ICA4 (issue 3 onwards) Connection and Calibration Details

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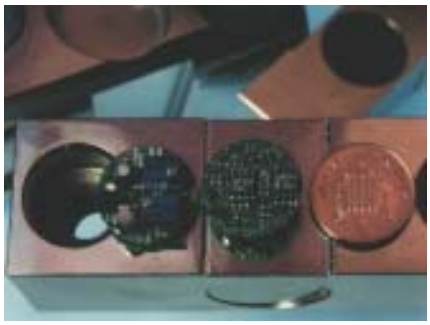
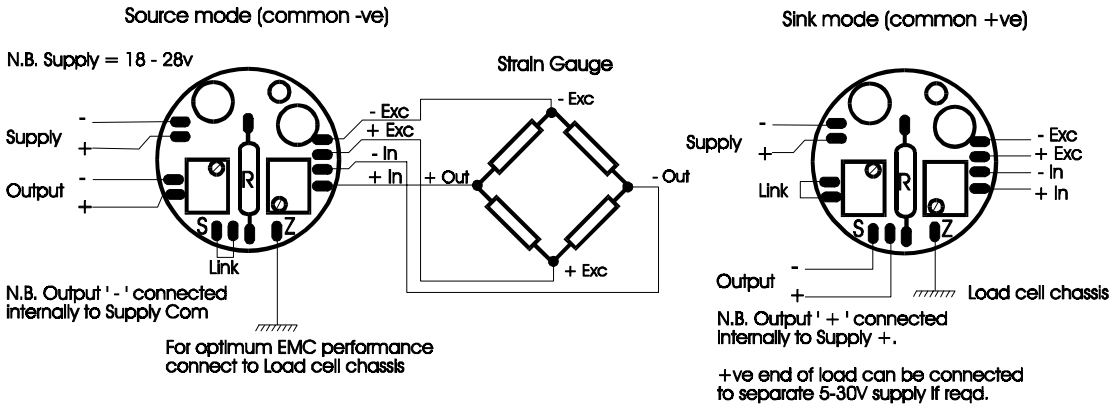




N.B. See note below for 3-wire cabling

The pad near the 'zero' trimmer on the ICA4 must be bonded, as tightly as possible, to the chassis of the loadcell.
This capacitively couples the common of the ICA4 electronics to the strain elements in the loadcell which improves the EMC susceptibility performance.
This connection should be made with 7/0.2 wire minimum with a maximum length of 12mm.
There is a maximum voltage limit of 16V between the load cell chassis and the 24V PSU '-ve'.

The ICA4 4-20mA In-Cell strain gauge amplifiers is supplied un-calibrated but optimised for a sensitivity of 2.5mV/V. To accommodate other sensitivities the gain resistor 'R' as shown above should be changed according to the following formulae. N.B. a high quality component e.g. 1% 50ppm metal film device should be used for optimum performance. It may be necessary to use an E96 value for optimum trim range:-

ICA4 (4-20mA) Output

Gain = 108 / (required mV/V) **R = 66,000 / (Gain-1)** **Ohms**

e.g.	For 2.5mV/V (Factory setting) :-	Gain = 43.2 x	R = 1564 Ohms (Use preferred value 1k6)
e.g.	For 0.5mV/V :-	Gain = 216 x	R = 306.9 Ohms (Use preferred value 300R)
e.g.	For 5.0mV/V :-	Gain = 21.6 x	R = 3204 Ohms (Use preferred value 3k3R or 3k24R (E96))

Calibration :-

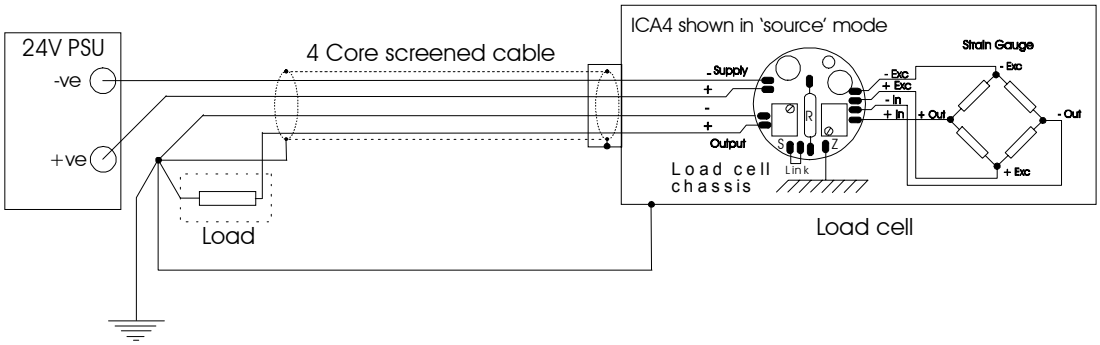
The ICA4 amplifiers can be calibrated with the transducer connected provided that two calibration points can be implemented e.g. by applying known weights or forces. If this is not possible, a stable mV source or load cell simulator can be used if the precise sensitivity (mV/V) of the transducer is known.

1) Apply the known low calibration conditions (weight, force or mV/V). This may be zero if required, and set the output to approx. 4mA using the 'Z' potentiometer and note the exact reading.
2) Apply the known high calibration conditions (ideally between 75% and full scale) and adjust the 'S' potentiometer to give the required change in output current for the known input (e.g. 16mA change for 4 - 20mA final calibration).
3) Apply the low calibration conditions again and note the new value. Apply the high conditions and re-adjust the 'S' pot. for the required change.

4) Repeat steps 2) and 3) until the span is correct.
5) Apply the low calibration conditions and adjust the 'Z' pot. for a reading of 4mA

N.B. If the ICA4 is required to operate in source mode (common negative) then the above 4-wire cabling should be adhered to in order provide the ICA4 with maximum protection.
If, however, 3 wire cabling is unavoidable the onboard protection circuit will limit the fault current in the load to approx. 55mA in the event of the negative supply connection becoming open circuit.

ICA4 issue 3 connections for good EMC immunity



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This connection should be made with 7/0.2 wire minimum with a maximum length of 12mm.
N.B. There is a maximum voltage limit of 16V between the load cell chassis and the 24V PSU '-ve' terminal.

Environmental Approvals

EMC Emissions	EN 50 081-1	:1992 (Light Industrial)
	EN 50 081-2	:1992 (Heavy Industrial)
EMC Immunity	EN 50 082-1	:1992 (Light Industrial)
	(RF Field Test	100 ppm of reading over 30 to 500MHz)
	EN 50 082-2	:1992 (Heavy Industrial)
	(RF Field Test	500 ppm of reading over 30 to 500MHz)