

## HCT Series - 4 to 20mA loop LVDT Transmitter



- 4-20mA, 2-wire current loop operation
- Stroke ranges from 0.25 to 10 inches
- Hermetically sealed, all welded
- Stainless steel housing
- MS style connector
- Shock and vibration tolerant
- IEC IP68 rating to 1,000 PSI [70 bars]
- Captive core option (most models)

#### **DESCRIPTION**

The HCT Series LVDT transmitters are the perfect choice for high performance measurements in environments containing moisture, dirt, and fluid contaminants. Operating on a +10.5 to +28VDC loop voltage, the HCT delivers a smooth 4-20mA current loop output. True hermetic sealing of the coil assembly and electronics provides premium protection against adverse environments.

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

Available in a number of standard linear measurement ranges from 0.25 to 10 inches, the HCT is ideal for process industries and power plant applications, or wherever high accuracy measurements are required in electrically noisy environments. The 2-wire 4-20mA current loop output is compatible with most PLCs.

Like in most of our LVDTs, the HCT 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 vibration and shock.

<u>Captive core option:</u> The HCT 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 PTFE sleeve allows low-friction travel through the stainless steel boreliner (spool tube). The core rod and the bearing assemblies are both field serviceable.

Also see our other position transmitter models; **CTS-420** (linear/rotary, remote sensor operation), **PTS-420** (rugged, splash-proof housing) and **GCT** (heavy-duty gage head).

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**<sup>™</sup> trademark in 2000.

### **FEATURES**

- 4-20mA current loop output
- All-welded stainless steel construction
- MS type connector (MIL-C-5015)
- Imperial or metric threaded core
- Reverse polarity protection
- Calibration certificate supplied with each unit

### **APPLICATIONS**

- Process industries
- Power plants
- Valve position monitoring
- Rolling mill roller gap feedback
- Ideal for electrically noisy environments
- Outdoor use with long cable



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## PERFORMANCE SPECIFICATIONS

| ELECTRICAL SPECIFICATIONS        |   |            |           |           |             |             |
|----------------------------------|---|------------|-----------|-----------|-------------|-------------|
| Parameter                        | HCT 250   | HCT 500    | HCT 1000  | HCT 2000  | HCT 5000    | HCT 10000   |
| Stroke range                     | 0.25 [6.35]   | 0.5 [12.7] | 1 [25.4]  | 2 [50.8]  | 5 [127]     | 10 [254]    |
| Sensitivity, mA/inch [mA/mm]     | 64 [2.52]   | 32 [1.26]  | 16 [0.63] | 8 [0.315] | 3.2 [0.126] | 1.6 [0.063] |
| Non-linearity, % of FR max.      |   | ±0.5% ±1%  |           |           |             |             |
| Temp. coefficient of sensitivity | 0.022%/°F [0.04%/°C]  |            |           |           |             |             |
| Loop supply voltage              | +10.5 to +28VDC   |            |           |           |             |             |
| Output                           | 4 to 20mA (Output increases when the core is displaced from null towards the connector) |            |           |           |             |             |
| Output at null position          | 12mA (null position is defined as the mid-stroke position)                              |            |           |           |             |             |
| Max loop resistance              | 540 ohms @ +24VDC (see loop resistance chart below)                                     |            |           |           |             |             |
| Output noise and ripple          | 25 μA, peak-to-peak maximum   |            |           |           |             |             |
| Stability                        | 0.05% of FSO, after 30 minute warm up   |            |           |           |             |             |
| Frequency response               | 50Hz @ -3db   |            |           |           |             |             |

| ENVIRONMENTAL AND MATERIAL SPECIFICATIONS |  |  |  |
|---|--|--|--|
| Operating temperature range               | -13°F to +185°F [-25°C to +85°C]                                     |  |  |
| Survival temperature                      | -65°F to +250°F [-55°C to 125°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:

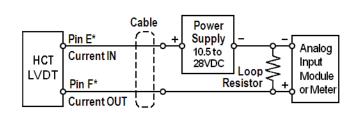
All values are nominal unless otherwise noted

Dimensions are in inch [mm] unless otherwise noted

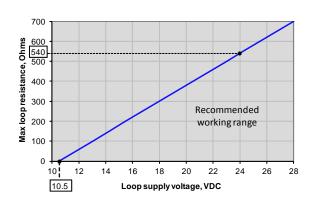
FR: Full Range is the stroke range, end to end; FR=S for 0 to S stroke range

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

## **WIRING SCHEMATIC & LOOP RESITANCE CHART**



<sup>\*</sup> Pins A through D: No connection

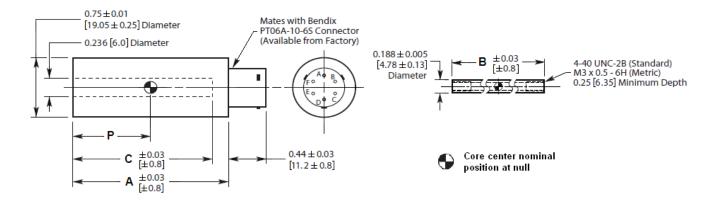




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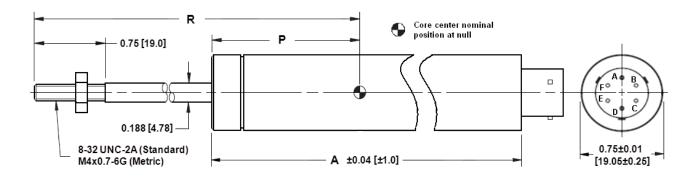
## MECHANICAL SPECIFICATIONS - NON CAPTIVE CORE (STANDARD)

| Parameter               | HCT 250      | HCT 500     | HCT 1000     | HCT 2000     | HCT 5000      | HCT 10000     |
|-------------------------|--------------|-------------|--------------|--------------|---------------|---------------|
| Main body length "A"    | 4.39 [111.4] | 5.51 [140]  | 6.92 [175.8] | 9.18 [233.1] | 12.28 [311.9] | 21.59 [548.3] |
| Core length "B"         | 1.25 [31.8]  | 1.80 [45.7] | 3.00 [76.2]  | 3.80 [96.5]  | 3.80 [96.5]   | 6.2 [157.5]   |
| Bore depth "C"          | 1.91 [48.5]  | 3.11 [79.0] | 4.46 [113.3] | 6.72 [170.7] | 9.90 [251.5]  | 19.22 [488.2] |
| Core center at null "P" | 0.96 [24.4]  | 1.52 [38.6] | 2.23 [56.6]  | 3.36 [85.2]  | 4.91 [124.7]  | 9.56 [242.8]  |
| Weight, body, oz [gram] | 3.04 [86]    | 3.63 [103]  | 4.38 [124]   | 5.38 [153]   | 6.51 [185]    | 12.93 [367]   |
| Weight, core, oz [gram] | 0.11 [3]     | 0.18 [5]    | 0.29 [8]     | 0.38 [11]    | 0.38 [11]     | 0.62 [18]     |



## **MECHANICAL SPECIFICATIONS - CAPTIVE CORE OPTION**

| Parameter                     | HCT 250      | HCT 500      | HCT 1000     | HCT 2000     | HCT 5000      |
|-------------------------------|--------------|--------------|--------------|--------------|---------------|
| Main body length "A"          | 4.72 [119.9] | 5.84 [148.3] | 7.25 [184.2] | 9.51 [241.6] | 12.62 [320.5] |
| Core center at null "P"       | 1.30 [33.0]  | 1.86 [47.2]  | 2.57 [65.3]  | 3.68 [93.5]  | 5.25 [133.4]  |
| Core rod position at null "R" | 4.36 [110.7] | 4.75 [120.7] | 6.04 [153.4] | 7.87 [199.9] | 12.36 [313.9] |
| Weight, oz [gram]             | 3.74 [106]   | 4.66 [132]   | 5.47 [155]   | 6.85 [194]   | 9.6 [272]     |



Dimensions are in inch [mm]



## HCT Series – 4 to 20mA loop LVDT Transmitter

### **ORDERING INFORMATION**

| Description    | Model    | Part Number  |
|----------------|----------|--------------|
| 0.25 inch LVDT | HCT 250  | 02561020-000 |
| 0.5 inch LVDT  | HCT 500  | 02561021-000 |
| 1 inch LVDT    | HCT 1000 | 02561022-000 |

| Description  | Model     | Part Number  |
|--------------|-----------|--------------|
| 2 inch LVDT  | HCT 2000  | 02561023-000 |
| 5 inch LVDT  | HCT 5000  | 02561024-000 |
| 10 inch LVDT | HCT 10000 | 02561025-000 |

| OPTIONS   |                            |               |  |  |
|---|----------------------------|---------------|--|--|
| Description   | Comments                   | Part Number   |  |  |
| Metric threaded core (M3 x 0.5-6H)                      | Non-captive core models    | XXXXXXXXX-006 |  |  |
| Captive core  | HCT 250 through 5000 only  | XXXXXXXXX-200 |  |  |
| Captive core with metric threaded extension (M4x0.7-6G) | HC1 250 tillough 5000 only | XXXXXXXX-206  |  |  |

| ACCESSORIES  |                 |              |  |  |  |
|--|-----------------|--------------|--|--|--|
| Description  | Model           | Part Number  |  |  |  |
| DC power supply (15VDC)                                    | PSD 40-15       | 02291339-000 |  |  |  |
| 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 |  |  |  |

Refer to our "Accessories for LVDTs" data sheet for our LVDT signal conditioning instrumentation and other accessories.

## **TECHNICAL CONTACT INFORMATION**

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|--|---|---|
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