

IC-BF WAFER PATTERN TURBINE METER

Turbine Flow Meter for Liquid Measurement

Between flange Wafer type turbine meters have been used successfully for many years, with little or no improvements in all that time. iCenta Controls have identified key areas of weaknesses in standard designs and produced a range of highly beneficial upgrades.

Instead of casting, which can produce rotor imbalance, weakness and discrepancies between batches, iCenta's IC-BF Turbine Meters are completely machined from a range of solid materials. This means we can control the minute (but significant) dimensional variations which can occur with cast parts and which drive calibration accuracy/uncertainty/linearity variations. We further ensure that every rotor is identical and will produce exceptional calibration repeatability.

Machined parts have better symmetry, reducing rotor wobble, extending the bearing life and resulting in less calibration and/or early failures. By examining each rotor's response to liquid flow, we have in most cases, extended the flow range, reduced rotational speed and pressure drop. Reduction in rpm's also enhance the longevity and should significantly reduce calibration frequency. Upgraded material selection enhances the meter's resistance to corrosion and enhances longevity.



Summary

- Brand: METRI
- Category: Turbine Flow Meters
- Fluid type: Liquids
- Part ref: IC-BF
- IWN: FLO-201910

Compact easy installation

Field serviceable

High repeatable performance

Reduced rotational speed for increased service life

Low pressure drop

High corrosion resistance

Long service life

Suitable for the following market sectors:

- Oil & Gas
- Marine & Offshore
- Research & Development
- Water & Wastewater

Suitable for use with the following liquids:

- Chemical
- Clean Water
- Fuel & Oil

SPECIFICATION DETAILS

Nominal Size	DN25, DN50, DN80 (DN100 - pending)
Process Connection	Wafer style ASME / ANSI B16.5-1996
Compatibility	ANSI
Operating Temp	Standard: -101°C – 170°C High: -101°C – 232°C (with high-temp pickup, consult factory for details)
Max Operating pressure	Up to 3600psi (at room temperature with stainless steel flanges) Up to 3705psi (at room temperature with carbon steel flanges)
Frequency Range	25 - 1500
Pressure drop	Less than 250 mbar (TBC)
Linearity	+/- 0.25%
Repeatability	±0.1%
Materials	Tungsten Carbide shaft and bearing 316L Stainless steel body Rotor 413 Stainless Options: 174PH & Duplex
Output/display	Pulse / Selection of safe Atex /Exd options
Installation	Horizontal Vertical Flow rising
Approvals	ATEX, Intrinsically safe, Exd, Exia, CSA

DIMENSIONS

Nominal size:	Length (mm)	Total										
		Height (mm) coil only	Height (mm) MV-PO/AN compact	Height (mm) DTS compact	Height (mm) E Series Display	Height (mm) F Series Display	Weight (kg) coil only	Weight (kg) Flow-meter & MV-PO/AN Compact	Weight (kg) Flow meter & DTS Display Compact	Weight (kg) Flow meter & E Series Display	Weight (kg) Flow meter & F Series Display	D Flow Meter Body Dia (mm)
25mm (1")	64	116	134	170	249	236	3.7	4.1	4.6	7.3	4.8	92
50mm (2")	64	116	134	170	249	236	3.2	3.6	4.1	6.8	4.3	92
80mm (3")	108	148	166	202	281	268	8.7	9.1	9.6	12.3	9.8	127

INSTRUMENT OPTIONS AVAILABLE

Type	Coil only	IC-MV-PO pulse output module	IC-MV-AN analogue output module	DTS	E & F Series ATEX
Input	-	20-2000 mV peak to peak	20-2000 mV peak to peak	mV/4-20 mA	mV/Pulse/4-20 mA
Frequency range	50-2500 Hz	30-1500 Hz	25-2500 Hz	0-2500 Hz	0-60 Hz (E Series) 0-500 Hz (F Series)
Supply voltage	-	5-30 Vdc	24 Vdc	24 Vdc	24 Vdc 110/240VAC
Outputs	mV	Open collector PNP/NPN selectable	4-20mA, 2 wire current loop	4-20mA, relay	Open collector pulse, 4-20 mA relay, Hart & Modbus
Operating temp	-	-10 to 55°C	-10 to 55°C	-10 to 65°C	-40 to 70°C
Rating	IP65, ATEX* (optional)	IP65	IP65	-	IP67

* ATEX rating optional 

FLOW RANGE

(Nominal size) Meter Bore Size (In.)	Linear Flow Ranges (based on water)			Nominal Calibration Factor pulses/US Gallon (pul/Litre)*	Maximum Output Frequency (pulses/Sec)*	Delta P at Maximum Flow Rate PSI (KPa)*
	US Gal/Min	m3/Hour	B/D (Barrels per Day)			
1"	5 - 66	1.14 – 17.03	171.4 – 2571.4	347.6 (91.8)	434	20 (138)
2"	40 - 600	9.08 – 136.2	1371.4 – 20571.4	88.2 (23.3)	879	22 (152)
3"	60 - 900	13.62 – 204.3	2057.1 – 30857.1	33.6 (8.89)	505	16 (110)

*Guideline figures quoted.

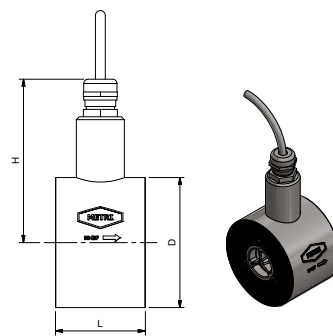
TEMPERATURE AND PRESSURE RATINGS

Flange Classification	CL150	CL300	CL600	CL900	CL1500
Design Operating Temperature Range	Maximum Working Pressure psi (mPa)				
-20 to 100°F (-28.8 to 37.7°C)	285 (1.96)	740 (5.1)	1480 (10.2)	2220 (15.3)	3705 (25.5)
200°F (93.3°C)	260 (1.79)	680 (4.7)	1360 (9.38)	2035 (14.03)	3395 (23.4)
400°F (204.4°C)	200 (1.38)	635 (4.38)	1265 (8.72)	1900 (13.1)	3170 (21.8)
450°F (232°C)	185 (1.28)	620 (4.27)	1235 (8.5)	1855 (12.79)	3092 (21.32)

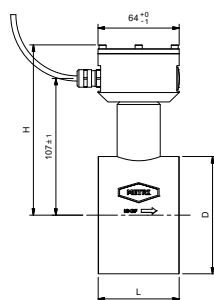
Based on 316L Stainless Steel

TECHNICAL DRAWINGS

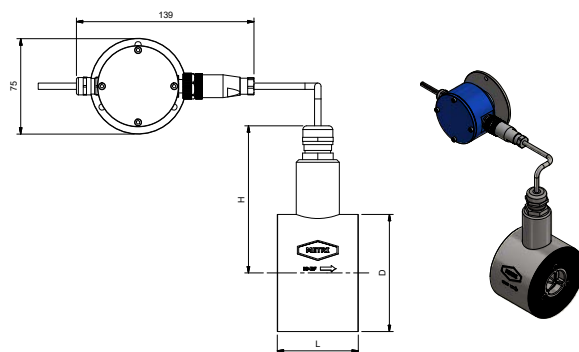
IC-BF-025



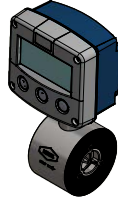
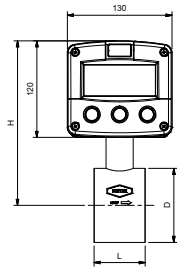
Coil Only



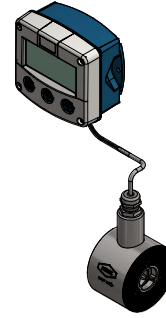
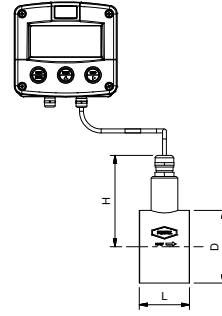
Including IC-MV-AN or PO



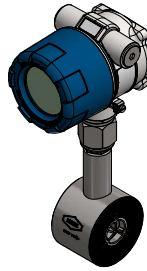
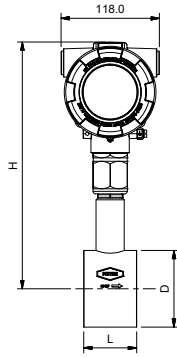
Including Remote IC-MV-AN or PO



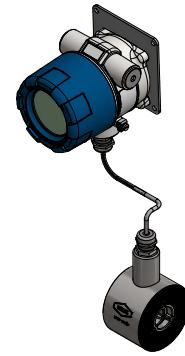
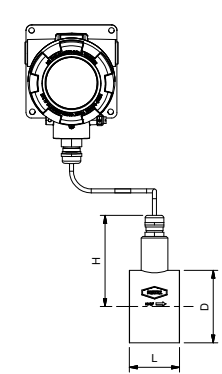
Compact F Series Display



Remote F Series Display



Compact E Series Display



Remote E Series Display

CONFIGURATION

Ordering information for the BF Flow Meter (Between Flange)

IC-BF	Nominal size, flow range (based on H ₂ O at 20°C)	
Size	Bore	L/min
025	DN25 (25mm)	19 - 283
050	DN50 (50mm)	151 - 2270
080	DN80 (80mm)	227 - 3405
Flow range: Standard/extended (see above for values)		
S	Standard	
Flow direction		
S	Single	
Process connection		
A	ANSI	
Max operating temperature		
S	Standard: -101°C – 170°C	
H	High: -101°C – 232°C (with high- temp pickup, consult factory for details)	
Approvals		
0	General purpose	
1	ATEX Ex ia (Intrinsically Safe)	
2	ATEX Ex d / CSA c-us	

Output/display	
0	Coil only
P	IC-MV-PO pulsed output module
A	IC-MV-AN analogue output module
D1	DTS display
D2	E Series display
D3	F Series display
Mounting of instrument	
0	No instrument
C	Compact (locally mounted on flow sensor)
R	Remote (wall mounted, incl. bracket (up to 3mm from sensor))
Options	
0	None
1	Specify options

ORDER CODE EXAMPLE

IC-BF	025	S	S	A	S	1	D2	C	0
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