



Universal Load Cell Amplifier / Strain Gauge Amplifier AS7539A

The AS7539A is a universal 3-wire amplifier providing **seven** modes of operation (current/voltage and unipolar/bipolar outputs). It has individual multi-turn potentiometers for the precise setting of Zero and Span and 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 clamped onto the board. Two additional extension boards (ASM1-4, ASM1-8) are also available providing multiple transducer processing, allowing up to 4- or 8-amplifiers, along with rugged aluminium enclosures offering IP66 protection.

Features

- Wide range power supply 13-32V
- 10V stabilised bridge excitation
- Bridge resistance 87 Ohm (or greater)
- Bridge sensitivity 0.3mV/V – 3mV/V
- Size 48mm x 41mm x 19mm height
- Fast calibration procedure
- Reverse-polarity protection



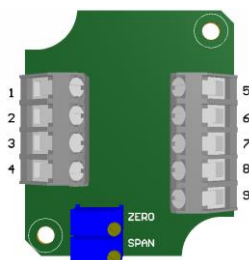
Applications

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

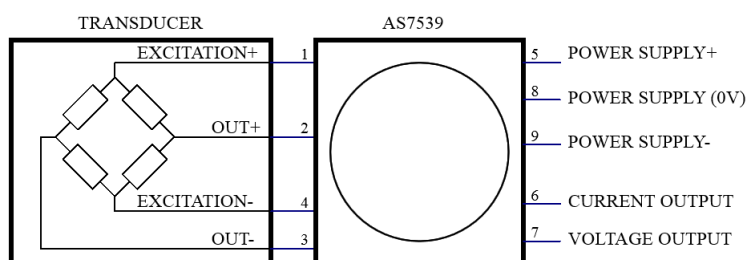
Ordering

Part number:	AS7539A*
*Please specify required input sensitivity and output type (current/voltage and unipolar/bipolar output) Default 2.0mV/V: AS7539A-2.0MV, 0-10V Output	
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 V_{in} (unipolar voltage/current output)	13	24	32	V
Supply Voltage V_{in} (bipolar voltage output)	-13 to -18		+13 to +18	V
Current Output – Zero (adjustable control)	3.9	4		mA
Current Output – Span (adjustable control)		20	23	mA
Current Output – Fault condition ¹		>32		mA
Voltage Output – Zero (adjustable control)		0.004 / 2.5		V
Voltage Output – Span (adjustable control)		5.0/7.5 /10.0		V
Voltage Output – Fault condition ¹		V_{in}		V
Bridge Sensitivity	0.3		3	mV/V
Bridge Resistance	87			Ohms
Bridge Excitation Voltage		10.0		V

Parameter	Min	Typical	Max	Unit
Current Output Temp. Coefficient – Zero		0.3	1	uV/°C
Current Output Temp. Coefficient – Span		0.01		%/°C
Step input response (2mV/V, 0-10V output, 10%-90%)		335		us
Frequency bandwidth (-3dB)		1		kHz
Operating Temperature	-20		50	°C

Seven configurable output modes are available:

1. 4-20mA current
2. 4-12mA-20mA current
3. 0-5V voltage
4. 0-10V voltage
5. 2.5 to 7.5V voltage
6. -5V to +5V voltage
7. -10V to +10V voltage

2. max sensitivity 2mV/V for 4-12-20mA current output

1. Installation

Default settings are:

Unipolar supply (24V)

Output sensitivity: 2mV/V (R1=220R)

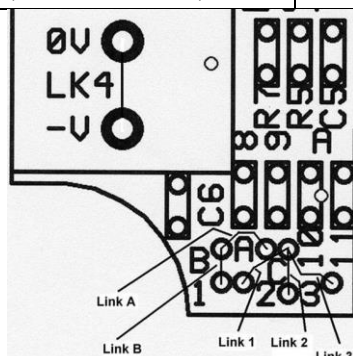
Output range: 0-10V (Link 2, Link B, R3=not assembled, R7=10k)

Normally we will set-up the unit to the requirements indicated in your order. If alternative settings are required later, follow the procedures detailed below.

¹Fault condition: if there is an input overload or a disconnected transducer, the output voltage may match the applied power supply input voltage (voltage output) or >32mA (current output). This characteristic can be utilized to identify a faulty transducer. However, it is important to ensure that any connected devices can tolerate this voltage or current.

Power Supply	Board changes
Unipolar supply (13 – 32V)	Make LK4 (default) (connect pin 9 to pin 8 if the board was previously configured for bipolar supply operation)
Bipolar supply (+/-13 to +/-18V)	Open LK4 by cutting PC track

Output Range	Board changes
2.5-7.5V	Link 1, Link A, R3=not assembled, R7=10k
0-5V, 0-10V	Link 2, Link B, R3=not assembled, R7=10k
0+/-5V, 0+/-10V	Link 2, Link B, R3=not assembled, R7=not assembled, Cut LK4
4-20mA	Link 3, Link A, R3=30k, R4=62k, R7=not assembled
4-12-20mA (Zero Load = 12 mA)	Link 3, Link A, R3=10k, R4=22k, R7=not assembled





2. Calibration

At zero load use ZERO potentiometer to set to zero output (example 4.00mA for current, 0.01V for voltage)

At full load use SPAN potentiometer to set to maximum output (example 20.00mA for current, 10.00V for voltage)

Repeat above procedure several times until both settings are reached.

3. Sensitivity

The amplifier is matched to the load-cell full scale sensitivity (mV/V) by the value of resistor R1

For 4-20mA, 0-5V, 0+/-5V and 2.5-7.5V ranges:

$$R1 = 220 \times \text{mV/V} \text{ Ohms}$$

Example: load-cell is 2mV/V. Therefore when configured for 0-5V voltage output, $R1 = 220 \times 2 = 440$ Ohms. Use 430R nearest value.

For 4-12-20mA range:

$$R1 = 1320 \times \text{mV/V} \text{ Ohms}$$

Example: load-cell is 2mV/V. Therefore, $R1 = 1320 \times 2 = 2640$ Ohms. Use 2.7K nearest value.

For 0-10V and 0+/-10V ranges:

$$R1 = 110 \times \text{mV/V} \text{ Ohms}$$

Example: load-cell is 2mV/V. Therefore when configured for 0-10V voltage output, $R1 = 110 \times 2 = 220$ Ohms.

If the calculated resistor value is not readily available use the nearest value.

Resistor should be 1% 100ppm/C 1/8 watt grade or better. Use either THT (1/8 watt) or SMD (0805) resistor.

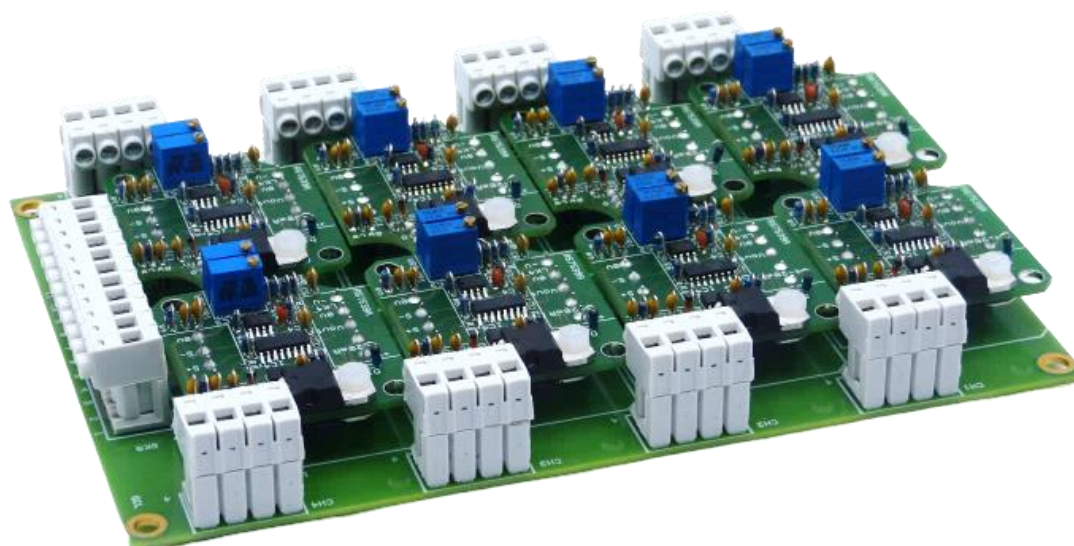
Example: THT MF12 series from Farnell Electronics: 100R, Part MF 12 100R, Order code: 9342397.

Optional Extras (Motherboards and Enclosures)

Part number:	ASM1-4	Motherboard for up to 4 AS7539A amplifiers
---------------------	---------------	---



Part number:	ASM1-8	Motherboard for up to 8 AS7539A amplifiers
---------------------	---------------	---





www.aieng.co.uk

Part number:	AS7539A +ENCL1	IP66 Enclosure for 1 AS7539A incl. 2x PG7 cable glands
--------------	----------------	--



Part number:	ASM1-4 +ENCL2	IP66 Enclosure for ASM1-4 incl. cable glands
--------------	---------------	--



Part number:	ASM1-8 +ENCL3	IP66 Enclosure for ASM1-8 incl. cable glands
--------------	---------------	--

