

• **FB-1211 DUAL TURBINE •**
BI-DIRECTIONAL
INSERTION FLOW METER
ISOLATED ANALOG OUTPUT



Made in the USA

DESCRIPTION

ONICON insertion turbine flow meters are suitable for measuring electrically conductive water-based liquids. The FB-1211 model provides isolated 4-20 mA and 0-10 V analog output signals that are linear with the flow rate, as well as a binary (digital) dry contact output for flow direction.

APPLICATIONS

- Primary/secondary decoupling loop (bypass)
- HVAC thermal storage tank
- Domestic water tank charge/discharge

GENERAL SPECIFICATIONS

ACCURACY

- ± 0.5% OF READING at calibrated velocity
- ± 1% OF READING from 3 to 30 ft/s (10:1 range)
- ± 2% OF READING from 0.4 to 20 ft/s (50:1 range)

SENSING METHOD

Electronic impedance sensing
 (non-magnetic and non-photoelectric)

PIPE SIZE RANGE

2½" through 72" nominal

SUPPLY VOLTAGE

24±4 V AC/DC at 140 mA

LIQUID TEMPERATURE RANGE

Standard: 180° F continuous, 200° F peak
 High Temp: 280° F continuous, 300° F peak
 Meters operating above 250° F require
 316 stainless steel construction option

AMBIENT TEMPERATURE RANGE

-5 to 160° F (-20 to 70° C)

OPERATING PRESSURE

400 PSI maximum

PRESSURE DROP

Less than 1 PSI at 20 ft/s in 2½" pipe,
 decreasing in large pipes and lower velocities

OUTPUT SIGNALS PROVIDED:

DIRECTIONAL CONTACT OUTPUT

Isolated solid state dry contact
 Contact rating: 100 mA, 50V
 Latches at 0.18 ft/s
 Switches within 20 seconds of direction change

ANALOG OUTPUTS (ISOLATED)

Voltage output: 0-10 V (0-5 V available)
 Current output: 4-20 mA

FREQUENCY OUTPUT

0-15 V peak pulse, typically less than 300 Hz

CALIBRATION

Every ONICON flow meter is wet-calibrated in our flow laboratory against primary volumetric standards directly traceable to NIST. Certification of calibration is included with every meter.

FEATURES

Unmatched Price vs. Performance - individually calibrated, "Percentage of Reading" accurate instrumentation at very competitive prices.

Excellent Long-term Reliability - patented electronic sensing is resistant to scale and particulate matter. Low mass turbines with engineered jewel bearing systems provide a mechanical system that virtually does not wear.

Industry Leading 2-year "No-fault" Warranty - Reduces start-up costs with extended coverage to include accidental installation damage (miswiring, etc.). Certain exclusions apply; see our complete warranty statement for details.

Installation Flexibility - Patented dual turbine models deliver outstanding accuracy in short pipe runs.

Simplified Hot Tap Insertion Design - Standard on every insertion flow meter. Allows for insertion and removal by hand without system shutdown.

OPERATING RANGE FOR COMMON PIPE SIZES 0.17 TO 20 ft/s ± 2% accuracy begins at 0.4 ft/s	
Pipe Size (Inches)	Flow Rate (GPM)
2½	2.5 - 230
3	4 - 460
4	8 - 800
6	15 - 1800
8	26 - 3100
10	42 - 4900
12	60 - 7050
14	72 - 8600
16	98 - 11,400
18	120 - 14,600
20	150 - 18,100
24	230 - 26,500
30	360 - 41,900
36	510 - 60,900

(continued on back)

FB-1211 SPECIFICATIONS cont.

MATERIAL

- Wetted metal components
- Standard: Electroless nickel plated brass
- Optional: 316 stainless steel

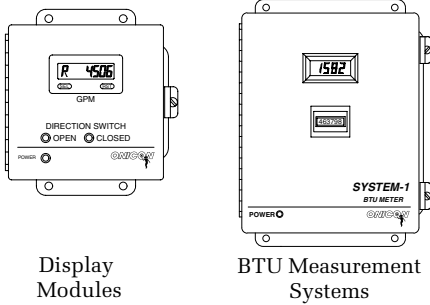
ELECTRONICS ENCLOSURE

- Standard: Weathertight aluminum enclosure
- Optional: Submersible enclosure

ELECTRICAL CONNECTIONS

- 6-wire minimum for directional switch and either 4-20 mA or 0-10 V output
- Second analog output and/or frequency output requires additional wires
- Standard: 10' of cable with 1/2" NPT conduit connection
- Optional: Plenum rated cable

ALSO AVAILABLE

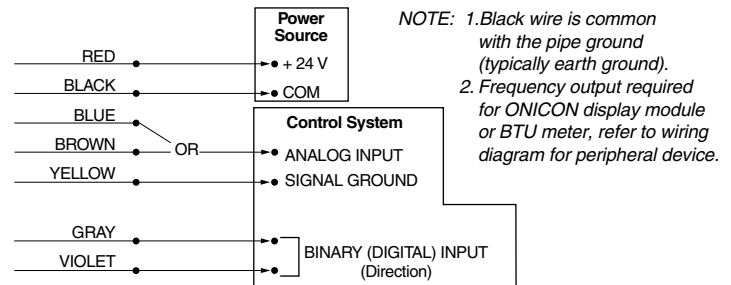


FB-1211 Wiring Information

WIRE COLOR CODE		NOTES
RED	(+) 24 V AC/DC supply voltage, 140 mA	Connect to power supply positive
BLACK	(-) Common ground (Common with pipe ground)	Connect to power supply negative
GREEN	(+) Frequency output signal: 0-15 V peak pulse	Required when meter is connected to local display or BTU meter
BLUE	(+) Analog signal: 4-20 mA (isolated)	Use yellow wire as (-) for these signals. Both signals may be used independently.
BROWN	(+) Analog signal: 0-10 V (isolated)	
YELLOW	(-) Isolated ground	Use for analog signals only
GRAY	Dry contact directional output - indicates flow direction	Contact closed when flow is in direction of arrow on meter
VIOLET		
DIAGNOSTIC SIGNALS		
ORANGE	Bottom turbine frequency	These signals are for diagnostic purposes - connect to local display or BTU meter
WHITE	Top turbine frequency	

FB-1211 Wiring Diagram

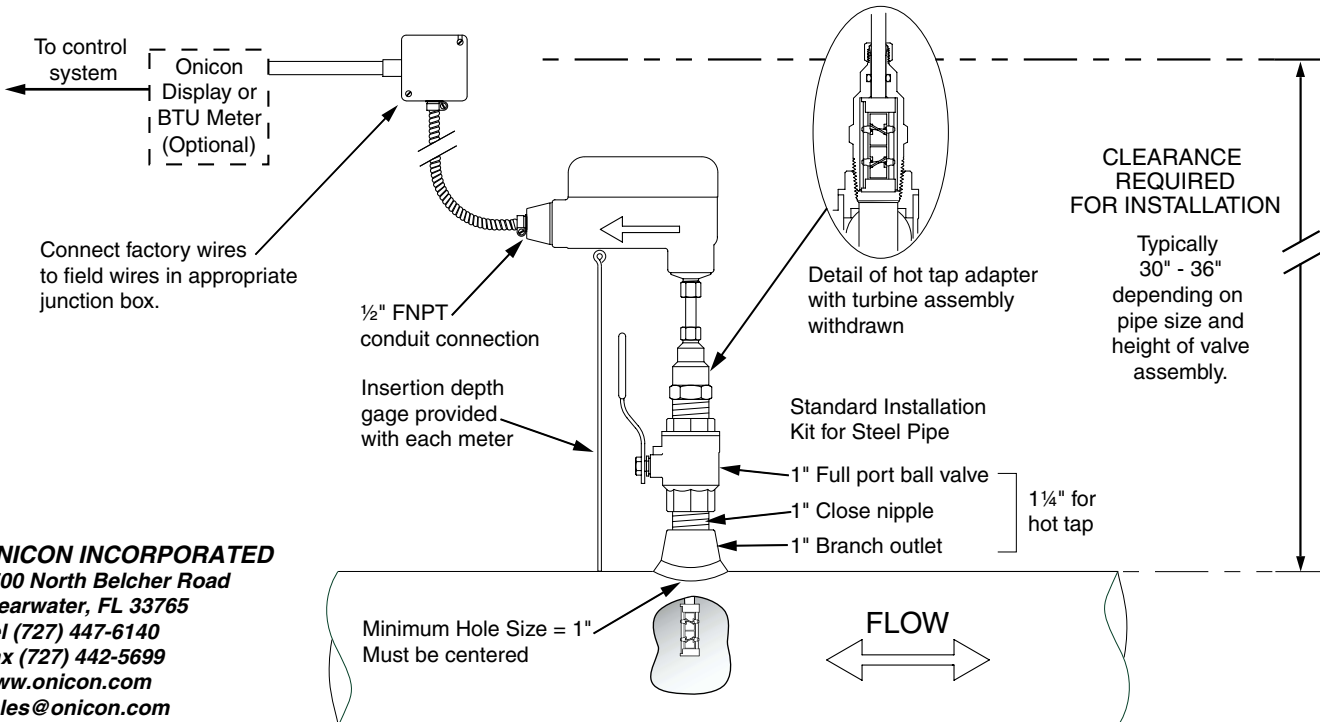
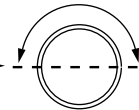
Flow Meter into Control System (No Display or BTU Meter)



Typical Meter Installation

(New construction or scheduled shutdown)

- Acceptable to install in vertical pipe
- Position meter anywhere in upper 180° for horizontal pipe



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Note: Installation kits vary based on pipe material and application. For installations in pressurized (live) systems, use "Hot tap" 1 1/4 inch installation kit and drill hole using a 1 inch wet tap drill.