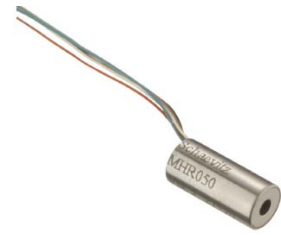


## MHR Series

### Schaevitz™ Miniature LVDT

- Measurement ranges from  $\pm 0.13$  mm to  $\pm 50.8$  mm
- LVDT
- Linearity 0.25 % (100% stroke, 2.5 kHz)
- Output signal 19 ... 343 mV/V per mm
- Supply voltage 3 V<sub>rms</sub>



The MHR Series of LVDT is ideal for applications where excessive core weight could influence the motion of sensitive mechanisms. The lightweight core also helps minimize stresses and preserves the structural integrity of the core actuation assembly. High sensitivity results from close electrical coupling between coil and core. Magnetic stainless steel housing provides electromagnetic and electrostatic shielding.

#### ■ Features

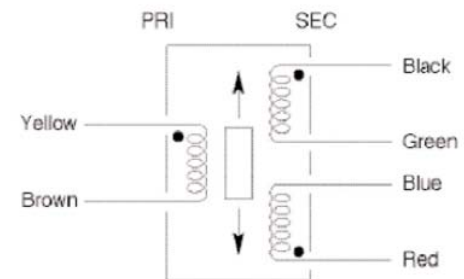
- Compact size
- Lightweight / low mass core
- Shock and vibration tolerant
- Mild radiation resistance (optional)
- Certificate of Calibration supplied with each LVDT

#### ■ Applications

- X, Y, Z stage position feedback
- Wire-die bonding machines
- Cylinder position feedback
- Voice coil teasing
- Materials testing machines
- Space restricted installations

#### ■ Specifications

|                              |  |
|------------------------------|--|
| Supply voltage:              | 3 V <sub>rms</sub> sine wave                                   |
| Input frequency range:       | 2 ... 20 kHz   |
| Test frequency:              | 2.5 kHz  |
| Operating temperature range: | -55 ... +150 °C  |
| Shock survival:              | 1000 g for 11 ms   |
| Vibration tolerance:         | 20 g up to 2 kHz   |
| Housing material:            | AISI 400 series stainless steel                                |
| Lead wires:                  | Six lead wires, 32 AWG stranded copper, PTFE insulated, 300 mm |



Connect „Green“ to „Blue“ for differential output

#### ■ Performance and Electrical Specifications at 10 kHz (recommended)

| Model number | Stroke range |       | Sensitivity mV/V per |     | Output at stroke ends mV/V | Null voltage (max.) % FSO | Linearity at stroke % of FS |             |      |      | Impedance |         | Phase shift |
|--------------|--------------|-------|----------------------|-----|----------------------------|---------------------------|-----------------------------|-------------|------|------|-----------|---------|-------------|
|              | inch         | mm    | 0.001 inch           | mm  |                            |                           | 50%                         | 100%        | 125% | 150% | Pri Ohm   | Sec Ohm |             |
| 005 MHR      | ±0.005       | ±0.13 | 8.70                 | 343 | 43.5                       | 5                         | 0.20                        | <b>0.25</b> | 0.30 | 0.40 | 84        | 302     | +38°        |
| 010 MHR      | ±0.010       | ±0.25 | 6.05                 | 238 | 60.5                       | 1                         | 0.10                        | <b>0.25</b> | 0.35 | 0.35 | 165       | 300     | +20°        |
| 025 MHR      | ±0.025       | ±0.64 | 8.10                 | 319 | 202.5                      | 0.5                       | 0.15                        | <b>0.25</b> | 0.25 | 0.30 | 238       | 485     | +15°        |
| 050 MHR      | ±0.05        | ±1.27 | 3.15                 | 124 | 157.5                      | 0.5                       | 0.15                        | <b>0.25</b> | 0.35 | 0.50 | 419       | 154     | +8°         |
| 100 MHR      | ±0.10        | ±2.54 | 2.80                 | 110 | 280                        | 0.5                       | 0.15                        | <b>0.25</b> | 0.25 | 0.30 | 400       | 200     | +5°         |
| 250 MHR      | ±0.25        | ±6.35 | 2.07                 | 81  | 517.5                      | 0.5                       | 0.15                        | <b>0.25</b> | 0.35 | 0.50 | 345       | 420     | +7°         |
| 500 MHR      | ±0.5         | ±12.7 | 1.96                 | 77  | 980                        | 0.5                       | 0.15                        | <b>0.25</b> | 0.30 | 0.75 | 264       | 810     | +4°         |
| 1000 MHR     | ±1           | ±25.4 | 0.77                 | 30  | 770                        | 0.5                       | 0.20                        | <b>0.25</b> | 0.50 | --   | 155       | 450     | +1°         |
| 2000 MHR     | ±2           | ±50.8 | 0.49                 | 19  | 980                        | 0.5                       | --                          | <b>0.50</b> | --   | --   | 504       | 1780    | +15°        |

- All values are nominal unless otherwise noted  
 - FSO: Full Scale Output is the output at X position for  $\pm X$  stroke

- FS: Full Scale is 2X for  $\pm X$  stroke

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**ALTHEN**  
 MESS- UND SENSORTECHNIK

## ■ Performance and Electrical Specifications at 2.5 kHz

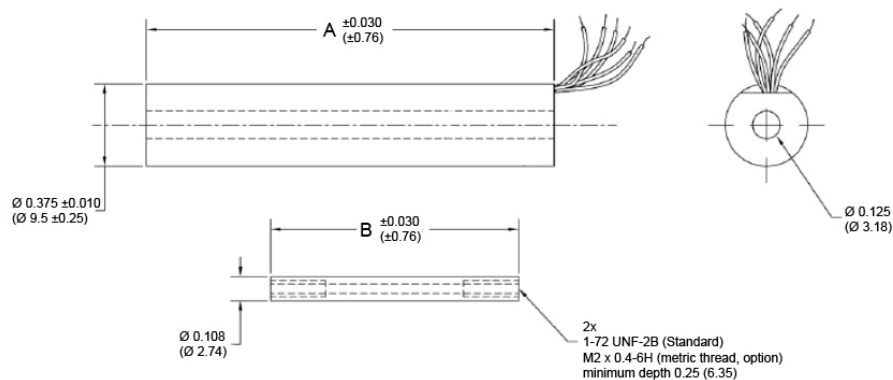
| Model number | Stroke range |       | Sensitivity mV/V per |     | Output at stroke ends | Null voltage (max.) | Linearity at stroke |             |       |      | Impedance |       | Phase shift |
|--------------|--------------|-------|----------------------|-----|-----------------------|---------------------|---------------------|-------------|-------|------|-----------|-------|-------------|
|              |              |       |                      |     |                       |                     | 50%                 | 100%        | shift | 150% | Pri       | Sec   |             |
|              | inch         | mm    | 0.001 inch           | mm  | mV/V                  | % FSO               | % of FS             |             |       | Ohm  | Ohm       |       |             |
| 005 MHR      | ±0.005       | ±0.13 | 3.19                 | 126 | 16                    | 6                   | 0.20                | <b>0.25</b> | 0.30  | 0.40 | 59        | 260   | +73°        |
| 010 MHR      | ±0.010       | ±0.25 | 3.36                 | 132 | 33.6                  | 3                   | 0.10                | <b>0.25</b> | 0.35  | 0.35 | 78        | 192   | +59°        |
| 025 MHR      | ±0.025       | ±0.64 | 4.36                 | 172 | 109                   | 0.5                 | 0.15                | <b>0.25</b> | 0.25  | 0.30 | 116       | 286   | +58°        |
| 050 MHR      | ±0.05        | ±1.27 | 2.55                 | 100 | 127.5                 | 0.5                 | 0.15                | <b>0.25</b> | 0.35  | 0.50 | 141       | 90    | +36°        |
| 100 MHR      | ±0.10        | ±2.54 | 2.40                 | 94  | 240                   | 0.5                 | 0.15                | <b>0.25</b> | 0.25  | 0.30 | 135       | 125   | +30°        |
| 250 MHR      | ±0.25        | ±6.35 | 1.73                 | 68  | 432.5                 | 0.5                 | 0.15                | <b>0.25</b> | 0.35  | 0.50 | 147       | 268   | +29°        |
| 500 MHR      | ±0.5         | ±12.7 | 1.60                 | 63  | 800                   | 0.5                 | 0.15                | <b>0.25</b> | 0.30  | 0.75 | 145       | 445   | +19°        |
| 1000 MHR     | ±1           | ±25.4 | 0.70                 | 27  | 700                   | 0.5                 | 0.20                | <b>0.25</b> | 0.50  | --   | 100       | 370   | +6°         |
| 2000 MHR     | ±2           | ±50.8 | 0.47                 | 19  | 940                   | 0.5                 | --                  | <b>0.25</b> | --    | --   | 304       | 13620 | +3°         |

- All values are nominal unless otherwise noted

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

- FS: Full Scale is 2X for ±X stroke

## ■ Mechanical Specifications



All dimensions in inches, values in brackets in mm, approx. values.

These drawings are for information only and not intended for construction purpose. Please ask for detailed drawings.

| Model number | Weight, approx. |    |       |     | Dimensions, approx |       |          |      |
|--------------|-----------------|----|-------|-----|--------------------|-------|----------|------|
|              | Body            |    | Core  |     | A (Body)           |       | B (Core) |      |
|              | oz              | g  | oz    | g   | inch               | mm    | inch     | mm   |
| 005 MHR      | 0.07            | 2  | 0.004 | 0.1 | 0.375              | 9.5   | 0.180    | 4.6  |
| 010 MHR      | 0.11            | 3  | 0.007 | 0.2 | 0.535              | 1.6   | 0.233    | 5.9  |
| 025 MHR      | 0.18            | 5  | 0.016 | 0.5 | 0.660              | 1.8   | 0.400    | 10.2 |
| 050 MHR      | 0.21            | 6  | 0.016 | 0.5 | 0.815              | 20.7  | 0.500    | 12.7 |
| 100 MHR      | 0.21            | 6  | 0.025 | 0.7 | 0.990              | 25.1  | 0.625    | 15.9 |
| 250 MHR      | 0.32            | 9  | 0.032 | 0.9 | 1.850              | 47.0  | 1.125    | 28.6 |
| 500 MHR      | 0.60            | 17 | 0.056 | 1.6 | 3.300              | 83.8  | 2.000    | 50.8 |
| 1000 MHR     | 0.92            | 26 | 0.088 | 2.5 | 5.600              | 142.2 | 3.000    | 76.2 |
| 2000 MHR     | 1.4             | 40 | 0.088 | 2.5 | 8.000              | 203.2 | 3.000    | 76.2 |

## ■ Ordering Information

Specify the MHR Model followed by the desired option number(s) ordered together.

### Example:

**Model 050 MHR-009** is a MHR series LVDT with a range of ±1.27 mm (050 MHR), with 10 kHz testing (003) and metric thread core (006)

## ■ Options

| Option number | Description                            |
|---------------|--|
| <b>002</b>    | 5 kHz Linearity test                   |
| <b>003</b>    | 10 kHz Linearity test                  |
| <b>006</b>    | Metric thread core                     |
| <b>080</b>    | Mild radiation resistance (on request) |

Due to continual product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.