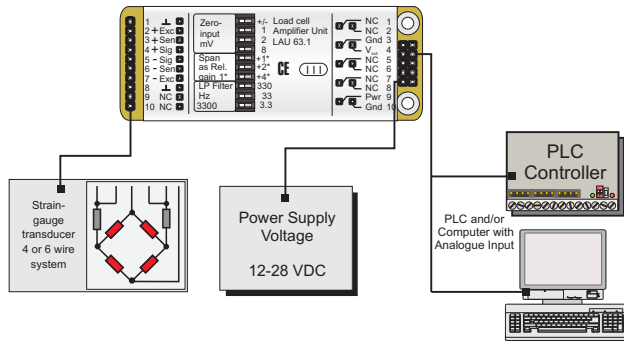


LAU® 63.1 Load Cell to Voltage Converter

Installation and Operating Guide

Scope: The LAU63.1 is a highly reliable device which can link an analogue strain-gauge transducer to a wide range of analogue equipment. The LAU63.1 is capable of handling a bipolar input signals producing both positive-going and negative-going voltage output. The device also features a full 3 kHz bandwidth, which is often a requirement for dynamic measurement applications. Switches are provided to give a wide range of filter, off-set and gain settings to suit most measurement applications, and the compact configuration provides for versatility of mounting.



Analogue input:

Strain-gauge load cell or force or torque transducer, minimum load impedance 350 Ohms. A four-wire true ratiometric measurement technique is employed. Provision is made for connection of sense wires for 6-wire circuits, these connections being commoned to the load cell excitation terminals on the LAU 63.1 pcb.

Output:

Bipolar voltage output is produced by input signals over the range -6.6 mV/V up to +6.6 mV/V as required. Due to the high gain and low noise of the LAU63.1, the full +/- 10V output signal is available from as little as +/- 0.8 mV/V of input signal. The output can drive a load of minimum 500 ohms, equivalent to 20mA at 10V output.

Power supply:

The power supply can be any regulated source of 12 to 28 Vdc, with a current drain of 80 mA maximum. Protection against excess voltage, reverse polarity and electrostatic discharge is built-in.

Mechanics:

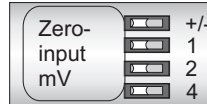
The LAU63.1 comprises a PC board measuring 82 x 31 x 6 mm, inclusive the complete wrap around EMI-protecting chassis but exclusive the terminal pins (2.54 mm spacing).

Load cell (transducer) connections:

The load cell takes its power supply from the +Exc and -Exc terminals. For six-wire systems, the +Sen and -Sen terminals are provided. For four-wire systems, these terminals can be ignored. The output from the load cell connects to the +Sig and -Sig terminals.

Zero set:

Provision is made for the compensation of zero offset, to the limits of +/- 1.4 mV/V_{IN}. Four DIP-switches are provided, and operate in binary combination to give -1.4 to +1.4 mV/V_{IN} offsets, in steps of 0.2mV/V.



Switch in left hand position = OFF

ZERO OFFSET REQUIRED mV/V

Switch	-1.4	-1.2	-1.0	-0.8	-0.6	-0.4	-0.2	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2	ON	ON	OFF	OFF	ON	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	ON
4	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON

Gain set:

Through the use of three DIP-switches, the relative gain factor can be set in steps of 1* over the range 1* to 8*. This allows the full output signal range to be obtained from load cells/transducers which provide only +/- 0.8 mV/V output at the intended load.



Switch in left hand position = OFF

RELATIVE GAIN

Span Relative Gain	1*	+1*	+2*	+3*	+4*	+5*	+6*	+7*
1	OFF	ON	OFF	ON	OFF	ON	OFF	ON
2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
4	OFF	OFF	OFF	OFF	ON	ON	ON	ON
Minimum Input signal(mV/V) to give 10V out	6.60	3.30	2.20	1.65	1.32	1.10	0.94	0.83

Low pass filter:

By selecting from the three DIP-switches, the low-pass filter can be set to cut-off at 3300, 330, 33 or 3.3 Hz. This will result in a settling time (for full precision) of 0.4ms, 4ms, 40ms or 400ms respectively.



Switch in left hand position = OFF

LOW PASS FILTER CUT OFF FREQUENCY

Filter Switch Settings	3300Hz	330Hz	33Hz	3.3Hz
330	OFF	ON	ON	ON
33	OFF	OFF	ON	ON
3.3	OFF	OFF	OFF	ON
Settling time to final value (ms)	0.4	4	40	400

Note that if all switches are OFF, the cut off frequency is 3300 Hz

Note that if all switches are ON, the cut off frequency is 3.3 Hz

Technical data:

The LAU 63.1 meets the CE regulations regarding EMC in accordance with 89/336/EEC and meets the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

Load cell (transducer) input:

Excitation voltage : 10 V DC <= 32 mA
 Short-circuit protected
 Load cell drive capability: 350 ~ 1000 Ohms
 Input offset range for 0 V_{OUT} : -1.4 to +1.4 mV/V
 Standard input gain range for +/- 10 V_{OUT} : +/- 0.8 to +/- 6.6 mV/V
 Input signal resolution: ~200 nV

Analog output:

DC Voltage (V_{OUT}) : -10 to + 10 VDC
 R_L >= 500R
 Short-circuit protected

Linearity:

Max deviation 0 - Full scale: <100 ppm FS. (<0.010% FS)

Temperature:

Drift 5 min. upon power ON: <50 ppm FS.
 Compensated temperature range: -10°C to +40°C.
 Operating temperature range: -20°C to +50°C.
 Temperature effect on offset: <50 ppm/°C.
 Temperature effect on gain: <50 ppm/°C.

EMC Capability:

Rejects EMI in the range : 26 ~ 1000 MHz @ 10 V/m (level 3)
 Burst (Transients) to meet: IEC 801-4 (level 2)
 Electrostatic discharge to meet: IEC 801-2 (level 3)

Environmental:

Protected to meet: IP40 DIN 40 050
 Humidity: 0-95% RH non-condensing

Power supply:

Regulated DC source: 12 ~ 28 V DC
 Max permitted ripple: 1.5 V p-p
 Current consumption: <=80mA
 Excess voltage, ESD and reverse polarity protected