

# Series LLU61X

Long Stroke LVDT Displacement Transducer, DC,  
Unguided Armature



## Description

The Series LLU61X is a high performance long stroke DC powered LVDT displacement transducer with an unguided armature. For the very basic unguided configuration, the armature is loose fit in the bore of the LVDT and is attached to the moving part by a male thread. Precise alignment along the bore results in a frictionless movement. The Series LLU61X is ideal for mechanical vibration measurements. In addition, the armature can be separated from the body without disconnecting either part. The Series LLU61X displacement transducers can be used for both static and dynamic applications. This position sensor operates from unregulated power supplies of +20Vdc to +40Vdc or dual  $\pm 10$ Vdc to  $\pm 20$ Vdc and generates either a  $\pm 5$ Vdc or 0-10Vdc. The compact size of the LLU61X series makes it ideal for applications requiring limited space. These displacement transducers are ruggedly constructed of all stainless steel. All Series LLU61X displacement transducers are shipped with traceable calibration certificates.

## Standard Features

- Stroke Ranges from  $\pm 0.5$  inches to  $\pm 8.0$  inches
- Unguided Armature
- Frictionless Configuration (Zero Wear)
- DC/DC
- $\pm 0.5\%$  Linearity
- Outputs of  $\pm 5$ Vdc or 0-10Vdc
- Encapsulated Integral Electronics
- Broad Temperature Range
- All Stainless Steel Construction
- Traceable Calibration Certificate

## Optional Features

- Improved Linearity
- Sealing Against Moisture Ingress
- Mounting Blocks

## Performance

### Stroke Ranges

$\pm 0.5$  inches to  $\pm 8.0$  inches  
 $\pm 0.1$  inches to  $\pm 0.4$  inches (Optional)

### Linearity

$\pm 0.5\%$  of full stroke max  
 $\pm 0.25\%$  or  $\pm 0.1$  options on some ranges

### Output Voltage

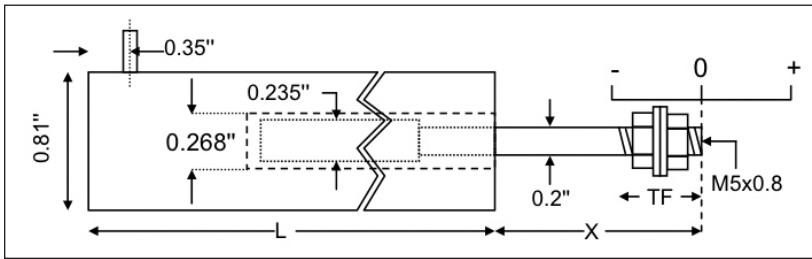
Two antiphase  $\pm 5$ Vdc Nominal for working stroke

LLU61X

# Series LLU61X Specifications

Baseline Configuration Specs Represented.  
Modifications Encouraged - See Below  
Custom Designs Available

## Dimensions (inches)



| Range | Linearity error (% F.S.) | L     | X     | Total Weight | Armature Weight | TF   | Inward over-travel |
|-------|--------------------------|-------|-------|--------------|-----------------|------|--------------------|
| ±0.5" | <± 0.5                   | 6.9"  | 1.7"  | 8oz          | 0.6oz           | 0.6" | 0.63"              |
| ±1"   | <± 0.5                   | 8.0"  | 2.7"  | 10oz         | 0.8oz           | 0.6" | 0.87"              |
| ±2"   | <± 0.5                   | 12.5" | 3.2"  | 13oz         | 1.3oz           | 0.6" | 0.63"              |
| ±3"   | <± 0.5                   | 16.9" | 4.7"  | 1.1lb        | 1.9oz           | 0.6" | 1.14"              |
| ±4"   | <± 0.5                   | 18.7" | 5.2"  | 1.4lb        | 2.5oz           | 0.6" | 0.63"              |
| ±6"   | <± 0.5                   | 26.2" | 7.2"  | 1.9lb        | 3.5oz           | 0.6" | 0.63"              |
| ±8"   | <± 0.5                   | 33.7" | 10.2" | 2.8lb        | 4.9oz           | 1.2" | 1.06"              |

## Mechanical Characteristics

### Resolution

Infinite.

### Case Material

Stainless steel.

### Armature Type

Unguided.

### Probe Thread

M5 x 0.8.

## Set-ups

Please Specify Set-up Required:

|                         | (-)             | (0)             | (+)             |
|-------------------------|-----------------|-----------------|-----------------|
| <b>Set-ups Position</b> | <b>Position</b> | <b>Position</b> | <b>Position</b> |
| <b>Standard</b>         |                 |                 |                 |
| 1                       | 0V              | 5V              | 10V(+0%-5%)     |
| 2                       | -5V(+0%-5%)     | 0V              | +5V(+0%-5%)     |
| <b>Optional</b>         |                 |                 |                 |
| 3                       | 10V(+0%-5%)     | 5V              | 0V              |
| 4                       | +5V(+0%-5%)     | 0V              | -5V(+0%-5%)     |

## Electrical Characteristics

### Input Supply

± 12Vdc to ± 20Vdc unregulated.

-or-

+ 20Vdc to + 40Vdc unregulated at 30mA.

### Input Voltage (Factory Calibrated)

±15Vdc (with 6 ft. of cable).

### Output Load (Minimum)

2K Ohms.

### Output Ripple

30mV peak to peak.

### Output Bandwidth

200 Hz (flat).

### Output Impedance

2 Ohms.

### Electrical Termination

High Quality Polyurethane Shield Cable  
(6 ft.) Radial Exit (Standard).

## Environmental Characteristics

### Operating Temperature Range

-60°F to +180°F.

### Temperature Effect on Zero

±0.006%/°F.

### Temperature Effect on Span

±0.017%/°F.

## MODEL IDENTIFICATION

**L L U 6 1 X**

SERIES

ELECTRICAL TERMINATIONS

Please specify termination required:

- X = 1 Axial Cable Exit (Optional)
- 2 Radial Cable Exit (Standard)
- 3 Axial Connector (Optional)
- 4 Radial Connector (Optional)

## Modifications and Warranty

MODIFICATIONS: We realize transducer applications vary greatly and as such our designs are flexible. Choice of pressure port, electrical termination, material compatibility and performance characteristics are a few of the many options available. Specifications on this datasheet represent the standard configuration only. Product and company names listed are trademarks of their respective companies. Specifications subject to change without notice.

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**LORD SENSING**  
Stellar Technology

ISO 9001/AS9100

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Due to the nature of technology, changes are inevitable. For latest technical specifications, see our website.

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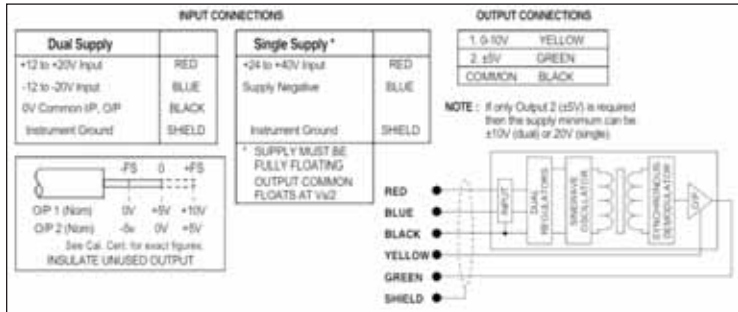


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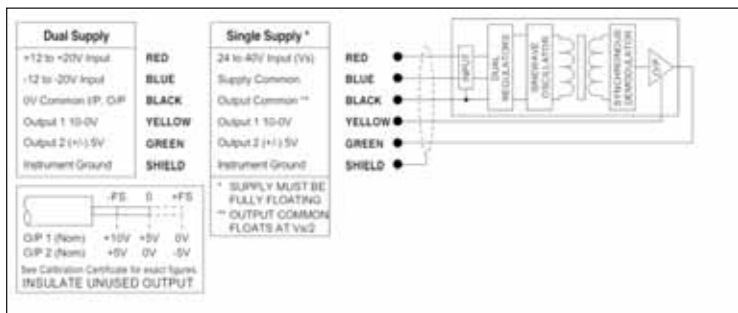
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## Connection Details

### Standard



### Optional



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