COMPLIANT



Vishay Sfernice

# Precision Rotative Transducers, Conductive Plastic, Economic Series (ECO)



The "ECO" models are a comprehensive range of rational motion transducers for industrial applications.

All mechanical and electrical parameters can be adapted to meet your specifications.

### **FEATURES**

- Size 05 09 13 are available
- Long life up to 30 million cycles
- Accuracy ± 1 % down to ± 0.25 %
- Bush or servo mounting types
- Rear mounted terminals
- Following MIL-R-39023 and NFC 93-255 requirements
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

QUICK REFERENCE DATA						
Sensor type ROTATIONAL, conductive plastic						
Output type	Output by turrets					
Market appliance Industrial						
Dimensions	Various sizes					

SIZE	05		09			13		
MODEL	50 ES	50 CB	78 ES	78 CS	78 CB	156 ES	156 CS	156 CB

ELECTRICAL SPECIFICATIONS								
Theoretical electrical travel (TET)		Actual electrical angle (AEA) - 2°						
Independent linearity (over TET)		$A \le \pm 1 \%$ $B \le \pm 0.5 \%$ (standard) (special)			C ≤ ± 0.25 % (special)			
Actual electrical travel (AET)	330°	' ± 5°		340° ± 5°		350° ± 5°		
Ohmic values (R <sub>T</sub> )			1 kΩ - 5 k	$\Omega$ - 10 k $\Omega$ - on request $\sigma$	ther values			
Ohmic value tolerances at 20 °C	± 10 %	± 20 %	± 10 %	± 10 % ± 20 %		± 20 %		
Output smoothness		≤ 0.05 %						
Maximum power rating at 70 °C	0.2	0.2 W 0.3 W 0.5 W				0.5 W		
Wiper current		Recommended: a few μA - 1 mA max. (continuous)						
Tap (current or voltage)	N	NA 1 (on request)						
Resistance load on wiper		Minimum 10 <sup>3</sup> x R <sub>T</sub>						
End voltage	≤ 0.2 %	≤ 0.5 %	≤ 0.2 % ≤ 0.5 % ≤ 0.2 % ≤ 0			≤ 0.5 %		
Insulation resistance		$\geq$ 1000 M $\Omega$ , 500 V <sub>DC</sub>						
Dielectric strength	≥ 500 V <sub>RMS</sub> , 50 Hz							

MECHANICAL SPECIFICATIONS								
Mechanical angle (MA)		360° continuous						
On request: stops	N	IA		340° ± 3°			350° ± 3°	
Mounting type	Servo	Bushing	Se	rvo	Bushing	Ser	vo	Bushing
Shaft guiding	Ball bearings	Sleeve bearings	Ball bearings			eeve arings		
Shaft		Stainless steel						
Housing				Plastic	molding			
Termination				Tur	rets			
Wiper			Prec	ious metal m	nulti-finger co	ntact		
Starting torque (N.cm) in TET	≤ 0.2	≤ 0.5	≤ 0.2	≤ (	0.5	≤ 0.2	≤	0.5
Torque on stops (N.cm)	50							
Weight (g)	5 ± 2	8 ± 2	13 ± 2	17	± 2	29 ± 2	34	± 2
Moment of inertia (g cm <sup>2</sup> )	≤ (	≤ 0.5 ≤ 1 ≤ 2						

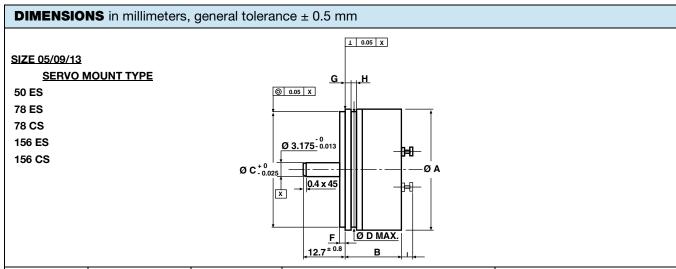
Revision: 05-Sep-18 1 Document Number: 54007



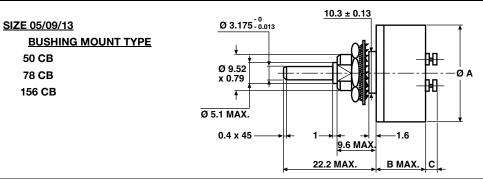
#### **PERFORMANCE MODELS ES CS and CB** Life (10<sup>6</sup> cycles) 30 20 -55 °C to +125 °C Temperature range Climatic category 55/125/04 Speed rotation (RPM) 600 150 Sine vibration on 3 axes 1.5 mm or 20 g from 10 Hz to 2000 Hz Mechanical shocks on 3 axes 50 g - 11 ms - half sine

#### Note

- · Nothing stated herein shall be construed as a guarantee of quality or durability
- Life under Vishay laboratory conditions

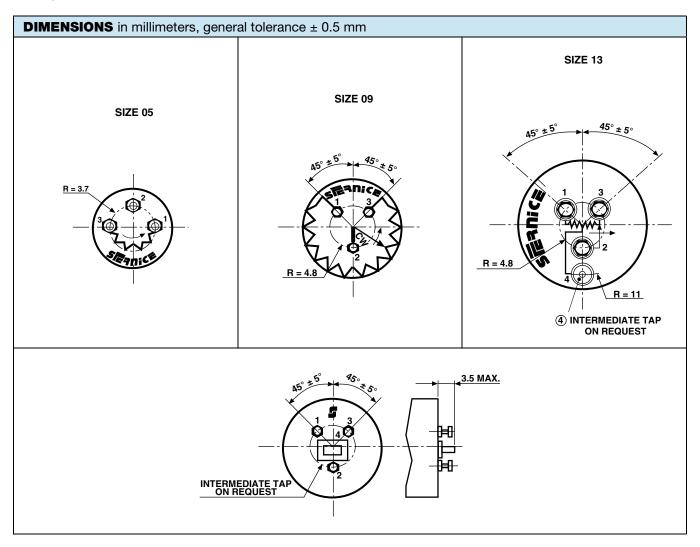


DIMENSIONS	DESIGNATION	SIZE 05	SIZ	SIZE 09		E 13	
DIMENSIONS	DESIGNATION	50 ES	78 ES	78 CS	156 ES	156 CS	
ØA	Ø housing	12.7	22	22.2		33.3	
В	Length	13.0	10	13.5		8.0	
ØС	Ø pilot	9.525	19	19.05		).16	
Ø D max.	Ø groove	11.45	19.64		19.64 30.9		
F	Flange thickness	1 ± 0.1	1.6 ± 0.1				
G	Shoulder	1.2 ± 0.1	1.6 ± 0.1				
Н	Dia. of groove	1.2 ± 0.2	1.5 min.				
I max.	Height of the turret	2.5	2	.5	3	3.6	



DIMENSIONS	DESIGNATION	SIZE 05	SIZE 09	SIZE 13
DIMENSIONS	DIMENSIONS DESIGNATION		78 CB	156 CB
ØA	Ø housing	12.7	22.2	33.3
B max.	Length	11	11.5	16
C max.	Height of the turret	2.5	2.5	3.6

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ORDER	ORDERING INFORMATION/DESCRIPTION										
ECO	78	E	s	Α	Т	103	e4				
SERIES	MODEL	TYPE	FIXATION	LINEARITY CODE	TAP	OHMIC VALUE	LEAD FINISH				
		E = Ball bearings C = Sleeve bearings	S: Servo B: Bushing	A: ± 1 % B: ± 0.5 % C: ± 0.25 %	On request T: Voltage U: Current position to be specified	First 2 digits are significant numbers 3 <sup>rd</sup> digit indicates number of zeros					

Special characteristics and designs on request

SAP PART NUMBERING GUIDELINES							
ECO	78CB	С	502				
SERIES	MODEL	LINEARITY	OHMIC VALUE				



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Vishay

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