

# Rotational Absolute Magnetic Encoder Displacement Sensor



## FEATURES

- Hall effect principle
- OTP (one time programmable) or flash technology
- Lightning protection
- Plug and play
- Single or redundant functions
- Good magnetic immunity
- Ball bearings
- Stainless steel shaft
- Housing protected
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, magnetic technology
Output type	Cable
Market appliance	Industrial, railway, military airplane actuator
Dimensions	7/8" (22 mm)

ELECTRICAL SPECIFICATIONS	
PARAMETER	
Voltage supply	$\pm 10$ V
Current supply	5 mA max.
Current supply maximum at startup time	15 mA during 50 ms (typical)
Connection	Shielded cable
Useful electrical angle	80°
Absolute accuracy at 18 °C to 25 °C	Refer to curves in charts "Channel 1" and "Channel 2"
Absolute accuracy at -40 °C to +110 °C	Refer to curves in charts "Channel 1" and "Channel 2"
Residual ripple	$\leq 30$ mV
Residual ripple frequency	75 kHz $\pm$ 30 kHz
Response time	1 ms max. (for an angle of 20° in 6 ms $\pm$ 2 ms)
Electrical phasing	0.5 U $\pm$ 0.1 % U
Nominal power at 70 °C	$\leq 0.2$ W
Lightning	DO160d level 4
Coupling (for design 2 functions)	$\leq 14$ mV

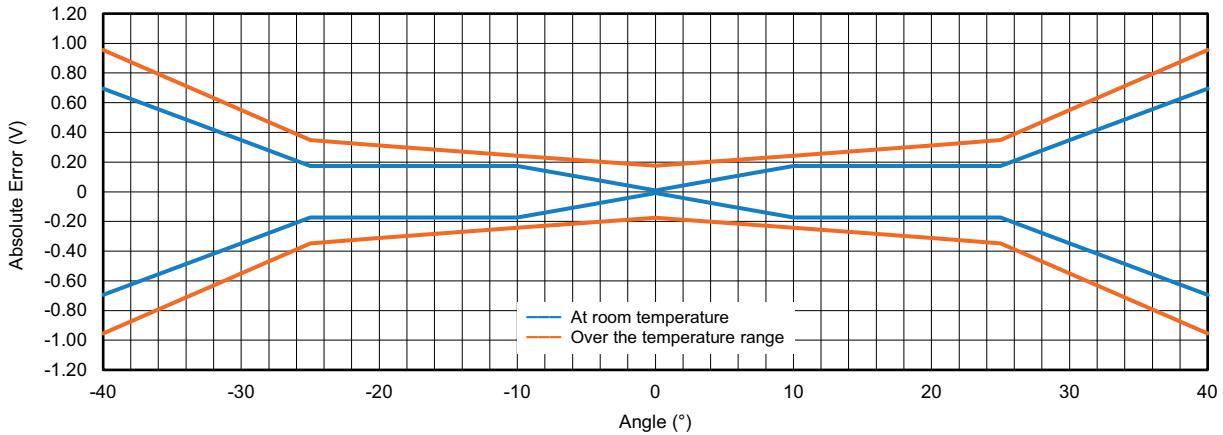
MECHANICAL SPECIFICATIONS	
PARAMETER	
Mechanical angle	360°
Hysteresis	$\leq 14$ mV
Running torque	< 0.2 N.m
Weight	36 g $\pm$ 4 g (for 1 function); 51 g $\pm$ 5.1 g (for 2 functions)



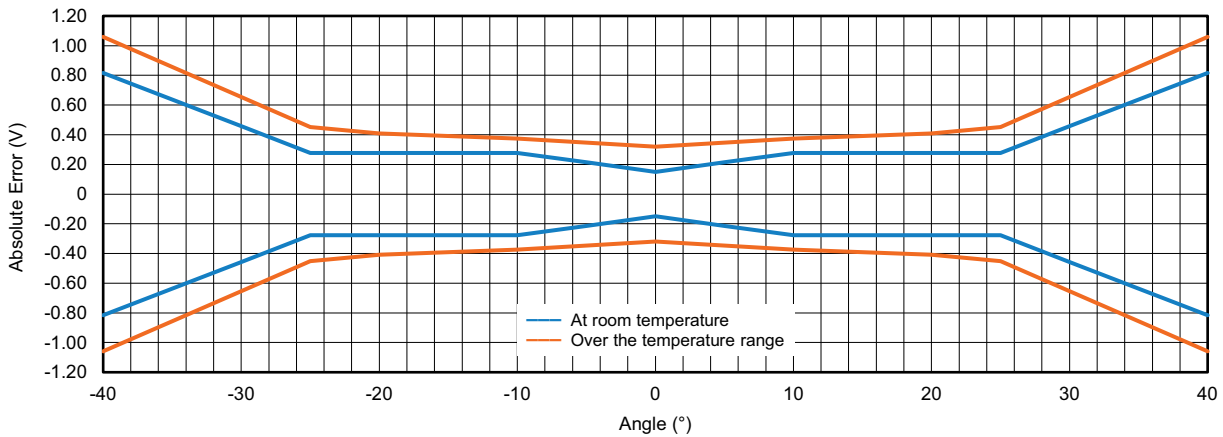
SAP PART NUMBERING GUIDELINES									
TYPE	MODEL	DESIGN	SIZE (mm)	TYPE	FUNCTION	ACCURACY (BITS)	RESOLUTION (BITS)	OUTPUT	PACKAGING
R = rotational	AM	E = encoder with housing	022	M	1 = 1 function 2 = 2 functions	UU	UU	B = analog CCW	B = box

PERFORMANCE	
PARAMETER	
Operating temperature range	-40 °C to +115 °C
Protection class	IP50
Life	50M cycles, ≥ 175M cycles (pseudo-random cycle in lab conditions)
Vibration	1.5 mm pic from 10 Hz to 60 Hz, 20 g from 60 Hz to 2000 Hz (free shaft) on 3 major axis
Shock	50 g, 1 ms, 1/2 sinus on the 3 axis

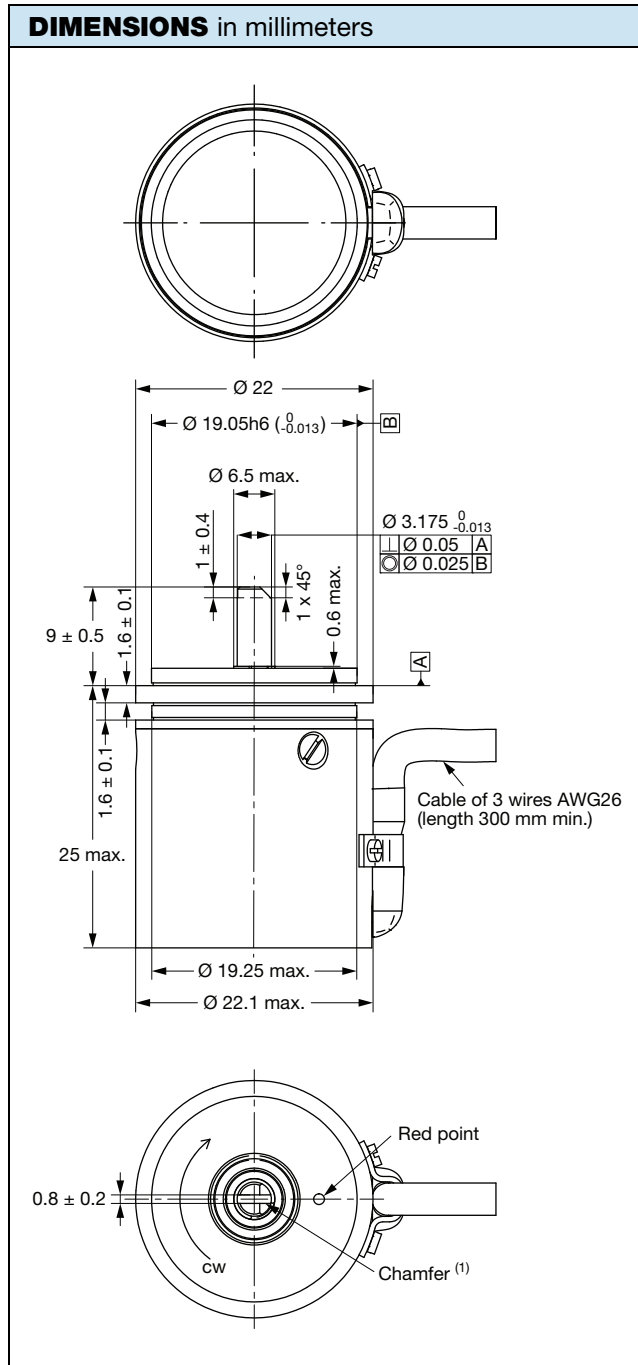
**CHANNEL 1**



**CHANNEL 2**



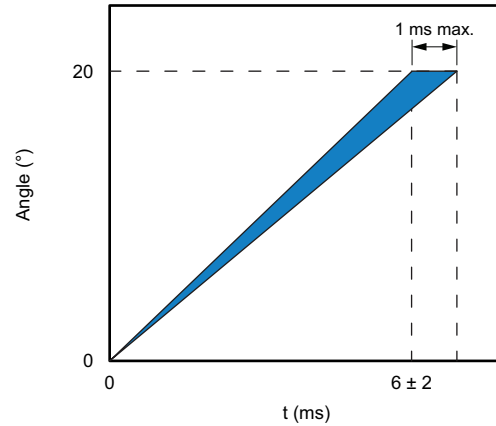
**VARIANT 1: SINGLE FUNCTION**



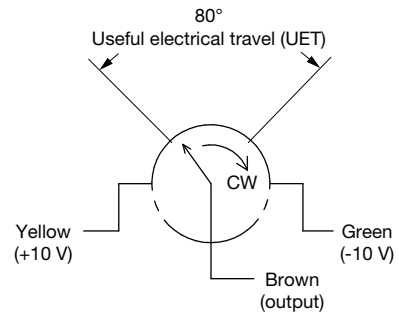
**Note**

<sup>(1)</sup> When the shaft chamfer is aligned with the red point, the position is approximately at electrical zero

**RESPONSE TIME**



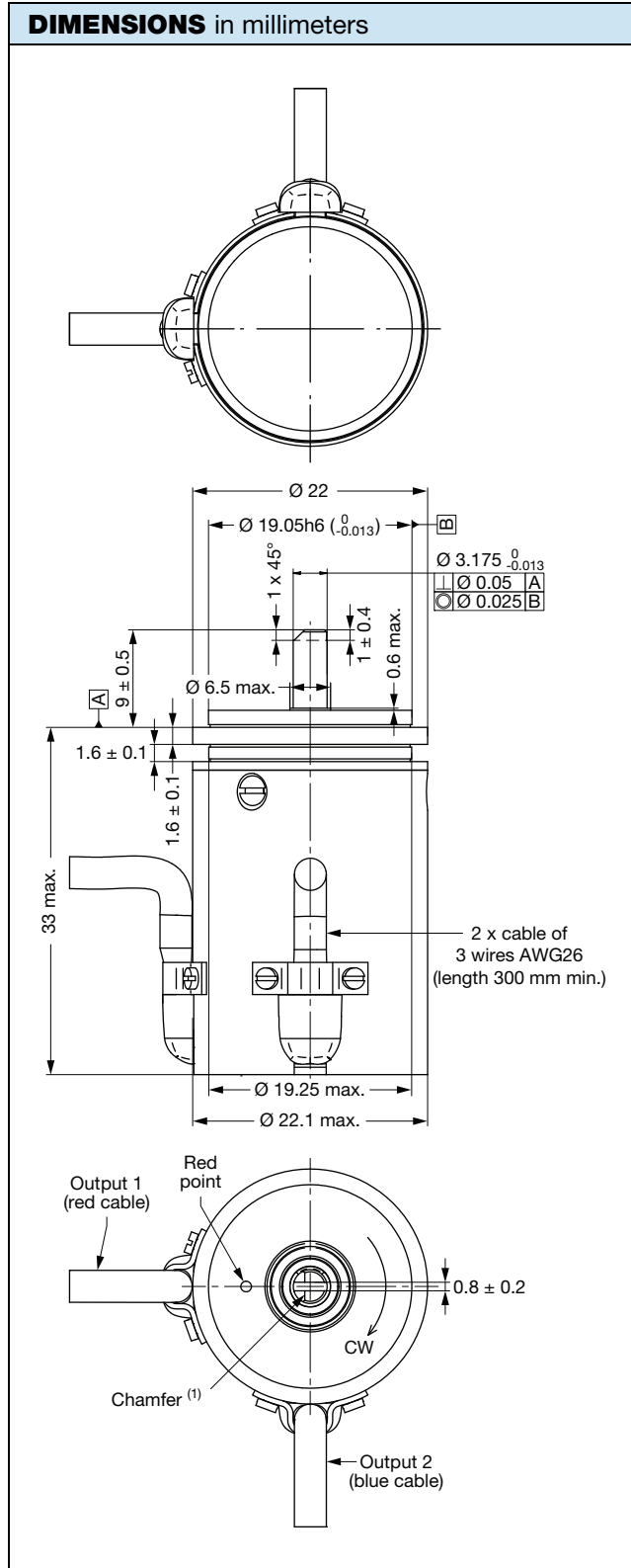
**ELECTRICAL DIAGRAM <sup>(1)</sup>**



**Note**

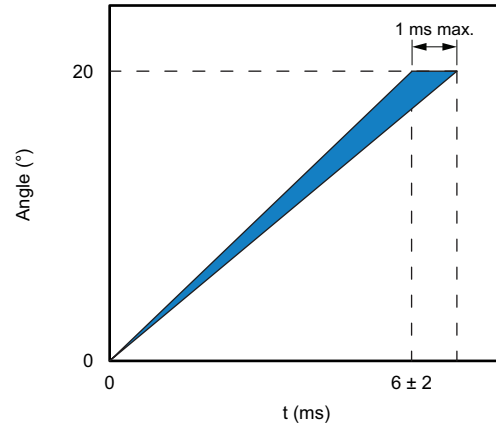
<sup>(1)</sup> Shaft side view, decreasing function when rotation is clockwise (CW)

**VARIANT 2: REDUNDANT FUNCTIONS**

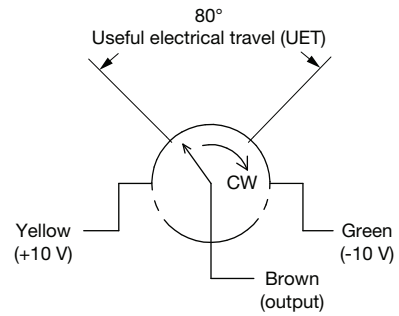


**Note**  
<sup>(1)</sup> When the shaft chamfer is aligned with the red point, the position is approximately at electrical zero

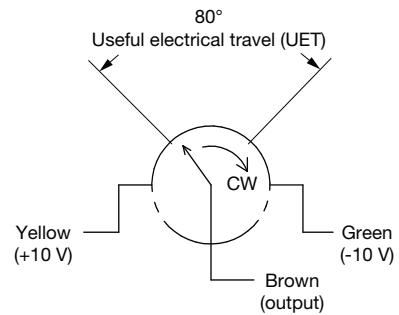
**RESPONSE TIME**



**ELECTRICAL DIAGRAM <sup>(1)</sup>**



**Output 1**



**Output 2**

**Note**  
<sup>(1)</sup> Shaft side view, decreasing function when rotation is clockwise (CW)

**OPTIONS** (on request)

- Other accuracy
- Other resolution
- Other mechanical dimensions and mechanical interfaces
- Other electrical interface (for example: SSI, ...)
- Possibility of function redundant



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