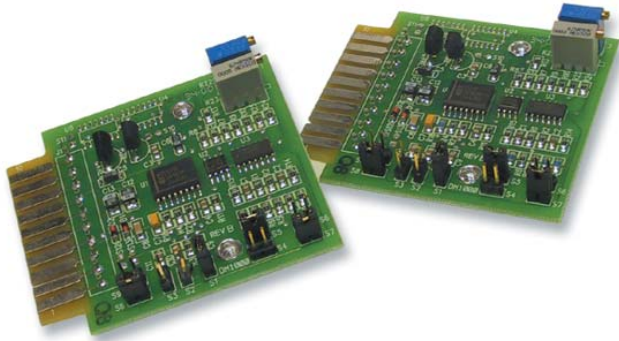


# DCM 1000

## DC-Operated LVDT Signal Conditioner Module



### Features

- Supports most standard LVDTs or LVRTs
- 0 to  $\pm 10$  V DC or 0 to 10 V DC output
- 50-to-1 full scale input sensitivity range
- 3, 5, or 10 kHz sine wave excitation
- Master/slave excitation synchronizing
- Non-interactive span and zero adjustments
- No demodulator phase adjustment needed

### Description

Macro Sensors' Model DCM-1000 is a low-cost, single-channel, board-level LVDT signal conditioner module designed primarily for incorporation into OEM products but also used by students and cost-sensitive end users. The DCM-1000 operates from  $\pm 15$  Volts DC power and provides a low-noise 0 to  $\pm 10$  Volts DC full-scale output suitable for inputting directly into PLCs, digital readouts, and data acquisition systems, as well as other signal processing and recording devices. This module provides a cost-effective high-performance alternative to homemade or in-house-designed electronics to support 4-, 5-, or 6-wire LVDTs or 3-wire half-bridge style LVRTs.

Utilizing modern, high-reliability, surface-mount construction, the DCM-1000 uses a time-proven ASIC that produces a low distortion sine wave to excite the LVDT and has a synchronous demodulator to convert the LVDT's AC output to a more useful bipolar DC voltage proportional to LVDT core position. Additional circuitry regulates the ASIC's DC operating power, enables on-board span and zero adjustability, and provides a 2-pole low pass output filter.

By shifting removable jumpers on the board, a user can choose 3, 5, or 10 kHz nominal excitation frequencies for driving the LVDT. Similarly, the user can select several coarse gain jumper settings, allowing a DCM-1000 to operate over more than a 50-to-1 range of full scale output signals from the LVDT.

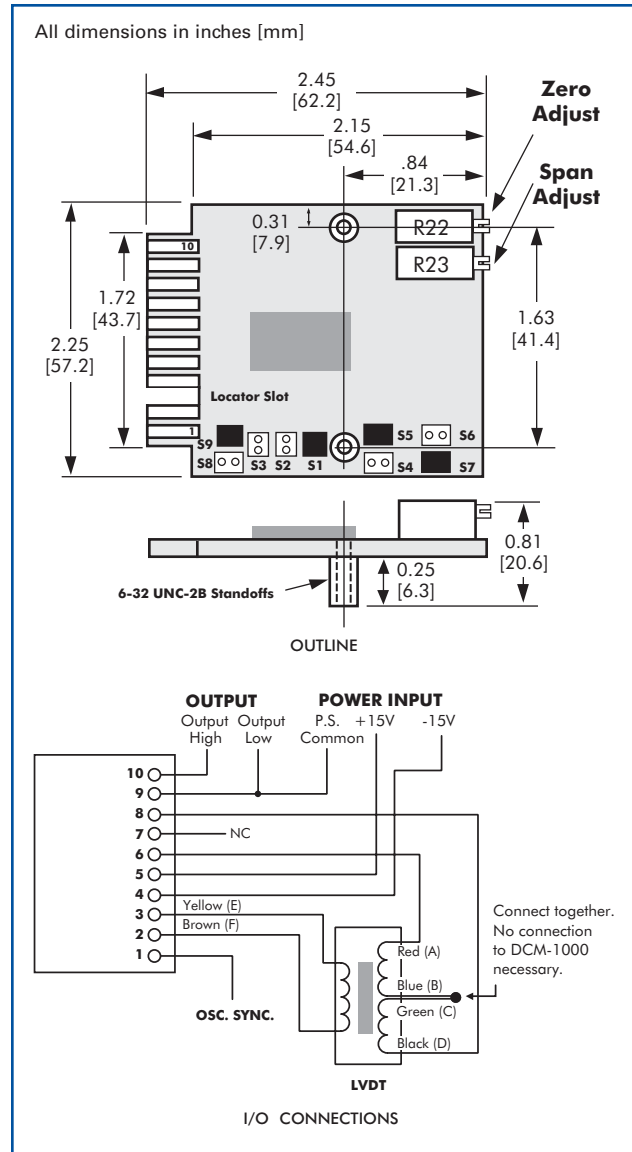
As a result, a DCM can operate almost any LVDT or LVRT, regardless of sensitivity. And for multi-channel applications, a user can switch on-board jumpers to synchronize the oscillators of each module in a master-slave configuration, which minimizes beat frequencies, heterodyning, and inter-modulation and/or crosstalk between channels.

A key feature of the DCM-1000 is minimal interaction between the Zero and Span controls, which facilitates user calibration while providing maximum I/O flexibility. The DCM-1000's Zero control permits output offset adjustment from -100% to +100% of full scale, which allows a user to set up the module with a unipolar output of 0 to 10 Volts DC over the entire working range of the sensor. The DCM-1000 module requires no phase adjustment and works satisfactorily even with moderate length cables between it and most LVDTs.

The I/O and power connections to the DCM-1000 module can be hardwired to on-board solder terminals or to a card edge connector into which the module can be plugged. As an alternative to mounting using a card edge connector, the module can be mounted by two female-threaded standoffs attached to the pc board. In addition to the standard catalog version, the DCM-1000 module is available in custom configurations for OEMs or larger systems integrators who might need different I/O parameters, such as input power or excitation and filter cutoff frequencies, or a reduction in package size by trimming off the card edge connections.

**General Specifications**

<b>Power Input:</b>	$\pm 15$ V DC $\pm 10\%$ , $\pm 50$ mA max.
<b>LVDT Excitation Voltage:</b>	2.5 Vrms (nominal)
<b>LVDT Excitation Frequency:</b>	3, 5, or 10 kHz (nominal)
<b>LVDT Primary Impedance:</b>	200 $\Omega$ min.
<b>Input Sensitivity:</b>	100 mVrms to 5.5 Vrms produces 10 V DC output
<b>Output Voltage:</b>	0 to $\pm 10$ V DC 0 to 10 V DC
<b>Output Current:</b>	5 mA max.
<b>Output Noise and Ripple:</b>	$\leq 5$ mVrms
<b>Output Impedance:</b>	$< 10 \Omega$
<b>Operating Temperature Range:</b>	0°F to +160°F (-20°C to +70°C)
<b>Thermal Coefficient of Sensitivity:</b>	$\leq 0.005\%$ of FSO/°F (nominal) ( $\leq 0.01\%$ of FSO/°C nominal)



**Accessories**

Mating Connector - TRW-Cinch 50-10A-20 or Equivalent

**Ordering Information**

Specify DCM-1000 LVDT Signal Conditioner  
 For Mating Card Edge Connector order Macro Sensors P/N 010205010020  
 For specifications on other Macro Sensors LVDT signal conditioners, please visit our website at [www.macrosensors.com](http://www.macrosensors.com).



**Innovators in Position Sensing**

All specifications subject to change without notice.  
 © 2004 Macro Sensors 02/05/04

7300 US Route 130 North, Bldg. 22  
 Pennsauken, NJ 08110-1541 USA  
 tel: 856-662-8000  
 fax: 856-317-1005  
[www.macrosensors.com](http://www.macrosensors.com)  
[lvdts@macrosensors.com](mailto:lvdts@macrosensors.com)

