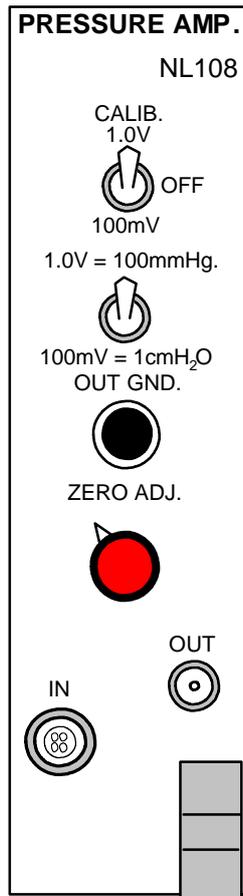

 NL108A - Pressure Amplifier



Introduction

The **NL108A Pressure Amplifier** module provides two gain settings, one appropriate for blood pressure measurement (1.0V at the output corresponds to 100mmHg pressure at the transducer) and the other for low pressure measurement such as intra-tracheal pressure (100mV at the output equals 1cmH₂O at the transducer port).

An internal voltage calibrate provides the appropriate deflection (1.0V or 100mV) for these two ranges. Other features include excellent DC stability, a push-button switch for setting the zero pressure baseline on the recording instrument and a sensitive zero offset control.

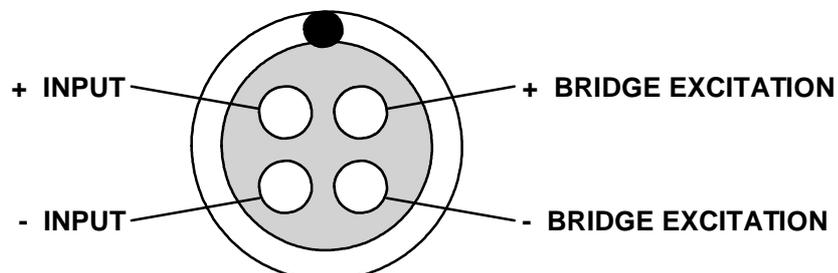
Although the NL108A is designed to mate perfectly with our own NeuroLog™ pressure transducers (**NL108T1**, **NL108T2**, **NL108T3** or **NL108T4**), due to its internally adjustable gain and bridge excitation voltage, it can be used with a variety of other standard pressure transducers.

NB: The NL108A has the same functions and front panel as the earlier NL108 but contains updated circuitry.

Connections to Transducer

If a NeuroLog™ transducer is not being used an input plug type NL963K must be correctly wired to the particular pressure transducer to be used with the NL108A.

The front panel socket, seen from the front of the NL108A panel, has the following connections :-



The signals are described in terms of the function of the NL108A.

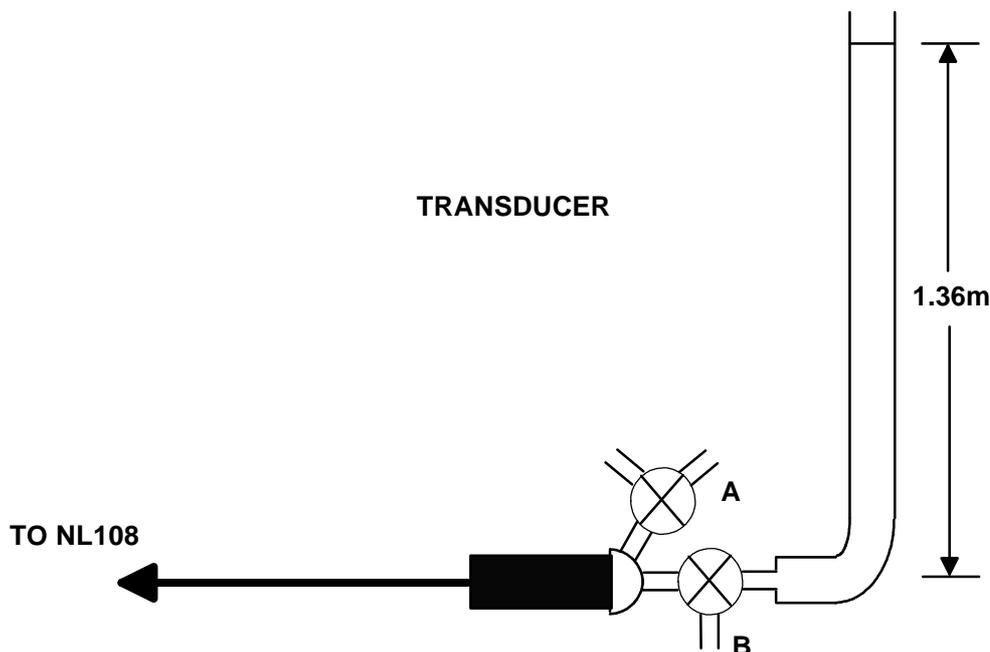
These connections are the same from the soldering end of the plug to be fitted to the transducer lead.

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Set Up

The NL108A is supplied calibrated for any of our supplied NeuroLog™ pressure transducers which have a stated accuracy. If a more precise calibration is required, or a different transducer is to be used, you will need to perform the following procedure.

- 1) Check the data sheet of the particular transducer you wish to use with the NL108A for its EXCITATION VOLTAGE at its rated output (in the case of the NeuroLog™ transducers this is 10.0V). The NL108A is designed so that the excitation voltage may be varied between 0 and 11 volts with the preset mounted on the board. This is so that damaging voltages cannot be applied to the NeuroLog™ transducers. If voltages up to 24 volts are required a single resistor change is required - see circuit diagram and assembly drawings for the NL108A.
- 2) Attach a good isolated voltmeter between the two pins on the NL108A printed circuit board marked BRIDGE VOLTAGE + and -. The voltages at these pins are symmetrical above and below 0V (i.e. ground or earth). DO NOT GROUND EITHER OF THESE TWO PINS. In general, an oscilloscope is not accurate enough to use in setting the excitation voltage - use a good voltmeter.
- 3) Plug the NL108A module into the rack with the power OFF, leaving several empty bays to the left of the module so that the trimpot marked set bridge voltage can be adjusted. DO NOT CONNECT THE PRESSURE TRANSDUCER YET.
- 4) Switch on the NL900 rack and adjust the set bridge voltage trimmer to give the correct excitation voltage at the bridge voltage pins.
- 5) The pressure transducer can now be plugged into the NL108A module and the voltmeter disconnected after ensuring no drop in voltage.



- 6) Attach a three-way stop-cock to each of the two points of the transducer as shown in the diagram. One of these stop-cocks (A) is closed. The second, at port B, is set up so that it can either vent the port to the atmosphere (i.e. zero pressure), or set to connect the port to a piece of 3 or 4mm inside diameter plastic tubing. The tubing is suspended vertically and filled with water to a height of 1.36 meters (the pressure exerted by a 1.36m column of water is equal to that for a 100mm column of mercury).

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- 7) With the port B stop-cock set to atmosphere, adjust the NL108A ZERO ADJ front panel potentiometer so the 0V is recorded at the OUT sockets. (CALIB switch in OFF position and the pressure range toggle switch in the 1.0V = 100mm position). Now switch the port B stop-cock so that the column of water is connected to the transducer. The output of the NL108A should give an output of +1.0V, if the excitation voltage and sensitivity of the transducer are correct. If not, check the BRIDGE VOLTAGE setting again (also double check the transducer data sheet).
- 8) Deviations from 1.0V output (for the 1.36m pressure) can be adjusted with the trimmer on the NL108A printed circuit board labelled GAIN. Small adjustments can also be made with the BRIDGE VOLTAGE setting - but be careful not to exceed the limits for your particular transducer.
- 9) When correctly set up, pushing the OUT GND push-button should produce the same effect on the output as opening port B to the atmosphere. Switching the CALIB toggle switch to its 1.0V position should also produce the same output deflection as opening port B to the 1.36m column of water.
- 10) Steps 6 and 9 can be repeated for the 100mV = 1cmH₂O switch position. In this case, however, the column of water should be 10cm for 1.0V output deflection.

USE OF THE OUT GND AND CALIB SWITCHES

The OUT GND push-button is used to locate the zero pressure dc level on the output recording (some chart recorders drift!). A 0.0V to 1.0V calibration deflection is produced on a recording trace by switching the CALIB switch to 1.0V and pushing the OUT GND push-button a couple of times. Similarly for the 0.0V to 100mV calibration deflection.

Specification

Input voltage range	: ±15V
Gain	: 1V/100mmHg or 100mV/cmH ₂ O (for a pressure transducer having an output of 50µV/mmHg)
DC offset	: ±60cmH ₂ O or ±40mmHg (when switched to the appropriate range)
Bandwidth	: DC - 150Hz
O/P voltage range	: ±12V
O/P impedance	: 600ohms (nom) except 'zero out', where O/P is s.c to ground
Bridge supply	: 0-24V dc (25mA)

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