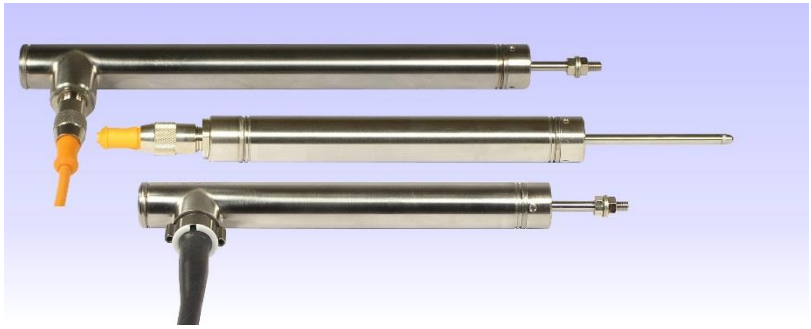
# DISPLACEMENT

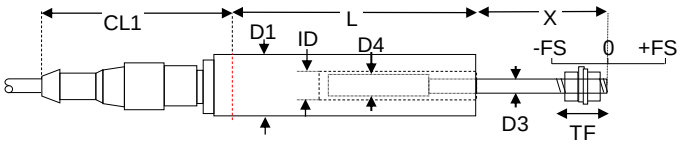
## ACW Submersible LVDT Displacement Transducer

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



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.
This series of displacement transducer is available as either an unguided, captive or spring return version.

## Unguided version.

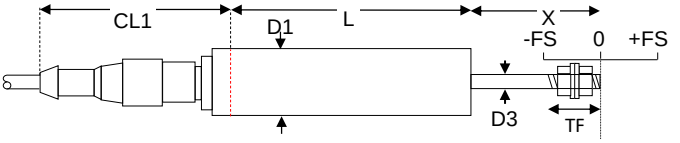



CL1=62mm
D1=20.6mm ±0.12mm
D3=4.75mm
D4=5.97mm
ID=6.80mm
TF=M5x0.8, 15mm
X=Centre of range

On our ACW 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. Our ACW unguided position measurement transducers are appropriate where external guidance is available and give truly non-contact operation

| Type | Range | Linearity error (% F.S.) | L | X (nom) | Total weight | Armature weight | Inward over-travel | Sensitivity (nom) |
|---|---|---|---|---|---|---|---|---|
| ACW500 | ±12.5mm | ±0.5/±0.25/±0.1 | 153mm | 38mm | 200g | 19g | 10mm | 0.7V/V |
| ACW1000 | ±25mm | ±0.5/±0.25/±0.1 | 181mm | 63mm | 257g | 26g | 23mm | 0.9V/V |
| ACW2000 | ±50mm | ±0.5/±0.25/±0.1 | 304mm | 76mm | 350g | 40g | 10mm | 1.5V/V |
| ACW3000 | ±75mm | ±0.5/±0.25/±0.1 | 420mm | 114mm | 484g | 57g | 23mm | 1.5V/V |
| ACW4000 | ±100mm | ±0.5/±0.25/±0.1 | 453mm | 127mm | 598g | 71g | 10mm | 3.2V/V |
| ACW6000 | ±150mm | ±0.5/±0.25 | 632mm | 178mm | 854g | 104g | 10mm | 2.4V/V |
| ACW8000 | ±200mm | ±0.5/±0.25 | 858mm | 254mm | 1.2kg | 142g | 36mm | 1.5V/V |

## Captive guided version.

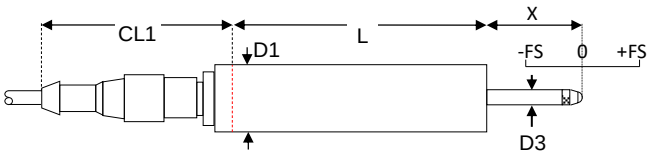



CL1=62mm
D1=20.6mm ±0.12mm
D3=4.75mm
TF=M5x0.8, 15mm
X=Centre of range

Our ACW captive guided displacement transducer has bearings to guide the armature inside the measurement sensor. Our ACW captive LVDTs are for position measurement applications where guidance may be poor and end bearings may be required.

| Type | Range | Linearity error (% F.S.) | L | X (nom) | Total weight | Inward over-travel | Outward over-travel | Sensitivity (nom) |
|---|---|---|---|---|---|---|---|---|
| ACW500B | ±12.5mm | ±0.5/±0.25/±0.1 | 153mm | 38mm | 314g | 10mm | 28mm | 0.7V/V |
| ACW1000B | ±25mm | ±0.5/±0.25/±0.1 | 181mm | 63mm | 370g | 17mm | 25mm | 0.9V/V |
| ACW2000B | ±50mm | ±0.5/±0.25/±0.1 | 304mm | 76mm | 541g | 10mm | 28mm | 1.5V/V |
| ACW3000B | ±75mm | ±0.5/±0.25/±0.1 | 420mm | 114mm | 683g | 23mm | 28mm | 1.5V/V |
| ACW4000B | ±100mm | ±0.5/±0.25/±0.1 | 453mm | 127mm | 740g | 10mm | 28mm | 3.2V/V |
| ACW6000B | ±150mm | ±0.5/±0.25 | 632mm | 178mm | 1.1kg | 10mm | 35mm | 2.4V/V |
| ACW8000B | ±200mm | ±0.5/±0.25 | 858mm | 254mm | 1.5kg | 36mm | 41mm | 1.5V/V |
| ACW10000B | ±250mm | ±0.5/±0.25 | 1043mm | 305mm | 1.6kg | 36mm | 47mm | 2.0V/V |
| ACW15000B | ±380mm | ±0.5 | 1443mm | 406mm | 2.2kg | 10mm | 28mm | 3.2V/V |
| ACW18500B | ±470mm | ±0.5 | 1716mm | 508mm | 2.6kg | 23mm | 35mm | 3.6V/V |

# Spring return version.



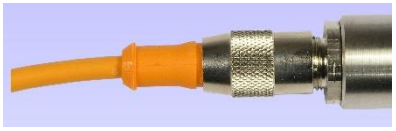

CL1=62mm
D1=20.6mm ±0.12mm
D3=4.75mm
X=Centre of range

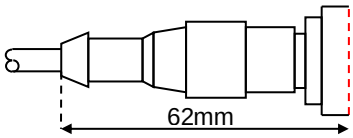
Our ACW spring displacement transducer has bearings to guide the armature inside the measurement sensor and a spring which pushes the armature to the fully out position. Our ACW spring return LVDTs are appropriate where it is not possible to connect the transducer armature to the moving component being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

| Type | Range | Linearity error (% F.S.) | L | X (nom) | Total weight | Spring force at X | Spring rate | Inward over-travel | Outward over-travel | Sensitivity (nom) |
|---|---|---|---|---|---|---|---|---|---|---|
| ACW500A | ±12.5mm | ±0.5/±0.25/±0.1 | 153mm | 38mm | 214g | 1.2N | 0.2N/cm | 6mm | 28mm | 0.7V/V |
| ACW1000A | ±25mm | ±0.5/±0.25/±0.1 | 181mm | 63mm | 257g | 1.9N | 0.3N/cm | 4mm | 25mm | 0.9V/V |
| ACW2000A | ±50mm | ±0.5/±0.25/±0.1 | 304mm | 76mm | 428g | 4.1N | 0.4N/cm | 6mm | 28mm | 1.5V/V |
| ACW3000A | ±75mm | ±0.5/±0.25/±0.1 | 420mm | 114mm | 513g | 5.4N | 0.4N/cm | 15mm | 28mm | 1.5V/V |

# Electrical termination options

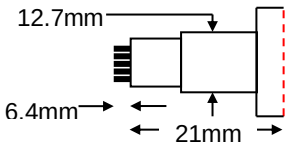
Standard cable - End exit connector with cable fitted





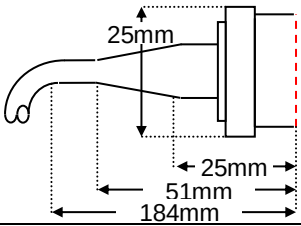

Cable length = 5m
Operating temperature range* = -25°C to 90°C
Maximum static pressure* = 1000kPa

Cable Option 1 - End exit solder pins for customer to fit their own cable



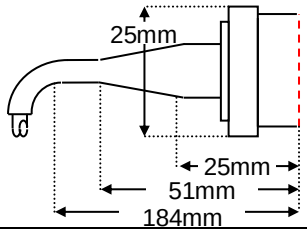

Operating temperature range* = -40°C to 125°C

Cable Option 2 - End exit fully sleeved integral cable



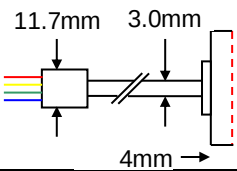

Cable length = 600mm to 7m
Operating temperature range* = -40°C to 100°C
Maximum static pressure* = 3MPa

Cable Option 3 - End exit part-sleeved integral cable



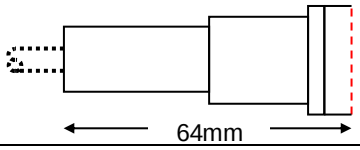

Cable length = 1m to 100m
Cable sleeve length = 600mm
Operating temperature range* = -40°C to 90°C
Maximum static pressure* = 2MPa

Cable Option 5 - End exit integral MI (mineral insulated) stainless steel cable



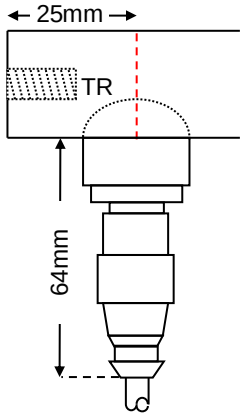

Operating temperature range* = -40°C to 200°C
Cable length = 100mm to 70m
Maximum static pressure* = 21MPa

## Cable Option 6 - End exit connector with customer defined cable length fitted



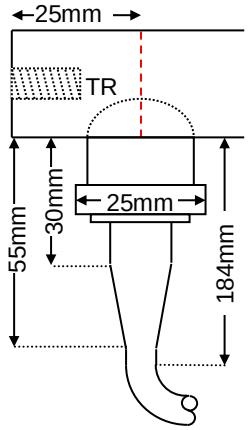

Cable length = 0mm to 1000m
Operating temperature range* = -25°C to 125°C
Maximum static pressure* = 800kPa

## Cable Option 7 - Side exit connector with cable fitted



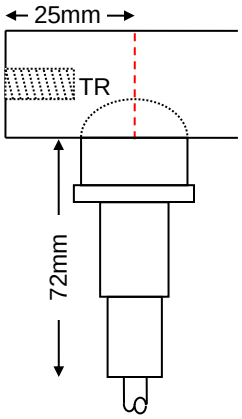

Cable length = 5m
Operating temperature range* = -25°C to 90°C
Maximum static pressure* = 1000kPa
TR = M5x0.8, 11mm

## Cable Option 8 - Side exit fully sleeved integral cable



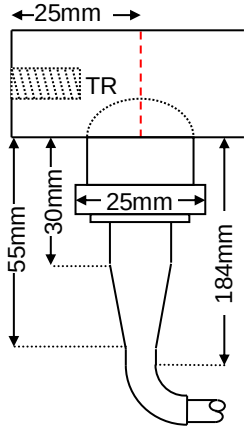

Cable length = 600mm to 7m
Operating temperature range* = -40°C to 100°C
Maximum static pressure* = 3MPa
TR = M5x0.8, 11mm

## Cable Option 9 - Side exit connector with customer defined cable length fitted



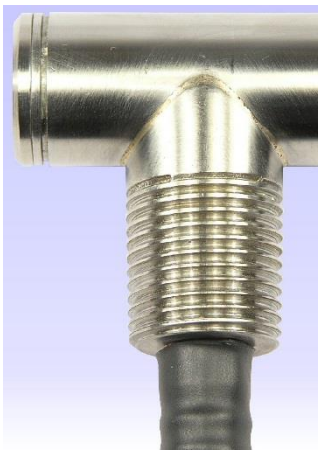

Cable length = 0mm to 1000m
Operating temperature range* = -25°C to 125°C
Maximum static pressure* = 800kPa
TR = M5x0.8, 11mm

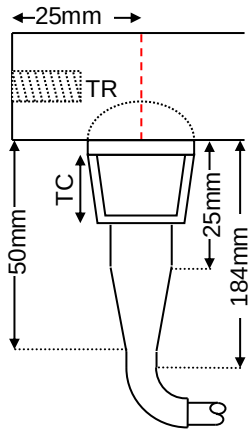
Cable Option 10 - Side exit part-sleeved integral cable




| | | |
|---|---|---|
| Cable length | = | 600mm to 1000m |
| Cable sleeve length | = | 150mm |
| Operating temperature range* | = | -40°C to 90°C |
| Maximum static pressure* | = | 2MPa |
| TR | = | M5x0.8, 11mm |

Cable Option 11 - Side exit part-sleeved integral cable and conduit fitting






| | | |
|---|---|---|
| Cable length | = | 1m to 1000m |
| Cable sleeve length | = | 150mm |
| Operating temperature range* | = | -40°C to 90°C |
| Maximum static pressure* | = | 2MPa |
| TR | = | M5x0.8, 11mm |
| TC | = | 1/2"-14 NPT, 20mm |

| **Specification** *Transducer and cable option specifications should be compared and the worst figures used | |
|---|---|
| Excitation/supply (acceptable) | 0.5V to 7V rms, 2kHz to 10kHz (sinusoidal) |
| Excitation/supply (calibrated) | 5V rms, 5kHz (sinusoidal) |
| Linearity error (Standard) | ±0.5% F.S. |
| Linearity error (Optional on some models) | ±0.25% F.S. |
| Linearity error (Optional on some models) | ±0.1% F.S.* |
| Temperature coefficient (span) | ±0.01% F.S. /°C (typical)* |
| Operating temperature range | -40°C to 125°C** |

bsi. ISO 9001 Quality Management

CE

Due to our policy of on-going development, ACW specifications may change without notice. Any modification to our ACW may affect some or all of the specifications for our equipment. All ACW dimensions and specifications are nominal.
ACW - WARNING - PERSONAL INJURY
Do not use our ACW as safety, emergency stop or feedback devices in any application where the failure of this product could result in damage to equipment, personal injury or death.

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