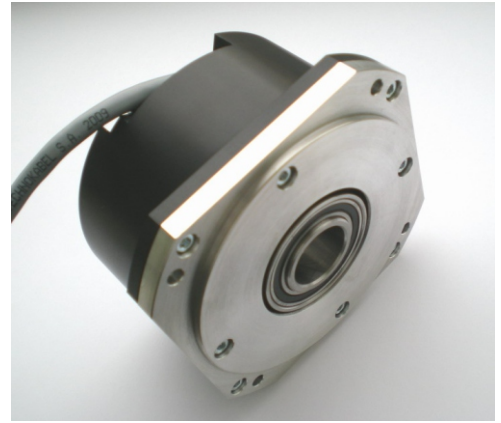


A90H PHOTOELECTRIC ROTARY ENCODER

(A90H-A, A90H-AV, A90H-F)



The semi-precision photoelectric rotary encoder **A90H** is used to measure angular position of the key machine components, industrial robots, comparators, rotary tables and to establish an informational link with DCC, NC or Digital Readout Units. It provides information about the value and direction of motion. The encoder is used in automatic control, on-line gauging, process monitoring systems, etc.

Encoder is coupled via shaft collar.

Three versions of output signals are available:

A90H-A - sinusoidal signals, with amplitude approx. 11 μ A_{pp};

A90H-AV - sinusoidal signals, with amplitude approx. 1 V_{pp};

A90H-F - square-wave signals (TTL) with integrated subdividing electronics for interpolation x1, x2, x5, x10, x20, x25, x50 and 100.

The modification with distance-coded reference marks is available for version A90H-AV with line number 18000.

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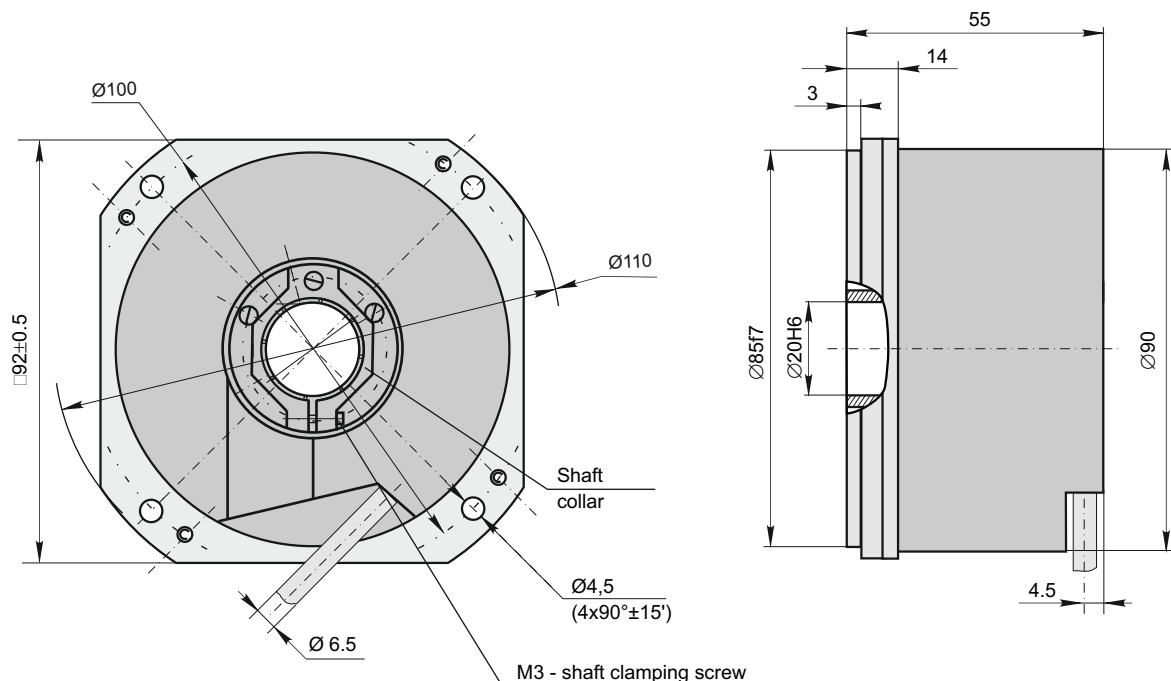
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ISO 9001:2008

◆ Mechanical Data

◆ Line number (z):	9000, 18000	◆ Permissible shaft runout:	
◆ Number of output pulses per revolution for A90H-F :	9000, 18000, 36000, 45000, 90000, 180000, 225000, 360000, 450000, 900000, 1800000	- axial	0.02 mm
◆ Reference signal:		- radial	±0.02 mm
- standard (S)	one per shaft revolution	◆ Accuracy grades:	±5.0 arc. sec ; ±7.5 arc. sec
- distance-coded (K) (for A90H-AV-18000 only)	36 per shaft revolution	◆ Starting torque at 20°C	≤ 0.08 Nm
◆ Permissible mech. speed	≤ 3000 rpm	◆ Rotor moment of inertia	< 0.6×10 ⁻⁴ kgm ²
◆ Max. operating speed (depends on number of output pulses)	600 to 1000 rpm	◆ Protection (IEC 529)	IP64
		◆ Maximum weight without cable	1.2 kg
		◆ Operating temperature	0...+70 °C
		◆ Storage temperature	-30...+85 °C
		◆ Maximum humidity (non condensing)	98 %
		◆ Permissible vibration (55 to 2000 Hz)	≤ 100 m/s ²
		◆ Permissible shock (5 ms)	≤ 300 m/s ²



◆ Electrical Data

Version

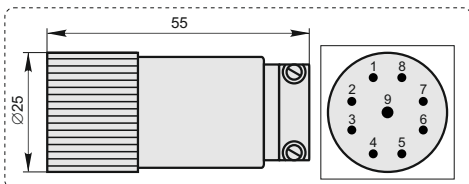
	A90H-A $\sim 11 \mu\text{App}$	A90H-AV $\sim 1 \text{ Vpp}$	A90H-F $\square$ TTL
◆ Supply voltage	+5 V $\pm 5\%$	+5 V $\pm 5\%$	+5 V $\pm 5\%$
◆ Max. supply current (without load)	100 mA	120 mA	150 mA
◆ Light source	LED	LED	LED
◆ Incremental signals	Two sinusoidal I_1 and I_2 . Amplitude at 1 k Ω load: - $I_1 = 7...16 \mu\text{A}$ - $I_2 = 7...16 \mu\text{A}$	Differential sine +A/-A and +B/-B Amplitude at 120 Ω 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") $\leq 0.5 \text{ V}$ - high (logic "1") $\geq 2.4 \text{ V}$
◆ Reference signal	One quasi-triangular I_0 peak per revolution. Signal magnitude at 1 k Ω load: - $I_0 = 2...8 \mu\text{A}$ (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signal magnitude at 120 Ω 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") $\leq 0.5 \text{ V}$ - high (logic "1") $\geq 2.4 \text{ V}$
◆ Max. operating frequency	(-3dB cutoff) $\geq 160 \text{ kHz}$	(-3dB cutoff) $\geq 180 \text{ kHz}$	160-2500 kHz (depends on interpolation factor)
◆ Direction of signals	I_2 lags I_1 for clockwise rotation (viewed from encoder mounting side)	+B lags +A for clockwise rotation (viewed from encoder mounting side)	$U2$ lags $U1$ for clockwise rotation (viewed from encoder mounting side)
◆ Max. rise and fall time			$\leq 0.2 \mu\text{s}$
◆ Standard cable length	1 m, without connector	1 m, without connector	1 m, without connector
◆ Maximum cable length	5 m	25 m	25 m

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 mm².

◆ Accessories

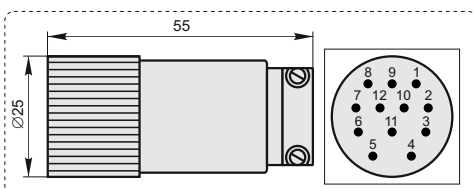
C9

9-pin round connector for A90H-A



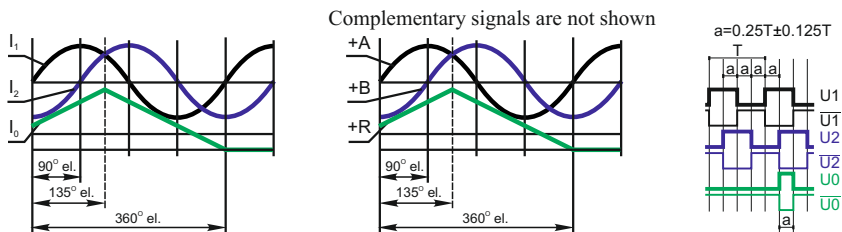
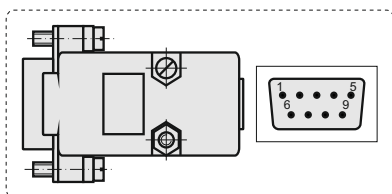
C12

12-pin round connector for A90H-AV and A90H-F

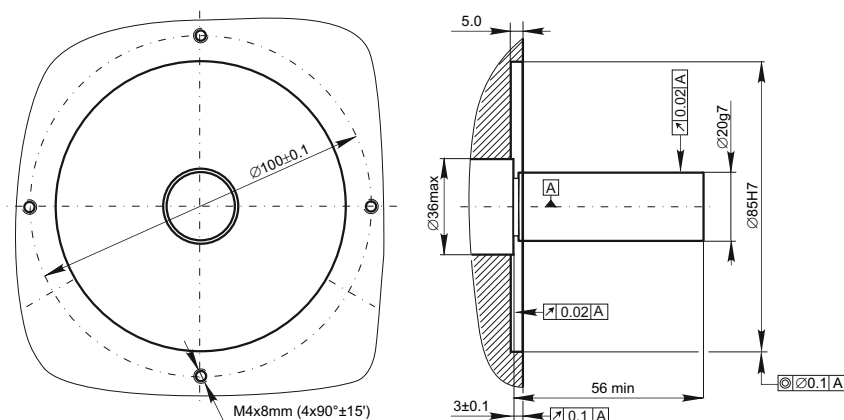


D9

9-pin flat connector for all A90H versions



◆ Mounting dimensions



◆ Order form

A90H - X - X X X X X - X - X X - X X / X

Output signals version: A, AV or F	Pulse number per revolution: 9000 ... 900000	Reference signal: S - one per revolution K - 36 per revolution, distance-coded, for A90H-AV-18000 only	Accuracy grade: 50 - ± 5.0 arc. sec. 75 - ± 7.5 arc. sec.	Cable length: 01 - 1m 02 - 2m 03 - 3m ... - ...	Connector type: W - without connector D9 - flat, 9 pins C9 - round, 9 pins C12 - round, 12 pins
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