

# ABSOLUTE OPTICAL ENCODER KIT AR90M



Absolute Encoder



High Resolutions



BiSS protocol



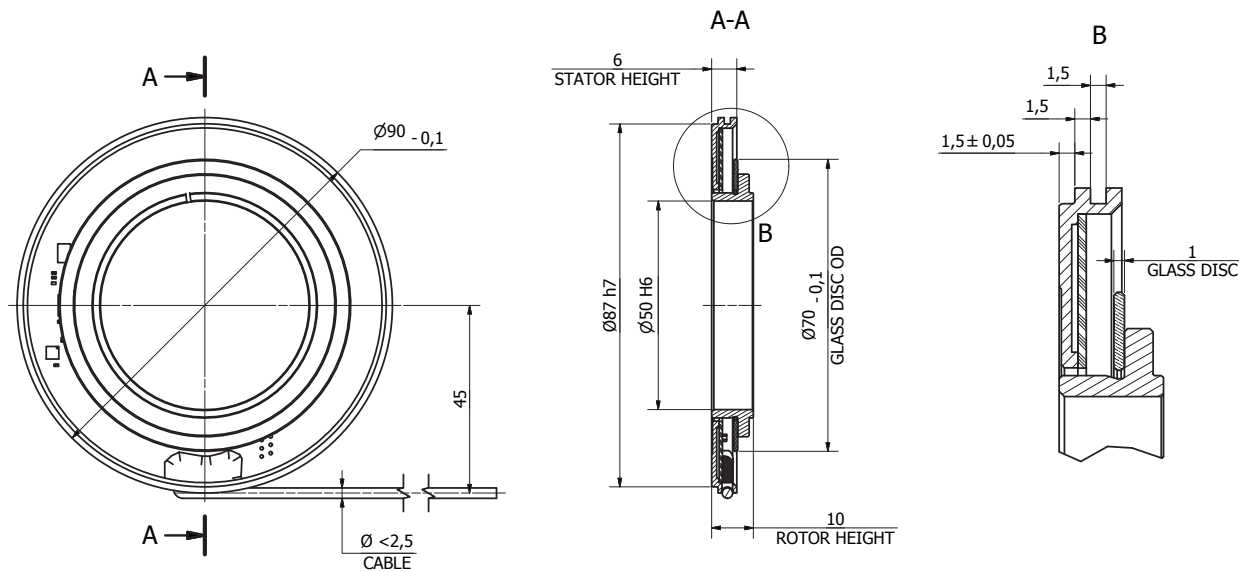
SSI protocol



Modular



Optical rotary encoder kit AR90M offers a unique combination of accuracy, reliability and high resolution. It consists of a stator, rotor and additional mounting accessories. Low profile (10 mm) and bearingless design makes the encoder especially suitable for most demanding applications. Absolute position (up to 24 bits) could be transferred through digital interfaces SSI or BiSS. Incremental encoder version transmits differential A,B and Z signals with any resolution from 1 to 2<sup>22</sup> PPR.



## 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.

## MECHANICAL DATA

Maximum shaft speed	20 000 rpm
Moment of inertia	< 35 x 10 <sup>-6</sup> kgm <sup>2</sup>
Permissible vibration (55 to 2000 Hz)	≤ 100 m/s <sup>2</sup>
Permissible shock (11 ms)	≤ 200 m/s <sup>2</sup>
Protection (IEC 529)	IP00
Max. weight without cable	0.09 kg
Maximum humidity (non-condensing)	98 %
Operating temperature	-40°C - 100°C
Storage temperature	-40°C - 100°C

## ELECTRICAL DATA

Interface <sup>1)</sup>	SSI	BISS-C	TTL
Measuring type	Absolute		Incremental
Output code <sup>1)</sup>	Gray/Binary	Binary	RS422
Resolution (positions per turn)	up to 24 bits (16 777 216 positions)		any from 1 to 2 <sup>22</sup> (4 194 304)PPR
Maximum electrical speed	14 000 RPM		80 RPM (at 2 <sup>22</sup> )
Clock frequency	10 MHz	20 MHz	-
Calculation time	< 2 μs		-
Maximum frequency	-		6 MHz
Supply voltage	5V ± 10%		-
Current consumption	< 100 mA		-

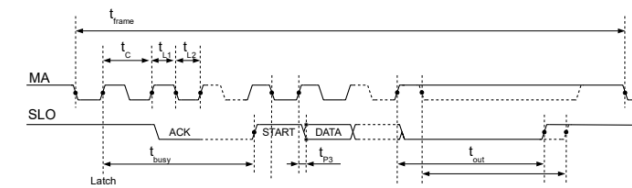
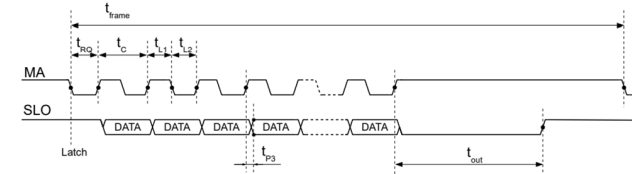
1) Select when ordering.

## INSTALLATION ERROR

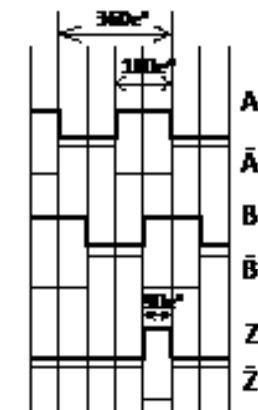
Due to dimensional and form error of the customer's shaft as well as its radial runout and fit tolerances with encoder disc / hub assembly the unwanted runout of the circular scale appears and leads to increased angle measurement error. The following installation error  $\Delta\Phi$  relationship between the radial runout  $r$  and the mean diameter  $D$  of the graduation is expressed:

$$\Delta\Phi = \pm 412 \times 0.5r / D \quad D = 65,26 \text{ mm}$$

## ABSOLUTE DIGITAL INTERFACE

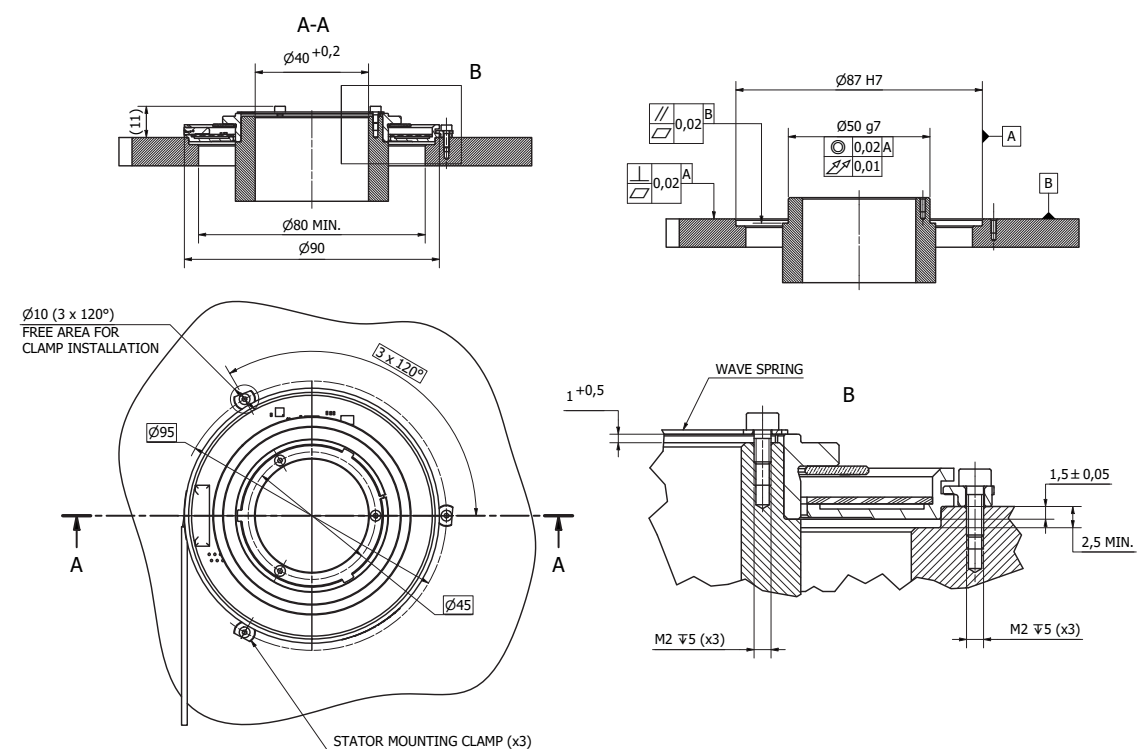


## INCREMENTAL INTERFACE



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

## MOUNTING DIMENSIONS



# MOUNTING ACCESSORIES

## STATOR MOUNTING CLAMP



## WAVE SPRING



Mounting accessories are included in the standard delivery set.

# 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

AR90M - X1 - X2 - X3 - X4/X5

Output signals Interface (serial) (X1):	Output code (X2):	Bit number* (X3):	Cable length (X4):	Connector type (X5):	
<b>S</b> - SSI <b>B</b> - BiSS C <b>F</b> - TTL	<b>B</b> - Binary <b>G</b> - Gray (only for SSI interface) <b>O</b> - For TTL output signal interface	<b>B1</b> - 1 ...-... <b>B24</b> - 24  <small>*For absolute version</small>	<b>1</b> ...-... <b>4 194 304</b>  <small>*For incremental version</small>	<b>T100</b> - 0.1 m ...-... <b>T1000</b> - 1 m (standard) ...-... <b>T4500</b> - 4.5 m (maximum)	<b>D9</b> - flat, 9 pins (standard) <b>W</b> - without connector <b>B12</b> - round, 12 pins <b>C9</b> - round, 9 pins <b>C12</b> - round, 12 pins <b>RS10</b> - round, 10 pins <b>ONC</b> - round, 10 pins

ORDER EXAMPLE: 1) AR90M-S-G-B24-T1000-D9  
 2) AR90M-F-O-5000-T500-RS10