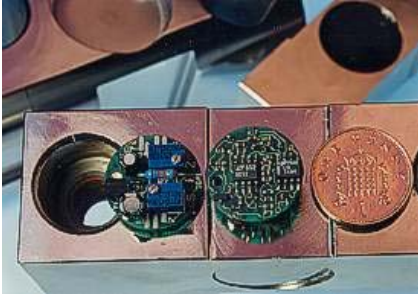


# Amber Instruments Ltd



## The Analogue 'in-cell' Amplifier

### Introduction

#### Flexible Solution:

- Sub-miniature design to fit the majority of strain gauge transducers
- Once calibrated and fitted into the transducer the ICA will operate maintenance free
- Pre-calibration of electronics to transducer saves time at final installation
- High level signalling
- High noise immunity
- Low supply voltage
- Can be used in installations requiring long cabling lengths without reducing performance
- Direct connectivity to a range of analogue input devices as required: PLC, display, chart recorder, industrial instrumentation, PC (with an A/D card)

### Features

- Excitation
- Adjustable Offset & Gain
- Analogue Output

#### High Specification:

- Surface mount PCB
- 3 year manufacturer's warranty
- Full CE approval

#### Simple to Install & use

- Solder pad connections to transducer
- Offset and gain are easily adjustable by potentiometers

#### Cost Effective

- Attractive discounts on quantity orders
- Easy to stock
- Fast delivery times
- Use with low cost 2-4 core cable

### Special features unique to the 2 wire, 4-20mA Amplifier ICA5

- Auto zero amplifier giving very high stability
- Linearisation
- Screw mounting & earth bonding for EMC
- Shunt calibration option
- Operating voltage from as low as 7.5 volts dc
- Low profile option 7.0mm (0.275") high (ICA5L)

### Specifications

#### Preliminary Specifications

#### 2 wire 4-20 mA ICA5

Parameter	Min	Typ	Max	Units
Power supply	7.5*	24	28	V DC
Bridge excitation	-	1.1	-	V (1k bridge)
Bridge resistance	350	1000	5000	Ohms
Bridge sensitivity	0.5	2.5	6	mV/V† (1k bridge)
Output load	-	-	800**	Ohms
Band width	0	-	2000	Hz
Zero temp stability (at 2.5mV/V)	-	0.001	0.005	%FS/°C (1k bridge)
Span temp stability (at 2.5mV/V)	-	0.007	0.014	%FS/°C (1k bridge)
Linearity	-	0.02	-	%FS
Operating temperature range	-40	-	+85	°C
Humidity	0	-	95	%RH

**Connections** Solder pads, 4 for strain gauge, 2 for power/signal

FS = Full Scale †= set by calibration resistor. \*\* 24V supply

\*To check operating minimum voltage the shunt resistor must be less than:  $((V_{supply} - 7.5) / 20mA - R_{wiring})$   
NOTE: Recommended bridge impedance is 1,000 Ohms

Parameter	3 wire 4-20 mA ICA4			4 wire ±10 volts ICA3			Units
	Min	Typ	Max	Min	Typ	Max	
Power supply	13	24	28	±13	-	±15	V DC
Bridge excitation	-	8	-	-	8	-	V
Bridge resistance	350	-	-	350	-	-	Ohms
Bridge sensitivity	0.5	2.5	30	0.5	2.5	30	mV/V†
Output load	-	-	1000*	5000	-	-	Ohms
Band width	0	-	2000	0	-	1000	Hz
Zero temperature stability	-	0.002	-	-	0.002	-	%FS°C
Span temperature stability	-	0.005	-	-	0.005	-	%FS°C
Linearity	-	0.02	-	-	0.02	-	%FS
Operating temperature range	-40	-	+85	-40	-	+85	°C
Humidity	-	-	95	-	-	95	%RH

#### 3 wire 4-20mA ICA4

Configuration	sink or source mode
Connections	Solder pads, 4 for strain gauge, 4 for power & signal

#### 4 wire ±10 volts ICA3

Connections	Solder pads, 4 for strain gauge, 4 for power & signal
FS = Full Scale †= set by calibration resistor	

Parameter	3 wire 0.1-5 volts ICA2			3 wire 0.1-10 volts ICA1			Units
	Min	Typ	Max	Min	Typ	Max	
Power supply	8.5	12	14	13	24	30	V DC
Bridge excitation	-	5	-	-	8	-	V
Bridge resistance	350	-	-	350	-	-	Ohms
Bridge sensitivity	0.5	2.5	30	0.5	2.5	30	mV/V †
Output load	2500	-	-	5000	-	-	Ohms
Band width	0	-	1000	0	-	1000	Hz
Zero temperature stability	-	0.0035	-	-	0.002	-	%FS°C
Span temperature stability	-	0.005	-	-	0.005	-	%FS°C
Linearity	-	0.02	-	-	0.02	-	%FS
Operating temperature range	-40	-	+85	-40	-	+85	°C
Humidity	-	-	95	-	-	95	%RH

#### 3 wire 0.1-5 volts ICA2

Min Output Voltage	0.07V
Connections	Solder pads, 4 for strain gauge, 3 for power & signal
FS= Full Scale †= set by calibration resistor	

#### 3 wire 0.1-10 volts ICA1

Min Output Voltage	0.07V
Connections	Solder pads, 4 for strain gauge, 3 for power & signal

#### Enclosure

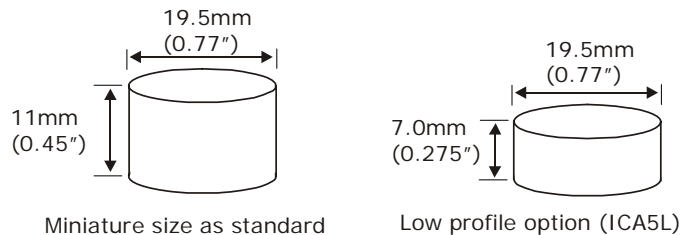
Fit into circular hole 19.5mm diameter with 11mm height, or low profile option 6.5mm (ICA5L)

#### Controls

Offset & gain pot +SOT R's for mV/V sensitivity

#### Mechanical Dimensions

Dimensions in mm and inches.



# Amber Instruments Ltd

Dunston House, Dunston Road, Chesterfield, Derbys, S41 9QD  
 Tel: 01246 260250 Fax: 01246 260955  
 e-mail: sales@amberinstruments.com web: www.amberinstruments.com

Torque Transducers, Load Cells (general purpose, weighing & fatigue rated). Multi-Axis Force/Torque, Weighing Instruments, Process Instruments, Portable Data Loggers, Pressure Sensors, Proximity Sensors, Laser (Distance Measuring) Sensors, & more.