

## D5W Submersible LVDT Displacement Transducer

- High cycle life
- Submersible
- Stainless steel
- Infinite resolution
- High accuracy
- Miniature



These transducers are for displacement / position measurement. They make an accurate position measurement of the movement of the armature (the sliding part) relative to the body of the displacement transducer.

This transducer uses the Linear Variable Differential Transformer (LVDT) principle which means that it is probably the most robust and reliable position sensor type available. The strength of the LVDT sensor's principle is that there is no electrical contact across the transducer position sensing element which for the user of the sensor means clean data, infinite resolution and a very long life.

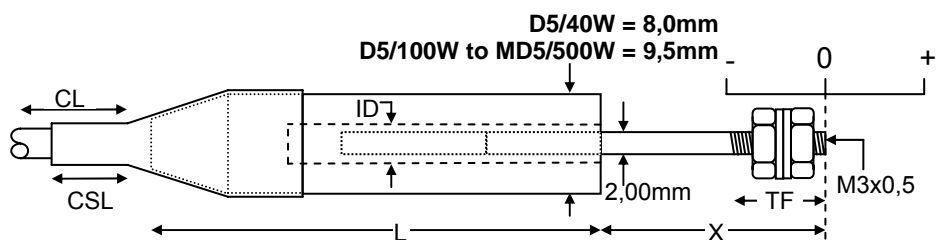
Our submersible displacement transducers are designed to make measurements whilst submerged in suitable liquids. Fluids which are non-magnetic can be allowed to flood the armature tube without affecting the operation of the transducer.

The LVDTs are available as either unguided or spring return versions.

### Unguided version.

On our unguided LVDTs the armature assembly is a separate component, to make a measurement the user must guide the armature inside the body without touching the sides. Unguided position measurement transducers are appropriate where external guidance is available and give truly non-contact operation

End (axial) exit cable.



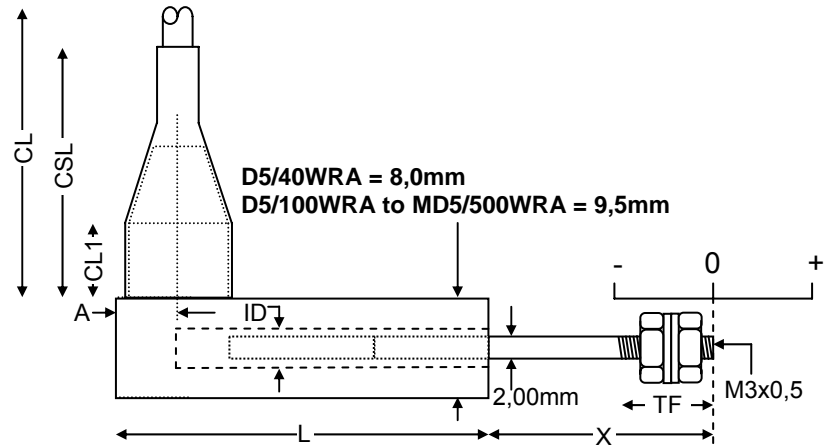
CL (Cable length). - See specification.

CSL (Cable sleeve length). - See specification.

| Type      | Range   | Linearity error (% F.S.) | L    | X      | ID     | Total weight | Armature weight | TF   | Inward over-travel | Sensitivity (nom) |
|-----------|---------|--------------------------|------|--------|--------|--------------|-----------------|------|--------------------|-------------------|
| D5/40W    | ±1mm    | <±0,5/±0,25              | 46mm | 15,7mm | 2,30mm | 20g          | 1,3g            | 13mm | 2,0mm              | 143mV/V           |
| D5/100W   | ±2,5mm  | <±0,5/±0,25              | 53mm | 19,5mm | 2,29mm | 22g          | 1,4g            | 14mm | 1,5mm              | 375mV/V           |
| D5/200W   | ±5mm    | <±0,5/±0,25/±0,1         | 55mm | 26,3mm | 2,29mm | 24g          | 1,8g            | 19mm | 2,9mm              | 320mV/V           |
| D5/300W   | ±7,5mm  | <±0,5/±0,25/±0,1         | 70mm | 30,0mm | 2,54mm | 26g          | 1,8g            | 19mm | 4,0mm              | 435mV/V           |
| D5/400W   | ±10mm   | <±0,5/±0,25              | 74mm | 32,5mm | 2,54mm | 34g          | 1,9g            | 19mm | 3,9mm              | 567mV/V           |
| MD5//500W | ±12,5mm | <±0,5/±0,25              | 90mm | 35,0mm | 2,54mm | 42g          | 2,3g            | 19mm | 3,9mm              | 773mV/V           |

Side (radial) exit cable.

A - 8mm (nominal)  
CL1 - 18mm



CL (Cable length). - See specification.  
CSL (Cable sleeve length). - See specification.

| Type       | Range   | Linearity error (% F.S.) | L    | X      | ID     | Total weight | Armature weight | TF   | Inward over-travel | Sensitivity (nom) |
|------------|---------|--------------------------|------|--------|--------|--------------|-----------------|------|--------------------|-------------------|
| D5/40WRA   | ±1mm    | <±0,5/±0,25              | 48mm | 19,0mm | 2,30mm | 20g          | 1,3g            | 13mm | 2,0mm              | 143mV/V           |
| D5/100WRA  | ±2,5mm  | <±0,5/±0,25              | 53mm | 19,5mm | 2,29mm | 22g          | 1,4g            | 14mm | 1,5mm              | 375mV/V           |
| D5/200WRA  | ±5mm    | <±0,5/±0,25/±0,1         | 55mm | 26,3mm | 2,29mm | 24g          | 1,8g            | 18mm | 2,9mm              | 320mV/V           |
| D5/300WRA  | ±7,5mm  | <±0,5/±0,25/±0,1         | 70mm | 30,0mm | 2,54mm | 26g          | 1,8g            | 18mm | 4,0mm              | 435mV/V           |
| D5/400WRA  | ±10mm   | <±0,5/±0,25              | 74mm | 32,5mm | 2,54mm | 34g          | 1,9g            | 18mm | 3,9mm              | 567mV/V           |
| MD5/500WRA | ±12,5mm | <±0,5/±0,25              | 90mm | 35,0mm | 2,54mm | 42g          | 2,3g            | 18mm | 3,9mm              | 773mV/V           |

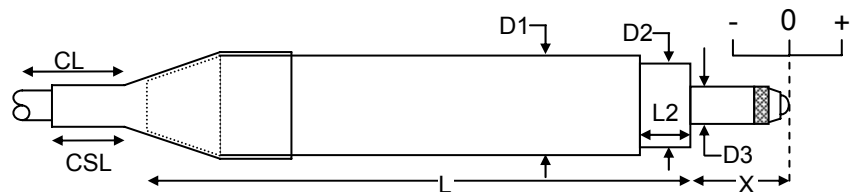
## Spring return version.

Our spring displacement transducer has bearings to guide the armature inside the measurement sensor and a spring which pushes the armature to the fully out position. Spring return LVDTs are appropriate where it is not possible to connect the transducer armature to the moving component being measured.

Spring return transducers should be cleared of air as trapped air may compress under pressure and cause errors. The mechanical frequency response of transducers may be reduced by fluid in the internal tubes.

End (axial) exit cable.

| Type                  | D1    | D2    | D3     | L2    |
|-----------------------|-------|-------|--------|-------|
| D5/40AW               | 8,0mm | 7,0mm | 3,96mm | 7,2mm |
| D5/100AW to MD5/500AW | 9,5mm | 8,0mm | 4,75mm | 8,0mm |



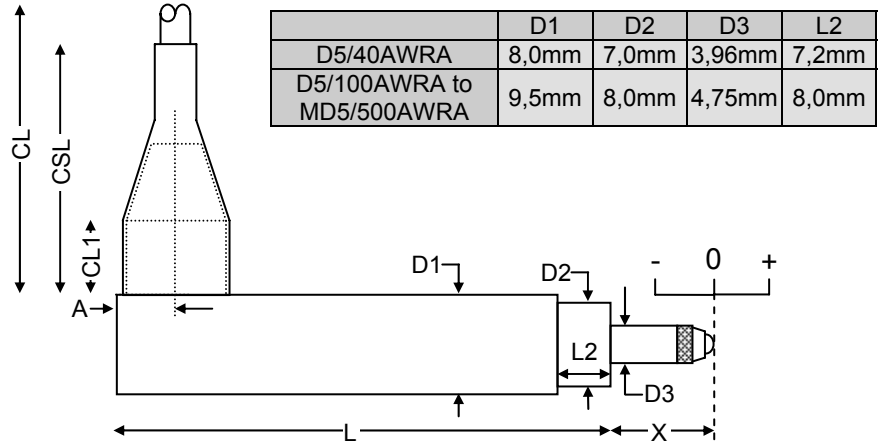
CL (Cable length). - See specification.  
CSL (Cable sleeve length). - See specification.

| Type      | Range   | Linearity error (% F.S.) | L     | X      | Total weight | Inward over-travel | Outward over-travel | Sensitivity (nom) |
|-----------|---------|--------------------------|-------|--------|--------------|--------------------|---------------------|-------------------|
| D5/40AW   | ±1mm    | <±0,5/±0,25              | 58mm  | 11,5mm | 11g          | 1,0mm              | 1,5mm               | 143mV/V           |
| D5/100AW  | ±2,5mm  | <±0,5/±0,25              | 69mm  | 12,5mm | 30g          | 1,1mm              | 1,1mm               | 375mV/V           |
| D5/200AW  | ±5mm    | <±0,5/±0,25/±0,1         | 76mm  | 13,7mm | 34g          | 1,4mm              | 0,3mm               | 320mV/V           |
| D5/300AW  | ±7,5mm  | <±0,5/±0,25/±0,1         | 98mm  | 15,3mm | 38g          | 1,4mm              | 1,3mm               | 435mV/V           |
| D5/400AW  | ±10mm   | <±0,5/±0,25              | 110mm | 19,0mm | 44g          | 1,3mm              | 1,3mm               | 567mV/V           |
| MD5/500AW | ±12,5mm | <±0,5/±0,25              | 132mm | 21,6mm | 52g          | 1,9mm              | 1,3mm               | 773mV/V           |

Side (radial) exit cable.

A - 8mm (nominal)  
CL1 - 18mm

CL (Cable length). - See specification.  
CSL (Cable sleeve length). - See specification.



| Type        | Range   | Linearity error (% F.S.) | L     | X      | Total weight | Inward over-travel | Outward over-travel | Sensitivity (nom) |
|-------------|---------|--------------------------|-------|--------|--------------|--------------------|---------------------|-------------------|
| D5/40AWRA   | ±1mm    | <±0,5/±0,25              | 59mm  | 11,5mm | 11g          | 1,0mm              | 1,5mm               | 143mV/V           |
| D5/100AWRA  | ±2,5mm  | <±0,5/±0,25              | 69mm  | 12,5mm | 30g          | 1,1mm              | 1,1mm               | 375mV/V           |
| D5/200AWRA  | ±5mm    | <±0,5/±0,25/±0,1         | 76mm  | 13,7mm | 34g          | 1,4mm              | 0,3mm               | 320mV/V           |
| D5/300AWRA  | ±7,5mm  | <±0,5/±0,25/±0,1         | 98mm  | 15,3mm | 38g          | 1,4mm              | 1,3mm               | 435mV/V           |
| D5/400AWRA  | ±10mm   | <±0,5/±0,25              | 110mm | 19,0mm | 44g          | 1,3mm              | 1,3mm               | 567mV/V           |
| MD5/500AWRA | ±12,5mm | <±0,5/±0,25              | 132mm | 21,6mm | 52g          | 1,9mm              | 1,3mm               | 773mV/V           |

All dimensions and specifications are nominal.

Due to our policy of on-going development, specifications may change without notice. Any modification may affect some or all of the specifications for our equipment.

| Specification   |  |
|---|--|
| Excitation/supply (acceptable)                          | 0,5V to 7V rms, 2kHz to 10kHz (sinusoidal) |
| Excitation/supply (calibrated)                          | 5V rms, 5kHz (sinusoidal)                  |
| Output load   | 100k Ohms                                  |
| Temperature coefficient (span)                          | ±0,01% F.S. /°C (typical)                  |
| Operating temperature range                             | -20°C to 125°C                             |
| Maximum pressure when sealed on inner cable with TM0960 | 2MPa                                       |
| Maximum pressure when sealed on cable sleeve            | 3MPa                                       |

| Cable length | Standard cable              | CSL (Cable sleeve length) = 2m, CL (Cable length) = 2m                |
|--------------|-----------------------------|---|
|              | Maximum cable sleeve length | 7m  |
|              | Option code TM0828          | CSL (Cable sleeve length) = 600mm, CL (Cable length) = 600mm to 1000m |
|              | Option code TM0960          | CSL (Cable sleeve length) = 50mm, CL (Cable length) = 600mm to 1000m  |

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