



**INSTRUCTION MANUAL
REMOTE CONTROL SYSTEM 4**

RC-4

Foreword

Thank you for purchasing the TOPCON RC-4 Remote control system-4.

For the best performance of the instrument, please read these brief instructions carefully, and keep them in a convenient location for future reference.

This system has the following features:

- Enables wireless communications between a built-in wireless total station (TS 9 series) / imaging station IS / Quick station QS (hereafter referred as "TS/IS/QS") and an RC-4R on the prism side, which allows one-man survey with the use of a data collector.
- Has the turn-round function with which more efficient one-man survey is possible.

Turn-round motions

Refer to "Light Emitting Angle" on page 16 and "Light Detecting Range" on page 17.

RC-4R should be kept aiming so that the TS/IS/QS always stays within the above range of laser beam emission until the turn-round motions are completed.

If the aiming is out of above range while RC-4R is in turn-round motions, the turn-round could not be completed.

▶ **Trademark**



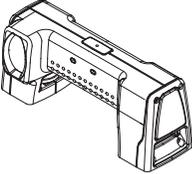
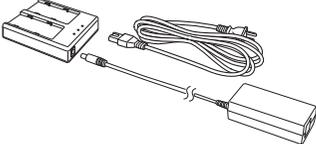
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Standard Package Components

The numerical value in parentheses shows the quantity.

<p>RC-4H (1)</p> 	<p>RC-4R (1)</p> 
<p>Battery BT-66Q (1)</p> 	<p>Battery charger BC-30D (1) [AC/DC Converter AD-14(1), AC-Cable (1)]</p> 
<p>Silicon cloth (1)</p> 	

- Make sure that all of the above items are with the instrument when purchased.

Precautions for Safe Operation

For the safe use of the product and prevention of injury to operators and other persons as well as prevention of property damage, items which should be observed are indicated by an exclamation point within a triangle used with WARNING and CAUTION statements in this instruction manual.

The definitions of the indications are listed below. Be sure you understand them before reading the manual's main text.

Definition of Indication

	WARNING	Ignoring this indication and making an operation error could possibly result in death or serious injury to the operator.
	CAUTION	Ignoring this indication and making an operation error could possibly result in personal injury or property damage.

-  This symbol indicates items for which caution (hazard warnings inclusive) is urged. Specific details are printed in or near the symbol.
-  This symbol indicates items which are prohibited. Specific details are printed in or near the symbol.
-  This symbol indicates items which must always be performed. Specific details are printed in or near the symbol.

General

Warning

-  Do not perform disassembly or rebuilding. Fire, electric shock or burns could result.
-  Do not use the unit in areas exposed to high amounts of dust or ash, in areas where there is inadequate ventilation, or near combustible materials. An explosion could occur.
-  Risk of injury by falling down the instrument or case.
Do not use a carrying case with a damaged which belts, grips or latches.
-  It could be dangerous if the instrument falls over, please check that you fix the handle to the instrument.

Power Supply

Warning

-  Do not short circuit. Heat or ignition could result.
-  Do not use voltage other than the specified power supply voltage. Fire or electrical shock could result.
-  Do not use damaged power cords, plugs or loose outlets. Fire or electric shock could result.
-  Do not use power cords other than those designated. Fire could result.
-  Do not place articles such as clothing on the battery charger while charging batteries. Sparks could be induced, leading to fire.
-  Use only the specified battery charger to recharge batteries. Other chargers may be of different voltage rating or polarity, causing sparking which could lead to fire or burns.
-  Do not heat or throw batteries into fire. An explosion could occur, resulting in injury.

-  Do not use the battery or charger for any other equipment or purpose. Fire or burns caused by ignition could result.
-  To prevent shorting of the battery in storage, apply insulating tape or equivalent to the terminals. Otherwise shorting could occur, resulting in fire or burns.
-  To reduce the risk of hazards, use only CSA/UL certified power supply cord set, cord is Type SPT-2 or heavier, minimum No.18 AWG copper, one end is provided with a moulded-on male attachment plug cap (with a specified NEMA configuration), and the other end is provided with a moulded-on female connector body (with a specified IEC non-industrial type configuration).
-  Do not use batteries or the battery charger if wet. Resultant shorting could lead to fire or burns.
-  Do not connect or disconnect power supply plugs with wet hands. Electric shock could result.
-  Do not use batteries other than those designated. An explosion could occur, or abnormal heat generated, leading to fire.

 **Caution**

-  Do not touch liquid leaking from batteries. Harmful chemicals could cause burns or blisters.

Bluetooth wireless technology

 **Warning**

-  Do not use within the vicinity of hospitals. Malfunction of medical equipment could result.
-  Use the instrument at a distance of at least 22 cm from anyone with a cardiac pacemaker. Otherwise, the pacemaker may be adversely affected by the electromagnetic waves produced and cease to operate as normal.
-  Do not use onboard aircraft. The aircraft instrumentation may malfunction as a result.
-  Do not use within the vicinity of automatic doors, fire alarms and other devices with automatic controls as the electromagnetic waves produced may adversely affect operation resulting in an accident.

Laser safety

 **Warning**

-  Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This product uses the invisible laser beam to communicate. This product is manufactured and sold in accordance with “Performance Standards for Light-Emitting Products” (FDA/BRH 21 CFR 1040) or “Radiation Safety of Laser Products, Equipment Classification, Requirements and User’s Guide” (IEC Publication 60825-1) provided on the safety standards for laser beam.

As per the said standard, this product is classified as “Class 1 (I) Laser Products”.

This is simple a product to operating that is not required to training from a “Laser safety officer”.

In case of any failure, do not disassemble the instrument. Contact TOPCON or your TOPCON dealer.

Class 1 Laser Product

Invisible Laser Beam

TS/IS/QS series

The software must be of the correct version for your version of the TS/IS/QS series, otherwise the RC-4 will not function properly. Contact TOPCON or your TOPCON dealer for version information.

Precautions

Before starting work or operation, be sure to check that the instrument is functioning correctly with normal performance.

Battery level check

Confirm battery remaining level before operating.

Direct sunlight

Do not leave the instrument under strong sunlight for a long time. It may cause the instrument to malfunction.

Guarding the instrument against shocks

When transporting the instrument, provide some protection to minimize the risk of shocks. Heavy shocks may cause the measurement to be faulty.

Waterproof property

The instrument can not be submerged underwater.

RC-4 is designed based on the International Standard IP65 and RC-4H is designed based on the International Standard IP54, therefore it is protected from the normal rainfall.

Storing the instrument for long period

Remove the battery from the instrument when you would not use it for long period.

Maintenance

Always clean the instrument after use.

- If the instrument becomes wet from rain, dry moisture.
- To clean the instrument, dust off well and then wipe clean with a soft cloth.
- Remove the dust using a brush, then wipe off with a soft cloth.
For cleaning the lens surface of the receiving window, use a cleaning brush, then use a clean lintless cotton cloth. Moisten it with alcohol (or mixture with ether) to wipe gently in a rotational motion from the center out.
- To remove the dust on the surface of emitting window or the parts made by plastic, never use thinner or benzene. Use a clean cloth moistened with neutral detergent.

User

- This product is for professional use only!
The user is required to be a qualified surveyor or have a good knowledge of surveying, in order to understand the user and safety instructions, before operating, inspecting or adjusting.
- Wear the required protectors (safety shoes, helmet, etc.) when operating.

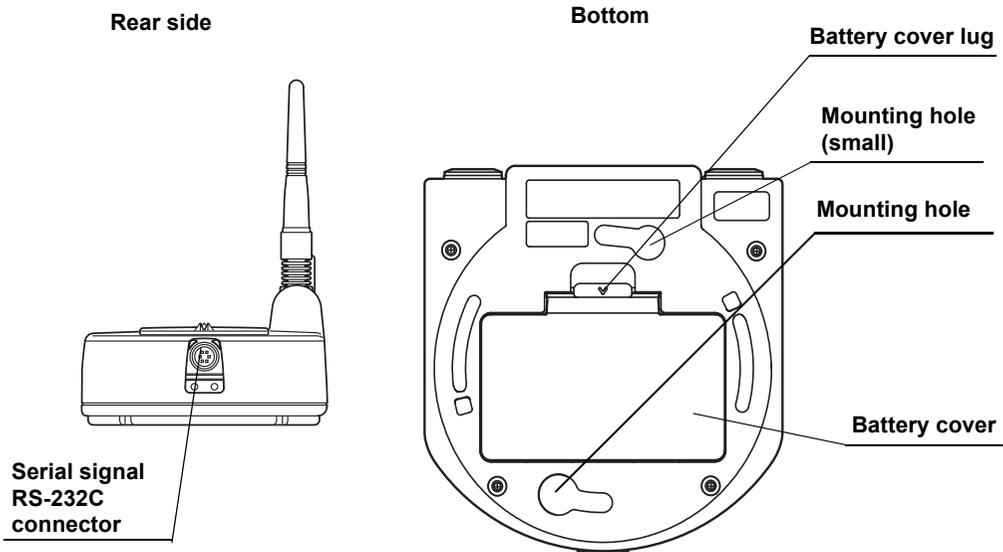
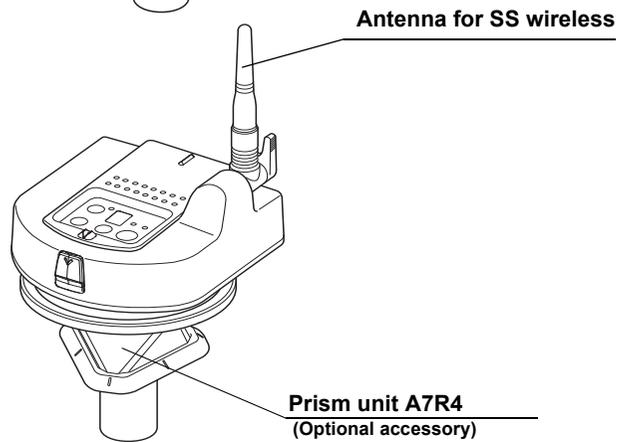
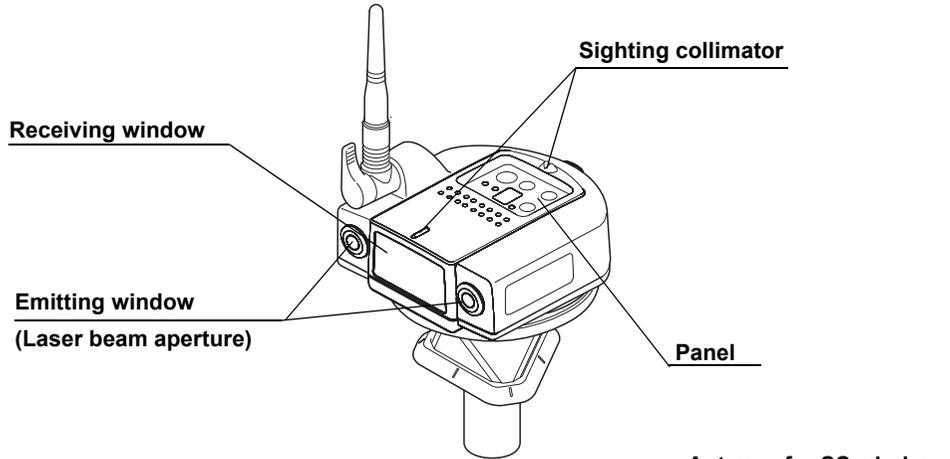
Exceptions from Responsibility

- The user of this product is expected to follow all operating instructions and make periodic checks of the product's performance.
- The manufacturer, or its representatives, assumes no responsibility for results of a faulty or intentional usage or misuse including any direct, indirect, consequential damage, and loss of profits.
- The manufacturer, or its representatives, assumes no responsibility for consequential damage, and loss of profits by any disaster, (an earthquake, storms, floods etc.). A fire, accident, or an act of a third party and/or a usage any other usual conditions.

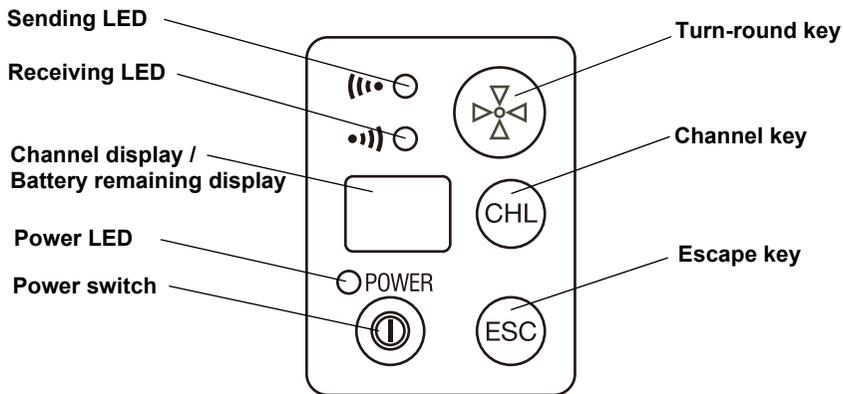
- The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits due to a change of data, loss of data, an interruption of business etc., caused by using the product or an unusable product.
- The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits caused by usage except for explained in the user manual.
- The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement, or action due to connecting with other products.

Nomenclature and Functions

Remote Controller RC-4R



Panel



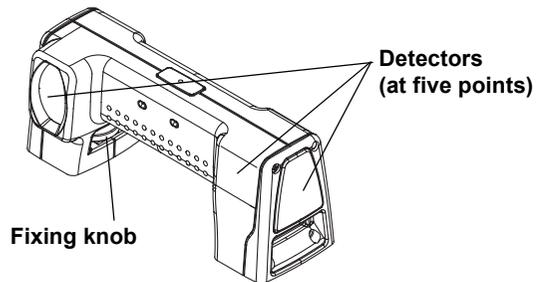
Key	Function
Power switch	ON/OFF of power of the RC-4R.
Turn-round key	TS/IS/QS will be in turn-round motion.
Escape key	Cancels the emitting laser for turn-round motion. The TS/IS/QS will stop the turn-round operation after continuing the motion for a while.
Channel key	Changes the transmission channels (Emitting laser for turn-round motion / SS-Wireless)

LEDs

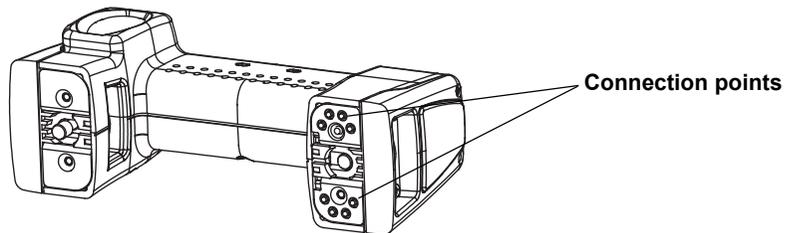
LED	Status	Contents
Power LED	On solid	The power of RC-4R is ON.
	Flash	The battery remaining of RC-4R is low. The battery should be recharged or replaced with a fully charged battery.
	Off	The power is OFF
Receiving LED	On solid	RC-4R is in the middle of data reception.
Sending LED	On solid	RC-4R is in the middle of data transmission.
	Flash	RC-4R is in the middle of turn-round command transmission.

Remote Controller Handle Unit RC-4H

Attaching the RC-4H to the TS/IS/QS, it enables the TS/IS/QS to do turn-round motions.



TS/IS/QS series carrying case is large enough to house the TS/IS/QS fitted with RC-4H.

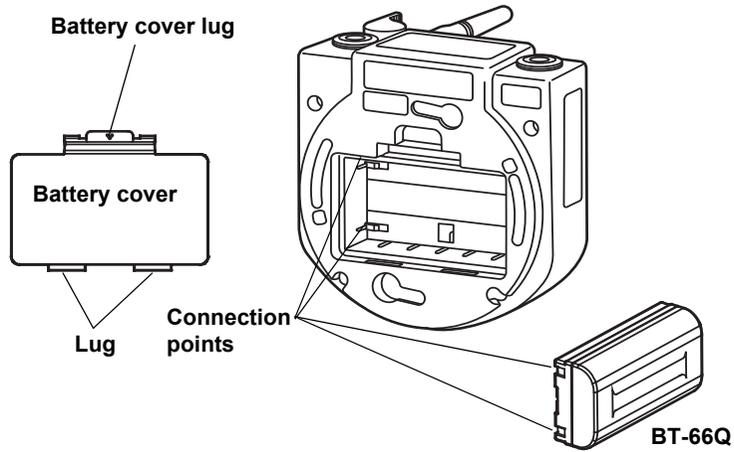


Do not damage or shock connection points. It may cause malfunction.

Preparation

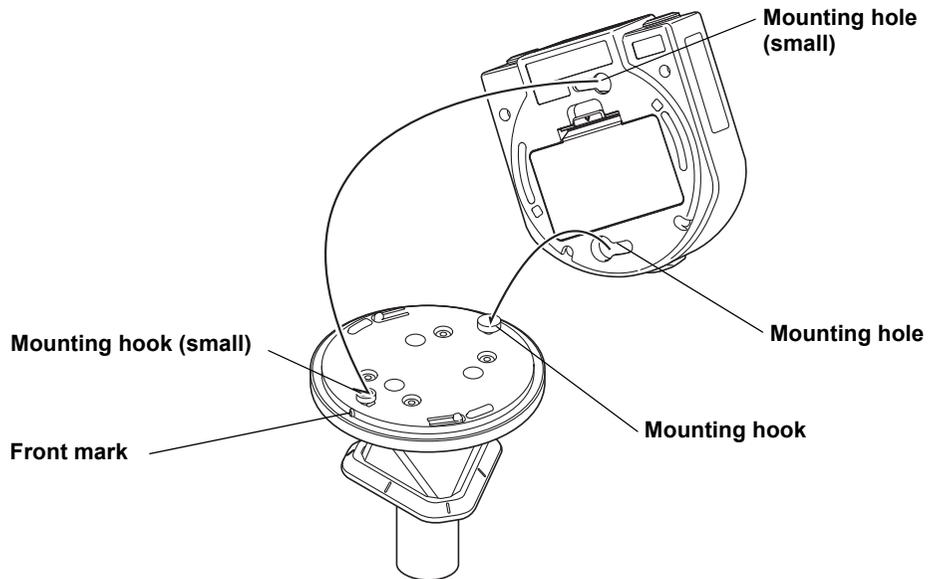
Battery Installation and Replacement

- 1 Push down the battery cover lug to unhook it, and remove the cover.
- 2 Insert Battery BT-66Q in the direction matching connection points as shown in the illustration.
- 3 Mount two lugs on the RC-4R.
- 4 Push the battery cover lug down until the cover is locked.

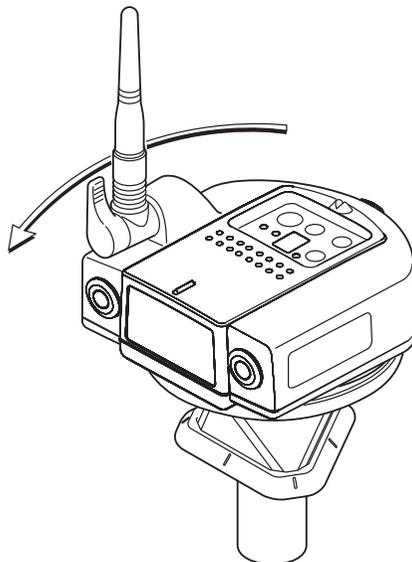


Installing RC-4R onto the Prism Unit A7R4

- 1 Match the receiving window with the front mark and insert the mounting hooks on the Prism Unit A7R4 into the mounting holes of the RC-4R.



- 2 Turn the RC-4R towards the front mark (until you hear a click).



Communication between the RC-4R and a Data Collector

Bluetooth communication

The *Bluetooth* module built-in the RC-4R enables wireless-communication with *Bluetooth*-compatible equipment.

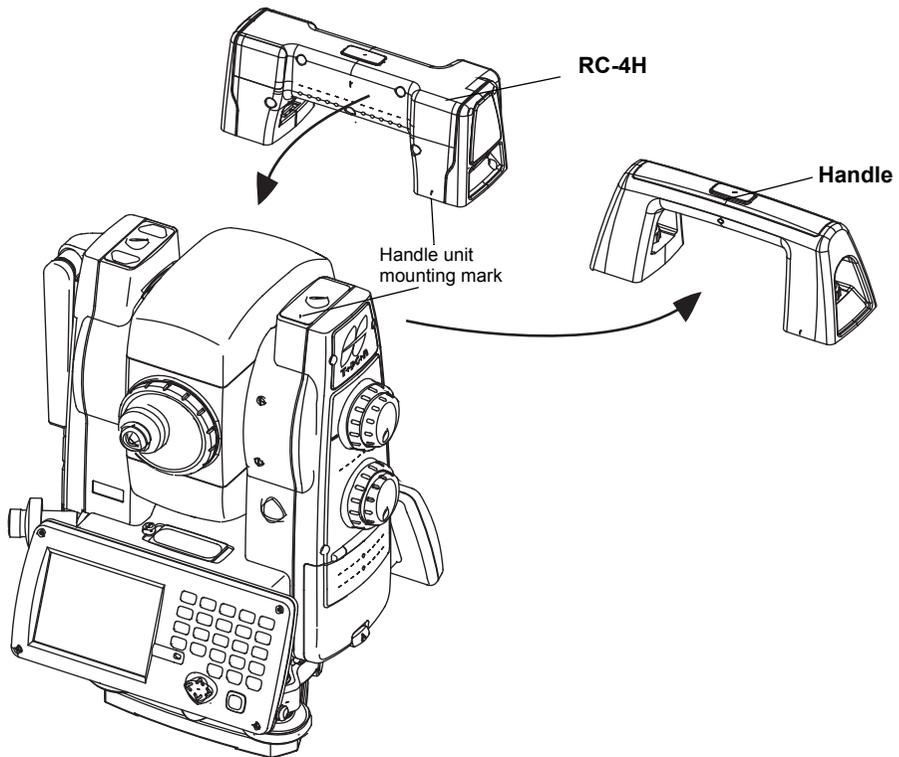
Serial signal connector

By connecting this connector to a PC or a data collector, it will provide the data transmission.

Mounting Remote Controller Handle Unit RC-4H onto the TS/IS/QS

If you wish to do turn-round motions, attach the remote controller handle unit RC-4H to the TS/IS/QS.

- 1 Dismount the handle from TS/IS/QS.



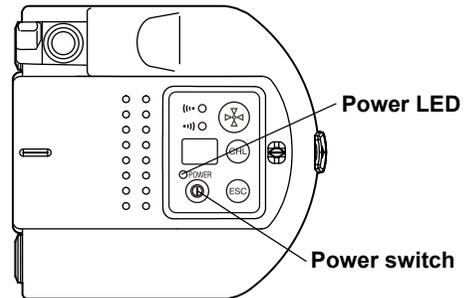
- 2 Match the handle unit mounting marks for the RC-4H and TS/IS/QS.
- 3 Make sure that the fixing knob is tightly fastened.

Note	Ensure that the power switch of TS/IS/QS is off when mounting RC-4H.
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Basic Operation

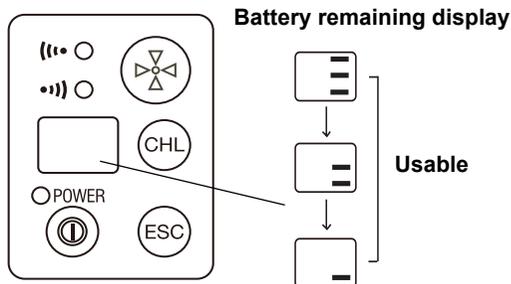
Power Switch ON

Press the power switch.
Power LED will light.



Battery Remaining Display

Push [ESC] key and the battery remaining capacity will be displayed for approximately 5 seconds.



Battery Warning Display for RC-4R

When the battery of the RC-4R is low, the power LED will flash with beep sound.
(Audio sound: Two pitches, frequent beep synchronized with power LED)
Confirm the battery remaining when turning on the instrument.
When the power LED is flashed with beep sound, replace or recharge the battery.

Battery Warning for TS/IS/QS series

When the battery power of TS/IS/QS in communication with RC-4R is low, the beep will sound from the RC-4R.
(Audio sound: Three pitches, frequent beep)
When the beep sounds, replace or recharge the batteries of TS/IS/QS.

Auto Power Off

If no key operation is given or no communication is performed for more than 30 minutes, the power turns off automatically.

Error Display

The RC-4R unit does not display errors.
Refer to the operation manual for the data collector and other software for details.

Setting for Communications with TS/IS/QS

The following settings is prerequisites for the communications to take place between the TS/IS/QS (or an application program) and RC-4R.

The same RC channel / SS Wireless channel must be assigned to both RC-4R and the TS/IS/QS.

With RC and SS-Wireless channels for the RC-4R, the parameters of the application software used for the FC-250 or PC may be prioritized. For further details, please refer to the instruction manual for your application software.

Setting Parameters in TS/IS/QS

Refer to the TS/IS/QS instruction manual for the TS/IS/QS setup procedures.

Setting Parameters in RC-4R

Set the parameters in Setting Mode.

Refer to Table of item to be set in Setting Mode.

Setting Parameters of *Bluetooth* Communication port in Data Collector

When connecting the RC-4R and data collector using *Bluetooth*, there are no settings for the RC-4R. Details about procedures for connecting the data collector and RC-4R by *Bluetooth*, refer to the instruction manual for the application software used on the data collector.

Setting Parameters of Communication port in Data Collector

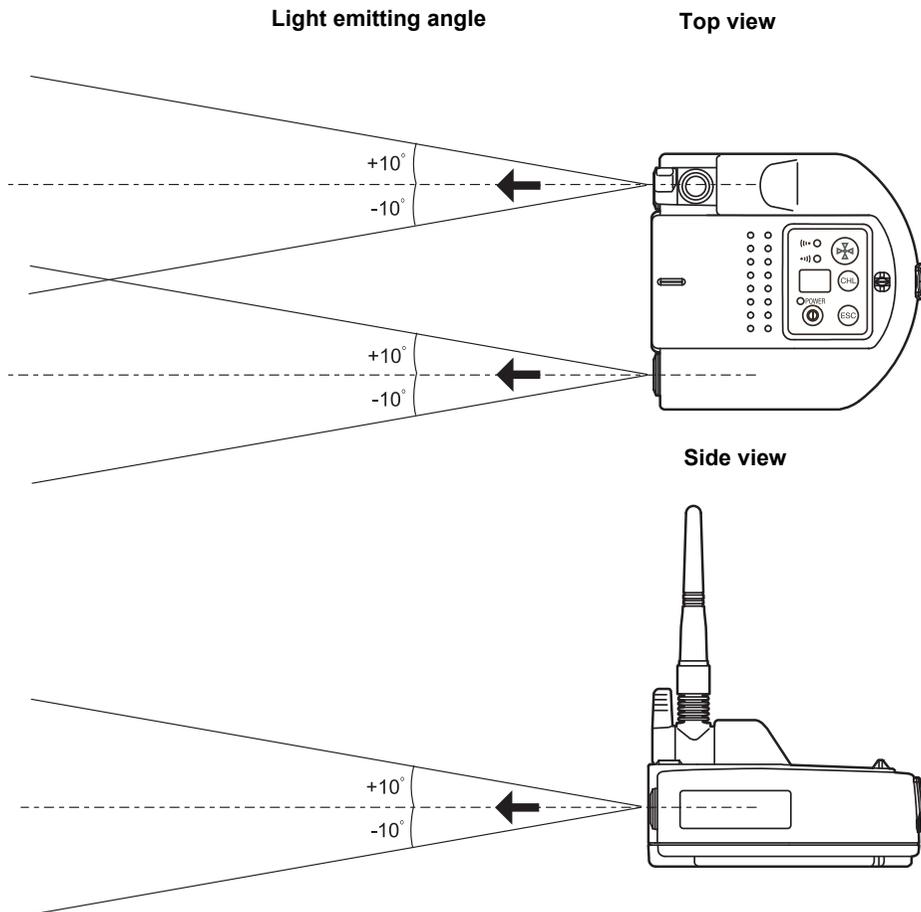
Connect a data collector to be used to the serial RS-232C connector of the RC-4R, and set the items as follows.

B.Rate	38400
Data.L	8
Parity	none
Stop Bit	1

Refer to the instruction manual for the application software used on the data collector for the setup procedures.

Light Emitting Angle

Laser beams are emitted from the emitting window of the RC-4R.
The angle of emitting laser beams is as follows.



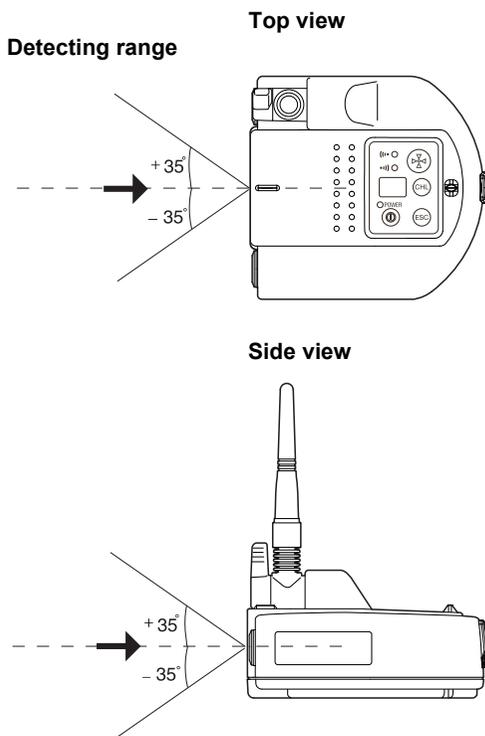
At greater distances, the laser light at the edge of the beam field (angle) will be weaker.

Important	<p>RC-4R should be kept aiming so that the TS/IS/QS always stays within the above range of laser beam emission until the turn-round motions are completed.</p> <p>If the aiming is out of above range while RC-4R is in turn-round motions, the turn-round could not be completed.</p>
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Light Detecting Range

The detecting angles of RC-4R and RC-4H (TS/IS/QS) are shown below:

TS/IS/QS can only be turned round with the turn-round key under the condition that RC-4R remains confined within the range as shown below where RC-4H can detect light.

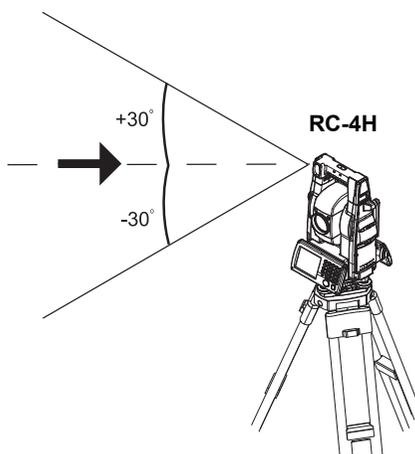


Important

Maintain the angle toward the TS/IS/QS within the range shown above until the turn-round function is completed.

Detecting range

(RC-4H can detect the laser in all horizontal direction.)



Turn-round function can be done within above range.

Turn-round Function

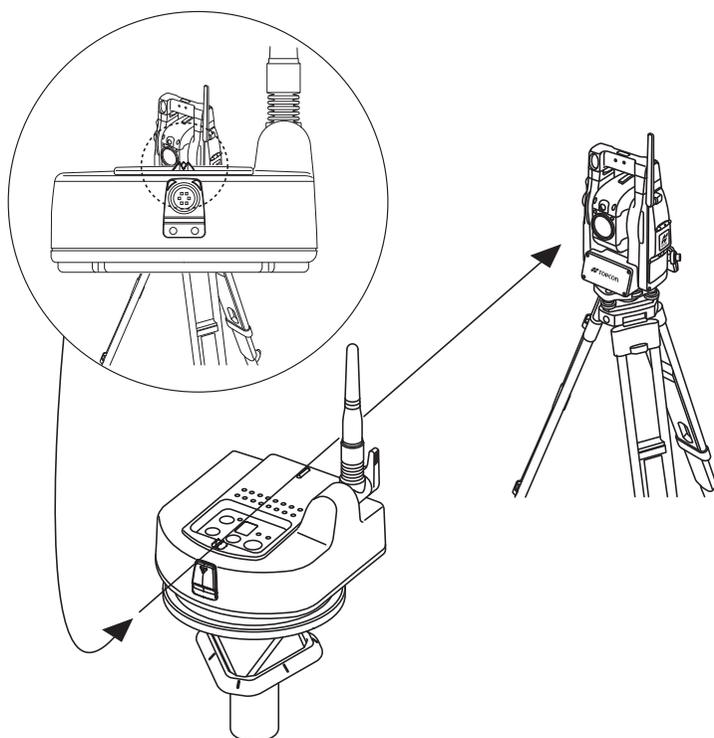
Important	<ul style="list-style-type: none"> Do not change the RC-4R direction during turn-round motions. When the direction is changed, the detecting signal for TS/IS/QS moves and the prism search cannot be performed correctly, causing a delay in the time required to complete the search or preventing the search from being completed. At greater distances, the laser light at the edge of the emitting range (angle) will be weaker; therefore, the RC-4R must be aimed correctly.
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The turn-round key on RC-4R is used to have the TS/IS/QS search or automatically track RC-4R (prism). Turn-round function is useful for auto-tracking when you start working or when the auto-tracking is interrupted by any reason.

For increasing efficiency, keep the auto-tracking status when you move to another measurement point.

Note	The settings and conditions of communication are prerequisites for the communications to take place between the TS/IS/QS and RC-4R.
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- 1 Turn on the TS/IS/QS and execute the [External Link].
- 2 Turn on the RC-4R by pressing the power switch.
- 3 Collimate the TS/IS/QS by using the sighting collimator on the RC-4R.

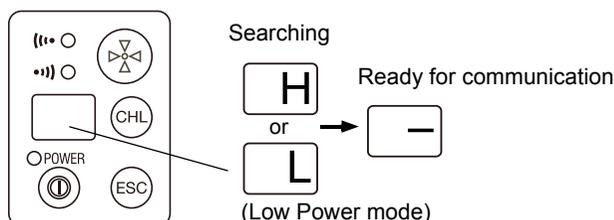


- 4 Press the [turn-round] key on the RC-4R. TS/IS/QS starts searching and ends in the tracking mode.

Note	TS/IS/QS must be kept apart from reflecting planes such as glass and white walls. Reflected light may prevent it from correct prism searching and from auto tracking. In this case, change the power mode of RC-4R to the low power mode to decrease the output of laser beam. To change the power mode, refer to "Low Power Mode of Laser Beam" on page 19.
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Turn-round operation status display

With the RC-4R, turn-round operation will be displayed as shown below.



Stopping Turn-round operations

Press the [ESC] key to terminate turn-round operation. After the key is pressed, turn-round operation will continue for a short time before the TS/IS/QS comes to a stop.

Low Power Mode of Laser Beam

When the TS/IS/QS performs a turn-round function at a distance of approximately 30 m from the RC-4R, strong reflections of the pulsed laser diode (PLD) emission can prevent the TS/IS/QS from searching the prism correctly. In this case, switch the laser to low-power mode to reduce the intensity of such reflections.

In low-power mode, the range of the turn-round function is shorter than in normal-power mode. (Approx. 50m)

To change the low-power mode

Turn the power ON while holding down the [ESC] key.

A buzzer will sound indicating that the RC-4R is in low-power mode.

To return to normal-power mode, turn the power OFF, wait several seconds, and then turn the power ON again.

Reference : Turn-round motions:

When the turn-round key on the RC-4R is pressed, the pulsed laser diode (PLD) in the emitter produces a laser beam with a $\pm 10^\circ$ cone pattern, refer to "Light Emitting Angle" on page 16.

The RC-4H component of the TS/IS/QS has photo detectors on all four sides (front, rear, right and left), allowing laser beams to be detected in any orientation. This detection ability extends to approximately $\pm 30^\circ$ in the vertical direction, refer to "Light Detecting Range" on page 17.

Upon detecting laser emissions, the TS/IS/QS aligns toward the RC-4R.

After horizontal alignment, the telescope is scanned vertically in order to target the prism and initiate auto tracking.

Under certain conditions, the time required for communications can increase to the point that turn-round operations require a long time to complete, and under certain circumstances such operations might not even be completed properly. The following conditions can adversely affect operation:

- 1) When units are used for communication over long distances or under poor atmospheric and weather conditions (e.g., in strong direct sunlight; heat refraction such as occurs near road surfaces and building surfaces on hot days; rain; fog, etc.)
- 2) When the aim of the RC-4R is set incorrectly, refer to "Light Emitting Angle" on page 16.
- 3) When communication channel settings, or other settings, of the TS/IS/QS and RC-4R are not matched or are set incorrectly, refer to "Setting Mode" on page 20.
- 4) When the TS/IS/QS is located in front of or to the side of glass or some other reflective surface.
- 5) When, during turn-round operations, a person, car, or other object obstructs the light path between the TS/IS/QS and the RC-4R.
- 6) When the units are used over long distances, the RC-4R is set to low-power mode, refer to "Low Power Mode of Laser Beam" on page 19.
- 7) When the dip switch settings on the RC-4R are set incorrectly, refer to "Communication Baud Rate" on page 21.
- 8) When the battery status display on the TS/IS/QS is flashing (low battery power)

Setting Mode

In this mode, following items can be set.

Setting Items

Items	Selecting item	Description
RC channel	1 to 6 (CH)	Sets a channel to be used for turn-round. The same communication channel (1to 6) must be assigned to both RC-4R and the TS/IS/QS. Prevents interference of communication when several systems consisting of a TS/IS/QS and a RC-4 are used at one site.
SS Wireless channel	01 to 20 (CH)	Sets a channel to be used for communications. The same communication channel (01 to 20) must be assigned to both RC-4R and the TS/IS/QS. Prevents interference of communication when several systems consisting of a TS/IS/QS and a RC-4 are used at one site.
Communication baud rate	38400/9600 (bps)	The communication baud rate can be selected.

How to Channel Set

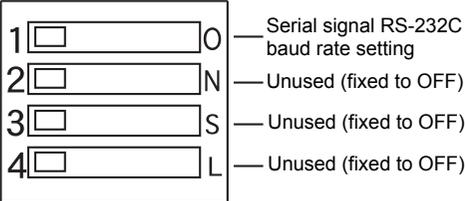
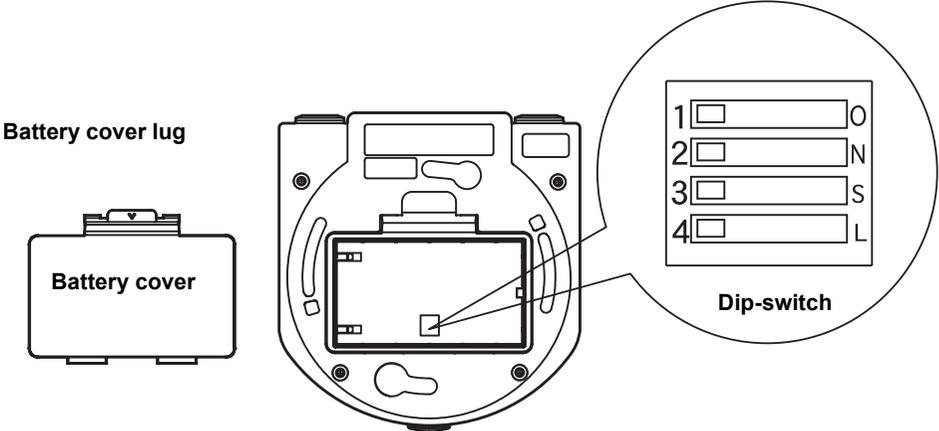
RC channel / SS Wireless channel

- 1** With the power ON, push the channel change key on the panel once.
Current RC channel will be displayed. (Default setting: 1 CH)
- 2** While the RC channel is displayed (approx. 3 seconds), push the key once again.
It will switch to the next RC channel.
- 3** Repeat step 2 until the RC channel you wish to set is displayed.
After approx. 3 seconds, the current SS Wireless channel will be displayed in 2 digits. (Default setting : 01 CH)
- 4** While the SS Wireless channel is displayed (approx. 3 seconds), push the key once again.
It will switch to the next SS Wireless channel.
- 5** Repeat step 4 until the SS Wireless channel you wish to set is displayed.
(The communication channel setting cannot be changed during turn-round.)

Communication Baud Rate

Setting can be done with the dip-switch on the battery section.

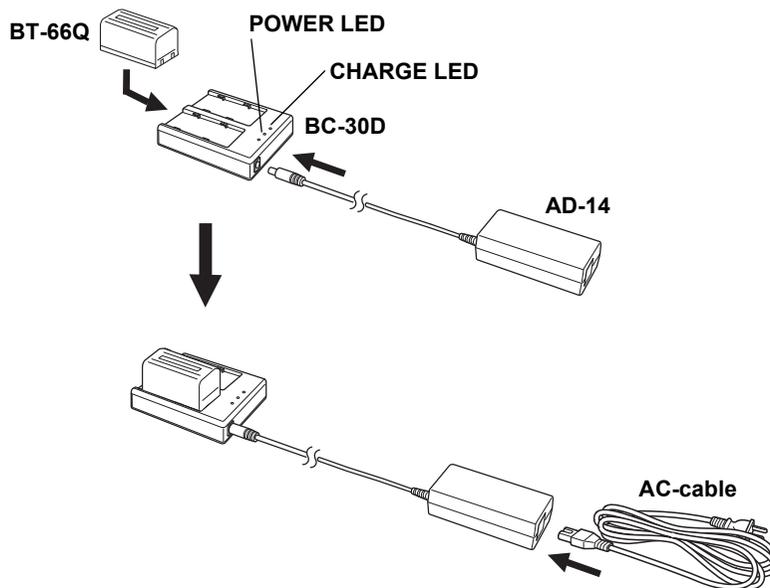
- 1 Remove battery cover and battery.
- 2 Set the dip switch with a pin.



Dip-switch	Setting	Contents
1	OFF (default)	38400 (bps)
	ON	9600 (bps)
2	Unused (fixed to OFF)	----
3	Unused (fixed to OFF)	----
4	Unused (fixed to OFF)	----

Note	Dip-switch No.2-4 must be fixed to OFF position. The RC-4R does not work correctly when the switch No.2-4 are set to ON position.
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Power Source and Charging



To charge

- 1 Connect the AC/DC converter AD-14 and AC-Cable to the charger. *1)
- 2 Plug the AC-Plug into the outlet. (The POWER LED will light.)
- 3 Attach the battery in the charger. Charging will start. (The CHARGE LED will light up in orange.)
Charging will take approximately 3 hours per battery. (The CHARGE LED will light up in green.)
If two batteries are attached to the charger, it will take approximately 6 hours to charge them completely.
If battery power is at a very low level when beginning charging, such as after the instrument has been in storage over an extended period of time in a discharge state, a full charge may not be possible with a single charging. In such a case, recharge a second time.
- 4 After charging, remove the battery from the charger.
Remove the AC-Plug from the outlet.

The POWER LED

Red ON : Power is on.

The CHARGE LED will indicate charging status;

OFF : Wait for charging.

Orange ON : Charging.

Green ON : Charging completed.

Orange Flashing: Charging error.

CHARGE LED will flash when the battery life is over or the battery is broken down. Replace the battery to new one.

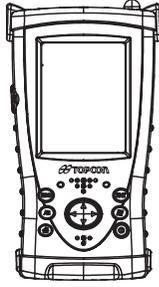
*1) Always use the AC/DC converter provided with the product.

- Do not charge continuously, otherwise the battery and the charger may be deteriorated. If charging is necessary, use the charger after stopping charge for approximately 30 minutes.
- Do not charge the battery in right after the battery is charged, it causes deterioration of the battery in rare cases.
- The charger may develop heat while charging, there is no problem of it.

Note

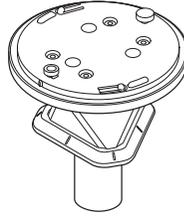
- Recharging should take place in a room with an ambient temperature range of 10°C to 40°C (50°F to 104°F).
- If charging is done at high temperature, charging time of the battery may take longer.
- Exceeding the specified charging time may shorten the life of the battery and should be avoided if possible.
- The battery will self-discharge when stored and should be checked before using with instrument.
- If the battery is not used over an extended period of time, store in a place at 30°C or below in a 50% charged state.
Over discharge will lower performance and a full charge may become impossible.
Please charge once every few months.

Special Accessories



Data Collector

Suitable for systemization of measuring instrument. Measuring data will be automatically stored and transferred to a computer system, making measuring operations more efficient and saving time and effort in such operation.



Prism unit-A7R4

Regulations

Region/ Country	Directives/ Regulations	Labels/Declarations
EU	Applicable instrument : • RC-4H • RC-4R EMC-Class B	<div style="border: 1px solid black; padding: 10px;">  <p>EMC NOTICE In industrial locations or in proximity to industrial power installations, this instrument might be affected by electromagnetic noise. Under such conditions, please test the instrument performance before use.</p> </div>
EU	Applicable instrument : RC-4R R&TTE-Class 1	<p>R&TTE Directive REMOTE CONTROLLER RC-4R Hereby, TOPCON CORP., declares that the above-mentioned equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.</p> <p>Please inquire below if you wish to receive a copy of Topcon's Declaration of Conformity.</p> <p>Topcon Europe Positioning B.V. Essebaan 11, 2908 LJ Capelle a/d IJssel, The Netherlands Tel:+31-10-4585077 Fax:+31-10-2844949 http://www.topcon-positioning.eu/index.asp</p>
EU	WEEE Directive	<div style="border: 1px solid black; padding: 10px;">  <p>WEEE Directive This symbol is applicable to EU members states only.</p> <p>Following information is only for EU-member states: The use of the symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about the take-back and recycling of this product, please contact your supplier where you purchased the product or consult.</p> <p style="text-align: right;">TOPCON CORPORATION</p> </div>
EU	EU Battery Directive	<div style="border: 1px solid black; padding: 10px;">  <p>EU Battery Directive This symbol is applicable to EU members states only.</p> <p>Battery users must not dispose of batteries as unsorted general waste, but treat properly.</p> </div>

Region/ Country	Directives/ Regulations	Labels/Declarations
U.S.A.	FCC-Class B	<p>NOTE: This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:</p> <ul style="list-style-type: none"> - Reorient or relocate the receiving antenna. - Increase the separation between the equipment and receiver. - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. - Consult the dealer or an experienced radio / TV technician for help. <p>This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.</p> <p>This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. This equipment has very low levels of RF energy that is deemed to comply without maximum permissive exposure evaluation (MPE). But it is desirable that it should be installed and operated with at least 20cm and more between the radiator and person's body (excluding extremities: hands, wrists, feet and ankles).</p> <p>Declaration of Conformity Model Number: RC-4R Trade Name: TOPCON CORPORATION</p> <p>Manufacturer Name: TOPCON CORPORATION Address: 75-1, Hasunuma-cho, Itabashi-ku, Tokyo, 174-8580 JAPAN Country: JAPAN</p> <p>U.S.A. Representative Responsible party: TOPCON POSITIONING SYSTEMS, INC. Address: 7400 National Drive Livermore, CA94551, U.S.A Telephone number: 925-245-8300</p>
California, U.S.A.	Proposition65	<div style="border: 1px solid black; padding: 5px;"> <p>WARNING : Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause birth defects or other reproductive harm. <i>Wash hands after handling.</i></p> </div>
California, U.S.A.	Perchlorate Material (CR Lithium Battery)	<div style="border: 1px solid black; padding: 5px;"> <p>This product contains a CR Lithium Battery which contains Perchlorate Material-special handling may apply. See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/ Note ; This is applicable to California, U.S.A. only</p> </div>

Region/ Country	Directives/ Regulations	Labels/Declarations
California and NY, U.S.A.	Recycling Batteries	<p style="text-align: center;"><u>DON'T THROW AWAY RECHARGEABLE BATTERIES, RECYCLE THEM.</u></p> <p style="text-align: center;"><u>Topcon Positioning Systems Inc., United States Return Process for Used Rechargeable Nickel Metal Hydride, Nickel Cadmium, Small Sealed Lead Acid, and Lithium Ion, Batteries</u></p> <p>In the United States Topcon Positioning Systems Inc., has established a process by which Topcon customers may return used rechargeable Nickel Metal Hydride(Ni-MH), Nickel Cadmium(Ni-Cd), Small Sealed Lead Acid(Pb), and Lithium Ion(Li-ion) batteries to Topcon for proper recycling and disposal. Only Topcon batteries will be accepted in this process.</p> <p>Proper shipping requires that batteries or battery packs must be intact and show no signs of leaking. The metal terminals on the individual batteries must be covered with tape to prevent short circuiting and heat buildup or batteries can be placed in individual plastic bag. Battery packs should not be disassembled prior to return.</p> <p>Topcon customers are responsible for complying with all federal, state, and local regulations pertaining to packing, labeling, and shipping of batteries. Packages must include a completed return address, be prepaid by the shipper, and travel by surface mode. <u>Under no circumstance should used/recyclable batteries be shipped by air.</u></p> <p>Failure to comply with the above requirements will result in the rejection of the package at the shipper's expense.</p> <p>Please remit packages to: Topcon Positioning Systems, Inc. C/O Battery Return Dept. 150 7400 National Dr. Livermore, CA 94551</p> <p style="text-align: center;"><u>DON'T THROW AWAY RECHARGEABLE BATTERIES, RECYCLE THEM.</u></p>
Canada	ICES-Class B	<p>This class B digital apparatus meets all requirements of the Canadian interference-Causing Equipment Regulations. Cet appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.</p> <p>This Class B digital apparatus complies with Canadian ICES-003 Cet appareil numérique de la Class B est conforme a la norme NMB-003 du Canada.</p> <p>Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.</p> <p>This equipment complies with IC radiation exposure limits set forth for uncontrolled equipment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that is deemed to comply without maximum permissive exposure evaluation (MPE). But it is desirable that it should be installed and operated with at least 20cm and more between the radiator and person's body (excluding extremities: hands, wrists, feet and ankles).</p>
Australia	C-Tick	<div style="text-align: center;">  </div> <p>The compliance label indicates that the product complies with the applicable standard and establishes a traceable link between the equipment and the manufacturer, importer or their agent responsible for compliance and for placing it on the Australian market.</p>

Specifications

Operating temperature	:	-20°C to +50°C
Storing temperature	:	-30°C to +60°C
Protection against water and dust	:	RC-4R: IP65 RC-4H: IP54 (Based on the standard IEC60529)
Turn-round operating distance * 1)	:	5m~400 m (16ft ~1310 ft) (When using with the prism unit A7R4/A7PR4)
	* 1)	The operating distance may be shorter than normal in such the condition is not good by the heat simmer or strong direct sun shine to the detector.
Turn-round operating time	:	Approximately 10 seconds *2, 3)
	* 2)	Sight haze with visibility about 20km (12.5 miles) moderate sunlight with light shimmer.
	* 3)	Under normal weather conditions, with the telescope turned 90° relative to the prism, and turn-round performed with the prism roughly aligned vertical. (Refer to “Reference : Turn-round motions:” on page 19.)
Number of RC channels	:	6
Number of SS WIRELES channels	:	20

Remote Controller Handle Unit RC-4H

Power source	:	DC 7.4V from TS/IS/QS
Detective range	:	Horizontal : 360° Vertical : ±30°
Weight	:	0.3 kg
Dimensions	:	58(D) × 166(W) × 71(H) mm

Remote Controller RC-4R

Weight	:	0.4 kg (with battery)
Dimensions	:	126 (D) × 124 (W) × 67 (H) mm (with antenna folded down)
<i>Bluetooth</i> [®] Unit		
<i>Bluetooth</i> [®] Standard	:	<i>Bluetooth</i> [®] Specification v1.2
<i>Bluetooth</i> [®] profiles	:	Generic Access Profile Service Discovery Application Profile Serial Port Profile
BD Address	:	IEEE std802 48bit LAN MAC Address
QDID	:	B010518
<i>Bluetooth</i> [®] Transmitting	:	Output Class2
<i>Bluetooth</i> [®] Communication distance	:	About 5m (The range will be different by a condition)

SS Wireless Unit

Communication distance	:	About 1000m (The range will be different by a condition)
Transmission output	:	100mW or less
Transmission method	:	DS/FH hybrid SS method
[Emitting Laser]		
Angle of Laser	:	Each direction $\pm 10^\circ$ At greater distances, the laser light at the edge of the emitting range (angle) will be weaker by laser emitting characteristic. 100m (328ft): Approximately $\pm 10^\circ$ 400m (1310ft): Approximately $\pm 4^\circ$ (The range and angle will be different by a condition.)
Laser class	:	Class 1/ Class I
[Detecting Laser]		
Detecting range	:	Horizontal $\pm 35^\circ$ Vertical $\pm 35^\circ$
[Interface]		
Connector with 6 pins	:	RS-232C Baudrate: 38400/9600 (Default : 38400) Bit length: 8 bits Parity bit: None Stop bit: 1 bit

Rechargeable Battery BT-66Q

Output voltage	:	DC7.4V
Capacity	:	2500mAh
Maximum operating time	:	9 hours *1)
*1) Normal use	:	Under normal temperature at $+20^\circ\text{C}$, Measuring two points (Including communicating and recording data) every 1 minute and using turn-round function once every 10 minutes. In low temperature, operating time will decrease rapidly due to the characteristic of battery.

Battery Charger BC-30D (with AC/DC converter AD-14 and AC-cable)

Input voltage	:	AC 100-240V
Frequency	:	50/60Hz
Recharging time (at $+20^\circ\text{C}$ / $+68^\circ\text{F}$)	:	Battery BT-66Q : 3 hours/1 battery
Operating temperature	:	$+10^\circ\text{C}$ to $+40^\circ\text{C}$ ($+50^\circ\text{F}$ to 104°F)
Charging signal	:	Orange charge lamp should glow
Finishing signal	:	Green charge lamp should glow
Weight (with AC/DC converter)	:	0.4kg (0.8 lbs)

JSIMA

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