



## SIGNAL CONDITIONER

### Low Voltage DC Operated LVDT MACRO LVC-2500

#### Overview

The Macro Sensors LVC-2500 is a single channel signal conditioner that operates on 10-30 Volts DC power to support standard LVDT, RVDT, and VRT half-bridge sensors. Designed expressly for use in 24 Volt systems with PLCs and mini-PLCs, or in 12 Volt mobile and vehicular testing systems, it offers the user a choice of three analog outputs: 0 to  $\pm 10$  V DC, 0 to 10 V DC, or 4 to 20 mA (sourcing) current loop in a 3-wire common ground system in which the power ground is connected to the output signal's ground.

The LVC-2500 is packaged in a DIN-rail mounting thermoplastic case with recessed screw-clamp terminals for all connections and multi-turn front-panel-accessible span and zero adjustments. It uses internal circuitry that produces a low distortion sine wave to excite the LVDT and employs a synchronous demodulator to convert the LVDT's AC output signal to more useful DC outputs proportional to core position. Additional circuitry regulates the ASIC's DC operating power and provides span and zero adjustability, a 2-pole low pass output filter, and the voltage-to-current conversion that drives the 4-20 mA current loop output.

Besides the externally adjustable span control, an LVC-2500 also incorporates movable coarse gain jumpers which allow it to operate over an LVDT full scale output signal range of 100 to 1. The external zero control permits output offset adjustment from

-100% to +100% of full scale output. The span and zero controls do not interact with each other. The LVC-2500 does not require a phase adjustment control, so it can work satisfactorily with reasonably long cables between it and the LVDT.

By shifting a movable internal jumper in the LVC-2500, a user can choose 3, 5, or 10 kHz nominal excitation frequencies at a level of 3 Volts rms.

For multiple channel applications, several LVC-2500 modules can be connected together in master/slave mode to synchronize their excitation oscillator frequency, thereby eliminating effects of heterodyning and spurious beat frequency signals, cross talk, and intermodulation effects. In addition to its other features, the LVC-2500 conditioner includes A+B, A-B,  $(A+B)/2$ . Thus two LVC-2500 signal conditioners can be connected together along with a pair of LVDT gauging probes to measure differential dimension, thickness, average height, etc.

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### Features

- ◆ DIN-rail mountable
- ◆ Analog voltage or current loop output
- ◆ Non-interactive adjustments
- ◆ No phase adjustment needed
- ◆ Supports all standard LVDTs and VR half-bridge sensors

### User Selectable Features

- ◆ 0 to  $\pm 10$  V, 0 to 10 V, or 4 to 20 mA output
- ◆ 3.0 Vrms LVDT excitation
- ◆ 3, 5, or 10 kHz excitation frequency
- ◆ Master/slave excitation synchronization
- ◆ 250 or 500 Hz output filtering

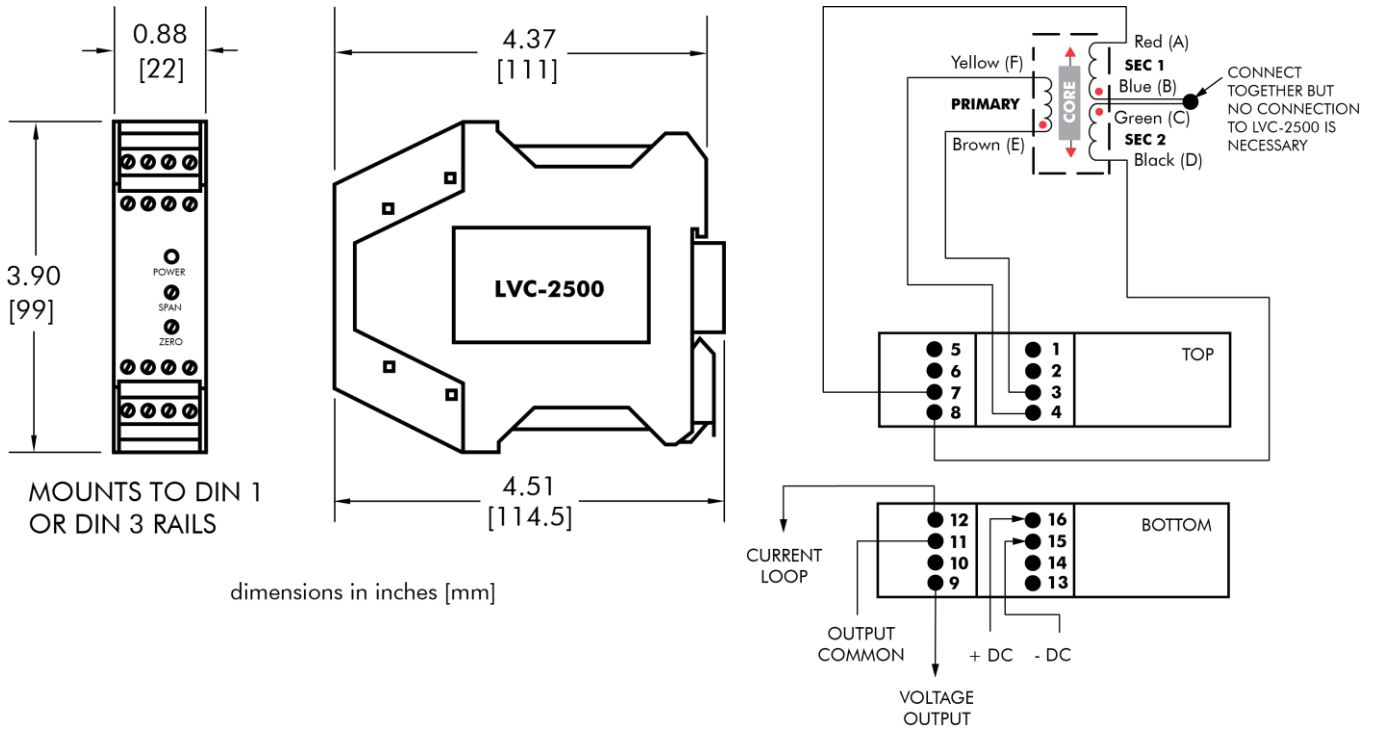
### Electrical Data

<b>Power Input</b>	10-30 Volts DC (24 Volts nominal, 100 mA max.) (10 Volts nominal, 160 mA max.)
<b>LVDT Excitation</b>	3.0 Vrms (nominal) for primary impedance $\geq 200 \Omega$
<b>LVDT Excitation Frequency</b>	3, 5, or 10 kHz (nominal)
<b>Input Sensitivity Range</b>	55 mVrms to 5.5 Vrms full scale input produces full scale DC output
<b>Full Scale Outputs</b>	0 to $\pm 10$ V DC, 5 mA max. 0 to 10 V DC, 5 mA max. 4 to 20 mA sourcing, 550 $\Omega$ maximum loop resistance
<b>Output Non-Linearity</b>	$\leq \pm 0.01\%$ of full scale output
<b>Output Noise / Ripple</b>	$\leq 1$ mVrms (voltage output) $\leq 2 \mu\text{Arms}$ (current loop output)
<b>Frequency Response (-3dB)</b>	250 or 500 Hz (user selectable)
<b>Operating Temperature</b>	0°F to +160°F (-20°C to +70°C)
<b>Thermal Coefficient of Sensitivity</b>	.005% of FSO/°F (nominal) (0.01% of FSO/°C nominal)

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## Dimensions / Wiring Diagram



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