

# A58HE

## PHOTOELECTRIC ROTARY ENCODER



The encoder A58HE is used to measure angular position of the key machine components, industrial robots, comparators, rotary tables, servo drives and to establish an informational link with DCC, NC or Digital Readout Units.

The encoder has integrated stator coupling so it can be fixed directly on the object shaft. Mounting adapter - similar to adapter of encoder A58H - is available on request.

The encoder is used in automatic control, on-line gauging, process monitoring systems, etc.

The case of encoder is mounted via four screws M3 through adapter. The encoder is coupled via shaft collar.



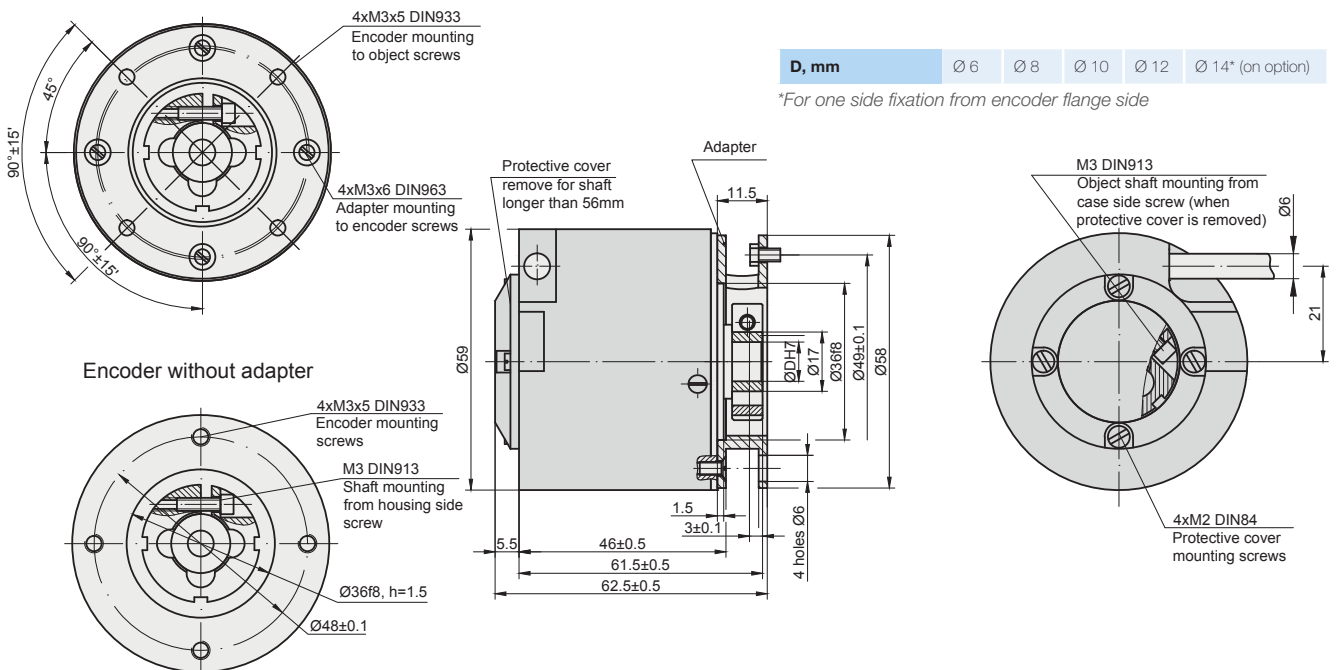
Three versions of output signals are available:

- A58H-A - sinusoidal signals, with amplitude approx. 11  $\mu$ App;
- A58H-AV - sinusoidal signals, with amplitude approx. 1 Vpp;
- A58H-F - square-wave signals (TTL or HTL) with integrated subdividing electronics for interpolation x1, x2, x3, x4, x5, x8, x10.

### MECHANICAL DATA

Line number on disc (z)	100; 250; 500; 600; 800; 1000; 1024; 1125; 1250; 1500; 2000; 2500; 3000; 3600; 4000; 5000; 9000; 10800
Pulse number per shaft revolution for A58-F	Z x k, where k=1,2,3,4,5,8,10 (k - interpolation factor)
Maximum shaft speed	10000 rpm
Permissible motion of shaft:	$\pm 0.03$ mm
- axial	0.05 mm
- radial (at shaft end)	
Accuracy (T <sub>1</sub> -period of lines on disc in arc. sec)	$\pm 0.1T_1$ arc. sec
- on option for z < 5000	$\pm 0.05T_1$ arc. sec
- on option for z > 5000	$\pm 12.0$ arc. sec

Starting torque at 20°C	$\leq 0.025$ Nm
Rotor moment of inertia	$< 1.5 \times 10^{-4}$ kgm <sup>2</sup>
Protection (housing) ( IEC 529)	IP64
Protection (shaft side) ( IEC 529)	IP64
Maximum weight without cable	0.35 kg
Operating temperature	0...+70 °C
Storage temperature	-30...+80 °C
Maximum humidity (non-condensing)	98 %
Permissible vibration (55 to 2000 Hz)	$\leq 100$ m/s <sup>2</sup>
Permissible shock (11 ms)	$\leq 300$ m/s <sup>2</sup>



### ELECTRICAL DATA

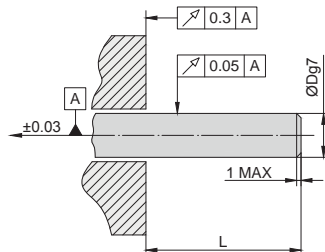
VERSION	A58HE-A $\sim 11 \mu\text{App}$	A58HE-AV $\sim 1 \text{Vpp}$	A58HE-F $\square \square \square \text{TTL}; \square \square \square \text{HTL}$
Supply voltage ( $U_p$ )	+5 V $\pm 5\%$	+5 V $\pm 5\%$	+5 V $\pm 5\%$ ; +(10 to 30) V
Max. supply current (without load)	80 mA	120 mA	120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal $I_1$ and $I_2$ Amplitude at 1 k $\Omega$ load: - $I_1 = 7\text{-}16 \mu\text{A}$ - $I_2 = 7\text{-}16 \mu\text{A}$	Differential sine +A/-A and +B/-B Amplitude at 120 $\Omega$ load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Differential square-wave $U1/\overline{U1}$ and $U2/\overline{U2}$ . Signal levels at 20 mA load current: - low (logic "0") $\leq 0.5 \text{ V}$ at $U_p=+5 \text{ V}$ - low (logic "0") $\leq 1.5 \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$ - high (logic "1") $\geq 2.4 \text{ V}$ at $U_p=+5 \text{ V}$ - high (logic "1") $\geq (U_p-2) \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$
Reference signal	One quasi-triangular $I_0$ peak per revolution. Signal magnitude at 1 k $\Omega$ load: - $I_0 = 2\text{-}8 \mu\text{A}$ (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120 $\Omega$ load - R = 0.2-0.8 V (usable component)	One differential square-wave $U0/\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low (logic "0") $< 0.5 \text{ V}$ at $U_p=+5 \text{ V}$ - low (logic "0") $< 1.5 \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$ - high (logic "1") $> 2.4 \text{ V}$ at $U_p=+5 \text{ V}$ - high (logic "1") $> (U_p-2) \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$
Maximum operating frequency	(-3 dB) $\geq 160 \text{ kHz}$	(-3 dB) $\geq 180 \text{ kHz}$	(160 x k) kHz, k-interpolation factor
Direction of signals	$I_2$ lags $I_1$ for clockwise rotation	+B lags +A for clockwise rotation	$U2$ lags $U1$ with clockwise rotation
Maximum rise and fall time	-	-	< 0.5 $\mu\text{s}$
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:

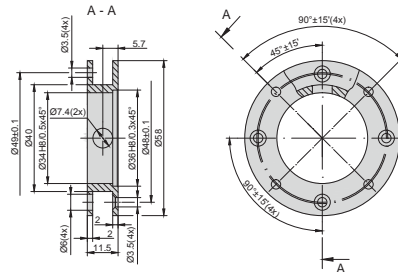
1. Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
2. If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm<sup>2</sup>.

### MOUNTING REQUIREMENTS

<b>L, mm</b>	11 min for one side fixation
	56 min for both side fixation
	56 min for version with protective cover
	>56min for version without protective cover



### ADAPTER



### ACCESSORIES

CONNECTORS FOR CABLE	B12 12-pin round connector	C9 12-pin round connector	C12 12-pin round connector	D9 9-pin flat connector	D15 15-pin flat connector	RS10 10-pin round connector	ONC 10-pin round connector
DIGITAL READOUT DEVICES	CS3000			CS5500			
EXTERNAL INTERPOLATOR	NK						

### ORDER FORM

A58HE - XX - XXXX/XXXX - XX - XX - XXX - X							
OUTPUT SIGNAL VERSION:	PULSE NUMBER PER REVOLUTION:	OPTIONAL LINE NUMBER ON DISC (Z):	SHAFT HOLE DIAMETER:	SUPPLY VOLTAGE:	CABLE LENGTH:	CONNECTOR TYPE:	ADAPTER:
A AV F	100 ... 108000	100 ... 10800 *only for A58HE-F	6, 8, 10, 12, 14* mm *with additional hub for shaft mounting, for one side fixation from flange side	05V - +5V 30V - +(10 to 30) V* *only for A58H-F with HTL output	AR01 - 1m AR02 - 2m AR03 - 3m ...	W - without connector B12 - round, 12 pins C9 - round, 9 pins C12 - round, 12 pins D9 - flat, 9 pins D15 - flat, 15 pins RS10 - round, 10 pins ONC - round, 10 pins	W - without adapter S - with adapter
ORDER EXAMPLES:	1) A58HE-AV-1024-6-05V-AR01/W-W 2) A58HE-F-4000-8-30V-AR06/C12-S 3) A58HE-F-4000/500-8-30V-AR06/C12-S						