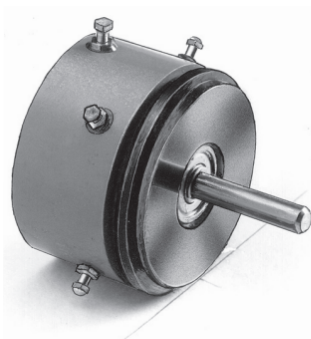


Precision Rotative Transducers 360° Special Laws: Sine/Cosine



Rotational motion transducers with trigonometric laws for a full angle measurement: 360° (no dead band).

FEATURES

- Laws: sine and cosine
- Size 11
- Continuous measure on 360°
- Long life up to 25 10⁶ cycles
- Conformity from $\pm 1\%$ down to $\pm 0.5\%$
- Bushing or servo mounting
- Following MIL-R-39023 requirements



SIZE	11	
MODEL	116 SFZ	116 BFZ
LAW	Z: Sine and cosine	

ELECTRICAL SPECIFICATIONS

Theoretical Electrical Angle (TEA) = 360°	Actual electrical angle (AEA) = TEA	
Conformity Peak to Peak	$A \leq \pm 1\%$	or $B \leq \pm 0.5\%$
Number of Cups	Up to 2	
Ohmic Values (R_T per Quadrant)	1 k Ω - 5 k Ω - 10 k Ω - on request other values	
Ohmic Value Tolerances at 20 °C	$\pm 20\%$	
Output Smoothness	$\leq 0.05\%$	
Maximum Power Rating at 70 °C	0.4 W	
Wiper Current	Recommended: a few μA - 1 mA max. (continuous)	
Ground Taps	On request	
Resistance Load on Wiper	Minimum $10^3 \times R_T$	
Resolution	Essentially infinite	
Insulation Resistance	$\geq 1000 M\Omega$, 500 V _{DC}	
Dielectric Strength	$\geq 500 V_{RMS}$, 50 Hz	

MECHANICAL SPECIFICATIONS

Mechanical Angle (MA)	360° continuous	
Mounting Type	Servo	Bushing
Shaft Guiding	Ball bearings	Sleeve bearings
Shaft	Stainless steel	
Housing	Plastic moulding	
Termination	Turrets	
Wiper	Precious metal multi-finger contact	
Starting Torque (N.cm)	1 cup	≤ 0.3
	2 cups	≤ 0.5
Weight (g)		≤ 0.5
		≤ 0.8
Weight (g)	30 ± 2 (1 cup) + 17 ± 2 (2 cups)	

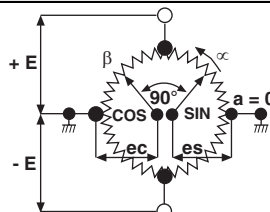
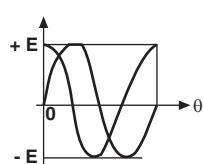
PERFORMANCE

Life (10 ⁶ Cycles)	≥ 25 (servo)	≥ 15 (bushing)
Temperature Range	- 55 °C to + 125 °C	
Climatic Category	55/125/04	
Speed Rotation (RPM)	600 (servo)	150 (bushing)
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	

TRIGONOMETRIC FUNCTIONS

SINE/COSINE
OVER 360°

LAW Z

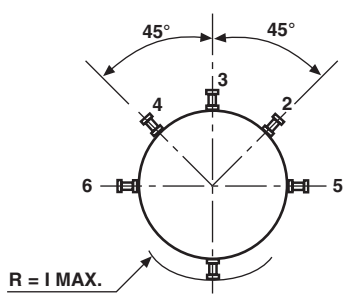


$$\frac{e_s}{E} = \sin \alpha \quad \frac{e_c}{E} = \cos \beta$$

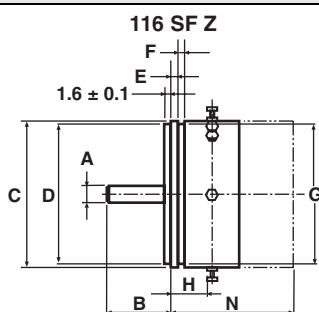
$$0^\circ \leq \Theta \leq 360^\circ$$

$$\beta = \alpha + 90^\circ$$

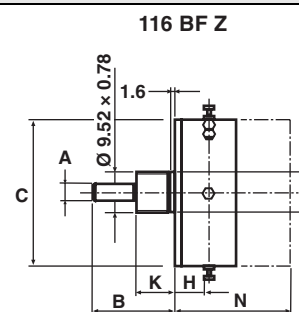
DIMENSIONS in millimeters, general tolerance ± 0.5 mm



- 1: POWER SUPPLY (+)
- 2: POWER SUPPLY (-)
- 3: WIPER (SINE)
- 4: WIPER (COSINE)
- 5: GROUND TAP (ON REQUEST)
- 6: GROUND TAP (ON REQUEST)



SIZE 11



DIMENSIONS mm	A +0 -0.013	B max.	C max.	D +0 -0.013	E ± 0.1	F min.	G max.	H min.	I max.	J +0 -0.02	K max.	N max. (1 cup)	N max. (2 cups)
DESIGNATION													
116 SF Z	3.175	16.6	27.05	24.608	1.6	1.5	24.8	4.5	17.3	-	-	18.5	35
116 BF Z		20	27.05	-	-	-	-	3	-	10.3	9.6	16.5	33

ORDERING INFORMATION/DESCRIPTION

ROT	116	S	F	Z	1	A	502	e1
SERIES	MODEL	MOUNTING TYPE	CONDUCTOR	LAW	NUMBER OF CUPS	CONFORMITY	OHMIC VALUE	LEAD FINISH
		S: Servo B: Bushing	F: Plastic	Z: Sine/ cosine	2 max.	A: ± 1 % B: ± 0.5 %	First 2 digits are significant numbers 3rd digit indicates number of zeros	

Special characteristics and designs on request

SAP PART NUMBERING GUIDELINES

RO 116SFZ	1	B	103
MODEL	GANG NUMBER	CONFORMITY	OHMIC VALUE
	1 or 2	A or B	10 kΩ



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