Rotary Laser User manual





Introduction

Congratulations on your purchase of the K-Level Leveling Instrument.

This manual includes important safety guidelines to help you safely install and use the instrument. Please read the user manual carefully before using this product.

The model and serial number of the instrument are marked on the instrument's label. When contacting the dealer or K-Level service facility, please refer to this information.

This manual is applicable to the K-Level Laser Leveling Instrument series. It highlights and describes the differences between various models of the instrument.

- •The manual contains all the basic operations for the series od products, It provides an overview of the product's technical specifications and safety instructions.
- ·Follow our company's public account to browse the electronic user manual.

Chapter

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1. Safety Guidelines

1.1 Overview

The following safety instructions define the responsibilities of the product owner, the user, and how to prevent and avoid hazardous operations. It is imperative that all instrument users are aware of and adhere to these regulations or instructions.

Before Use:

- •This product can emit a laser horizontal plane or align using a laser.
- •The laser beam can be detected by a laser detector.
- •The product can be remotely controlled.
- •Operate the instrument according to the manual.

Operating Environment: The instrument's environmental requirements are similar to those that humans can tolerate: it is not suitable for use in corrosive, flammable, or explosive environments.

Foreseeable misuse of the device:

- •Using the instrument contrary to the manual's instructions.
- •Using the instrument beyond its intended purpose and scope.
- •Opening, repairing, or modifying the instrument with tools like screw-drivers outside of the specific permitted scope.
- •Continuing to use the instrument when it has obvious damage or defects.

1.2 Warnings

If the instrument is misused, the following situations may occur:

- •If the polymer components burn, toxic gases that may be harmful to health can be released.
- •If the batteries are damaged or overheat, it may cause burning, explosions, corrosion, and environmental pollution.
- •Only a qualified service department authorized by the manufacturer is allowed to repair the product.
- •Continuing to use the product after attempting repairs on your own can lead to problems.

•If the instrument has been subjected to impact, misuse, modifications, long-term storage, or transportation, it should be inspected for potential incorrect measurement results.

1.3 Laser Category

The rotating laser built into the product produces a visible laser beam, which originates from the rotating laser head. The laser products described in this section are classified as Class 2 laser products according to the following standard: IEC 60825-1 (2014-05): "Safety of laser products."

These standards specify the general requirements and safety measures for laser products, including the radiation power limits and requirements for radiation safety. Laser devices need to meet these standards to ensure safety during operation and use.

Description	Value
Maximum radiant power peak	2.6 mW \pm 5%
Pulse duration (effective)	1.4 ms 1.0 ms 0.7 ms
Pulse repetition rate	10,RPS
Beam divergence	0.2 mrad
Wavelength	635 nm/515 nm

1. 4 Precautions

- Interference generated by electromagnetic radiation may cause measurement errors. In such environments, it is advisable to check whether the measurement results are reasonable.
- When using the remote control mode, unrelated targets may be measured. It is recommended to frequently check the measurement results when operating in remote control mode.
- If accessories are not securely connected to the instrument or if the device suffers physical impacts (such as from wind or falls), this may lead to device damage or personal injury.

2. System Description

2.1 Overview

The laser leveling instrument is a laser tool used for general construction and for applications requiring horizontal and vertical alignment.

• Setting up the horizontal/vertical plane

Checking levelness
 Controlling excavation depth
 If within the automatic leveling range, the instrument will automatically create an accurate laser horizontal (or vertical) plane.

Once the instrument is leveled, the laser head will start to rotate, allowing the instrument to operate.

2.2 Setup Location

- **Location** Ensure there are no potential obstructions or reflections of the laser beam.
 - Place the instrument on stable ground; vibrations and extreme winds can affect operation.
 - In very dusty environments, position the instrument upwind so the dust can be blown awav.

Set up an instrument on a tripod

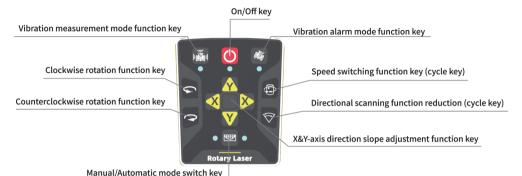


Steps	Description
1.	Setting up the instrument on a tripod
2.	Setting up the tripodPlace the instrument on the tripod.
3.	Tighten the tripod screws to prevent the instrument from falling off.

- Secure the instrument firmly on the tripod or on a stable horizontal surface.
- If the tripod has chains, they should be loosely tied to prevent expansion due to heat.
- In windy conditions, the tripod needs to be secured.

3. Operation

3.1Panel



3.2 Key description

- On/Off key
 Control the switch status of the instrument
- Switch status indicator light

When the light is on, the instrument is in the power-on state. When the light is flashing, the instrument is in the state of low power supply voltage and needs to charge the rechargeable battery on the machine.

 Speed switching function key (cycle key)

Speed from low to high is divided into 4 gears, 0、300、600、900rpm, 600rpm is default while power-on.

Directional scanning function reduction (cycle

key) The scanning width is divided into 4 gears from small to large, 0°、15°、45°、90°

 Clockwise rotation function key

When the laser point is in a stopped or directional scanning state, the laser point can be controlled to move in a clockwise direction.

Counterclockwise rotation function key

When the laser point is in a stopped or directional scanning state, the laser point can be controlled to move in a counterclockwise direction.

 X&Y-axis direction slope adjustment function key

When the instrument is in the manual mode, it can be used for X or Y-axis direction sloping function.

 Manual/Automatic mode switch key

To control instrument in manual mode or in automatic leveling mode.

Right) Leveling indicator light

When the light flashes, the instrument is not leveling. The light is on and not flash, the instrument is in a leveling state.

 Left) Manual mode indicator light

When the light is off, the instrument is in automatic mode. The light is always on and the instrument is in manual mode.

(When the left and right lights flash alternately, it means the instrument exceeds the auto-leveling range.)

Vibration measurement mode function key

Press to enter the vibration measurement mode.

 Vibration measurement mode indicator light

When the light is on, the instrument is vibration measurement mode. When the light is off, the instrument is out of vibration measurement mode.

 Vibration alarm mode function key

The instrument enters the vibration alarm mode when pressed.

 Vibration alarm mode indicator

When the light is on, the instrument is in vibration alarm mode. When the light is off, the instrument is out of vibration alarm mode. When the light is flashing, the instrument is alarming.

3.3 Horizontal Measurement

Put the instrument on the tripod, or place it on a stable plane, or hang it on the wall. The instrument is basically vertical and the tilt is not more than 5°.

3.4 Vertical Measurement

Place the instrument on a stable plane with the tilt not exceeding 5°.

3.5 Power Operation

Press the ON/OFF key "", the ON indicator lights up, and the automatic leveling function is starts. The ON/OFF indicator flashes, indicating that the battery voltage is insufficient. At this time, the rechargeable battery should be charged on the machine. To turn off the instrument, press the ON/OFF key " " again, the ON status indicator will turn off and the instrument will be turned off.

3.6 Leveling instruction

Press the on/off key " ", the automatic leveling function starts, the laser beam flashes. After finishing the automatic leveling, the laser beam stops flashing, and the laser rotates at a speed of about 600r.p.m. If the instrument is not properly placed, or if the instrument tilts more than 5° for other reasons, the manual/automatic leveling mode indicator light and laser beam flash at the same time, the instrument should be relocated.

3.7Rotating

(1) Rotation state

Press the scanning acceleration key " " to adjust the rotation speed of the laser head. Press this key continuously, the laser head change speed 0-300-600-900r.p.m accordingly.

(2) Single-step rotation state

Press the scanning acceleration key to 0rp.m, the laser stops rotating. At this time, press the right-hand button " ", the laser rotate clockwise step by step. Press the left-hand button " the laser rotate counterclockwise step by step.

3.8Directional scanning

(1) Press the scan acceleration key to 0r.p.m, and the laser stops rotating.

(2) Press the directional scanning key " , and the laser head directional scan. Press this key continuously, and the scanning width of the laser head will change according to 0°-10°-45°-90°.

(3) Press the right-handed key or left-handed key to rotate the scanning direction.

3.9 Tilt setting

When this instrument is placed vertically for horizontal scanning, it can be set the tilt in the X and Y directions.

Press the manual/automatic leveling mode key "□", the manual/automatic level→ x1 ing mode indicator light is on, and enter the tilt setting.

(1)Set the tilt in the X direction

A.As shown in the illustration below, aim the X1 of the instrument in the direction where the tilt needs to be set.

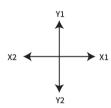
B.Press the "\=" or "\=" button to move the laser beam up or down.

(2) Set the tilt in the Y direction

A.Aim the Y1 of the instrument in the direction where the tilt needs to be set.

B.Press the "
" or "
" button to move the laser beam up or down.

(3) Then press the manual/automatic leveling mode key, set the indicator light to turn off, exit the tilt setting mode, and enter the automatic leveling mode.





4. Remote control

RC100



- With power switch
- Two-way communication, remote control
- Independent function buttons, easy to operate
- Usage distance≥150m
- Real-time function indicator, quickly understand the Main Machine working status
- No. 5 alkaline battery



RC200



- Two-way communication, long-distance control
- Independent function buttons, easy to operate
- Usage distance≥300m
- Real-time function indicator light, quickly understand the working status of the Main machine
- With a power button, understand the working status of the Main machine at any time
- Built-in lithium battery pack, super long working time
- Rubber-coated design, better resistance to falling



RC300



- LCD Screen, more convenient slope setting
- Two-way communication, long-distance control
- Independent function buttons, easy to operate
- Usage distance≥300m (Usage distance≥500m with KRL-840)
- Real-time function indicator light, quickly understand the working status of the Main machine
- With a power button, understand the working status of the Main machine at any time
- Built-in lithium battery pack, super long working time
- Rubber-coated design, better resistance to falling





RC300 LCD remote control instructions

X-axis horizontal angle indication

Y-axis horizontal angle indication

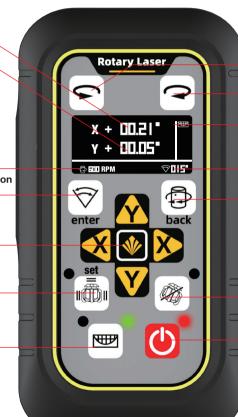
Speed indicator

Directional scanning function reduction (cycle key)

X&Y-axis direction slope adjustment function key

Vibration measurement mode function key

Manual/Automatic mode switch key



Clockwise rotation function key

Counter clockwise ratation function key

Manual automatic indication

Scanning angle indication

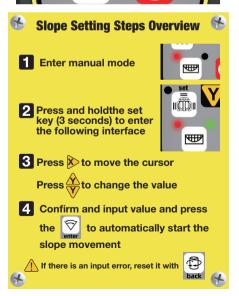
Speed switching function key(cycle key)

Vibration alarm mode function key

On/Off key

Enter the slope setting display interface





5. Power supply System

5.1 Charging



When the power supply voltage indicator light on the control panel is on, the battery should becharged in time. Connect the charger power plug into the AC power supply, and plug the chargerinto the charging socket on the bottom of the instrument (as shown in the above left illustration)

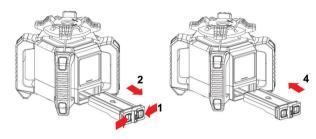
The charging indicator light is red, indicating that the product is being charged.

The charging indicator light is green, indicating that the product has been charged completely.

Tips

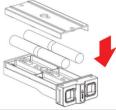
- It needs about 7 hours to charge original rechargeable battery of instrument completely.
- Adaptation range of charger AC power supply voltage: Hertz:50-60HZ, voltage 85V-265V.
- This instrument can be used while charging.
- When the instrument is stored (not used for a long time), take the battery (rechargeablebattery) out.
- New batteries or batteries that have not been used for a long time should be repeatedlycharged three times to reach the specified capacity.

5.2 Replacing the Lithium Battery Pack



Steps:	Description	
1	Pinch the slider at the front end of the battery pack.	
2	Pull out (a spring will eject the battery pack outward).	
3	Remove the lithium battery pack.4.	
4	Push the lithium battery pack towards the battery compartment until it clicks into place, automatically locking.	

5.3 Replacing a Single Lithium Cell



Steps:	Description
1	Use a special screwdriver to unscrew the screws on the battery box.
2	Remove the battery.
3	Insert the new battery correctly according to the positive and negative orientations.

6. Receiver

LP500



Rubber-coated design, better resistance to impact

Strong magnetic design on the top, Function keys better usability

- I Usage distance≥500m (with K-LEVEL rotary laser)
- I Usage distance≥300m (with other rotary laser)
- I Equipped with a clamp
- I No.5 alkaline battery















LP700



- I Rubber-coated design, better resistance to impact
- I Strong magnetic design on the top, better usability
- I Usage distance≥400m (with K-LEVEL rotary laser)
- I Usage distance≥300m (with other rotary laser)
- I Equipped with a clamp
- No.5 alkaline battery
- I Display the distance





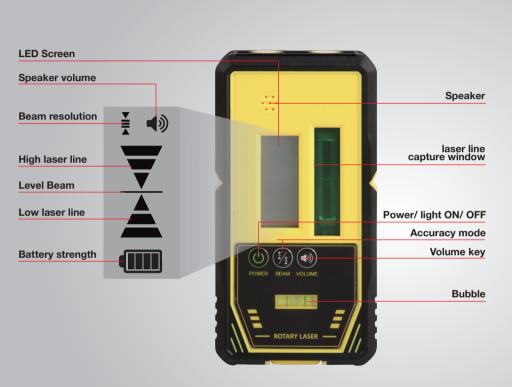


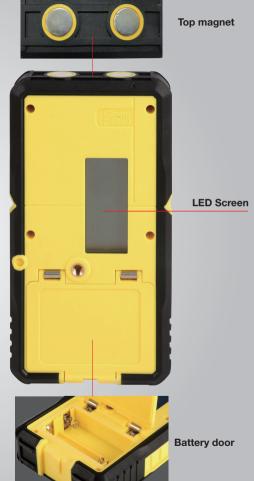












PRODUCT DESCRIPTION

The LP500 laser detector is useful for locating the red (or green) laser line generated by a rotating laser under conditions where the laser line is not very visible, such as in strong light or during outdoor use.

This unit can be preset to detect the laser line at distances of up to 300 meters, with a sensitivity range of less than ±1.5 millimeters at 30 meters. It features three types of audible alarm tones to assist in aligning the laser beam.

SAFETY INSTRUCTIONS

Ensure that the batteries are used.

Ensure the batteries are inserted in the correct manner, with the correct polarity.

OPERATION

- 1. Turn on the instrument by pressing the Power ON/OFF pad.
- 2.Expose the beamcapture window of the laser detectortowards the direction of the Laser Line.
- 3. Slowly move the laser detector in an upward and downwarddirection until the LCD beam indicator arrows appear and/or apulsing audio signal is heard.
- 4.Move the detector downward when the highlaser LED is lit (With volume on, a slow pulsing audio tone is heard). Move thedetector upward when the low laser LED is lit (With volume on, arapid pulsing audio tone is heard). When the line is level, thelevel beam LED will be lit (With volume on, a solid audio tone willbe heard).

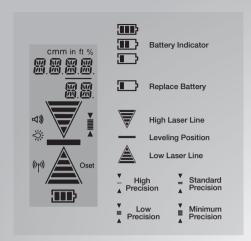
If the detector does not detect a pulse laser line after 1minutes, the detector will shut lights off, after 10minutes, the detectorwill automatically shut itself off to preserve battery life. Turn theinstrument back on using the power button.

Press the light ON/OFF pad to open or close the lights

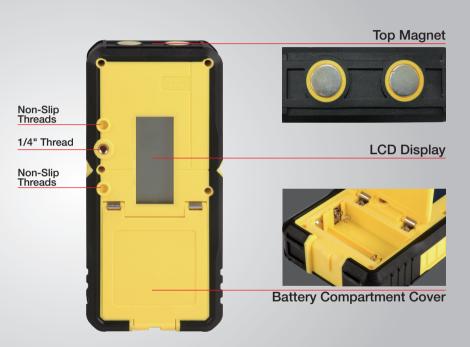
Press the Power ON/OFF pad to shut the instrument off.

Specifications

Dimensions	Weight	Bandwidth Sensitivity	Receive range	Readout	Power
140mmx70mmx26mm	145g (without battery)	Fine ±1mm Coarse +1.5mm	300m	LED screen two sides	Two AAA batteries









Power Button

- 1.Short press the
- 2. Short press while powered on to toggle the backlight
- 3. Press and hold of for ≥3 seconds.



High-low precision switch button

- 1. The default startup precision is high precision, Display: -
- 2.Press the Precision Button to switch to Low Precision, Display:

 ▼
- 3. Press again to cycle back to High Precision



Volume shift button

- 1.The default startup volume is high volume, Display:
- 2. Press the Volume Button to switch to Low Volume, Display:
- 3. Press again to mute, Display:
- 4. Press again to cycle back to High Volume

Precision red laser

Ensure the battery compartment's center aligns with the sticker's center (tolerance: ±1mm)

Distance	Precision	
Distance	High precision	Low precision
40m	1.2mm ±1mm	2.4mm ±1.5mm
300m	Reception stabilization	Reception stabilization
Leveling accuracy (high)	1mm	
Leveling accuracy (normal) 2mm		ım
Leveling accuracy (low)	5mm	
Leveling accuracy (lowest)	lowest) 10mm	
Laser receiving window width	135mm	
Working radius	350m	

30m digital range measurement +50~-50mm 100mm±3mm

Power ON/OFF





- 1. Press the power button to turn on the detector
- 2. Upon startup, the LCD will briefly display all icons for functionality check (Allow checks to ensure the LCD is working properly)
- 3.Hold for >3 seconds to turn off the detector

Unit/ Precision









Metric millimeter	Imperial inches (Display as decimal)	Imperial inches (Display as fraction)
1mm	0.05in	1/16
2mm	0.10in	1/8
5mm	0.20in	1/4
10mm	0.50in	1/2

Buzzer



- High volume
- Low volume
- No sound

Zero Calibration



Press the SET Button within the receiver range (numeric display) to set the current laser position as the default zero point.

7. Accuracy Adjustment

Overview

Users need to perform accuracy checks on the leveling instrument according to the operating instructions.

The instrument is adjusted to precise accuracy before leaving the factory. However, it is still recommended to check the accuracy of the laser and to conduct regular checks thereafter to ensure the accuracy of the precision. If the leveling instrument requires adjustment, please contact the nearest authorized service center or use the procedure described in this chapter to adjust the laser.

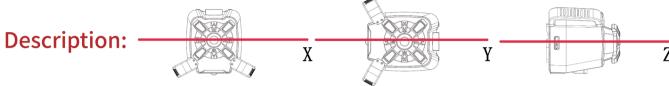
This process should ideally be performed by two people on a relatively flat surface.

7.1 Horizontal Accuracy Check

Steps	Description
1	Place the instrument on a flat horizontal surface or tripod approximately 30 meters away from a wall.
2	Align the first axis so that it is vertical to the wall, allowing the instrument to level automatically.
3	Mark the position of the beam.
4	Rotate the leveling instrument 180° and allow it to level automatically.
5	Mark the opposite position of the first axis.
6	By rotating 90°, align the instrument's second axis so that it is vertical to the wall.
7	Mark the position of the beam.
8	Rotate the leveling instrument 180° and allow it to level automatically.
9	Mark the relative value of the second axis.

 $extcolor{line}{f G}$ If all four marks are within ± 1.5 mm from the center point, the leveling instrument is within specifications.

7.2 Horizontal Accuracy Adjustment



Entering adjustment	Steps:	Description:
mode:	1.	Turn on the instrument power.
	2.	Wait for the instrument to level automatically.
	3.	Press the auto/manual toggle button to enter manual mode (the red indicator light on the left side of the button will light up).
Entering X-axis adjust-	Steps:	Description:
ment:	1.	Align the X-axis of the instrument with the calibration equipment or the target.
	2.	Adjust the laser beam height using the adjustment button" 🚺 " " 🚺 "
	3.	After completing the adjustment, press and hold " a "(vibration alarm key) for 5 seconds. The indicator light will flash 3 times, signaling the end of the adjustment.
Entering Y-axis adjust-	Steps:	Description:
ment:	1.	Align the Y-axis of the instrument with the calibration equipment or the target.
	2.	Adjust the instrument beam left and right through the case" ← " " → "
	3.	After completing the adjustment, press and hold "a "(vibration alarm key) for 5 seconds. The indicator light will flash 3 times, signaling the end of the adjustment.
Entering Z-axis adjust-	Steps:	Description:
ment:	1.	Align the Z-axis (with the instrument laid horizontally) with the calibration equipment or the target.
	2.	Adjust the laser beam height using the adjustment button.
	3.	After completing the adjustment, press and hold " 1 " " 1 " (vibration alarm key) a for 5 seconds. The indicator light will flash 3 times, signaling the end of the adjustment.

8. Fault Diagnosis

Warning:

Warning	Identification	Possible Cause and Solution	
Low battery LED indicator is flashing red.		Low battery power.Replace the lithium-ion battery pack. See "Page 12, Replacing the Battery."	
The vibration alarm LED is flashing, and the device is emitting a "beep" sound.		The instrument was bumped, or the tripod has moved. Turn off the vibration alarm, check the laser height, and then restart the operation.	
• •	The leveling alarm LED is flashing alternately, and the device is emitting a "beep" sound.	The instrument has tilted too much. Within the 5° automatic leveling range, the instrument will automatically re-level.	

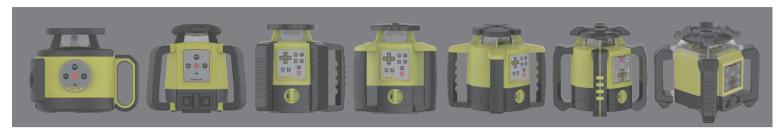
Troubleshooting:

Issue	Possible Cause	Suggested Solutions
The instrument is working but is not leveling automatically. The instrument is in manual mode.		The instrument must be leveled in automatic mode. Press and hold the auto/manual mode button to switch to automatic mode.
The instrument is not turning on.	The battery is low or depleted.	Check the battery, and if necessary, replace or recharge the battery.
The laser range of the leveling instrument is reduced.	The laser range of the leveling instrument is reduced.	Clean the windows of the instrument and receiver. If the problem persists, contact an authorized Tianhui Electric service center.
The lease reasiner is	The instrument is not rotating, or it's leveling and in vibration alarm mode.	Check whether the instrument works properly
The laser receiver is not working properly.	The range the receiver can use.	Move closer to the instrument.
8 6 7 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	The receiver's battery is low voltage.	Replace the receiver's battery.

9. Product family description

			_		_						
Laser type	KRL-305	KRL-310	KRL-320	KRL-340	KRL-405	KRL-410 KRL-420	KRL-440	KRL-520	TRL-540	KRL-640	KRL-840
Marral an atta	515nm 515nm(Upper)		515nm (Upper/Lower) 515nm		515nm(Upper)		515nm(Upper/Lower)				
Wavelength	635nm	635nm 635nm(Upper)		635nm (Upper/Lower)	635nm (Upper)			635nm(Upper/Lower)			
Leveling way	Electronic leveling										
Leveling range	±5°										
Leveling accuracy	±0.5mm/10m ±0.25mm/									m/10m	
Working radius											
UsingLP500 radius	≥500m										
UsingLP700 radius	≥400m										
Working temperature	-10°C-+50°C										
Main unit operation	4 keys /5 lights 12 keys /5 lights				4 keys	/5 lights	12 keys /5 lights				
Remote control operation	12 keys /5 lights										
Remote control distance	≥150m ≥500m										
Laser rotation speed	0/300/600/1000 rpm				0/30	00/600/1000/1500 r	0/150/300/600 rpm				
Area scan	15°/45°/90°/180°										
Tilt setting	Two-way										
Power supply method	Lithium/Direct supply										
Lithium working time	36H(Red laser)/30H(Green laser)										
Calibration method	Remote control /APP										
Size(mm)		Length:232 Width:168 Height:179	Length:237 Width:204 Height:217		Width:189	Length:232 Length:201 Width:189 Width:215 Height:227 Height:232	Width:215	Width:204	Width:215	Length:217 Width:217 Height:244	Width:227

9.1 Configuration details



Laser type	KRL-305	KRL-310	KRL-320	KRL-340	KRL-405	KRL-410	KRL-420	KRL-440	KRL-520	KRL-540	KRL-640	KRL-840
Horizontal	J	√	J	√	1	J	1	J	J	J	√	√
Vertical	-	√	J	√	-	J	J	J	\checkmark	J	\checkmark	√
Receiver	LP500	LP500	LP500	LP500	LP500	LP500	LP500	LP500	LP500	LP500	LP500	LP500
Clamp	J	√	J	J	J	√	√	1	\checkmark	J	\checkmark	\checkmark
Remote control	RC100	RC100	RC100	RC100	RC100	RC100	RC100	RC100	RC200	RC200	RC200	RC200
Lithium battery	4 lithium batteries	4 lithium batteries	-	-	-	-	-	-	-	-	-	-
Lithium battery pack	-	-	1	√	√	1	1	1	√	√	√	√
Electric charger	J	√	J	√	J	1	√	1	\checkmark	J	J	\checkmark
Charging Cable	J	√	J	√	√	J	√	√ √	J	√	J	\checkmark
Protective goggles	J	V	J	√	J	J	J	J	J	J	J	J
User manual	√ √	1	J	√	1	J	J	J	√	√	√	V

Note:

- ·The above describes the standard configurations for each model at the time of shinment.
- ·LP700, Rc200, and RC300 are optional (please inquire with a K-Level authorized dealer for optional configurations).
- ·The right ofinterpretation belongs to the company.

10. Transportation and Storage

Field Transportation

- Field Trans- Place the instrument in the original K-Level.
 - When transporting the instrument with a tripod, carry the tripod on your shoulder with the instrument held upright.
 - When transporting the instrument by vehicle, the instrument case must be used to prevent damage from impact and vibration.
 - Always use the original instrument case to fix and protect the instrument during transportation.

Storage

- When storing the instrument, especially during summer when it's stored in vehicles or other transport tools, be mindful of the temperature limitations. Refer to the "Technical Specifications" for information on temperature limits.
- After long-term storage, the instrument should be checked and calibrated according to the user manual before use.
- Remove the battery from the instrument and charge it before storage.
- After storage, recharge the battery before use.
- It is recommended to store the battery in a dry environment at 0°C to +30°C (32°F to 86°F) to minimize self-discharge.

11. Warranty

First of all, thank you for choosing our product. We will provide you with one year of free maintenance service. The warranty period takes effect from the month of purchase, and the following conditions apply:

1. The warranty covers only faults related to the product itself, such as functional issues or remote control failure.

2.If the user disassembles the product without authorization, resulting in any quality issues (including tampering with the serial number) or damage, the company will not provide warranty service.

3. The warranty claim must include a detailed description of the fault on the warranty form, and the warranty form must be signed and stamped by the dealer to be valid.

4. For repairs during the warranty period, please present this warranty form and proof of purchase.





(26) 181 1233 4566

