

Series 600

High Accuracy ADTs

Trans-Tek SERIES 600 Angular Displacement Transducers (ADT's) are precision differential capacitors. These transducers do not have the edge effects and dimensional instability characteristic of traditional capacitive devices. The sensing element is coupled to a solid state oscillator, demodulator, and amplifier to yield DC input — DC output performance.

These transducers deliver a high level analog DC voltage directly proportional to shaft angular displacement with a high degree of conformity. Rotation is continuous and there is no reactive torque. Reliable performance is assured by the absence of any high speed rubbing contacts.



Key Features

Ranges from $\pm 30^\circ$ to $\pm 60^\circ$
Non-linearity < 0.05%

Absolute Measurement
DC Voltage Operation

SPECIFICATIONS

MODEL NO.	DISPL. RANGE +CW, -CCW	LINEARITY*	MAX. USABLE RANGE	LINEARITY USABLE RANGE	OUTPUT VDC	INPUT/ OUTPUT CURVE	TYPICAL TEMP. COEF. SPAN/°F
0600-0000	$\pm 30^\circ$	$\pm 0.05\%$	$\pm 40^\circ$	$\pm 0.10\%$	100 mV/°	1	-0.01%
0601-0000	10°-70° CW	$\pm 0.05\%$	0°-80° CW	$\pm 0.10\%$	100 mV/°	2	-0.015%
0602-0000	10°-70° CCW	$\pm 0.05\%$	0°-80° CCW	$\pm 0.10\%$	100 mV/°	3	-0.01%
0603-0000	$\pm 60^\circ$	$\pm 0.10\%$	$\pm 80^\circ$	$\pm 0.15\%$	100 mV/°	4	-0.01%
0603-0001	$\pm 60^\circ$	$\pm 0.05\%$	$\pm 80^\circ$	$\pm 0.10\%$	100 mV/°	4	-0.01%
0603-0002	20°-140° CW	$\pm 0.10\%$	0°-160° CW	$\pm 0.15\%$	50 mV/°	5	-0.015%
0603-0003	20°-140° CW	$\pm 0.05\%$	0°-160° CW	$\pm 0.10\%$	50 mV/°	5	-0.015%
0603-0004	20°-140° CCW	$\pm 0.10\%$	0°-160° CCW	$\pm 0.15\%$	50 mV/°	6	-0.01%
0603-0005	20°-140° CCW	$\pm 0.05\%$	0°-160° CCW	$\pm 0.10\%$	50 mV/°	6	-0.01%

*Definition: Zero Base Terminal Average, expressed as a max % deviation of total range.

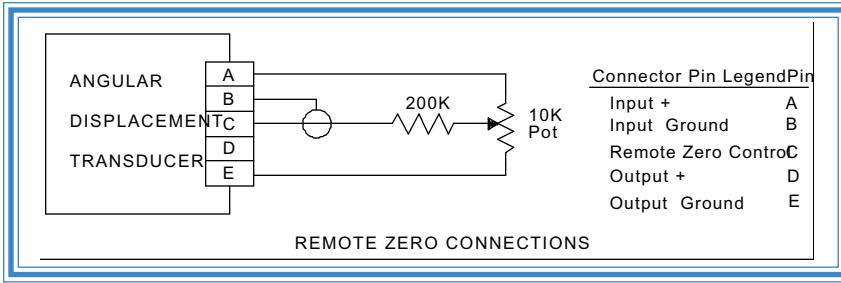
CW defined as clockwise direction of shaft rotation, when viewed from shaft end.

COMMON ELECTRICAL SPECIFICATIONS

Repeatability	< .01%	Internal carrier frequency	400 kHz
Resolution	Infinite	Ripple, Max.	20 mV P/P 400 kHz
Current, Input	30 mA max	Zero adjustment	$\pm 3^\circ$
Impedance, Output	< 2 Ohms	Zero positions	See Output Curves
Max Angular Velocity	1440°/sec	Output short circuited protected	
Max. Angular Velocity with output down < 2%	18000°/sec available	Excitation (See option 1) Voltage > 18 VDC may damage unit	15.00 VDC

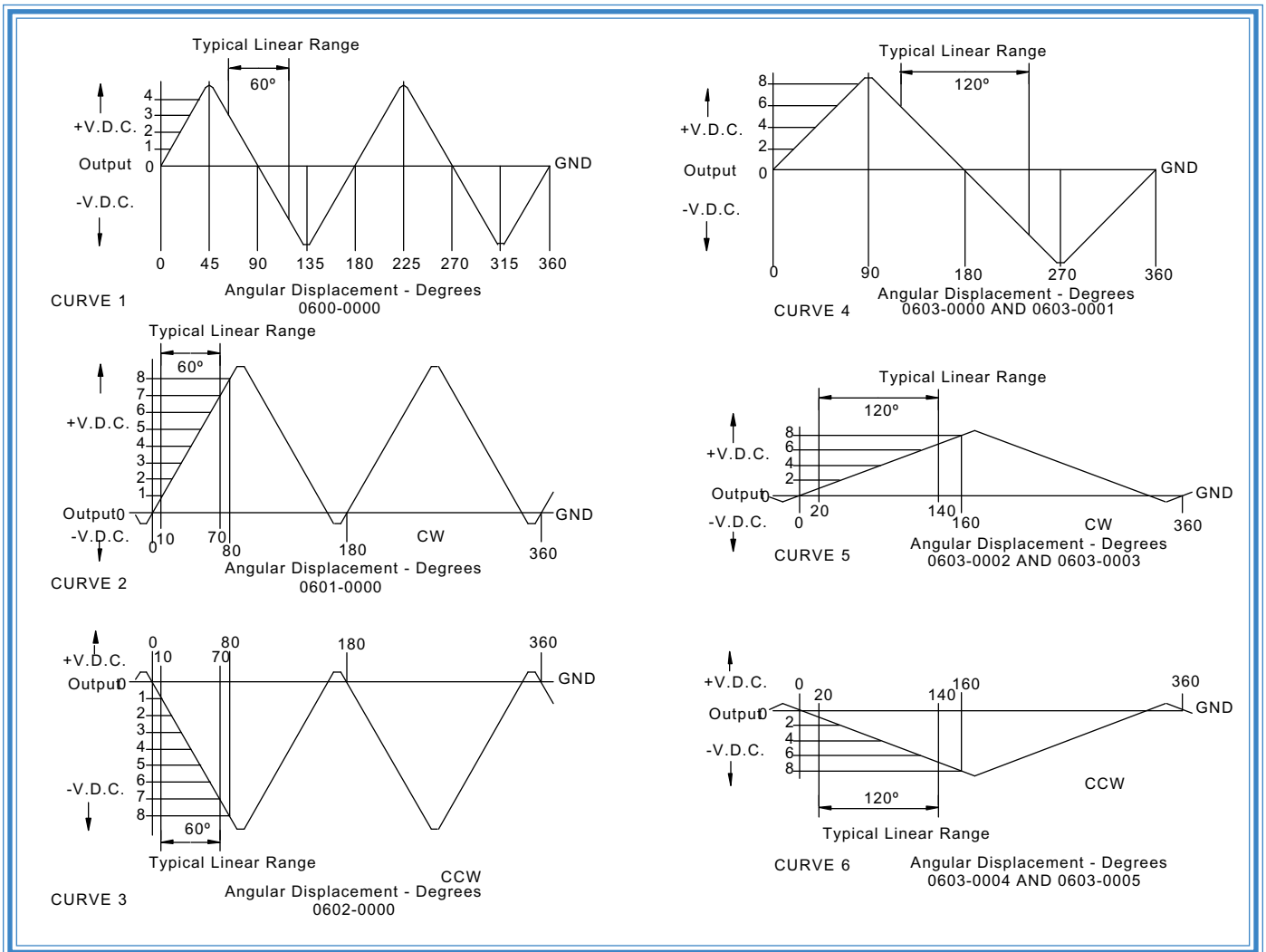
Input polarity protected

REMOTE ZERO OPERATION



UNLESS operating in a noise free environment, the lead to pin C must be shielded, as shown. The existing zero adjust potentiometer in the Angular Displacement Transducer must be rotated fully clockwise before the remote zero control can function correctly. This remote function is useful in applications where it is inconvenient to access the adjustment screw on the transducer housing.

INPUT - OUTPUT CURVES



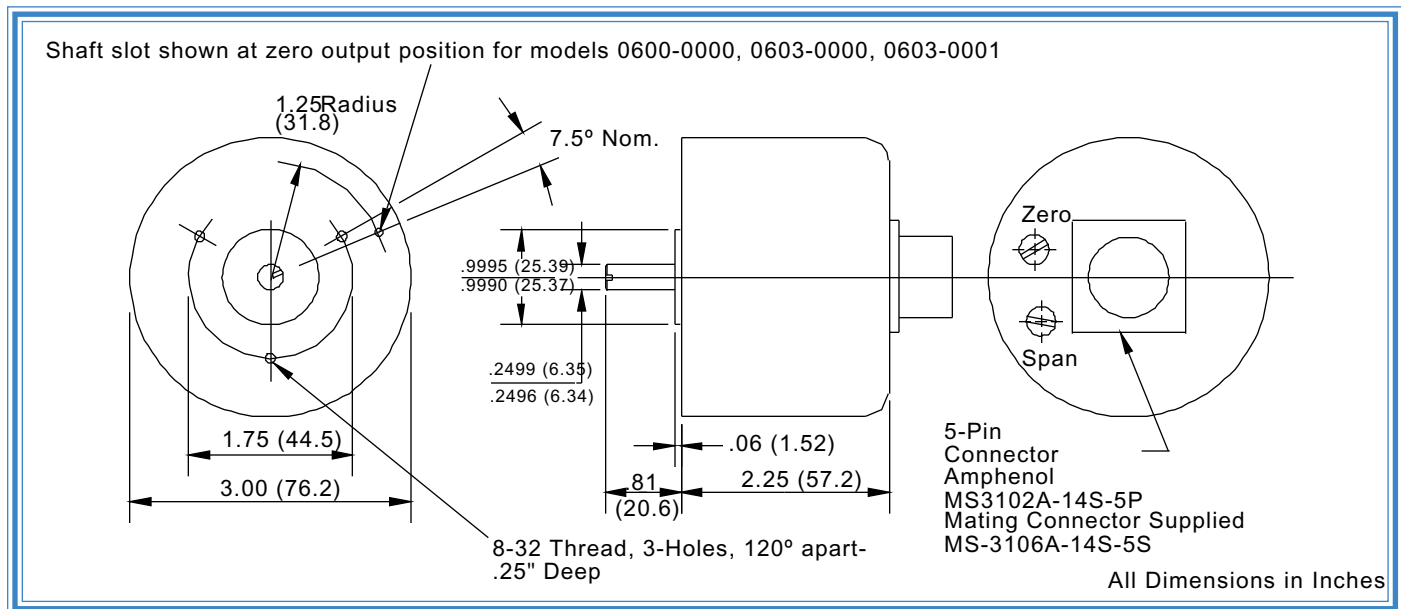
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Mechanical Specifications

MECHANICAL SPECIFICATIONS

DISPLACEMENT RANGE	Continuous	MAX. AXIAL LOAD	7 lbs.
TORQUE, MAX. STARTING 0.5 GM. CM. AVAILABLE	5.0 gm. cm.	LIFE: LIMITED BY BEARINGS, EG.	10 lbs. radial load at 10 RPM; bearing life - 17,000 HOURS
TORQUE, MAX. RUNNING	3.5 gm. cm.	NOMINAL WEIGHT	12.5 oz., 352 gm.
MOMENT OF INERTIA, ROTOR	6 gm. cm. ²	OPERATING TEMP. RANGE	32° to +167°F (0° to +75°C)
MAX. RADIAL LOAD, AT SHAFT END	10 lbs.	STORAGE TEMP. RANGE	-67° to +257°F (-55° to +125°C)
		MOUNTING	Any position, gravity insensitive

DIMENSIONAL DIAGRAM



SLOT - ANGLE POSITION

MODEL	SLOT-ANGLE POSITION	MODEL	SLOT-ANGLE POSITION
0600-0000	0° ±3°	0603-0000, 0603-0001	0° ±3°
0601-0000	40° CW ±3°	0603-0002, 0603-0003	80° CW ±3°
0602-0000	40° CCW ±3°	0603-0004, 0603-0005	80° CCW ±3°

As seen in the output curves graph on the previous page, there is more than one linear range throughout one complete shaft revolution. Only one of these ranges is calibrated. To find the calibrated range, line up the slot in the shaft to the drill hole in

the face of the unit. The output voltage at this position corresponds to the angular position within the linear range. For Models 0600-0000, 0603-0000, and 0603-0001, this is the zero position.

INSTALLATION

There are no installation restrictions; the transducer can be mounted in any position. Three tapped holes are provided in the mounting surface. The close toleranced stainless steel pilot when fitted into a properly machined bore will predetermine the

shaft position. Aligning the shaft slot with the drill spot on the transducer face will approximate the center of the working range. Refer to the physical diagram for mounting dimensions.

ORDERING INFORMATION

Model #	S-Number Description		
060_ - 000_	0	0	0
	TEMPERATURE	ANGULAR VELOCITY/ STARTING TORQUE	SEALING
	1 32° to 158°F	1 Standard	1 General Purpose
	2 -67°F to 257°F	2 Max Angular Velocity: 18,000°/sec	2 Splashproof
		3 Max Angular Velocity: 18,000°/sec; Starting torque: 0.5 gm crh	

Notes: 1. The shaft OD is reduced to 0.125 Inches (3.18 mm). There is no slot in the smaller shaft.

The following options are available at the time of purchase:

- Units will be factory calibrated to your specified excitation voltage, ranging from 12 to 16V.D.C. to provide an output as stated in the electrical specifications per listed model number. The standard is 15V.D.C.
- Factory calibration to any other specified output sensitivity, providing the required maximum output voltage is 4V.D.C. less than the input voltage (12 to 16 V.D.C.)
- Zero offset other than the standard models listed ranging from 0° to ±30° (0600-0000) to 0 to ±60° (0603-0000) can be ordered providing that the maximum output voltage is 4 V.D.C. less than the supply voltage (12 to 16 V.D.C.)

SALES OPTIONS

Option #	Description
X0016:	Vibration Protection - Internal electronics are encapsulated in RTV to prevent free movement during high vibration and/or shock
X0033:	Material modification for operation in a vacuum environment; Span and Zero pots are replaced by fixed resistors
X0035:	Increase axial load tolerance to 14 pounds; Not available with high speed option
X0042:	Optional side connector configuration; Replaces axial connector; See diagram below

