INSTALLATION & OPERATION MANUAL

SP718-MA-24-C
24 Volt Modulated Carrier Amplifier
4-20mA Transmitter

DOC#: MN-718MA-24.doc

LIQUID CONTROLS SPONSLER, INC.
FLOW MEASURING DEVICES AND CONTROLS
A Unit of the IDEX Corporation
105 Albrecht Drive • Lake Bluff, IL 60044
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IDEX LIQUID CONTROLS GROUP

SPECIFICATIONS

Temperature: Operating 0 – 70°C
Storage –20 – 85°C

Input Voltage: 12 – 24VDC 100mA MAX
Reverse Polarity Protected
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: 4mA @ 0Hz, 20 mA @ desired Full Scale Frequency
Full Scale Range 25Hz – 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 500 ohms

Features: LED Power Indicator
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-mA 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-mA linearly converts the detected carrier frequency shift rate to an equivalent 4-20mA current output. When incorporated 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 transmissions.

The SP718-mA produces a carrier frequency in conjunction with an RF pickup coil, detects the shift in the carrier frequency (Modulation) that occurs with the passage of magnetic material and linearly generates a 4-20mA output that is proportional to the rate of modulation.

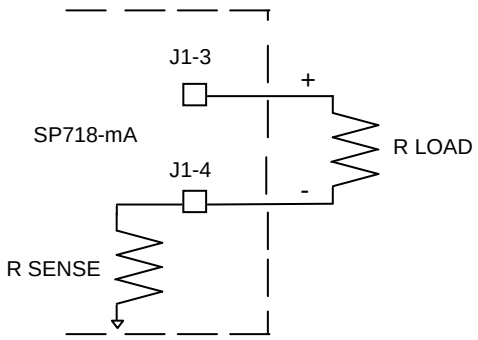
A full-scale frequency range of 25-3500Hz is jumper selectable. The Span Adjustment establishes the frequency point at which a 20mA output is achieved.

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 12-24VDC
Digital Multimeter (DMM)
Frequency Generator
Frequency Counter
Oscilloscope

Refer to Figure



Test Procedure:

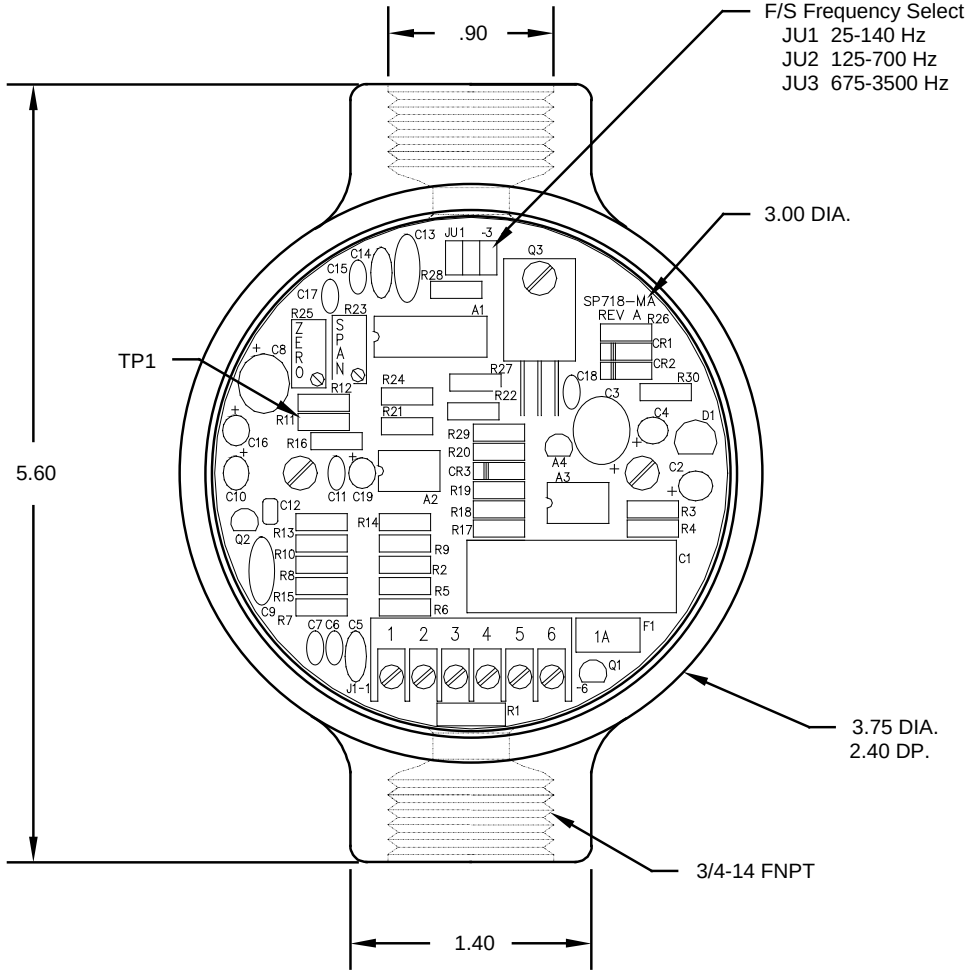
NOTE: All test equipment power cords should be equipped with 2-prong 'cheater' plugs.

A) Connect Flowmeter with RF Pick-up Coil to J1-1,2
B) Connect Power Supply Positive & Negative 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 mA DC
E) Install Jumper @ JU1-3 for desired Full Scale Frequency Range
F) Turn Power Supply 'ON', LED D1 Illuminates & O'Scope displays a 50KHz +/- 5KHz 6Vp-p Carrier Sinewave
G) Adjust 'ZERO' (R25) for a DMM Indication of 4.00mA
H) Set Frequency Generator function to Sinewave, Amplitude to 500mVp-p with 2.5VDC OFFSET & Frequency to desired Full Scale Frequency. Connect Frequency Generator POSITIVE Lead to TP1 (R11) & NEGATIVE Lead to J1-2.
I) Adjust 'SPAN' (R23) for DMM Indication of 20.00mA
J) Reduce Signal Amplitude of Frequency Generator to Zero, Adjust 'ZERO' (R25) for DMM Indication of 4.00mA if necessary
K) Increase Signal Amplitude of Frequency Generator to 500mVp-p, 2.5VDC OFFSET; Adjust 'SPAN' (R23) for DMM Indication of 20.00mA if necessary
L) Adjust Frequency of Frequency Generator to 0, 25, 50, 75, & 100% of Full Scale Frequency of Step H

To check for Linearity at any Frequency Point, incorporate the following formula -
(F/F Max X 16) + 4 = mA

Example: Assume Maximum Frequency Point = 2KHz (20mA Point)
Check for Linearity at 750Hz
750/2000 = .375
16 X .375 = 6
6 + 4 = 10 DMM Should indicate 10.00mA at 750Hz

DATE	REV	REVISION RECORD	AUTH	DR	CK



TERMINAL LOCATION

1	SIGNAL IN +
2	SIGNAL IN –
3	ANALOG OUT +
4	ANALOG OUT –
5	DC-
6	DC+

NOTE: DIMIENSIONS ARE IN INCHES

SPONSLER, INC.		
FILE NAME: ELECT\SP718mA.DWG		
DESCRIPTION: SP718-mA 24-C		DRAWN BY: TN
		DATE: 6-8-01
MATERIAL	SCALE: NONE	REVIEWED BY
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