



DISPLACEMENT

## DCW Submersible DC to DC LVDT Displacement Transducer

- High cycle life
- Submersible
- Stainless steel
- High accuracy
- High resolution
- Voltage / 4-20mA output



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 DC to DC LVDT transducer has all of the benefits of the LVDT sensor principle with the added convenience of built-in LVDT electronics enabling a dc supply and dc output. As an option we can offer a 4-20mA 2 wire connection to the transducer on some models.

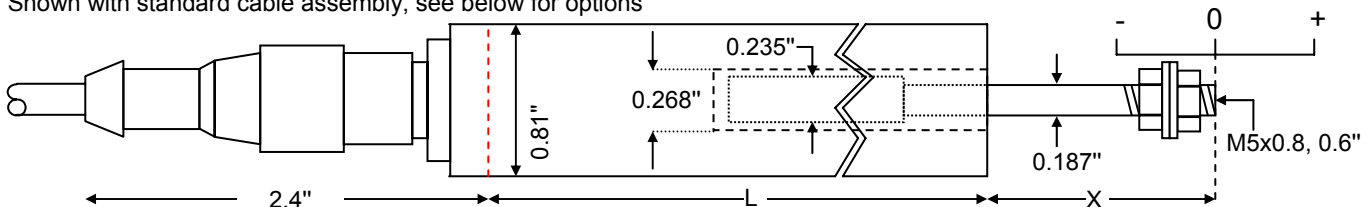
Our submersible displacement transducers are designed to make measurements whilst submerged in suitable liquids. Fluids which are non-magnetic can be allowed to flood the armature tube without affecting the operation of the transducer.

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

### Unguided version.

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

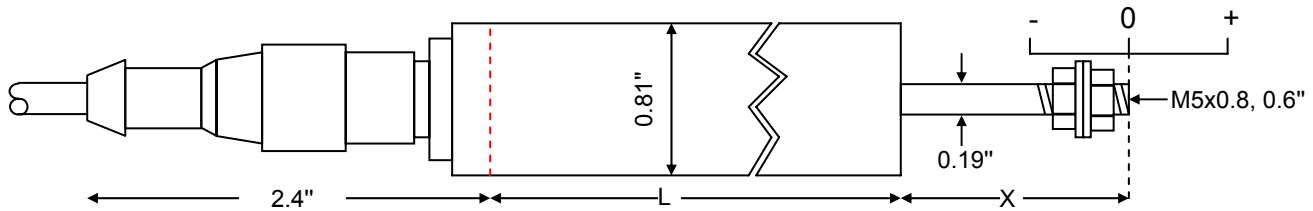
Shown with standard cable assembly, see below for options



Type	Range	Linearity error (% F.S.)	L	X	Total weight	Armature weight	Inward over-travel
DCW100	±2.5mm (±0.1")	<±0.5/±0.25	2.7"	1.28"	4oz	0.05oz	0.4"
DCW200	±5mm (±0.2")	<±0.5/±0.25	2.7"	1.28"	4oz	0.06oz	0.3"
DCW300	±7.5mm (±0.3")	<±0.5/±0.25	2.7"	1.28"	4oz	0.06oz	0.2"
DCW400	±10mm (±0.4")	<±0.5/±0.25	2.7"	1.28"	4oz	0.07oz	0.1"
DCW500	±12.5mm (±0.5")	<±0.5/±0.25/±0.1	8.0"	1.5"	9oz	0.7oz	0.4"
DCW1000	±25mm (±1")	<±0.5/±0.25/±0.1	9.1"	2.5"	11oz	0.9oz	0.9"
DCW2000	±50mm (±2")	<±0.5/±0.25/±0.1	13.9"	3.0"	14oz	1.4oz	0.4"

## Captive guided version.

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



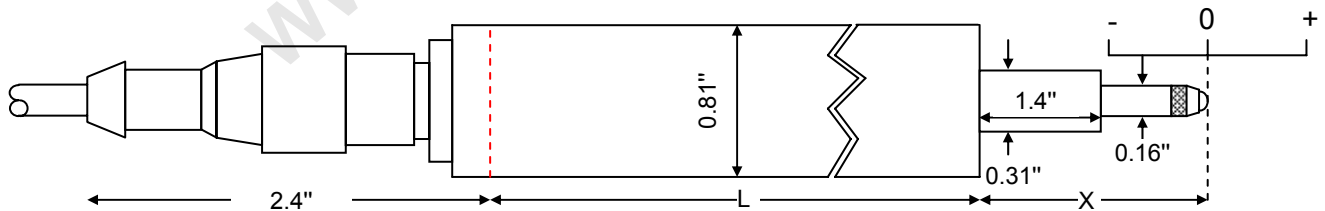
Shown with standard cable assembly, see below for options

Type	Range	Linearity error (% F.S.)	L	X	Total weight	Inward over-travel	Outward over-travel
DCW500B	±12.5mm (±0.5")	<±0.5/±0.25/±0.1	8.0"	1.5"	13oz	0.4"	1.1"
DCW1000B	±25mm (±1")	<±0.5/±0.25/±0.1	9.1"	2.5"	15oz	0.7"	1.0"
DCW2000B	±50mm (±2")	<±0.5/±0.25/±0.1	13.9"	3.0"	1.2lb	0.4"	1.1"
DCW3000B	±75mm (±3")	<±0.5/±0.25/±0.1	18.5"	4.5"	1.4lb	0.9"	1.1"
DCW4000B	±100mm (±4")	<±0.5/±0.25/±0.1	19.8"	5.0"	1.8lb	0.4"	1.1"
DCW6000B	±150mm (±6")	<±0.5/±0.25	27.8"	7.0"	2.3lb	0.4"	1.4"
DCW8000B	±200mm (±8")	<±0.5/±0.25	35.8"	10.0"	3.3lb	1.4"	1.6"
DCW10000B	±250mm (±10")	<±0.5/±0.25	43.1"	12.0"	3.8lb	1.4"	1.9"
DCW15000B	±375mm (±15")	<±0.5	58.8"	16.0"	5.0lb	0.4"	1.1"
DCW18500B	±470mm (±18.5")	<±0.5	69.5"	20"	5.8lb	0.9"	1.4"

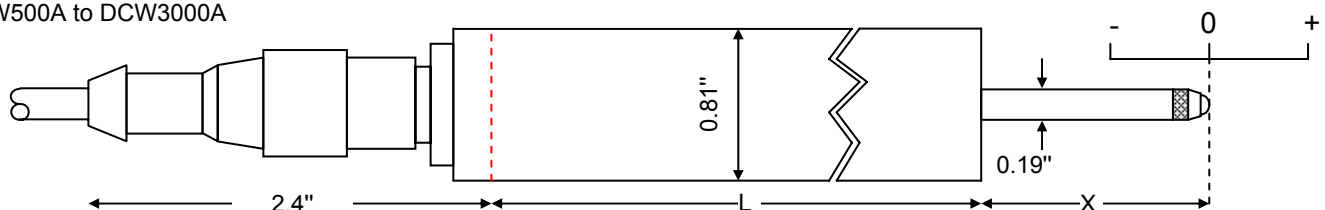
## Spring return version.

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.

DCW100A to DCW400A



DCW500A to DCW3000A



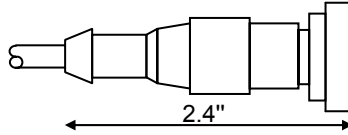
Shown with standard cable assembly, see below for options

Type	Range	Linearity error (% F.S.)	L	X	Total weight	Spring force at X	Spring rate	Inward over-travel	Outward over-travel
DCW100A	±2.5mm (±0.1")	<±0.5/±0.25	2.7"	0.5"	5oz	3oz	8.5oz/inch	0.09"	0.06"
DCW200A	±5mm (±0.2")	<±0.5/±0.25	2.7"	0.5"	5oz	3oz	7.1oz/inch	0.01"	0.06"
DCW300A	±7.5mm (±0.3")	<±0.5/±0.25	2.7"	0.7"	5oz	5oz	5.8oz/inch	0.1"	0.06"
DCW400A	±10mm (±0.4")	<±0.5/±0.25	2.7"	0.9"	5oz	6oz	7.2oz/inch	0.06"	0.06"
DCW500A	±12.5mm (±0.5")	<±0.5/±0.25/±0.1	8.0"	1.5"	9oz	4.4oz	2.0oz/inch	0.2"	1.1"
DCW1000A	±25mm (±1")	<±0.5/±0.25/±0.1	9.1"	2.5"	11oz	7.0oz	2.3oz/inch	0.2"	1.0"
DCW2000A	±50mm (±2")	<±0.5/±0.25/±0.1	13.9"	3.0"	15oz	15oz	3.6oz/inch	0.2"	1.1"
DCW3000A	±75mm (±3")	<±0.5/±0.25/±0.1	18.5"	4.5"	1.2lb	1lbs	3.2oz/inch	1.1"	1.1"

# Electrical termination options

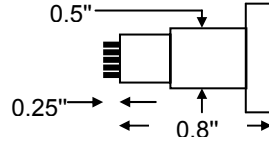
\*Transducer and cable option specifications should be compared and the worst figures used

Standard cable - End exit connector with cable fitted



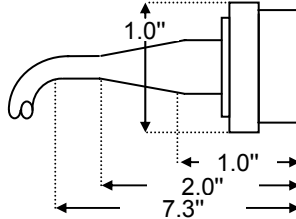
Cable length = 16ft  
Operating temperature range\* = -13°F to 194°F  
Maximum static pressure\* = 145psi

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



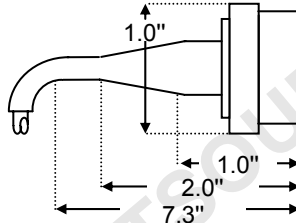
Operating temperature range\* = -40°F to 257°F

Option code 2 - End exit fully sleeved integral cable



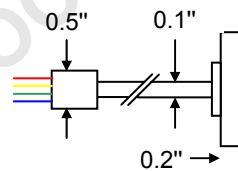
Cable length = 23.6" to 23ft  
Operating temperature range\* = -40°F to 212°F  
Maximum static pressure\* = 500psi

Option code 3 - End exit part-sleeved integral cable



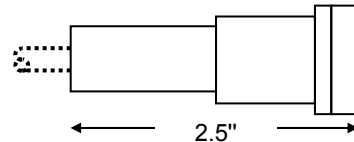
Cable length = 39.4" to 328ft  
Cable sleeve length = 24"  
Operating temperature range\* = -40°F to 194°F  
Maximum static pressure\* = 250psi

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



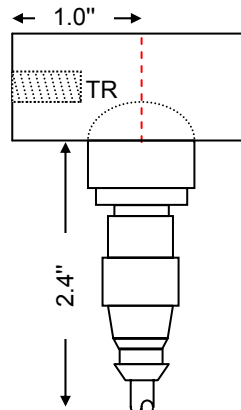
Operating temperature range\* = -40°F to 392°F  
Cable length = 3.9" to 230ft  
Maximum static pressure\* = 3000psi

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



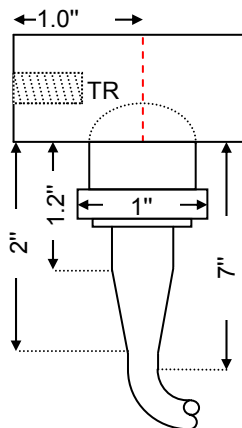
Cable length = 0" to 3281ft  
Operating temperature range\* = -13°F to 257°F  
Maximum static pressure\* = 116psi

Standard cable 7 - Side exit connector with cable fitted



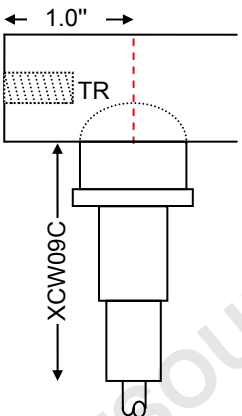
Cable length = 16ft  
Operating temperature range\* = -13°F to 194°F  
Maximum static pressure\* = 145psi  
TR = M5x0.8, 0.43"

A close-up photograph of a cable connector. The connector is made of polished metal and has a T-shaped design. A black cable is plugged into the vertical port. A white O-ring seal is visible, positioned between the cable's outer jacket and the metal housing to provide a watertight seal. The background is a solid light blue.

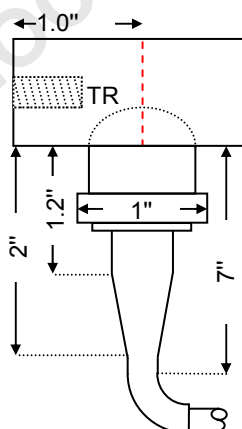


Cable length	=	23.6" to 23ft
Operating temperature range*	=	-40°F to 212°F
Maximum static pressure*	=	500psi
TR	=	M5x0.8, 0.43"

A close-up photograph of a metal T-junction fitting. The fitting is made of polished metal and has a threaded plug inserted into one of its ports. A black cable is attached to the bottom of the plug. The background is a solid light blue color.

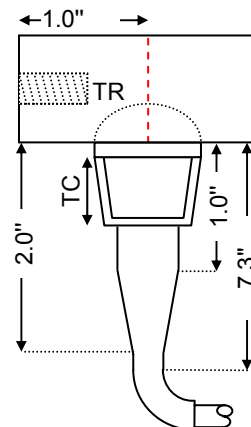


Cable length	=	0" to 3281ft
Operating temperature range*	=	-13°F to 257°F
Maximum static pressure*	=	116psi
TR	=	M5x0.8, 0.43"



Cable length	=	23.6" to 3281ft
Cable sleeve length	=	6"
Operating temperature range*	=	-40°F to 194°F
Maximum static pressure*	=	250psi
TR	=	M5x0.8 0.43"

A close-up photograph of a metal fitting, likely made of stainless steel. It features a horizontal section with a smooth, polished finish and a vertical section with a threaded, knurled appearance. A black cable is attached to the bottom of the vertical section. The background is a solid light blue.



Cable length	=	39.4" to 3281ft
Cable sleeve length	=	6"
Operating temperature range*	=	-40°F to 194°F
Maximum static pressure*	=	247psi
	TR	= M5x0.8, 0.43"
	TC	= 1/2"-14 NPT, 0.8"

Specification		
V output	Supply voltage (dual)	±12V to ±20V dc, 30mA (typical)
	Supply voltage (single, must be floating)	24V to 40V dc, 30mA (typical)
	Change in output for change in supply	5mV/V
	Output load	10kOhms
	Output ripple	30mV (peak-to-peak typical)
	Electrical output bandwidth	200Hz
	Output impedance	2 Ohms
	Operating temperature range	-58°F to 176°F
4-20mA output ( $\geq \pm 12.5\text{mm}$ ( $\pm 0.5''$ ))	Supply voltage	12V to 36V dc
	Max loop resistance	(Supply voltage-11) x 50 Ohms
	Output ripple	50uA (peak-to-peak)
	Electrical output bandwidth	200Hz
	Operating temperature range	14°F to 158°F
Both outputs	Temperature coefficient (zero)	±0.006% F.S. /°F (typical)
	Temperature coefficient (span)	±0.017% F.S. /°F (typical)
	Maximum static pressure	3000psi

Output details				
Option code	Note	- position	0	+ position
Standard		-5V (+0% - 5%)	0V	+5V (+0% - 5%)
TM0627		+5V (+0% - 5%)	0V	-5V (+0% - 5%)
TM85A		0V	5V	10V (+0% - 5%)
TM85B		10V (+0% - 5%)	5V	0V
TM0321A	$\geq \pm 12.5\text{mm}$ ( $\pm 0.5''$ )	4mA	12mA	20mA
TM0321B	$\geq \pm 12.5\text{mm}$ ( $\pm 0.5''$ )	20mA	12mA	4mA

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.

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