Split-type Multi-turn Absolute Rotary Encoder
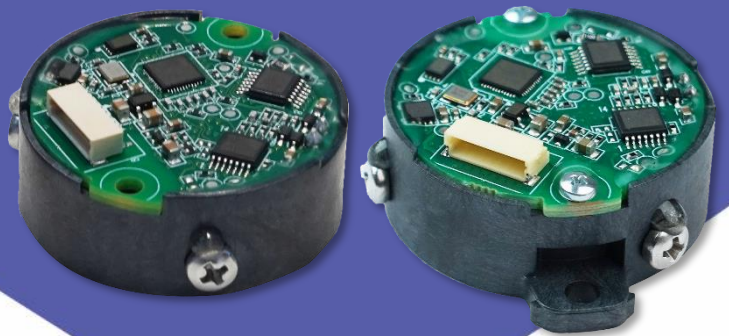# SROA35E-M16S23Bit-SY-C-5V
SROA46E-M16S23Bit-SY-C-5V
SPECIFICATION
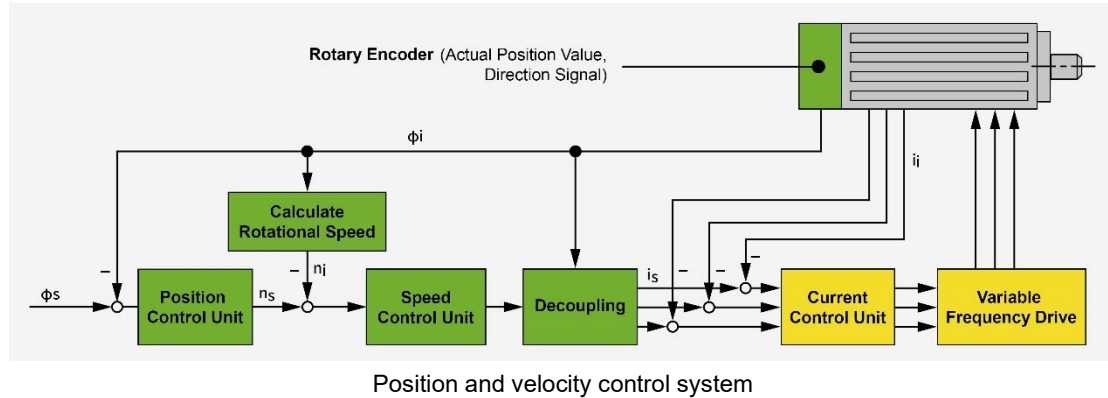
Contents

1．Summary Info

This manual primarily describes how to use the split-type SROA35E/SROA46E series multi-turn encoders from Reagle Sensing. This product is mainly used in servo-driven control systems, providing the accurate positional and speed feedback required by the control units.

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
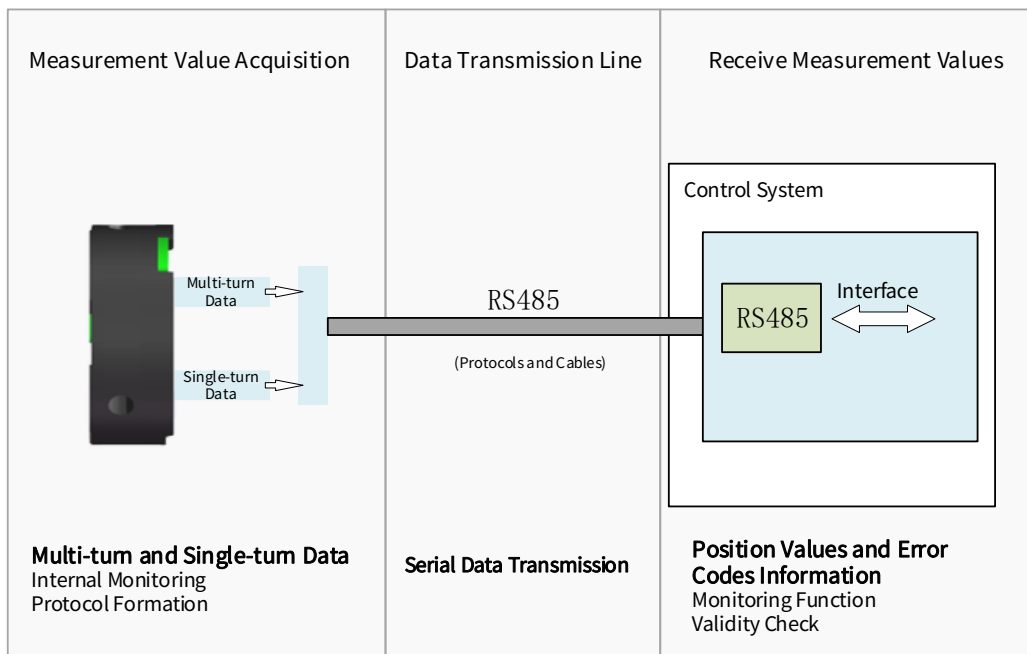
Equipped with RS485 communication encoder

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2．Technical Specifications

Model	SROA35E-M16S23Bit-SY-C-5V SROA46E-M16S23Bit-SY-C-5V
Resolution	Supports up to 8388608 (23bit), compatible with 17bit.
Turns	65536 (16bit)
Absolute positioning accuracy	—（Depends on motor shaft rotation accuracy）
Repeat positioning accuracy	＜±5 Arc seconds
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：——　　　　Axial play：＜0.1mm Radial：±0.1mm　　Radial play＜0.01mm Tilt：＜0.1°
Main shaft speed	≤6000rpm
Shaft diameter	Straight Shaft Ø6mm
Moment of inertia	$0.21kg \cdot mm^2$
Starting torque (20°C)	$≤0.005N \cdot m$
Weight	≈0.021kg（excluding cables）
Rotor angular acceleration	$≤80000rad/s^2$ when powered by a power source; $≤4000 rad/s^2$ when powered by a battery.
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℃~105℃
Relative Humidity	≤90%（40°C/21 days, based on EN 60068-2-78）; No condensation
Enclosure Protection Rating	—（Motor Rear Cover Protection）

3．Electrical Parameters

Items		T=25°C		
		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 switching voltage	Main power supply to low power mode	--	4.2V	--
	low power mode to main power supply	--	4.3V	--
Differential Level	High	3.5V	--	--
	Low	--	--	1.7V
Edge change time		--	--	100ns
Insulation resistance		50MΩ	--	--

4．Cable Definition

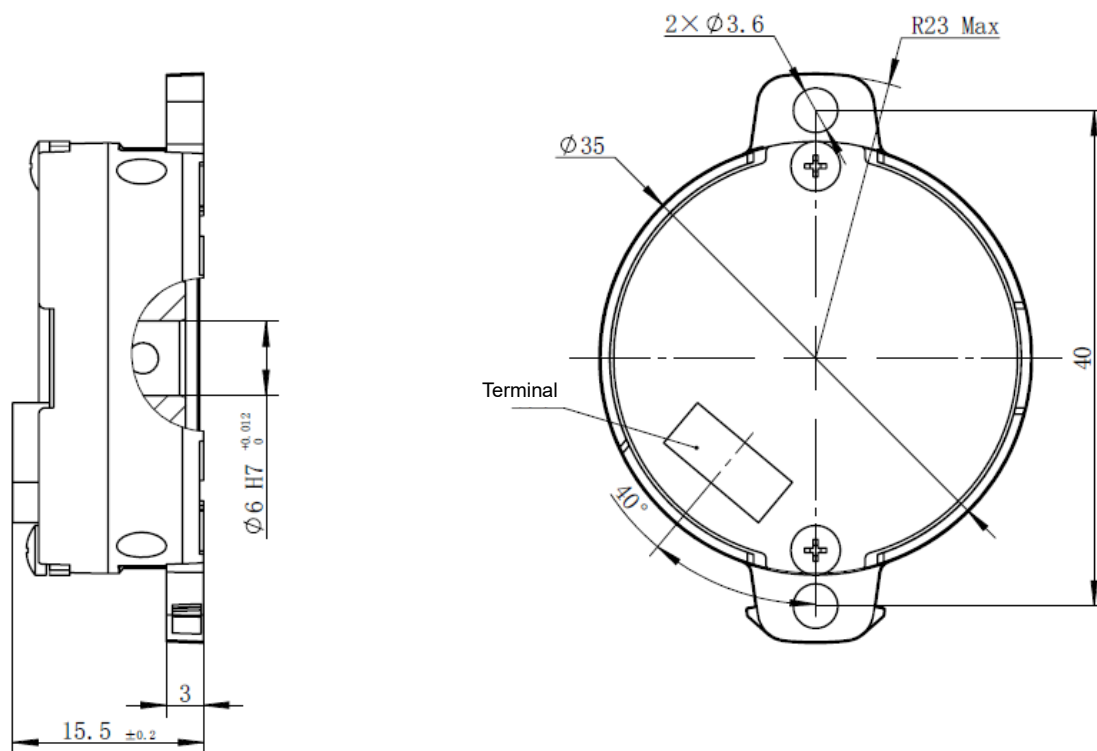| Cable color	Definition
red	5V
black	GND
blue	485+
yellow	485-
brown	Battery +
white	Battery GND
shielding mesh	PE

5．Mechanical Specifications

5.1 SROA35E Series

✧ Product Structural Dimensions Diagram
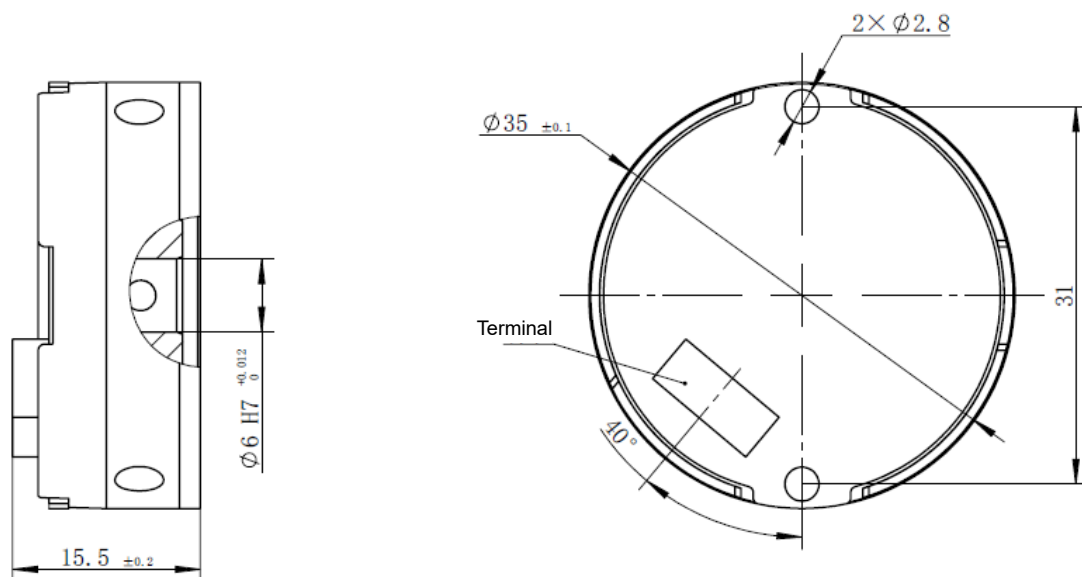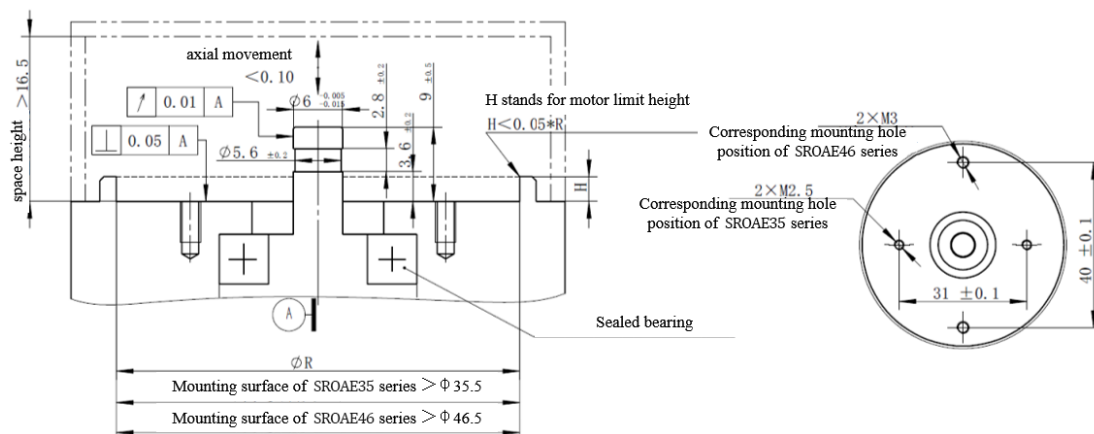

5.2 SROA46E Series

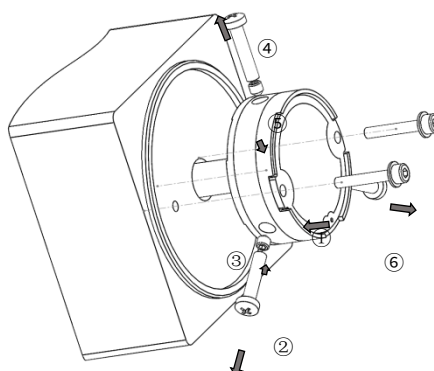✧ Product Structural Dimensions Diagram

✧ Recommended Motor End Design Dimensions

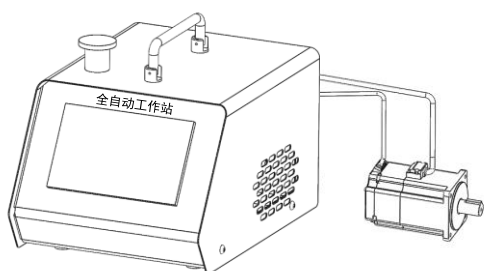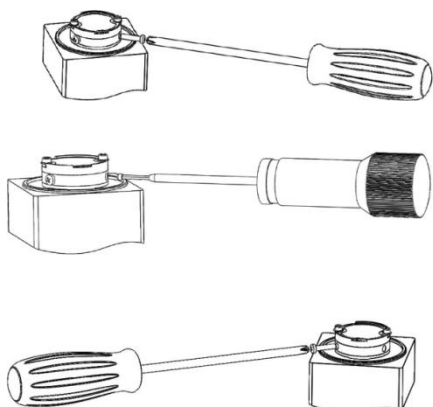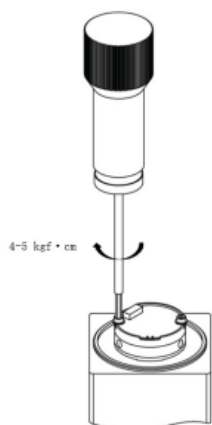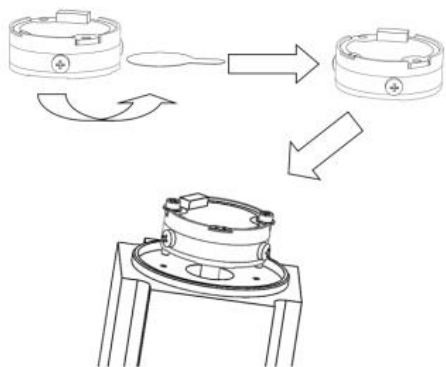# 6．Mounting Procedure

6.1 SROA35E Series

6.1.1 Installation Diagram

6.1.2 Installation Accessories

- Metric opposite side 1.5mm hexagonal torque wrench
- Metric opposite side 2.0mm hexagonal torque wrench
- Cross screwdriver

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6.1.3 Installation Sequence

① Remove the dust-proof sticker at the lower part of the encoder; Thread the encoder shaft into the motor shaft until the bottom surface of the encoder fully fits the rear end cover of the motor, then adjust the angle to make the encoder screw hole and the rear of the motor end cover threaded hole alignment; Install M2.5 combination screws in the screw holes on both sides of the encoder.

4~5 kgf·cm

② To make the PCB flat, use the corresponding hexagon torque wrench to pre-tighten M2.5 screw assemblies on both sides in turn, and then use 4~5kgf·cm torque to tighten both screw.

③ Remove one screw on the side wall with a cross screwdriver, insert m3*3 hexagon socket set screw and pre lock it, then remove another screw on the side wall, insert m3*3 hexagon socket set screw, lock it with 7kgf·cm, and then lock the previous set screw with 7kgf·cm; Finally, remove the remaining screw on the side wall to complete the encoder installation;

④ After the motor rear cover is assembled, connect the motor line and encoder line to the workstation. If the test passes, it indicates that the encoder is installed completely correctly and the installation process is over.

[Note]:the encoder must be tested and confirmed by the workstation to ensure stable and reliable installation.
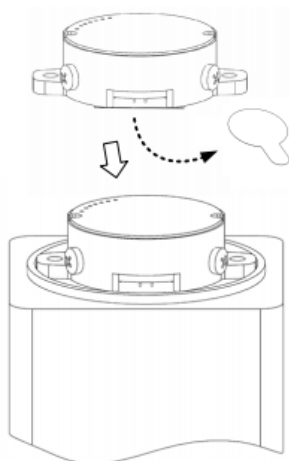
全自动工作站

6.2 SROA46E Series

6.2.1 Installation Diagram
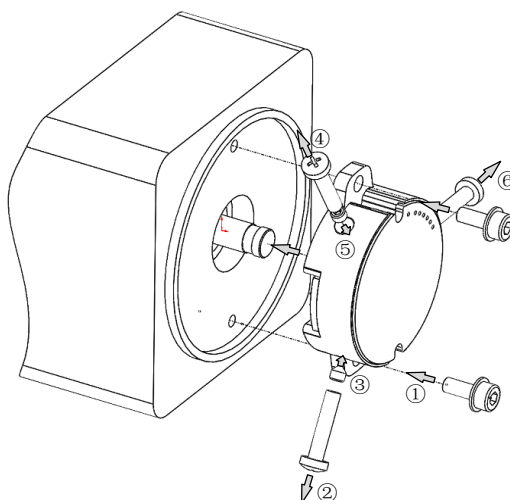
6.2.2 Installation Accessories

- Metric opposite side 1.5mm hexagonal torque wrench
- Metric opposite side 2.0mm hexagonal torque wrench
- Cross screwdriver

6.2.3　Installation Sequence

① Remove the dust-proof sticker at the lower part of the encoder, Thread the encoder shaft into the motor shaft until the bottom of the encoder fits with the rear end cover of the motor. During normal cooperation, no force is required during the threading process of the encoder. If necessary, check the motor size and whether there are extrusion injuries, foreign matters, etc. Do not press down the encoder or knock it during installation.
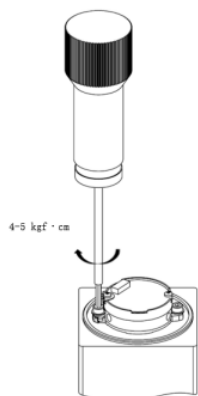
② Use the corresponding hex torque wrench to lightly tighten the M3 screws on one side, then lightly tighten the M3 screws on the other side. Finally, tighten both screws to 4~5 kgf·cm torque sequentially.
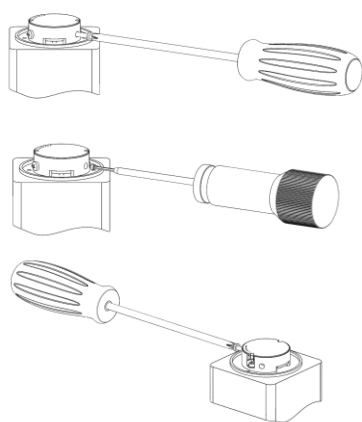
③ Remove one screw on the side wall with a cross screwdriver, insert m3*3 hexagon socket set screw and pre lock it, then remove another screw on the side wall, insert m3*3 hexagon socket set screw, lock it with 7kgf·cm, and then lock the previous set screw with 7kgf·cm; Finally, remove the remaining screw on the side wall to complete the installation.
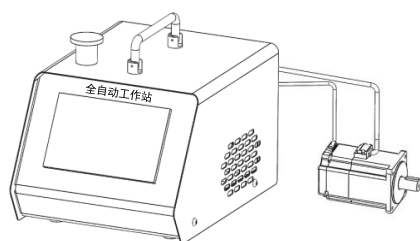
④ After the motor rear cover is assembled, connect the motor line and encoder line to the workstation. If the test passes, it indicates that the encoder is installed completely correctly, and the installation process is over.

[Note]: the encoder must be tested and confirmed by the workstation to ensure stable and reliable installation.

7．Communication Specifications

Table 1：TAMA Protocol Parameters

1	Single-turn position resolution	8388608（23bit，ENID = 0x17） 131072（17bit，ENID = 0x11）
2	Multi-turn position resolution	65536（16bit）
3	Overspeed alarm threshold	7200rpm

The specific content of the "Reagle Communication Protocol Specification (TAMA-STD) [Public]." can be found in the document itself.

8．Configuration Instructions

For ordering codes, refer to the "Reagle Sensing Absolute Encoder Ordering Guide."
For specifications of terminal cables, refer to the "Reagle Sensing Absolute Encoder Terminal Cable Drawings."

Optional Configuration	Description
Resolution	17Bit/23Bit

Revision History

Date	Version Number	Modification Details or Changes	
		Location	Content
20231215	V1.0	/	New Version

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