Load Cell Amplifier / Strain Gauge Amplifier with Linearity Correction
AS200706

The AS200706 is a small compact board for 3-wire systems providing a 4mA - 20mA current output with adjustable linearity correction. The unit has individual multi-turn potentiometers for the precise setting of Zero, Span and Linearity without the need of a computer. This unit is also available with **mid. zero output** (12mA for example) for compression / tension transducers. The inputs provide EMI-/RF-suppression. Transducer wires can be easily connected to board via soldering or SIL sockets (standard).

Features

- Wide range power supply 16-30V
- 5V stabilised bridge excitation
- Bridge resistance 240 Ohm (or greater)
- Bridge sensitivity 0.6mV/V – 3mV/V
- Size 29mm x 29mm, 7.5mm height
- Fast calibration procedure
- Reverse-polarity protection
- Easy linearity correction procedure

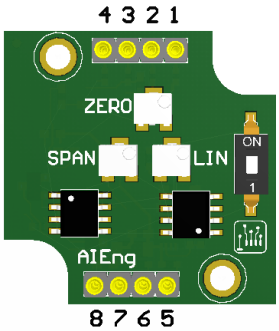
Applications

- Industrial Weighing
- Load Testing & Monitoring
- Overload Protection Systems

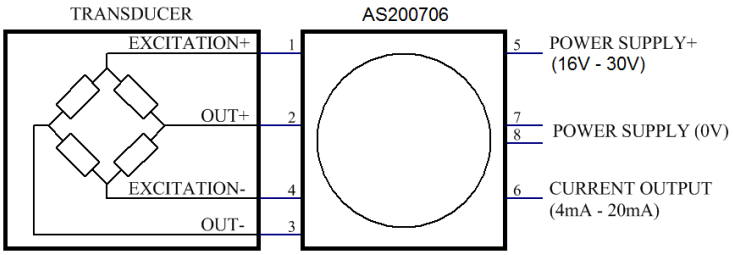
Ordering

Part number:	AS200706*
*Please specify required input range, between 0.6mV/V – 3mV/V Default setting is 1mV/V.	
Customer specific electrical / mechanical changes are possible – please contact us with your individual requirements.	

Board Connections



Schematic Diagram



Specifications

Parameter	Min	Typical	Max	Unit
Supply Voltage	16	24	30	V
Current Output – Zero (adjustable control)	1.6	4		mA
Current Output – Span (adjustable control)		20	24	mA
Bridge Sensitivity	0.6		3	mV/V
Bridge Resistance	240			Ohms
Bridge Excitation Voltage		5		V
Linearity Correction Range		+/-1.8		mA @12mA
Current Output Temp. Coefficient – Zero		0.3		uV/°C

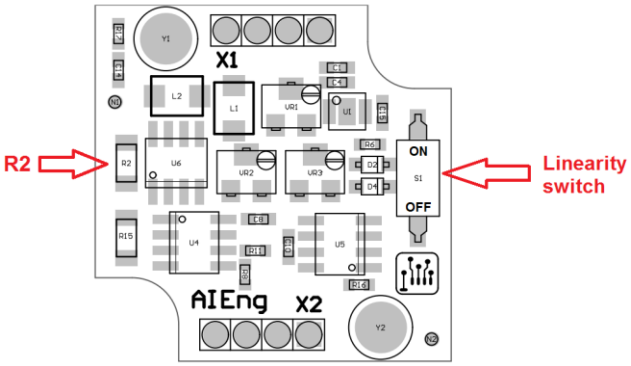
Parameter	Min	Typical	Max	Unit
Current Output Temp. Coefficient – Span		0.01		%/°C
Operating Temperature	-20		50	°C

Installation

The unit has multi-turn potentiometers for the precise setting of Zero, Span and Linearity.
The amplifier features a linearity correcting circuit which adds a parabola to the normal straight line characteristic. The amount of correction which may be positive or negative and reaches a maximum at 50 % full scale is controlled by a single potentiometer adjustment. The circuit is designed to minimise the interaction of settings. The linearity correction has no effect at zero or at full scale.

The amplifier's default sensitiviy is set for 1mV/V. SMD Resistor R2 can be changed according to the required sensitiviy as follows: R2=470 x mV/V

For example:
for 1mV/V load cell, use R2=470 x 1 = 470 Ohm
for 2.5mV/V load cell, use R2=470 x 2.5 = 1125 Ohm = 1.1kOhm (nearest value).
The SMD resistor tolerance is typically +/-1% and size 1206 [3216 Metric].



Calibration Procedure

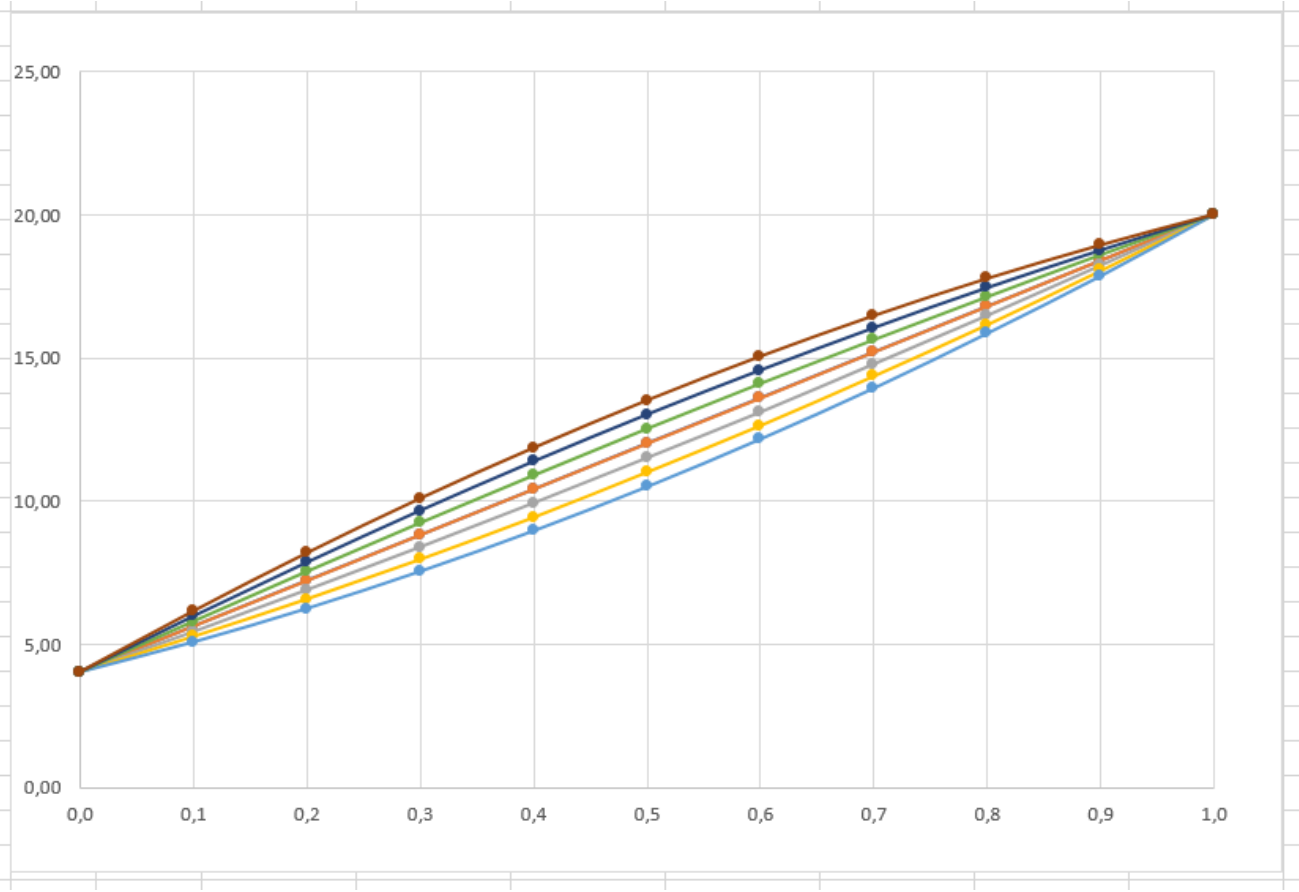
The linearity switch should be placed in the „off" position.
At zero load use the 'ZERO' potentiometer to set 4.00mA.
At full load use the 'SPAN' potentiometer to set 20.00mA.
Check and repeat as necessary.

If the linearity function is required the switch should now be placed in the „on" position.
At about 30 % full load use the 'LIN' potentiometer to correct the output as desired.
Check and repeat as necessary.

Typical Results

Settings: 1mV/V ; Calibrated at zero=4mA, span=20mA; 350R bridge, Vin=24V

mV/V	LIN off	LIN on I@0,5=12mA	LIN on I@0,5=11,5mA	LIN on I@0,5=11mA	LIN on I@0,5=10,5mA	LIN on I@0,5=12,5mA	LIN on I@0,5=13mA	LIN on I@0,5=13.5mA
0,0	4,01	4,01	4,01	4,01	4,01	4,01	4,01	4,01
0,1	5,61	5,61	5,42	5,25	5,06	5,78	5,96	6,14
0,2	7,21	7,20	6,88	6,56	6,23	7,52	7,84	8,17
0,3	8,80	8,80	8,38	7,95	7,53	9,22	9,65	10,08
0,4	10,40	10,40	9,92	9,42	8,95	10,88	11,37	11,85
0,5	12,01	12,00	11,50	11,00	10,49	12,51	13,01	13,51
0,6	13,60	13,59	13,10	12,63	12,16	14,09	14,56	15,05
0,7	15,20	15,20	14,78	14,36	13,94	15,62	16,04	16,47
0,8	16,80	16,80	16,48	16,16	15,86	17,12	17,44	17,77
0,9	18,40	18,41	18,23	18,05	17,87	18,59	18,75	18,94
1,0	20,01	20,02	20,01	20,02	20,02	20,00	20,00	20,01

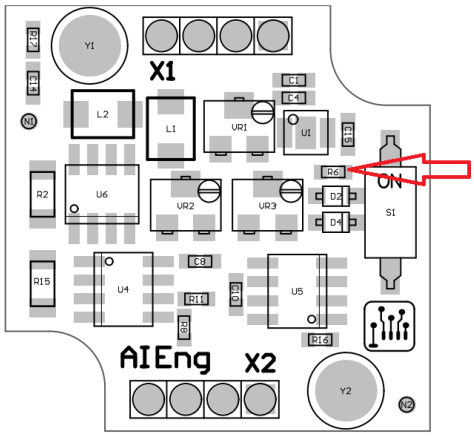


Bi-directional systems (Tension/Compression) with 12mA@Zero

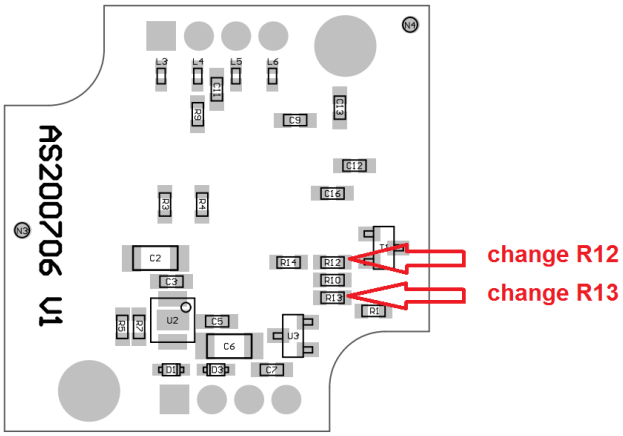
Make the following changes to the board:
Change resistor R12 from 30kOhm (default) to 60.4kOhm.
Change resistor R13 from 120kOhm (default) to 40.2kOhm.
The SMD resistor tolerance is typically +/-1% and size 0603 [1608 Metric].
Remove resistor R6 (default 0R) from board.

Please NOTE: the linearity correction is not valid for bi-directional systems and the linearity switch should be placed in the “off” position.

Top side



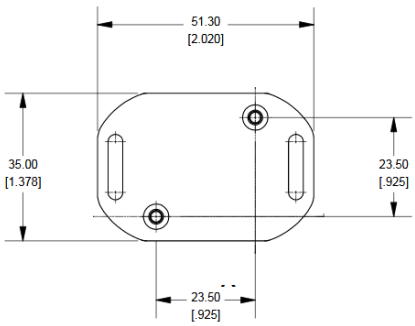
Bottom side



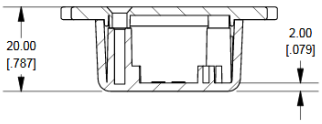
Optional Extras

Part number:	**AS200706-ENCL1**	**ABS Enclosure for AS200706 Amplifier including Lid with mounting flanges Three colours available: Black, Grey, Translucent Blue**

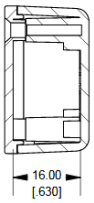
Top View Lid (with Flanges)



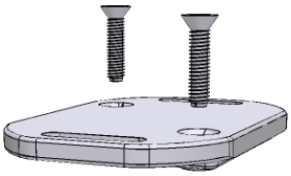
Side View



End View



Units: mm [inch]



Top View (inside box)