



**APPLIED MEASUREMENTS LTD.**  
Transducer Specialists...

+44 (0) 118 981 7339

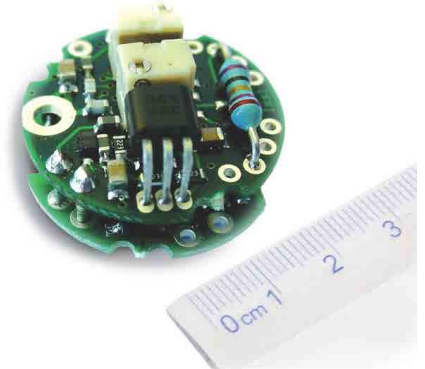
[info@appmeas.co.uk](mailto:info@appmeas.co.uk)

<https://appmeas.co.uk>

## ICA Miniature Load Cell Amplifier

### **Key Features:**

- Miniature Design (19mm x 7.6mm)
- 0-5Vdc, 0-10Vdc, 4-20mA,  $\pm 10$ Vdc Output Versions Available
- Low Current Consumption
- Bandwidth: 1kHz max
- Optional Die-Cast Enclosure
- User Adjustable Sensitivity
- Zero and Span Controls Using 20 Turn Potentiometers
- CE Approved
- 3 Year Warranty



*Miniature in size designed to fit where space is limited.*

The new generation of [ICA series In-Cell/Miniature Strain Gauge Amplifiers](#) are designed for applications where it is not possible to fit a larger amplifier due to space constraints, or where a direct amplified output is required from a sensor.

We are able to supply the ICA fitted inside a miniature IP65-rated die-cast enclosure to provide signal conditioning 'in-line' with the transducer cable, providing a neat and simple amplified system. The size of the ICA means that it can be fitted integral to most strain gauge based products, giving a pre-scaled output ready for use.

There are 2 variant of new models available; standard stability (S) for general industrial applications and high stability (H) for applications where accuracy and performance are of utmost importance. Although this form of amplifier does not offer the performance available from our SGA series, they offer other advantages as detailed above.

The ICA series can be bought separately or supplied as an integral part of one of our standard or special sensor products. As with all Applied Measurements' products, the ICA is supplied with a 3 Year Warranty.

Please see our [range of load cell amplifiers](#).

### **Options:**

- Fitted inside compact die-cast enclosure for in-line mounting on transducer cable.
- Calibrated with any of our strain gauge based transducers with UKAS traceable certification.



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## Specification:

Characteristics	ICA1H	ICA2H	ICA3H	ICA4H	ICA6H	ICA5S	Units
Output Range:	0.1 to 10.1 Vdc	0.1 to 5.1 Vdc	0 to ±10Vdc	4 to 20mA	0 to ±10Vdc	4 to 20mA	See opposite
Minimum Output: not on Mantracourt spec	0.07Vdc	0.07Vdc	0Vdc	3.8mA	0Vdc	3.8mA	See opposite
Number of Connections: not on Mantracourt spec	3	3	4	3	3	2	See opposite
Mode of Operations:	Uni-directional	Uni-directional	Bi-directional	Uni-directional	Bi-directional	Uni-directional	See opposite
Power Supply: Minimum	13	8.5	±13	10 (Note 4)	14 (Note 3)	7.5	Vdc
Typical	24	12	±14	24 (Note 4)	15 (Note 3)	24	Vdc
Maximum	30	28	±15	30 (Note 4)	18 (Note 3)	30	Vdc
Operating Current: Typical	22 (Note 1)	22 (Note 1)	22 (Note 1)	Min 26, Max 42 (Note 1)	30 (Note 1)	4 to 20	mA
Bridge Excitation Voltage:	5±0.1	5±0.1	5±0.1	5±0.1	5±0.1	1.1 nom (Note 5)	Volts
Bridge Resistance: Min	350	350	350	350	350	350 (Note 6)	Ohms
Typ	1000	1000	1000	1000	1000	1000 (Note 6)	Ohms
Max	5000	5000	5000	5000	5000	5000 (Note 6)	Ohms
Bridge Sensitivity (Note 2): Min	0.5	0.5	0.5	0.5	0.5	0.5	mV/V
Typ	2.5	2.5	2.5	2.5	2.5	2.5	mV/V
Max	150	150	150	150	150	55	mV/V
Minimum Resistance across Output:	5000	5000	5000	1000	5000	800	Ohms
Maximum Loop Resistance: not on Mantracourt spec	N/A	N/A	N/A	250	N/A	800	Ohms
Output Bandwidth:	1000	1000	1000	1000	1000	1000	Hz
Zero Adjustment:	±2	±2	±2	±2	±2	±2 (Note 5)	%FSO
Span Adjustment:	±8	±8	±8	±8	±8	±8	%FSO
Output Linearity:	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	±%FSO
Zero Temp Coefficient: Typ	0.0004	0.0004	0.0004	0.0004	0.0004	0.001	±%FSO/°C
Max	0.0015	0.0015	0.0015	0.0015	0.0015	0.005	±%FSO/°C
Span Temp Coefficient: Typ	0.002	0.002	0.002	0.002	0.002	0.007	±%FSO/°C
Max	0.0051	0.0051	0.0051	0.0051	0.0051	0.014	±%FSO/°C
Operating Temperature Range:	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	°C
Storage Temperature Range:	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +85	°C
Reverse Polarity Protection:	-30	-30	-30	-30	-30	-30	Vdc
Maximum Relative Humidity:	95	95	95	95	95	95	% non-condensing
Connection Method: not on Mantracourt spec	Plated through holes	Plated through holes	Plated through holes	Plated through holes	Plated through holes	Plated through holes	See opposite

Note 1: With 350 Ohm load cell connected.

Note 2: Factory setting is the typical value shown. For other values fit an alternative calibration resistor.

Note 3: ICA6 maximum voltage can be increased to 24V with a 1000 Ohm load cell.

Note 4: The ICA4 can tolerate a lower supply voltage if the output load is reduced e.g. operation is possible at 8V provided that the load does not exceed 150 Ohm.

Note 5: ICA5 with 1000 Ohms load cell connected.

Note 6: ICA5 recommended bridge impedance is 1000 Ohms or greater.



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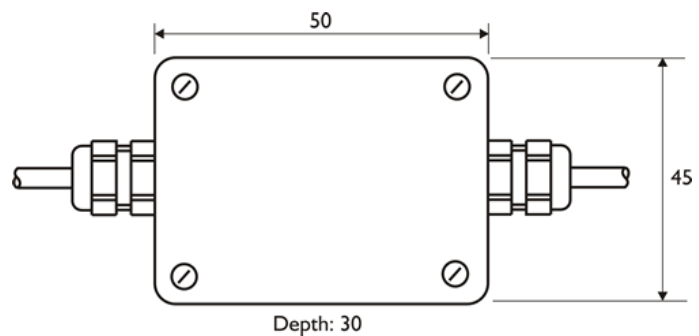
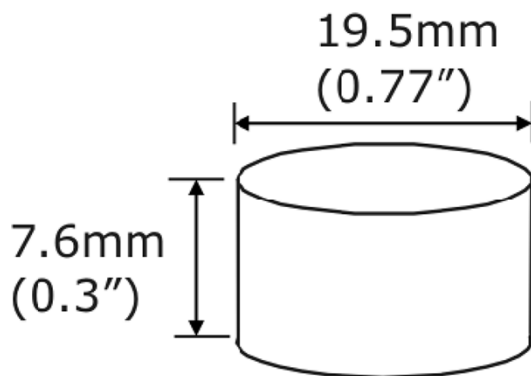
## Industries:

- Automotive
- Agriculture
- Silo and Weighing Industry
- Construction
- Alternative Energy
- Civil Engineering
- Lifting and Handling
- Waste Management

## Applications:

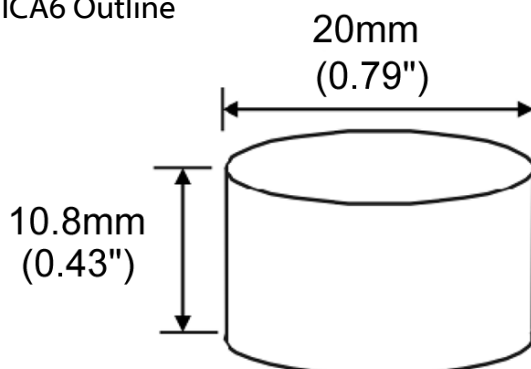
- Weighing Platforms
- Vessel Weighing Systems
- Weighbridges
- Conveyor Weighing Systems
- Bridge Structure Monitoring
- Waste Management Systems
- Lifting and Handling
- Monitoring of Anchor Loads
- Truck Load Weight Monitoring
- Skip Weighing System
- Multi-Cell or Multi-Transducer Installations
- Monitoring of Building Foundations
- Force Measurement in Formula Racing
- Silo Weighing
- Measuring the Power Output of a Motor
- Vessel Weighing Systems

## Dimensions (mm):



Optional ICA Enclosure

## ICA6 Outline





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## Ordering Codes:

Core Product	Supply Voltage	Example Result
ICA	0.1 to 10.1Vdc / 13 to 30Vdc	ICA1H
ICA	0.1 to 5.1Vdc / 8.5 to 28Vdc	ICA2H
ICA	0 to $\pm 10$ Vdc / $\pm 13$ to $\pm 15$ Vdc	ICA3H
ICA	4 to 20mA (3-wire) / 10 to 30Vdc	ICA4H
ICA	4 to 20mA (2-wire) / 7.5 to 30Vdc	ICA5S
ICA	0 to $\pm 10$ Vdc / 14 to 18Vdc	ICA6H

## Associated Products:



[Load Cells & Force Sensors](#)



[T24 Wireless Telemetry Range](#)



[AML/SGD Displacement Sensor](#)



[DSC-USB USB Signal Digitiser](#)



[Torque Transducers & Torque Sensors](#)



[Pi600 Pressure Sensor](#)

## Associated Case Studies:

### [Applied Measurements' Submersible Load Cells fitted to the World's Largest All-Terrain Hexapod](#)



DSCC load cells and ICA amplifiers monitored the force on the legs to maintain the Mantis' (the world's largest hydraulic hexapod robot) overall walking stability. [Read more...](#)

### [Shear Pin Load Cells and Draw Wire Sensors Deliver Flawless Results in Sub-Zero Temperatures](#)



Using customised DBEP shear pin load cells, the RICE team were able to successfully extract a 763m deep ice core from an ice cap on Roosevelt Island. [Read more...](#)