

## Rotational Absolute Magnetic Encoder, 33 mm and 37 mm Displacement Sensor


**FEATURES**

- Hall effect principle
- 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
- Very high precision (VHP)
- Protected design, patent EP 2711663

**QUICK REFERENCE DATA**

Sensor type	ROTATIONAL, magnetic technology
Output type	Cables
Market appliance	Industrial
Dimensions	Diameter 33 mm and 37 mm

**ELECTRICAL SPECIFICATIONS**

PARAMETER	
Voltage supply	5 V $\pm$ 0.25 V
Current supply	$\cong$ 200 mA max. at 5 V
Output	SSI
Connection	Shielded cable
Useful electrical angle	360° (single turn)
Absolute accuracy at -40 °C to +85 °C	Standard: $\pm$ 0.011° = 15 bits
Resolution	21 bits
Startup time	$\leq$ 200 $\mu$ s
Refresh time	= 50 $\mu$ s at sampling rate 20 kHz
Latency time	= 50 $\mu$ s at sampling rate 20 kHz
Sampling rate	20 kHz $\pm$ 5 %

**MECHANICAL SPECIFICATIONS**

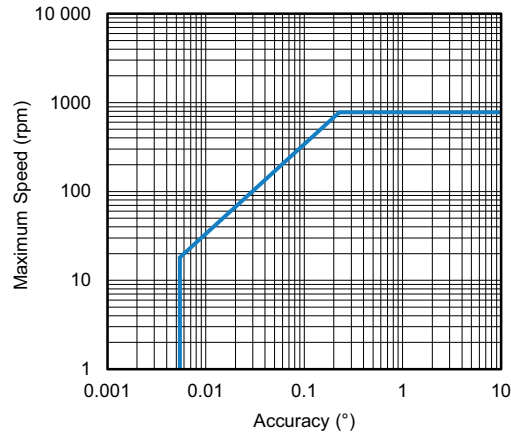
PARAMETER	
Mechanical angle	360°
Maximum speed rotation	18 rpm (up to 760 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart)
Weight	$\varnothing$ 33 mm: 44.5 g $\pm$ 2 g; $\varnothing$ 37 mm: 56.5 g $\pm$ 2 g

**SAP PART NUMBERING GUIDELINES**

TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	E	033	M	1	15	21	I = SSI CW	B = box
			037						

PERFORMANCE	
PARAMETER	
Operating temperature range	-46 °C to +105 °C (-46 °C to +115 °C on request)
Storage temperature range	-54 °C to +105 °C (-54 °C to +115 °C on request)
Vibration	14.8 grms, 10 Hz to 2000 Hz for 20 min along the three major axis
Shock	50 g, 11 ms, 1/2 sine, 3 shocks along the three axis

## MAXIMUM SPEED VS. ACCURACY CHART



**DIMENSIONS** in millimeters

RAME033

Cable 6 wires 32AWG  
 Length: 300

Detail A  
 6:1

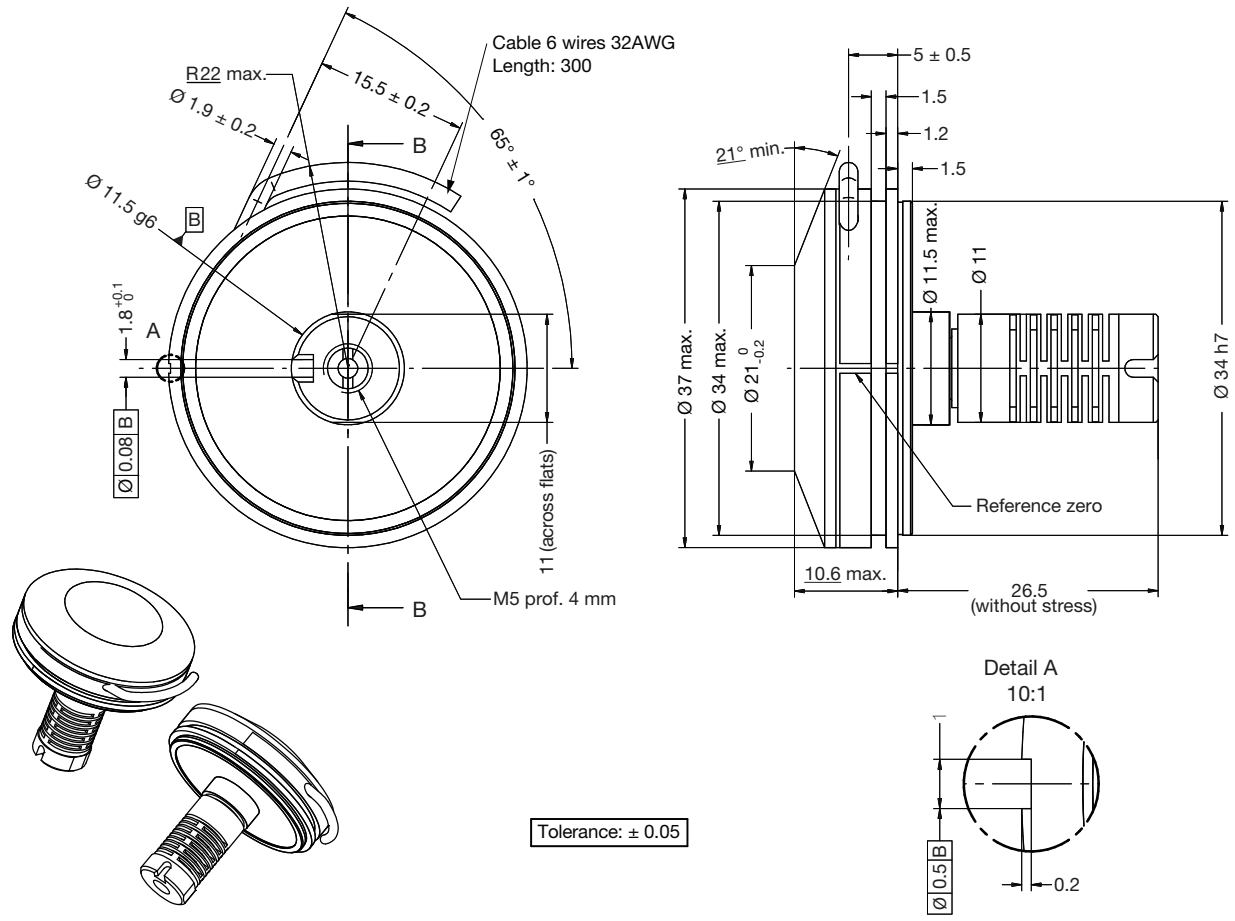
View B  
 1.5:1

View E  
 1.5:1

Tolerance:  $\pm 0.05$

**DIMENSIONS** in millimeters

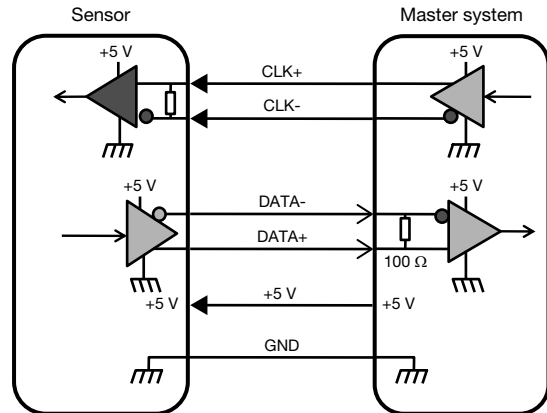
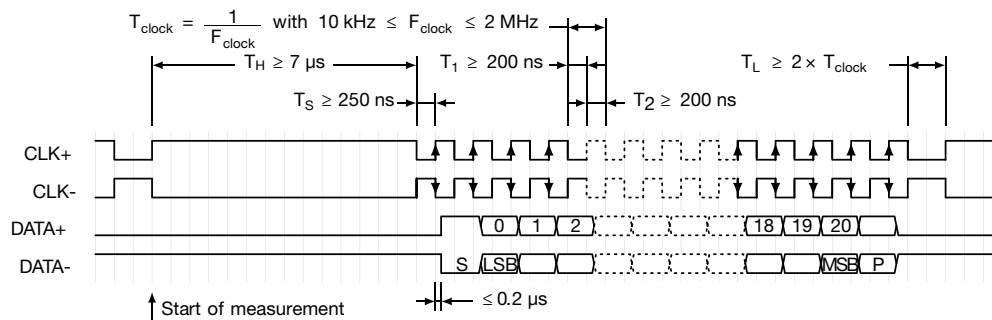
RAME037



**ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE**

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

SSI PARAMETERS	
Output code	Binary
Data differential interface	RS422 according to EIA-RS422
CLK differential interface	RS422 according to EIA-RS422
Minimum clock frequency	10 kHz
Maximum clock frequency	2 MHz
Data bit (n)	21 bits


**Timing Diagram**

**OPTIONS**

- Other design on request (mechanical interfaces, electrical interfaces, ...)



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