AC Power Line Operated LVDT Signal Conditioner



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

Description

The Macro Sensors LPC-2100 is a single channel signal conditioner that operates on AC line power to support any standard LVDT. Designed expressly for use in systems with PLCs and mini-PLCs, it offers the user a choice of three analog outputs: 0 to ± 10 V DC, 0 to 10 V DC, or 4 to 20 mA (sourcing) current loop in a 3-wire grounded or 4-wire isolated configuration. Two versions are available, one operating from 115 V AC, 50-60 Hz power, and an export version operating from 220 V AC, 50-60 Hz. An LPC-2100's AC power input is fully isolated from its analog outputs, but to eliminate ground loops, the power line ground is not connected to the output signal's ground. To provide maximum output flexibility, the 4-20 mA current loop output does not track the voltage output.

The LPC-2100 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. It 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 ASIC 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 having an externally adjustable span control, the LPC-2100 also incorporates movable coarse gain jumpers which allow it to operate over an LVDT full scale output signal range greater than 50 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 LPC-2100 does not require a phase adjustment control, so it can work satisfactorily with reasonably long cables between it and the LVDT.

By shifting removable jumpers internally in the LPC-2100, 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 1.5 Volts rms for operating LVDTs with low primary impedance. For multiple channel applications, several LPC-2100 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.



LPC 2100 Series

Technical Bulletin 9201



Power Input:

LVDT Excitation Output:

LVDT Excitation Frequency:

Input Sensitivity Range:

Full Scale Outputs:

Output Non-linearity:

Output Noise / Ripple:

Frequency Response (-3dB):

Operating Temperature:

Thermal Coefficient of Sensitivity:

0.005% of FSO/°F (nominal) (0.01% of FSO/°C nominal)

3, 5, or 10 kHz (nominal)

0 to ± 10 V DC, 5 mA max.

 $\pm 0.01\%$ of full scale output max.

0 to 10 V DC, 5 mA max.

5 mVrms max. 25 μArms max.

250 Hz (nominal)

(-20°C to +70°C)

 $0^{\circ}F$ to $+160^{\circ}F$

115 V AC, 50-60 Hz, 2.5 VA (LPC-2100-100)

220 V AC, 50-60 Hz, 1.3 VA (LPC-2100-200)

3.0 Vrms (nominal) for primary impedance $\ge 200\Omega$ 1.5 Vrms (nominal) for primary impedance $\le 200\Omega$

100 mVrms to 5.5 Vrms produces full scale output

4 to 20 mA sourcing, 500 Ω maximum loop resistance





LVDT

Ordering Information

For LPC-2100 operating on 115 V AC, 50-60 Hz, order model LPC-2100-100 For LPC-2100 operating on 220 V AC, 50-60 Hz, order model LPC-2100-200 For specifications on other Macro Sensors LVDT signal conditioners, please visit our website at www.macrosensors.com.



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