

PHOTOELECTRIC ROTARY ENCODER

A58HE1



High Resolutions



Analog output signals



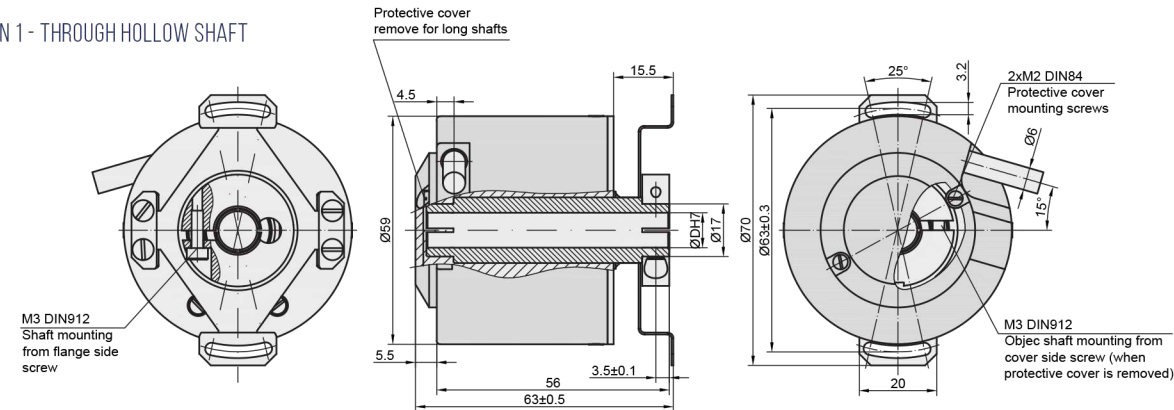
Hollow Shaft



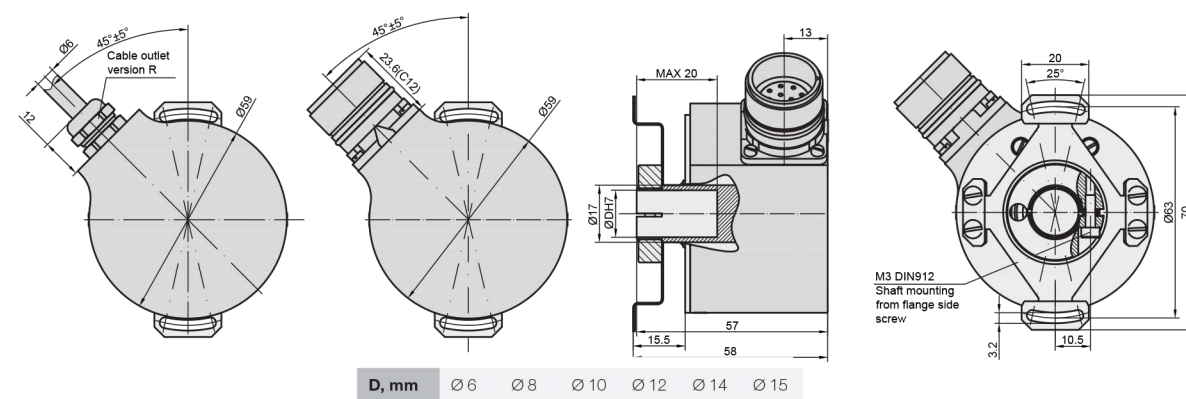
Photoelectric incremental hollow shaft encoder A58HE1 has an external flexible coupling and it is the main feature that differs it from other similar encoders. It is able to produce up to 108.000 output pulses per

revolution and has different output signal versions available: 11 μ App, 1Vpp, TTL or HTL.

VERSION 1 - THROUGH HOLLOW SHAFT



VERSION 2 - BLIND HOLLOW SHAFT



MECHANICAL DATA

Line number on disc (z)	100; 250; 500; 600 800; 1000; 1024; 1125; 1250; 1500; 2000; 2048; 2500; 3000; 3600; 4000; 5000; 9000; 10800	Rotor moment of inertia	< 1.5x10 ⁻⁴ kgm ²
Number of output pulses per revolution for A58HE1-F	Z x k, where k=1,2,3,4,5,8,10 (k - interpolation factor)	Protection (housing) (IEC 529)	IP64
Maximum shaft speed	10000 rpm	Protection (shaft side) (IEC 529)	IP64
Permissible motion of shaft: - axial - radial (at shaft end)	± 0.03 mm 0.05 mm	Maximum weight without cable	0.3 kg
Accuracy (T ₁ -period of lines on disc in arc. sec)	$\pm 0.1T_1$ arc. sec	Operating temperature	-10...+70 °C
Starting torque at 20°C	≤ 0.025 Nm	Storage temperature	-30...+80 °C
		Maximum humidity (non-condensing)	98 %
		Permissible vibration (55 to 2000 Hz)	≤ 100 m/s ²
		Permissible shock (5 ms)	≤ 1000 m/s ²

ACCESSORIES

CONNECTORS FOR CABLE	C9, 9-pin round connector	C12, 12-pin round connector	C12, 12-pin flange socket	C9, 9-pin flange socket
DIGITAL READOUT DEVICES	CS3000		CS5500	
EXTERNAL INTERPOLATOR	NK			

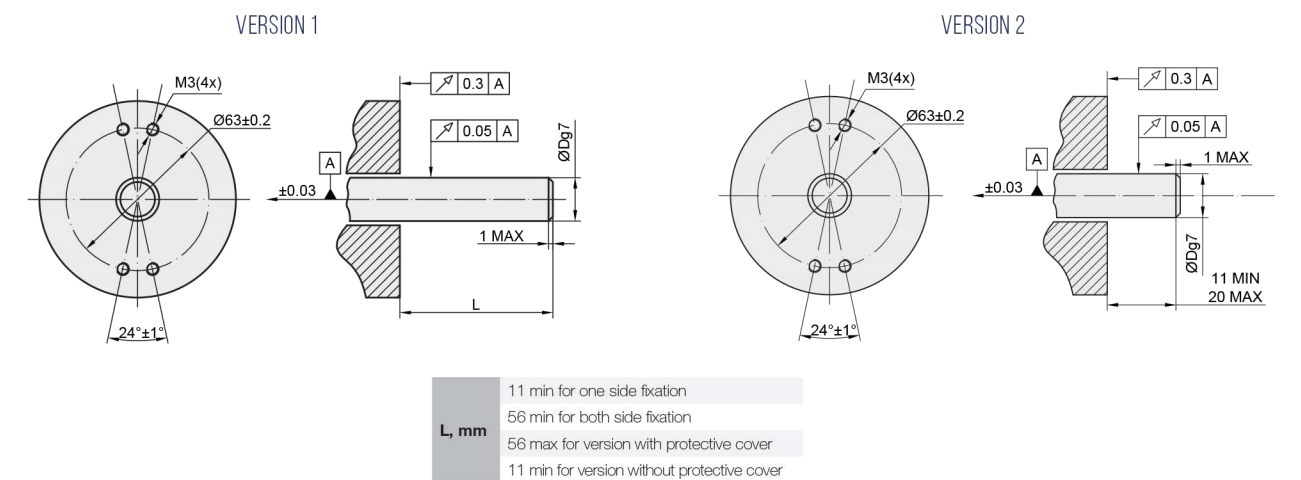
ELECTRICAL DATA

Version	A58HE1-A $\sim 11 \mu$ App	A58HE1-AV ~ 1 Vpp	A58HE1-F \square TTL; \square HTL
Supply voltage (U _p)	+5 V \pm 5%	+5 V \pm 5%	+5 V \pm 5%; +(10 to 30) V
Max. supply current (without load)	80 mA	120 mA	120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal I ₁ and I ₂ Amplitude at 1 k Ω load: - I ₁ = 7-16 μ A - I ₂ = 7-16 μ A	Differential sine +A/-A and +B/-B Amplitude at 120 Ω load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Differential square-wave U ₁ /U ₁ and U ₂ /U ₂ . Signal levels at 20 mA load current: - low (logic "0") ≤ 0.5 V at U _p =+5 V - low (logic "0") ≤ 1.5 V at U _p =10 to 30 V - high (logic "1") ≥ 2.4 V at U _p =+5 V - high (logic "1") $\geq (U_p-2)$ V at U _p =10 to 30 V
Reference signal	One quasi-triangular I ₀ peak per revolution. Signal magnitude at 1 k Ω load: - I ₀ = 2-8 μ A (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120 Ω load - R = 0.2-0.8 V (usable component)	One differential square-wave U ₀ /U ₀ per revolution. Signal levels at 20 mA load current: - low (logic "0") < 0.5 V at U _p =+5 V - low (logic "0") < 1.5 V at U _p =10 to 30 V - high (logic "1") > 2.4 V at U _p =+5 V - high (logic "1") > (U _p -2) V at U _p =10 to 30 V
Maximum operating frequency	(-3 dB) ≥ 160 kHz	(-3 dB) ≥ 180 kHz	(160 x k) kHz, k-interpolation factor
Direction of signals	I ₂ lags I ₁ for clockwise rotation	+B lags +A for clockwise rotation	U ₂ lags U ₁ with clockwise rotation
Maximum rise and fall time	-	-	< 0.5 μ s
Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
Maximum cable length	5 m	25 m	25 m
Output signals			

Note:

- Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
- If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm².

MOUNTING REQUIREMENTS



ORDER FORM

Mechanical Version (X1):	Output signal version (X2):	Pulse number per Revolution (X3):	Optional line number on disc (z) (X4):	Shaft hole Diameter (X5):	Supply Voltage (X6):	Cable length (X7):	Connector type (X8):
1 - through hollow shaft 2 - blind hollow shaft	A AV F	100 ... 108000*	100 ... 10800	6, 8, 10, 12, 14, 15 - mm	05V - +5V 30V - +(10 to 30)V*	AR01 - 1m AR02 - 2m AR03 - 3m R01 - 1m ... CR - flange socket radial	W - without connector C9 - round, 9 pins C12 - round, 12 pins D9 - flat, 9 pins

ORDER EXAMPLES: 1) A58HE1-1-AV-5000-8-05V-01/C12;
2) A58HE1-2-F-10000/2500-10-30V-CR/C12