Series DCTM

Precision
Non Contacting

Linear Displacement Transducer System

DESIGN AND PERFORMANCE FEATURES

● Excellent linearity over long and short stroke (0.05%).
● Infinite Resolution.
● Output is absolute - not incremental (no loss of position).
● Non-contacting design, no wear, no friction.
● Completely solid state - all electronics included.
● Extremely stable - no adjustments necessary.
● Sealed stainless steel sensor withstands 3,000 PSI pressure.
● Options for remote preset switching and remote reading.
● Compact package - easily installed.
● Includes provisions for external fine zero-position trim adjustment.
● May be adapted to use external D.C. reference for output voltage.
● Quartz Crystal time reference.
● Constructed for operation in corrosive environment and high pressures.
● May be installed to couple with magnet through wall of non-magnetic material.
● Clearance between magnet and sensor can exceed 1 inch (special).
● Velocity output available (optional).

COMPLETELY SOLID STATE, UTILIZES MAGNETOSTRICTIVE PRINCIPLE.

ANALOG OUTPUT
FROM 0 TO 10 VOLTS DC.
OTHER OUTPUTS AVAILABLE

PULSE TRAIN OUTPUT FOR DIRECT DIGITAL PROCESSING

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DISPLACEMENT RANGE</th>
<th>DISPLACEMENT</th>
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<tbody>
<tr>
<td>DCTM-12</td>
<td>0 to 12&quot;</td>
<td>$454.00</td>
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<td>DCTM-24</td>
<td>0 to 24&quot;</td>
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<td>DCTM-36</td>
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<td>DCTM-48</td>
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<td>DCTM-60</td>
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<tr>
<td>DCTM-120</td>
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DCTM over 120" - Special Order
Standard units in one foot increments to ten feet.
Operations

Strain pulses are launched in a ferromagnetic (magnetostrictive wire) by the interaction of pulse current through the wire and magnetic field from a magnet. These pulses arrive at a fixed reference time interval later. This time interval is precisely related to the controlled properties of the wire within a protective tube.

These precise time based pulses are either converted to a D.C. analog output voltage or can be used to gate a precision quartz clock to obtain a count or digital output.

Pulses Launched  t_d  Ref. Voltage
Pulses Received  1k
Pulse Train  Average
DC Output 0

Standard Specifications

Electrical Stroke: Standard - up to 10 feet (longer strokes available).
Null: Positioned as required.
Null Adjustment: ±2% of total stroke nominal.
Non-Linearity: Less than ±0.05% of full range.
Repeatability: Better than ±0.002% of full range.
Temperature Coef. of Scale Factor: Less than 5ppm/°F for over 30°.
Frequency Response: Frequency response is a function of length and the type of filtering used.
Ripple: Less than 0.5% of RMS of full range.
Input Voltage: 10 to +10 vdc (4 to 20mA available).
Special Output: Pulse width modulated output signal TTL compatible.
Output Impedance: Less than 10 ohms.
Operating Temperature Range: 35°F to 180°F (wider range available).
Storage Temperature Range: -40°F to 180°F.
Operation in Hydraulic Fluid: The 3/8" rod is capable of operating in hydraulic fluid and will withstand 3,000 psi operating pressure.
Scale Adjustment: 1% of total stroke nominal.

Special Notes on Temperature Performance

Separate Electronics:
Standard units use commercial electronics and operate up to 150°F.
Special units with special electronics operate up to 180°F.
TCA of Analog Box with 30ppm/°F, is special.
55ppm/°F, is standard.
Transducer Rod Assembly:
Stroke lengths over 12" can operate up to 180°F. Standard stroke lengths 12" or under need special electronics for operation over 150°F.

Options

- 115V, 60 Hz
- Bar magnets are available for operation in limited access applications.
- Wider ranges of operating temperatures are available on request.
- Transducers can be supplied to operate with customer furnished electronics.
- Remote presetting of limit switches.

APPLICATION NOTES

1. The ultrasonic waveguide is enclosed in a non-magnetic tubing (transducer beam) so that the magnetic positioning head can couple its magnetic field to the waveguide. Magnetic fields normally generated by 60 Hz or 400 Hz equipment will not have an effect on the operation because these frequencies will be rejected by the narrow band-width detector utilized.

2. The magnetic positioning head has holes for mounting or may be clamped in position.

3. Normally, the transducer beam is fixed and the positioning head is movable. However, this can be reversed if desired — relative displacement between the two parts provides the output signal.

4. Adjustable multi-point sensing and switching (solid state or relay) can be supplied as optional equipment.

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