

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



The “ECO” models are a comprehensive range of rotational 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  $\pm 1\%$  down to  $\pm 0.25\%$
- 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### QUICK REFERENCE DATA

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

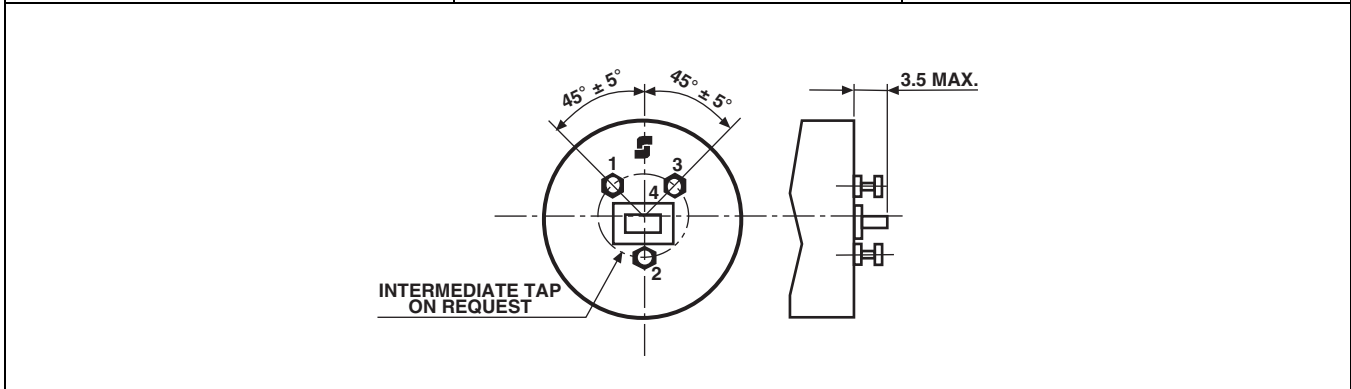
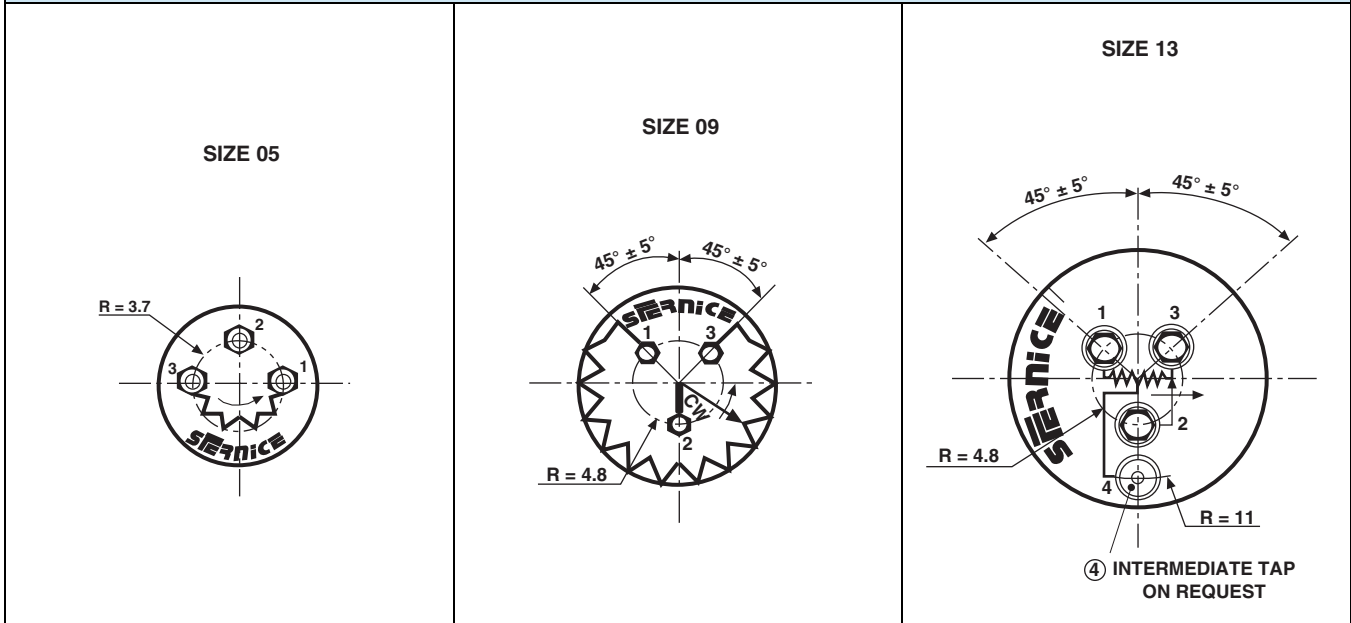
SIZE	05		09			13		
MODEL	50 ES	50 CB	78 ES	78 CS	78 CB	156 ES	156 CS	156 CB

ELECTRICAL SPECIFICATIONS							
Theoretical electrical angle (TEA)	Actual electrical angle (AEA) - 2°						
Independent linearity (over TEA)	A $\leq \pm 1\%$ (standard)		B $\leq \pm 0.5\%$ (special)		C $\leq \pm 0.25\%$ (special)		
Actual electrical angle (AEA)	330° $\pm 5^\circ$		340° $\pm 5^\circ$		350° $\pm 5^\circ$		
Ohmic values (R <sub>T</sub> )	1 k $\Omega$ - 5 k $\Omega$ - 10 k $\Omega$ - on request other values						
Ohmic value tolerances at 20 °C	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	$\pm 10\%$	$\pm 20\%$	
Output smoothness	$\leq 0.05\%$						
Maximum power rating at 70 °C	0.2 W		0.3 W		0.5 W		
Wiper current	Recommended: a few $\mu$ A - 1 mA max. (continuous)						
Tap (current or voltage)	NA		1 (on request)				
Resistance load on wiper	Minimum 10 <sup>3</sup> x R <sub>T</sub>						
End voltage	$\leq 0.2\%$	$\leq 0.5\%$	$\leq 0.2\%$	$\leq 0.5\%$	$\leq 0.2\%$	$\leq 0.5\%$	
Insulation resistance	$\geq 1000\text{ M}\Omega$ , 500 V <sub>DC</sub>						
Dielectric strength	$\geq 500\text{ V}_{\text{RMS}}$ , 50 Hz						

MECHANICAL SPECIFICATIONS							
Mechanical angle (MA)	360° continuous						
On request: stops	NA		340° $\pm 3^\circ$		350° $\pm 3^\circ$		
Mounting type	Servo	Bushing	Servo	Bushing	Servo	Bushing	
Shaft guiding	Ball bearings	Sleeve bearings	Ball bearings	Sleeve bearings	Ball bearings	Sleeve bearings	
Shaft	Stainless steel						
Housing	Plastic moulding						
Termination	Turrets						
Wiper	Precious metal multi-finger contact						
Starting torque (N.cm)	$\leq 0.2$	$\leq 0.5$	$\leq 0.2$	$\leq 0.5$	$\leq 0.2$	$\leq 0.5$	
Torque on stops (N.cm)	50						
Weight (g)	5 $\pm 2$	8 $\pm 2$	13 $\pm 2$	17 $\pm 2$	29 $\pm 2$	34 $\pm 2$	
Moment of inertia (g cm <sup>2</sup> )	$\leq 0.5$		$\leq 1$		$\leq 2$		



**DIMENSIONS** in millimeters, general tolerance  $\pm 0.5$  mm



**ORDERING INFORMATION/DESCRIPTION**

ECO	78	E	S	A	T	103	e4
SERIES	MODEL	TYPE	FIXATION	LINEARITY CODE	TAP	OHMIC VALUE	LEAD FINISH
		E = Ball bearings C = Sleeve bearings	S: Servo B: Bushing	A: $\pm 1\%$ B: $\pm 0.5\%$ C: $\pm 0.25\%$	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	C	502
SERIES	MODEL	LINEARITY	OHMIC VALUE



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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

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С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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