

LVC 2401 Series

Low Voltage DC Operated LVDT Signal Conditioner



Description

The Macro Sensors LVC-2401 is a single channel signal conditioner that operates on 24 to 30 Volts DC power to support any standard LVDT. Designed expressly for use with mini-PLCs, it offers the user a choice of three analog outputs: 0 to ± 7.5 V DC, 0 to 7.5 V DC, or 4 to 20 mA current loop. The LVC-2401 is packaged in a DIN-rail mounting thermoplastic case with recessed screw-clamp terminals for all connections and front panel accessible Span and Zero adjustments. The design of the LVC-2401 requires that the low voltage DC input power be isolated from the output ground. This means that no part of the DC input power or return may be connected to the output ground. 24V DC power isolation is common on most small PLCs.

The LVC-2401 uses a time-proven ASIC to produce a low distortion sine wave to excite the LVDT and a synchronous demodulator to convert the LVDT's AC output to more useful DC voltage proportional to core position. Additional circuitry regulates the DC power operating the module and provides span and zero adjustability, a 2-pole low pass filter, and the voltage-to-current conversion that drives the 4-20 mA current loop output.

Features

- DIN-rail mountable
- DC voltage or current output
- Non-interactive adjustments
- No phase adjustment needed
- Supports all standard LVDTs

User Selectable Features

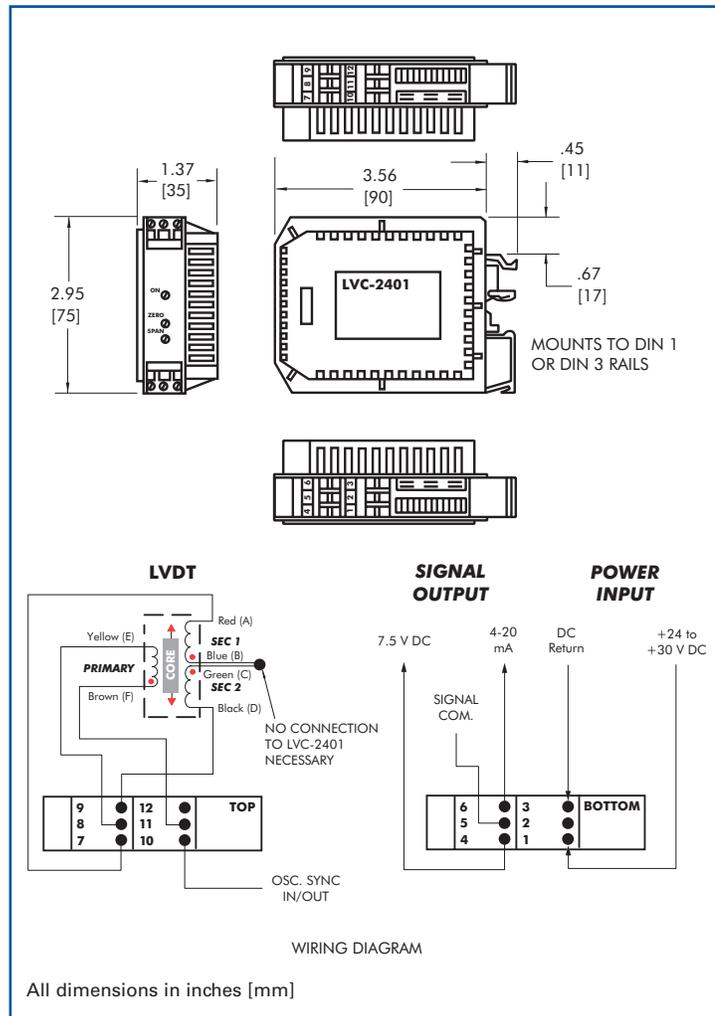
- 0 to ± 7.5 V, 0 to 7.5 V, or 4 to 20 mA output
- 1.3 or 3.0 Vrms LVDT excitation
- 3, 5, or 10 kHz excitation frequency
- Master/slave excitation synchronization

By shifting removable jumpers internally in the LVC-2401, a user can choose 3, 5, or 10 kHz nominal excitation frequencies at a level of 3 Volts rms for driving normal LVDTs, changeable to 1.3 Volts rms for operating LVDTs with low primary impedance. For multiple channel applications, several LVC-2401 modules can be connected together in master/slave mode to synchronize their excitation oscillator frequency, thereby eliminating heterodyning, spurious beat frequency signals, cross talk, and intermodulation effects.

Besides having an externally adjustable Span control, the LVC-2401 also incorporates several coarse gain jumpers which allow it to operate over a maximum LVDT output signal range of 50 to 1. The external Zero control permits a zero offset from -100% to +100% of full scale output. The span and zero controls do not interact with each other. Because the LVC-2401 does not require a phase adjustment control, it can work satisfactorily with long cables between it and the LVDT.

General Specifications

- Power Input:** 24 to 30 Volts DC (isolated), 50 mA max.
- LVDT Excitation Output:** 3.0 Vrms (nominal) for primary impedance > 200Ω
1.3 Vrms (nominal) for primary impedance < 200Ω
- LVDT Excitation Frequency:** 3, 5, or 10 kHz (nominal)
- Input Sensitivity Range:** 100 mVrms to 5.5 Vrms produces full scale output
- Full Scale Outputs:** 0 to ±7.5 V DC, 5 mA max.
0 to 7.5 V DC, 5 mA max.
4 to 20 mA sourcing, 500 Ω maximum loop resistance
- Output Non-linearity:** < ±0.01% of full scale output
- Output Noise / Ripple:** < 10 mVrms (voltage output)
< 30 μArms (current output)
- Frequency Response (-3dB):** 250 Hz (nominal)
- Operating Temperature:** 0°F to +160°F (-20°C to +70°C)
- Thermal Coefficient of Sensitivity:** 0.005% of FSO/°F (nominal)
(0.01% of FSO/°C nominal)



Ordering Information

Order model LVC-2401
 For specifications on other Macro Sensors LVDT signal conditioners, please visit our website at www.macrosensors.com.



Innovators in Position Sensing

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