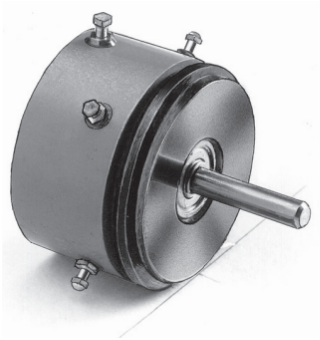
Precision Rotative Transducers 360°
Special Laws: Sine/Cosine



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 10^6 cycles
- Conformity from ± 1 % down to ± 0.5 %
- Bushing or servo mounting
- Following MIL-R-39023 requirements

RoHS COMPLIANT

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 ≤ ± 1 % or B ≤ ± 0.5 %
Number of Cups	Up to 2
Ohmic Values (R_T per Quadrant)	1 kΩ - 5 kΩ - 10 kΩ - on request other values
Ohmic Value Tolerances at 20 °C	± 20 %
Output Smoothness	≤ 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 x R_T
Resolution	Essentially infinite
Insulation Resistance	≥ 1000 MΩ, 500 V_{DC}
Dielectric Strength	≥ 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	≤ 0.5
	2 cups	≤ 0.5	≤ 0.8
Weight (g)		30 ± 2 (1 cup) + 17 ± 2 (2 cups)	

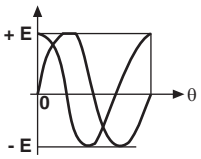
PERFORMANCE

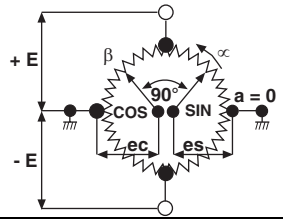
Life (10^6 Cycles)	≥ 25 (servo)	≥ 15 (bushing)
Temperature Range	- 55 °C to + 125 °C	
Climatic Category	55/125/04	
Speed Rotation (RPM)	600 (servo)	150 (bushing)
Sine Vibration on 3 Axes	1.5 mm or 20 g from 10 Hz to 2000 Hz	
Mechanical Shocks on 3 Axes	50 g - 11 ms - half sine	

TRIGONOMETRIC FUNCTIONS

SINE/COSINE OVER 360°

LAW Z



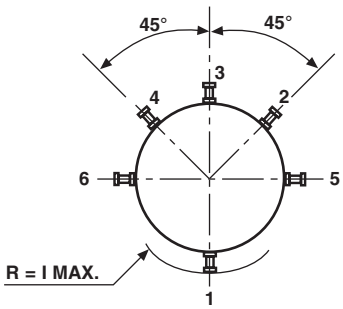


$\frac{e_s}{E} = \text{SIN} \propto$ $\frac{e_c}{E} = \text{COS}\ \beta$

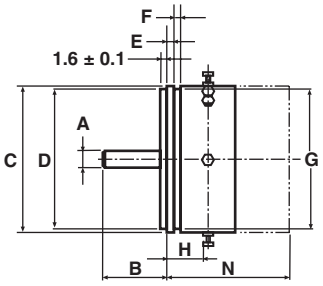
$0° \leq \Theta \leq 360°$

$\beta = \propto + 90°$

DIMENSIONS in millimeters, general tolerance ± 0.5 mm

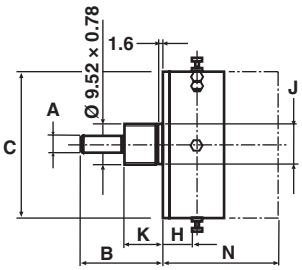


116 SF Z



SIZE 11

116 BF Z



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

DIMENSIONS mm / DESIGNATION	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)
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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