

# 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
- Hall effect principle

## 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 $\pm$ 0.25 V
Current supply	$\leq$ 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	$\pm$ 0.03°
Absolute accuracy at -40 °C to +105 °C	$\pm$ 0.05° (13 bits)
Resolution	0.0017° (> 17 bits, 212 992 points)
Startup time	$\leq$ 20 ms
Refresh time	$\leq$ 100 $\mu$ s
Latency time	$\leq$ 200 $\mu$ s
Sampling rate	10 kHz $\pm$ 5 %

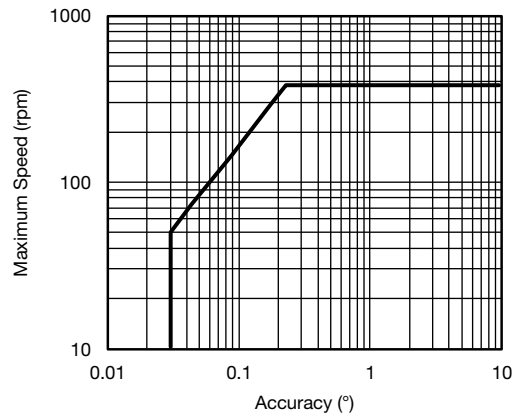
## MECHANICAL SPECIFICATIONS

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

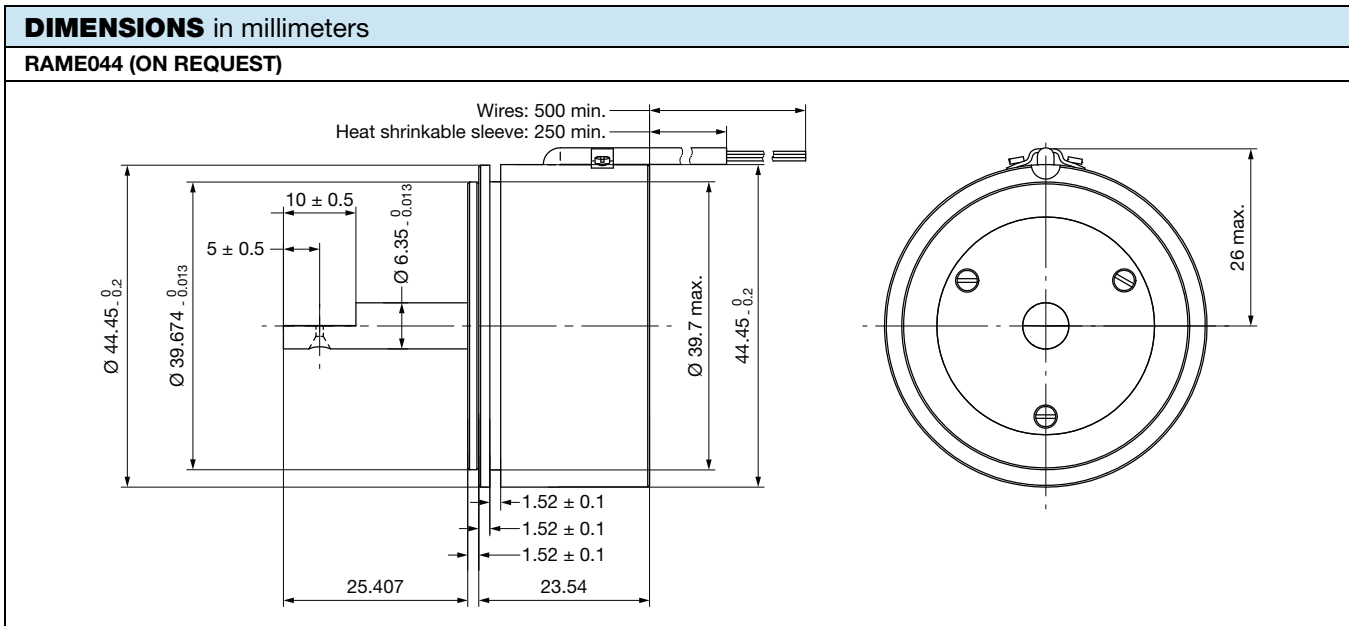
## SAP PART NUMBERING GUIDELINES

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

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 <sup>2</sup> /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**


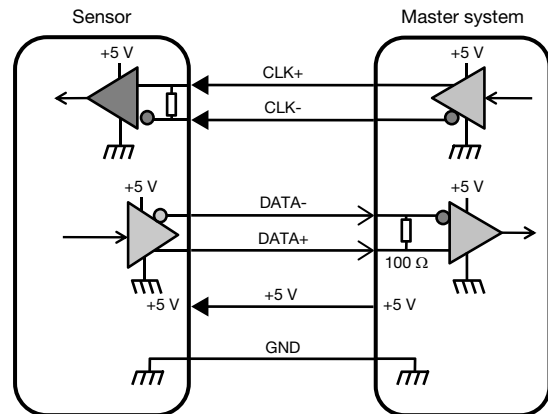
DIMENSIONS in millimeters
RAME044 (STANDARD)



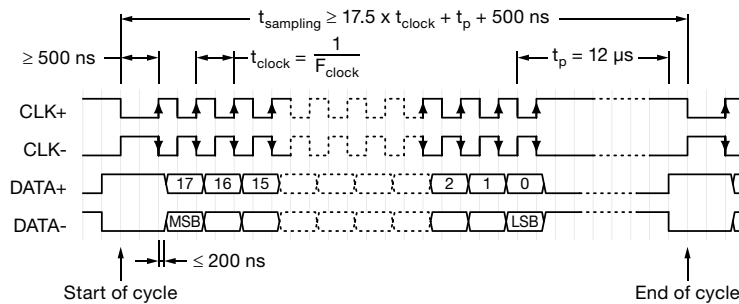
**ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE**

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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