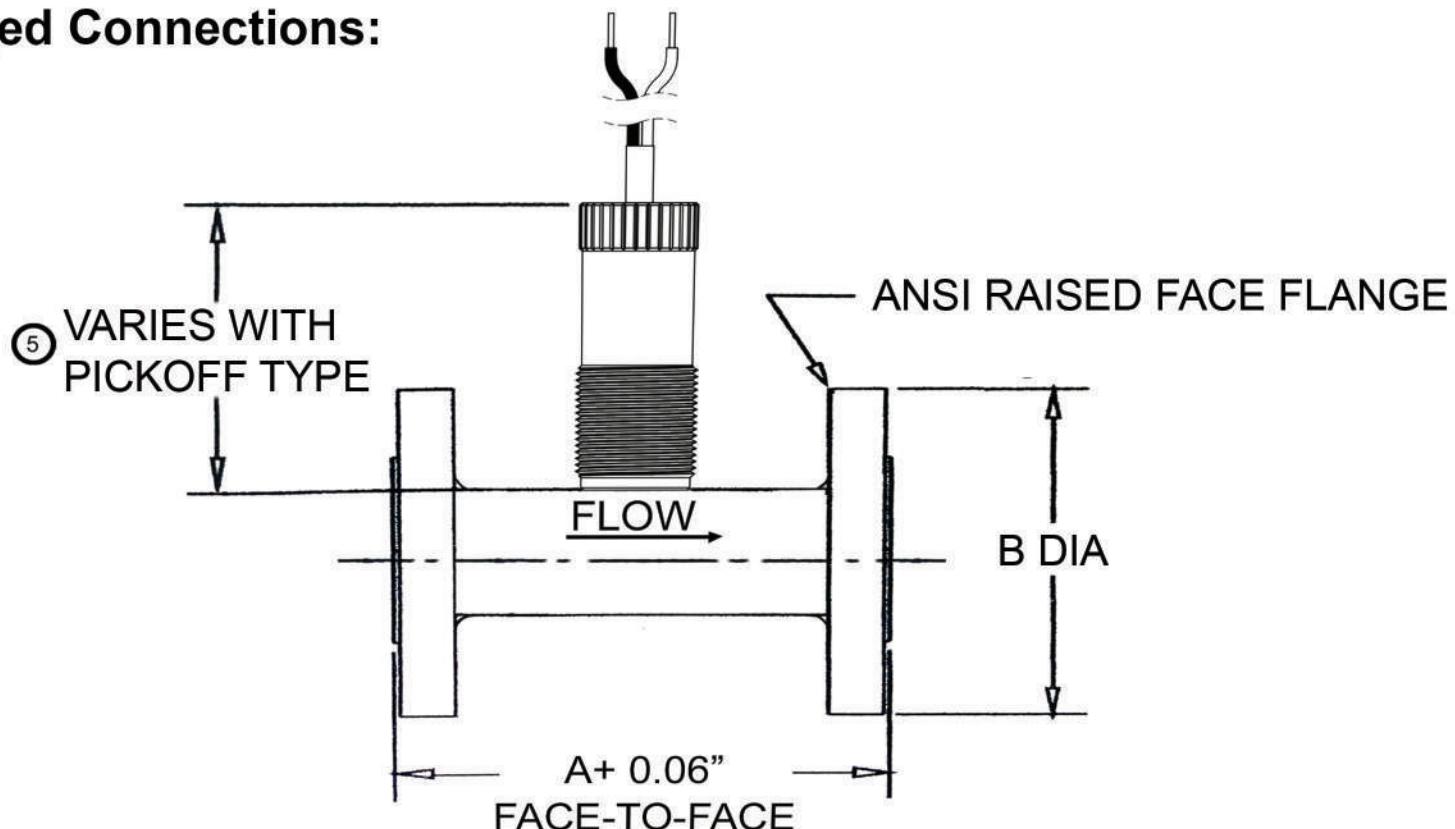
(4) The fluid viscosity needed for calibration purpose

FT Series

Dimensions with NPT or AN/MS Connections:



Dimensions with ANSI Flanged Connections:



ANSI Flanged Size	"A"	"B" DIA
1/2" - 150 LB	(102mm) 4.00"	(89mm) 3.50"
1/2" - 300 LB	(108mm) 4.25"	(95mm) 3.75"
1/2" - 600 LB	(118mm) 4.63"	(95mm) 3.73"
1/2" - 900 LB	(133mm) 5.25"	(121mm) 4.75"

⑤ Refer pickup sensors brochure for available options
www.ifstech.org/products