

ISQ-TS200K

## LED STROBOSCOPE OPERATION MANUAL



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EN -- Please scan the QR code or visit the website for operation manual.

IT -- Scansiona il codice QR oppure visita il sito web per il manuale d'uso.

CZ -- Pro návod prosím naskenujte QR kód nebo navštivte webovou stránku.

ES -- Por favor, escanee el código QR o visite la página web para ver el manual de instrucciones.

FR -- Veuillez scanner le QR Code ou visiter notre site web pour accéder aux manuels d'utilisation.

DE -- Bitte scannen Sie den QR-Code oder besuchen Sie die Website für die Bedienungsanleitung.

PT -- Para aceder ao manual de instruções, por favor, faça a leitura do código QR ou visite o nosso site.



MN-ISQ-TS200K-E

V0

## 1. Caution



### Warning

- ▶ To avoid malfunctioning of the instrument, use it within the voltage range specified for the product.
- ▶ Do not use the instrument in an environment with flammable or explosive gases.
- ▶ Do not disassemble, process, modify or repair the instrument without authorization, otherwise it may cause abnormal operation, electric shock or fire.
- ▶ Be careful not to let dust, wires, iron filings or other things enter into the instrument when it is in use, otherwise it may cause malfunction or failure.
- ▶ Please use a dry cloth to wipe the instrument, do not use alcohol, gasoline or other organic solvents to wipe, do not splash water on the instrument, if the instrument is immersed in water, please terminate the use immediately, otherwise there is a risk of leakage, electric shock or fire.



### Warning

- \* Do not look directly at the LED light to avoid eye damage.
- \* Viewing this stroboscope may trigger seizures in people with photosensitive epilepsy, please use with caution!

## 2. Introduction

Stroboscopes can emit short and frequent flashes of light. Adjust the strobe flashing frequency, when it is close to the rotation (or movement) speed of the object under test (or synchronization), it appears to be slow motion or relatively static with human eyes. People can easily observe the surface quality of high-speed movement of the object and the operating conditions with the stroboscope.

This stroboscope is a compact instrument, which is especially suitable for occasions where electricity is inconvenient and voltage is unstable. It is suitable for printing industry, paper making industry, textile industry, steel cold rolling, large generator, aluminum foil industry, machinery manufacturing industry and so on.

### Main features

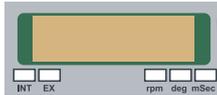
- Quick and easy operation with rotary encoder and adjustment button: double the frequency, halve the frequency.
- Adjust the LED flash frequency according to the rotational speed or cyclic movement frequency of the workpiece to make the workpiece appear stationary
- Measure the rotational speed or cyclic movement frequency of the workpiece without physical contact or reflective stickers
- External trigger mode allows automatic tracking with external sensors such as proximity switch (PNP-NO), Hall switch (PNP-NO), photoelectric switch, encoder etc.
- Adjustable brightness and single flash duration
- Built-in storage memory for flash frequency and parameter setting
- Low battery indicator

## SPECIFICATION

Code	DC type	ISQ-TS200K	ISQ-TS210K
	AC type	ISQ-TS200KA-P, ISQ-TS200KA-K, ISQ-TS200KA-B	ISQ-TS210KA-P, ISQ-TS210KA-K, ISQ-TS210KA-B
Range		50.0FPM~36000FPM; 1.00Hz~600.00Hz	50.0FPM~99999FPM; 1.00Hz~1666.7Hz
Resolution		0.1FPM (<10000FPM), 1FPM (≥10000FPM); 0.01Hz (<1000Hz), 0.1Hz (≥1000Hz)	
Unit		FPM, Hz	
Accuracy		±0.01%	
Trigger mode		internal trigger (F00), external trigger (F01, F02)	
Phase shift		range: 0°~359°, increment: 1° (only valid for F01 internal trigger mode)	
Light source		9 CREE LED lamps, lamp lifetime: 3~5 years	
Power supply	DC type	12.6V rechargeable Lithium battery	
	AC type	100V~240V, 50/60Hz	
Dimensions		200×100×120mm	
Weight		1350g	

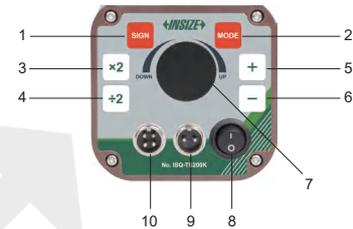
## 3. Key function

### 3.1 Display window



1.  Display window
2. INT Internal trigger mode indicator
3. EX External trigger mode indicator
4. rpm Light on: Flash rate per minute (FPM),  
Light off: Flash rate per second (Hz)
5. deg Phase delay indicator

## 3.2 Operation panel



1. "SIGN" key: Trigger Mode Key
2. "MODE" key: In Internal Mode: Press key to change the units of flash rate, from FPM to Hz; In External Mode: Press key to select external parameters
3. Double Key: Press key to doubler the flash rate
4. Halve Key: Press key to halve the flash rate
5. Plus key: Press key to change flash rate, Hold key to change flash rate fast
6. Minus key: Press key to change flash rate, Hold key to change flash rate fast
7. Rotary switch
8. Power key: On/Off
9. Battery Charging Socket (AC Power Input) Socket
10. External Trigger Socket

## 4. Operation

### 4.1 Trigger mode

The instrument has two trigger modes, internal and external. Pressing the "SIGN" key to switch the display between F00, F01 and F02. After selecting the mode, release the "SIGN" key, the instrument will be switched to the selected mode.

Select F00 to adjust the frequency manually, select F01 or F02, the external sensor can realize the auto-tracking function.

#### 4.1.1 Internal Trigger Mode

The internal trigger mode (F00) refers to the stroboscope internal stroboscopic signal, can be manually adjusted by adjusting the knob or key on the stroboscope operating panel to adjust the flash frequency, control stroboscopic flash.

#### 4.1.2 External Trigger Mode (F01, F02)

External trigger mode is provided by external sensors or controllers to provide pulse signals, stroboscopes flash according to the frequency of the signal to realize the automatic tracking function. There are two types of external trigger modes: F01 and F02.

External trigger mode F01: Flash once a sensor signal.

Phase Shift Function: (Only available in F01 mode)

Phase shift range: 0~359°, adjustment increment: 1°.

Press "MODE" key, "P ." will be displayed, at this time, you can change the data by key or adjusting knob, the data "0" means no offset delay.

Press "SIGN" key to exit and save.

External trigger mode F02:

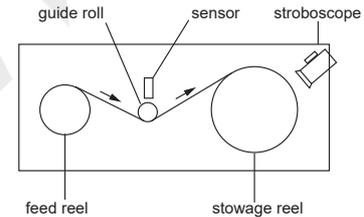
Flash rate determined by sensor signal and two parameters (C and d)

Press "MODE" key to select parameters.

Parameter "C" : length between two continuous sensor signals, units:mm

Parameter "d" : length between two continuous objects, such as printing pattern

Sensor installation reference



### 4.2 Frequency adjustment

Press +, - to add 1 or subtract 1.

Press x2, +2 to multiply or divide by 2.

Press and hold the +, - keys to add or subtract numbers quickly.

Adjust the rotary switch to change the number, clockwise to add, counterclockwise to subtract. The greater the angle of rotation within a certain period of time, the faster the change in the number.

### 4.3 Frequency unit conversion

Select internal trigger operation mode (F00), press "MODE" key, the unit will switch between revolution/minute (rpm) and times/second (Hz), press "SIGN" key to save and exit the setting automatically.

#### 4.4 Estimating the Motion Pattern Frequency

When using the internal trigger operation mode (F00), if you do not know the frequency of the motion pattern, you can calculate it according to the following formula:

$$\text{Frequency } n = (v/d) * 1000$$

- n: Stroboscope internal trigger frequency, unit: times/minute;
- d: the distance between two consecutive identical printed patterns, i.e., the starting position of the first pattern to the starting position of the second pattern, unit: millimeter;
- v: the running speed of the machine, unit: meters/minute.

#### 4.5 Single working time setting

The single working time is the working time from when the strobe starts flashing to when it automatically stops flashing. If there is any operation during this period, the working time will start again. The specific setting method is as follows:

- Turn off the power of the stroboscope, press and hold the "MODE" key and turn on the power switch of the stroboscope;
- Wait for the display to show "t \*\*\*\*" and release the "MODE" key, the display will show the last set single working time, the maximum value is 9999, the unit is seconds;
- Press + key, - key or turn the adjusting knob to modify the data to the desired time value;
- Press the "MODE" key, the stroboscope automatically saves the data and enters the normal working state.

Note: When the flash is stopped, the screen displays "PAUSE" character, at this time press any one of the keys or turn the adjustment knob, the stroboscope enters the normal working state. If you do not need to stop the flash, you can set the single working time to 0.

#### 4.6 Single flash duration adjustment

The length of the strobe's flash duration and the relative brightness of the light affect the clarity of the image. The longer the flash duration, the blurrier the image. It is recommended that the stroboscopic flash brightness should be approximately 4 times the ambient brightness.

- The duration of a single flash can also be adjusted accordingly to the brightness of the strobe, the adjustment method is as follows:
- In the internal trigger mode (F00), press and hold down the "MODE" button, wait for the display to show "P \*\*", release the button;
  - Adjust the knob to modify the data, set the range of 8us~100us, the single flash time to the actual effect shall prevail, the data is too high is the observation of the image will appear ghosting phenomenon, the general value does not exceed 50us;
  - Press "MODE" key to exit and save the setting.

## 5. Socket introduction



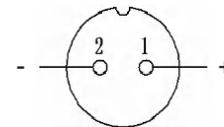
**Please use the original charging adapter or power cable with aviation plug, otherwise it may cause damage to the battery or cause accidents!**

#### 5.1 DC type power socket

DC type charging connector is a 2-pole aviation socket.

Pin 1: Positive power input

Pin 2: Negative power input



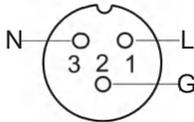
Caution:

1. The battery used in the stroboscope is lithium battery, the life span is generally about 300~400 times of charging and discharging, related to the use of habits, can not be over-discharged, in the stroboscope prompts "LLLLL", must be charged immediately
2. Charging must use the original charger, the charger's two-core plug corresponding to the charging port.
3. The charger indicator light is red to indicate that it is charging, when the battery is fully charged, the indicator light is green.
4. When the stroboscope display figures flashing, the battery voltage is close to the critical point, it is recommended to start charging the stroboscope.

**5.2 AC type power socket**

AC type power connector is a three-pronged aviation socket.

- Pin 1: AC L wire
- Pin 2: Ground wire
- Pin 3: AC N wire



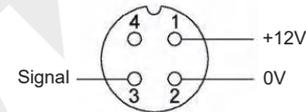
Attention:

1. AC power supply grounding is required for operator safety.
2. Please do not pull the power cord with force, which may break the welding of the aviation connector and cause accidents such as the equipment not working properly, short circuit of the power supply or electric shock to the operator.

**5.3 External trigger socket**

The external trigger signal is a 4-pole aviation socket:

- Pin 1: 12V DC power output pin, 12V power is provided by the internal stroboscope
- Pin 2: Signal ground input pin, common ground with 12V inside the strobe.
- Pin 3: Signal input pin
- Pin 4: Floating



Caution:

1. If the sensor power is supplied by an external power supply, connect only pins 2 and 3; if the sensor power needs to be supplied by a stroboscopic device, connect pins 1, 2, and 3;
2. If the trigger signal is supplied by an external controller (e.g., PLC), connect to pins 2 and 3 only;
3. Sensor interface type requires PNP normally open;
4. Pulse signal requirements: low level 0~0.7V, high level >2.7V (maximum 24V allowed), rising edge trigger, high level duration >20us.