



BRIDGE AMPLIFIER

Type 107-1/B

Features

- * **Transducer Supply**
- * **User Adjustable Ranges**
- * **Wide Range of Output Types**



FUNCTION

This versatile unit will convert signals from milli-volt and bridge type transducers (e.g. strain gauge, load and pressure transducers) into standard process signals. An isolated and stabilised power supply for excitation of bridge type circuits and other transducers requiring a constant voltage is provided.

Information Required When Ordering

- Specify Type 107-1/B
- Input Signal
- Type of Output (see specification overleaf)
- Transducer Supply
- Supply Voltage and Frequency

SPECIFICATION

GENERAL NOTE

The Bridge Amplifier can be manufactured for other ranges than stated below e.g. 0-10V, please contact our sales department to discuss your requirements.

INPUTS

User adjustable ranges from 0-10mV to 0-100mV

OUTPUTS

mA Ranges	Max. Load (ohms)	Optional*
0-10mA	2000	4000
0-20mA	1000	2000
4-20mA	1000	2000

*options available to order

Voltage Ranges Min. Load (ohms)

0-5 Volts	500
0-10 Volts	1000
1-5 Volts	500
2-10 Volts	1000

CALIBRATED ACCURACY

Set at 100% to be within $\pm 0.1\%$ FSD

LINEARITY ERROR

$\leq \pm 0.1\%$ FSD

OUTPUT RIPPLE

$\leq 0.1\%$ (Peak to Peak) of FSD.

LOAD RESISTANCE EFFECT

$\leq 0.001\%$ of span/100 ohm change.

ISOLATION

The input and output are not isolated from each other, but are isolated from the power supply.

TEMPERATURE COEFFICIENTS

Zero: $\pm 0.02\%$ span/°C

Span: $\pm 0.02\%$ span/°C

TEMPERATURE RANGE

Operating: -10°C to $+60^{\circ}\text{C}$

Storage: -20°C to $+70^{\circ}\text{C}$

SUPPLY VOLTAGE REJECTION

Output change $< 0.01\%$ span/ % supply change.

TRANSDUCER EXCITATION SUPPLY

Constant Current:

Typically 5mA

Set during manufacture to suit transducer.

Constant Voltage

Output Typically 10V at 6mA max.

Accuracy $\pm 0.01\%$

Load Regulation $\pm 0.005\%$ / mA

Temp. Coefficient $\pm 0.002\%$ / °C

POWER SUPPLY

AC 110, 220, 240V $\pm 10\%$ 50/60Hz 5VA

Fuse (internal) 100mA quick-blow (20 x 5mm)

DC 12, 24, 48V -10% $+20\%$ 3.5W

Fuse (internal) 250mA anti-surge (20 x 5mm)

WEIGHT

Approximately 0.5 kg.

INSTALLATION

This unit can be fitted either to a suitable dry, flat surface with a two screw fixing or to a mounting rail (to BS5584:1978, EN50 022, DIN46277-3) with an optional mounting clip.

Release the two securing screws and remove the plug-in module from the base section to reveal fixing positions and wiring terminals. Grommets are provided on three sides of the base section and there are two rear entry knock-outs in the bottom. For screw fixing, two 4mm holes are provided on 100mm centres. Good instrumentation practice must be observed when wiring to the unit to ensure segregation of supply and signal wiring, and the use of suitably screened signal cabling.

Adjusting calibration

Suitable measuring equipment is required to set the unit to its specified accuracy or to the requirements of the application e.g. a 4½ digit DVM, 100 ohm laboratory standard resistor (for current outputs) and a signal source to simulate the input transducer.

Gaining access to the calibration adjustments

The fine-trim span and zero controls are accessed through the front panel. The range setting switches are mounted internally and may be accessed as follows:

- Isolate all supplies to the unit.
- Unscrew two module retaining screws and separate the plug-in module from the base section.
- With the fingers, ease apart the shorter sides of the cover releasing the interlocking tongue and groove fastenings to remove the plastic plate (i.e. the plate with the connections label).
- Slide out the printed circuit board assembly.

Calibration procedure

- Set the range switches (SW1) as required (see table).
- Reassemble and plug the module into the base section. (see 'Module reassembly').
- Set *output Zero*: with input signal at its zero setting, monitor the output signal with a suitable instrument and adjust the zero control (via upper hole).
- Set *Span*: with input at full scale, adjust the span control (lower hole).
- Repeat steps (iii) and (iv) readjusting if necessary.

Mains supply and fuse replacement

See fig 1 for details of the mains supply link settings made by soldered tinned copper wire links. NB operating supply voltage of DC powered versions cannot be changed.

Module reassembly

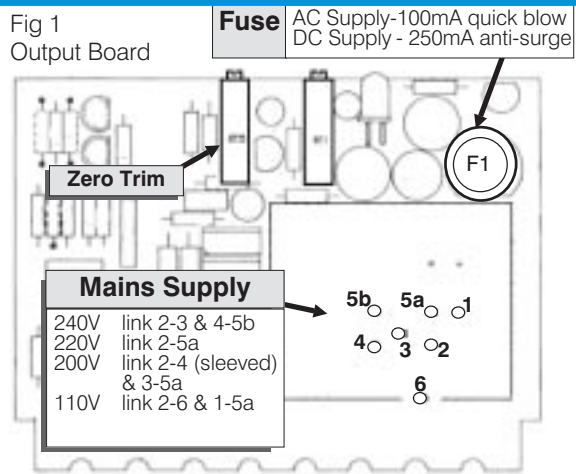
- Slide the PCB assembly into the slots in the case.
- Replace the plastic plate, PCB edge first, and press into place engaging the locking tongues into their slots.
- Insert plug-in module into the base section and secure with the retaining screws. *NB do not over tighten.*

WARNING THIS UNIT CAN BE MAINS POWERED, AND ALL INPUTS TO IT MUST BE ISOLATED FROM DANGEROUS VOLTAGES BEFORE THE FRONT COVER IS REMOVED. LIVE TERMINALS WILL BE EXPOSED.



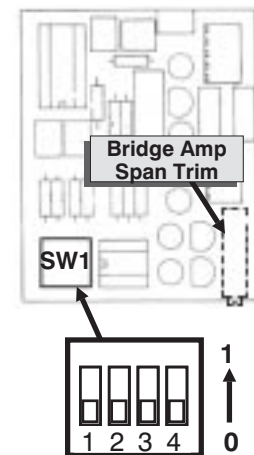
Continuous development may necessitate changes in these details without notice

Fig 1
Output Board



SW1 Positions				Nominal Input (mV)	
1	2	3	4	Min.	Max.
0	0	0	0	7.5	9
1	0	0	0	8	10
0	1	0	0	9	11
1	1	0	0	10	12
0	0	1	0	11	13
1	0	1	0	11	14
0	1	1	0	12	15
1	1	1	0	13	17
0	0	0	1	17	22
1	0	0	1	20	25
0	1	0	1	22	30
1	1	0	1	26	33
0	0	1	1	33	45
1	0	1	1	40	54
0	1	1	1	54	75
1	1	1	1	72	100

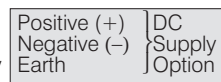
Fig 2 Bridge Amp Sub-board



ELECTRICAL CONNECTIONS

Auxiliary Supply

- 1 ↔ Line
- 2 ↔ Neutral
- 3 ↔ Earth



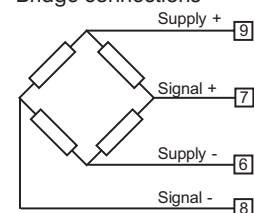
Outputs

- 4 ↔ Output Common (-)
- 5 ↔ Output (+)

Inputs

- 6 ↔ Constant V (-)
- 7 ↔ Input (+)
- 8 ↔ Input Common (-)
- 9 ↔ Constant I or V (+)

Bridge connections



Please Note: constant current or voltage transducer supply outputs and DC auxiliary supply versions are options which must be specified at time of order.

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