

• **F-1220 DUAL TURBINE •**  
**INSERTION FLOW METER**  
**DIVIDED OUTPUT**



Made in the USA

**DESCRIPTION**

ONICON insertion turbine flow meters are suitable for measuring electrically conductive water-based liquids. The F-1220 model provides a binary (digital) dry contact output signal corresponding to flow rate, which is divided to meet the monitoring system input frequency limitation.

**APPLICATIONS**

- Closed loop chilled water, hot water, condenser water & water/glycol/brine solutions for HVAC
- Process water & water mixtures
- Domestic water

**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 diameter

**SUPPLY VOLTAGE**

24 ± 4 V AC/DC at 30 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 SS 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 larger pipes and lower velocities

**OUTPUT SIGNALS PROVIDED**

- Divided Contact Output
- Isolated solid state dry contact
- Contact rating: 100 mA, 50 V
- Frequency Output
- 0 – 15 V peak pulse, typically less than 300 Hz

(continued on back)

**CALIBRATION**

Every ONICON flow meter is wet calibrated in our flow laboratory against primary volumetric standards that are directly traceable to N.I.S.T. A certificate of calibration accompanies every meter.

**FEATURES**

**Unmatched Price vs. Performance -** Custom calibrated, highly 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 Two-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.

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

<b>OPERATING RANGE FOR COMMON PIPE SIZES</b>	
<b>0.17 TO 20 ft/s</b>	
±2% accuracy begins at 0.4 ft/s	
Pipe Size (Inches)	Flow Rate (GPM)
2 ½	2.5 - 230
3	4 - 460
4	8 - 800
6	15 - 1,800
8	26 - 3,100
10	42 - 4,900
12	60 - 7,050
14	72 - 8,600
16	98 - 11,400
18	120 - 14,600
20	150 - 18,100
24	230 - 26,500
30	360 - 41,900
36	510 - 60,900

## F-1220 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

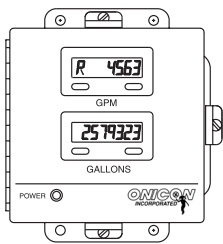
4-wire minimum for divided switch output

Frequency output requires an additional wire

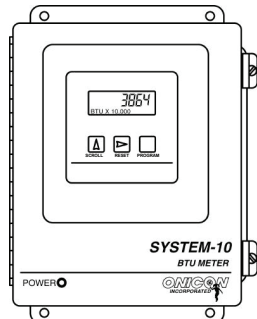
Standard: 10' of cable with 1/2" NPT conduit connection

Optional: Indoor DIN connector with 10' of plenum rated cable

## ALSO AVAILABLE



Display Modules



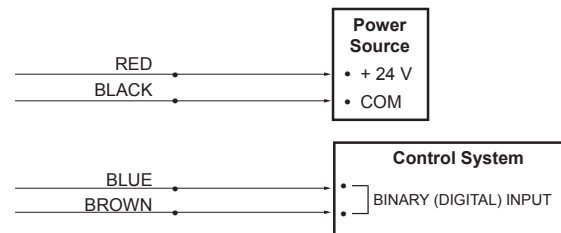
Btu Measurement Systems

## F-1220 Wiring Information

WIRE COLOR	DESCRIPTION	NOTES
RED	(+) 24 V AC/DC supply voltage, 30 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	Dry contact switch output	Output can be divided by any binary number up to 4096 to meet frequency limitations of control system
BROWN		
DIAGNOSTIC SIGNALS		
ORANGE	Bottom turbine frequency	These signals are for diagnostic purposes - connect to local display or Btu meter
WHITE	Top turbine frequency	

## F-1220 Wiring Diagram

Flow meter in control system (no display or Btu meter)



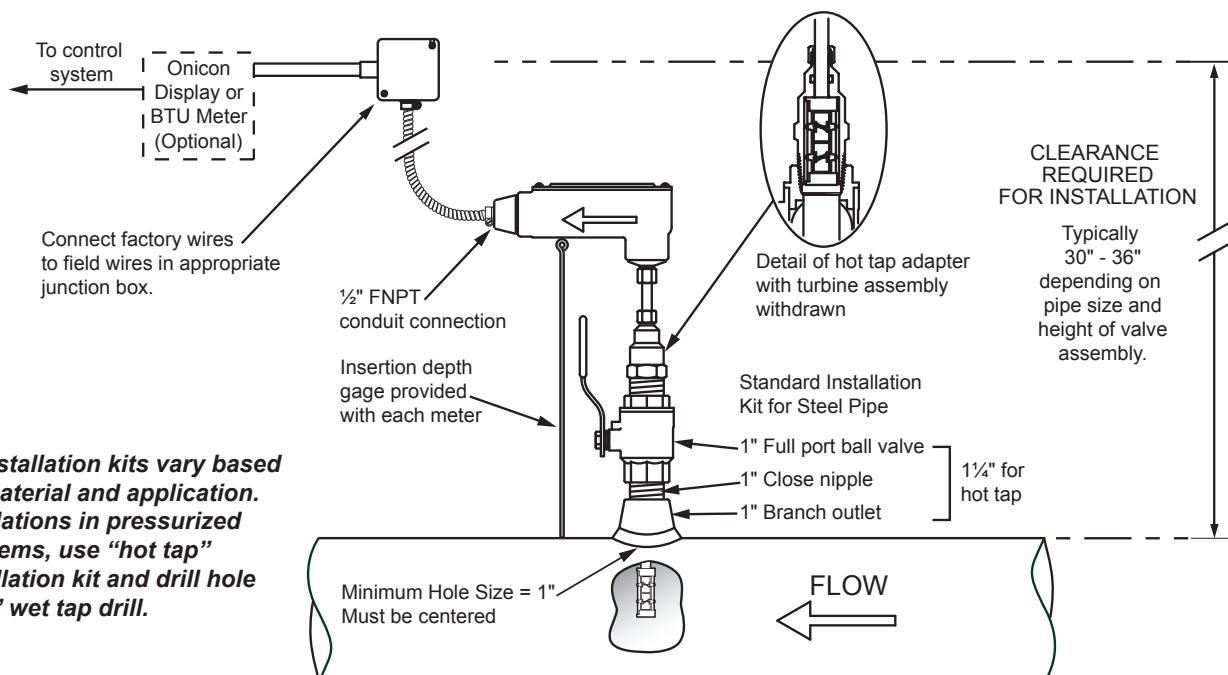
- NOTE: 1.** Black wire is common with the pipe ground (typically earth ground.)  
**2.** Frequency output required for ONICON display module or Btu meter, refer to wiring diagram for peripheral device.

## Typical Meter Installation

(New construction or scheduled shutdown)

- Acceptable to install in vertical pipe

- Position meter anywhere in upper 240° for horizontal pipe



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