锐鹰传感
REAGLE SENSING

Cross-axis Multi-turn Absolute Rotary Encoder

SROA79-M16S23Bit-SCSC-M-5V

SPECIFICATION

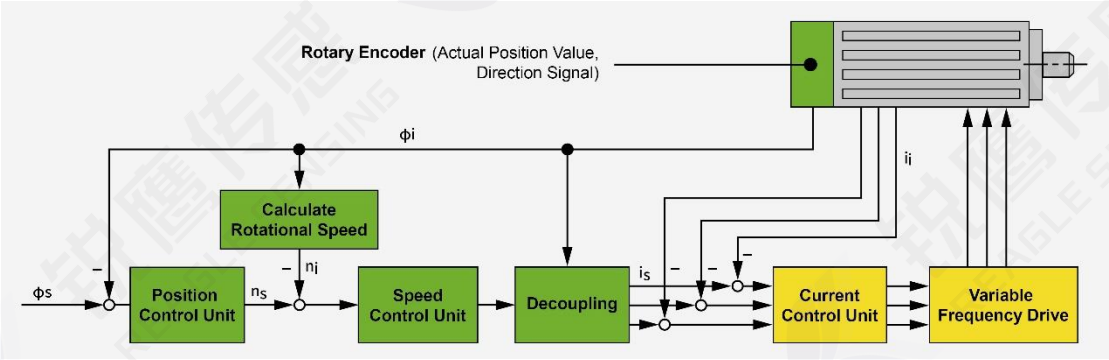
浙江锐鹰传感技术股份有限公司

ZHEJIANG REAGLE SENSING TECHNOLOGY INCORPORATED

Contents

1. Summary Info

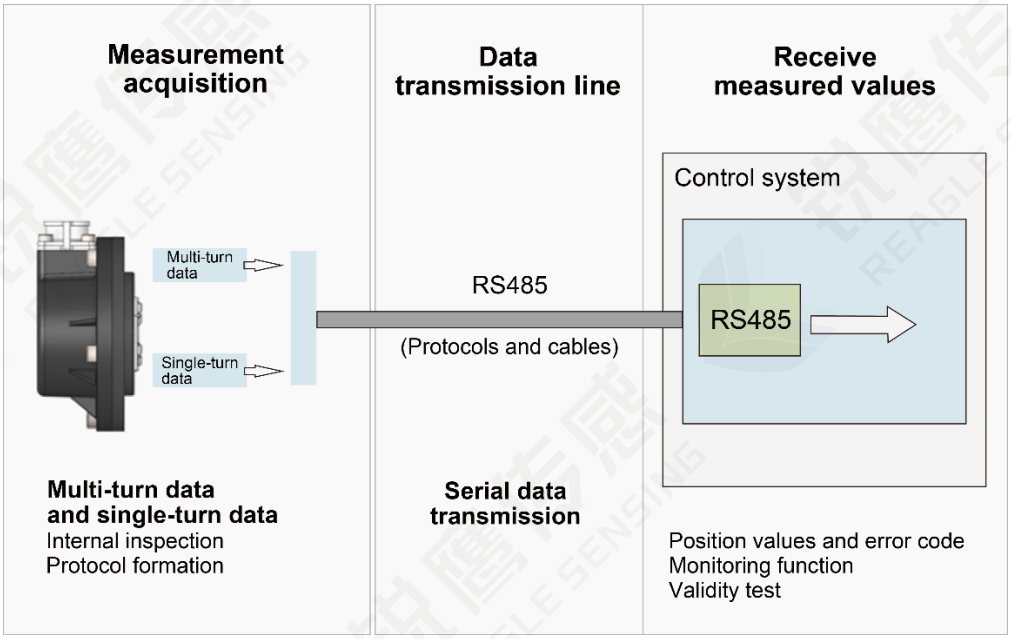
This manual primarily describes how to use the SROA79 cross-axis multi-turn absolute rotary encoder from Reagle Sensing. This product is designed to serve servo-driven control systems, providing the necessary feedback information for accurate position and velocity control units within the system.



Position and velocity control system

The performance of the encoder has a decisive impact on the essential characteristics of the motor, such as:

- Positioning accuracy
- Speed stability
- Bandwidth, determining the response speed to drive command signals and resistance to interference
- Motor size
- Noise



RS485 communication encoder

2．Technical Specifications

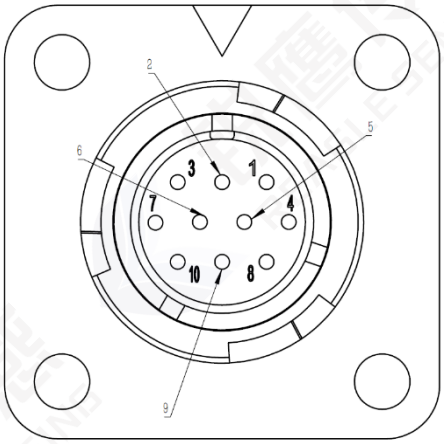
Model	SROA79-M16S23Bit-SCSC-M-5V
Resolution	8388608（23bit）
Number of turns	65536（16bit）
Auxiliary Functions	Fault Warning * Electromagnetic Environment Warning *Battery Voltage Warning
Communication Interface	RS485
Communication frequency	≤16kHz
Baud rate	2.5Mbps
Input shaft allowable deviation	Axial：±0.1mm　Axial play：＜0.8mm（Recommend ＜0.2mm） Radial：±0.1mm　Radial play：＜0.05mm Tilt：0.1°
Main shaft speed	≤6000rpm
Moment of inertia	0.86kg·mm^2
Starting torque (20°C))	≤0.005Nm
Weight	≈0.3kg（excluding cables）
Rotor angular acceleration	during power supply≤10000rad/s^2， during battery power≤4000rad/s^2
Vibration	Between 10 and 55Hz, maintain amplitude of 1.5mm. Between 55 and 2000Hz, acceleration is 98m/s². 2 hours per axis for XYZ, totaling 6 hours.
Mechanical shock	Shock acceleration of 980m/s², 11 milliseconds. 3 impacts per direction, totaling 18 impacts.
Operating Temperature	-20°C~105°C
Relative Humidity	≤90% (40°C/21 days, based on EN 60068-2-78); No condensation
Enclosure Protection Rating	IP 67

3. Electrical Parameters

Items		T=25℃		
		Min.	Typ.	Max.
Main power supply voltage		4.75 V	5V	5.25V
Main power supply Current (Typ)		--	90mA	--
Battery voltage		--	3.6V DC	--
Battery fault voltage		--	2.9V	--
Battery warning voltage		--	3.1V	--
Mode transition voltage	Main power supply switches to low-power mode	--	4.2V	--
	Low-power mode transition to main power supply mode	--	4.3V	--
Differential Level	High	3.5V	--	--
	Low	--	--	1.7V
Edge Change Time		--	--	100ns
Insulation resistance		50MΩ	--	--

4. Socket Definition

aviation connector pinout	Definition
4	5V
9	GND
1	485+
2	485-
6	Battery +
5	Battery GND
10	PE

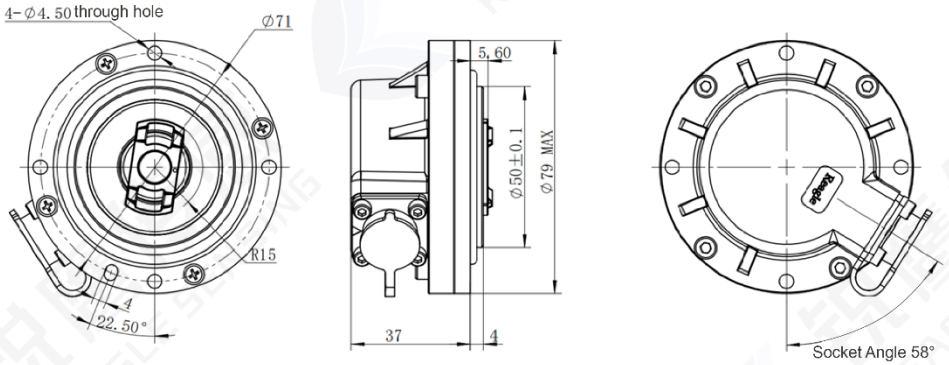


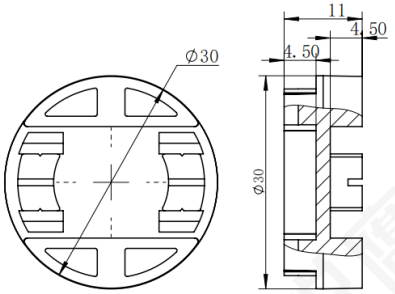
【Note】:

- Terminal Model: CM10-R10P
- Recommended Connector Models: CM10-SP10S-M (Straight) ; CM10-AP10S-M (Right Angle)

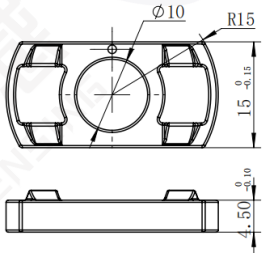
5. Structural Dimensions

✧ Product Structure Dimension Diagram



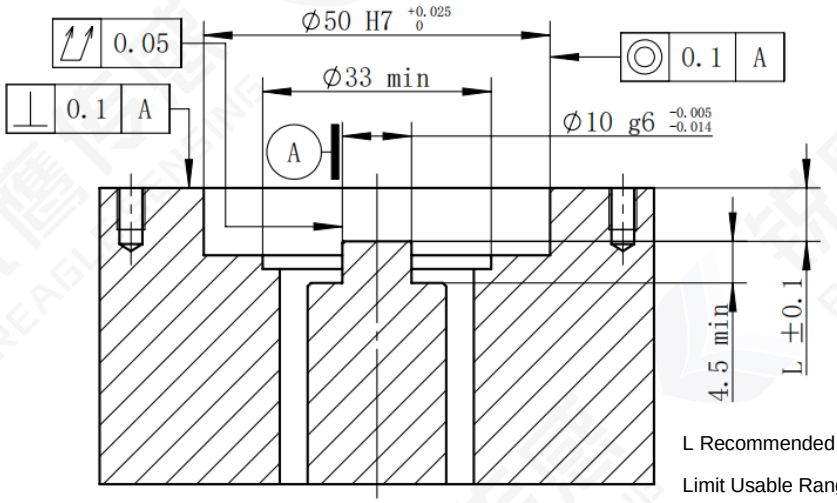


Accessory: Cross Coupling Slider



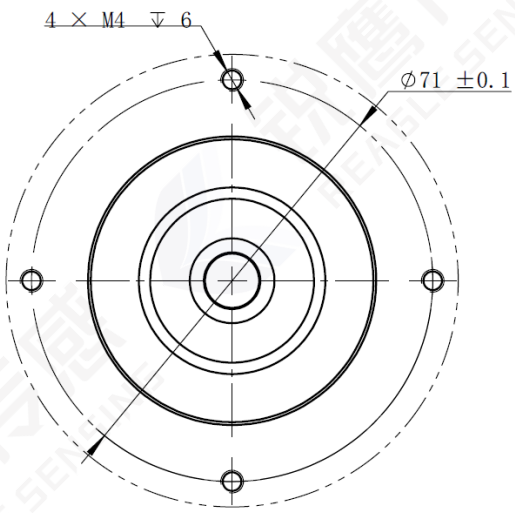
Accessory: Cross Coupling Hub

✧ Recommended Motor End Design Dimensions



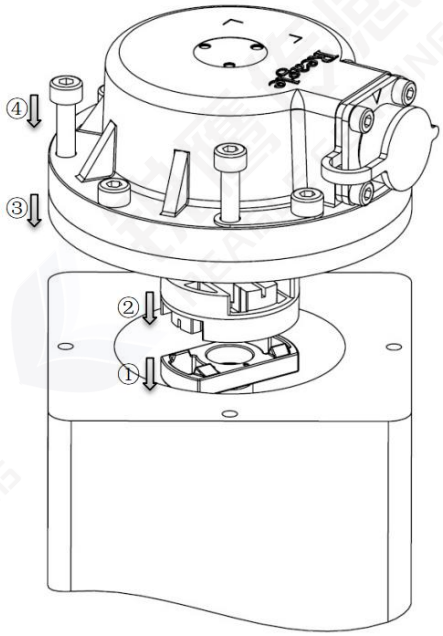
L Recommended Value: 8

Limit Usable Range: 7.7~8.5



6. Mounting Procedure

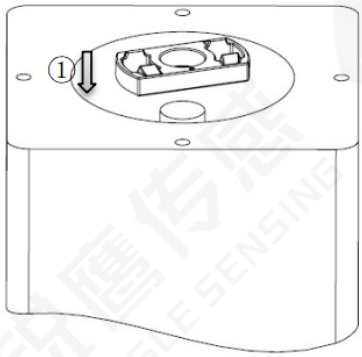
6.1 Installation Diagram



6.2 Installation Accessories

- Torque Screwdriver (Including M4 Hex Bit)
- Adhesive (Recommended Loctite 648 Anaerobic Adhesive)

6.3 Installation Sequence



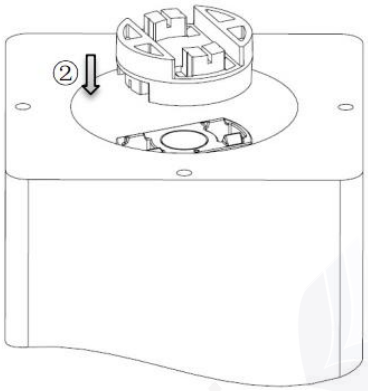
① Install the Cross-Coupling Encoder Accessory - Hub:

a. Clean the motor shaft surface and the inner wall of the Hub from dust, dirt, rust, and other defects.

b. Apply adhesive evenly on both the motor shaft and the inner wall of the Hub (Loctite 648 anaerobic adhesive is recommended).

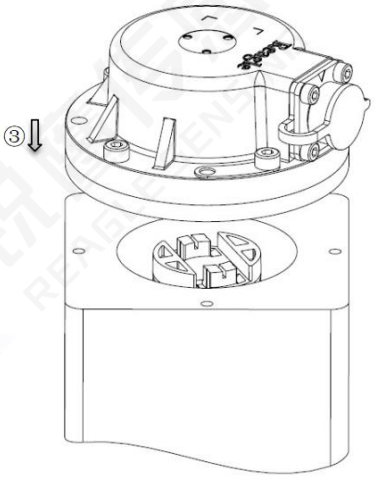
c. Mount the Hub onto the motor shaft, ensuring that the top face of the Hub is flush with the top face of the motor shaft. Maintain a distance of 7.7mm to 8.5mm between the top face of the motor shaft and the contact surface between the motor and the encoder body.

d. Let the adhesive cure for 30 minutes before proceeding to the next step.



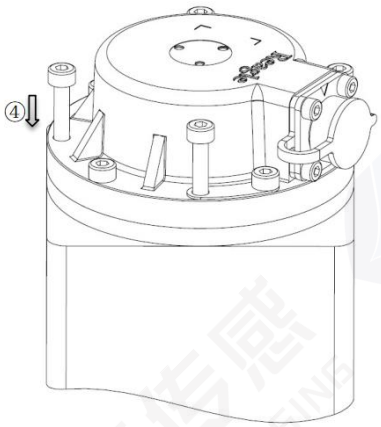
②Install the Cross-Coupling Encoder Accessory - Slider:

a. Gently press the Slider onto the end of the motor shaft Hub. Do not use tapping or similar methods to avoid damaging the motor shaft and encoder accessories.



③ Install the Cross-Coupling Encoder:

a. Gently press the Hub end of the cross-coupling encoder onto the Slider at the end of the motor shaft. Avoid using tapping methods to prevent damage to the motor shaft and encoder accessories. Ensure that the encoder stop face is flush with the motor stop face and that the bottom face of the encoder is completely flush with the top face of the motor.



④ Install the Locking Screws:

a. Use a torque wrench to install four M4 locking screws with a torque of 12 kgf·cm each, securing the cross-coupling encoder to the motor end face.

7．Configuration Instructions

For details on the protocol, please refer to the "REAGLE SENSING READ Protocol Description".

Revision History

Date	Version Number	Modification Details or Changes	
		Location	Content
20210831	V1.0	/	New Version
20210302	V2.0	Communication Protocol Timing	Detailed Communication Protocol Description Detailed Communication Protocol Description
20230803	V3.0	Technical Specifications Mechanical Specifications Installation Procedure	Update IP Rating Update Operating Temperature Update Dimensional Drawings Update Installation Torque Units
20240823	V3.1	Technical Specifications Mounting Procedure	Correct mistake Recommended torque for M4 screws adjusted to 12 kgf·cm

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