

# YKAN

## Incremental Sine-Cosine Encoder Series KEI-50CSC Operation Manual

Thank you for purchasing this series KEI-50CSC Incremental Sine-Cosine Encoders. Please read this Operation Manual carefully before applying this product.  
PLEASE KEEP MANUAL IN A SAFE PLACE!

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JELWX-M8582B-E

### Safety Consideration

**Warning** This indicates contents which can cause large accidents leading to loss of life or severe injury when the indication is disregarded and wrong handling is executed.

**Caution** This indicates contents which can cause injury or material damage when the indication is disregarded and wrong handling is executed.

Explanation of the pictograms

- This symbol indicates a general prohibition.
- This symbol indicates a compulsory item or an instruction.

### [Operating environment and conditions]

#### Warning

- Do not use in a combustible or explosive atmosphere. Otherwise personal injury or fire may be caused.
- Do not use this product for applications related to human safety. Use is assumed in an application where an accident or incorrect use will not immediately cause danger to humans.

### [Operating environment and conditions]

#### Caution

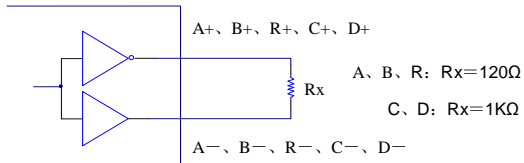
- Use and store the equipment within the scope of the environment (vibrations, impact, temperature, humidity etc.) specified in the specifications. Otherwise fire or product damage may be caused.
- Understand the product first before use it.

### [Installation and wiring]

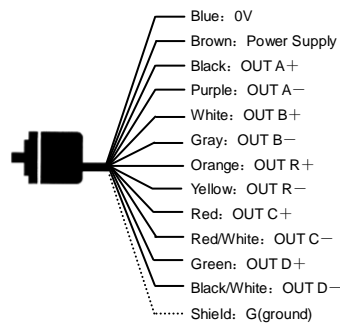
#### Warning

- Use only with the power supply voltage listed in the specifications. Otherwise fire, electric shock, or accidents may be caused.
- Use only with the wiring and layout specified in the specifications. Otherwise fire, electric shock, or accidents may be caused.
- Do not apply any kind of stress to the wires. Otherwise electric shock or fire may be caused.

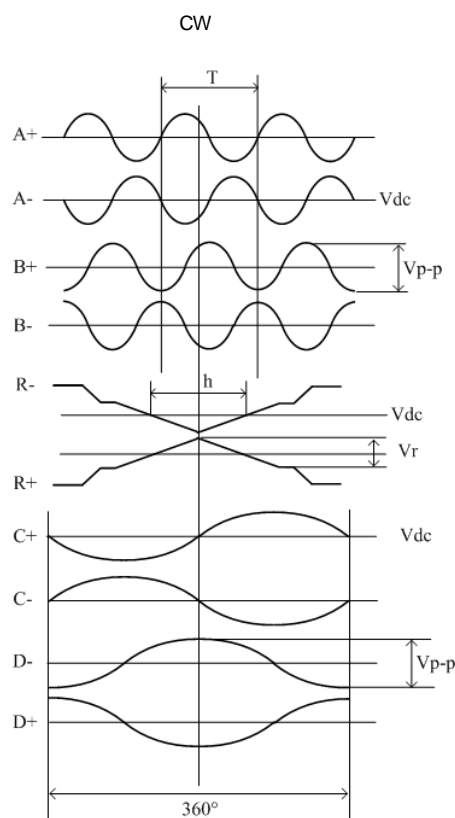
### Output circuit



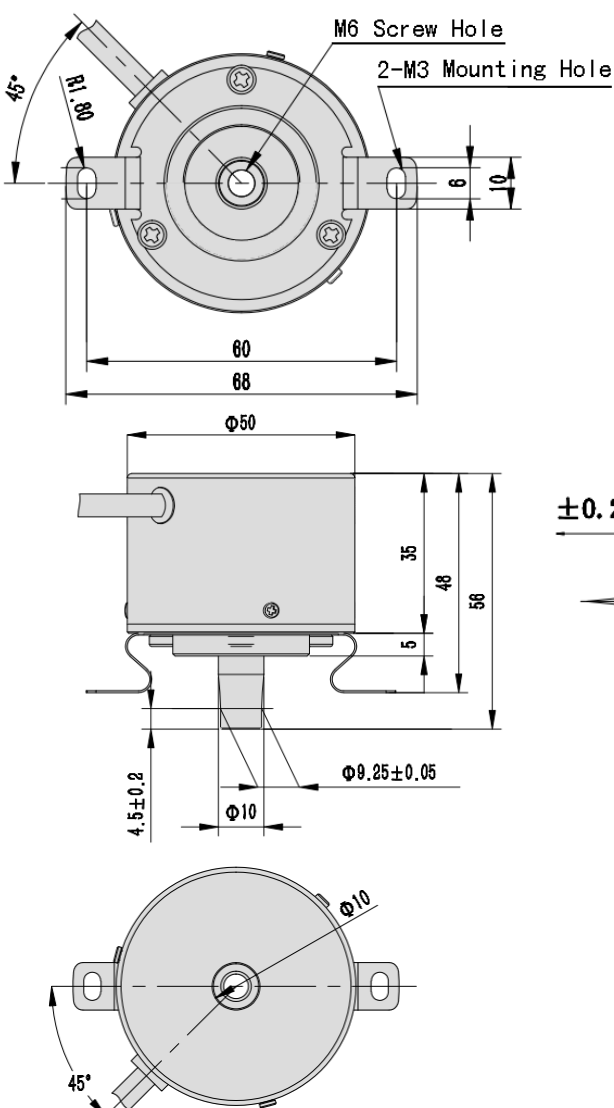
### Connection



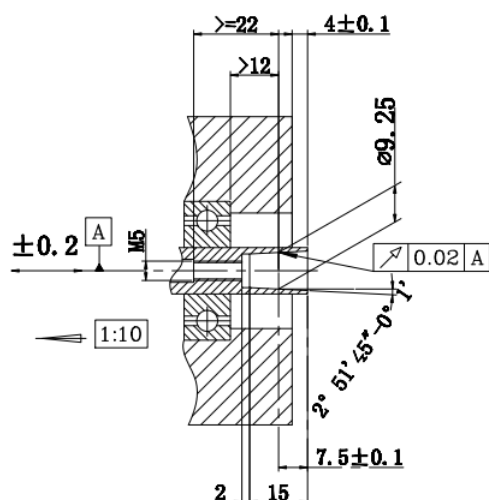
### Output signal timing chart



### External dimensions



### Required mating dimensions



### Mechanical specifications

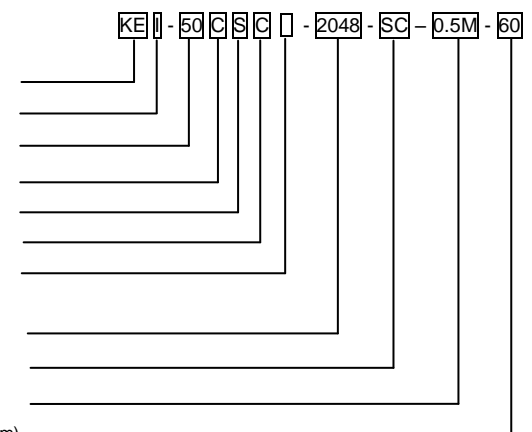
|  |                                      |  |
|--|--------------------------------------|--|
| Starting torque                          | Max.3x10 <sup>-3</sup> N·m (+20°C)   |  |
| Shaft moment of inertia                  | 2x10 <sup>-6</sup> kg·m <sup>2</sup> |  |
| Max. allowable shaft load                | Radial                               | 50N                                    |
|  | Thrust                               | 30N                                    |
| Max. allowable speed                     | 3000rpm                              |  |
| Drive shaft allowable position deviation | Radial                               | 0.02mm TRIMAX                          |
|  | Thrust                               | 0.2mm MAX                              |
|  | Tilt angle                           | 0.1°MAX                                |
| Cable                                    | Material                             | Oil-resistant PVC(with shielded cable) |
|  | Nominal core cross section           | AWG28(0.08mm <sup>2</sup> )            |
|  | External diameter                    | Approx. 5.0mm                          |
| Weight                                   | Approx.180g(cable length 0.5m)       |  |

### Environmental requirements

|                         |  |
|-------------------------|--|
| Ambient temperature     | Operation temperature: -20~+100°C<br>Storage temperature: -25~+100°C |
| Ambient humidity        | 35~85%RH (non-condensing)  |
| Withstand voltage       | AC500V 1minute   |
| Insulation resistance   | ≥50MΩ (between power supply, signal line and body)                   |
| Vibration resistance    | Durable for 1h along 3 axes at 5 to 57Hz with 1.5mm amplitudes       |
| Shock resistance        | 11ms with 980m/s <sup>2</sup> applied 3 times 3 axes                 |
| Protection construction | Dust proofed:IP40  |

### Composition of model number

- KE: Fix
- I: Incremental
- 50: Outer diameter(mm)
- C: Series
- S: Solid shaft
- C: Conicity 1:10
- Protection construction blank: IP40
- 2048: Resolution
- SC: Sine-Cosine signal
- 0.5M: Cable length 0.5M
- 60: Panel string install size(mm)



### Electrical specifications

|                               |  |                       |
|-------------------------------|--|-----------------------|
| Type No.                      | KEI-50CSC  |                       |
| Power supply                  | Operating voltage  | DC 5V±0.25V           |
|                               | Allowable ripple   | ≤3%rms                |
|                               | Current consumption  | ≤100mA (without load) |
| Signal format                 | Sine-Cosine waveform   |                       |
| Max. response frequency       | 100kHz   |                       |
| Electric Max. allowable speed | (Maximum response frequency/Pulse)x60<br>(The encoder can not respond to revolution faster than the electric maximum allowable speed.) |                       |
| Direction                     | CW means clockwise revolution viewed from the plate spring.  |                       |
| Signal waveform Vp-p          | 0.5V±0.1V  |                       |
| R phase signal amplitude Vr   | ≥200mV   |                       |
| DC bias voltage Vdc           | 2.5V±0.3V  |                       |
| Waveform distortion           | ≤2%  |                       |
| Output current                | ≤10mA.   |                       |

### 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.
- The service life of the bearing is largely affected by the amount of load to the shaft. Try to reduce the load as much as possible.
- Do not disassemble the product.
- As the rotary encoder is composed of precision parts, its function will be impaired when it is subjected to shocks. Use sufficient care for handling and mounting.
- Avoid using this product in the following places: the place where there is excessive vibration and shock, the encoder may be damaged; the place where there are devices with strong magnetic and strong electrical interference; the place where there is flammable, corrosive gases, splashing water, oil and dusty; the place where the temperature and humidity exceeds the standard; the place where strong alkali and strong acid materials nearby; the place where receives direct sunlight.

