

## M-12 Series – Premium performance, 12mm diameter AC LVDT



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

### DESCRIPTION

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 (*refer to MEAS application note "Principles of the LVDT" in our online: [resource library](#)*).

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.

Measurement Specialties, Inc. (NASDAQ MEAS) offers many other types of sensors and signal conditioners. Data sheets can be downloaded from our web site at: <http://www.meas-spec.com/datasheets.aspx>

MEAS acquired Schaevitz Sensors and the **Schaevitz™** trademark in 2000.

### 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

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## 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)

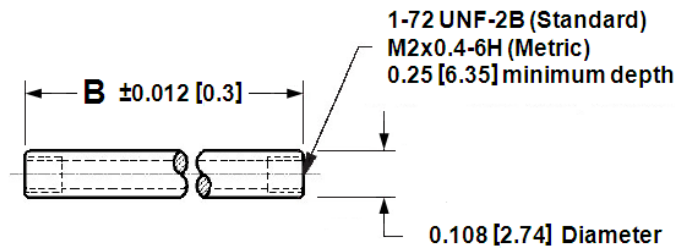
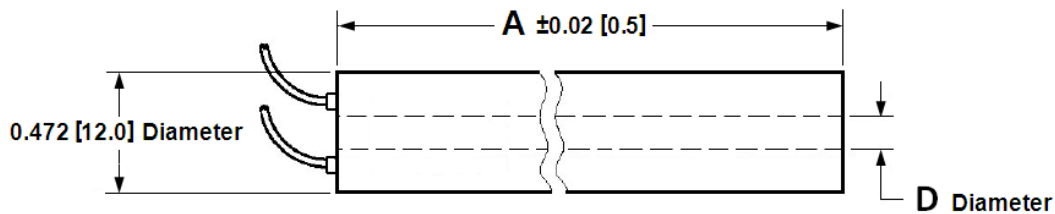
(\*\*): Unit for Sum of secondary outputs is volt out, per volt of excitation (RMS)

(\*\*\*): Excitation frequency dependent (Call factory for additional information)

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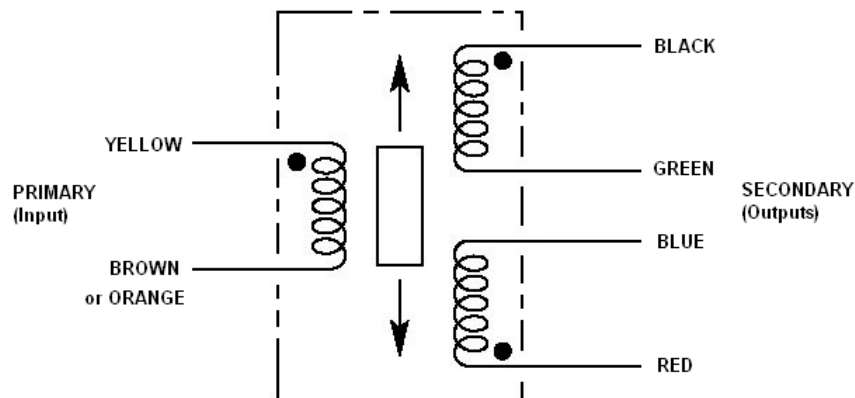
## MECHANICAL SPECIFICATIONS

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

# M-12 Series – Premium performance, 12mm diameter AC LVDT

## 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

Refer to our "[Accessories for LVDTs](#)" data sheet for our LVDT signal conditioning instrumentation and other accessories.

## TECHNICAL CONTACT INFORMATION

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