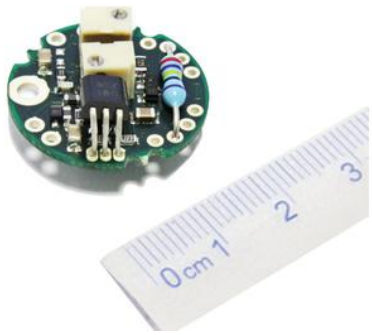
Strain Gauge or Load Cell Embedded Analogue Amplifier



A range of high performance robust signal conditioners in a miniature OEM format and designed specifically for fitting inside load cells

Introduction

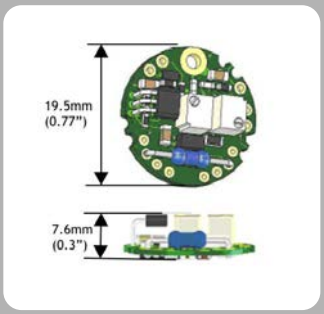
Mantracourt's ICA family offers high stability and fast response strain gauge or load cell amplifier, converting a strain gauge input into a volt or mA output. It's sub-miniature design enables it to be fitted into the majority of transducers for a wide range of signal conditioning for strain gauges, load cells, pressure and torque transducers. Available in 6 versions, 5 with high performance and ICA5S with industrial stability.

The ICAH range offer very low drift over wide operating temperatures.

Optional (ILE) in line enclosure to convert a standard load cell to a conditioned load cell output.

Specification at a Glance

- Standardised mounting hole for faster & easier installation
- New generation improved performance of up to 400% (High stability version) over operating temperature
- ROHS compliant
- Standardised excitation 5 V DC
- Multi layer printed circuit board & additional filtering to improve EMC performance
- ICA6 model to provide ±10 V output from uni-polar 14-24 V supply
- Plated through holes for wire connections
- Full CE approval



User Benefits

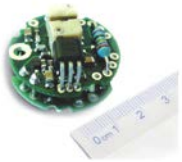
- Available in 6 different versions
- Small & compact, reduced height of just 7.6 mm
- Low drift
- Robust design, reverse polarity & short circuit protected
- Fast calibration procedure

Ideal Applications

- Automotive
- Lifting & Handling
- Silo & Weighing
- Hazardous Areas
- Agriculture

Related Product

ILE
Field enclosure for ICA analogue and DCell data converters



ICA5ATEX
ATEX Intrinsically Safe, OEM strain gauge converter, 4-20mA 2 wire

Case Study

The ETS Formula SAE Team from the University of Quebec is renowned for its lightweight and ergonomic car design, its excellent suspension design and its scientific approach to vehicle validation and development.

The 2011 car features new suspension and steering packages designed from scratch. The new steering system was designed to reduce driver effort while allowing clear feedback from the tyres back to the driver. In order to validate set up and troubleshoot various systems on the car, loads in all suspension and steering links needed to be quantified. To do so, the team needed strain gauges on all suspension and steering links.

The Application:
A race car generates a lot of electro-magnetic noise from the ignition and telemetry systems. This means that there must be minimal wiring length between the strain gauges and the amplifiers. Secondly, to provide representative data, the weight of the whole system must not alter the dynamics of the car.

The Solution:
The strain gauges and embedded ICA amplifiers were integrated to the data acquisition system already in place. The resulting data was used in several phases of the project. Here are a few examples:

The recorded suspension loads allowed further refinements of the chassis load case which yields a lighter, yet rules a compliant chassis design.

The recorded steering loads allowed the team to characterise driver effort and also allowed a new target to be set for a steering system design balancing steering response, feedback and effort.

During the validation and development phase, the strain gauges allowed the team to monitor the wheel load fluctuation for better spring-damper selection and adjustment. Also, load transfer characteristics were monitored for validation and diagnosis purposes.

CE & Environmental

Storage temperature	- 40 to +85ºC
Operating temperature	- 40 to +85ºC

CE Environmental Approvals

European EMC Directive	2004/108/EC

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In the interests of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice

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