



# *Flow Line Options*



## **Digital Loop-Powered Meter Manual**

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## SPECIFICATIONS

*Except where noted all specifications apply to operation at +25°C.*

**INPUT:** 4-20 mA @ 24 VDC maximum.

**DISPLAY:** 0.5D (12.7mm) high LCD, 31/2 digit; 1999, user selectable decimal point.

**CALIBRATION:** 2 Step; non-interacting zero and span

**CALIBRATION RANGE:** 4 mA input: -500 to +500;

20 mA input: between 20 to 2000 above 4 mA display.

**MAXIMUM VOLTAGE DROP:** 1.5 VDC @ 20 mA;

3.5 VDC @ 20 mA with backlighting option.

**ACCURACY:** ±0.1% of span, ±1 count.

**CONVERSION RATE:** 2.5 conversions/second.

**CONNECTIONS:** Removable screw terminal block.

**OPERATING TEMPERATURE RANGE:** -40 to 80°C.

**APPROVAL:** The FC661-N-EX and FC661-B-EX are FM

Approved and CSA Certified as explosion-proof for Class I, Division 1, Groups B, C, and D; dust-ignition proof for Class II, Division 1, Groups E, F, and G; and Class III hazardous (classified) locations. LCIE (CENELEC) certified as flameproof, EEx d IIC T6.

**FC660 ENCLOSURE:** High impact-resistant ABS plastic body, color: gray, clear ABS plastic cover with blue faceplate; NEMA 4X, IP 67; 1/2D conduit hole provided at base. Hole may be provided on back for panel mounting applications, call factory for details.

**FC661 ENCLOSURE:** Explosion-proof, cast aluminum, corrosion resistant, color: "safety blue" polyester powder coating. FM Approved and CSA Certified; NEMA 4X, 7 & 9; Class I, Division 1, Groups B, C, & D and Class II, Groups E, F, & G, Class III hazardous outdoor (Type 4X) locations.

**CENELEC:** EEx d IIC + H2 IP 66. Two 1/2D NPT holes provided.

**LOOP-POWERED BACKLIGHTING OPTION:** Factory installed only. Powered directly off the 4-20 mA loop, no batteries required. The display brightness will increase as the input signal current increases.

**WARRANTY:** 1 year parts and labor.

**EXTENDED WARRANTY:** May be extended an additional 12 months by returning the Product Registration Form within 2 months from date of purchase.

## Setup

The only tools needed for calibration are a calibrated current source, a flat head screwdriver, and a phillips head screwdriver. Please note that the meter must be disassembled in order to perform the setup functions.

### DISASSEMBLY

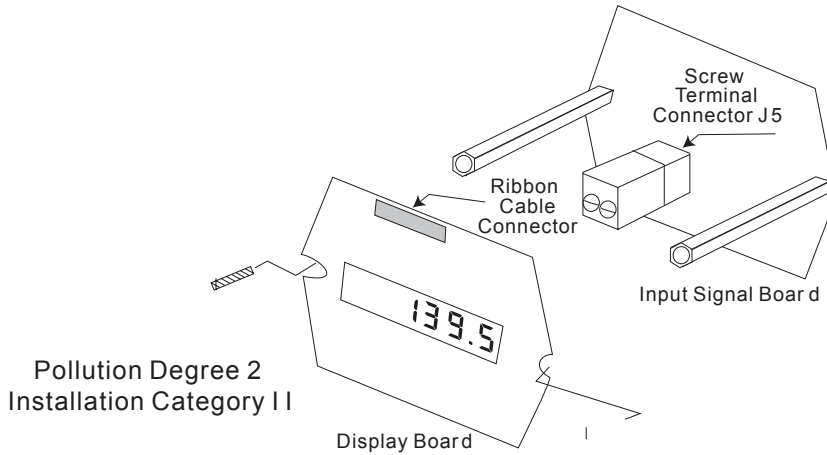
The calibration controls are located behind the display faceplate. To access these controls, you must first remove the enclosure cover and faceplate by doing the following:

FC660: Loosen the four screws on the enclosure cover and remove. Unscrew the two fasteners that hold the faceplate, then remove.

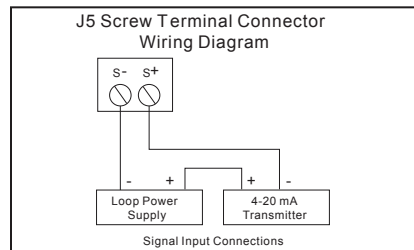
FC661: Turn the enclosure cover counterclockwise to remove. Unscrew the two fasteners that hold the faceplate, then remove.

## CONNECTIONS

Field connections are made to the screw terminals located on the Input Signal Board. To access these screw terminals it is necessary to remove the Display Board from the Input Signal Board. First, disconnect the ribbon cable connector from the Display Board. Next, loosen the two screws located to the left and right of the LCD that hold the Display Board in place. Finally, remove the Display Board carefully to avoid contact with any rough surfaces. Connect a 4-20 mA input signal to terminal J5 located on the Input Signal Board as shown below.



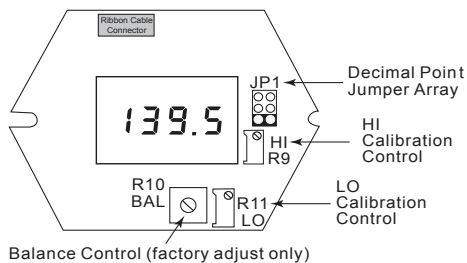
**NOTE: When reassembling boards DO NOT over-tighten screws**



**CAUTION - DISCONNECT FROM SUPPLY BEFORE OPENING. KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE. CONDUIT SEALS MUST BE INSTALLED WITHIN 18" OF THE ENCLOSURE.**

## DECIMAL POINT SELECTION

Decimal point selection is accomplished using JP1 located behind the faceplate to the right of the display. Leave jumper on one pin only for a display of 1999 (default), place the jumper over both bottom pins for a display of 199.9, middle for 19.99, top for 1.999.



## CALIBRATION

The LO control (R11) is located below the display and the HI control (R9) is located to the right of the display. Apply a 4 mA signal and adjust the LO control to display the desired reading. Next, apply a signal between 16 and 20 mA and adjust the HI control to display the desired reading. Complete the calibration by making any minor adjustments to the LO and HI controls.

## Mounting

### FC660

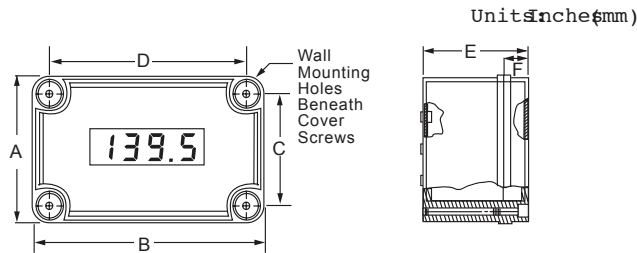
The FC660 can be wall mounted using the mounting holes beneath the cover screws. It can be panel mounted with the addition of the FCA6604 panel mount kit. It can also be pipe mounted by using the FCA6845 or the FCA6845-SS 2" pipe mounting kit.

### FC661

The FC661 has no provisions for wall mounting. Installation of the unit is accomplished by using the two ½" NPT conduit holes provided with ½" NPT fittings.

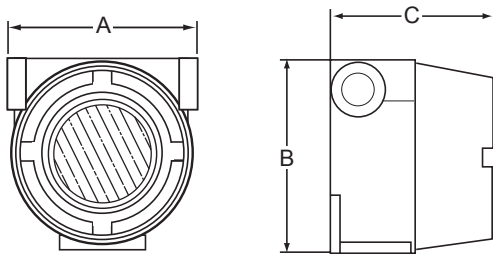
## Dimensions

### FC660



A: 3.15 (80)	C: 2.36 (60)	E: 2.56 (65)
B: 4.33 (110)	D: 3.54 (90)	F: 0.79 (20)

### FC661



A: 4.5 (114)	B: 4.75 (121)	C: 3.75 (95)
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## Ordering Information

MODEL	DESCRIPTION
FC660-N	NEMA 4X Loop-Powered Meter
FC660-B	NEMA 4X Loop-Powered Meter with Loop-Powered Backlight
FC661-N	Explosion-Proof Loop-Powered Meter
FC661-B	Exp-Proof Loop-Powered Meter with Loop-Powered Backlight
FC661-N-EX	FM Approved & CSA Certified Explosion-Proof Meter
FC661-B-EX	FM & CSA Exp-Proof Meter with Loop-Powered Backlight