FMC Technologies

Flow Rate Transmitter

Model FC420 Frequency to Current Converter

Bulletin SSIT014

The INVALCO Model FC420 is a precision frequency to current transmitter. The signal is directly proportional to the frequency input to the unit from a turbine flow meter magnetic pickup or related device. The span of the unit is field adjustable to accommodate a wide range of flow rates. By using relatively high dc voltages and an independently sourced current, the transmitter is immune to voltage drops caused by long wire runs and electrical noise due to motors, relays, switches, transformers, and other industrial equipment. The Model FC420 excels in supplying signals for remote flow rate indication or as an input to data acquisition systems.

Series FC420 Flow Rate Transmitter

Features

- **4 - 20 mA Current Output**
- **Switch Selectable Signal Ranges**
- **Output Signal Proportional to Flow**
- **Two or Three Wire Current Output**
- **CE Compliant**

Specifications

Electrical Input

DC Power

9 to 30 Vdc (reverse polarity protected)

Supply Current: 4.0 mA (2 wire), 5.0 mA (3 wire)

Input Protection: 100 Vac

Input Signal

Type: Sinusoidal wave - magnetic pickup

Input Sensitivity: 50 mV peak-to-peak

12 mV peak-to-peak (Optional)

Type: Digital (square wave)

Frequency Range: Switch selectable

High Range: 1100 Hz to 18 Khz for full scale output

Low Range: 75 Hz to 1100 Hz for full scale output

Zero/Span Adjustment Interaction

Less than 1%

Operating Temperature

-40°F to 185°F (-40°C to 85°C)

Output Settling Time

Full scale changes to 95% of final value in 1.8 sec.

Output Ripple and Noise

.2 mA max. p-p, 1% of full scale

.02 mA typ. .01% of full scale

Temperature Coefficient

77°F to 104°F (25°C to 40°C), 0.13%/°C,

Outputs

Current Mode

2 or 3 Wire Output Version	**4-20mA Range**
Minimum Output Current	0.07 mA
Maximum Output Current (Full Scale Current with Calibration set to "zero" 4mA and 10mA respectively	24.1 mA
Load Resistance <(+V-9V)/ Full Scale Output +V=12V Output +V=24V	<150Ohms <750 Ohms

Enclosure

Y3 (Standard) UL, CSA

Housing Designed for use in:

Class I, Division 1 & 2, Groups C and D

Class II, Division 1 & 2, Groups E,F, and G

Class III

Calibration Procedure

Current Equipment Required

- Function Generator (Wavetek Model 21 or equiv.)
- DC Power Supply (12V, 100mA)
- Digital Multimeter Meter DMM (Keithley 175 or equiv.)

Preliminary Setup (4-20mA)

1. Connect DC power supply to FC420 as follows.

   Set DMM for ammeter operation.

   Connect power supply positive to the ammeter positive.

   Connect ammeter negative to terminal 1 of FC420.

   Connect power supply negative (or common) to terminal 2 of FC420.

   Verify that a jumper wire connects terminal 1 to terminal 3 of FC420.
2. Set DMM for 200mA range.
3. Connect the Function Generator output to FC420 terminals 4 and 5.
4. Position FC420 Frequency Input Range switch for desired full scale output:

   10KHz max. = High Range

   1100Hz max. = Low Range

   Reference FC420 diagram for switch positions.

Procedure (4-20mA)

1. Turn on 12 V DC power supply.
2. Set the Function Generator for a 500mV P-P sine wave output. Set output frequency for 0hz and adjust ZERO pot on FC420 for a 4.00 mA +/-.02mA output reading on the DMM.
3. Set Function Generator for the maximum flowrate frequency and adjust the SPAN pot on FC420 for a 20.00mA +/-.02mA output reading on the DMM.
4. Set output frequency for 0hz and verify output reading of 4.00mA +/-.02mA. Readjust ZERO pot if necessary.
5. Set output frequency for the maximum flowrate frequency and verify output reading of 20.00mA +/-.02mA Readjust SPAN pot if necessary.

Ordering Information

Basic Model Designation	
FC420	Frequency to Current Converter 9 to 30 Vdc Powered. 4-20mA Output
Mounting/Enclosure Options	
- 1	No Enclosure, PC Board/Terminals only
- 2	Y3, Nema 7 Explosion-proof Enclosure with 3/4" NPT Union

Drawings and Diagrams

Note: Dimensions - Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from respective engineering drawings.

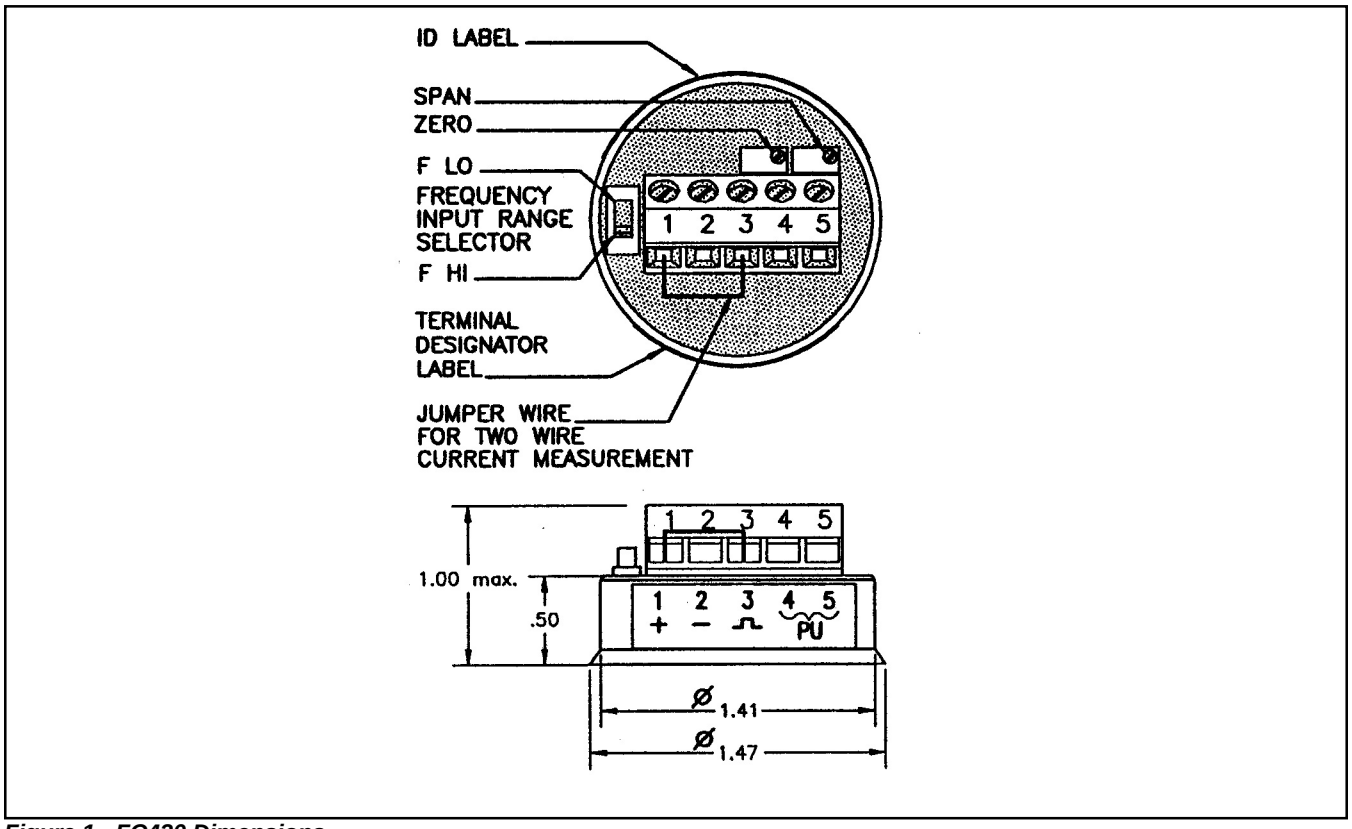

Figure 1 - FC420 Dimensions

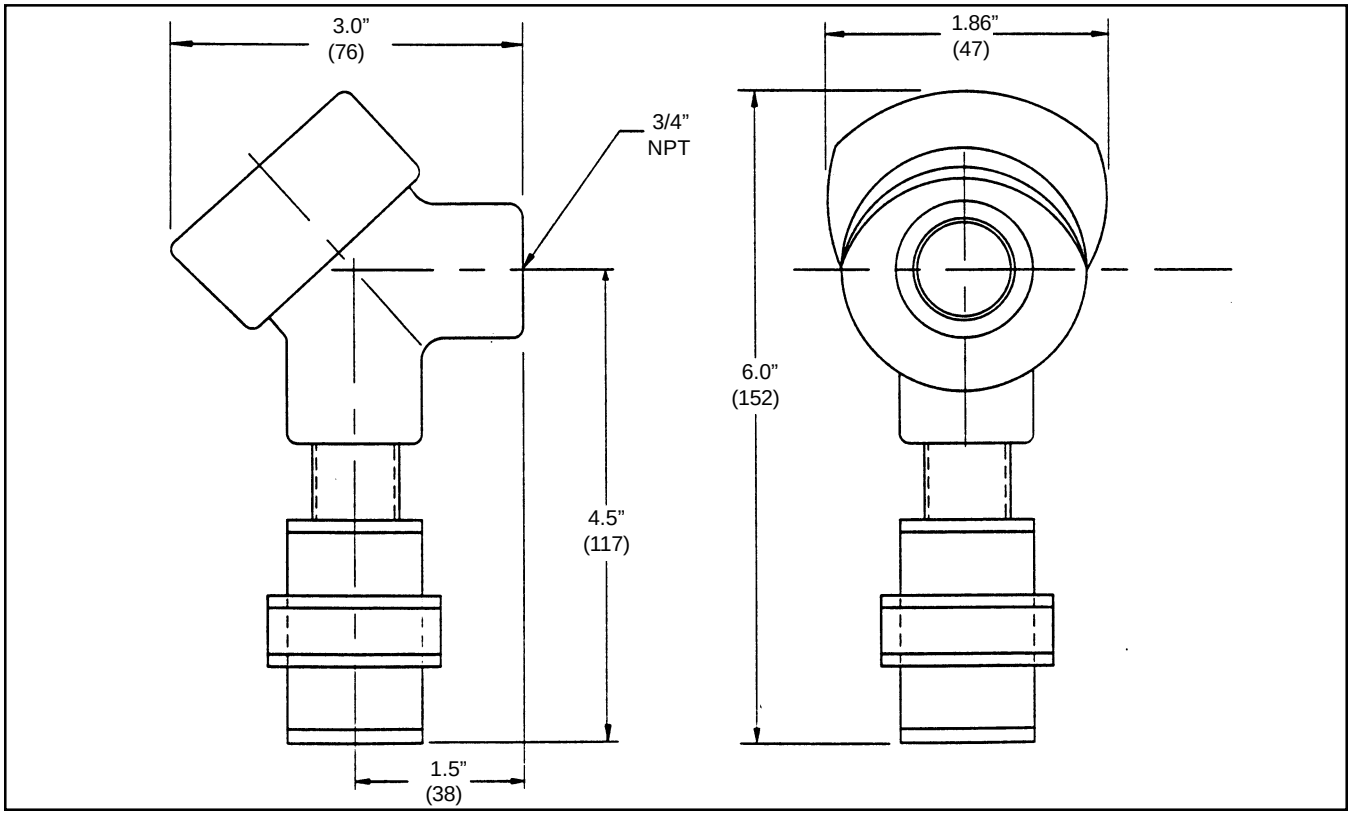

Figure 2 - FC420 Mounted in Y3 Enclosure Dimensions

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