



## MHR-T SERIES

### Miniature High-Temperature AC LVDT

#### SPECIFICATIONS

- ◆ Operating temperature 392°F [200°C]
- ◆ Small size and low mass core
- ◆ High output signal
- ◆ Stroke ranges from  $\pm 0.025$  to  $\pm 1$  inch
- ◆ AC operation from 2kHz to 20kHz
- ◆ Stainless steel housing
- ◆ Imperial or metric threaded core

The **MHR-T** Series LVDTs are a variant of the legendary MHR Series. The MHR-T Series provide precision measurements in space restrictive applications at temperatures up to 392°F [200°C] continuous.

With a diameter of just 3/8 inch [9.5mm], and an extremely lightweight core, the MHR-T Series is ideal for applications where excessive core weight could influence the motion; with less inertia, accurate measurements at higher displacement speeds are easier to achieve. The lightweight core also reduces mechanical stresses and helps preserve the structural integrity of the core actuation assembly.

The high output sensitivity resulting from the close electrical coupling between the coil and core provides ample signal for interfacing with practically all signal conditioners and conditioning circuits. The magnetic stainless steel housing provides electromagnetic and electrostatic shielding.

Available in a variety of stroke ranges from  $\pm 0.025$  to  $\pm 1$  inch, the MHR-T is compatible with the full line of Measurement Specialties LVDT signal conditioners.

Like in most of our LVDTs, the MHR-T 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.

#### FEATURES

- ◆ Compact size
- ◆ 392°F [200°C] continuous operation
- ◆ Lightweight core
- ◆ Shock and vibration tolerant
- ◆ Calibration certificate supplied with each unit

#### APPLICATIONS

- ◆ High temperature applications
- ◆ Cylinder position feedback
- ◆ Materials testing machines
- ◆ Space restricted installations

**PERFORMANCE SPECIFICATIONS**

<b>ELECTRICAL SPECIFICATIONS (common)</b>						
Input voltage	3 VRMS sine wave					
Input frequency	2kHz to 20kHz					
Test frequency	2.5kHz (standard)					
<b>ELECTRICAL SPECIFICATIONS @ 10kHz (recommended operation)</b>						
Parameter	MHR-T 025	MHR-T 050	MHR-T 100	MHR-T 250	MHR-T 500	MHR-T 1000
Stroke range	±0.025 [±0.64]	±0.05 [±1.27]	±0.10 [±2.54]	±0.25 [±6.35]	±0.5 [±12.7]	±1 [±25.4]
Sensitivity, V/V/inch [mV/V/mm]	8.10 [319]	3.15 [124]	2.80 [110]	2.07 [81.5]	1.96 [77.2]	0.77 [30.3]
Output at stroke ends, mV/V (*)	202.5	157.5	280	517.5	980	770
Phase shift	+21°	+8°	+5°	+7°	+7°	-1°
Input impedance (PRIMARY)	238Ω	419Ω	400Ω	345Ω	264Ω	155Ω
Output impedance (SECONDARY)	485Ω	154Ω	200Ω	420Ω	810Ω	450Ω
Non-linearity	±% of FR					
@ 50% stroke	0.15	0.15	0.15	0.15	0.15	0.20
<b>@100% stroke (maximum)</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>
@125% stroke	0.25	0.35	0.25	0.35	0.30 (**)	0.50
@150% stroke	0.30	0.50	0.30	0.50 (**)	0.75 (**)	/
Null voltage (max.)	0.5% of FSO					

<b>ELECTRICAL SPECIFICATIONS @ 2.5kHz (standard calibration)</b>						
Parameter	MHR-T 025	MHR-T 050	MHR-T 100	MHR-T 250	MHR-T 500	MHR-T 1000
Stroke range	±0.025 [±0.64]	±0.05 [±1.27]	±0.10 [±2.54]	±0.25 [±6.35]	±0.5 [±12.7]	±1 [±25.4]
Sensitivity, V/V/in [mV/V/mm]	4.36 [172]	2.55 [100]	2.40 [94]	1.73 [68]	1.60 [63]	0.70 [27]
Output at 100% stroke, mV/V (*)	109	127.5	240	432.5	800	700
Phase shift	+58°	+36°	+30°	+33°	+23°	+6°
Input impedance (PRIMARY)	116Ω	141Ω	135Ω	147Ω	145Ω	100Ω
Output impedance (SECONDARY)	286Ω	90Ω	125Ω	268Ω	445Ω	370Ω
Non-linearity	±% of FR					
@ 50% stroke	0.15	0.15	0.15	0.15	0.15	0.20
<b>@100% stroke (maximum)</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>
@125% stroke	0.25	0.35	0.25	0.35	0.30 (**)	0.50
@150% stroke	0.30	0.50	0.30	0.50 (**)	0.75 (**)	/
Null voltage (max)	0.5% of FSO					

<b>ENVIRONMENTAL SPECIFICATIONS &amp; MATERIALS</b>	
Operating temperature	-4°F to +392°F [-20°C to +200°C]
Shock survival	1,000 g (11ms half-sine)
Vibration tolerance	20 g up to 2KHz
Housing material	AISI 400 Series stainless steel
Electrical connection	Six lead-wires, 32 AWG stranded plated Copper, PTFE insulated, 3 foot [1 meter] long
IEC 60529 rating	IP61

**Notes:**

All values are nominal unless otherwise noted

Electrical specifications are for the test frequency indicated in the table

Dimensions are in inch [mm] unless otherwise noted

FR: Full Range is the stroke range, end to end; FR=2xS for ±S stroke range

FSO (Full Scale Output): Largest absolute value of the outputs measured at the ends of the range

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

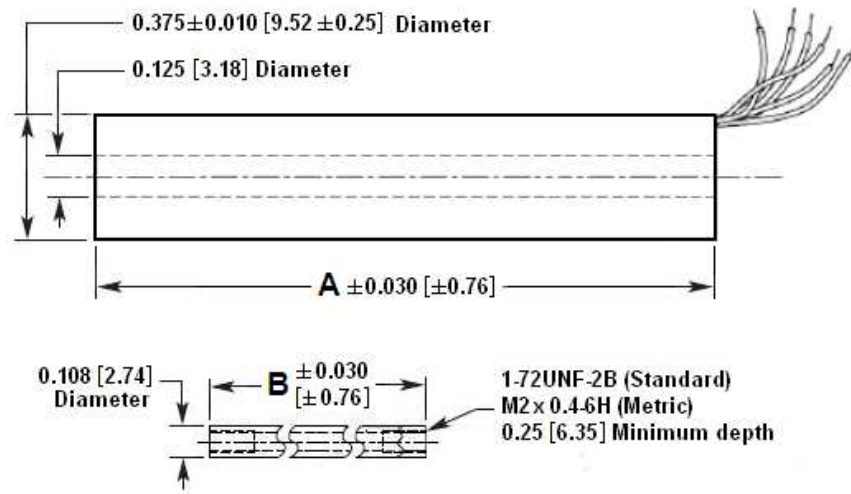
(\*\*) Requires special reduced core length

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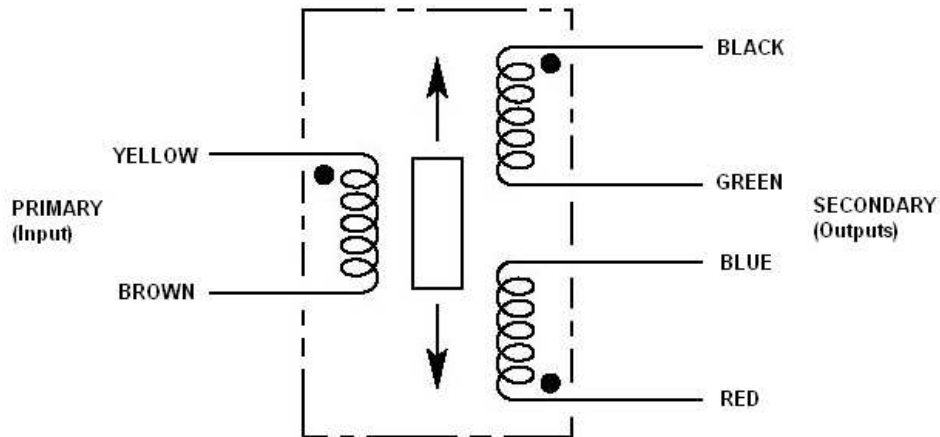
### MECHANICAL SPECIFICATIONS

Parameter	MHR-T 025	MHR-T 050	MHR-T 100	MHR-T 250	MHR-T 500	MHR-T 1000
Body length "A"	0.660 [16.8]	0.815 [20.7]	0.990 [25.1]	1.850 [47.0]	3.300 [83.82]	5.600 [142.2]
Core length "B"	0.400 [10.2]	0.500 [12.7]	0.625 [15.9]	1.125 [28.6]	2.000 [50.8]	3.000 [76.2]
Body weight, oz [g]	0.18 [5]	0.21 [6]	0.21 [6]	0.32 [9]	0.60 [17]	0.92 [26]
Core weight, oz [g]	0.016 [0.5]	0.016 [0.5]	0.025 [0.7]	0.032 [0.9]	0.056 [1.6]	0.088 [2.5]



Dimensions are in inch [mm]

### WIRING INFORMATION



Connect Blue to Green for differential output