HR Series – General Purpose LVDT

- **High Reliability**
- **Large core-to-bore clearance**
- **Operating temperature up to 220°C (option)**
- **Stroke ranges from ± 0.05 to ±10 inches**
- **AC operation from 400Hz to 5kHz**
- **Stainless steel housing**
- **Imperial or metric threaded core**
- **Many options and accessories**

DESCRIPTION

The **HR Series** general purpose LVDTs provide the optimum performance required for a majority of applications. The large 1/16 inch [1.6mm] bore-to-core radial clearance provides for ample installation misalignments and therefore reduces the application costs. Featuring a high output voltage and a broad operating frequency range, these versatile and highly reliable LVDTs deliver worry-free and precise position measurements.

Available in a variety of stroke ranges from ±0.05 to ±10 inches, the HR Series can be configured with a number of standard options including guided core, small diameter/low mass core and mild radiation resistance (10^{12} NVT total integrated flux; 10^{7} rads Gamma). High temperature operation (+220^{o}C) and high pressure (vented case) versions are also available *(consult factory)*. The HR Series is compatible with the full line of Measurement Specialties LVDT signal conditioners.

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

- 0.25% linearity (100% stroke)
- Large 1/16” core-to-bore clearance
- Shock and vibration tolerant
- Electromagnetic/electrostatic shielding
- Mild radiation resistance (optional)
- Calibration certificate supplied with each unit

APPLICATIONS

- Process control
- Factory automation
- Materials testing
- Metrology
- Applications with large misalignments
- General industrial

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PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS												
Parameter	**050 HR**	**100 HR**	**200 HR**	**300 HR**	**500 HR**	**1000 HR**	**2000 HR**	**3000 HR**	**4000 HR**	**5000 HR**	**7500 HR**	**10000 HR**
Stroke range	±0.05 [±1.27]	±0.1 [±2.54]	±0.2 [±5.08]	±0.3 [±7.62]	±0.5 [±12.7]	±1 [±25.4]	±2 [±50.8]	±3 [±76.2]	±4 [±101.6]	±5 [±127]	±7.5 [±190.5]	±10 [±254]
Sensitivity mV/V/.001in [mV/V/mm]	5.8 [228]	4.2 [165]	2.5 [98]	1.3 [51]	0.7 [28]	0.39 [15.3]	0.23 [9.1]	0.25 [9.8]	0.20 [7.9]	0.14 [5.5]	0.13 [5.1]	0.07 [2.8]
Output at stroke ends, mV/V (*)	290	420	500	390	350	390	460	750	800	700	975	700
Phase shift	-1	-5	-4	-11	-1	-3	-5	-11	-1	-3	-1	-5
Input impedance (PRIMARY)	430Ω	1070Ω	1150Ω	1100Ω	460Ω	460Ω	330Ω	315Ω	275Ω	310Ω	260Ω	550Ω
Output impedance (SECONDARY)	4000Ω	5000Ω	4000Ω	2700Ω	375Ω	320Ω	300Ω	830Ω	400Ω	400Ω	905Ω	750Ω
Linearity	% FS (% of Full Scale), nominal band unless otherwise noted											
@ 50% stroke	0.10	0.10	0.10	0.10	0.15	0.15	0.15	0.15	0.15	0.15	/	0.15
@100% stroke (maximum band)	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**
@125% stroke	0.25	0.25	0.25	0.35	0.35	1.00	0 .50**	0 .50**	0 .50**	1.00**	/	1.00**
@150% stroke	0.50	0.50	0.50	0.50	0.75	1.30**	1.00**	1.00**	1.00**	/	/	/
Input voltage	3Vrms sine wave											
Input freq. range	400Hz to 5kHz											
Test frequency	2.5kHz											
Null voltage (max)	0.5% FSO (% of Full Scale Output)											

ENVIRONMENTAL SPECIFICATIONS & MATERIALS	
Operating temperature	-65°F to +300°F [-55°C to 150°C]
Shock survival	1,000 g (11ms half-sine)
Vibration tolerance	20 g up to 2KHz
Housing material	AISI 400 Series stainless steel
Lead-wire type/length	Six lead-wires, 28 AWG stranded Copper, PTFE insulated, 1 foot [0.3m] long

Notes:

Dimensions are in inch [mm]

All values are nominal unless otherwise noted

Electrical specifications are for the test frequency indicated in the table

FS: Full Scale is 2X for ±X stroke

FSO: Full Scale Output is the output at X position for ±X stroke

*** Requires special reduced core length*

(*) Unit for output at stroke ends is millivolt per volt of excitation

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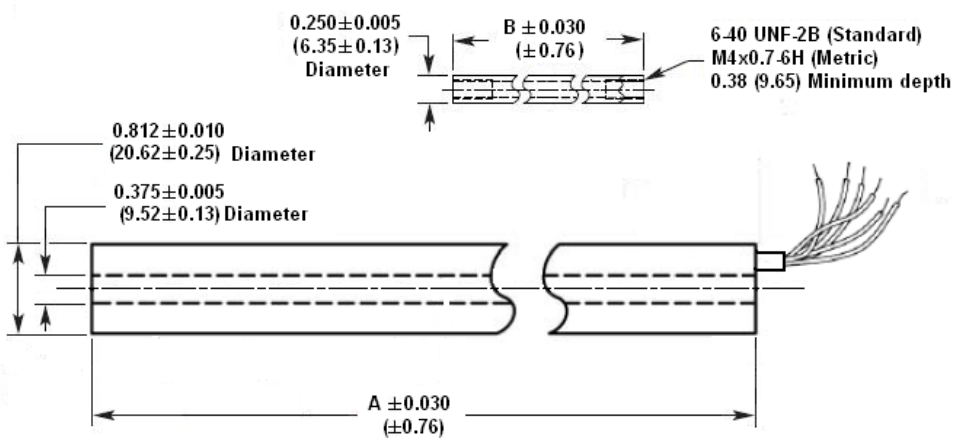
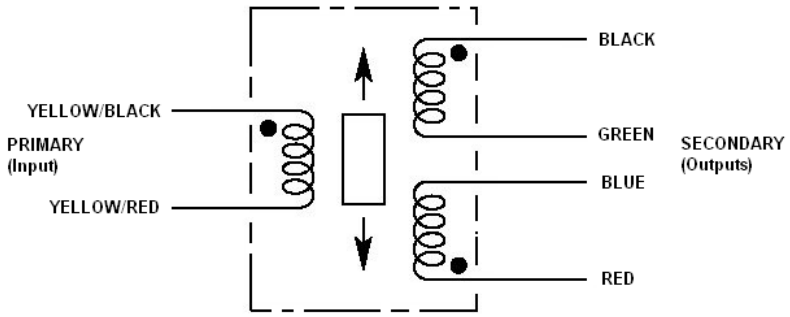
MECHANICAL SPECIFICATIONS

	050 HR	100 HR	200 HR	300 HR	500 HR	1000 HR	2000 HR	3000 HR	4000 HR	5000 HR	7500 HR	10000 HR
Body length "A"	1.13 [28.7]	1.81 [46.0]	2.50 [63.5]	3.22 [81.8]	5.50 [139.7]	6.63 [168.4]	10.00 [254]	12.82 [325.6]	15.64 [397.3]	17.88 [454.2]	24.09 [611.9]	30.85 [783.6]
Core length "B"	0.80 [20.3]	1.3 [33.0]	1.65 [41.9]	1.95 [49.5]	3.45 [87.6]	4.00 [101.6]	5.30 [134.6]	5.60 [142.2]	7.00 [177.8]	7.00 [177.8]	7.00 [177.8]	8.50 [215.9]
Body weight, oz[g]	1.13 [32]	1.69 [48]	2.12 [60]	2.72 [77]	3.85 [109]	4.45 [126]	5.93 [168]	7.94 [225]	10.41 [295]	11.99 [340]	16.16 [458]	20.46 [580]
Core weight, oz [g]	0.14 [4]	0.21 [6]	0.28 [8]	0.35 [10]	0.64 [18]	0.74 [21]	0.95 [27]	0.99 [28]	1.27 [36]	1.27 [36]	1.27 [36]	1.52 [43]



Dimensions are in inches (mm)

WIRING SCHEMATIC



Connect blue (BLU) to green (GRN) for differential output

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ORDERING INFORMATION

Description	Model	Part Number		Description	Model	Part Number
±0.05 inch LVDT	050 HR	02560389-000		±2 inch LVDT	2000 HR	02560396-000
±0.1 inch LVDT	100 HR	02560390-000		±3 inch LVDT	3000 HR	02560398-000
±0.2 inch LVDT	200 HR	02560391-000		±4 inch LVDT	4000 HR	02560399-000
±0.3inch LVDT	300 HR	02560392-000		±5 inch LVDT	5000 HR	02560400-000
±0.5 inch LVDT	500 HR	02560394-000		±7.5 inch LVDT	7500 HR	02561011-000
±1 inch LVDT	1000 HR	02560395-000		±10 inch LVDT	10000 HR	02560401-000

Options		
5.0 KHz calibration	Available for 050 HR, 100 HR, 200 HR and 500 HR only	XXXXXXXX-002
Metric threaded core	All	XXXXXXXX-006
Guided core	All	XXXXXXXX-010
Small-diameter/low-mass core ***(consult factory for mass and dimensions)***	Consult factory	XXXXXXXX-020
Mild radiation resistance	All	XXXXXXXX-080

Note: Add multiple option dash numbers together to determine proper ordering suffix
Example: 1000 HR, ±1 inch, with 5 KHz calibration and mild radiation resistance, P/N 02560395-082

Accessories	
Core connecting rod, 6 inches long, 6-40 threads	05282947-006
Core connecting rod, 12 inches long, 6-40 threads	05282947-012
Core connecting rod, 24 inches long, 6-40 threads	05282947-024
Core connecting rod, 36 inches long, 6-40 threads	05282947-036
Core connecting rod, 6 inches long, M4x0.7 metric threads	05282978-006
Core connecting rod, 12 inches long, M4x0.7 metric threads	05282978-012
Mounting block	04560952-000
Refer to our " Accessories for LVDT's" brochure for our LVDT signal conditioning instrumentation and other accessories	

TECHNICAL CONTACT INFORMATION

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