

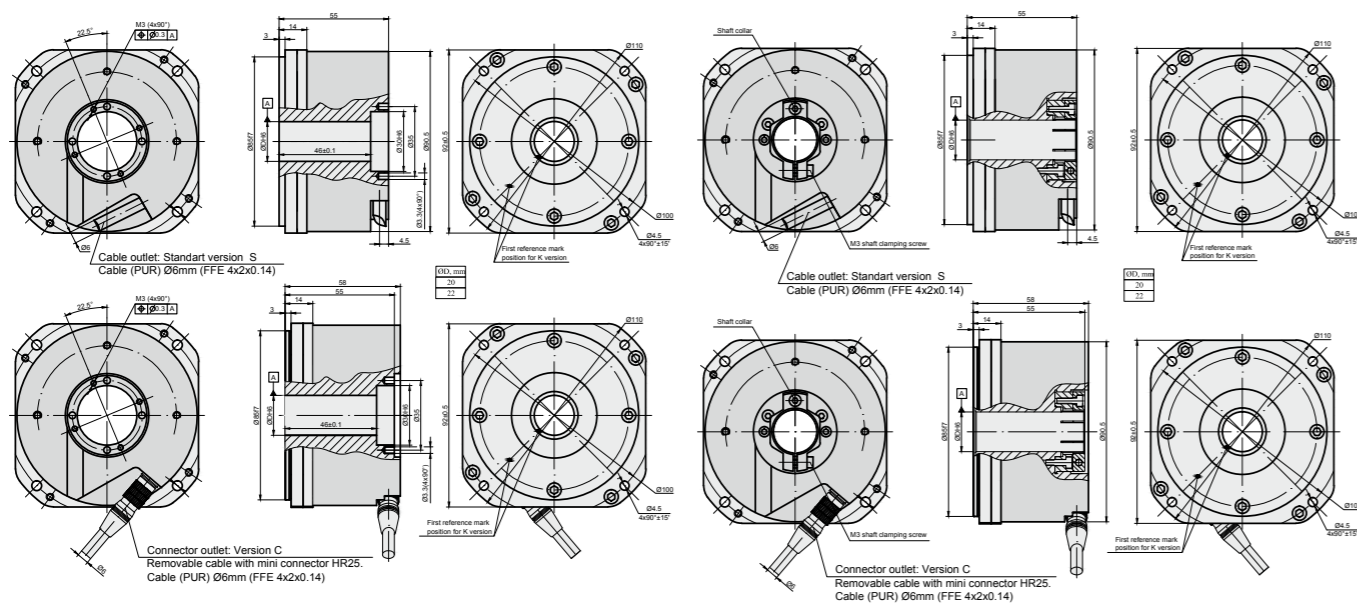
# A90H

## PHOTOELECTRIC ANGLE ENCODER



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

### 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						

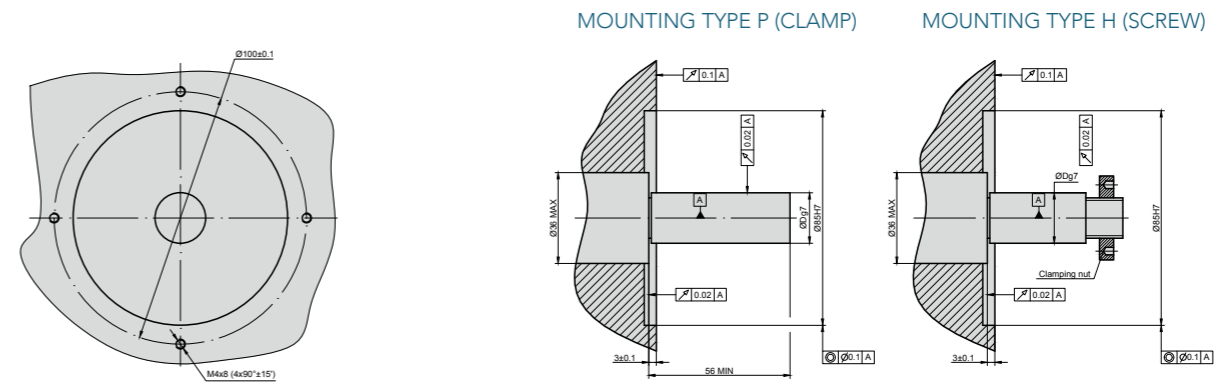
### ELECTRICAL DATA

VERSION	A90H-A ~ 11 µApp	A90H-AV ~ 1 Vpp	A90H-F □ TTL
Supply voltage (U <sub>p</sub> )	+5 V ± 5%	+5 V ± 5%	+5 V ± 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/Ū1 and U2/Ū2. 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>1</sub> peak per revolution. Signal magnitude at 1 kΩ load: - I <sub>1</sub> = 2...8 µA (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/U0 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	160-2500 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			

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

A90H - X - XXXX - X - XX - X - X - XX/X

OUTPUT SIGNAL VERSION:	PULSE NUMBER PER REVOLUTION:	REFERENCE SIGNAL:	DIAMETER OF SHAFT HOLE:	MOUNTING TYPE:	CABLE OR CONNECTOR OUTLET:	CABLE LENGTH:	CONNECTOR TYPE:
A	1...18000	S - one per revolution	20 - 20mm	P - clamp	S - version S (cable outlet)	AR01 - 1m	W - without connector
AV	...	K - 36 per revolution, distance-coded	22 - 22mm	H - screw	C - version C (connector outlet)	AR02 - 2m	B12 - round, 12 pins
F	1...1800000					AR03 - 3m	C9 - round, 9 pins
						...	C12 - round, 12 pins
							D9 - flat, 9 pins
							D15 - flat, 15 pins
							RS10 - round, 10 pins
							ONC - round, 10 pins

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