

PHOTOELECTRIC ANGLE ENCODER

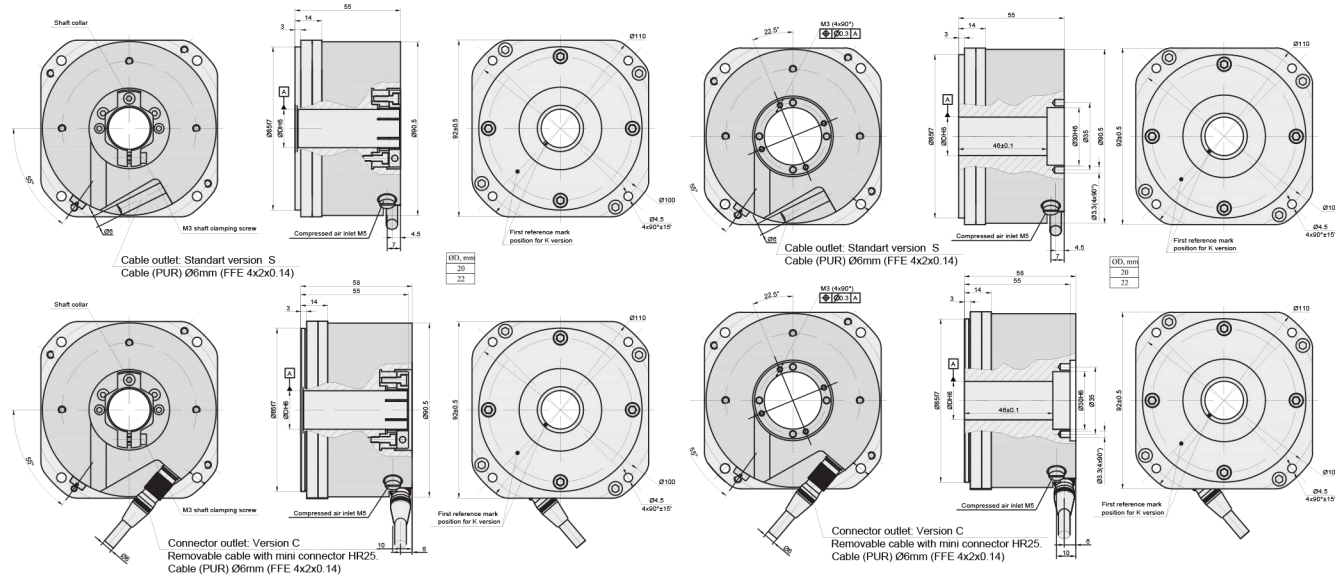
# A90H

- Analog output signals
- High Resolutions
- Hollow Shaft
- Distance Coded reference mark
- High Precision



Photoelectric angle encoder A90H is a high end incremental encoder that produces up to 1.800.000 output pulses per revolution. It has hollow shaft, integrated stator coupling and the accuracy of

up to ±5 arc. sec. and is available in two different mounting types – coupling via shaft collar or via central screw.



MOUNTING TYPE H (SCREW)

øD, mm
20
22

MOUNTING TYPE P (CLAMP)

øD, mm
20
22

For highest quality up-to-date drawings please refer to our website [www.precizika.com](http://www.precizika.com)

## MECHANICAL DATA

Line number on disc (z)	18000	Permissible shaft run out:	
Number of output pulses per revolution for A90H-F	Z x k, where k = 1, 2, 3, 4, 5, 8, 10, 20, 25, 50, 100	- axial	0.02 mm
Reference signal:		- radial	0.02 mm
- standard (S)	one per shaft revolution	Rotor moment of inertia	< 0.6 × 10 <sup>-4</sup> kgm <sup>2</sup>
- distance-coded (K)	36 per shaft revolution	Protection (IEC 529)	IP64
Permissible mech. speed	≤ 3000 rp	Maximum weight without cable	1.2 kg
Max. operating speed (depends on number of output pulses)	600 to 1000 rpm	Operating temperature	0...+70 °C
Accuracy grades	±5.0 arc. sec	Storage temperature	-30...+85 °C
Starting torque at 20°C	≤ 0.08 Nm	Maximum humidity (non condensing)	98 %
		Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
		Permissible shock (5 ms)	≤ 300 m/s <sup>2</sup>

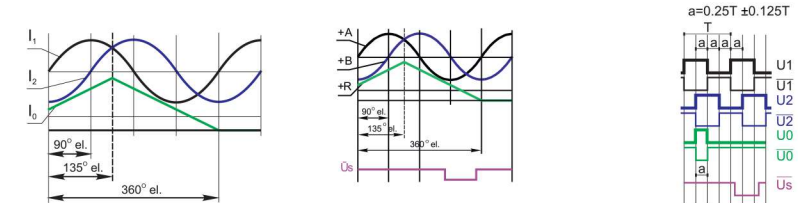
## ACCESSORIES

CONNECTORS FOR CABLE	B12 12-pin round connector	C9 9-pin round connector	C12 12-pin round connector	D9 9-pin flat connector	D15 15-pin flat connector	RS10 10-pin round connector	ONC 10-pin round connector
DIGITAL READOUT DEVICES	CS3000			CS5500			
EXTERNAL INTERPOLATOR	NK						

## ELECTRICAL DATA

Version	A90H-A ~ 11 µApp	A90H-AV ~ 1 Vpp	A90H-F □ TTL
Supply voltage (U <sub>p</sub> )	+5V ± 5%	+5V ± 5%	+5V ± 5%;
Max. supply current (without load)	100 mA	120 mA	150 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal I <sub>1</sub> and I <sub>2</sub> Amplitude at 1 kΩ load: - I <sub>1</sub> = 7...16 µA - I <sub>2</sub> = 7...16 µA	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/U1̄ and U2/U2̄. Signal levels at 20 mA load current: - low (logic "0") ≤ 0.5 V - high (logic "1") ≥ 2.4 V
Reference signal	One quasi-triangular I <sub>0</sub> peak per revolution. Signal magnitude at 1 kΩ load: - I <sub>0</sub> = 2...8 µA (usable component)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120Ω load - R = 0.2...0.8 V (usable component)	One differential square-wave U0/U0̄ per revolution. Signal levels at 20 mA load current: - low (logic "0") < 0.5 V - high (logic "1") > 2.4 V
Fault detection signal Ūs*	- - no error occur - error occur	one square-wave pulse high low	one square-wave pulse high low
Maximum operating frequency	(-3 dB) ≥ 160 kHz	(-3 dB) ≥ 180 kHz	160-2000 kHz (depends on interpolation factor)
Direction of signals	I <sub>2</sub> lags I <sub>1</sub> for clockwise rotation (viewed from encoder mounting side)	+B lags +A for clockwise rotation (viewed from encoder mounting side)	U2 lags U1 with clockwise rotation (viewed from encoder mounting side)
Maximum rise and fall time	-	-	< 0.2 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

Output signals

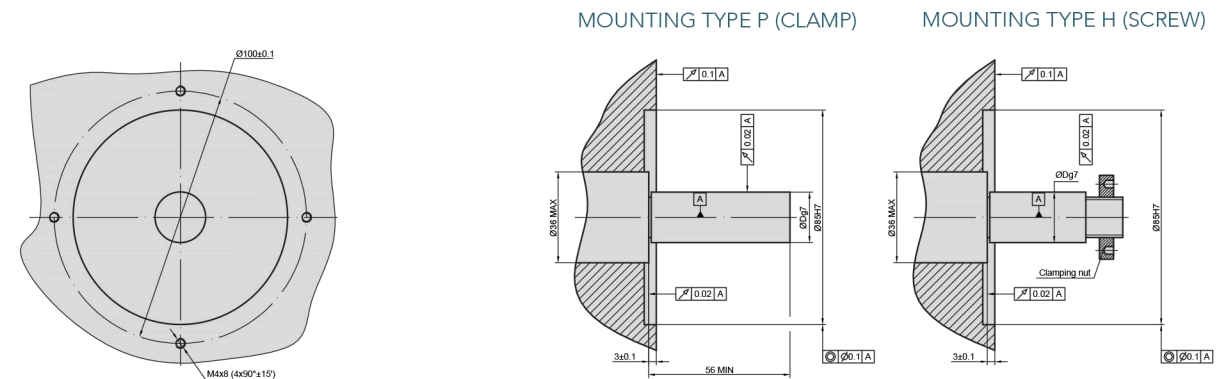


\*not available for version with removable cable

Note:

- Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
- If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm<sup>2</sup>.

## MOUNTING REQUIREMENTS



## ORDER FORM

<b>A90H</b>	- X1 - X2 - X3 - X4 - X5 - X6 - X7/X8						
Output signal version (X1):	Pulse number per revolution (X2):	Reference signal (X3):	Diameter of shaft hole (X4):	Mounting type (X5):	Cable or connector Outlet (X6):	Cable Length (X7):	Connector type (X8):
<b>A</b> <b>AV</b> <b>F</b>	<b>18000</b> ... <b>1800000*</b>	<b>S</b> - one per revolution <b>K</b> - 36 per revolution, distance-coded	<b>20</b> - 20mm <b>22</b> - 22mm	<b>P</b> - clamp <b>H</b> - screw	<b>S</b> - version S (cable outlet) <b>C</b> - version C (connector outlet)	<b>AR01</b> - 1m <b>AR02</b> - 2m <b>AR03</b> - 3m ....	<b>W</b> - without connector <b>B12</b> - round, 12 pins <b>C9</b> - round, 9 pins <b>C12</b> - round, 12 pins <b>D9</b> - flat, 9 pins <b>D15</b> - flat, 15 pins <b>RS10</b> - round, 10 pins <b>ONC</b> - round, 10 pins

ORDER EXAMPLE: 1) A90H-A-18000-K-20-P-S-AR01/W