# YKAN

MODBUS RTU Output Multi-turn Absolute Encoder

## Series KEM-40MS6-MOD

## **Operation Manual**

Thank you for purchasing the KEM-40MS6-MOD series MODBUS RTU communication output Multi-turn Absolute Encoder. Please read this Operation Manual carefully before applying this product.

#### JTEKT ELECTRONICS (WUXI) CO., LTD.

Add: No.6 Lianhe Road, Hudai Town Binhu District, Wuxi, Jiangsu, P.R.China Pc: 214161

https: //www.jtektele.com.cn Fax: (0510)85161393

JELWX-M8587B-E

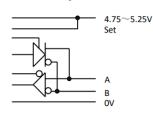
#### Connection

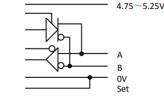
Tel: (0510)85167888

Wire color	Item	Function		
Brown	5V	Dewer eventy		
Blue	0V	Power supply		
White	A	RS-485 communication port(two wires), MODBUS RTU Slave		
Gray	В			
Yellow	Set	Mode selection signal. (Connect to 5V:Setting-Mode; Connect to 0V:Running-Mode)*1		

The product supports two working Mode.
 Setting-Mode :Used to set the working parameter of the product. or to reset the position register to zero.
 Running-Mode :The general working mode. Used to accept the position data through the RS-485 port.

Using the connection way of the Set signal wire, you can select the current working Mode of the product: Connect to 5V:Setting-Mode; Connect to 0V:Runing-Mode . As shown in the figure below.

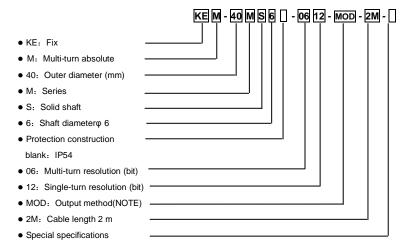




Set Wire connection for Setting-Mode

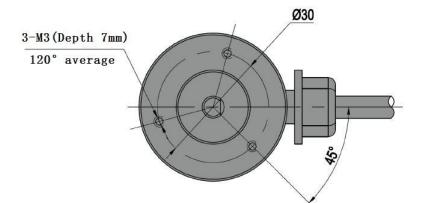
Set Wire connection for Running-Mode

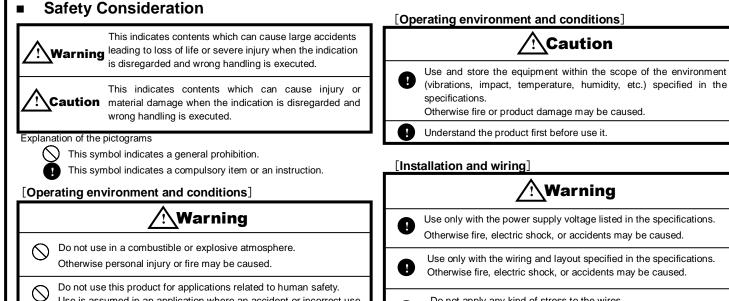
### **Composition of product name**



NOTE: MOD means MODBUS RTU Communication output.

### **External dimensions and mounting**





## Mechanical specifications Environmental requirements

Starting torque			≤ 0.01N • m (+20°C)	
Shaft moment of inertia			3×10 <sup>-7</sup> kg⋅m²	
Max. allowable		Radial	30N	
shaft load		Thrust	20N	
Max. allowable speed			3000rpm	
Cable	Material		Oil resistant PVC cable	
	Outer diameter		Approx. φ 5mm (8 cores)	
	Length		2.0m (Standard)	
	Specification		Nominal cross-sectional area is 0.14mm <sup>2</sup> , AWG26	
Weight			Approx. 160g (cable length 2m)	

Ambient	Operation	<b>−25</b> ~+85℃	
temperature	Store	<b>−30</b> ~+90°C	
Ambient	humidity	35 $\sim$ 85%RH (non-condensing)	
Withstand	d voltage	AC500V (50/60Hz) for 1 min	
Insulation r	esistance	min. 20MΩ	
Vibration re	esistance	10 to 55Hz with 0.75mm amplitude durable for 1h along 3 axes	
Shock re	sistance	11ms with 490m /s <sup>2</sup> applied 3 times 3 axes	
Protection co	onstruction	IP54	

Do not apply any kind of stress to the wires.

Otherwise electric shock or fire may be caused.

#### **Electrical specifications**

	Item	Specification	Remark
Power supply	Operating voltage	5V±0.25V DC	
	Allowable ripple	Max. 3%rms	
	Current consumption	Max. 100mA	
Output signal	Interface	RS-485 communication port(two wires) Max communication distance:1Km	SN65176B equivalent
	Protocol	MODBUS RTU,Slave	
Receive/Send	A/B signal Current(I <sub>0</sub> )	±60mA Max	

## **Brief description of MODBUS RTU communication**

Use is assumed in an application where an accident or incorrect use

will not immediately cause danger to humans.

Data Register
 (1) Zero position setting order register R1(Holding Register,1word, MODBUS ADDRESS 40001)
 (2) Parameter setting register R2,R3(Holding Register,2words, MODBUS ADDRESS 40002, 40003)
 (3) position data register R1-R3(Input Register,3words, MODBUS ADDRESS 30001, 30002,30003)
 (4) speed/direction data register R4-R5(Input Register,2words, MODBUS ADDRESS 30004, 30005)

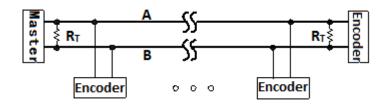
- Supported MODBUS Function Codes Under Setting-Mode
   Zero position setting order register writing :0x06 (1 word Holding Register writing)
   Parameter setting register writing :0x10 (2 words Holding Register writing)
   Parameter setting register reading :0x03 (2 words Holding Register reading)
   position data register reading :0x04 (3 words Input Register reading)
   position /speed/direction data register reading :0x04 (5 words Input Register reading)

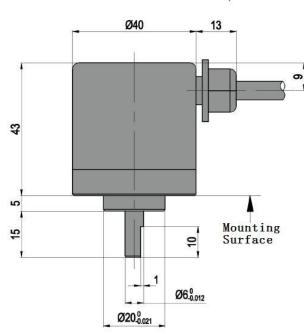
Under Running-Mode
(1) Zero position setting order register writing :0x06 (1 word Holding Register writing)
(2) Parameter setting register reading :0x03 (2words Holding Register reading)
(3) position data register reading :0x04 (3 words Input Register reading)
(4) position /speed/direction data register reading :0x04 (5 words Input Register reading)

3、Communication Parameter

(2).Under Setting-Mode—Fixed(node address:1/speed:9600bps/data:8bits/stop:1bit/Parity: none)
(2).Under Running-Mode—decided by Parameter Setting Register which been set under Setting-Mode.

#### **Reference Communication cable connection**





NOTE: 1) Please to add the terminal resistance  $R_T$  for longer communication distance.(120 $\Omega$  recommended). 2) The maximum communication distance is 1Km,when using the shielded twist paired cable.

#### **Cautions for use**



Do not wire the cable in parallel with other power lines and do not share a duct with other cables.

Use capacitors or surge absorption elements to remove the sparks caused by relays and switches in the control panel as far as possible.

- Be sure to connect all wires properly, as wrong wiring can damage the internal circuitry.
- Erroneous data may be caused at the time of power ON and power OFF. After power ON, wait for at least 0.5 sec. before use.
- Do not disassemble the product. Do not expose the product for a long time to water, even if it is a dust-resistant, jet-proof type. Wipe off any water getting onto the product.
- As the rotary encoder is composed of precision parts, its parts will be impaired when it is subjected to shocks. Use sufficient care for handling and mounting.