INSTALLATION & OPERATION MANUAL

SP712-2 REV. C
Loop Powered 4-20mA Transmitter

DOC#: MN-712-C

SPONSLER CO., INC.

Precision Industrial Flow Measuring Devices and Controls

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SPECIFICATIONS

Temperature: Operating -40 to 85°C
Storage -65 to 125°C

Input Voltage: Minimum = 7 V + (20mA X RL)
Maximum = 28 V + (4mA X RL)
Protected against polarity reversal

Signal Input: Frequency 0-10 KHz
Amplitude 50 mV – 35 V sine or square wave
Sensitivity field adjustable
Impedance 50K

Analog Output 4mA @ 0 Hz, 20mA @ desired full scale frequency
Full scale range -- 100 Hz-10 KHz selectable
Response time -- 95% of change in 1 second
Linearity -- .3% F/S
Tempco -- < 2% of reading over entire temperature range

Features: Mounts directly on flowmeter

Enclosure: FM Approved, CSA Certified
Class I Groups B, C, D
Class II Groups E, F, G
Weight 1.7 lbs.

The SP712-2 is a 2-wire loop powered analog transmitter designed to linearly convert a frequency input to an equivalent 4-20mA current output. When it incorporates with a turbine flowmeter a current representation proportional to flow is obtainable. Data transmission in a current format exhibits excellent noise immunity and the capability of long distance transmission.

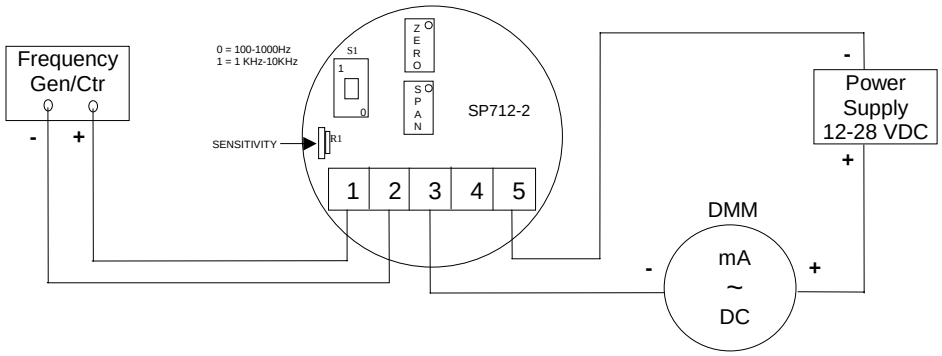
A full-scale frequency range of 100 Hz-10 KHz is selectable, via S1. The span adjustment establishes the frequency point at which a 20mA output is achieved. The sensitivity adjustment permits the SP712-2 to discriminate between a signal input and noise by increasing (CCW) or decreasing (CW) the input signal amplitude necessary to process a valid signal. 'Test' S2 when depressed, illuminates D1 if loop voltage and input signal both are present.

Installation of the SP712-2 requires only 2 wires because it is a true 2-wire transmitter: input power and signal output utilizes the same wires.

BENCH TEST CALIBRATION PROCEDURE

Required Equipment: Power Supply 12-28v, Digital Multimeter (DMM), Frequency Generator, & Frequency Counter

Test Procedure:



A) Connect DMM positive lead to power supply positive, connect DMM negative lead to J1-3, set DMM function to mA DC

B) Connect power supply negative lead to J1-5

C) Connect frequency generator positive & negative leads to J1-1,2; respectively. Set output to sinewave & amplitude to zero

D) Set S1 for desired frequency range

E) Turn power supply & frequency generator 'ON', DMM should indicate approximately 4.00mA

F) Adjust 'ZERO' (R25) for 4.00mA DMM indication (record data)

G) Set 'Sensitivity' adjust (R1) fully clockwise

H) Adjust signal amplitude of frequency generator to 50mv & frequency to maximum desired point (full scale frequency) (record data)

I) Adjust 'SPAN' (R19) for 20.00mA DMM indication (record data)

J) Reduce signal amplitude of frequency generator to zero, adjust 'ZERO' (R25) for 4.00mA DMM indication if necessary

K) Adjust signal amplitude of frequency generator to 50mv, adjust 'SPAN' (R19) for 20.00mA DMM indication if necessary

L) Adjust frequency of frequency generator to exactly 50% of maximum frequency point in step H, DMM should indicate 12.00mA ± .06. Repeat for 25% & 75% full scale frequencies(record data)

To check linearity @ any frequency point, incorporate the following formula:

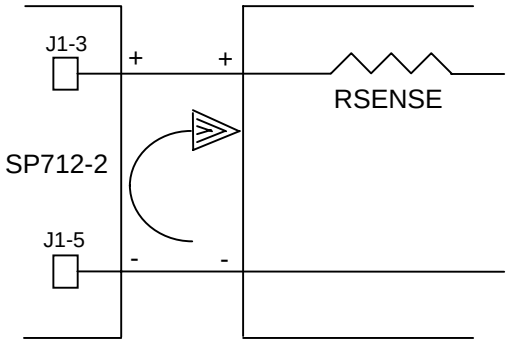
$$(F/F_{max} \text{ X } 16) + 4 = mA$$

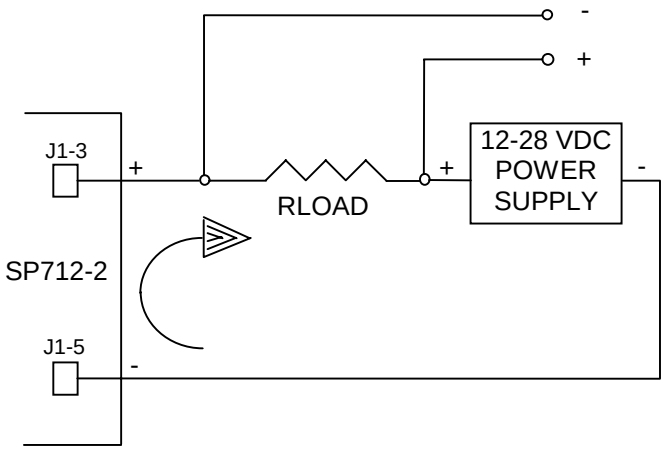
(Where F = Flowrate frequency in Hz)
(F_{max} = Frequency in Hz at which 20mA is set)

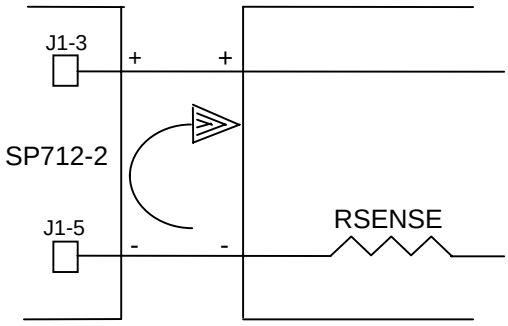
Ex. Assume maximum frequency point = 2000 Hz (20.00mA) Check for linearity @ 750 Hz point

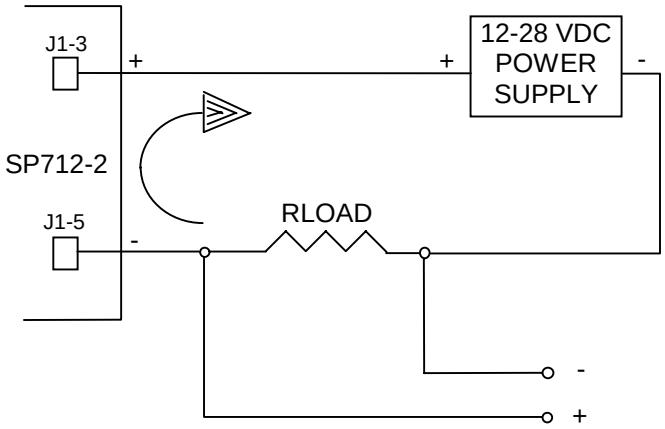
750/2000 = .375
16 X .375 = 6
6 + 4 = 10; DMM should indicate 10.00mA @ 750 Hz input

TYPICAL LOOP CONFIGURATIONS

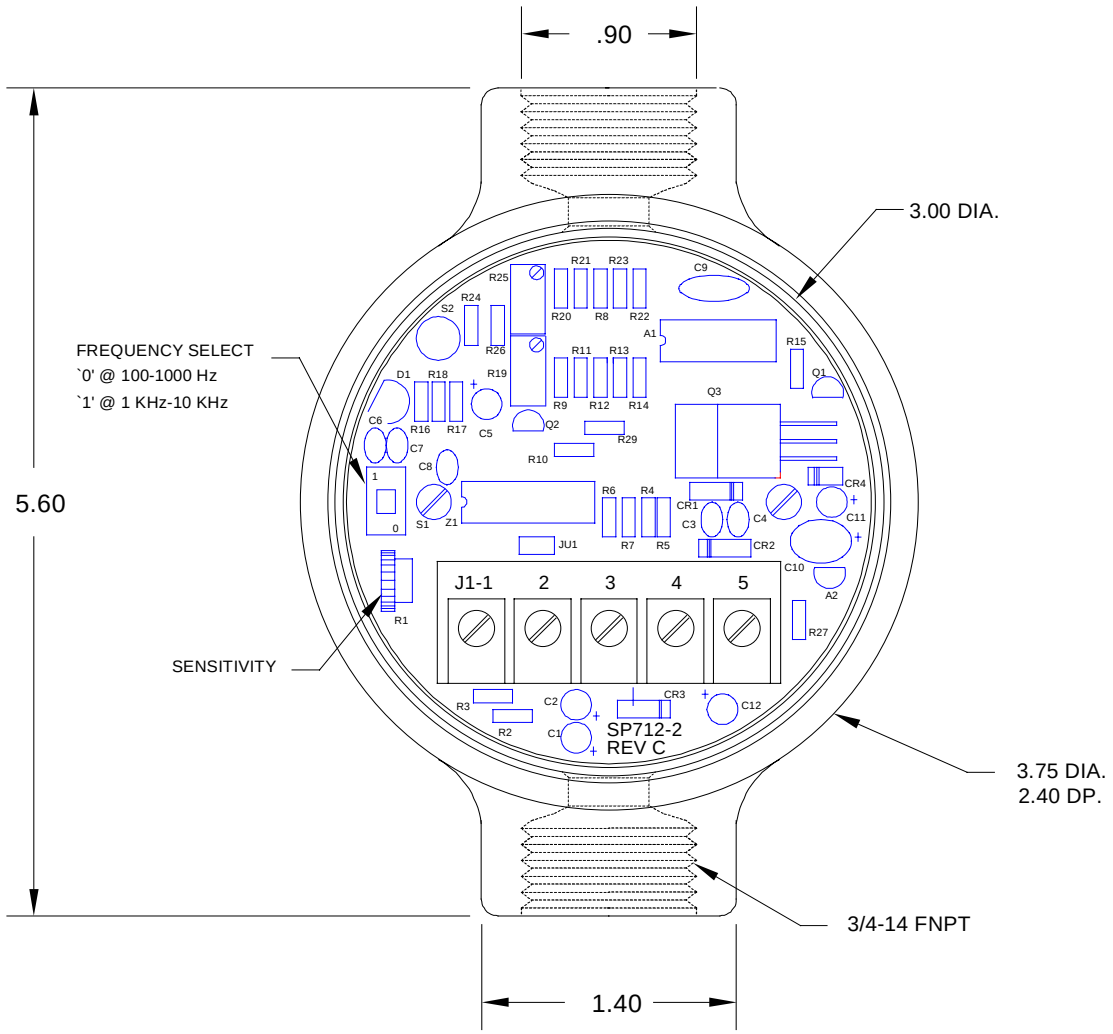








DATE	REV	REVISION RECORD	AUTH	DR	CK



TERMINAL LOCATION

1 SIGNAL IN +
2 SIGNAL IN -
3 LOOP IN +
4 N/C
5 LOOP IN -

NOTE: DIMENSIONS ARE IN INCHES

SPONSLER CO., INC.		
FILE \ELECT\SP712.DWG		
DESCRIPTION SP712-2 LOOP POWERED 4-20mA TRANSMITTER		DRAWN BY TN
		DATE 5-5-97
MATERIAL	SCALE NONE	REVIEWED BY
		DATE
COD DRAWING NUMBER EM SP712-2	REV. #	APPR. BY
		DATE