

# A58D PHOTOELECTRIC ROTARY ENCODER

(A58D-A, A58D-AV, A58D-F)



The encoder **A58D** is similar to the "Heidenhain" ROD 420, ROD 430, ROD 450 and ROD480 type encoders in electrical parameters, mounting and overall dimensions.

The photoelectric rotary encoder **A58D** 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 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.

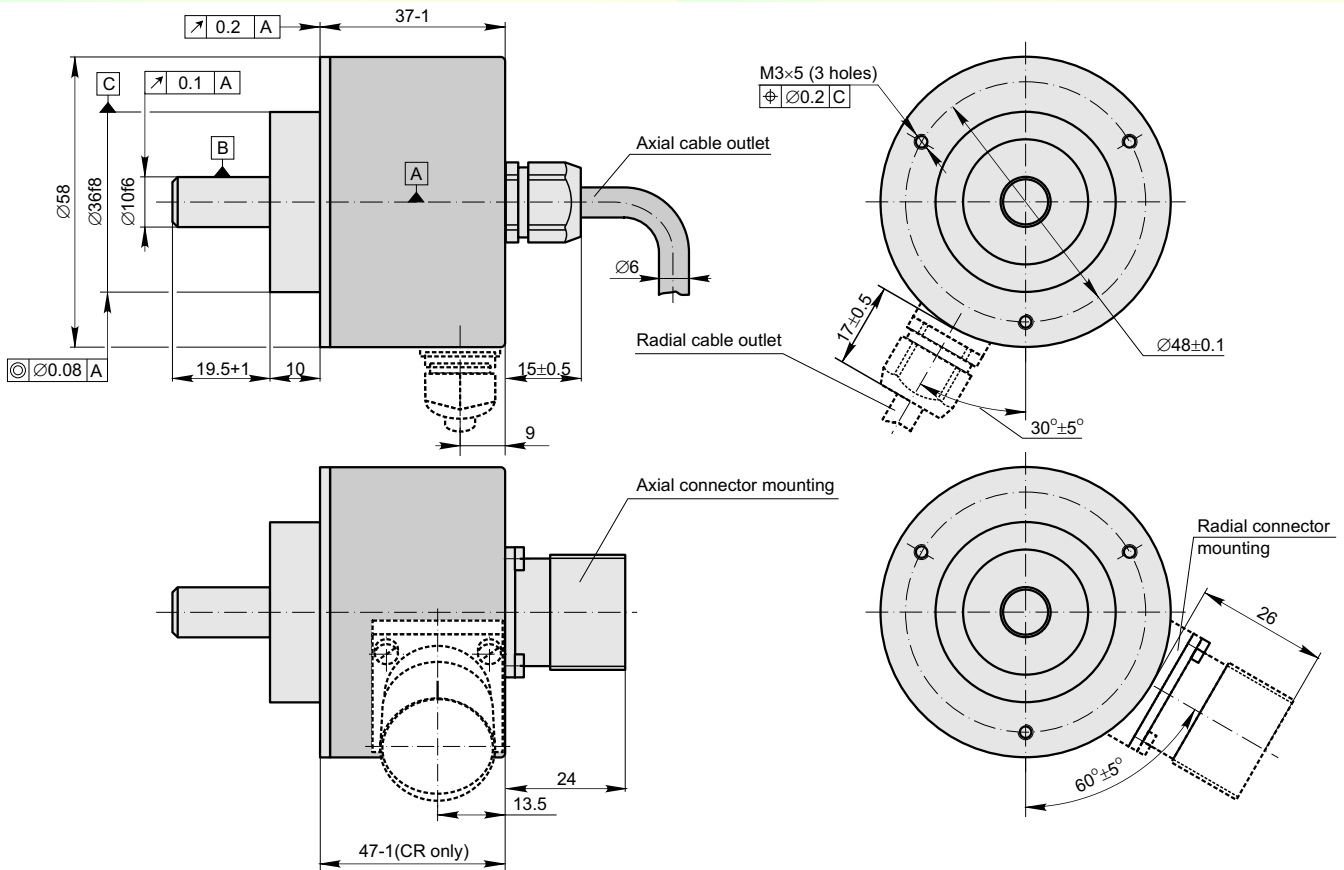
The encoder has three versions by its output signals:

- A58D-A** - sinusoidal signals, with amplitude approx. 11  $\mu$ App;
- A58D-AV** - sinusoidal signals, with amplitude approx. 1 Vpp;
- A58D-F** - square-wave signals TTL or HTL.

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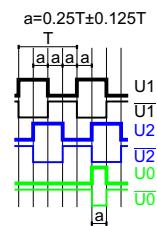
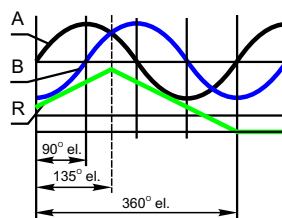
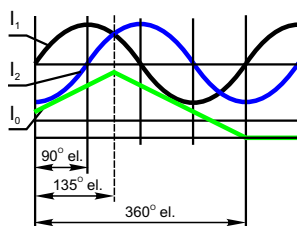
## Mechanical Data

- |   |                              |   |                         |
|---|------------------------------|---|-------------------------|
| ◆ Line number on disc: 100, 250, 500, 600, 800, 1000, 1024, 1125, 1250, 1500, 2000, 2500, 3000, 3600, 4000, 5000  | ◆ Starting torque at 20°C    | ≤ 0.2 Ncm   |                         |
| ◆ 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 9000 10000 10240 12500 15000 18000 20000 20480 21600 25000 30000 40000 45000 50000 54000 90000 10800 | ◆ Moment of inertia of rotor | < 15 gcm <sup>2</sup>                                 |                         |
| ◆ Maximum shaft speed   | 12000 rpm                    | ◆ Protection (IEC 529)                                | IP64                    |
| ◆ Maximum shaft load:   |                              | ◆ Maximum weight without cable                        | 0.25 kg                 |
| ◆ - axial   | 40 N                         | ◆ Operating temperature                               | -10...+70 °C            |
| ◆ - radial (at shaft end)   | 60 N                         | ◆ Storage temperature                                 | -30...+80 °C            |
| ◆ Accuracy (T <sub>1</sub> -period of lines on disc)  | ±0.1T <sub>1</sub> arc. sec  | ◆ 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

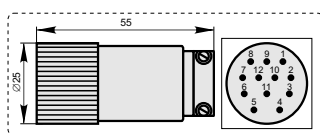
Version	A58D-A $\sim 11 \mu\text{App}$	A58D-AV $\sim 1 \text{Vpp}$	A58D-F $\square$ TTL; $\square$ HTL
◆ Power supply ( $U_p$ )	+5 V $\pm 5\%$ / <80 mA	+5 V $\pm 5\%$ / <120 mA	+5 V $\pm 5\%$ ; +(10 to 30) V / <120 mA
◆ Light source	LED	LED	LED
◆ Incremental signals	Two sinusoidal $I_1$ and $I_2$ . Amplitude at 1 k $\Omega$ load: - $I_1 = 7\text{-}16 \mu\text{A}$ - $I_2 = 7\text{-}16 \mu\text{A}$	Two sinusoidal A and B. Amplitude at 120 $\Omega$ 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 $\Omega$ load: - $I_0 = 2\text{-}8 \mu\text{A}$ (usable component)	One quasi-triangle R per revolution. Signal magnitude at 120 $\Omega$ 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
◆ Type of connector mounted on the encoder	Round 9-pin	Round 12-pin	Round 12-pin
◆ Maximum cable length	5 m	15 m	30 m for TTL, 100 m for HTL



## Accessories

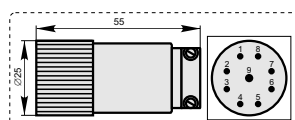
### C12

12-pin round connector for A58D-F and A58D-AV



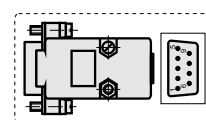
### C9

9-pin round connector for A58D-A

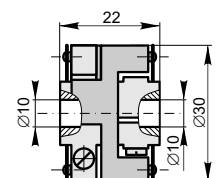


### D9

9-pin flat connector for all versions of A58D



### SC30 Coupling



## Order form

A58D - X - XXXXX - XXX - XXXX / X - X

Version by output signals:  
A, AV or F

Line number:  
100...  
5000

Power supply:  
05V - +5V  
30V - +(10 to 30) V\*  
\*only for A58D-F with HTL output signals

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

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

Coupling:  
0 - without coupling  
1 - with coupling

or

CA - connector axially mounted on the encoder  
CR - connector radially mounted on the encoder

