

Universal In-Line Amplifiers

Models UBP, UV, UV-10, U3W, And U2W

**COMPATIBLE WITH ANY
STRAIN GAGE SENSOR**

USER PROGRAMMABLE

**NEMA-4 & IP-66 WATER
RESISTANCE**

**SELECTABLE EXCITATION
VOLTAGES**



Applications

Applications that may require an in-line amplifier:

1. In some applications, a transducer must be located in a hostile environment or one which is some distance from the display. If the environment at the sensing site is subject to high temperatures, humidity, or corrosive conditions, it may be necessary to place the amplifier in-line and away from the transducer.
2. In-Line Amplifiers can be shipped from stock for quick delivery.
3. Can be used with miniature transducers or when space is limited.
4. An In-Line Amplifier may be more accessible than the transducer itself, therefore potentiometer adjustments which are located in the amplifier are more convenient.

The SENSOTEC Universal In-Line Amplifier is a highly serviceable, user-programmable unit which meets NEMA-4 and IP-66 ratings for water resistance.

The SENSOTEC Universal In-Line Amplifier is housed in a rugged plastic package, which is connected between the transducer and a readout instrument. The amplifier supplies a highly regulated bridge excitation voltage for the transducer and converts the millivolt signal of the transducer to 0-5, 0-10 VDC or 4-20 mA. The In-Line features include three selectable excitation voltages, programmable gain setting, a wide adjustment range on zero and a buffered solid state shunt cal for quick calibration.

Advantages

Using SENSOTEC's In-Line Amplifier with a strain gage transducer has many advantages:

1. Signal-to-noise ratio is increased.
2. Effects of voltage drops in excitation sources are eliminated.
3. Signals can be sent to the data systems from low-impedance sources.

MODEL UV, UV-10

Connect with power pack or vehicle battery power for field use. This amplifier has a high degree of regulation to accept battery voltage changes plus transient protection. It can drive loads of up to 5 milliamperes at full output. Model UV provides ± 5 VDC output, Model UV-10 provides ± 10 VDC output. New optional metal cable glands are now available.

MODEL U3W, U2W

Model U3W provides 4-20 mA (3-wire) output, and is ideal for applications requiring long signal transmission with minimal signal loss. The U3W is inherently protected against incorrect wiring. Maximum load resistance is 1000 ohms. Model U2W provides 4-20 mA (2-wire) output. New optional metal cable glands are now available.

MODEL UBP

Connect ± 15 VDC power input to get non-floating output. Model UBP is used when both positive and negative output (± 5 VDC) or positive only output (0-5VDC) are required.

NEW METAL CASE OPTION

New optional metal case and electrical connections for all universal in-line amplifiers (2 1/2" high x 5" long x 3" wide).



The diagram illustrates the internal layout of the Bipolar Inline Amp module. It features a central section labeled "BIPOlar INLINE AMP" with two main functional areas: "POWER" and "TRANSDUCER".

- POWER Section:** Includes terminals for "SUPPLY", "OUTPUT COMMON", "SUPPLY", "SHUNT CAL", and "ENABLE".
- TRANSDUCER Section:** Includes terminals for "EXCITATION", "EXCITATION", "SIGNAL", and "SHUNT CAL RESISTOR".

External connections are shown on the left and right sides:

- TO READOUT:** Connected to the "SUPPLY", "OUTPUT COMMON", "SUPPLY", "SHUNT CAL", and "ENABLE" terminals.
- TO TRANSDUCER:** Connected to the "EXCITATION", "EXCITATION", "SIGNAL", and "SHUNT CAL RESISTOR" terminals.

At the bottom of the module, there are several control and adjustment components:

- EXCITATION SELECTOR:** A switch labeled "COARSE" and "FINE".
- COARSE ZERO:** A potentiometer labeled "ZERO".
- FINE ZERO:** A potentiometer labeled "ZERO".
- COARSE GAIN:** A potentiometer labeled "SPAN".
- FINE GAIN:** A potentiometer labeled "SPAN".

Labels with arrows point to these components from the bottom of the diagram:

- EXCITATION SELECTOR
- COARSE ZERO
- FINE ZERO
- COARSE GAIN
- FINE GAIN

A label at the top right points to the module's housing: "PANEL MOUNTING USE #6 OR #8 SCREWS".

[illegible]

Diagram of the rear panel of a 4-20 mA transmitter, showing various adjustment points and terminals. The panel is square with four mounting holes at the corners. The central area contains a circular display or window. The labels and their corresponding points are:

- TEST POINTS: .04 VOLTS = 4 MA, .20 VOLTS = 20 MA.
- EXCITATION TYPE SELECT
- SPAN AND ZERO FINE ADJUST
- + OUTPUT (4-20 MA)
- + POWER SUPPLY (8 - 32 VOLTS)
- EXCITATION (BLACK)
- + EXCITATION (RED)
- INPUT (GREEN)
- + INPUT (WHITE)
- EARTH GROUND
- COARSE GAIN JUMPER
- RANGE
- GAIN RESISTORS
- SPAN
- ZERO
- TP- TP+
- I V

New-Package size available. Same configuration as above models UV or U3W

New Metal Case option: enclosure size: 5" long, 3" wide, 2 1/2" high. Electrical connection options: 51k Metal Case, 59e Turck output connector 15 ft. cable and Turck molded connector assembly order code AA128

18 - 32 VDC
-20° to 158° F (-30° to 70° C)
3, 5 or 10 VDC @ 50 mA
± 10 VDC @ 2.5 mA
± 25% Coarse
± 10% Fine
1 mV/V to 20 mV/V
Solid State Relay On-Board
DC - 5000 Hz
IP-66 or NEMA-4
.02% F.S.

NOTE: This model is for replacement only, not to be used in new designs

Operating Voltage	18 - 32 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)
Excitation Voltage.....	3 or 5 VDC @ 70 mA
Output Voltage Range.....	4 - 20 mA
Zero Adjustment Range	± 70% coarse ± 25% fine
Span Adjustment Range5 mV/V to 6.6 mV/V
Shunt Calibration*	Solid state relay on-board
Frequency Response	DC - 5000 Hz.
Environment	IP-66 or NEMA-4
Linearity.....	.02% F.S.

Operating Voltage	8 - 32 VDC
Operating Temperature	-20° to 158° F (-30° to 70° C)
Transducer Bridge Excitation and Resistance	
Constant Voltage Mode	5 VDC @ 2 mA max.; 3K to 10 K ohms
Constant Current Mode	0.5 mA w/3 volts compliance; 2K to 6 K ohms
Output	4-20 mA 2-wire
Zero Adjustment Range	± 15% fine
Span Adjustment Range	Jumper selectable and ± 20% fine adjustment
Frequency Response	1 KHz @ 2 mV/V
Environment	IP-66 or NEMA-4
Lightning Protection	Yes

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