

A42M PHOTOELECTRIC MODULAR ROTARY

(A42M-A, A42M-AV, A42M-F)



The encoder **A42M** is similar to the ERO 1222 type encoder (Heidenhain) in electrical parameters, mounting and overall dimensions.

The photoelectric rotary encoder **A42M** 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 absence of bearings and lubricants makes the encoder suitable for using in vacuum environment or when zero starting torque is required.

The encoder consists of two parts: rotor/hub unit and scanning unit.

The hub unit includes the grating disc fixed to bushing made from stainless steel.

The scanning unit includes the base made of hard anodizing aluminium. The base supports light source, reticle, photosensitive diodes and other electronic components.

The stator of the encoder is fixed to an object by means of screws. The hub is mounting directly on to the shaft of object and does not require a compensating coupling. Mounting procedure is very simple and easy. An oscilloscope or others electronic devices are not necessary for final adjusting.

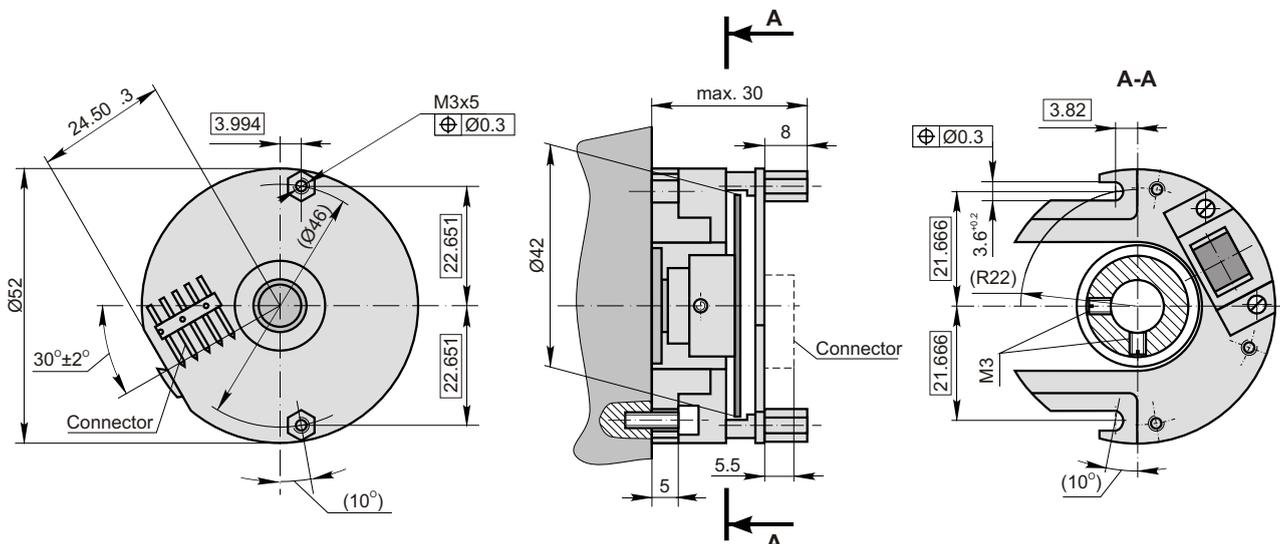
The encoder has three versions by its output signals:

- A42M-A** - sinusoidal signals, with amplitude approx. 11 μ App;
- A42M-AV** - sinusoidal signals, with amplitude approx. 1Vpp;
- A42M-F** - square-wave signals TTL.

Brown&Sharpe-Precizika
 Zirmunu 139
 2600 Vilnius
 Lithuania
 t 3705 2363602
 f 3705 2363609
<http://www.bsp.Lt>
 E-mail:marketing@bsp.Lt
 ISO 9002

Mechanical Data

Line number on disc:	1000, 2500 (others from 60 up to 5000 on request)	Moment of inertia of rotor	< 22 gm ²
Number of output pulses per revolution for A42M-F :	1000, 2000, 2500, 5000, 10000, 12500, 25000	Protection (IEC 529)	IP00
Max. permissible mechanical rotation speed	16000 rpm	Max. weight:	
Accuracy (T ₁ period of lines on disc)	$\pm 0.1 T_1$ arc. sec.	- rotor unit	0.022 kg
Permissible axial motion of object shaft	0.05 mm	- scanning unit	0.04 kg
Hub inside diameter	10, 8, 6 mm	Operating temperature	-20...+85 °C
		Storage temperature	-30...+85 °C
		Max. humidity (without condensation of moisture)	98 %
		Permissible vibration (55 to 2000 Hz)	≤ 100 m/s ²
		Permissible shock (6 ms)	≤ 1000 m/s ²

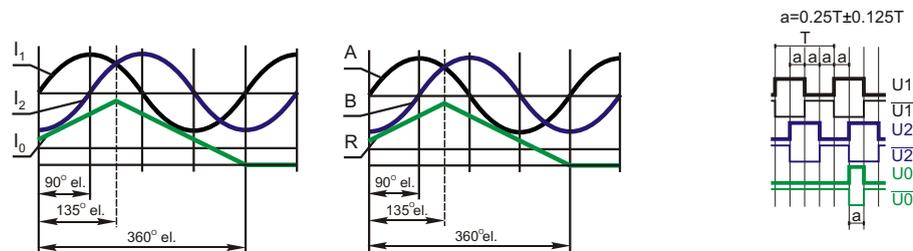


Electrical

Version

	A42M-A $\sim 11 \mu\text{App}$	A42M-A $\sim 1\text{V App}$	A42M-F \square TTL
Power supply	+5 V $\pm 5\%$ / < 80 mA	+5 V $\pm 5\%$ / < 120 mA	+5 V $\pm 5\%$ / < 120 mA
Light source	LED	LED	LED
Incremental signals	Two sinusoidal I_1 and I_2 . Amplitude at 1 k load: - $I_1 = 7\text{--}16 \mu\text{A}$ - $I_2 = 7\text{--}16 \mu\text{A}$	Two sinusoidal A and B. Amplitude at 120 load: - $I_1 = 0.6\text{--}1.2 \text{V}$ - $I_2 = 0.6\text{--}1.2 \text{V}$	Square-wave $U1, U2$ and their inverted $\overline{U1}, \overline{U2}$. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{V}$ - high ("1" logic) $\geq 2.4 \text{V}$
Reference signal	One quasi-triangle I_0 peak per revolution. Signal magnitude at 1 k load: - $I_0 = 2\text{--}8 \mu\text{A}$ (usable component)	One quasi-triangle R peak per revolution. Signal magnitude at 120 load: - $I_0 = 0.2\text{--}0.8 \text{V}$ (usable component)	One square-wave $U0$ and its inverted $\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low ("0" logic) $\leq 0.5 \text{V}$ - high ("1" logic) $\geq 2.4 \text{V}$
Maximum operating frequency	(-3 dB) $\geq 160 \text{kHz}$	(-3 dB) $\geq 160 \text{kHz}$	160 kHz
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
Connector	PCB, right angle	PCB, right angle	PCB, right angle
Recommended max. cable length to subsequent electronics	3 m	15 m	30 m

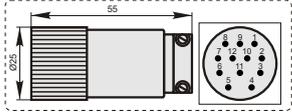
Output signals



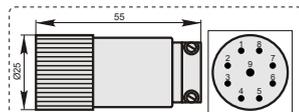
Accessories

Required mounting dimensions

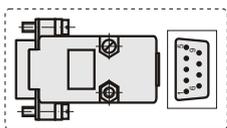
C12
12-pin round connector for
A42M-F and A42M-AV



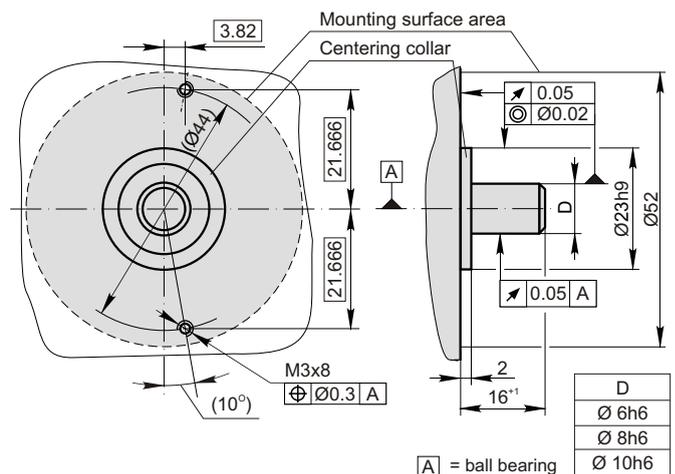
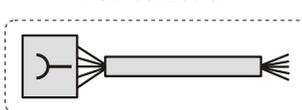
C9
9-pin round connector for
A42M-A



D9
9-pin flat connector for
all version of A42M



AC
Adapter Cable dia. 5 mm with
PCB connector



Order form

A42M - X - XXXX - XX - XXXX / X

Version by
output signals:
A, AV and F

Number of output pulses per
revolution:
1000, 2000, 2500, 5000
...

Hub inside dia.:
06 - Ø6
08 - Ø8
10 - Ø10

Adapter cable:
AC01 - 1 m length
AC02 - 2 m length
AC03 - 3 m length
... - ...

Type of connector:
W - without connector
C9 - round, 9 pins
C12 - round, 12 pins
D9 - flat, 9 pins