PRECIZIKA METROLOGY

A58 PHOTOELECTRIC ROTARY ENCODER

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

Precizika Metrology
Zirmunu 139
LT-09120 Vilnius
Lithuania
t 3705 2363600
f 3705 2363609
http://www.precizika.lt
E-mail:info@precizika.lt

ISO 9001:2000

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 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.

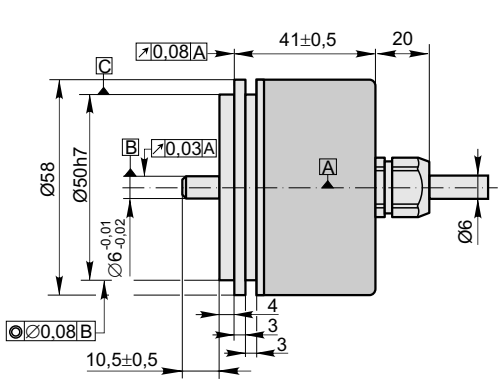
The encoder has three versions by its output signals:

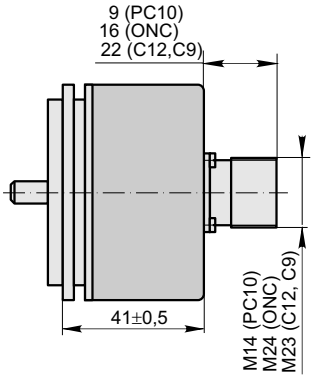
A58-A - sinusoidal signals, with amplitude approx. 11 μA_{pp};
A58-AV - sinusoidal signals, with amplitude approx. 1 V_{pp};
A58-F - square-wave signals TTL or HTL.

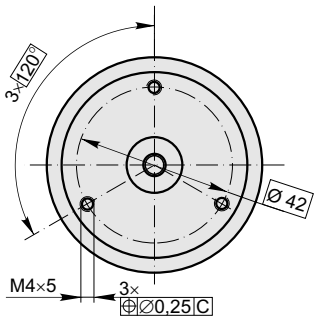
■ Mechanical Data

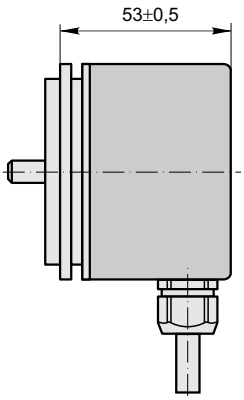
•Line number on disc (Z):	100 250 500 600 800 1000 1024 1125 1250 1500 2000 2048 2500 3000 3600 4000 5000 9000 10800
•Pulse number per shaft revolution for **A58-F**	Z x k, where k=1, 2, 3, 4, 5, 8, 10
•Maximum shaft speed	12000 rpm
•Maximum shaft load:	
- axial	10 N
- radial (at shaft end)	20 N
•Accuracy (T_1-period of lines on disc in arc. sec.)	$\pm 0.1 T_1$ arc. sec

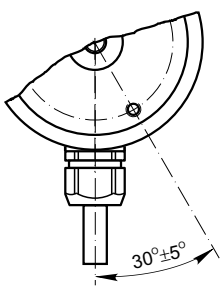
•Starting torque at 20°C	≤ 0.01 Nm
•Moment of inertia of rotor	< 15 gcm^2
•Protection (IEC 529)	IP64
•Maximum weight without cable	0.25 kg
•Operating temperature	-10...+70 °C
•Storage temperature	-30...+80 °C
•Maximum humidity (without condensation of moisture)	98 %
•Permissible vibration (55 to 2000 Hz)	≤ 100 m/s^2
•Permissible shock (11 ms)	≤ 1000 m/s^2

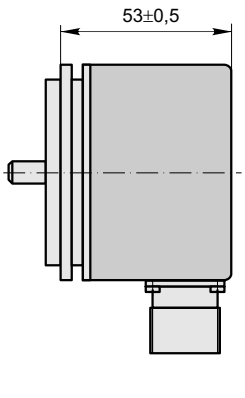


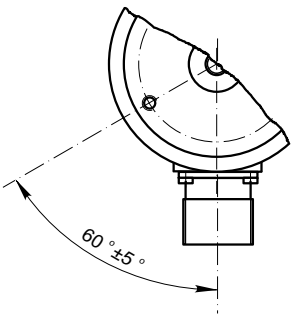










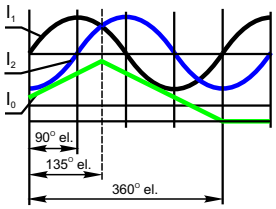


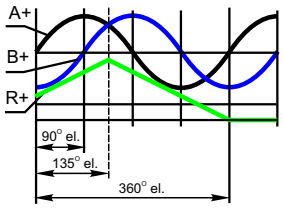
■ Electrical Data

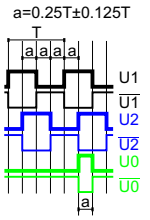
Version	**A58-A** ∿ 11 µApp	**A58-AV** ∿ 1 Vpp	**A58-F** ⊓⊔ TTL; ⊓⊔ HTL
•Power supply (U_P)	+5 V ±5%	+5 V ±5%	+5 V ±5%; +(10 to 30) V
•Maximum consumed current (without load)	80 mA	120 mA	120 mA
•Light source	LED	LED	LED
•Incremental signals	Two sinusoidal I_1 and I_2. Amplitude at 1 kΩ load: - I_1 = 7-16 µA - I_2 = 7-16 µA	Two sinusoidal A+ and B+ and their inverted A- and B- Amplitude at 120 Ω 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) ≤ 0.5 V at U_P=+5 V - low ("0" logic) ≤ 1.5 V at U_P=10 to 30 V - high ("1" logic) ≥ 2.4 V at U_P=+5 V - high ("1" logic) ≥ (U_P-2) V at U_P=10 to 30 V
•Reference signal	One quasi-triangle I_0 peak per revolution. Signal magnitude at 1 kΩ load: - I_0 = 2-8 µA (usable component)	One quasi-triangle R+ and its inverted R- per revolution. Signal magnitude at 120Ω 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) ≤ 0.5 V at U_P=+5 V - low ("0" logic) ≤ 1.5 V at U_P=10 to 30 V - high ("1" logic) ≥ 2.4 V at U_P=+5 V - high ("1" logic) ≥ (U_P-2) V at U_P=10 to 30 V
•Maximum operating frequency	(-3dB cutoff) ≥ 160 kHz	(-3dB cutoff) ≥ 180 kHz	(160 x k) kHz, k - interpolation factor
•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 µs
•Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
•Maximum cable length	5 m	25 m	25 m

Note: 1. Maximum working rotation speed (with proper counting of encoder) is limited by maximum operating frequency and maximum mechanical rotaion speed. 2. If cable extension is used the power supply conductor section should be not smaller than 0.5 mm^2.

Inverted signals are not shown





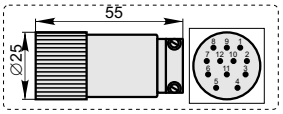


■ Accessories

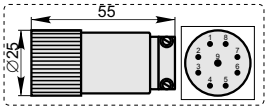
• Connectors

•Coupling

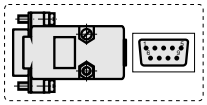
C12
12-pin round connector for **A58-AV** and **A58-F**



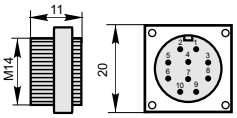
C9
9-pin round connector for **A58-A**



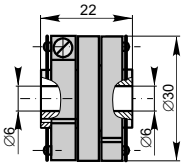
D9
9-pin flat connector for all version of **A58**



RS10
10-pin round connector for all version of **A5**



SC30



• Cable armour ↓ 10

■ 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 **RS10** - round, 10 pins	Coupling: **0** - without coupling **1** - with coupling

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

CE

May 2010