Displacement Transducers

Honeywell manufactures a wide range of linear variable displacement transducers. Our linear variable displacement transducers are designed to meet requirements of most single- and multiple-point industrial gauging applications as well as micro-displacement instruments in research and scientific laboratories.

Models are available with free unguided, captive spring return, and captive guided armatures. Non-linearity of 0.25 % full scale and measuring ranges from ±0.1 in to ±18.5 in are available. Electrically, we offer both ac and dc models to match power requirement needs. Our linear variable displacement transducers operate in temperatures as low as -50 °C [-58 °F] to as high as 125 °C [257 °F].

Our welded, stainless steel construction and submersible, underwater connectors are combined to offer units that are often ideal for offshore drilling, mining, marine, and hydraulic engineering potential applications.

Many displacement transducers can ship from our extensive quick-ship program, and others are available with customized options or as fully custom designs. Please see our Web site for updated listings (http://measurementsensors.honeywell.com).

Quick-ship program - Displacement transducers

Our quick-ship program for test and measurement products includes thousands of finished transducers, load cells, accelerometers, displacement transducers, instrumentation and amplifiers in a wide variety of models and ranges. This diversity readily accommodates most applications, and provides immediate solutions to your urgent sensor needs.

To learn more about Honeywell's quick-ship program, visit our Web site or contact our sales support team at 800.848.6564 (+1 614.850.5000).

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	PLVX	VL7A	MVL7C	S3C	JEC-AG	S5
						
±0.1 in	X					
±0.2 in				X		X
±0.4 in				X		
±0.5 in		X			X	
±1 in		X			X	
±2 in		X	X		X	
±3 in			X			

Potential application		Model	Order codes	Stroke range	Page	
Amplified	Unguided	JEC DLB	AY321 BY127	±12,7 mm to 203,2 mm [±0.5 in to ±8.0 in] ±12,7 mm to 203,2 mm [±0.5 in to ±8.0 in]	407 409	
	Captive guided	JEC-C DLE	AY323 BY128	±12,7 mm to 470 mm [±0.5 in to ±18.5 in] ±12,7 mm to 470 mm [±0.5 in to ±18.5 in]	411 413	
	Spring loaded	JEC-AG DLF	AY322 BY129	±12,7 mm to 76,2 mm [±0.5 in to ±3.0 in] ±12,7 mm to 76,2 mm [±0.5 in to ±3.0 in]	415 417	
	Miniature unguided	MS3	BY327	±2,54 mm to 10,16 mm [±0.1 in to ±0.4 in]	419	
	Miniature spring loaded	S3C	BY324	±2,54 mm to 10,16 mm [±0.1 in to ±0.4 in]	421	
	Submersible unguided	DW7U	AY250	±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in]	423	
	Submersible captive guided	DW7C	AY251	±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in]	425	
	Submersible spring loaded	DW7S SSD	AY252 AY911	±12,7 mm to 76,2 mm [±0.5 in to ±3.0 in] ±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in]	427 429	
Unamplified	Unguided	MVL7	BY125	±12,7 mm to 203,2 mm [±0.5 in to ±8.0 in]	431	
	Captive guided	MVL7C	BY126	±12,7 mm to 470 mm [±0.5 in to ±18.5 in]	433	
	Spring loaded	VL7A	BY122	±12,7 mm to 76,2 mm [±0.5 in to ±3.0 in]	435	
	Miniature	M-5C PLVX S5	AY318 AY111 AY112	±2,54 mm to 12,7 mm [±0.5 in to ±3.0 in] ±0,51 mm to 5,08 mm [±0.02 in to ±0.2 in] ±0,25 mm to 12,7 mm [±0.01 in to ±0.5 in]	437 439 441	
	Submersible unguided	LW7U SSA	AY200 AY910	±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in] ±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in]	443 445	
	Submersible spring loaded	LW7C LW7S	AY201 AY202	±12,7 mm to 101,6 mm [±0.5 in to ±4.0 in] ±12,7 mm to 76,2 mm [±0.5 in to ±3.0 in]	447 449	
	Submersible miniature unguided	MS7A	BY921	±1,02 mm to 12,7 mm [±0.04 in to ±0.5 in]	451	
	Submersible miniature spring loaded	S7C	BY912	±1,02 mm to 12,7 mm [±0.04 in to ±0.5 in]	453	

Displacement transducer selection considerations

The following factors should be considered when selecting an displacement transducer:
1. Measurement range
2. Armature type
3. ac-ac vs. dc-dc
4. Environment

Measurement range: displacement transducers are available with ranges from 0,25 mm to 470 mm [±.01 in to ±18.5 in]. A displacement transducer with a ±470 mm [±18.5 in] range can be used in one direction to measure up to 939,8 mm [37 in]. If accuracy is important, the range selected should not be any larger than necessary.

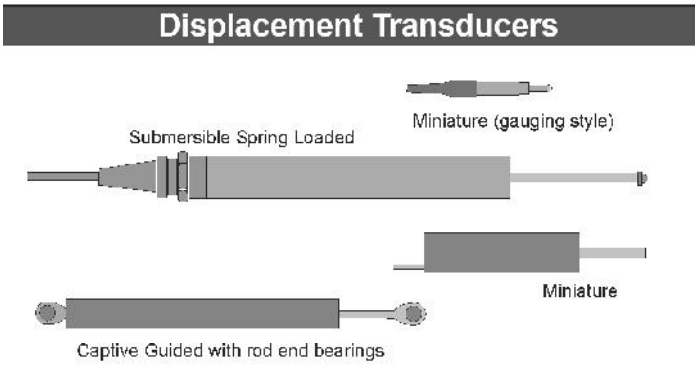
Armature type: Three armature types are available: free unguided armatures, captive guided spring return armatures, and captive guided armatures.

Free unguided armatures are recommended for applications in which the target being measured moves parallel to the transducer body as well as those which require frequent or continuous measurements. This armature type is often well suited for dynamic applications. When using a free unguided armature, the armature and the displacement transducer body must be mounted so that their correct relative positions are maintained. This type of displacement transducer features an armature/threaded push rod assembly which is completely separable from the displacement transducer body. Since the free unguided armature involves no mechanical coupling between the armature and the displacement transducer body, there are no springs or bearings to fatigue. This unit often has a virtually unlimited fatigue life.

Captive guided spring return armatures are often well suited for those applications requiring the measurement of multiple targets or applications in which the target moves transverse to the armature and changes in a structure's surface are being measured. In this type of displacement transducer, the armature moves over bearings in the displacement transducer body. The armature is biased by an internal spring so that the ball-ended probe bears against the surface of the target whose displacement is being measured. The displacement transducer is held in position by clamping the body alone. The armature is not attached to the target being measured.

Captive guided armatures are designed for applications requiring a longer working range. The armature moves freely over machined bearings but cannot be removed from the body. The displacement transducer body has a threaded mounting hole and the armature is attached to the structure being measured. The armature end is threaded so that special adapters such as spherical bearings or rollers can be attached.

ac-ac vs. dc-dc: The major advantages of dc-dc displacement transducers are the ease of installation, the ability to operate from dry cell batteries in remote locations, and lower system cost. ac-ac displacement transducer advantages include enhanced accuracy and a smaller body size. An ac-ac displacement transducer can be equipped with more sophisticated electronics such as Honeywell's SC instrumentation. The SC instrument provides an ac power supply, a phase sensitive demodulator, a scaling amplifier and dc output. The ac-ac displacement transducer system has less residual noise at minimum readings that dc-dc units which utilize internal electronics.



Environment: For applications involving very high humidity or requiring submersion of the displacement transducer, a submersible displacement transducer is required. Submersible units are available for either ac-ac or dc-dc operation and with free unguided or captive spring return armatures. The unit selected should also operate and survive at the temperatures dictated by the application. Note that ac-ac units will operate at higher temperatures (up to 125 °C [257 °F]) than the dc-dc units (up to 70 °C [158 °F]) which have internal electronics.

Side loads: Side loads must be kept to a minimum since they will cause rubbing between the armature and the displacement transducer body. This friction will cause excessive wear of bearings and parts and in extreme cases, the armature may bend. At a minimum, side loads will reduce the unit's life and accuracy.

Mounting blocks: Mounting blocks come in two sizes. The large size (order code AA937) accommodates displacement transducers with an outside diameter of 20,6 mm [0.80 in]. The small size (order code AA945) is for units with outside diameters of 9,5 mm [0.37 in] or 8 mm [0.32 in]. The mounting blocks are designed to be bolted to a flat surface. The sensor is clamped with a captive cap head screw. Two mounting cap screws are furnished. Both units are made from glass filled nylon and have an operating temperature of -29 °C to 110 °C [-20 °F to 230°F]. Strokes up to 10,16 mm [0.4 in] require one mounting block, strokes over 12,7 mm [0.5 in] require two mounting blocks. See accessories section of Appendix for outline and dimensional drawings.