

Signal Conditioning Line Amplifiers, 200-30015-R9

COS manufacturers several versions of line amplifiers, intended for use with various probes and sensors. These Line Amplifiers provide sensor isolation, high input impedance and high gain, along with a line driver capable of delivering a useable signal, even the harshest environments. They are intended for use at the sensor location, providing signal conditioned analog outputs to a remote MCU, which can be located up to 1000 feet away.



The units are packaged in an all plastic case with a protective seal to prevent corrosion in harsh environments. With exception of the connectors, the units are hermetically sealed. The low power requirement insures that the units remain stable across the entire operating range, and across a wide environmental operating range.

The Line amplifiers provide two independent channels. One is a non-isolated channel (ground common with the signal return of the probe), and is intended for use with isolated probes, such as temperature probes. This channel also has a precision excitation source, which can provide a very stable reference to power probes such as thermistors, etc. The channel has both gain and offset adjustments, readily accessible through sealed access ports on the top cover.

The second channel has an optically isolated amplifier on the sensor input, providing ultra high input impedance and high gain. This channel is intended for use with sensors like pH probes, ION probes, DO, ORP and related voltage generating probes. It provides complete isolation of the probe, insuring that ground currents and other similar noise sources are eliminated. It has exceptional temperature stability across the full operating range. It also greatly extends the probe service life, eliminating current flows through the probe due to differences in ground potentials. The output of the optical isolation amplifier is signal conditioned by a second line driver amplifier, allowing the units to be used up to 1500 feet from the recorder (MCU) or more. This stage also has gain and offset adjustments, accessible through the sealed access ports on the top cover.

The amplifiers are intended for use with the MCUS500 product line. They provide a separate signal return reference which is used as the reference input for the differential analog inputs of the MCU. Again, this helps provide a high degree of immunity to ground loops and noise, even in environments where VFD motor controllers and other electrically noisy equipments are co-located.

Line Amplifier, dual channel, part number: 200-30015-R9
COS, Inc. Control Products Group

SPECIFICATIONS: 200-30015-R9 Line Amplifier

ELECTRICAL:

Power requirements:

Input Voltage: 8.5 to 28 VDC, Typically +12 VDC.

Input current: 35 mA, Max. ~18 mA at +12 VDC.

Input Filtering: Transient voltage protection provided by MOV and TVS circuits.

Signal Inputs/Outputs:

Channel 1 (optically isolated input) pH probes: +/- 200 mV ; ORP: -50 to +500 mV; or DO (0-200% Sat.): 0-80 mV, typical. (Input range adjustable through internal settings)

Output: 0-5 VDC output, w/ gain and offset adjustments. Uses isolated BNC input connector. Input impedance >10^12 Ohms. 2KV transient protection*

Channel 2 (non-isolated): 10 mV to 5 Volt input, typically set for use with Thermistor temperature probes. Provides internal excitation for the thermistor.

Output: 0-5VDC, w/ gain and offset adjustments. 3.00K load impedance. Uses Hypertronics 4 pin connector for input. *

Channel 2 reference: +/- 0-6.5 VDC, 5 mA (10.0K source impedance), signal available on input connector pin 3. Normally set for +5.00 VDC output for thermistor excitation.

Output Impedance: Typically 2K Ohms (both channels). Recommend use with load impedances of 10K or greater.

Short Circuit Protection: Continuous. +/- 40 mA max.

PHYSICAL:

Size: 2.5 inch wide, x 5.5 inch long, x 2.5 inch height; weight: 8 oz

* configured at COS for the particular application.

ENVIRONMENTAL:

Operating Temperature: -10 Deg C to +80 Deg C, convection cooling. Recommend do NOT use in direct sunlight.

-30 Deg C to +125 C

Storage Temperature: 0-100%, non-condensing. Not for use in splash zones, without additional protection.

Humidity: MTBF: >200,000 Hrs, MIL HDBK 217D, 50 Deg C, Ground/Mobile class.

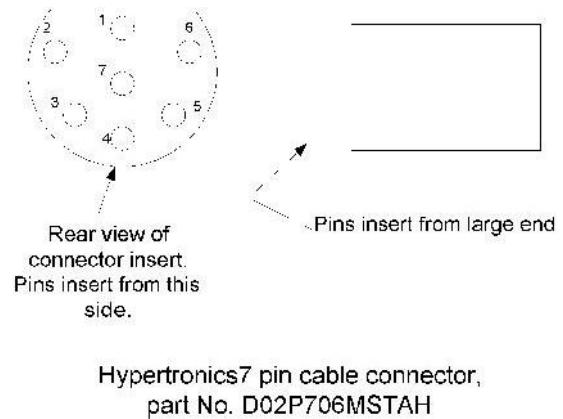
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IO Pin Assignments:

Output:

Connector type: Use with Hypertonic cable connector, type D02P706MSTAH

- Pin 1: +12 VDC Input power pin
- Pin 2: Signal Ground Return/Reference (NOT a power ground)
- Pin 3: Channel 1 (Optical channel) signal output
- Pin 4: Input power return (ground) for pin 1
- Pin 5: Channel 2 output (non-isolated)
- Pin 6: Chassis ground (case ground)



Inputs:

Channel 1, Optical Isolated input: Use with standard BNC connector. Input range specified by application.

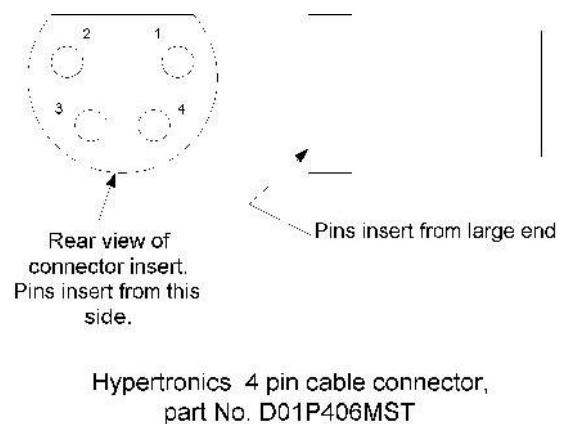
Channel 2 (non-isolated channel) signal input: Use with Hypertonic cable connector, type D01P406MST. DC input range: +/- 12VDC max. Input impedance 3.00K Ohms.

Channel 2 Input pinout connections:

- 1 = input to amplifier (with precision 3 KOhm load).
- 2 = Not used
- 3 = Precision 5 VDC reference voltage source, provided through 10K source resistor.
- 4 = Shield ground (chassis ground).

This channel is intended to be used in conjunction with a YSI 44007 thermistor temperature probe (5K at 25 deg C). COS can supply these probes.

Please refer to application note APN1003 for additional details on installing the hypertonic connectors.



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Signal Conditioner Line
Amplifier, Version L9 - Showing
connectors.