

4-20 mA output SOUND LEVEL TRANSMITTER

Model : TRSL-401



for you into the field of precision measurement. Although this meter a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

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TABLE OF CONTENTS

1. FEATURES.....	1
2. SPECIFICATIONS.....	1
3. FRONT PANEL DESCRIPTION.....	3
4. CURRENT LOOP AND TARGET SOUND LEVEL.....	4
5. MEASURING PROCEDURE OF SOUND TRANSMITTER	4
5-1 Sound level Transmitter Wire connection.....	4
5-2 Sound level Transmitter Fixed installation considerations.....	5
5-3 Sound level Transmitter MEASUREMENT	6
5-4 Sound level A/C Frequency weighting	6
5-5 Sound level Transmitter ZERO & SPAN (Calibration).....	7
6. FREQUENCY WEIGHTING CHARACTERISTICS OF A & C NETWORKS.....	7

1. FEATURES

- * 4-wire installation.
- * Linear current output .
- * Easy installation and connection.
- * Sound level range 30 to 130 dB .
- * Frequency and Time weighting are designed to meet IEC 61672 class 2.
- * A & C weighting networks comply with standards.
- * 0.5" standard microphone head.
- * Time weighting (Fast) dynamic characteristic modes.
- * Build External Zero & span calibration VR.
- * Separate sound level probe easy operation.

2. SPECIFICATIONS

Circuit	Custom one-chip of microprocessor LSI circuit.	
Measurement Type	SPL : Sound pressure level	
Measurement Range	30 - 130 dB.	
Function	dB (A & C frequency weighting), Time weighting (Fast) .	
Accuracy (23 ±5 °C)	Characteristics of " A ", " C " frequency weighting network meet ANSI S1.4-2014 / IEC 61672 -1 : 2013 class 2 Under 94 dB input signal, the accuracy are :	
Remark : The right spec. are tested under the environment RF Field Strength less than 3 V/M & frequency less than 30 MHz only.	31.5	Hz ±3.0 dB
	63	Hz ±2.0 dB
	125	Hz ±1.5 dB
	250	Hz ±1.5 dB
	500	Hz ±1.5 dB
	1 K	Hz ±1.0 dB
	2 K	Hz ±2.0 dB
	4 K	Hz ±3.0 dB
	8 K	Hz ±5.0 dB

Frequency Weighting Network	Characteristics of A & C. A weighting : The characteristic is simulated as "Human Ear Listening" response. Typical, if making the environmental sound level measurement, always select to A weighting. C weighting The characteristic is near the "FLAT" response. Typical, it is suitable for checking the noise of machinery (Q.C. check) & knowing the sound pressure level of the tested equipment.
Time weighting	Fast - $t = 125 \text{ ms}$ * "Fast" range is simulated the human ear response time weighting.
Frequency	31.5 to 8,000 Hz.
Microphone type	Electric condenser microphone.
Microphone size	Out size, 12.7 mm DIA. (1/2 inch).
Analog output	Analog output: 4 to 20 mA. * <i>linear to temperature.</i>
Loop impedance	Max. $90 \Omega @ 24 \text{ V DC}$.
Power supply	Isolated Power 9VDC to 30VDC * <i>Ripple < 2.5%</i>
Power consumption	Maximum approx : 30 mA * <i>at DC 24 V , full scale.</i>
Operation Temp.	0°C to 50°C / 32°F to 122°F.
Operation humidity	Max. 85% RH.
Dimensions	120 mm x 96 mm x 43 mm
Weight	340 g / 0.75Lbs
Enclosure rating	meter : IP63 . Probe (Microphone) : IP40 .
Accessories Included	* Instruction manual..... 1 PC * Sound Probe..... 1 PC

3. FRONT PANEL DESCRIPTION

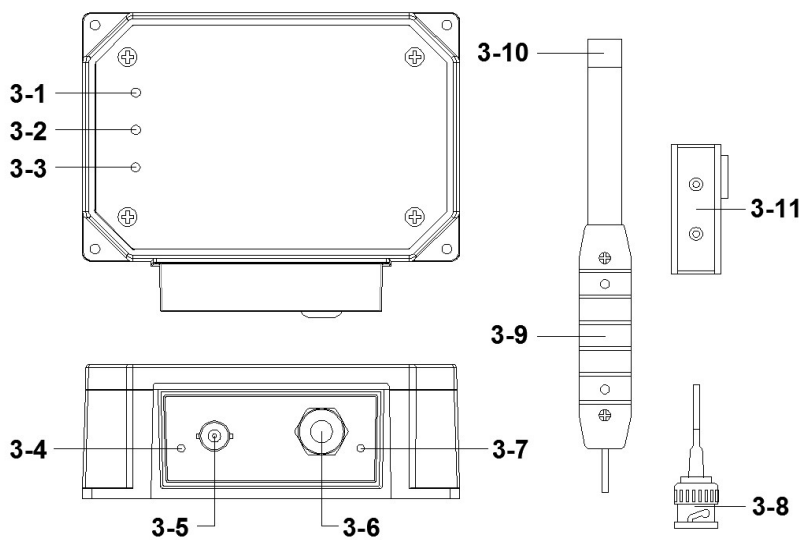


Fig. 1

3-1 Power indicator

3-2 Over indicator

3-3 Under indicator

3-4 ZERO (4 mA)

3-5 Sound probe input BNC connector

3-6 Cable connector/Output Cable

3-7 SPAN (20 mA)

3-8 BNC Plug

3-9 Sound probe handle

3-10 Sound microphone

3-11 Sound probe holder

4. CURRENT LOOP AND TARGET SOUND LEVEL.

The following table shows the relationship for the Current Loop Output with the Target Sound level. The different Current Loop Output is corresponding to the relevant target Sound level.

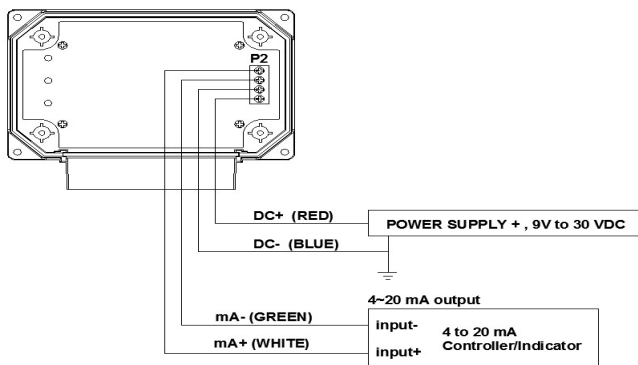
Table 1: Current Loop Output & Target Sound level

Code	Current Loop Output mA	Target Sound level (dB)
1	7.69	30 dB
2	11.38	60 dB
3	15.57	94 dB
4	16.80	104 dB
5	20.00	130 dB

5. MEASURING PROCEDURE OF SOUND TRANSMITTER

5-1 Sound level Transmitter Wire connection

The following diagram and table show the proper wiring connections. Each wire is numbered with the number and the relative color. Please follow the function guide when you connect the wire.



The Max. load for the output terminal is 90 ohm. So the total internal impedance of connecting wire should be less than 90 ohm, otherwise the accuracy will be changed and beyond the specification.

Table 2 : Wire Color & Connection Indication

Wire No.	Wire Color	Function
1	RED	9~30VDC Power (V+)
2	BLUE	9~30VDC Power (V-)
3	GREEN	DC Current 4~20mA signal(-)
4	WHITE	DC Current 4~20mA signal(+)
5	Bare	Shield Ground

Warning:

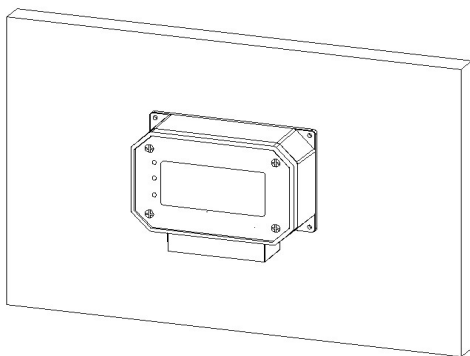
Please pay the special attention to the wire connection for the DCV + (V+) and DCV-(V-). Please take care that current output can not be linked with any Power line (DCV+) or (DCV-), and the current output (mA+) connecting to controller (mA+) input, The current output(mA-) please connection to controller (mA-) .

5-2 Sound level Transmitter Fixed installation considerations

Fix the transmitter, it must be vertical to the wall , to have waterproof protection.

Please refer to the figure below for the installation method.

The meter must be mounted on the wall for waterproofing



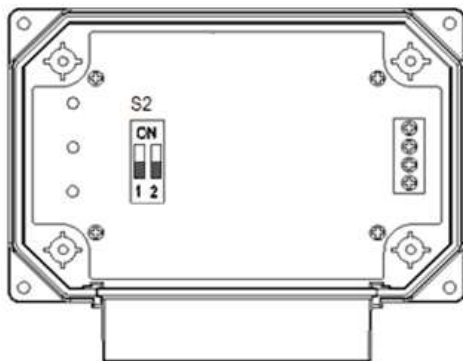
5-3 Sound level Transmitter MEASUREMENT

- (1).Sound level probe Cable BNC Plug" Fig1 3-8 " connect to Sound level Transmitter Input BNC Socket " Fig1 3-5 " .
- (2).Then to do sound level measurement ,at the same time the measure value will transing to DC mA current and output to mA output socket.

5-4 Sound level A/C Frequency weighting

How to select the A/C Frequency weighting

Use screw drive open the transmitter top case,Then following diagram and use s2 dip switch , then according to the function select table, select to want measurement function.



S2 A/C Frequency weighting select

1	2	
ON	OFF	A weighting
OFF	ON	C weighting

5-5 Sound level Transmitter ZERO & SPAN (Calibration)

The Sound level transmitter can be Adjustment ZERO & SPAN
How to adjust the zero and span , please following calibration procedures:

zero adjust: 30dB Sound level signal input to bnc socket, then use screw drive to adjust the zero VR, make the DMM mA reading value equal 7.69mA.

span adjust: sound level probe bnc cable connect to the transmitter, 94dB Sound level signal input to the Sound level probe Mic. , then use screw drive adjust the span VR, make the DMM mA value equal 15.57mA.

6. FREQUENCY WEIGHTING CHARACTERISTICS OF A & C NETWORKS

Frequency	A Weighting Charac.	C Weighting Charac.	Tolerance (IEC 61672 Class 2)
31.5 Hz	-39.4 dB	-3 dB	±3.0 dB
63 Hz	-26.2 dB	-0.8 dB	±2.0 dB
125 Hz	-16.1 dB	-0.2 dB	±1.5 dB
250 Hz	-8.6 dB	0 dB	±1.5 dB
500 Hz	-3.2 dB	0 dB	±1.5 dB
1 KHz	0 dB	0 dB	±1.0 dB
2 KHz	+1.2 dB	-0.2 dB	±2.0 dB
4 KHz	+1 dB	-0.8 dB	±3.0 dB
8 KHz	-1.1 dB	-3 dB	±5.0 dB

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