

MAIN EXPORT COUNTRIES:



The company under the name **JSC "Precizika Metrology"** began work after the change of name of the Lithuanian - American Joint Venture "Brown & Sharpe - Precizika". The company has a proud history of old traditions in the leadership of design and production of metrological equipment. Its workforce has been involved for over fifty years in the supply of measuring technology and systems to automate factories as well as in the development of optical scale manufacturing technology.

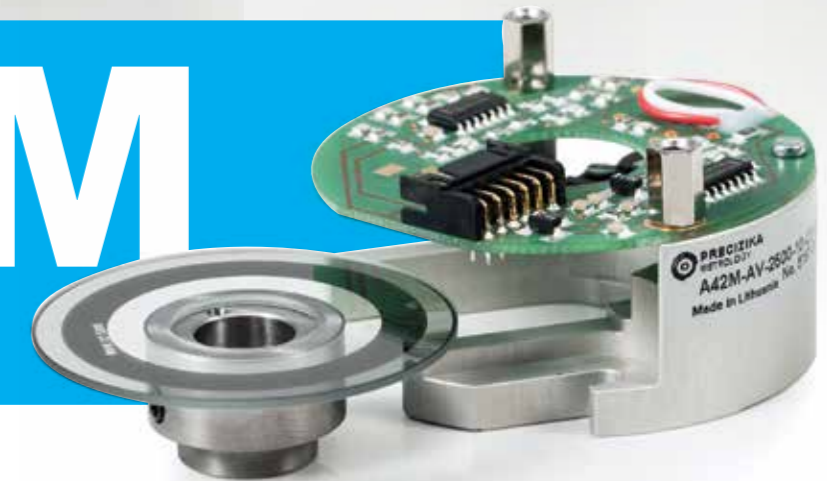
In 2000, the production process was certified to fully meeting the requirements of EN ISO 9002:1994, in 2003 – EN ISO 9001:2000.

The company's goal is to consistently supply high quality products and services to meet customer demands on a timely basis. The company's main products are linear and angular glass scale gratings, and the linear and rotary displacement measuring systems.

**JSC "Precizika Metrology"** represents worldwide known companies and suppliers of measuring equipment, CNC centers, executes installation and services of them, trains the users, and executes upgrading of used CMM and manual cutting machine-tools.

# A42M

PHOTOELECTRIC MODULAR  
ROTARY ENCODER



Photoelectric rotary encoder A42M is used to establish an informational link between the key machine components, industrial robots, comparators and DCC, NC or Digital Readout Units. It provides information about the value and direction of the motion. The encoder is used in automatic control, on-line gauging, process monitoring systems, etc. The absence of bearings and lubricants makes the encoder suitable for use in vacuum environment or when zero starting torque is required. The encoder consists of two assemblies: rotor/hub 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 anodized aluminium. The base supports light source, reticle, photodiodes and other electronic components. The stator of the encoder is fixed to an object by means of screws. The hub is mounted directly on the shaft. Three versions of output signals are available:

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



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# A42M

## RECOMMENDED APPLICATIONS



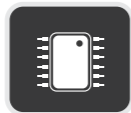
ROBOTICS



MEDICAL EQUIPMENT



SERVO MOTORS



ELECTRONIC INDUSTRY



AUTOMATED GONIOMETERS



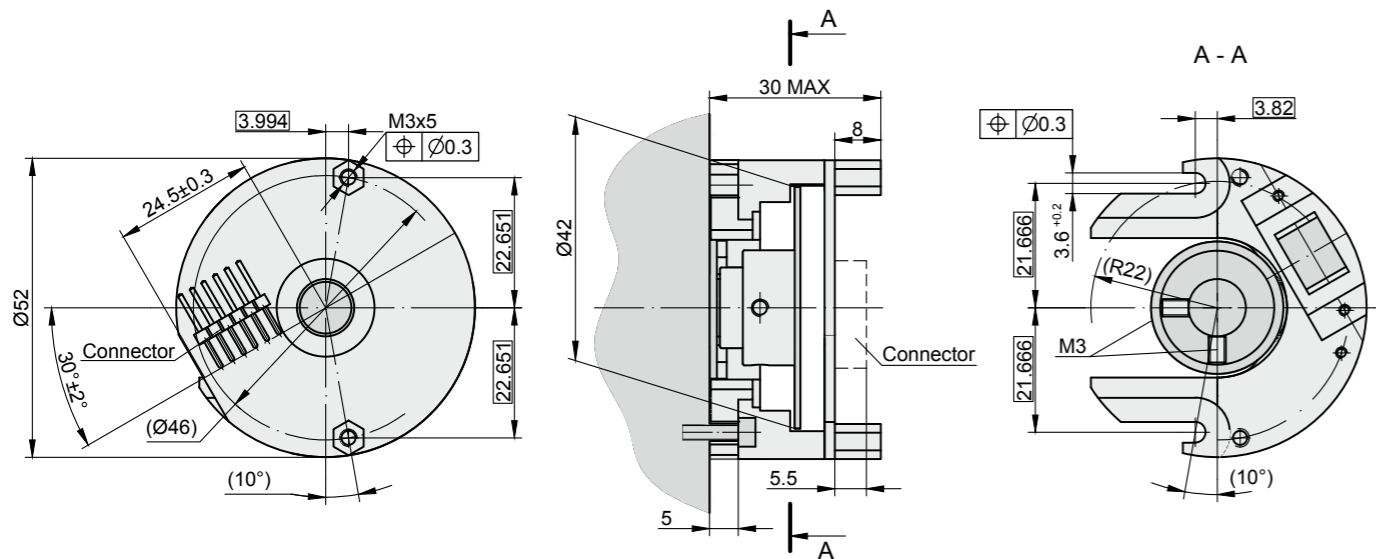
AUTOMOTIVE INDUSTRY



MAINTENANCE

## MECHANICAL DATA

Line number on disc (z)	1000, 2500 (others on request)	Protection (IEC 529)	IP00
Number of output pulses per revolution for A42M-F	Z x k, where k=1,2,5,10	Max. weight: - rotor assembly - scanning unit	0.022 kg 0.04 kg
Max. permissible mechanical rotation speed	20000 rpm	Operating temperature	-10...+70 °C
Accuracy (T <sub>1</sub> period of lines on disc in arc. sec.)	±0.1T <sub>1</sub> arc. sec.	Storage temperature	-30...+85 °C
Permissible axial shaft run out	0.05 mm	Maximum humidity (non-condensing)	98 %
Hub inside diameter	10, 8, 6 mm	Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
Rotor moment of inertia	< 22 gcm <sup>2</sup>	Permissible shock (6 ms)	≤ 1000 m/s <sup>2</sup>



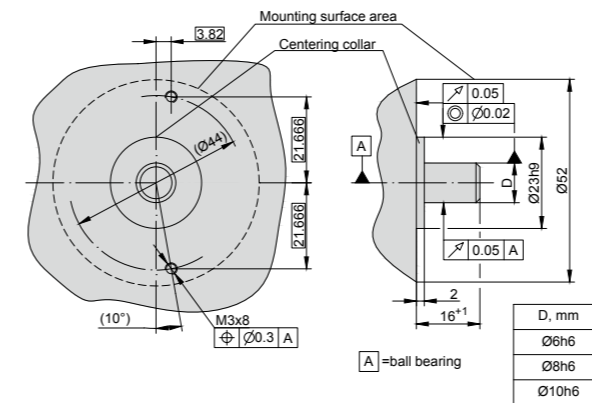
## ELECTRICAL DATA

VERSION	A42M-A ~ 11 µApp	A42M-AV ~ 1V Ap	A42M-F □ TTL
Power supply	+5 V ± 5% / < 80 mA	+5 V ± 5% / < 120 mA	+5 V ± 5% / < 120 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/U1 and U2/U2. 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 1 kΩ load: - I <sub>0</sub> = 2-8 µA (usable)	One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120 Ω load - R = 0.2-0.8 V (usable)	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
Maximum operating frequency	(-3 dB) ≥ 160 kHz	(-3 dB) ≥ 180 kHz	(160 x k) kHz, k-interpolation factor
Direction of signals	I <sub>1</sub> lags I <sub>2</sub> for clockwise rotation (viewed from shaft side)	+B lags +A for clockwise rotation (viewed from shaft side)	U2 lags U1 with clockwise rotation (viewed from shaft side)
Maximum rise and fall time	-	-	< 0.5 µs
Recommended max. cable length to subsequent electronics	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>.

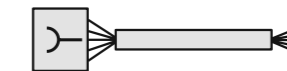
## MOUNTING DIMENSIONS



## PCB CONNECTOR

### AC

Adapter Cable dia.  
7 mm with PCB connector



## ACCESSORIES

<b>CONNECTORS FOR CABLE</b>	B12 12-pin round connector	C9 12-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
<b>CONNECTOR FOR PCB</b>	Adapter Cable dia. 7 mm with PCB connector						
<b>DIGITAL READOUT DEVICES</b>	CS3000			CS5500			
<b>EXTERNAL INTERPOLATOR</b>	NK						

## ORDER FORM

A42M - X - XXXX/XXXX - XX - XXXX / X

OUTPUT SIGNAL VERSION:	PULSE NUMBER PER REVOLUTION:	(OPTIONAL) LINE NUMBER ON DISC (Z):	HUB INSIDE DIAMETER:	ADAPTER CABLE:	CONNECTOR TYPE FOR ADAPTER CABLE:
A	1000	1000	06 - Ø 6mm	W - without cable	W - without connector
AV	25000	2500	08 - Ø 8mm	AC01 - 1m	B12 - round, 12 pins
F		*only for A42M-F	10 - Ø 10mm	AC02 - 2m	C9 - round, 9 pins
				AC03 - 3m	C12 - round, 12 pins
				...	D9 - flat, 9 pins
					D15 - flat, 15 pins
					RS10 - round, 10 pins
					ONC - round, 10 pins

ORDER EXAMPLES:  
 1) A42M-AV-2500-10-AC01/W  
 2) A42M-F-5000-06-/W/W  
 3) A42M-F-5000/1000-06-W/W