



# Rotary Encoders for General Purpose

SPECIFIC CHARACTERISTICS	S	H / HA	HP	SP
Measuring	Up to 625 pulses/turn: Perforated Disc From 625 pulses/turn: Graduated Glass Disc			
Precision	± 1/10 pitch			
Maximum turning speed	12000 RPM			
Vibration	100 m/sec <sup>2</sup> (10 ÷ 2000 Hz.)			
Shock	300 m/sec <sup>2</sup> (11 msec)			
Momentum of inertia	16 gr.cm <sup>2</sup>			
Turning torque	0.003 Nm. (30 grcm) max., 20°C			
Shaft	Protruding Shaft	Hollow Shaft	Hollow Shaft	Protruding Shaft
Max. Shaft Load	Axial: 10 N Radial: 20 N	-	-	Axial: 10 N Radial: 20 N
Weight	0.3 kg.			
Environmental data:				
Operating temperature	0°...70°C			
Storage temperature	-30°...+80°C			
Relative humidity	98% without condensation			
Sealing Protection	IP 64 (DIN 40050)			
Light source	IRED			
Maximum frequency	200 KHz		200 KHz	
Reference pulse I <sub>0</sub>	One reference signal I <sub>0</sub> per turn			
Supply voltage	5 V ± 5% (TTL)		5 V ± 5%	
Consumption	70 mA typical, 100 mA max. (without load)			
Output signals	 Differential TTL (5V)		 1Vpp	
Electronics for pulse generation	Inside the encoder			
Maximum cable length allowed	50 m (163 ft)		150 m (490 ft)	

## Pulses per Revolution

S	SP	H	HP	HA
50	-	50	-	-
100	-	100	-	-
200	-	200	-	-
250	-	250	-	-
400	-	400	-	-
500	-	500	-	-
600	-	600	-	-
635	-	635	-	-
1000	1000	1000	1000	-
1024	1024	1024	1024	1024
1250	1250	1250	1250	1800
1270	1270	1270	1270	2000
1500	1500	1500	1500	2048
2000	2000	2000	2000	2500
2500	2500	2500	2500	3000
3000	3000	3000	3000	3600
-	3600	-	-	4000
-	4320	-	-	4096
5000	5000	-	-	5000
-	-	-	-	10000

## Order Identification - HA model

Example: HA - 22132 - 2500

<b>HA</b>	In all cases
<b>1</b>	Holder type <ul style="list-style-type: none"> <li>1: Rear clamps</li> <li>2: Front clamps</li> </ul>
<b>2</b>	Size of hollow shaft (ØA) <ul style="list-style-type: none"> <li>1: 10 mm</li> <li>2: 12 mm</li> </ul>
<b>1</b>	Output signals <ul style="list-style-type: none"> <li>A, B, I<sub>0</sub> and their inverted signals</li> </ul>
<b>3</b>	Type of connection <ul style="list-style-type: none"> <li>1: Radial cable (2 m)</li> <li>2: With radial CONNEI-12 connector</li> <li>3: Radial cable (1 m) with CONNEI 12 connector</li> </ul>
<b>2</b>	Supply voltage <ul style="list-style-type: none"> <li>1: Push-Pull (11-30V)</li> <li>2: RS-422 (5V)</li> </ul>
<b>2500</b>	Nr. of pulses per turn

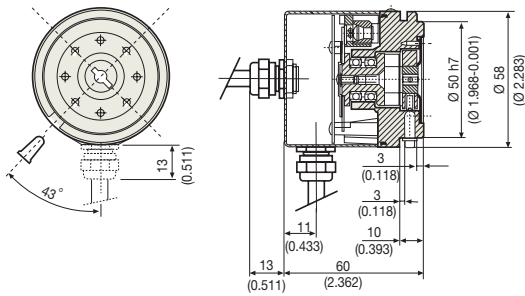
## Order Identification - H, HP, S, SP Models

Example: SP - 1024 - A - 12 - IP 66

<b>SP</b>	Model <ul style="list-style-type: none"> <li>S: Protruding shaft, square signal (TTL or HTL)</li> <li>SP: Protruding shaft, sinusoidal signal (1Vpp)</li> <li>H: Hollow shaft, square signal (TTL or HTL)</li> <li>HP: Hollow shaft, sinusoidal signal (1Vpp)</li> </ul>
<b>1024</b>	Pulses per revolution
<b>C</b>	Type of connector <ul style="list-style-type: none"> <li>Blank space</li> <li>C: male-male connector in a CONNEI 12 housing</li> <li>C5: 1 meter cable besides a male-male CONNEI 12 connector</li> </ul>
<b>A</b>	Cable Output <ul style="list-style-type: none"> <li>R: Radial</li> <li>A: Axial</li> </ul> <p>If no indication is given, the default cable output is assumed to be axial</p>
<b>12</b>	Voltage <ul style="list-style-type: none"> <li>Blank: Standard Power Supply 5V</li> <li>12: Optional power supply (12 V) - Only HTL signal</li> </ul>
<b>IP 66</b>	Protection <ul style="list-style-type: none"> <li>Blank space: standard protection (IP-53)</li> <li>IP-66: IP-66 protection</li> </ul>

## Dimensions in mm (inches)

### H, HP Models

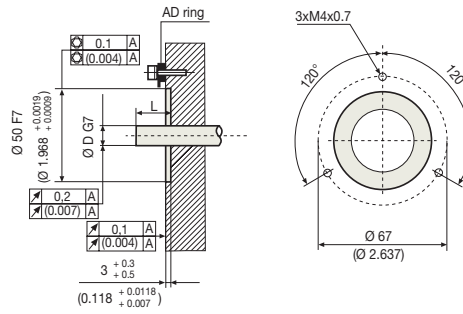


L: Min. 9 mm (0.36 inch), max. 16 mm (0.63 inch)

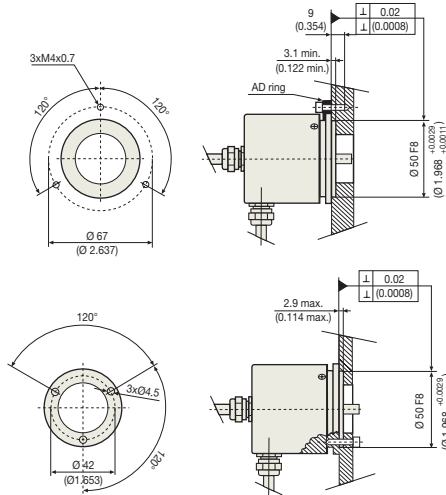
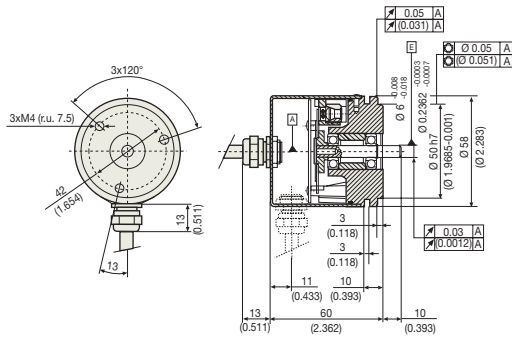
#### Ø D G7

mm	3	4	6	6.35	7	8	9.53	10
inches	(0.118)	(0.157)	(0.236)	(0.250)	(0.275)	(0.314)	(0.375)	(0.393)

## Mounting possibilities



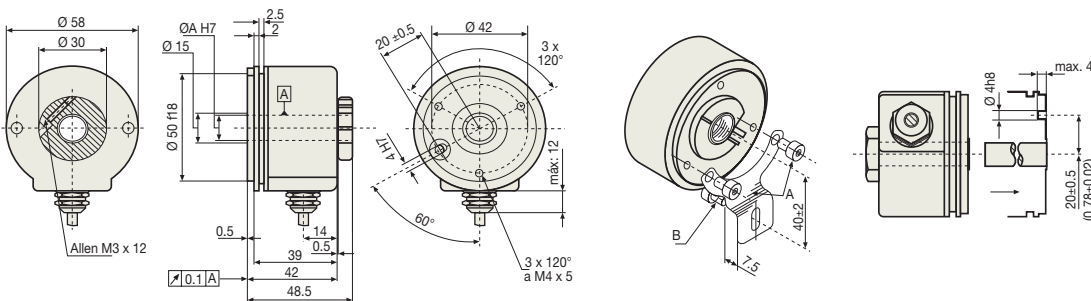
### S, SP Models



Signal	+5V Power	0V Power	+5V Sense	0V Sense	A	/A	B	/B	I <sub>0</sub>	/I <sub>0</sub>	GND
Color	Red	Black	Purple	White	Blue	Pink	Green	Yellow	Grey	Brown	Shield

### HA Model

With rear holder (\*)



(\*) Also available with front holder



Note: • Only the S-90000-1024 D90 and S-...-D170 models include a cable.

• Request the cable for the rest of the models. Recommended cable: EC-...-A-C1 (see page 27)