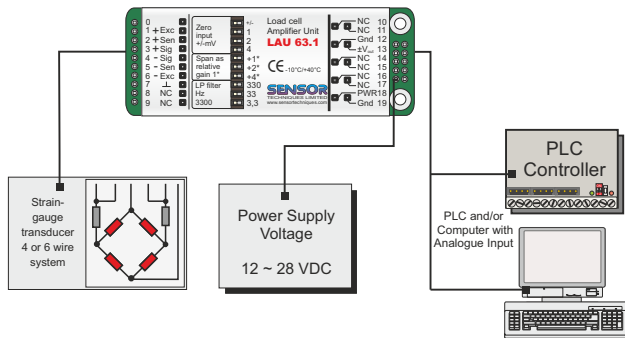


# LAU<sup>®</sup> 63.1 Load Cell to bipolar voltage Converter

## 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 bipolar input signals producing a bipolar voltage output. The LAU 63.1 has a full 3 kHz bandwidth making it ideal for dynamic measurement applications. Switches are provided to give a wide range of filter, off-set and gain settings to suit many force measurement applications, and the compact configuration provides for versatility of mounting.



### Analogue input:

Strain-gauge load cell or force transducer, minimum load impedance 350R. A four-wire 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:

The bipolar voltage output of up to -10V to +10V is produced by load cell signals over the range -6.6 mV/V to + 6.6 mV/V FS as required. Due to the high gain and low noise of the LAU 63.1 the full  $\pm 10V$  output signal is available for an input signal as low as  $\pm 0.8$  mV/V. The output can drive a load of minimum 500 Ohms, equivalent to 20 mA at 10V output.

### Power supply:

The power supply can be any regulated source of 12~28 V DC 80 mA maximum. Protection against excess voltage, reverse polarity and electrostatic discharge built in.

### Mechanics:

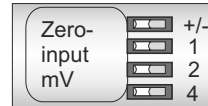
The LAU63.1 comprises a PC board measuring 82 x 31 x 12 mm, inclusive of the terminal pins (2.54 mm spacing) and the complete wrap around EMI-protecting chassis.

### Load cell 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, up to a limit of  $\pm 1.4$  mV/V<sub>IN</sub>. Four DIP-switches (including 1 polarity) are provided, and operate in combination to give 0 to  $\pm 1.4$  mV/V<sub>IN</sub> offsets in 0.2mV/V steps.



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
+/-	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
2	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF
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  $\pm 0.8$  mV/V output at the applied 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
Min. Input signal(mV/V) to provide 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, 4 ms, 40 ms 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 the all the switches are OFF the cut off frequency is 3300Hz. If all the switches are ON the cut off frequency is 3.3Hz

### 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 input:

Excitation voltage : 10 V DC  $\leq$  32 mA  
Short circuit protected.  
Load cell drive capability: 350 ~ 1000 Ohms  
Input offset range for 0 V<sub>OUT</sub>: 0 -  $\pm 1.4$  mV/V

### Standard input gain

range for 10 V<sub>OUT</sub> :  $\pm 0.80$  to  $\pm 6.6$  mV/V

### Input signal resolution:

$\sim 200$  nV

### Analog output:

Bipolar voltage output (V<sub>OUT</sub>): 0- $\pm 10V$  DC  
R<sub>i</sub>  $\geq 500R$   
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.  
Operating temperature range: -10°C to +40°C.  
Storage 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:

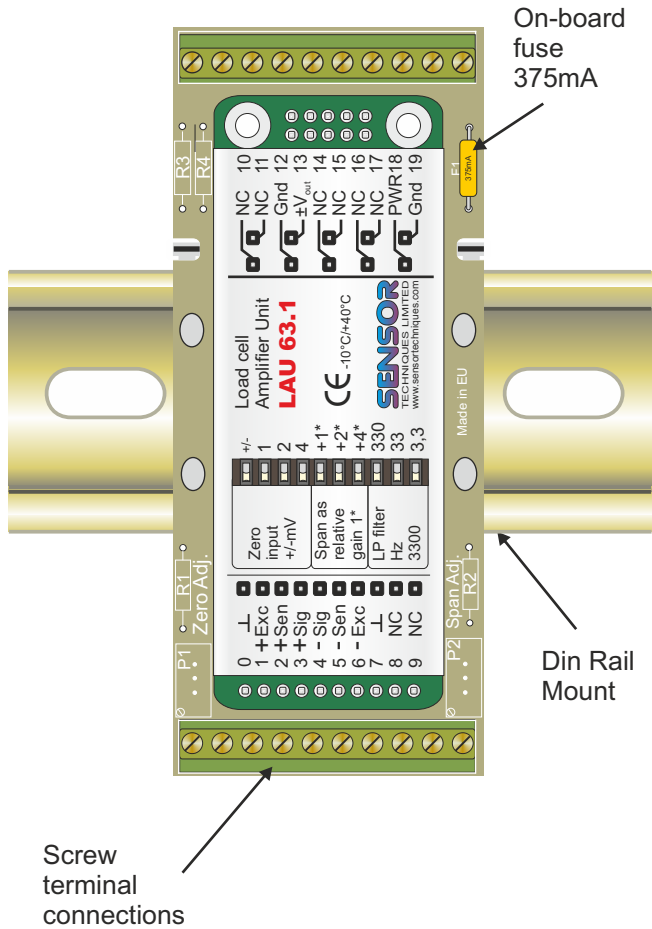
Protected to meet: IP 40 DIN 40 050  
Humidity: 0-95% RH non-condensing

### Power supply:

Regulated DC source: 12 ~ 28 V DC  
Max permitted ripple: 1.5 V V p-p  
Current Consumption:  $\leq 80$  mA  
Excess voltage, ESD and reverse polarity protected

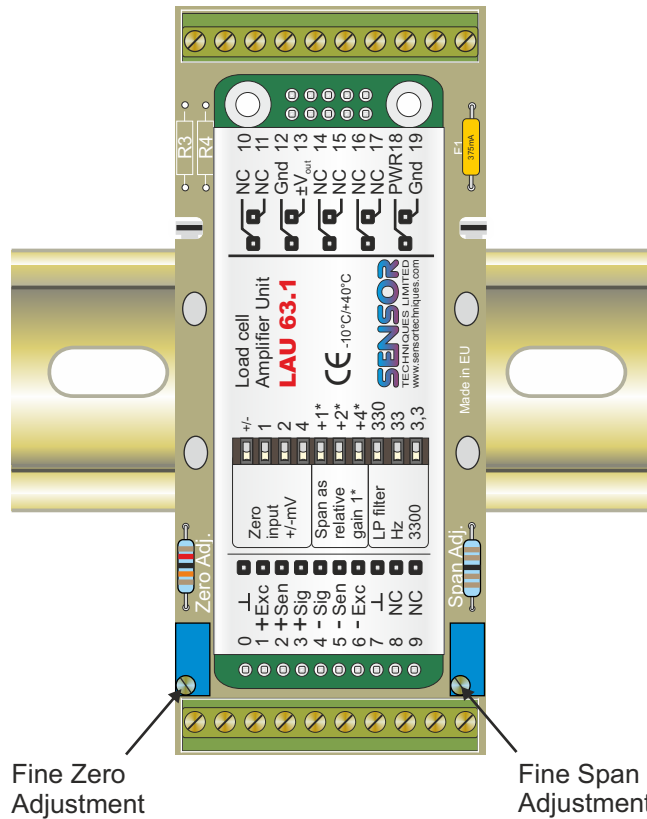
### Optional Unit Adapter Model UA73.202

An optional Unit Adapter for the Model LAU63.1 which allows DIN rail mounting and gives screw terminals for all connections. The unit has an on-board fuse and provision for resistors to be added to give a voltage output instead of current.



### Unit Adapter Model UA73.20x Options

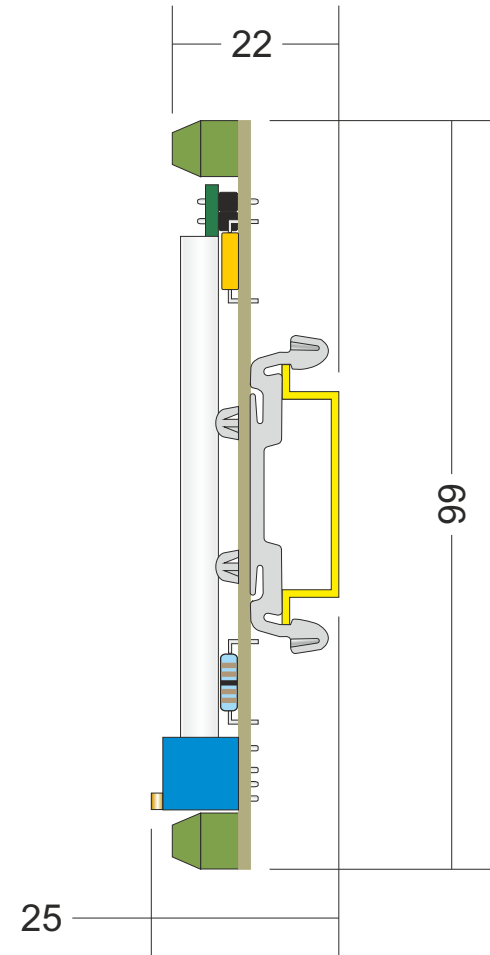
The UA 73.202 is available with additional fine zero and span adjustments via on-board potentiometers



ORDER CODES  
 UA 73.202 - Standard Unit  
 UA 73.203 - UA 73.202 with Zero & Span Pots

### Fitting instructions and dimensions

To mount the LAU63.1 to the UA 73.20x simply push the pre-fitted pins on the underside of the LAU 63.1 into the corresponding socket on the UA 73.20x



All UA73.20x units are 41mm wide.