

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

QUICK REFERENCE DATA

Sensor type	ROTATIONAL, magnetic technology
Output type	Wires, cables, or connector
Market appliance	Industrial
Dimensions	Diameter 44 mm and 58 mm

ELECTRICAL SPECIFICATIONS

PARAMETER	
Voltage supply	5 V $\pm$ 0.25 V (or 9 V to 35 V in option)
Current supply	$\leq$ 110 mA max. at 5 V
Output	SSI (SPI on request)
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 μ s
Latency time	$\leq$ 200 μ s
Sampling rate	10 kHz $\pm$ 5 %

MECHANICAL SPECIFICATIONS

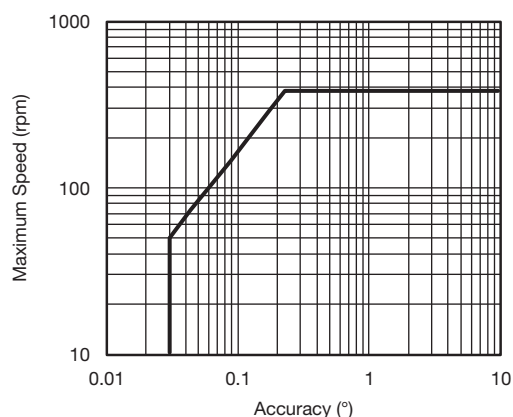
PARAMETER	
Mechanical angle	360°
Maximum speed rotation	50 rpm (up to 380 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart)
Axial charge	10 N
Radial charge	10 N

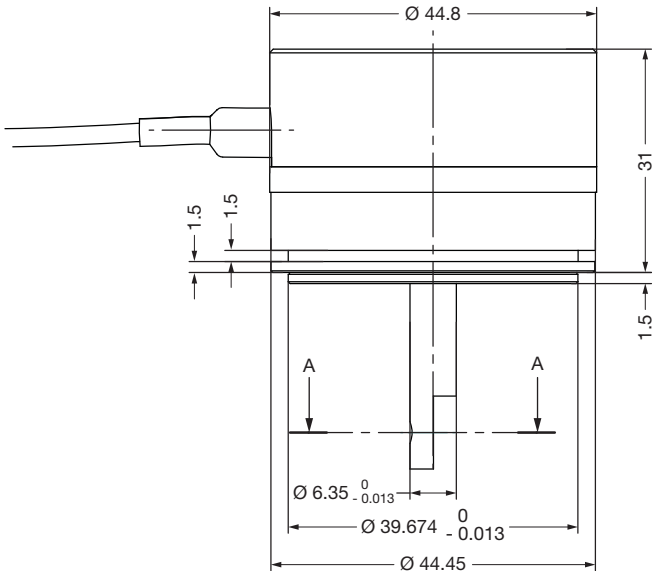
SAP PART NUMBERING GUIDELINES

TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	E = encoder with housing	044 058	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 (IP67 on request)
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

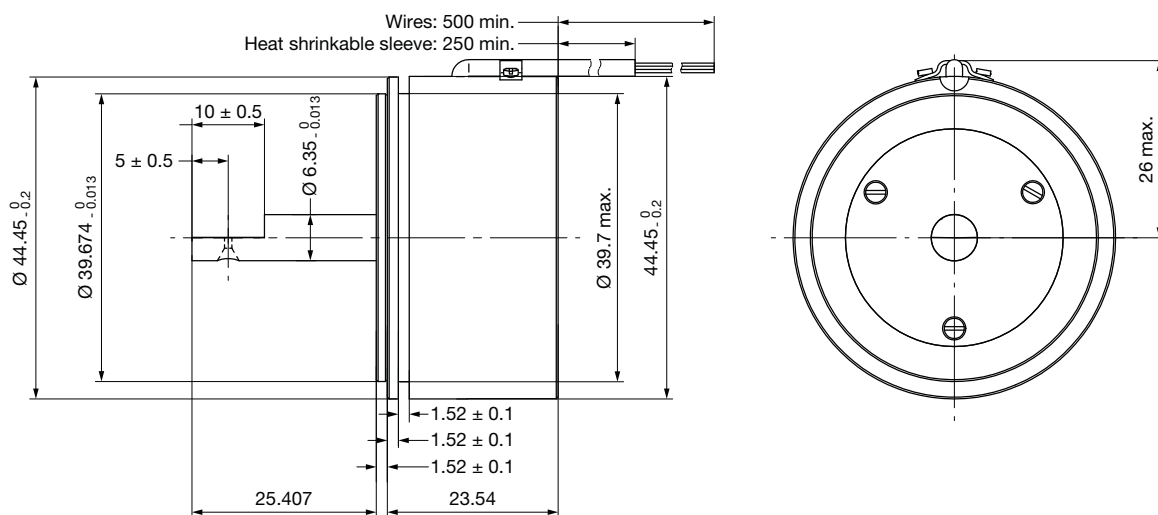
MAXIMUM SPEED VS. ACCURACY CHART



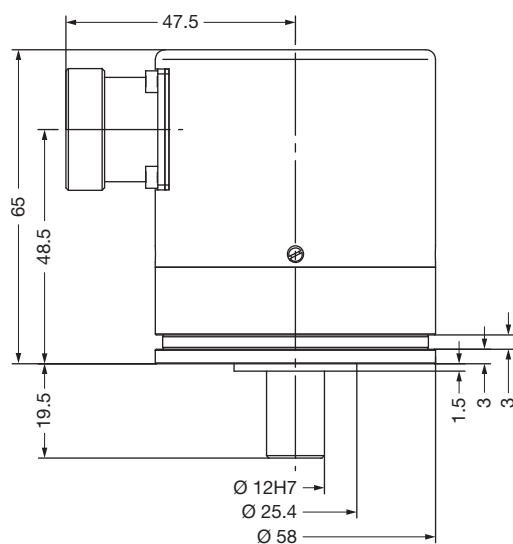
DIMENSIONS in millimeters	
RAME044 (STANDARD)	
	

DIMENSIONS in millimeters

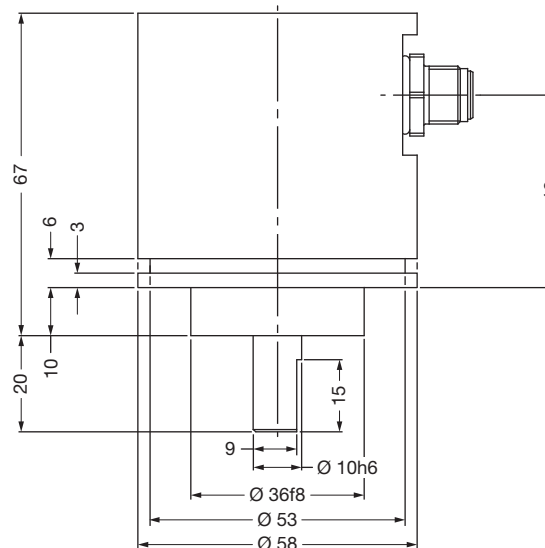
RAME044 (ON REQUEST)



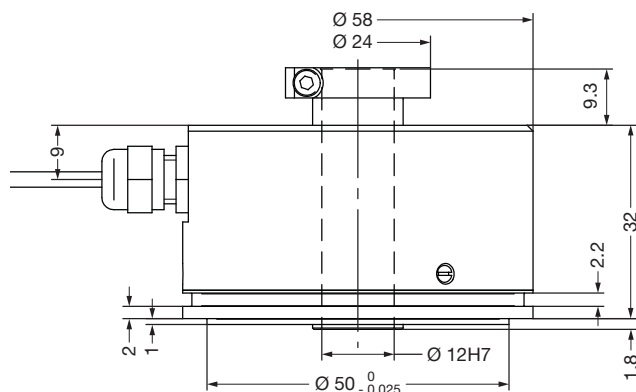
RAME058 - SHAFT VERSION 1 (STANDARD)



RAME058 - SHAFT VERSION 2 (ON REQUEST)



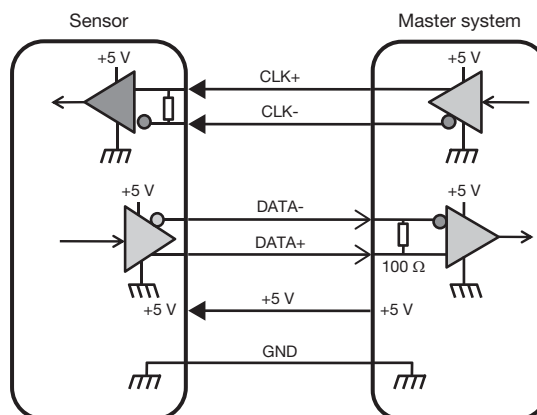
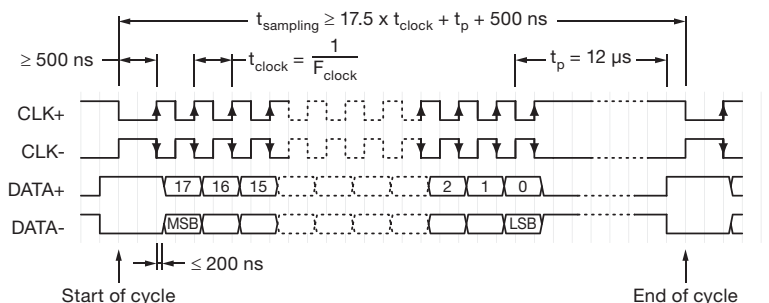
RAME058 - HOLLOW SHAFT (ON REQUEST)



ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE

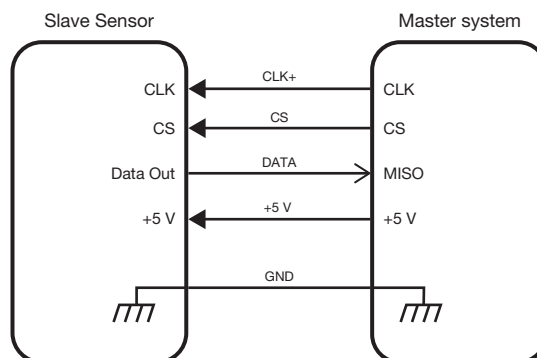
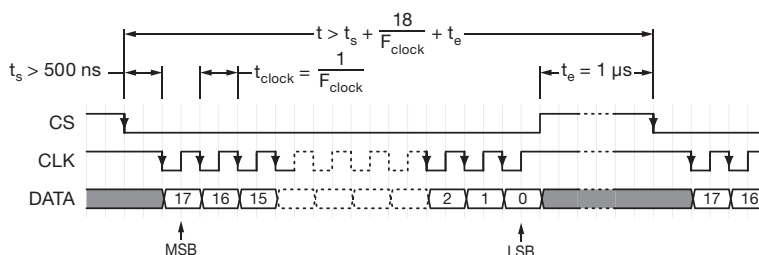
6 WIRES CONNECTIONS	
NAME	WIRE COLOR
GND	Black
+5 V	Red
CLK+	White
CLK-	Clear
DATA+	Yellow
DATA-	Green

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

ELECTRICAL INTERFACE DESCRIPTION - SPI INTERFACE (on request)

5 WIRES CONNECTIONS	
NAME	WIRE COLOR
GND	Black
+5 V	Red
CLK	White
DATA	Clear
CS	Yellow

SPI PARAMETERS	
Output code	Binary
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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