

• **F-1110 SINGLE TURBINE •**  
**INSERTION FLOW METER**  
**ANALOG OUTPUT**



Made in the USA

**DESCRIPTION**

ONICON insertion turbine flow meters are suitable for measuring electrically conductive water-based liquids. The F-1110 model provides non-isolated 4-20 mA and 0-10 V analog output signals that are linear with the flow rate.

**APPLICATIONS**

- Chilled water, hot water, condenser water, and water/glycol/brine for HVAC
- Process water and 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**

1¼" through 72" nominal

**SUPPLY VOLTAGE**

24±4 V AC/DC at 50 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 1½" pipe,  
 decreasing in larger pipes and lower velocities

**OUTPUT SIGNALS PROVIDED:**

**ANALOG OUTPUTS (NON-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

(continued on back)

**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** - 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.

| OPERATING RANGE FOR<br>COMMON PIPE SIZES<br>0.17 TO 20 ft/s<br>± 2% accuracy begins at 0.4 ft/s |                 |
|---|-----------------|
| Pipe Size (Inches)  | Flow Rate (GPM) |
| 1¼  | 0.8 - 95        |
| 1½  | 1 - 130         |
| 2   | 2 - 210         |
| 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    |

# F-1110 SPECIFICATIONS cont.

## MATERIAL

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

## ELECTRONICS ENCLOSURE

- Standard: Weathertight aluminum enclosure
- Optional: Submersible enclosure

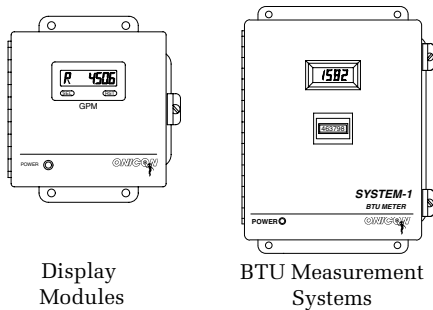
## ELECTRICAL CONNECTIONS

- 3-wire minimum for 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: Indoor DIN connector with 10' of plenum rated cable

# F-1110 Wiring Information

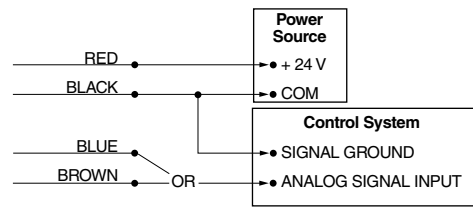
| WIRE COLOR CODE |  | NOTES  |
|-----------------|--|--|
| RED             | (+) 24 V AC/DC supply voltage, 50 mA           | Connect to power supply positive                               |
| BLACK           | (-) Common ground (Common with pipe ground)    | Connect to power supply negative & analog input ground         |
| 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 (Non-isolated)      | Both signals may be used independently                         |
| BROWN           | (+) Analog signal: 0-10 V (Non-isolated)       |  |

## ALSO AVAILABLE



## F-1110 Wiring Diagram

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

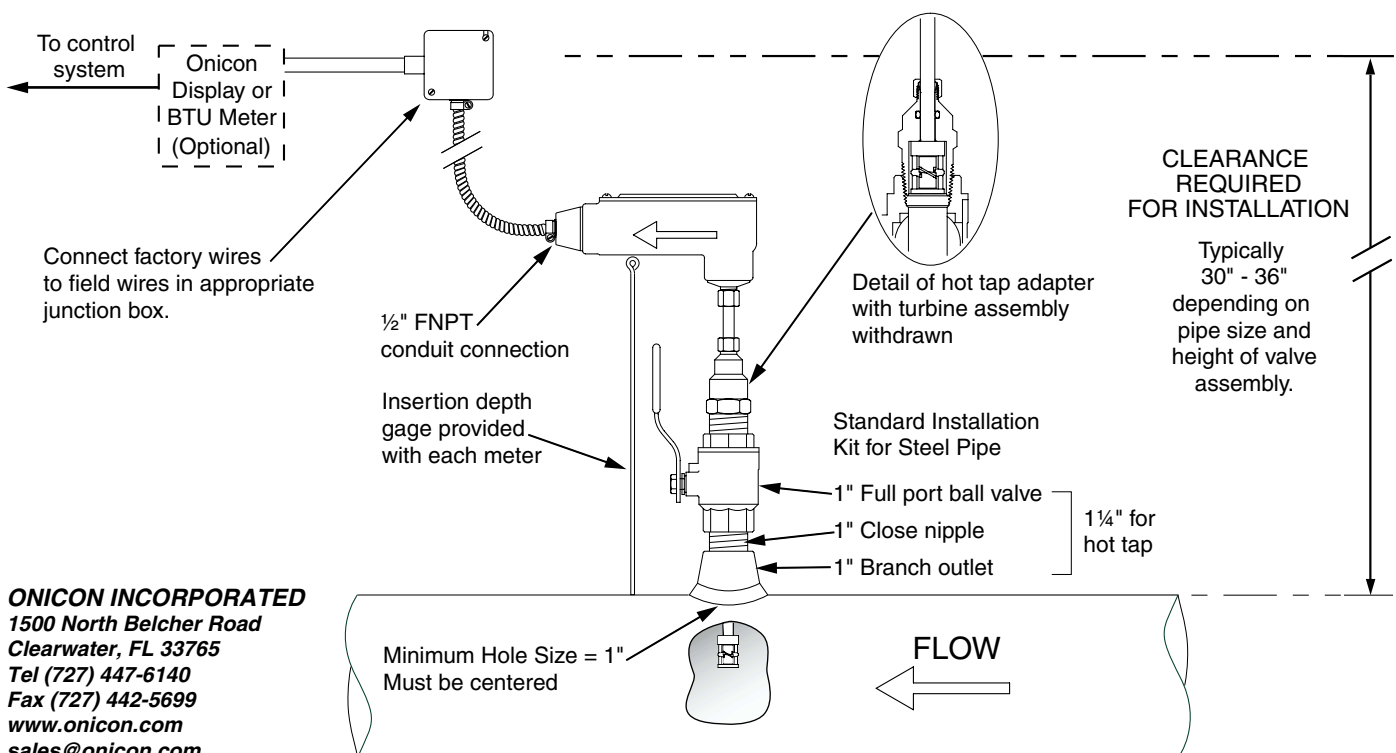


- NOTE: 1. Black wire is common with the pipe ground (typically earth ground).  
 2. Frequency output required for ONICON display module or BTU meter, refer to wiring diagram for peripheral device.

## Typical Meter Installation

(New construction or scheduled shutdown)

- Acceptable to install in vertical pipe
- Position meter anywhere in upper 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.