PRECIZIKA METROLOGY

ABSOLUTE OPTICAL ENCODER KIT
AR25M

Absolute Encoder
SSI protocol
HD High Resolutions
Modular
BiSS protocol

This is a high-resolution, singleturn absolute encoder with a 20 Bit BISS-C interface.

TOP VIEW

Ø6 +0,02

120° (×3)

Wires glued with epoxy adhesive "DP-490"

x3 Slots
For encoder clamp

1,5   0,7   (7)

Ø25 +0,05 −0,02

Ø12   Ø20

BOTTOM VIEW

Ø22

Ø21

A-A

ROTOR
(Stainless steel Hub & Glass Disc)

Ø8

Ø7,5

1,4 +0,1

Mounting surface

STATOR
(Aluminium Flange & PCB)
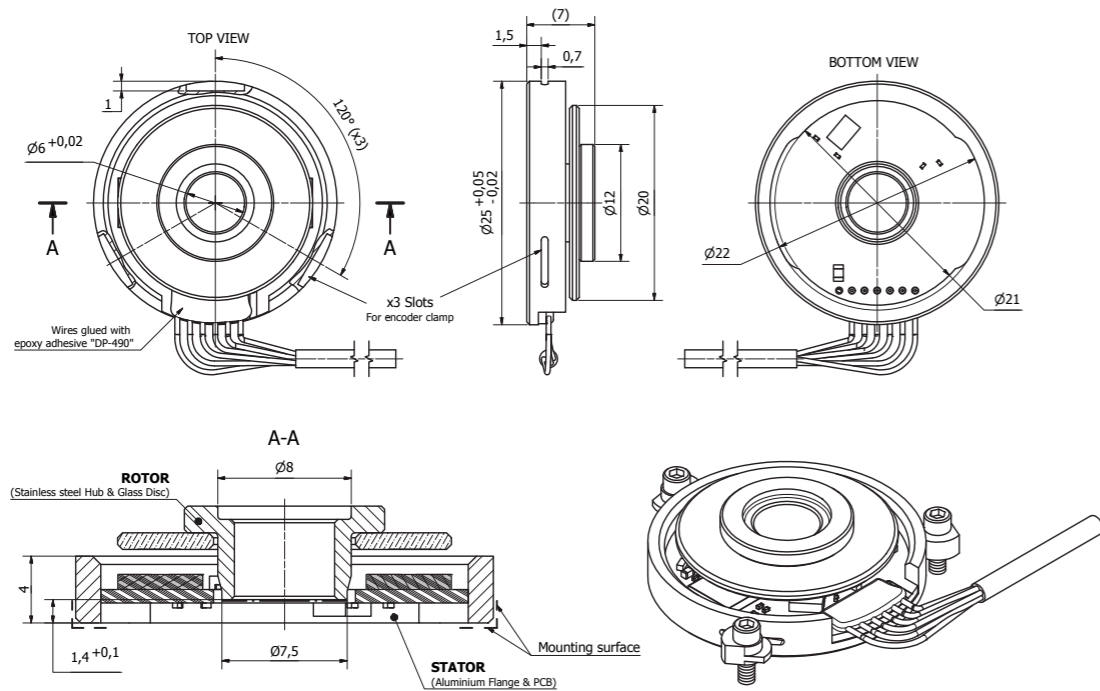
SYSTEM SPECIFICATIONS

Measuring standard	Glass scale with absolute and incremental tracks
System accuracy*	±100"
PCB assembly based on IPC 610 Class 3	
PCB based on IPC 600 Class 3	
Conformal coating to both sides of the PCB: UVCL UV Cure Conformal Coating	

*Expected at optimum installation, additional deviations due to mounting and inaccuracy of the measured shaft are not taken into account. Refer to Instalation Error section for more information.

MECHANICAL DATA

Maximum shaft speed	20 000 rpm
Permissible vibration (55 to 2000 Hz)	≤ 100 m²
Permissible shock (11 ms)	≤ 400 m²
Protection (IEC 529)	IP00
Max. weigth without cable	0.01 kg
Maximum humidity (non-condensing)	98 %
Operating temperature	-40°C - 70°C
Storage temperature	-40°C - 100°C

ELECTRICAL DATA

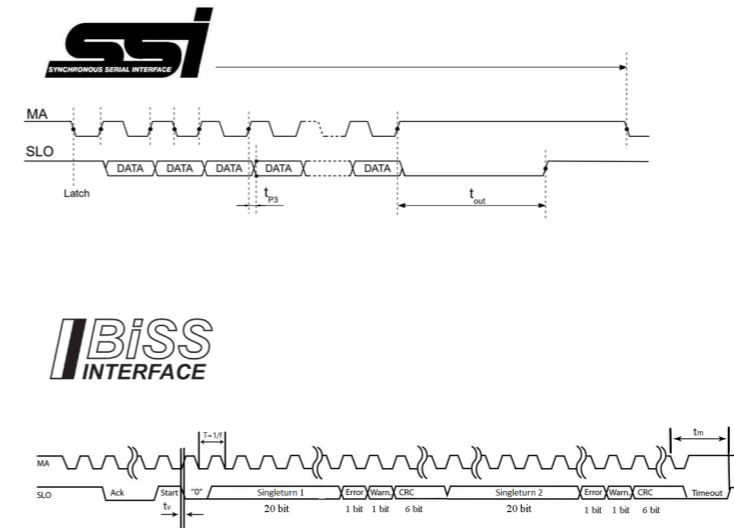| Interface[1]	SSI	BISS-C	TTL
Measuring type	Absolute		Incremental
Output code[1]	Gray/Binary	Binary	RS422
Resolution (positions per turn)	up to 20 bits (1 048 576 positions)		any from 1 to 2²⁰ (1 048 576)PPR
Maximum electrical speed	14 000 RPM		80 RPM (at 2²⁰)
Clock frequency	10 MHz	20 MHz	-
Calculation time	< 2 µs		-
Maximum frequency	-	-	6 MHz
Supply voltage	5V ± 5%		
Supply current	80 - 220 mA		

1) Select when ordering.

INSTALLATION ERROR

Due to dimensional and form error of the customer's shaft as well as its radial runout and fit tolerances with encoder disc / hub assembly the unwanted runout of the circular scale appears and leads to increased angle measurement error. The following installation error ΔΦ relationship between the radial runout **r** and the mean diameter **D** of the graduation is expressed:
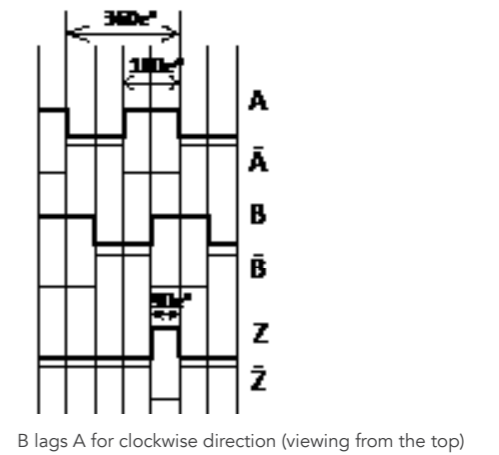
$$\Delta\Phi = \pm\,412 \times 0.5r\,/\,D$$ D = 16,36 mm
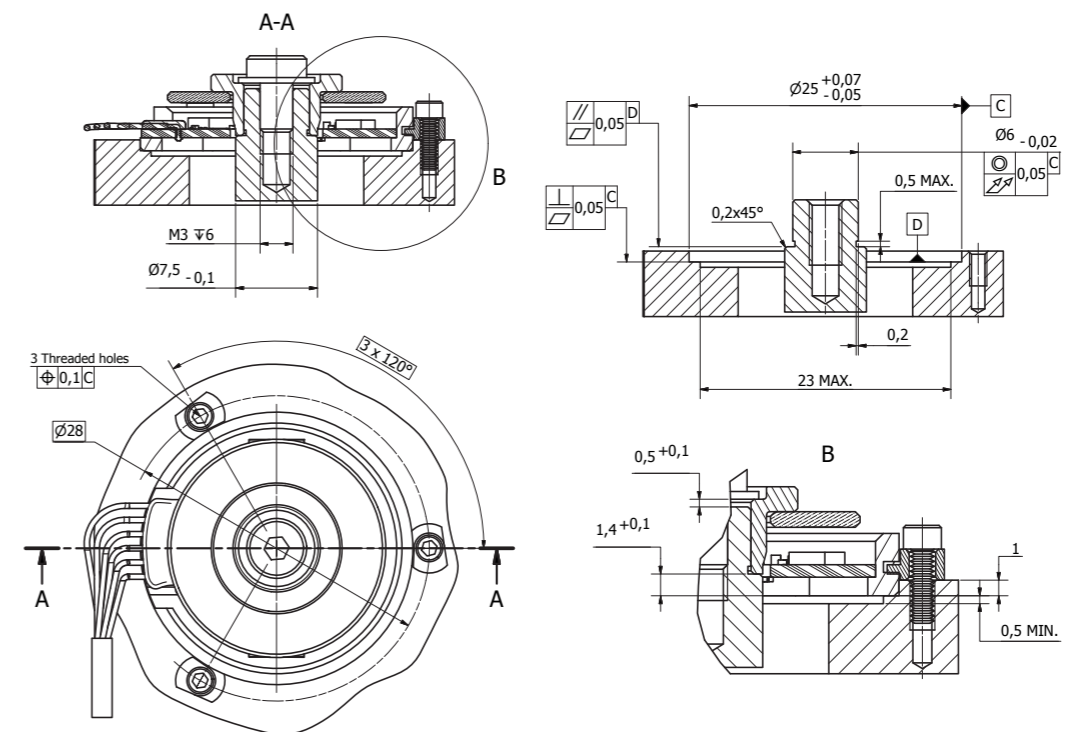
ABSOLUTE DIGITAL INTERFACE

SSI SYNCHRONOUS SERIAL INTERFACE

MA
SLO
Latch

DATA DATA DATA DATA   DATA

t_{P3} t_{out}

BiSS INTERFACE

MA
SLO

Ack   Start "0"   Single turn 1   Error Warn CRC   Single turn 2   Error Warn CRC   Timeout
20 bit   1 bit 1 bit 6 bit   20 bit   1 bit 1 bit 6 bit

INCREMENTAL INTERFACE

TTL

A
Ā
B
B̄
Z
Z̄

B lags A for clockwise direction (viewing from the top)

MOUNTING DIMENSIONS

A-A

M3 ⊽6
Ø7,5 −0,1

3 Threaded holes
⊕ 0,1 C

Ø28

3 × 120°

Ø25 +0,07 −0,05

Ø6 −0,02

0,5 MAX.

0,2×45°

0,5 +0,1

1,4 +0,1

0,2

23 MAX.

B

0,5 MIN.

1

MOUNTING ACCESSORIES

Mounting accessories are included in the standard delivery set.

STATOR MOUNTING CLAMP

ELECTRICAL CONNECTION

Standard version of the encoder includes 1 meter long cable with 9-pins D-type connector.

9-PINS FLAT CONNECTOR D9, MALE

At the time of ordering, the customer can choose a cable of the required length with any of the other connectors listed below.

15-PINS FLAT CONNECTOR D15, MALE

9-PINS ROUND CONNECTOR C9, MALE

10-PINS ROUND CONNECTOR RS10, MALE

10-PINS ROUND CONNECTOR ONC, MALE

12-PINS ROUND CONNECTOR B12, MALE

12-PINS ROUND CONNECTOR C12, MALE

ORDER FORM

| AR25M | - | X1 | - | X2 | - | X3 | - | X4/X5 |

Output signals Interface (serial) (X1):	Output code (X2):	Bit number* (X3):		Cable length (X4):	Connector type (X5):
S - SSI B - BiSS C F - TTL	B - Binary G - Gray (only for SSI interface) 0 - For TTL output signal interface	B1 - 1 ...-... B20 - 20 *For absolute version	1 ...-... 1 048 576 *For incremental version	T100 - 0.1 m ...-... T1000 - 1 m (standard) ...-... T4500 - 4.5 m (maximum)	D9 - flat, 9 pins (standard) W - without connector B12 - round, 12 pins C9 -round, 9 pins C12 - round, 12 pins RS10 - round, 10 pins ONC - round, 10 pins

ORDER EXAMPLE: 1) AR25M-S-G-B24-T1000-D9
2) AR25M-F-0-5000-T500-RS10