

RoHS

M-12 SERIES

Premium performance
12mm diameter AC LVDT

SPECIFICATIONS

- **Premium performance at competitive price**
- **Low 100ppm/°C temperature coefficient**
- **Low phase shift**
- **Metric 12mm housing diameter**
- **Stroke ranges from ±10 to ±100mm**
- **Stainless steel housing**
- **Magnetically shielded**
- **Imperial or metric threaded core**

FEATURES

- Small 12mm diameter case
- Low temperature coefficient of sensitivity
- Excellent stroke to length ratio
- Smooth transfer function
- Constant sum of secondary output voltages
- Electromagnetic shielding
- AISI 304 Series stainless steel case

APPLICATIONS

- Materials testing extensometers
- Cylinder position feedback
- Hydraulic spool valve position feedback
- Roller gap positioning
- Automotive suspension testing
- Flight simulators
- Aircraft flight control feedback

The M-12 Series of layer-wound LVDTs offer premium performance at standard LVDT pricing. The M-12 series are wound with state-of-the art, computerized winding machines on a ribless bobbin, resulting in the smooth transfer function required for the most demanding materials testing and position feedback applications. Precision distribution and tapering of the layer windings provide an excellent stroke to length ratio, without sacrificing sensor linearity.

A constant sum of the secondary output voltages throughout the linear range insures compatibility with ratiometric signal conditioning schemes for even lower temperature coefficients

The M-12 Series coil designs have been optimized to provide the lowest possible temperature coefficient of sensitivity, while maintaining suitability for operation with extended cable lengths. An internal high-permeability magnetic shield provides protection in the noisiest electromagnetic environments, while the high-quality AISI 304 Series stainless steel housing protects the LVDT from corrosion in aggressive environments.

Like in most of our LVDTs, the M-12 windings are vacuum impregnated with a specially formulated, high temperature, flexible resin, and the coil assembly is potted inside its housing with a two-component epoxy. This provides excellent protection against hostile environments such as high humidity, vibration and shock.

PERFORMANCE SPECIFICATIONS

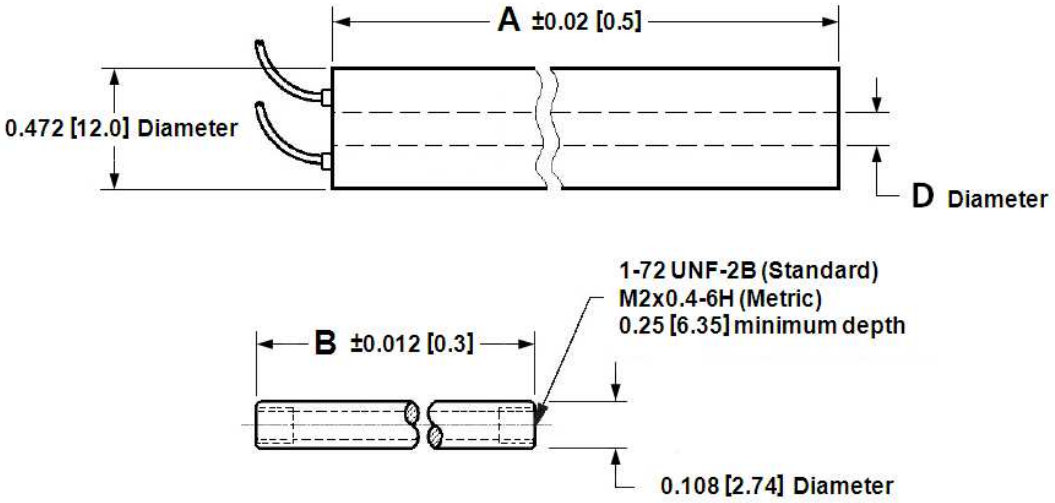
ELECTRICAL SPECIFICATIONS						
Parameter	**M-12 10**	**M-12 20**	**M-12 30**	**M-12 50**	**M-12 65**	**M-12 100**
Stroke range, inch [mm]	±0.39 [±10]	±0.79 [±20]	±1.18 [±30]	±1.97 [±50]	±2.56 [±65]	±3.94 [±100]
Sensitivity, V/V/inch [mV/V/mm]	1.07 [42.0]	0.54 [21.2]	0.25 [10.0]	0.25 [9.9]	0.22 [8.8]	0.18 [7.1]
Output at stroke ends *(*)*	420mV/V	424mV/V	300mV/V	495mV/V	573mV/V	710mV/V
Sum of secondary outputs *(**)*	1.44 V/V	1.0 V/V	0.6 V/V	0.8 V/V	0.94 V/V	0.7 V/V
Phase shift, degree	+3°	+2°	+2°	+3°	-2°	-3°
Input impedance (PRIMARY)	570Ω	1100Ω	1540Ω	780Ω	1200Ω	1000Ω
Output impedance (SECONDARY)	540Ω	400Ω	600Ω	825Ω	1100Ω	1700Ω
Non-linearity	±0.25% of FR, maximum					
Input (excitation) voltage	3 VRMS sine wave					
Input (excitation) frequency	500Hz to 10kHz					
Test frequency	2.5kHz					
Null voltage	0.5% of FRO, maximum					

ENVIRONMENTAL SPECIFICATIONS & MATERIALS	
Operating temperature	-65°F to +300°F [-55°C to 150°C]
Temperature coefficient of sensitivity (***)	0.018% per degree F [0.01% per degree C]
Shock survival	500 g (11ms half-sine)
Vibration tolerance	20 g up to 2KHz
Housing material	AISI 304 Series stainless steel
Electrical connection	Six lead-wires, 26 AWG, PTFE insulated, 1 foot [0.3m] long *(longer wires optional)*
IEC 60529 rating	IP61

Notes:
Dimensions are in inch [mm]
All values are nominal unless otherwise noted
Electrical specifications are for the test frequency indicated in the table
FR: Full Range is the stroke range, end to end; FR=2xS for ±S stroke range
FRO (Full Range Output): Algebraic difference in outputs measured at the ends of the range
(*): Unit for output at stroke ends is millivolt out, per volt of excitation (RMS)
(**): Unit for Sum of secondary outputs is volt out, per volt of excitation (RMS)
(***): Excitation frequency dependent (Call factory for additional information)

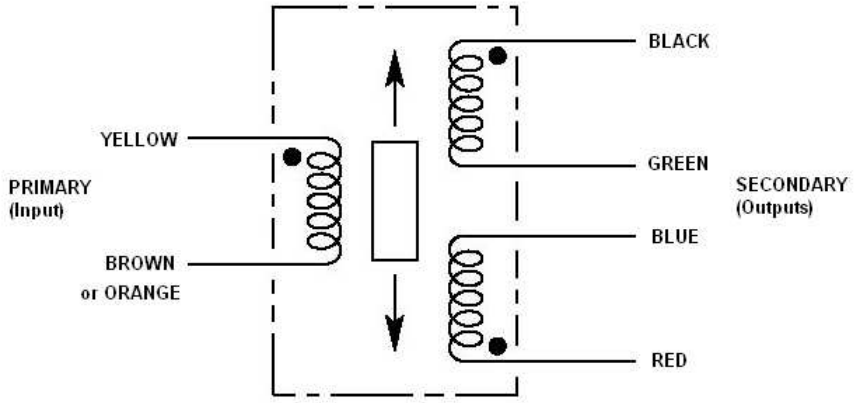
MECHANICAL SPECIFICATIONS

Parameter	M-12 10	M-12 20	M-12 30	M-12 50	M-12 65	M-12 100
Main body length “A”	2.64 [67]	3.82 [97]	4.61 [117]	6.10 [155]	7.87 [200]	11.22 [285]
Core length “B”	1.42 [36]	1.81 [46]	1.81 [46]	1.81 [46]	2.36 [60]	2.95 [75]
Bore diameter “D”	0.122 [3.1]	0.122 [3.1]	0.122 [3.1]	0.122 [3.1]	0.134 [3.4]	0.134 [3.4]



Dimensions are in inch [mm]

WIRING INFORMATION



Connect Green to Blue for differential output

ORDERING INFORMATION

Description	Model	Part Number
±10mm LVDT	M-12 10	02561036-000
±20mm LVDT	M-12 20	02561037-000
±30mm LVDT	M-12 30	02561038-000
±50mm LVDT	M-12 50	02561039-000
±65mm LVDT	M-12 65	02561043-000
±100mm LVDT	M-12 100	02561040-000
OPTIONS		
5.0 KHz calibration		xxxxxxxx-002
Metric threaded core option (M2x0.4-6H threads)		xxxxxxxx-006
5.0 KHz calibration AND metric threaded core option		xxxxxxxx-008
10 foot long lead-wires	Consult factory	xxxxxxxx-040
ACCESSORIES		
Core connecting rod, 6 inches long, 1-72 threads		05282945-006
Core connecting rod, 12 inches long, 1-72 threads		05282945-012
Core connecting rod, 24 inches long, 1-72 threads		05282945-024
Core connecting rod, 36 inches long, 1-72 threads		05282945-036
Core connecting rod, 6 inches long, M2x0.4 metric threads		05282976-006
Core connecting rod, 12 inches long, M2x0.4 metric threads		05282976-012
Mounting block		04560956-000

s

ASIA

ABOUT MACRO SENSORS

Macro Sensors, founded by Howard A. Schaevitz, has more than three hundred man-years of experience in just one thing: the design and manufacture of LVDTs. We believe that you need solutions, not simply products. When you call us, you get the benefit of our experience and our commitment.

Most products listed are in stock for immediate delivery, and we strive to offer the finest customer service in the industry: technical support from people who understand LVDTs and how to apply them to your benefit, and a commitment to excellent pricing, quality products, and deliveries that you can truly rely on. Macro Sensors also has a comprehensive network of representatives and distributors in the U.S. and around the world to provide you with local support.

We manufacture an enormous array of LVDTs, from modified standards to complete custom designs. Our customers consistently tell us it is Macro Sensors? quality and service that keeps them coming back. Let our experience go to work for you.

Macro Sensors · 7300 U.S. Route 130 North, Bldg. 22, Pennsauken, NJ 08110-1541 USA
© Macro Sensors. All Rights Reserved.