

INSTALLATION & OPERATION MANUAL

SP718-V REV. A Modulated Carrier Amplifier 0-5V/0-10V Transmitter

DOC#: MN-718V-A.doc



LIQUID CONTROLS SPONSLE, INC.

FLOW MEASURING DEVICES AND CONTROLS

A Unit of the IDEX Corporation

105 Albrecht Drive • Lake Bluff, IL 60044

(847) 295- 1050 • www.sponsler.com



SPECIFICATIONS

Temperature:	Operating 0 – 70°C Storage –20 – 85°C
Input Voltage:	110VAC 60Hz or 12 – 16.5VDC 50mA MAX Observe Polarity Consult factory for other Input Voltages
Signal Input:	Frequency 0 – 3500 Hz w/ 50KHz carrier (requires P/U Coil 1 – 1.3 mh)
Analog Output:	0V @ 0Hz, 5 or 10 V @ desired Full Scale Frequency Full Scale Range 60 Hz – 3500 Hz Selectable Consult factory for other Ranges Response Time 95% of change in 1 second Linearity .3% F/S Tempco <2% of Reading over entire Temperature Range Maximum Load Resistance 1000 ohms
Features:	Switch Selectable Output Range 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 SP718-V Modulated Carrier Amplifier and Analog Transmitter is a meter mounted device designed to combine the advantages of the Modulated Carrier principle with the convenience of an Analog Output in a single PCB Assembly. The SP718-V linearly converts the detected carrier frequency shift rate to an equivalent voltage output level, 0-5V/0-10V that is switch selectable. When incorporated with a turbine flowmeter, a voltage representation proportional to flow is obtainable.

The SP718-V produces a carrier frequency in conjunction with a RF pick-up coil, detects the shift in the carrier frequency (Modulation) that occurs with the passage of magnetic material and linearly generates a voltage output that is proportional to the rate of Modulation.

A full-scale frequency range of 60-3500Hz is jumper selectable. The Span adjustment establishes the frequency point at which the Full Scale Output is achieved.

The Modulated Carrier principle introduces no drag on the passing magnetic device therefore; when utilized with a turbine flowmeter extension of the flowmeter's nominal linear range at the low end of the flow spectrum is realized. This parameter is particularly useful when measuring a low mass gas and the operating flowrate is at the flowmeter's low end.

BENCH TEST CALIBRATION PROCEDURE

Required Equipment: Power Supply 12-16.5VDC or 110VAC
Digital Multimeter (DMM)
Frequency Generator
Frequency Counter
Oscilloscope

Refer to Figure

Test Procedure:

NOTE: All test equipment power cords should be equipped with 2-prong 'cheater' plugs.

- A)** Connect Flowmeter with RF Pick-up Coil to J1-1,2
- B)** Connect Power Supply Positive (HOT) & Negative (NEU) Leads to J1-6,5
Respectively
- C)** Connect O'Scope Positive & Negative Leads to J1-1,2 Respectively
- D)** Connect DMM Positive & Negative Leads to J1-3,4 Respectively, Set Function to
Volts DC
- E)** Install Jumper @ JU4, Set S1 for desired Output Voltage Level
- F)** Install Jumper @ JU1-3 for desired Full Scale Frequency Range
- G)** Turn Power Supply 'ON', LED D1 Illuminates & O'Scope displays a 50KHz +/- 5KHz
Carrier Sinewave
- H)** Observe Carrier Amplitude of 6Vp-p
- I)** Adjust 'ZERO' (R25) for a DMM Indication of .000V
- J)** Disconnect O'Scope
- K)** Connect Frequency Generator Positive and Negative Leads to J1-1,2 Respectively;
Set Function to Squarewave Amplitude to 5Vp-p & Frequency to desired Full Scale
Point
- L)** Adjust 'SPAN' (R23) for a DMM Indication of 5.00V or 10.00V
- M)** Reduce Signal Amplitude of Frequency Generator to Zero, Adjust 'ZERO' (R25) for
DMM Indication of .000V if necessary
- N)** Increase Signal Amplitude of Frequency Generator to 5Vp-p; Adjust 'SPAN' (R23) for
DMM Indication of 5.00V or 10.00V if necessary
- O)** Adjust Frequency of Frequency Generator to 0, 25, 50, 75, & 100% of Full Scale
Frequency of Step K

To check for Linearity at any Frequency Point, incorporate the following formula -
 $(F/F \text{ Max} \times \text{Full Scale Output}) = \text{Volts}$

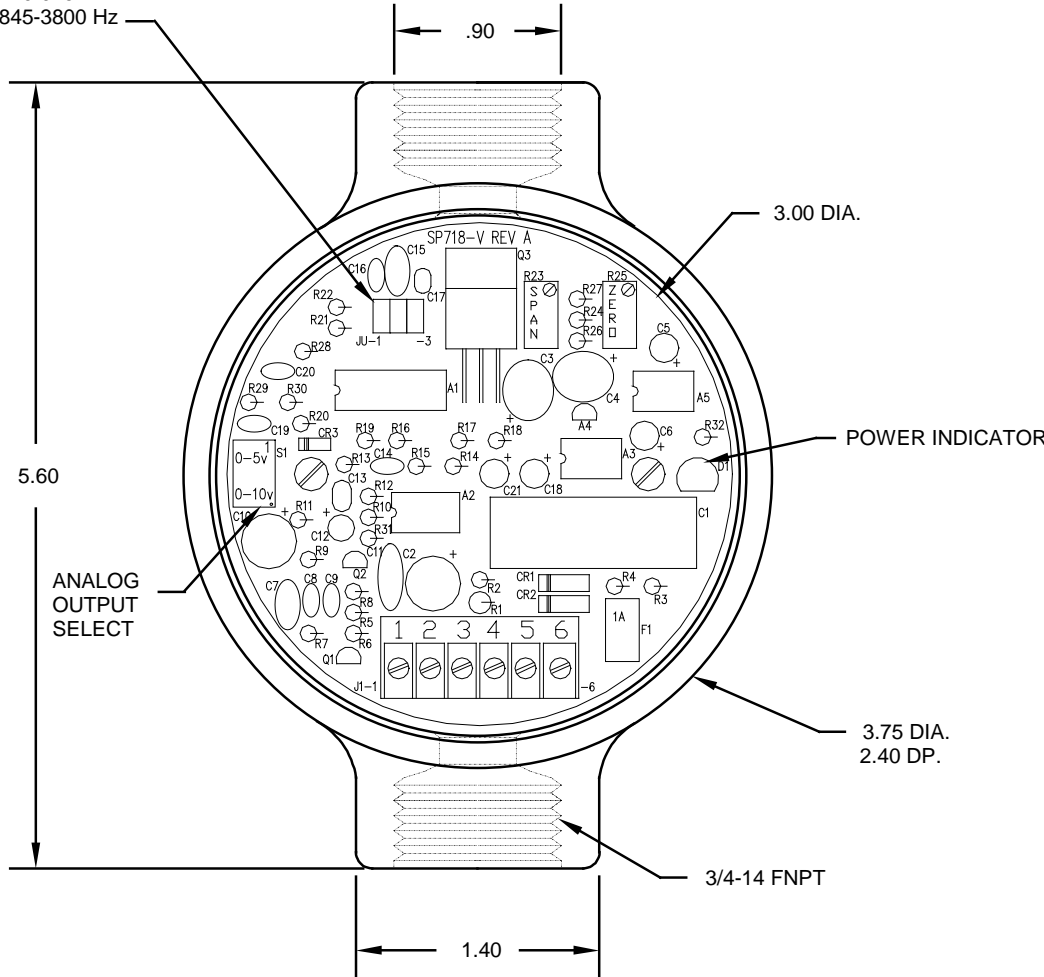
Example: Assume Maximum Frequency Point = 2KHz (5 or 10V Point)
Check for Linearity at 750Hz. 10V Full Scale Output

$$750/2000 = .375$$

$$.375 \times 10 = 3.75V \text{ DMM Should Indicate } - 3.75V @ 750Hz$$

DATE	REV	REVISION RECORD	AUTH	DR	CK

F/S FREQUENCY RANGE SELECT
 JU1 60-245 Hz
 JU2 220-925 Hz
 JU3 845-3800 Hz



TERMINAL LOCATION

- 1 SIGNAL IN +
- 2 SIGNAL IN -
- 3 ANALOG OUT +
- 4 ANALOG OUT -
- 5 110 VAC NEU (DC-)
- 6 110 VAC HOT (DC+)

NOTE:
 Condulet enclosure not available for 120 volts, consult factory

NOTE: DIMENSIONS ARE IN INCHES

SPONSLER, INC.			
FILE NAME: SELECT\SP718V.DWG			
DESCRIPTION		DRAWN BY: TN	
SP718-V REV. A AMPLIFIER		DATE: 5-5-97	
MATERIAL		SCALE	
NONE		NONE	
DATE		REVIEWED BY	
DATE		DATE	
COD	DRAWING NUMBER	REV. #	APPR. BY
EM	SP718-V-A		DATE