

A170 PHOTOELECTRIC ANGLE ENCODER

(A170-A, A170-AV, A170-F)



The precision photoelectric angle encoder **A170** is used for very precise position measurement of rotary tables, dividers, comparators, antennas and other high precision equipment. 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 stainless steel case of the encoder is fixed to an object by means of screws. The angle encoder is connected to the motor shaft or spindle by coupling, optionally available.

The encoder has three versions by its output signals:

A170-A - sinusoidal signals, with amplitude approx. 11 μ A_{pp};

A170-AV - sinusoidal signals, with amplitude approx. 1 V_{pp};

A170-F - square-wave signals (TTL) with integrated subdividing electronics for interpolation x1, x2, x5, x10, x20, x25, x50 and x100.

Precizika Metrology
Zirmunu 139
LT-09120 Vilnius
Lithuania

t 3705 2363600

f 3705 2363609

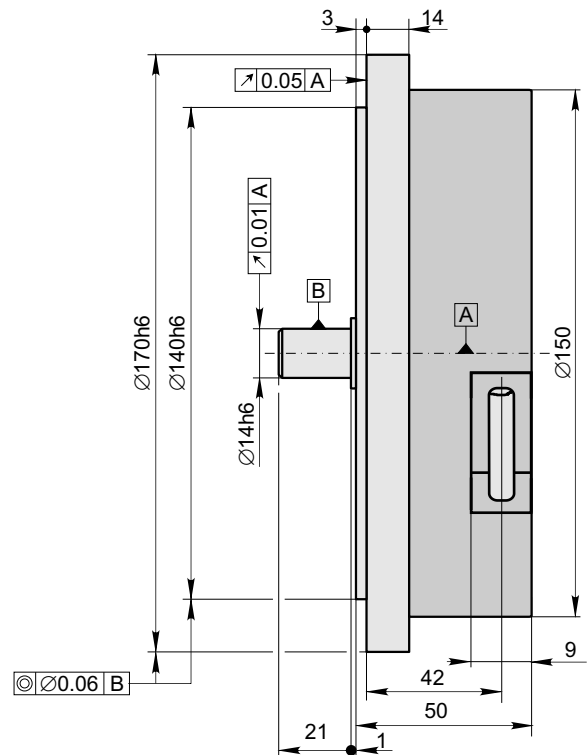
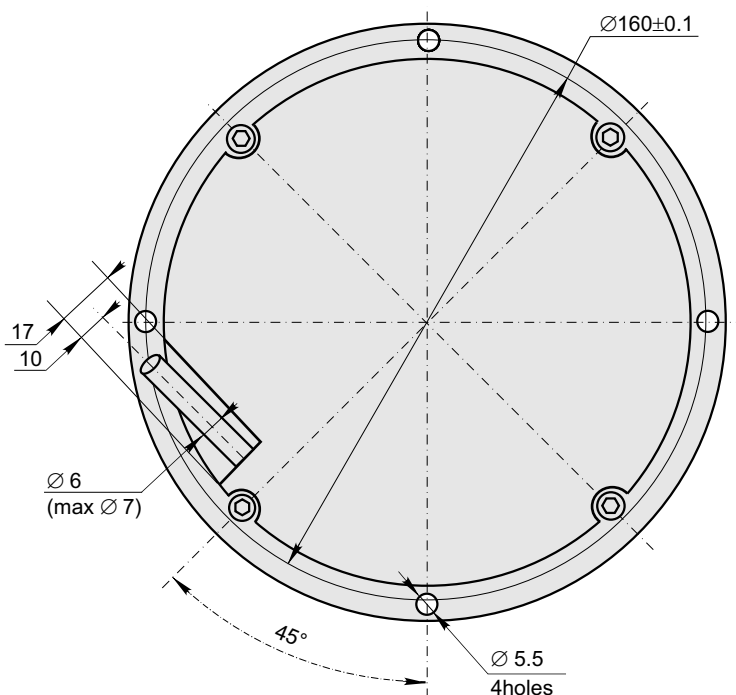
http://www.precizika.lt

E-mail: info@precizika.lt

ISO 9001:2000

■ Mechanical Data

◆ Line number:	18000	◆ Starting torque at 20°C	≤ 0.012 Nm
◆ Number of output pulses per revolution for A170-F:	18000, 36000, 90000 180000, 360000, 450000, 900000, 1800000	◆ Moment of inertia of rotor	< 3.7 × 10 ⁻⁴ kgm ²
◆ Permissible mech. speed	≤ 1000 rpm	◆ Protection (IEC 529)	IP64
◆ Max. operating speed (depends on number of output pulses)	300 to 500 rpm	◆ Maximum weight without cable	3.5 kg
◆ Accuracy	±2.5 arc. sec.	◆ Operating temperature	0...+70 °C
◆ Permissible shaft load:		◆ Storage temperature	-30...+85 °C
- axial	≤ 30 N	◆ Maximum humidity (without condensation of moisture)	98 %
- radial	≤ 30 N	◆ Permissible vibration (55 to 2000 Hz)	≤ 100 m/s ²
		◆ Permissible shock (5 ms)	≤ 300 m/s ²

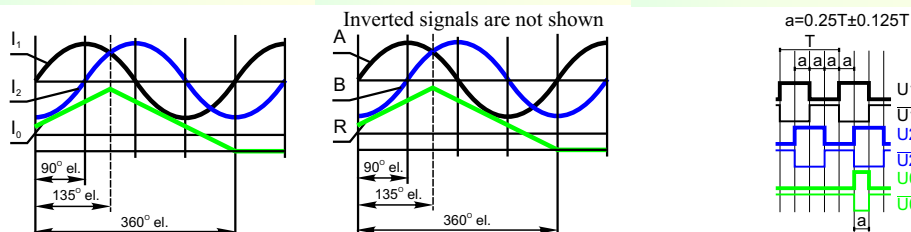


Electrical Data

Version

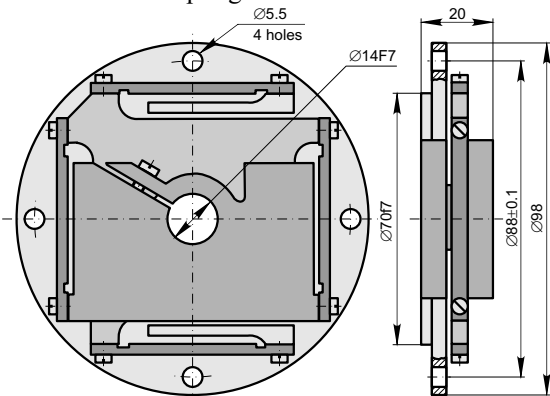
	A170-A $\sim 11 \mu A_{pp}$	A170-AV $\sim 1 V_{pp}$	A170-F \square TTL
◆ Power supply	+5 V $\pm 5\%$ / 100 mA max	+5 V $\pm 5\%$ / 120 mA max	+5 V $\pm 5\%$ / 150 mA max
◆ Light source	LED	LED	LED
◆ Incremental signals	Two sinusoidal I_1 and I_2 . Amplitude at 1 k Ω load: - $I_1 = 7...16 \mu A$ - $I_2 = 7...16 \mu A$	Two sinusoidal +A, B and their inverted A-, 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 - high ("1" logic) ≥ 2.4 V
◆ Reference signal	One quasi-triangle I_0 peak per revolution. Signal magnitude at 1 k Ω load: - $I_0 = 2...8 \mu A$ (usable component)	One quasi-triangle R+ and its inverted R- per revolution. Signal magnitude at 120 Ω 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 - high ("1" logic) ≥ 2.4 V
◆ Max. operating frequency	(-3dB cutoff) ≥ 160 kHz	(-3dB cutoff) ≥ 180 kHz	160-4500 kHz (depends on interpolation f actor)
◆ Direction of signals	I_2 lags I_1 with clockwise rotation (viewed from encoder mounting side)	B+ lags A+ with clockwise rotation (viewed from encoder mounting side)	$U2$ lags $U1$ with clockwise rotation (viewed from encoder mounting side)
◆ Max. rising and falling time			$< 0.5 \mu s$
◆ Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
◆ Maximum cable length	5 m	25 m	25 m

Note: 1. Maximum working rotation speed (with proper counting of encoder) is limited by maximum operating frequency and maximum mechanical rotation speed. 2. If cable extension is used the power supply conductor section should be not smaller than 0.5 mm².

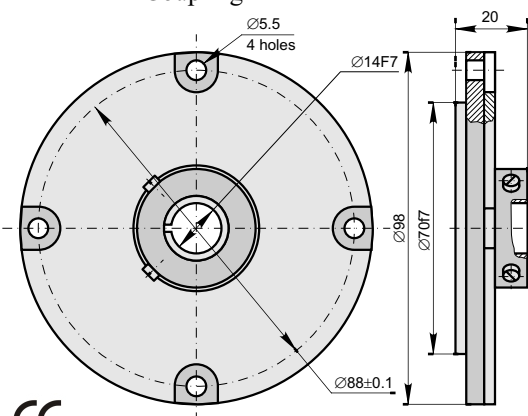


Accessories

SC98-1 Coupling

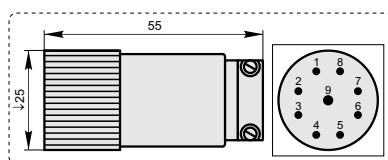


SC98-2 Coupling



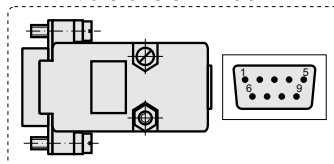
C9

9-pin round connector for A170-A



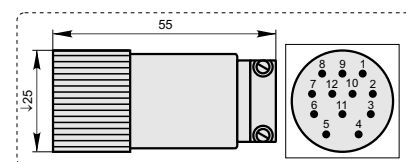
D9

9-pin flat connector for all versions of A170



C12

12-pin round connector for A170-AV and A170-F



Order form

A170 - X - XXXXX - XX / X - X

Version by output signals:	Impulse number:	Cable length:	Type of connector:	Coupling:
A, AV or F	18000 ...	01 - 1m 02 - 2m 03 - 3m ... - ...	W - without conn. D9 - flat, 9 pins C9 - round, 9 pins C12 - round, 12 pins	0 - without coupling 1 - SC98-1 2 - SC98-2