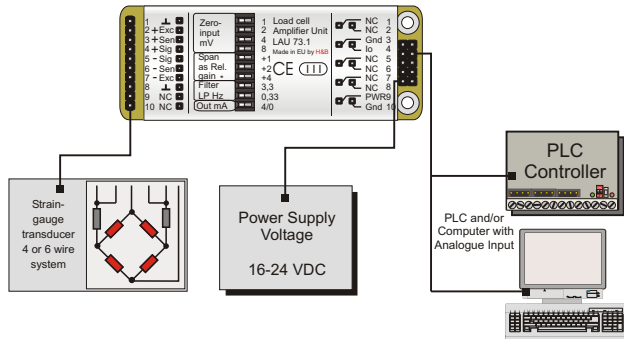


# LAU<sup>®</sup> 73.1 Load Cell to Current Loop Converter

## Installation and Operating Guide

**Scope:** The LAU73.1 is a highly reliable device which can link an analogue strain-gauge transducer to a wide range of analogue equipment. The LAU produces a current loop output which can be easily converted to a voltage output by adding a resistor. Switches are provided to give a wide range of filter, off-set and gain settings to suit many industrial applications, and the compact configuration provides for versatility of mounting.



### Analogue input:

Strain-gauge load cell or force transducer, minimum load impedance 320R. 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 73.1 pcb.

### Output:

Current loop output is produced by load cell signals over the range 0-0.25 mV/V up to 0-2.3 mV/V FS as required. The I<sub>OUT</sub> range can be set to 0-20 mA or 4-20 mA. Selecting the 0-20 mA output and placing a 500R resistor across the current output will generate a 0-10 V DC analogue signal.

### Power supply:

The power supply can be any regulated source of 16-24 V DC +10/-15%, 80 mA maximum.

### Mechanics:

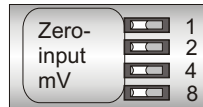
The LAU73.1 comprises a PC board measuring 82 x 31 x 12 mm, inclusive of the terminal pins (2.54 mm spacing) and the complete wrap around EMI-protecting chassis.

### 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 1.5 mV/V<sub>IN</sub>. Four DIP-switches are provided, and operate in combination to give 0 to 1.5 mV/V<sub>IN</sub> offsets in 0.1mV/V.



Switch in left hand position = OFF

ZERO OFFSET REQUIRED mV/V															
Switch	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
2	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
4	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON
8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	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 7. This allows the full output signal range to be obtained from load cells/transducers which provide only 0.25 mV/V output at the intended load.



Switch in left hand position = OFF

RELATIVE GAIN									
Span	Relative Gain	0	+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 20mA out		2.00	1.00	0.67	0.50	0.40	0.33	0.29	0.25

### Low pass filter:

By selecting from the two DIP-switches, the low-pass filter can be set to cut-off at 33, 3.3 or 0.3 Hz. This will result in a settling time (for full precision) of 30ms, 300ms or 3s respectively.



Switch in left hand position = OFF

LOW PASS FILTER CUT OFF FREQUENCY			
Filter Switch Settings	33Hz	3.3Hz	0.3Hz
3,3	OFF	ON	OFF
0,3	OFF	OFF	ON
Settling time to final value (ms)	30	300	3000

Note that if both 3.3 and 0.3 switches are ON the cut off frequency is 0.3Hz

### Technical data:

The LAU 73.1 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 <= 32 mA  
 Load cell drive capability: 250 ~ 2000 Ohms  
 Input offset range for 0/4mA I<sub>OUT</sub>: 0 - 1.5 mV/V  
 Standard input gain range for 20 mA I<sub>OUT</sub>: 0.25 - > 2.0 mV/V  
 Input signal resolution: ~100 nV

#### Analog output:

Current loop output (I<sub>OUT</sub>): 0-20 mA or 4-20 mA  
 R<sub>L</sub> <=500R

#### 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: <100 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: 12-24 V DC +10/-15% <=80mA