PHOTOELECTRIC ROTARY ENCODER

A20

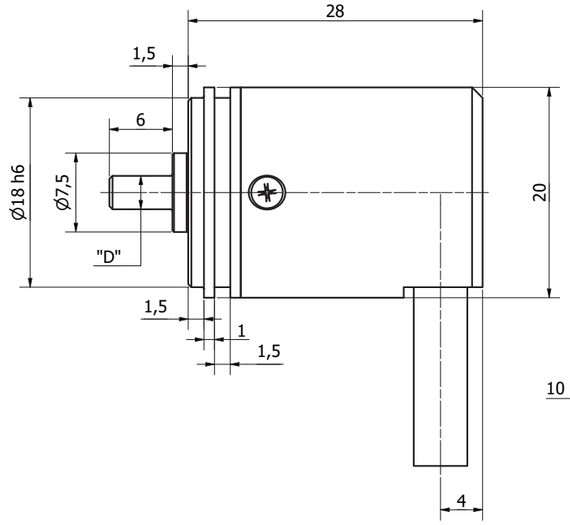
A20 is a compact, incremental encoder designed for high-precision motion detection in applications with limited space. With a small diameter of only 20mm, it is ideal for installations where size constraints are critical. The encoder outputs TTL differential signals, ensuring reliable data transmission even in electrically noisy environments. It offers a wide range of resolution options, adjustable from 1 to 262,144 pulses per revolution, providing flexibility to match specific performance requirements in diverse applications. The encoder is available in various configurations, including both solid and blind hollow shaft versions.The blind hollow shaft version features two optional flexible couplings, which can be mounted at different angles. This design allows for versatile and adaptable installation to accommodate various mounting requirements, enhancing ease of integration into different mechanical systems. Moreover, the encoder is specifically designed to withstand an extended temperature range (-40°C + 100°C).

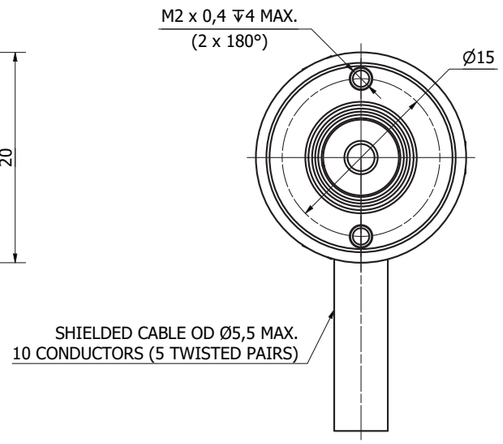
- Miniature size (∅ 20 mm)
- Various diameter options for solid and blind hollow shafts
- Several flexible couplings with different mounting options
- Special encoder design for extended temperature ranges (-40°C + 100°C)
- Round cable version

SYSTEM SPECIFICATIONS

Measuring type	Incremental
Measuring technology	Optical reflective
Measuring standard	Glass disc with incremental track and a reference mark
System accuracy	± 100 arc.sec
Resolution (positions per turn)	up to 1 048 576 counts per revolution

A20S





D, mm	Ø 2 mm h6	Ø 3 mm h6	Ø 4 mm h6

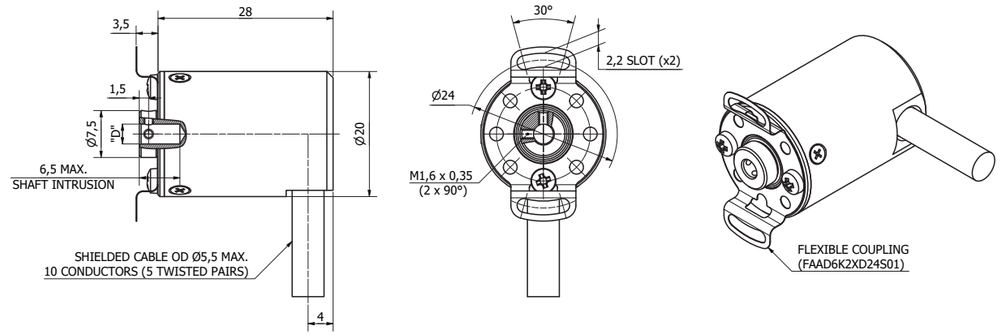
For other diameter options, please contact the manufacturer.

A20H

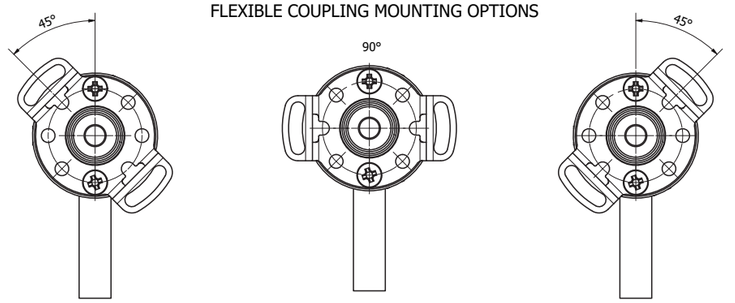
FLEXIBLE COUPLING VERSION 1

D, mm	Ø 2 mm H7	Ø 3 mm H7	Ø 4 mm H7

For other diameter options, please contact the manufacturer.



FLEXIBLE COUPLING MOUNTING OPTIONS

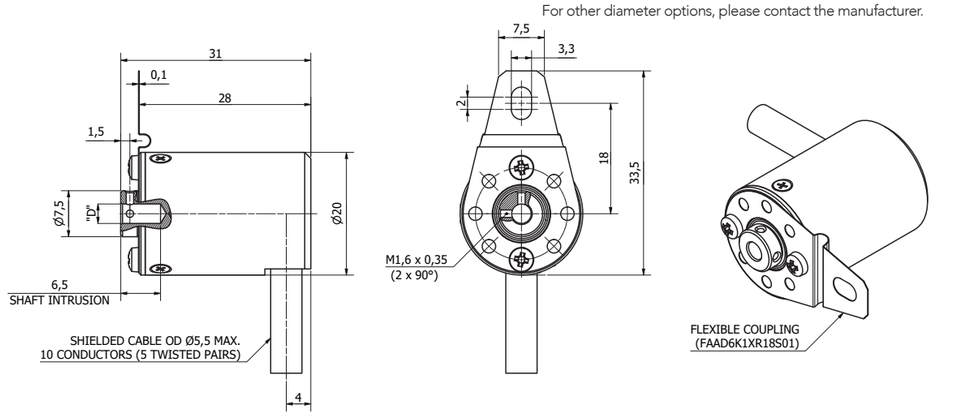


A20H

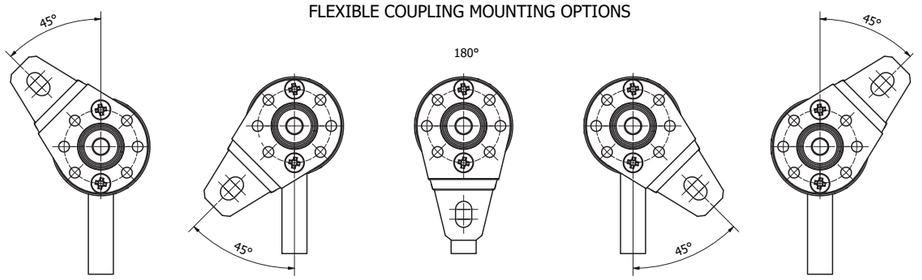
FLEXIBLE COUPLING VERSION 2

D, mm	Ø 2 mm H7	Ø 3 mm H7	Ø 4 mm H7

For other diameter options, please contact the manufacturer.



FLEXIBLE COUPLING MOUNTING OPTIONS



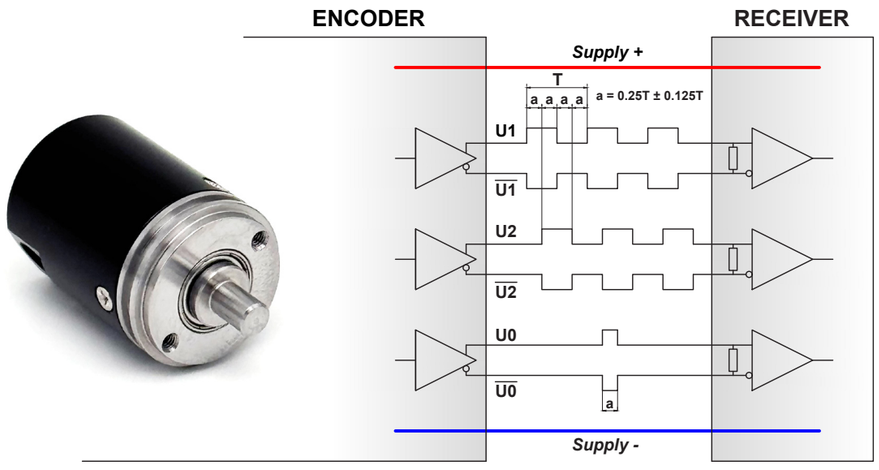
MECHANICAL DATA

Maximum shaft speed	10 000 RPM
Moment of inertia	< 0.4 gcm^2
Starting torque	5 x 10^{-4} Nm
Shaft load: - axial - radial	 3 N 3 N
Vibrations (55 Hz to 2000 Hz)	≤ 100 m/s^2
Shock (6 ms)	≤ 300 m/s^2
Operating temperature: - standard - extended	 0°C - 70°C -40°C - 100°C
Storage temperature	-40°C - 105°C
Ingress Protection (EN 60529)	IP50
Mass (without cable): - standard - for extended temperature option with stainless steel	 < 20 g < 30 g

ELECTRICAL DATA

Interface	TTL
Incremental signals	Differential square-wave U1/$\overline{U1}$ and U2/$\overline{U2}$. Signal levels at 20 mA load current: - low (logic "0") ≤ 0.5 V - high (logic "1") ≥ 2.4 V
Reference mark	One differential square-wave U0/$\overline{U0}$ per revolution. Signal levels at 20 mA load current: - low (logic "0") < 0.5 V - high (logic "1") > 2.4 V
Supply voltage	+5 V ±5%
Current consumption (without load)	max. 100 mA
Maximum operating frequency	12.5 MHz

ENCODER ELECTRICAL CONNECTION



U2 lags U1 with clockwise rotation (viewed from shaft side).
Other reference signal widths (90°C, 180°C, 360°C) available on request.

ACCESSORIES

FLEXIBLE COUPLINGS	FAAD6K2XD24S01 flexible coupling version 1	FAAD6K1XR18S01 flexible coupling version 2

FAAD6K2XD24S01 FLEXIBLE COUPLING VERSION 1

FAAD6K1XR18S01 FLEXIBLE COUPLING VERSION 2

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

12-PINS ROUND CONNECTOR B12, MALE

9-PINS ROUND CONNECTOR C9, MALE

12-PINS ROUND CONNECTOR C12, MALE

9-PINS FLAT CONNECTOR D9, MALE

15-PINS FLAT CONNECTOR D15, MALE

DIGITAL READOUT DEVICES	CS3000 digital readout device	CS5500 digital readout device

CS3000 DIGITAL READOUT DEVICE

CS5500 DIGITAL READOUT DEVICE

Compatible with D15 mating connector

SPECIAL CAPABILITIES

We offer exceptional flexibility in our design and manufacturing processes, allowing us to create tailor-made encoders to meet specific customer needs. We can also modify our standard encoders to accommodate different shaft diameters or designs, special wiring configurations, different mechanical interfaces, etc. Additionally, we can incorporate other custom features, such as specialized connectors, couplings, and various accessories, to ensure seamless integration into your application. Furthermore, we can adapt the design and conduct testing for various environmental conditions, including higher ingress protection levels, extended temperature ranges, and resistance to intensive mechanical vibrations or shock.

ORDER FORM

A20X1 - X2 - X3 - X4 - X5 - X6/X7

Type (X1):	Pulse number per revolution (X2):	Operating temperature (X3):	Shaft diameter (X4):	Cable length (X5):	Connector type (X6):	Flexible coupling (X7):
S - solid shaft **H** - blind hollow shaft	**000001** - 1 pulse/rev ... **262144** - 262 144 pulses/rev	**N** - 0°C - 70°C (standard) **T** - -40°C - 100°C (extended)	**02M** - Ø 2 mm **03M** - Ø 3 mm **04M** - Ø 4 mm	**R005** - 500 mm **R01** - 1 000 mm **R02** - 2 000 mm	**W** - without connector **D9** - flat, 9 pins **D15** - flat, 15 pins **C9** - round, 9 pins **C12** - round, 12 pins **B12** - round, 12 pins	**W** - without coupling **1** - flexible coupling version 1* **2** - flexible coupling version 2* *only for blind hollow shaft encoder type.

ORDER EXAMPLES: 1) A20S-S-262144-N-02M-R005-D9/W
2) A20H-000001-T-03M-R01-W/1