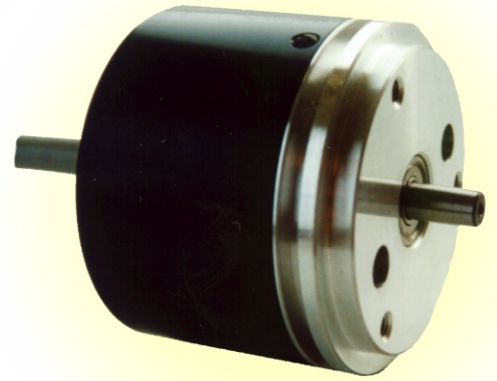


# A58 PHOTOELECTRIC ROTARY ENCODER

(A58-A, A58-AV, A58-F)



The encoder A58 is similar to the "Heidenhain" ROD 426, ROD 456, ROD 466 and ROD 486 type encoders in electrical parameters, mounting and overall dimensions.

The photoelectric rotary encoder **A58** is used to establish an informational link between the key components of machines, industrial robots, comparators and DCC, NC or Digital Readout units. It gives information about the value and direction of the motion components. The encoder is used in automatic control, on-line gauging, in process monitoring systems, etc.

The encoder consists of three parts: mechanical, optical and electronic.

**The mechanical part** supports the rotation of the grating disc, fixes optical and electronic parts.

**The optical part** includes the light source, photosensitive diodes and grating elements.

**The electronic part** is made on the base of a specialized microchip.

The case of the encoder is fixed to an object by means of screws. The shaft of the encoder is connected with an object shaft by virtue of a compensating coupling.

The encoder has three versions by its output signals:

**A58-A** - sinusoidal signals, with amplitude approx. 11  $\mu$ App;

**A58-AV** - sinusoidal signals, with amplitude approx. 1 Vpp;

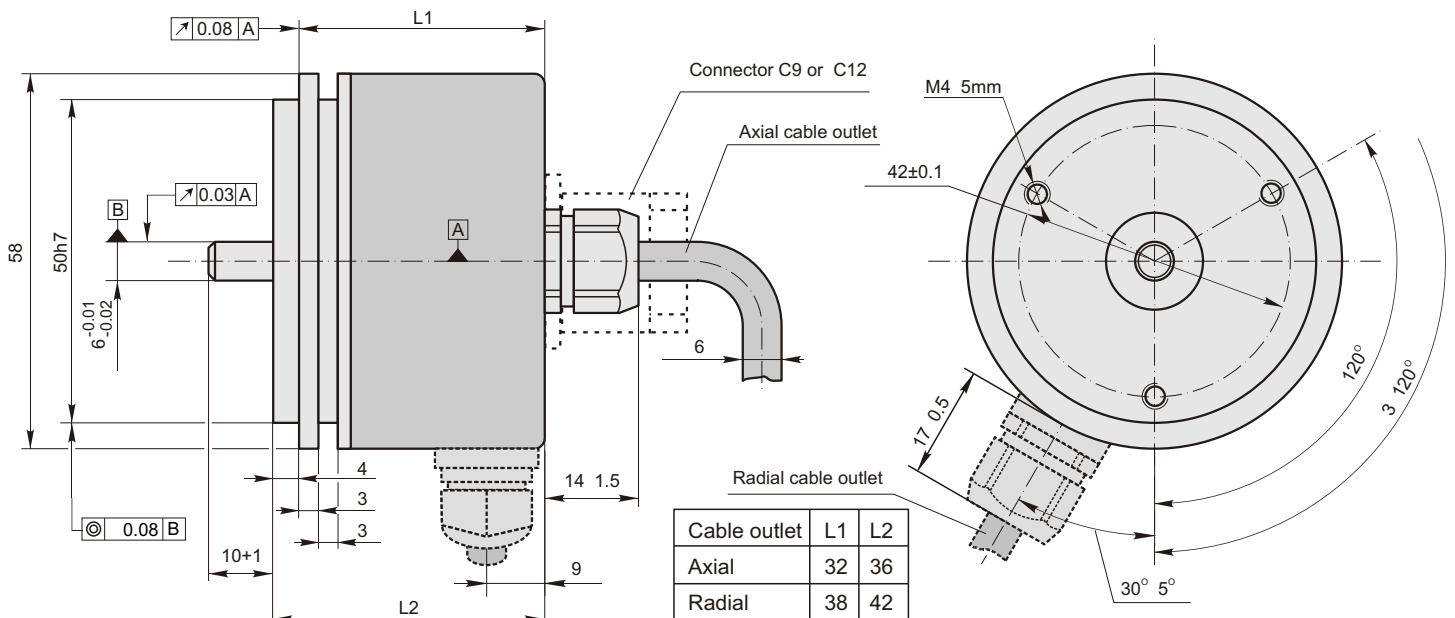
**A58-F** - square-wave signals TTL or HTL.

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## Mechanical Data

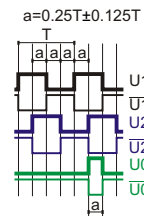
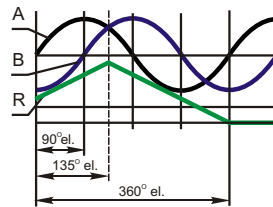
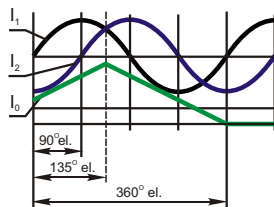
Line number on disc:	100 250 500 600 800 1000 1024 1125 1250 1500 2000 2500 3000 3600 4000 5000 9000 10800
Pulse number per shaft revolution	100 200 250 500 600 800 1000 1024 1125 1200 1250 1500 1600 2000 2048 2500 3000 3600 4000 5000 6000 6250 7500 8000 10000 10240 12500 15000 18000 20000 20480 21600 25000 30000 40000 45000 50000 54000 90000 108000
Maximum shaft speed	12000 rpm
Maximum shaft load:	
- axial	10 N
- radial (at shaft end)	20 N
Accuracy (T <sub>1</sub> -period of lines on disc)	±0.1T <sub>1</sub> arc. sec

Starting torque at 20°C	≤ 0.2 Ncm
Moment of inertia of rotor	< 15 gm <sup>2</sup>
Protection (IEC 529)	IP64
Maximum weight without cable	0.25 kg
Operating temperature	-10...+70 °C
Storage temperature	-30...+80 °C
Maximum humidity (without condensation of moisture)	98 %
Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
Permissible shock (11 ms)	≤ 1000 m/s <sup>2</sup>



## Electrical Data

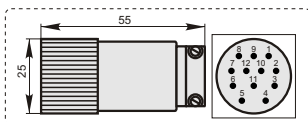
Version	A58-A $\sim 11 \mu\text{A}_{pp}$	A58-AV $\sim 1 \text{V}_{pp}$	A58-F $\square$ TTL; $\square$ HTL
Power supply ( $U_p$ )	+5 V $\pm 5\%$	+5 V $\pm 5\%$	+5 V $\pm 5\%$ ; +(10 to 30) V
Maximum consumed current (without load)	80 mA	120 mA	120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal $I_1$ and $I_2$ . Amplitude at 1 k load: - $I_1 = 7-16 \mu\text{A}$ - $I_2 = 7-16 \mu\text{A}$	Two sinusoidal A and B. Amplitude at 120 load: - A = 0.6-1.2 V - B = 0.6-1.2 V	Square-wave $U1$ , $U2$ and their inverted $\overline{U1}$ , $\overline{U2}$ . Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{ V}$ at $U_p=+5 \text{ V}$ - low ("0" logic) $\leq 1.5 \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$ - high ("1" logic) $\geq 2.4 \text{ V}$ at $U_p=+5 \text{ V}$ - high ("1" logic) $\geq (U_p-2) \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$
Reference signal	One quasi-triangle $I_0$ peak per revolution. Signal magnitude at 1 k load: - $I_0 = 2-8 \mu\text{A}$ (usable component)	One quasi-triangle R per revolution. Signal magnitude at 120 load: - R = 0.2-0.8 V (usable component)	One square-wave $U0$ and its inverted $\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{ V}$ at $U_p=+5 \text{ V}$ - low ("0" logic) $\leq 1.5 \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$ - high ("1" logic) $\geq 2.4 \text{ V}$ at $U_p=+5 \text{ V}$ - high ("1" logic) $\geq (U_p-2) \text{ V}$ at $U_p=10 \text{ to } 30 \text{ V}$
Maximum operating frequency	(-3dB cutoff) $\geq 160 \text{ kHz}$	(-3dB cutoff) $\geq 160 \text{ kHz}$	160 kHz
Direction of signals	$I_2$ lags $I_1$ with clockwise rotation (viewed from shaft side)	B lags A with clockwise rotation (viewed from shaft side)	$U2$ lags $U1$ with clockwise rotation (viewed from shaft side)
Maximum rising and falling time			$< 0.5 \mu\text{s}$
Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
Cable diameter	6 mm	6 mm	6 mm
Maximum cable length	5 m	15 m	30 m for TTL, 100 m for HTL



## Accessories

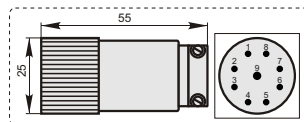
### C12

12-pin round connector for A58-AV and A58-F



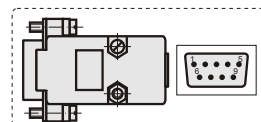
### C9

9-pin round connector for A58-A

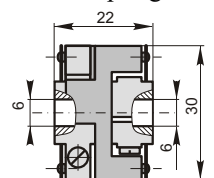


### D9

9-pin flat connector for all version of A58



### SC30 Coupling



Cable armour 6

## Order form

A58 - X - XXXXX - XXX - XXX / X - X

Version by output signals:  
A, AV or F

Pulse number per revolution:  
100...  
10800

Power supply:  
05V - +5V  
30V - +(10 to 30) V\*  
\*only for A58-F with HTL output signals

Cable length and outlet:  
A01 - 1m (A-axial outlet)  
A02 - 2m  
R03 - 3m (R-radial outlet)  
... - ...

Type of connector:  
W - without connector  
D9 - flat, 9 pins  
C9 - round, 9 pins  
C12 - round, 12 pins

Coupling:  
0 - without coupling  
1 - with coupling

or  
CA - connector on housing axial  
CR - connector on housing radial

