


# Rotational Absolute Magnetic Kit Encoder Version 40 mm HP Displacement Sensor



## FEATURES

- Especially dedicated to hard conditions (vibrations, shocks, CEM, ...) 
- Not sensitive to external magnetic fields and temperature
- Not sensitive to moisture and pollution
- Plug and play
- Small error due to misalignment
- Hall effect principle
- High Precision (HP)
- Protected design, patent EP 2711663
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## LINKS TO ADDITIONAL RESOURCES



## QUICK REFERENCE DATA

Sensor type	ROTATIONAL, magnetic technology
Output type	Wires or cables
Market appliance	Industrial
Dimensions	Diameter 40.65 mm

## ELECTRICAL SPECIFICATIONS

PARAMETER	
Voltage supply	5 V ± 0.25 V (or 9 V to 35 V in option)
Current supply	≤ 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	± 0.03° > 13 bits
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 %

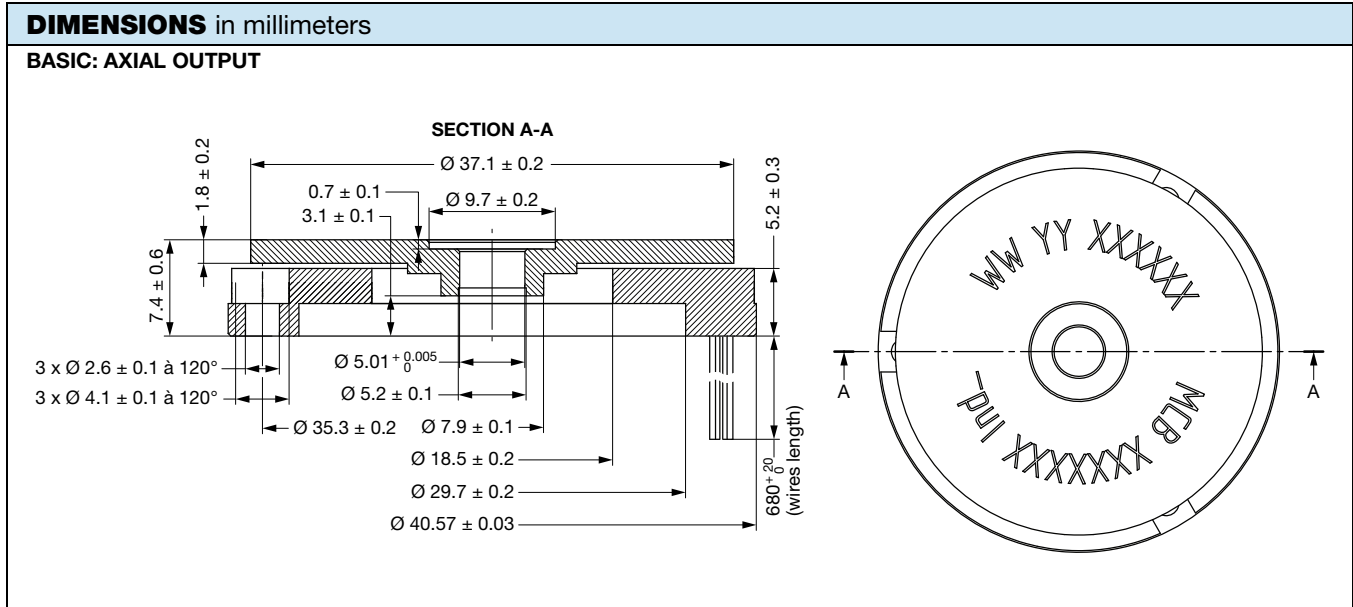
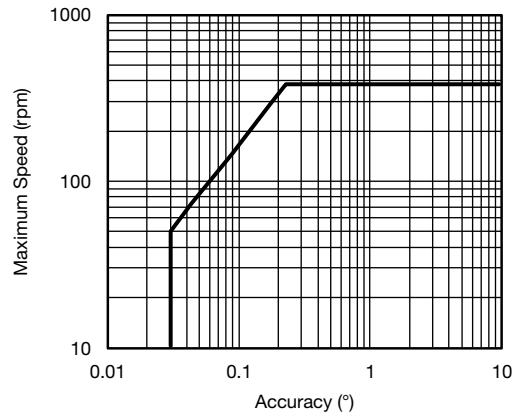
## MECHANICAL SPECIFICATIONS

PARAMETER	
Mechanical angle	360°
Maximum speed rotation	50 rpm (up to 380 rpm with decreasing of accuracy, see "Maximum Speed vs. Accuracy" chart)
Maximum mechanical speed	9000 rpm (or more on request)
Weight	Rotor: 12 g ± 1 g; stator: 16.5 g ± 1 g

## SAP PART NUMBERING GUIDELINES

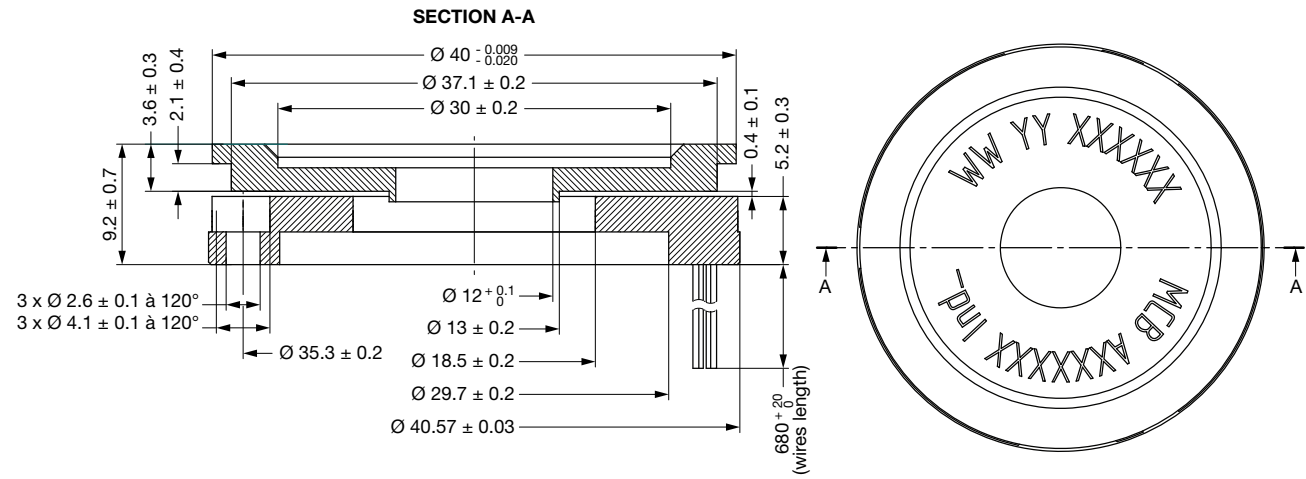
TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	K = kit	040	M	1	13	17	J = SSI CCW	B = box

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)
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
Humidity	HR ≤ 80 % (non-condensing)

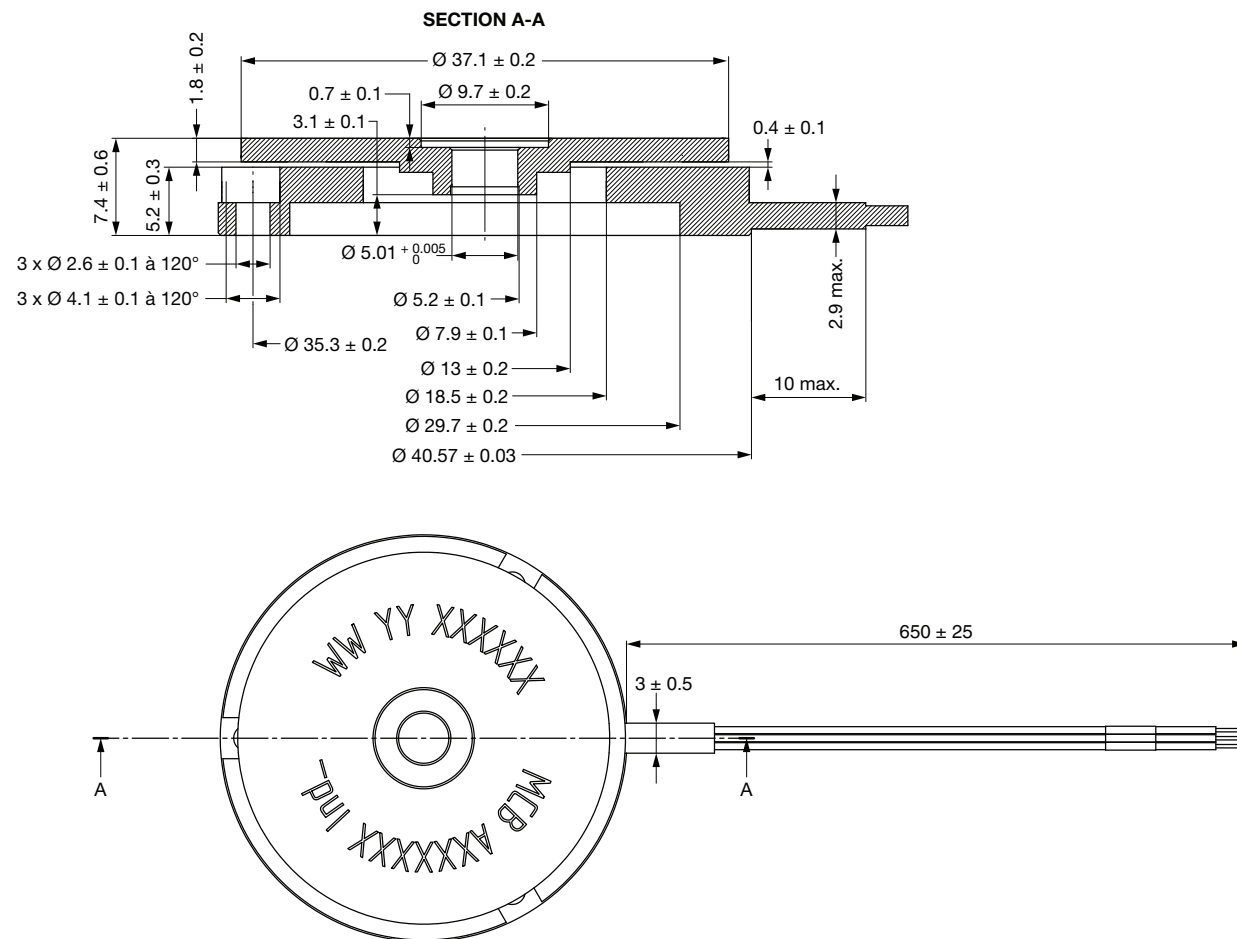
**MAXIMUM SPEED VS. ACCURACY CHART**


**DIMENSIONS** in millimeters

OPTION ON REQUEST: ANOTHER INTERFACE FOR THE ROTOR



OPTION ON REQUEST: RADIAL OUTPUT



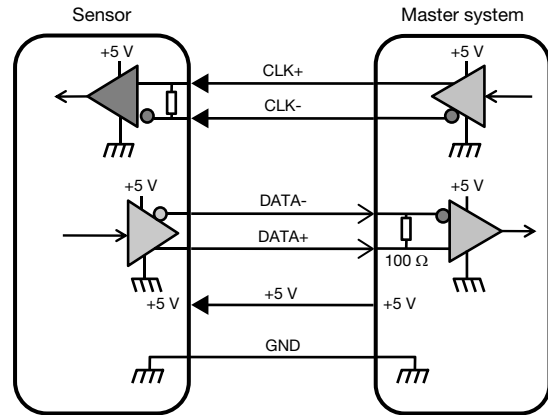
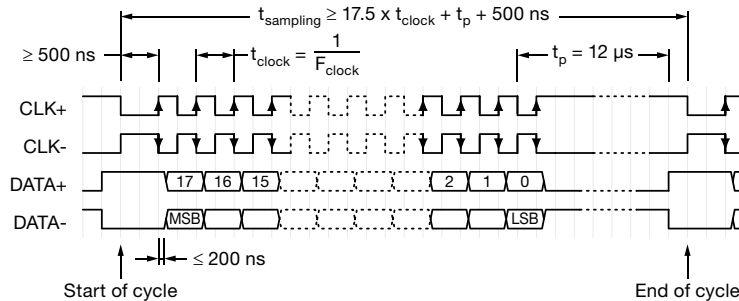
**ELECTRICAL INTERFACE DESCRIPTION - SSI INTERFACE**

6 WIRES CONNECTIONS		
NAME	WIRE COLOR	
GND	Black	Blue <sup>(1)</sup>
+5 V	Red	White <sup>(1)</sup>
CLK+	White	Blue <sup>(1)</sup>
CLK-	Clear	White <sup>(1)</sup>
DATA+	Yellow	Blue <sup>(1)</sup>
DATA-	Green	White <sup>(1)</sup>

**Note**

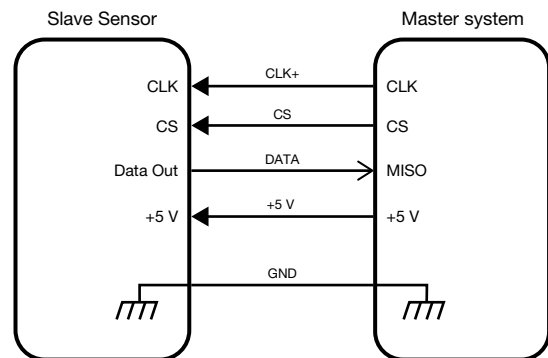
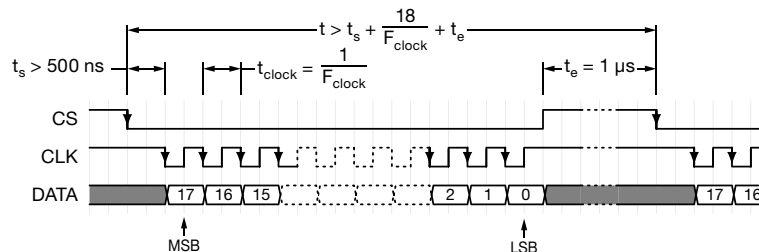
<sup>(1)</sup> With marking sleeve (S, C, or D)

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	3 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 (mechanical interfaces, electrical interfaces, ...)



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