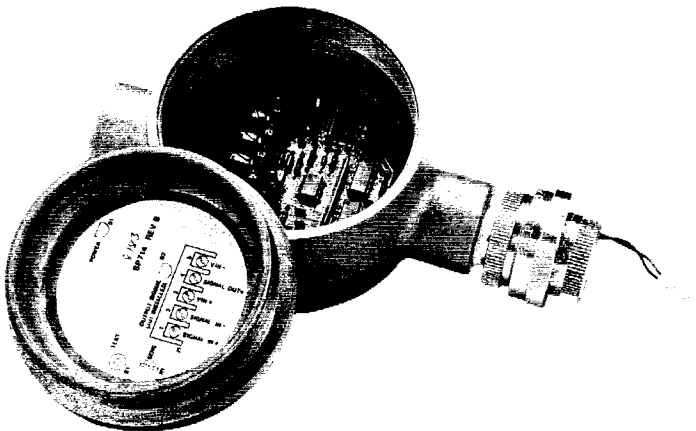


User's Guide



<http://www.omega.com>
e-mail: info@omega.com



FLSC-61 **3-Wire Analog Transmitter**



OMEGAnetSM On-Line Service http://www.omega.com	Internet e-mail info@omega.com
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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.
WARNING: These products are not designed for use in, and should not be used for, patient connected applications.

FLSC-61 3 WIRE 0-5/0-10 V ANALOG F-V CONVERTER

Temperature:	Operating -40 - 85° C Storage -65 - 125° C
Input Voltage:	12-28 VDC 50 ma MAX Protected against polarity reversal
Signal Input:	Frequency 0-10 Khz Amplitude 20 mv-35 v Sine or Squarewave Sensitivity field adjustable Impedance 10 K
Analog Output:	0 v @ 0 Hz, 5 or 10 V @ desired full scale frequency Full scale range 75 Hz- 10 Khz selectable Response time 95% of change in 1 second Linearity .3% F/S Tempco < 2% of reading over entire temperature range Minimum load resistance 250 ohms
Features:	Switch selectable output range Mounts directly on FTB900 and FTB5900 series flowmeters
Enclosure:	FM Approved, C.S.A. Certified Class I Groups B, C, D Class II Groups E, F, G Weight 1.7 lbs.

The FLSC-61 is a 3 wire analog transmitter designed to linearly convert a frequency input to an equivalent voltage output whose level is switch selectable @ 0-5V/0-10V. When incorporated with a turbine flowmeter a voltage representation proportional to flow is obtainable.

A full scale frequency range of 75HZ-10KHZ is jumper selectable. The span adjustment establishes the frequency point at which the full scale voltage output (5V or 10V) is achieved. The sensitivity adjustment permits the FLSC-61 to discriminate between a signal input or noise by increasing (CCW) or decreasing (CW) the input signal amplitude necessary to be processed as a valid signal. This in conjunction with direct meter mounting allows the FLSC-61 to operate effectively in noisy environments.

FLSC-61 BENCH CALIBRATION PROCEDURE:

REQUIRED EQUIPMENT- Power Supply 12-28 VDC, Digital Multimeter (DMM),
Frequency Generator, Frequency Counter

Refer to Figure 1

Test Procedure-

- A) Connect DMM Positive & Negative Leads to J1-3,4 Respectively & Set DMM Function to DC Volts
- B) Connect Power Supply Positive & Negative Leads to J1-5,4 Respectively
- C) Connect Frequency Generator Positive & Negative Leads to J1,1,2 Respectively, Set Output to Sinewave & Amplitude to Zero
- D) Install Jumper @ JU2-4 for desired full scale frequency range, set S1 to 0-5V or 0-10V for desired Output Level
- E) Set 'Sensitivity' Adjust (R1) Fully Clockwise
- F) Turn Power Supply & Frequency Generator 'ON', DMM should indicate 0VDC
- G) Adjust 'ZERO' (R10) for DMM indication of .000V
- H) Adjust Signal Amplitude of Frequency Generator to 20mv & Frequency to Maximum Desired Point (Full Scale Frequency)
- I) Adjust 'SPAN' (R8) for 5.00V or 10.00V DMM Indication
- J) Reduce Signal Amplitude of Signal Generator to Zero, Adjust 'ZERO' (R10) for DMM Indication of .000V if necessary
- K) Adjust Signal Amplitude of Frequency Generator to 20mv, adjust 'SPAN' (R8) for 5.00V or 10.00V DMM Indication if necessary
- L) Adjust Frequency of Frequency Generator to exactly 50% of maximum frequency point in Step H, DMM should indicate 2.50V or 5.00V \pm .02V

To Check for Linearity @ any Frequency Point Incorporate the following formula-
$$f/f_{\max} \times \text{Full Scale Output} = \text{Volts}$$

Ex: Assume Maximum Frequency Point = 2000 HZ & Full Scale Output

Voltage = 10V

Check for Linearity @ 750HZ Point

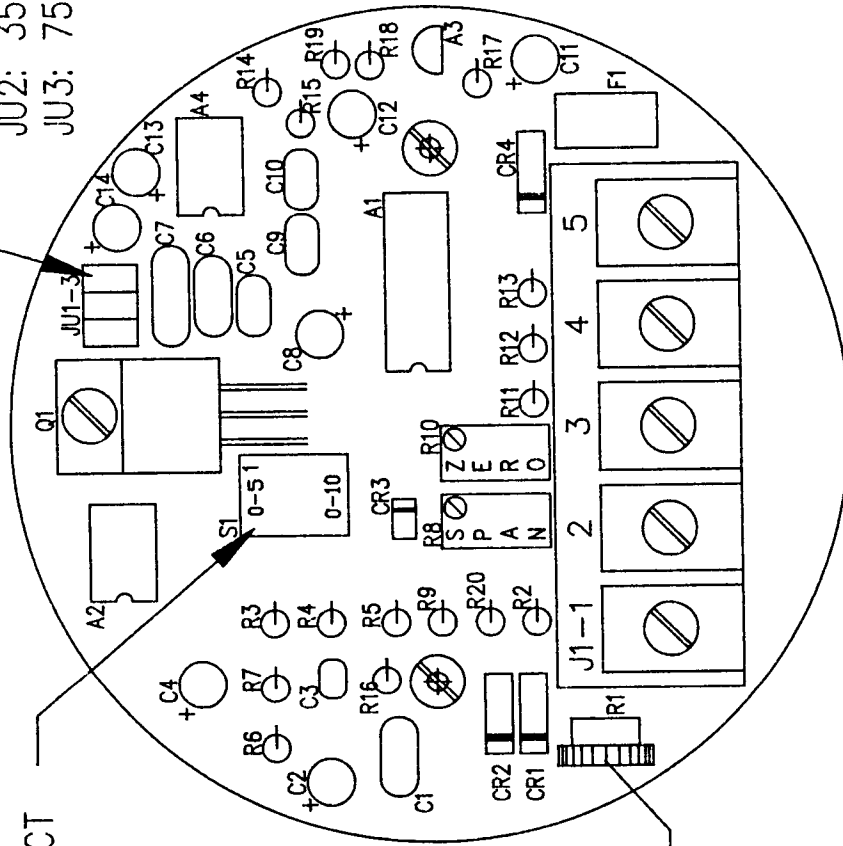
$750/2000 = .375$

$10 \times .375 = 3.75$ DMM Should Indicate 3.75V \pm .03V

F/S FREQUENCY RANGE SELECT

- JU1: 1875-10,000 Hz
- JU2: 350-1950 Hz
- JU3: 75-375 Hz

ANALOG OUTPUT SELECT



SENSITIVITY

5 DC INPUT +

DC INPUT -

4 ANALOG OUT -

3 ANALOG OUT +

2 SIGNAL IN -

1 SIGNAL IN +

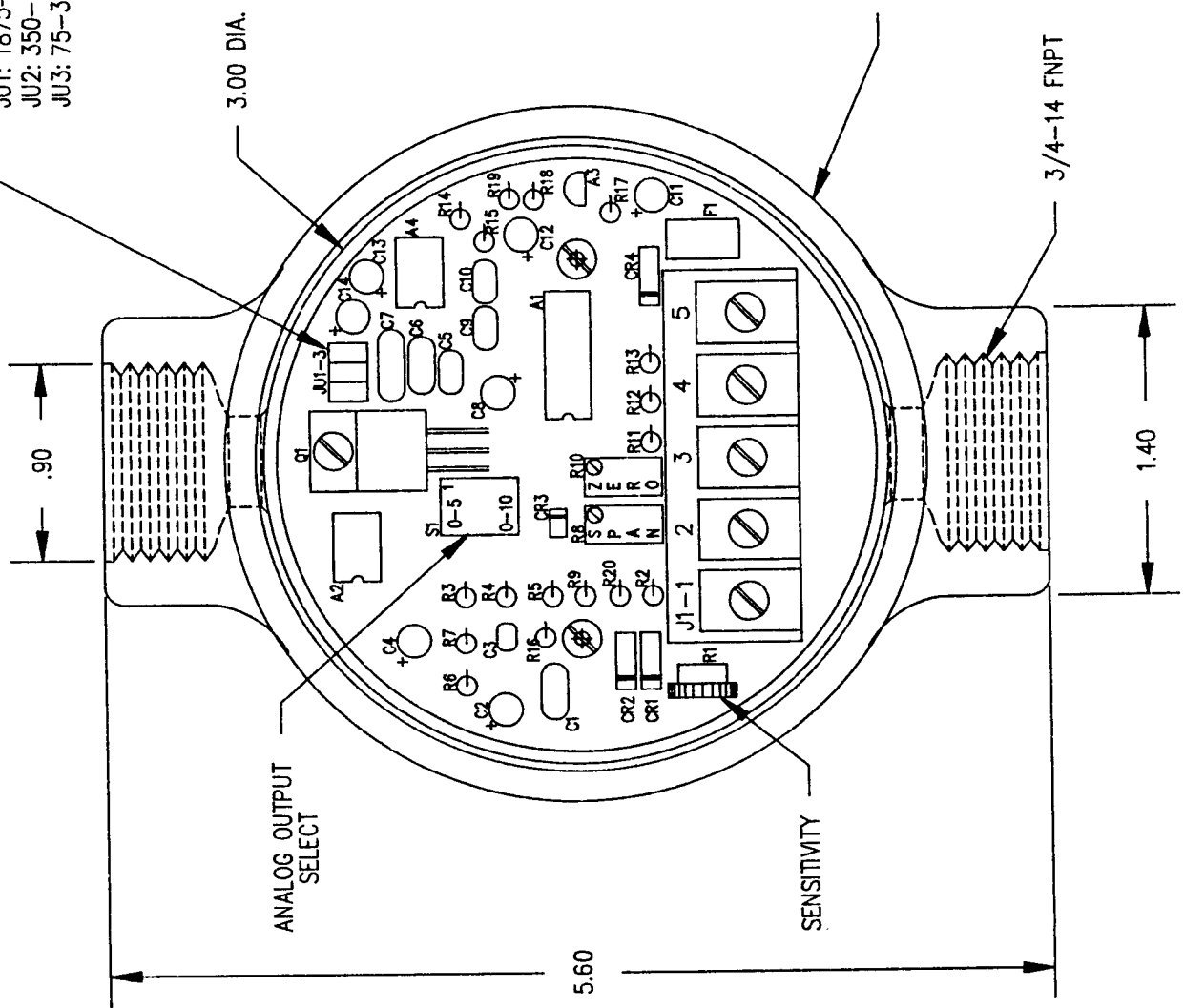
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DESCRIPTION	FLSC-61 3-WIRE ANALOG TRANSMITTER PCB		REVIEWED BY	
CODE	DRAWING NUMBER	REV. #	DATE	
EM	FLSC-61-PCB-01		APPR. BY	
			DATE	

DATE	REV	REVISION RECORD	AUTH	DR	CK

- TERMINAL LOCATION
- 1 SIGNAL IN +
 - 2 SIGNAL IN -
 - 3 ANALOG OUT +
 - 4 ANALOG OUT -
 - 5 DC INPUT -
- 

F/S FREQUENCY RANGE SELECT
 JU1: 1875-10,000 Hz
 JU2: 350-1950 Hz
 JU3: 75-375 Hz



OMEGA	SCALE	IN	DRAWN BY	TN
	FILE: \OMEGA\FLSC-61.DWG	NONE	DATE	5-5-97
DESCRIPTION		REVIEWED BY		
FLSC-61 3-WIRE ANALOG TRANSMITTER		DATE		
CODE	DRAWING NUMBER	REV #	APPR BY	DATE
EM	FLSC-61-01			

NOTE: DIMENSIONS ARE IN INCHES



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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