Rotational Absolute Magnetic Encoder High Precision Displacement Sensor

FEATURES

- Especially dedicated to harsh conditions (vibrations, shocks, CEM, ...)
- Not sensitive to external magnetic fields and temperature
- Not sensitive to moisture and pollution
- Plug and play
- Protected design, patent EP 2711663
- Hall effect principle
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, magnetic technology
Output type	Wires, cables, or connector
Market appliance	Industrial
Dimensions	Diameter 44 mm

ELECTRICAL SPECIFICATIONS	
PARAMETER	
Voltage supply	5 V ± 0.25 V
Current supply	≤ 110 mA max. at 5 V
Output	SSI
Connection	Ultra-flex AWG32 wires (shielded cable and connector on request)
Useful electrical angle	360° (single turn)
Absolute accuracy at 25 °C	± 0.03°
Absolute accuracy at -40 °C to +105 °C	± 0.05° (13 bits)
Resolution	0.0017° (> 17 bits, 212 992 points)
Startup time	≤ 20 ms
Refresh time	≤ 100 µs
Latency time	≤ 200 µs
Sampling rate	10 kHz ± 5 %

MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical angle	360°
Maximum speed rotation	50 rpm (up to 380 rpm with decreasing of accuracy, see “Maximum Speed vs. Accuracy” chart)
Axial charge	10 N
Radial charge	10 N

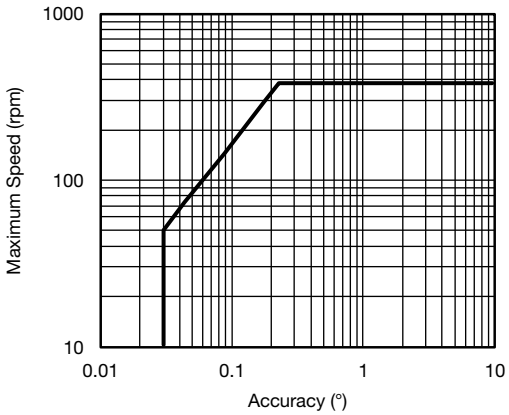
SAP PART NUMBERING GUIDELINES

TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	E = encoder with housing	044	I	1	13	17	J = SSI CCW	B = box

For technical questions, contact: mcbprecisionpot@vishay.com

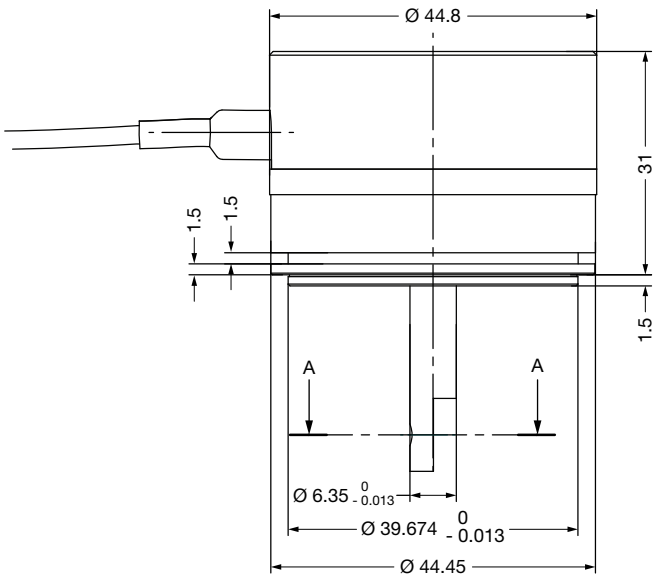
PERFORMANCE	
PARAMETER	
Operating temperature range	-40 °C to +105 °C (-55 °C to +105 °C on request)
Storage temperature range	-45 °C to +105 °C (-55 °C to +105 °C on request)
Protection class	IP50
Life	50M cycles
Humidity	HR ≤ 80 % (non-condensing)
Acceleration	70 g for 1 s
Vibration	0.05 g^2/Hz, 20 Hz to 2000 Hz for 1 h along the three major axis
Shock	180 g, 14 ms, 1/2 sine
EMC	MIL-STD-461F - CS114: conducted susceptibility, bulk cable injection,10 kHz to 200 MHz table VI army ground level common mode injection and differential mode on positive - RS101: magnetic susceptibility, magnetic field, fig. RS101-2 from 30 Hz to 100 kHz - RS103: radiated susceptibility, electric field, 2 MHz to 18 GHz (level: 50 V/m) - RE102: radiated emissions, electric field, fig. RE102-4 - navy mobile and army - 10 kHz to 16 MHz

MAXIMUM SPEED VS. ACCURACY CHART



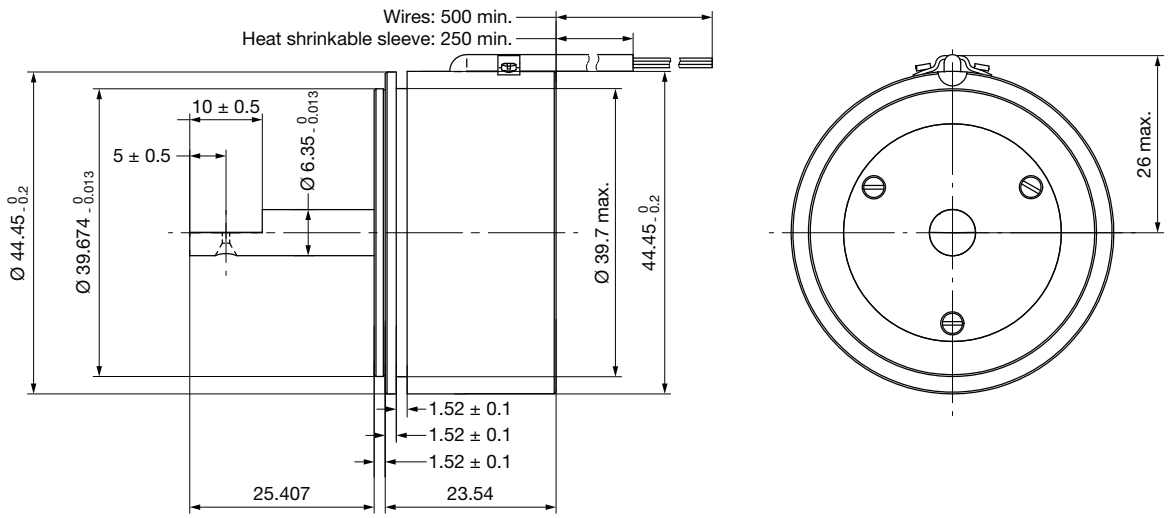
DIMENSIONS in millimeters

RAME044 (STANDARD)



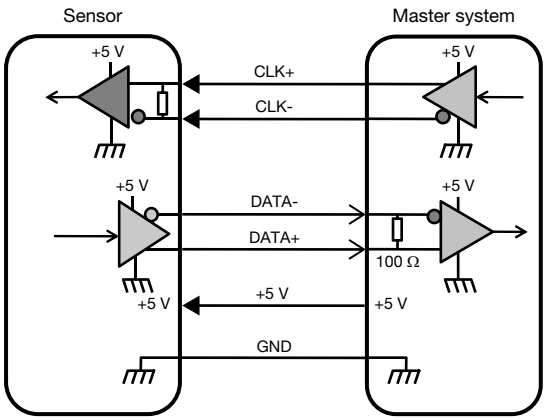
DIMENSIONS in millimeters

RAME044 (ON REQUEST)



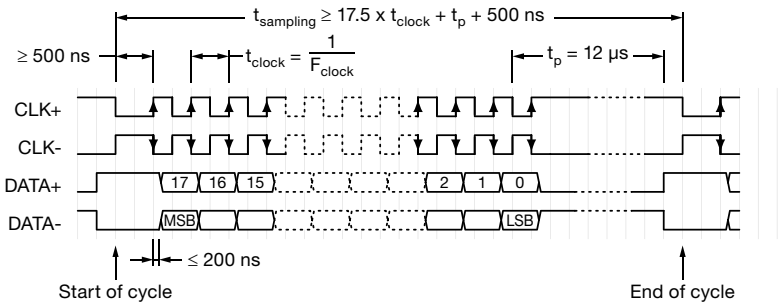
ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE

6 WIRES CONNECTIONS	
NAME	**WIRE COLOR**
GND	Black
+5 V	Red
CLK+	White
CLK-	Clear
DATA+	Yellow
DATA-	Green



SSI PARAMETERS	
Output code	Binary
Data differential interface	RS422 according to EIA-RS422
CLK differential interface	RS422 according to EIA-RS422
Minimum clock frequency	300 kHz
Maximum clock frequency	4 MHz
Data bit (n)	18 bits

Timing Diagram



OPTIONS

- Other design on request including waterproofness, mechanical interfaces, electrical interfaces, ...
- Better accuracy (on request)

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