# HC-485 SERIES

## Digital I/O LVDT

## SPECIFICATIONS

- **RS-485 output**
- **±0.25% of FR max (±0.1% optional) linearity**
- **32 devices communicating over 2 wires**
- **MIN, MAX and TIR readings**
- **Velocity output**
- **Internal tare (zero) function**
- **Stroke ranges from ±0.125 to ±3 inches**
- **IEC IP68 rating to 1,000 PSI [70 bars]**

**The HC-485 Series** of heavy-duty LVDTs are self-contained, ultra precision, digital I/O devices for high performance measurements in environments containing moisture, dirt, and fluid contaminants. The HC-485 eliminates the need for expensive and error-prone analog to digital conversion by internally converting the analog LVDT signals into engineering units (imperial or metric). The result is a fully calibrated and traceable measurement device, ready for installation, and 100% field interchangeable.

Operating on 8.5 to 30 VDC supply, the HC-485 provides an addressable RS-485 (2-wire) digital output (MODBus RTU and ASCII protocols) running at 119kBd baud rate and capable of handling up to 32 devices communicating over two wires. MIN, MAX and TIR readings are sampled and stored internally at a maximum update rate of 600 samples per second, and are provided to the host on demand. A velocity output (inch or mm per second) is also available, while an internal tare (zero) function affords maximum set-up flexibility.

MEAS offers accessories and options such as mating connector plugs, imperial or metric threaded core, guided core, and captive core. The 'EA' (Extended Accuracy) option extends the linear stroke range to 150% with ±0.1% linearity.

Like in most of our LVDTs, the HC-485 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.

Captive core option: The HC-485 features an optional captive core design 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.

## FEATURES

- All-welded stainless steel construction
- MS type connector (MIL-C-5015)
- MOD-Bus RTU & ASCII protocols
- Programmable filtering
- Velocity output
- Field interchangeable
- Calibration certificate supplied with each unit

## APPLICATIONS

- Process control
- Valve position feedback
- Roller gap
- Automated test systems
- X-Y Positional Feedback
- Remote Monitoring
- Applications where wiring must be minimized

## PERFORMANCE SPECIFICATIONS

| ELECTRICAL SPECIFICATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **HC-485 125** | **HC-485 250** | **HC-485 500** | **HC-485 1000** | **HC-485 2000** | **HC-485 3000** |
| Stroke range, STD | ±0.125 [±3.17] | ±0.25 [±6.85] | ±0.5 [±12.7] | ±1.0 [±25.4] | ±2.0 [±50.8] | ±3.0 [±76.2] |
| Linearity, standard | ±0.25% of FR, maximum | | | | | |
| Stroke range, 'EA' | ±0.188 [±4.78] | ±0.375 [±9.53] | ±0.75 [±19.05] | ±1.5 [±38.1] | ±3.0 [±76.2] | ±4.5 [±114.3] |
| Linearity, 'EA' option | ±0.1% of FR, maximum (±0.05% typical) | | | | | |
| Temp. coefficient of scale factor | 0.025%/°F [0.05%/°C], maximum | | | | | |
| Input voltage | 8.5 to 30 VDC | | | | | |
| Input current | 50mA | | | | | |
| Output | RS-485 (MODBus RTU and ASCII protocols) | | | | | |
| Baud rate | 119 kBd | | | | | |
| Output units | Imperial or Metric | | | | | |
| Resolution | 15-bit (minimum) | | | | | |
| Stability | 0.1% of FR | | | | | |
| Bandwidth (digital filtering) | Programmable to 1, 50, 100, or 200+ Hertz, rapid roll-off | | | | | |

| ENVIRONMENTAL SPECIFICATIONS & MATERIALS | |
|---|---|
| Operating temperature | -13°F to +185°F [-25°C to +85°C] |
| Survival temperature | -67°F to +203°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) |
| IEC 60529 rating | IP68 to 1,000 PSI [70 bars] with use of proper mating connector plug |

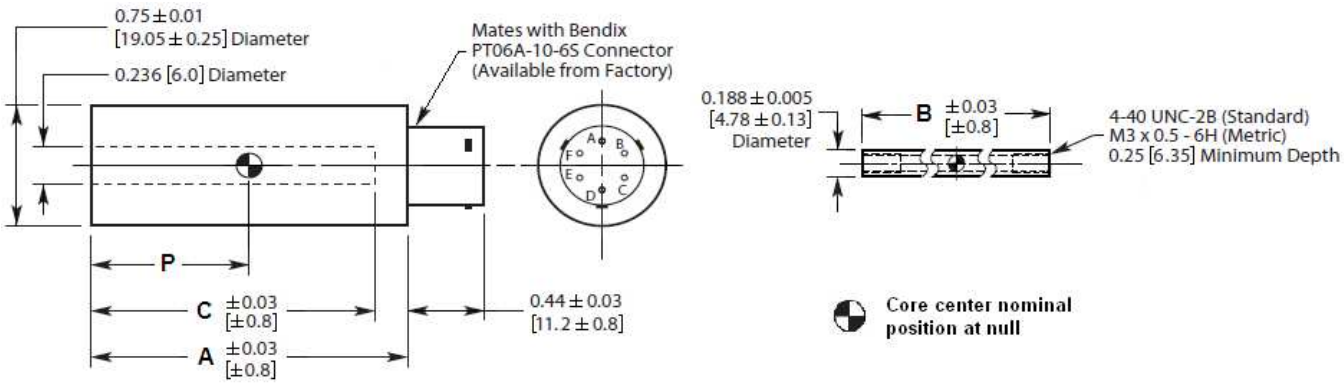
*Notes:*
*All values are nominal unless otherwise noted*
*Dimensions are in inch [mm] unless otherwise noted*
*FR: Full Range is the stroke range, end to end; FR=2xS for ±S stroke range*

## WIRING INFORMATION

| Function | Connector pin |
|---|---|
| Power IN | E |
| Common | D |
| A (-Data) | A |
| B (+Data) | B |

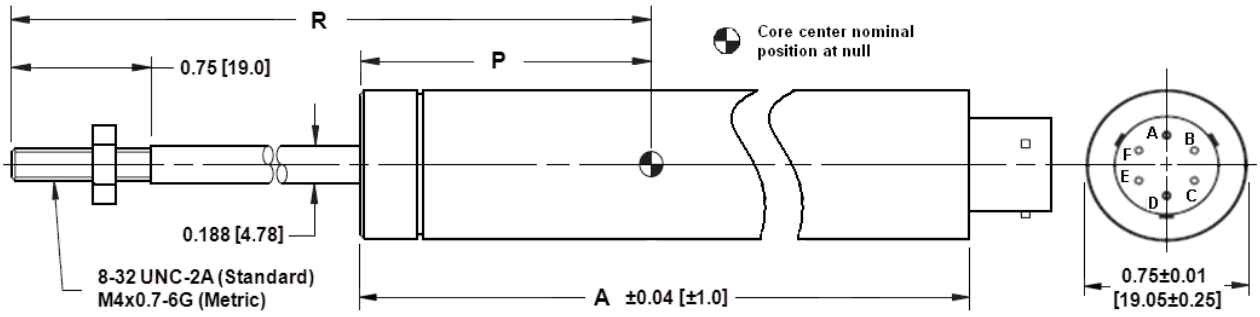
## MECHANICAL SPECIFICATIONS – NON CAPTIVE CORE (STANDARD)

| Parameter | HC-485 125 | HC-485 250 | HC-485 500 | HC-485 1000 | HC-485 2000 | HC-485 3000 |
|---|---|---|---|---|---|---|
| Main body length “A” | 4.39 [111.5] | 5.51 [140.0] | 6.92 [175.8] | 9.18 [233.2] | 12.66 [321.6] | 17.63 [447.8] |
| Core length “B” | 1.10 [27.9] | 1.80 [45.7] | 3.00 [76.2] | 3.80 [96.5] | 5.30 [134.6] | 6.20 [157.5] |
| Bore depth “C” | 2.01 [51.1] | 2.87 [72.9] | 4.56 [115.8] | 6.82 [173.2] | 10.30 [261.6] | 15.27 [387.9] |
| Core center @ null “P” | 0.96 [24.4] | 1.38 [35.1] | 2.23 [56.6] | 3.22 [81.8] | 4.91 [124.7] | 7.59 [192.8] |




## MECHANICAL SPECIFICATIONS – CAPTIVE CORE OPTION

| Parameter | HC-485 125 | HC-485 250 | HC-485 500 | HC-485 1000 | HC-485 2000 | HC-485 3000 |
|---|---|---|---|---|---|---|
| Main body length “A” | 4.72 [119.9] | 5.84 [148.3] | 7.25 [184.2] | 9.51 [241.6] | 12.99 [329.9] | 17.96 [456.2] |
| Core center at null “P” | 1.26 [32.0] | 1.68 [42.7] | 2.54 [64.5] | 3.52 [89.4] | 5.22 [132.6] | 7.90 [200.7] |
| Core rod position at null “R” | 4.28 [108.7] | 4.75 [120.7] | 6.04 [153.4] | 7.90 [200.7] | 10.52 [267.2] | 15.27 [387.9] |




*Dimensions are in inch [mm]*

## ORDERING INFORMATION

| Description | Model | Part Number | | Description | Model | Part Number |
|---|---|---|---|---|---|---|
| ±0.125 inch LVDT | HC-485 125 | 02561013-000 | | ±1 inch LVDT | HC-485 1000 | 02561016-000 |
| ±0.25 inch LVDT | HC-485 250 | 02561014-000 | | ±2 inch LVDT | HC-485 2000 | 02561017-000 |
| ±0.5 inch LVDT | HC-485 500 | 02561015-000 | | ±3 inch LVDT | HC-485 3000 | 02561018-000 |

| OPTIONS | |
|---|---|
| Extended Accuracy 'EA' (150% stroke range, ±0.1% linearity) | XXXXXXXX-002 |
| Metric threaded core (M3 x 0.5-6H) | XXXXXXXX-006 |
| Guided core | XXXXXXXX-010 |
| Captive core | XXXXXXXX-200 |
| Captive core, metric threaded extension (M4x0.7-6G) | XXXXXXXX-206 |

Note: *Add multiple option dash numbers together to determine proper ordering suffix*
*Example: HC-485 1000, ±1 inch, 'EA', captive core, metric, P/N 02561016-208*

| ACCESSORIES | | |
|---|---|---|
| DC power supply (15VDC) | Model 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 |

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