



XS-D SERIES

High stroke-to-length ratio LVDT

SPECIFICATIONS

- ✦ Excellent stroke-to-length ratio
- ✦ Lower weights than other standard LVDTs with comparable displacement ranges
- ✦ Stroke ranges from ± 1 to ± 10 inches
- ✦ Shock and vibration tolerant
- ✦ Stainless steel housing
- ✦ Magnetically shielded
- ✦ Imperial or metric threaded core

The **XS-D Series** LVDTs are specifically designed for measuring relatively large displacements where installation space is limited. The XS-D Series have a substantially greater displacement range than other standard LVDTs, but without the accompanying increase in body length and weight. Using special coil winding techniques, the XS-D permits linear range measurements of up to 80% of the housing length.

Compact, shock and vibration tolerant, and featuring infinite resolution and repeatability, the XS-D Series are the perfect choice for servo mechanisms, linear potentiometer replacement, or wherever precise displacement measurements are required in space restrictive applications. All models are supplied with a calibration certificate, and are available with either an imperial or metric threaded core. The XS-D Series are compatible with all Measurement Specialties LVDT signal conditioners, controllers and readouts.

Like in most of our LVDTs, the XS-D 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.

FEATURES

- ✦ Superior stroke-to-length ratio
- ✦ Stroke ranges from ± 1 to ± 10 inches
- ✦ Smooth transfer function
- ✦ AISI 400 Series stainless steel housing
- ✦ Calibration certificate supplied with all units

APPLICATIONS

- ✦ Servo mechanisms
- ✦ Hydraulic actuators
- ✦ Linear potentiometer replacement
- ✦ Space restrictive installations
- ✦ Weight sensitive applications

PERFORMANCE SPECIFICATIONS

| ELECTRICAL SPECIFICATIONS | | | | | |
|--------------------------------------|----------------------|------------------|------------------|------------------|-------------------|
| Parameter | XS-D 1002 | XS-D 2002 | XS-D 3002 | XS-D 5002 | XS-D 10002 |
| Stroke range | ±1 [±25.4] | ±2 [±50.8] | ±3 [±76.2] | ±5 [±127] | ±10 [±254] |
| Sensitivity V/V/inch [mV/V/mm] | 0.28 [11.0] | 0.16 [6.3] | 0.12 [4.7] | 0.13 [5.1] | 0.05 [2.0] |
| Output at stroke ends (*) | 280mV/V | 320mV/V | 360mV/V | 650mV/V | 500mV/V |
| Phase shift | +30° | +25° | +7° | +0.5° | -4° |
| Input impedance (PRIMARY) | 175Ω | 243Ω | 266Ω | 968Ω | 628Ω |
| Output impedance (SECONDARY) | 230Ω | 103Ω | 220Ω | 532Ω | 416Ω |
| Non-linearity | ±2.0% of FR, maximum | | | | |
| Input voltage | 3 VRMS sine wave | | | | |
| Test input frequency | 2.5kHz | | | | |
| Input frequency range | 400Hz to 3kHz | | | | |
| Null voltage | 0.5% of FRO, maximum | | | | |

| ENVIRONMENTAL SPECIFICATIONS & MATERIALS | |
|---|---|
| Operating temperature | -65°F to +300°F [-55°C to 150°C] |
| Shock survival | 1,000 g (11ms half-sine) |
| Vibration tolerance | 20 g up to 2KHz |
| Housing material | AISI 410 Series stainless steel |
| Electrical connection | Six lead-wires, stranded 28 AWG, PTFE insulated, 1 foot [0.3m] long |
| IEC 60529 rating | IP61 |

Notes:

Dimensions are in inch [mm]

All values are nominal unless otherwise noted

Electrical specifications are for the test frequency indicated in the table

(): Unit for output at stroke ends is millivolt per volt of excitation (input voltage)*

FR: Full Range is the stroke range, end to end; FR=2xS for ±S stroke range

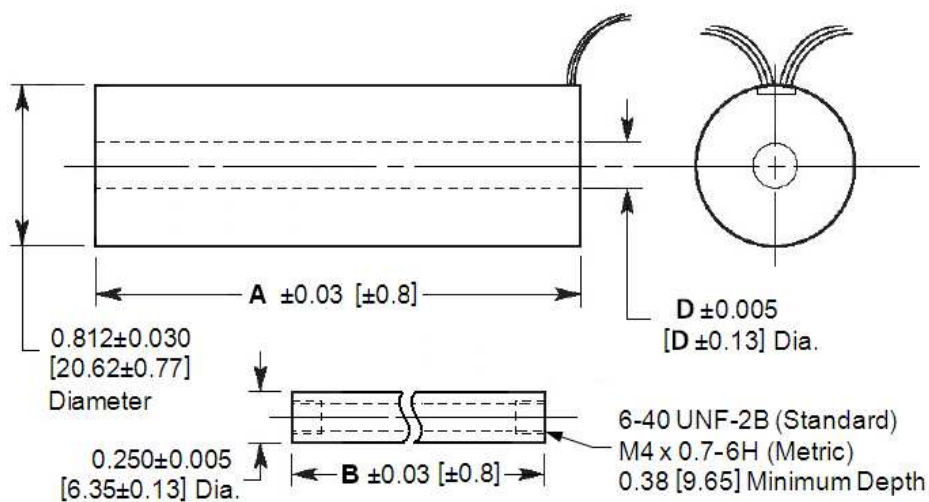
FRO (Full Range Output): Algebraic difference in outputs measured at the ends of the range

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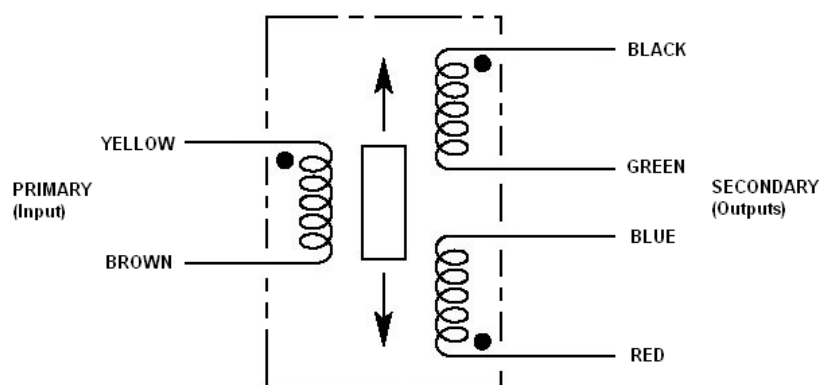
MECHANICAL SPECIFICATIONS

| Parameter | XS-D 1002 | XS-D 2002 | XS-D 3002 | XS-D 5002 | XS-D 10002 |
|----------------------|--------------|--------------|--------------|---------------|---------------|
| Main body length "A" | 2.57 [65.2] | 5.76 [146.3] | 7.50 [190.5] | 12.52 [318.0] | 25.06 [636.5] |
| Core length "B" | 0.45 [11.4] | 1.50 [38.1] | 1.25 [31.8] | 2.40 [61.0] | 4.00 [101.6] |
| Bore diameter "D" | 0.265 [6.73] | 0.265 [6.73] | 0.30 [7.62] | 0.30 [7.62] | 0.35 [8.89] |
| Body weight, oz [g] | 2.3 [65] | 4.1 [115] | 4.9 [140] | 7.6 [215] | 16.6 [470] |
| Core weight, oz [g] | 0.09 [2.5] | 0.28 [8.0] | 0.24 [6.8] | 0.44 [12.5] | 0.88 [25.0] |



Dimensions are in inches [mm]

WIRING INFORMATION



Connect Green to Blue for differential output

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ORDERING INFORMATION

| Description | Model | Part Number |
|---------------|-----------|--------------|
| ±1 inch LVDT | XS-D1002 | 02560567-000 |
| ±2 inch LVDT | XS-D2002 | 02560568-000 |
| ±3 inch LVDT | XS-D3002 | 02560569-000 |
| ±5 inch LVDT | XS-D5002 | 02560571-000 |
| ±10 inch LVDT | XS-D10002 | 02560572-000 |

| OPTIONS | | |
|---|-------|--------------|
| Description | Model | Part Number |
| Metric threaded core option (M4x0.7-6H threads) | All | XXXXXXXX-006 |

| ACCESSORIES | |
|--|--------------|
| Description | Part Number |
| Core connecting rod, 6 inches long, 6-40 threads | 05282947-006 |
| Core connecting rod, 12 inches long, 6-40 threads | 05282947-012 |
| Core connecting rod, 24 inches long, 6-40 threads | 05282947-024 |
| Core connecting rod, 36 inches long, 6-40 threads | 05282947-036 |
| Core connecting rod, 6 inches long, M4x0.7 metric threads | 05282978-006 |
| Core connecting rod, 12 inches long, M4x0.7 metric threads | 05282978-012 |
| Mounting block | 04560952-000 |

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