

HCD Series – Hermetically Sealed DC LVDT



- Hermetically sealed
- High level ± 10 VDC output
- Stroke ranges from ± 0.05 to ± 10 inches
- Shock and vibration tolerant
- MS style connector
- IEC IP68 rating to 1,000 PSI [70 bars]
- Captive core option

DESCRIPTION

The **HCD Series** of hermetically sealed DC operated LVDTs are the perfect choice for high performance measurements in environments containing moisture, dirt, and fluid contaminants. Operating on a nominal ± 15 VDC supply, these heavy-duty LVDTs deliver an extremely linear, low noise, yet high frequency response ± 10 VDC output.

The integral electrical connector (welded, glass-sealed MS type) provides for easy installation and allows replacing a damaged cable without sacrificing the sensor.

The HCD is available in stroke ranges of ± 0.05 inch [± 1.27 mm] up to ± 10 inches [± 254 mm], and with a number of standard options including imperial or metric threaded core, guided core and captive core.

Captive core option: The HCD features an optional captive core design (available for most models) that greatly simplifies installation. The core rod and bearing assembly includes a Bronze bearing on the front end for self-alignment, while a Teflon sleeve allows low-friction travel through the stainless steel boreliner (spool tube). The core rod and the bearing assembly are both field serviceable.

Also see our other models with built-in signal conditioning: **DC-EC** (\pm DC voltage), **DC-SE** (single-ended DC voltage), **HC-485** (RS485 Digital Series) and the **HCT-IS** (Intrinsically safe, 4-20mA, 2-wire loop).

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

- All-welded stainless steel construction
- Shock and vibration tolerant
- Low noise, ± 10 VDC output
- Double magnetic shielding
- MS type connector (MIL-C-5015)
- Calibration certificate supplied with each unit

APPLICATIONS

- Harsh industrial environments
- Pressurized installations up to 1,000 psi
- Paper processing mills
- Roller gap position feedback
- Automated test systems
- X-Y Positional Feedback

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PERFORMANCE SPECIFICATIONS

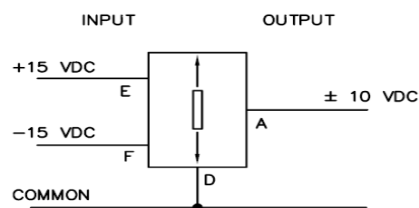
| ELECTRICAL SPECIFICATIONS | | | | | | | | | |
|-------------------------------------|--|-------------------|------------------|-----------------|---------------|---------------|---------------|--------------|---------------|
| Parameter | HCD 050 | HCD 125 | HCD 250 | HCD 500 | HCD 1000 | HCD 2000 | HCD 3000 | HCD 5000 | HCD 10000 |
| Stroke range | ±0.050 [±1.27] | ±0.125 [±3.17] | ±0.25 [±6.85] | ±0.5 [±12.7] | ±1 [±25.4] | ±2 [±50.8] | ±3 [±76.2] | ±5 [±127] | ±10 [±254] |
| Sensitivity (VDC/inch) | 200 | 80 | 40 | 20 | 10 | 5 | 3.3 | 2.0 | 1.0 |
| Sensitivity, VDC/mm | 7.87 | 3.15 | 1.575 | 0.787 | 0.394 | 0.197 | 0.130 | 0.079 | 0.0394 |
| Frequency response Hertz @ -3db) | 500 | 500 | 500 | 200 | 200 | 200 | 200 | 200 | 200 |
| Input voltage | +/-15VDC | | | | | | | | |
| Input current | ±25mA | | | | | | | | |
| Output @ stroke ends | +/-10VDC (Output is positive when the core is displaced from null towards the connector) | | | | | | | | |
| Output at null position | 0VDC | | | | | | | | |
| Linearity | ±0.25% of FS, maximum | | | | | | | | |
| Output ripple | 25mVRMS, maximum | | | | | | | | |
| Stability | 0.125% of FS | | | | | | | | |
| Output impedance | 1 Ohm | | | | | | | | |

| ENVIRONMENTAL SPECIFICATIONS & MATERIALS | |
|--|--|
| Operating temperature | +32°F to +160°F [0°C to +70°C] |
| Survival temperature | -65°F to +200°F [-55°C to +95°C] |
| Shock survival | 250 g (11ms half-sine) |
| Vibration tolerance | 10 g up to 2KHz |
| Housing material | AISI 400 Series stainless steel |
| Electrical connector | 6-pin MS type connector (MIL-C-5015) |
| NEMA IEC 60529 rating | IP68 to 1,000 PSI [70 bars] with use of proper mating connector plug |

Notes:

All values are nominal unless otherwise noted
 Dimensions are in inch [mm] unless otherwise noted
 FS: Full Scale is 2X for ±X stroke

WIRING INFORMATION

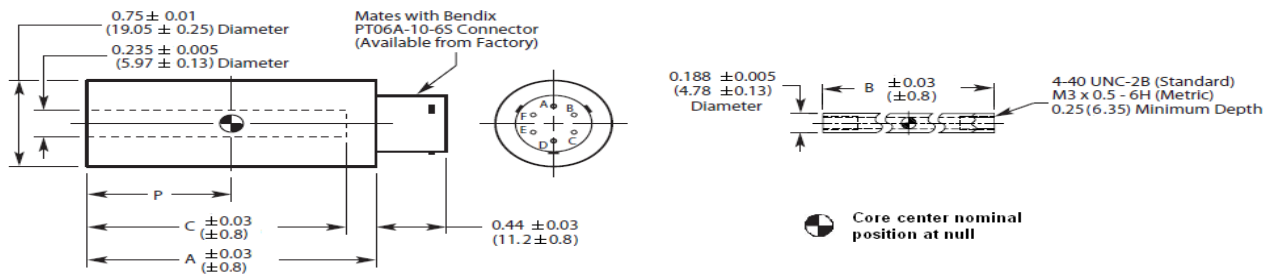


A through F: Connector pin assignments

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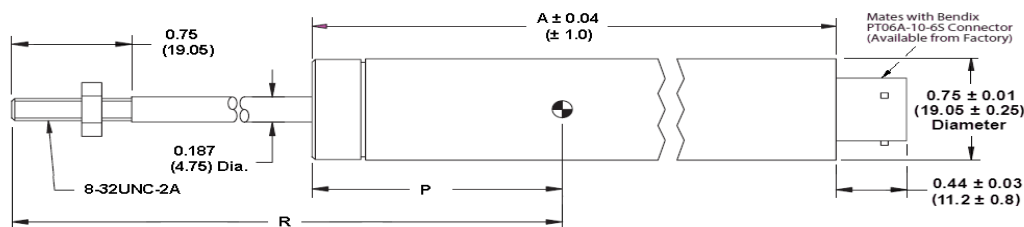
MECHANICAL SPECIFICATIONS, NON-CAPTIVE CORE (STANDARD)

| | HCD 050 | HCD 125 | HCD 250 | HCD 500 | HCD 1000 | HCD 2000 | HCD 3000 | HCD 5000 | HCD 10000 |
|-------------------------|------------------|------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|
| Main body length "A" | ±2.40 [±61.0] | ±3.23 [±82.0] | ±4.10 [±104.1] | ±5.79 [±147.1] | ±8.05 [±204.5] | ±11.42 [±290.1] | ±16.62 [±422.1] | ±20.45 [±519.4] | ±34.57 [±878.1] |
| Core length "B" | ±0.75 [±19.1] | ±1.25 [±31.8] | ±2.0 [±50.8] | ±3.0 [±76.2] | ±3.8 [±96.5] | ±5.3 [±134.6] | ±6.2 [±157.5] | ±6.2 [±157.5] | ±12.0 [±304.8] |
| Bore depth "C" | ±1.90 [±48.3] | ±2.73 [±69.3] | ±3.60 [±91.4] | ±5.29 [±134.4] | ±7.55 [±191.8] | ±10.92 [±277.4] | ±16.10 [±408.9] | ±19.95 [±506.7] | ±34.03 [±864.4] |
| Core center at null "P" | ±0.55 [±14.0] | ±0.96 [±24.4] | ±1.39 [±35.3] | ±2.23 [±56.6] | ±3.18 [±80.8] | ±4.91 [±124.7] | ±7.59 [±192.8] | ±9.56 [±242.8] | ±16.61 [±421.9] |
| Weight, body oz [gram] | 1.41 [40] | 1.77 [50] | 2.19 [62] | 2.93 [83] | 4.24 [120] | 6.14 [174] | 8.33 [236] | 10.38 [294] | 18.57 [526] |
| Weight, core oz [gram] | 0.07 [2] | 0.11 [3] | 0.18 [5] | 0.28 [8] | 0.35 [10] | 0.53 [15] | 0.64 [18] | 0.64 [18] | 0.85 [24] |



MECHANICAL SPECIFICATIONS, CAPTIVE CORE OPTION

| | HCD 050 | HCD 125 | HCD 250 | HCD 500 | HCD 1000 | HCD 2000 | HCD 3000 |
|-------------------------------|------------------|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|
| Main body length "A" | ±2.74 [±69.6] | ±3.57 [±90.7] | ±4.44 [±112.8] | ±6.13 [±155.7] | ±8.39 [±213.1] | ±11.76 [±298.7] | ±16.96 [±430.8] |
| Core center at null "P" | ±0.89 [±22.6] | ±1.30 [±33.0] | ±1.73 [±43.9] | ±2.57 [±65.3] | ±3.52 [±89.4] | ±5.25 [±133.4] | ±7.93 [±201.4] |
| Core rod position at null "R" | ±3.78 [±96.0] | ±4.36 [±110.7] | ±4.85 [±123.2] | ±6.04 [±153.4] | ±7.90 [±200.7] | ±10.52 [±267.2] | ±15.27 [±387.9] |
| Weight, oz [gram] | 2.19 [62] | 2.65 [75] | 3.14 [89] | 4.06 [115] | 5.61 [159] | 7.87 [223] | 10.63 [301] |



Dimensions are in inches [mm]

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ORDERING INFORMATION

| Description | Model | Part Number | Description | Model | Part Number |
|---|----------|--------------|---|-----------|--------------|
| ±0.050 inch LVDT | HCD 050 | 02560440-000 | ±2 inch LVDT | HCD 2000 | 02560445-000 |
| ±0.125 inch LVDT | HCD 125 | 02560441-000 | ±3 inch LVDT | HCD 3000 | 02560446-000 |
| ±0.25 inch LVDT | HCD 250 | 02560442-000 | ±5 inch LVDT | HCD 5000 | 02560447-000 |
| ±0.5 inch LVDT | HCD 500 | 02560443-000 | ±10 inch LVDT | HCD 10000 | 02560448-000 |
| ±1 inch LVDT | HCD 1000 | 02560444-000 | | | |
| OPTIONS | | | | | |
| Metric threaded core (M3 x 0.5-6H) | | | Available on non-captive core models only | | XXXXXXXX-006 |
| Guided core | | | | | XXXXXXXX-010 |
| Small-diameter/low-mass core (<i>consult factory for mass & dimensions</i>) | | | | | XXXXXXXX-020 |
| Captive core | | | 050 thru 3000 HCD only | | XXXXXXXX-200 |

Note: Add multiple option dash numbers together to determine proper ordering suffix
Example: HCD 1000, ±1 inch, with metric threaded and guided core, P/N 02560444-016

| ACCESSORIES | | |
|---|--------------------|--------------|
| Core connecting rod, 6 inches long, 4-40 threads | | 05282946-006 |
| Core connecting rod, 12 inches long, 4-40 threads | | 05282946-012 |
| Core connecting rod, 24 inches long, 4-40 threads | | 05282946-024 |
| Core connecting rod, 36 inches long, 4-40 threads | | 05282946-036 |
| Core connecting rod, 6 inches long, M3x0.5 metric threads | | 05282977-006 |
| Core connecting rod, 12 inches long, M3x0.5 metric threads | | 05282977-012 |
| Mounting block | | 04560950-000 |
| Mating connector kit | PT06A-10-6S(SR) | 62101011-000 |
| 10 foot shielded cable with wired mating connector (<i>consult factory for other longer cable lengths</i>) | HCD cable assembly | 04290583-000 |

Note: Refer to our "[Accessories for LVDT's](#)" brochure for LVDT signal conditioning instrumentation and other accessories

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