LAC® 65.000 Load cell to voltage + current loop Converter

Scope: The **L**oad cell to **A**nalogue **C**onverter is a highly reliable device which can link analogue transducers to various analogue equipment. The LAC produces both voltage and current loop outputs and allows a wide range of filter, off-set and gain settings to suit any industrial application. Because of the AC load cell excitation and the galvanically isolated power supply, the LAC rejects unwanted influences and disturbances better than any comparable device. These features plus the ratiometric design (which include the add-on optional modules) ensure high accuracy and reliability.

Analogue input: Up to six load cells (each >350Ω) may be connected. The low load cell supply voltage (2,5 VAC) minimize warm-up errors. AC load cell supply (425 Hz carrier), ratiometric voltagevoltage loop design and sense inputs allow long load cell cables (>10 m) to be used even in electrically hostile environments.

Low pass filter: 64 steps of filter settings ranging from 0.25 to 32 Hz can be selected.

Off-set: Both positive and negative compensation (± 80% FS) can be set in 32 steps and fine trimmed.

Gain: Can be set in 32 steps and fine trimmed over the range 1-64x. LED-lamps show over or under range signals.

Output: Both voltage output (0 - ±10 VDC) and current loop output (0 - 20 mA or 4 - 20 mA) are produced by load cell signals over the range 0 - ± 0.17 mV/V up to 0 - ± 3.3 mV/V FS as required. Even load cell signals over the range 0 - ± 0.08 mV/V up to 0 - ± 0.017 mV/V FS can be accommodated by removing an internal zero Ω resistor.

Module output: A ratiometric analogue output is available at a connector on the side of the LAC. The module output provides signal, reference and supply voltages for up to four optional add-on modules, connected in line.

Set points: The optional add-on module, (part no. 65.200) comprise of two individual set-points isolated C-form contact reed-relay outputs. Four modules can be arranged in line to give up to 8 setpoints.

Power supply: The power supply can be any regulated source 12-24 VDC +10/-15% max. 3 Watt. Galvanic isolation of the power supply from the input/output terminals is provided.

Mechanics: The basic LAC is composed of a PC Board measuring 110 x 72 x 16 mm including the row of 16 terminal blocks (5.08 mm spacing) and EMI-protecting chassis. The LAC is supplied in a 112.5 mm long, standard Phoenix™ module UMK allowing any standard DIN-rail mountings. If add-on modules are required, a UMK-BE 45 mm standard element is added per module. The LAC can also be wall mounted directly.

Low pass filter: By combining the six DIP-switches the low-pass filter time constant can be set in 64 steps of 10 ms over the range 5 to 640 ms equivalent to 45 ms to 5.8 s settling time.

DIP-switches ON		None	1	2	3	4	5	6	All
Time constant τ Settling to ≈0,01% Cut off frequency	ms ms Hz	5 45 32	10 90 16	20 180 8	40 360 4	80 720 2	160 1440 1	320 2880 0.5	640 5760 0.25

Zero set: The six DIP-switches permit the off-set to be coarsely set in steps of 2.5% of 3.2 mV/V_{IN} over the range + or - 80%. The 25 turn pot-meter permits trimming to <0.002%.

DIP-switches ON		Pot.	None	1	2	3	4	5	All	Pol.
Relative off-set Input at 0 V_{OUT}	% mV/V	0 - 3 0 - 0.1	0 0	2.5 0.08	5 0.15	10 0.3	20 0.6	40 1.2	80 2.4	+/ - +/ -

Gain: The five DIP-switches permit the relative gain factor to be set in steps of 2 over the range 1 to 64 (Optionally 64 to 128). The 25 turn pot-meter permit trimming to any gain factor <0.001x. The I_{OUT} range can be set to 0-20 mA or 4-20 mA .

DIP-switches ON		Pot.	None	1	2	3	4	5	All	I_{OUT} range
Rel. gain factor Input at 10 V_{OUT}	f mV/V	1 - 2 x -	1 x >3.3	2 x 2.7	4 x 1.8	8 x 1.1	16 x 0.6	32 x 0.3	64 x 0.17	0-20 or 4-20mA

Technical data: The LAC 65.100 meets the CE regulations regarding EMI and EMR and the relevant parts of EN45501 for weighing scales in precision class (III).

Load cell input:	Excitation voltage :	2.5 VAC 425 Hz	≤60 mA
	Input off-set range for 0 V_{OUT}:	0 - ± 2.6 mV/V	
	Standard input gain range for 10 V_{OUT}:	0.17 - > 3.3 mV/V	
	Optional input gain range for 10 V_{OUT}:	0.08 - 0.17 mV/V	
	Input signal resolution:	≈50 nV	
Analog output:	Voltage output (V_{OUT}):	± 10 VDC	R_L≥500Ω
	Current loop output (I_{OUT}):	0-20 mA or 4-20 mA	R_L≤500Ω
Output tracking:	Off-set deviation between V_{OUT} and I_{OUT}:	<2% FS.	
	Gain deviation between V_{OUT} and I_{OUT}:	<2% FS.	
Linearity:	Max deviation 0 - Full scale:	<50 ppm FS.	
Influence:	Drift 5 min. upon power ON:	<20 ppm FS.	
	Approved temperature range:	-10°C to +40°C.	
	Storage temperature range:	-20°C to +60°C.	
	Temperature effect on Off-set:	<30 ppm/°C.	(Average)
	Temperature effect on Gain:	<15 ppm/°C.	(Average)
Rejects:	EMI (26-1000 MHz) at field strength:	>10 V/m	(level 3)
	Burst (Transients) to meet:	IEC 801-4	(level 2)
	Electrostatic discharge to meet:	IEC 801-2	(level 3)
	Mechanical protected to meet:	IP 40	DIN 40 050
Power supply:	Regulated DC source:	12-24VDC ≤3 Watt	+10/-15%
	Isolation between Power source and LAC:	>10 MΩ	<1 nF
	Permitted voltage on Power source:		>0.5 kV

The technical data given here are typical values serving as product descriptions only and must not be interpreted as guaranteed characteristics in legal sense.

NOTE: Do not apply capacitors over any of the load cell wires. Even small capacitors will affect the signal voltage wave form leading to measureing errors.

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