# HCT-IS Series – 4 to 20mA loop LVDT for hazardous locations

- **Intrinsically safe, FM & CSA approved**
- **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-IS Series** intrinsically safe LVDT transmitters make accurate measurements in hazardous areas possible. Operating on a +10.5 to +28VDC loop voltage, the HCT-IS delivers a smooth 4-20mA current loop output, allowing use of a single barrier and a minimum of interconnecting wire or cable. 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 is ideal for process industries and power plant applications, or wherever high accuracy displacement measurements are required in hazardous environments. The 2-wire 4-20mA current loop output is compatible with most PLC's.

Like in most of our LVDTs, the HT-IS 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.

Captive core option: The HCT-IS 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***® *trademark in 2000.*

## FEATURES

- Intrinsically Safe (with appropriate barriers)
- 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

# HCT-IS Series – 4 to 20mA loop LVDT for hazardous locations

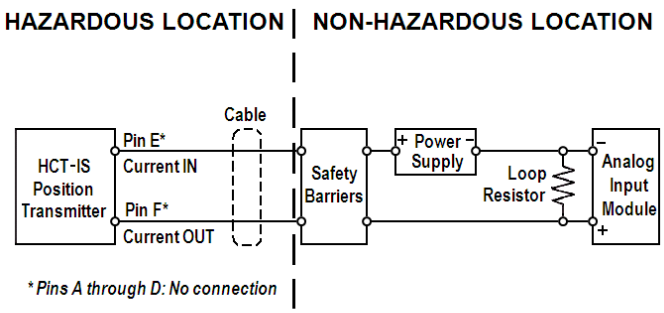
## PERFORMANCE SPECIFICATIONS

| ELECTRICAL SPECIFICATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **HCT-IS 250** | **HCT-IS 500** | **HCT-IS 1000** | **HCT-IS 2000** | **HCT-IS 5000** | **HCT-IS 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 | | | | | |

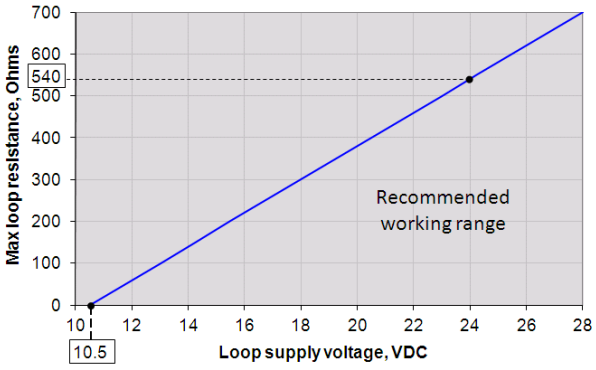
| ENVIRONMENTAL AND MATERIAL SPECIFICATIONS | |
|---|---|
| Operating temperature range | -13°F to +185°F [-25°C to +85°C] |
| Survival temperature | -65°F to +250°F [-55°C to 125°C] |
| Shock survival | 250 g (11ms half-sine) |
| Vibration tolerance | 10 g up to 2kHz |
| Housing material | AISI 400 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 |
| Intrinsic safety approval classification | FM & CSA, Class I, Div. 1, Group A,B,C,D; Class II, Div.1, Group G; Class III |
| Intrinsic safety entity parameters | Vmax = 32VDC, Imax = 110mA, Ci = 12nF, Li = 0<br>Intrinsically safe when connected per MEAS drawing 09561512-000 |

*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




***IMPORTANT: Installation must be in accordance with Intrinsically Safe Control Drawing No 09531512-000***

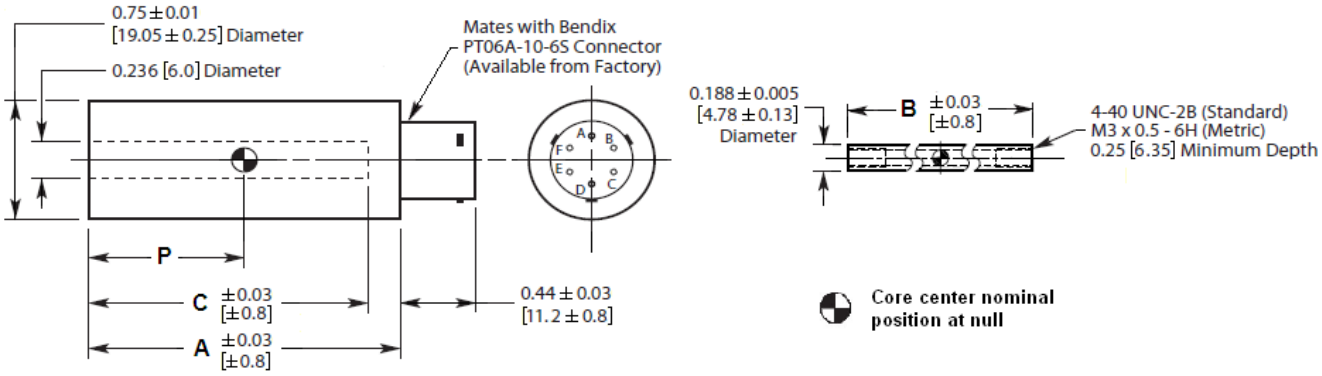



***Note: Loop resistance includes barrier series resistance***

# HCT-IS Series – 4 to 20mA loop LVDT for hazardous locations

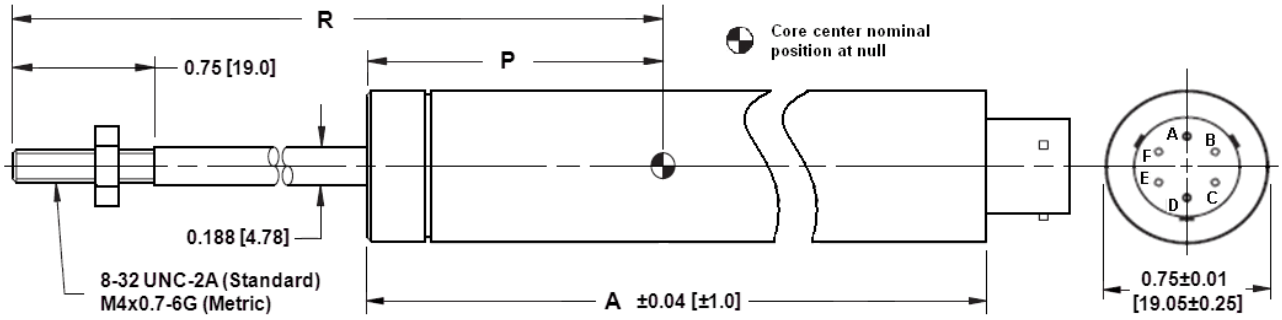
## MECHANICAL SPECIFICATIONS – NON CAPTIVE CORE (STANDARD)

| Parameter | HCT-IS 250 | HCT-IS 500 | HCT-IS 1000 | HCT-IS 2000 | HCT-IS 5000 | HCT-IS 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-IS 250 | HCT-IS 500 | HCT-IS 1000 | HCT-IS 2000 | HCT-IS 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-IS Series – 4 to 20mA loop LVDT for hazardous locations

## ORDERING INFORMATION

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

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

| OPTIONS | | |
|---|---|---|
| **Description** | **Comments** | **Part Number** |
| Metric threaded core (M3 x 0.5-6H) | Non-captive core models | xxxxxxxx-006 |
| Captive core | HCT-IS 250 thru 5000 only | xxxxxxxx-200 |
| Captive core with metric threaded extension (M4x0.7-6G) | | xxxxxxxx-206 |

| ACCESSORIES | | |
|---|---|---|
| **Description** | **Comments** | **Part Number** |
| 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


| NORTH AMERICA | EUROPE | ASIA |
|---|---|---|
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