

A75M MODULAR PHOTOELECTRIC ROTARY ENCODER

(A75M-A, A75M-AV, A75M-F)



Photoelectric rotary encoder **A75M** 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 mounted to an object by means of screws. The hub is mounted directly on the shaft.

Two versions of output signals are available:

A75M-AV - sinusoidal signals, with amplitude approx. 1V_{pp};

A75M-F - square-wave signals TTL.

Precizika Metrology
Zirmunu 139

LT-09120 Vilnius

Lithuania

t +(370-5) 236-36-00

f +(370-5) 236-36-09

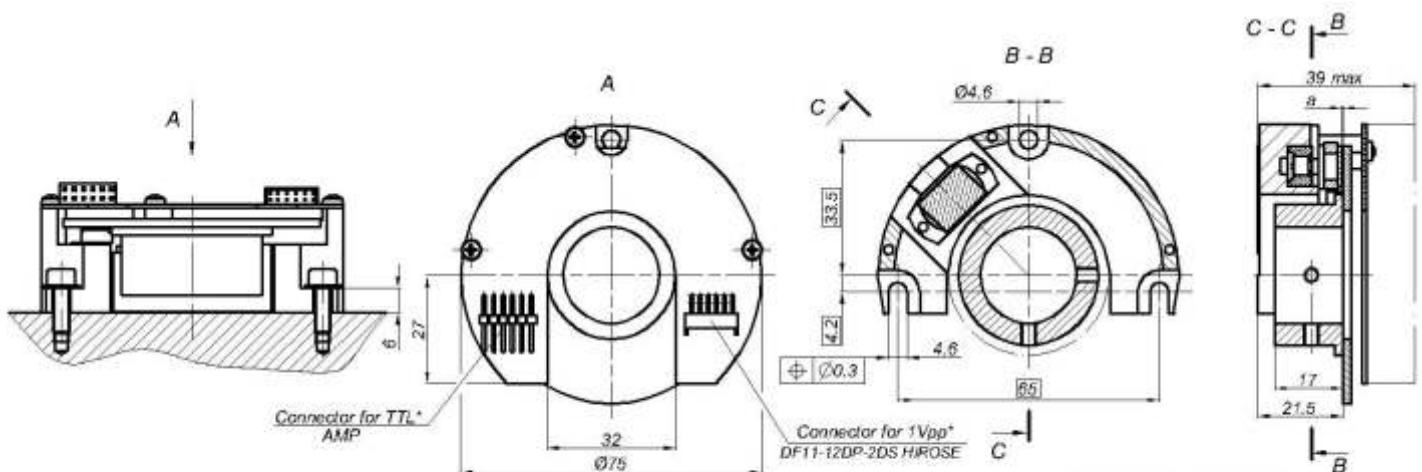
http://www.precizika.lt

E-mail: info@precizika.lt

ISO 9001:2008

• Mechanical Data

•Line number on disc (Z):	2048	- with shaft \sim 30 mm	$35 \times 10^{-6} \text{ kgm}^2$
•Number of output pulses per revolution for A75M-F :	Z x k, where k=1, 2, 3, 4, 5, 8, 10	•Protection (IEC 529)	IP00
•Max. permissible mechanical rotation speed	16000 rpm	•Max. weight	0.2 kg
•Accuracy (T ₁ period of lines on disc in arc. sec.)	$\pm 0.1 T_1 \text{ arc. sec.}$	•Operating temperature	0...+85 °C
•Permissible axial shaft runout	$\pm 0.05 \text{ mm}$	•Storage temperature	-30...+85 °C
•Rotor moment of inertia:		•Max. humidity (non condensing)	98 %
- with shaft \sim 20 mm	$26 \times 10^{-6} \text{ kgm}^2$	•Permissible vibration (55 to 2000 Hz)	$\leq 100 \text{ m/s}^2$
		•Permissible shock (6 ms)	$\leq 1000 \text{ m/s}^2$



* only one mounted connector depending on signal version

Incremental signals	a, mm
1 V _{pp}	0.1+0.2
TTL	0.05+0.15

Electrical Data

Version

- Power supply
- Light source
- Incremental signals

A75M-AV \sim 1V App

+5 V \pm 5% / < 120 mA

LED

Differential sine
+A/-A and +B/-B
Amplitude at 120 W load:
- $I_1 = 0.6 \dots 1.2$ V
- $I_2 = 0.6 \dots 1.2$ V

- Reference signal

One quasi-triangular +R and its complimentary -R per revolution. Signal magnitude at 120 W load:
- $I_0 = 0.2 \dots 0.8$ V (usable)

- Maximum operating frequency

(-3 dB) \geq 180 kHz

- Direction of signals

+B lags +A for clockwise rotation (viewed from shaft side)

- Maximum rise and fall time

- Recommended max. cable length to subsequent electronics

25 m

A75M-F \square TTL

+5 V \pm 5% / < 120 mA

LED

Differential square-wave $U1/\overline{U1}$ and $U2/\overline{U2}$. Signal levels at 20 mA load current:

- low (logic "0") \leq 0.5 V
- high (logic "1") \geq 2.4 V

One differential square-wave $U0/\overline{U0}$ per revolution. Signal levels at 20 mA load current:

- low (logic "0") \leq 0.5 V
- high (logic "1") \geq 2.4 V

(160 x k) kHz, k - interpolation factor

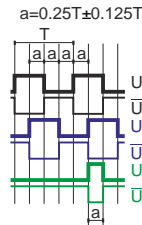
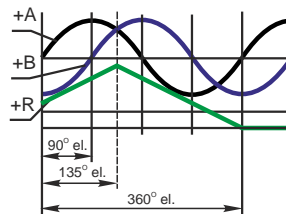
U2 lags U1 for clockwise rotation (viewed from shaft side)

< 0.5 μ s

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.

Output signals

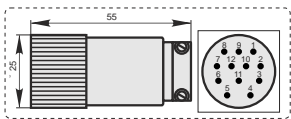
Complementary signals are not shown



Accessories

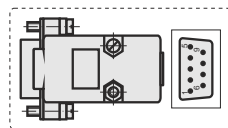
C12

12-pin round connector



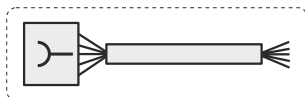
D9

9-pin flat connector

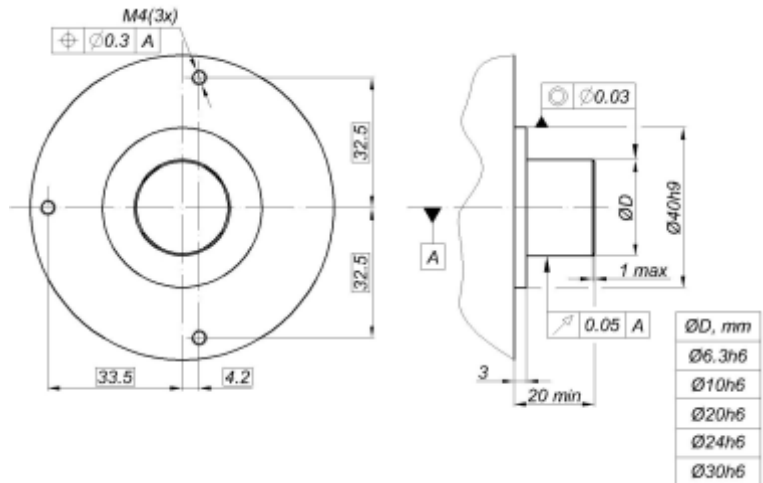


AC

Adapter cable dia. 7 mm with PCB connector



Mounting dimensions



Order form

A75M - X - XXXX - XX - XXXX / X

Output signals version:
AV and F

Pulse number per revolution:
2048
...

Hub inside dia.:
06 - \sim 6.3
10 - \sim 10
20 - \sim 20
24 - \sim 24
30 - \sim 24

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

Cable connector type:
W - without connector
C12 - round, 12 pins
D9 - flat, 9 pins