

REMOTE DISPLAY RD-100W

Thank you for purchasing the TOPCON RD-100W.
For the best performance of the instruments, please read these instructions carefully and keep them in a convenient location for future reference.

GENERAL HANDLING PRECAUTIONS

Before starting work or operation, be sure to check that the system is functioning properly.

Affection of the radio waves

When using the instrument in the following place, the strong radio wave may cause faulty operation.



- Near the instrument occurring strong radio waves. (e.g. Transceiver)
- Near the radio wave towers such as television or radio.

Battery replacement

- Replace all 3 batteries with new ones at the same time. Do not mix used and new batteries, and do not mix different types of batteries together.
- Use alkaline dry cells. (3 Dry cells for initial operation check are composed in a standard package.)
Nickel hydrogen dry cells and nickel cadmium dry cells can be used too, but the operating time is different from the time of alkaline dry cells.

DISPLAY FOR SAFE USE

In order to encourage the safe use of products and prevent any danger to the operator and others or damage to properties, important warnings are put on the products and inserted in the instruction manuals. We suggest that everyone understand the meaning of the following displays and icons before reading the "Safety Cautions" and text.


Display	Meaning
 WARNING	Ignoring or disregard of this display may lead to death or serious injury.
 CAUTION	Ignoring or disregard of this display may lead to personal injury or physical damage to the instrument.


- Injury refers to hurt, burn, electric shock, etc.
- Physical damage refers to extensive damage to buildings or equipment and furniture.

HANDLING PRECAUTIONS

Guarding the instrument against shock
When transporting the instrument, provide some protection to minimize risk of shock. Heavy shock may affect beam accuracy.

SAFETY CAUTIONS

 WARNING
<ul style="list-style-type: none"> • There is a risk of fire, electric shock or physical harm if you attempt to disassemble or repair the instrument yourself. This is only to be carried out by TOPCON or an authorized dealer, only! • Risk of fire or electric shock. Do not use damaged power cable, plug and socket. • Risk of fire or electric shock. Do not use a wet battery. • May ignite explosively. Never use an instrument near flammable gas, liquid matter, and do not use in a coal mine. • Do not hold the RD-100W magnetic clamp near anyone who uses a pace maker or other electronic medical devices. The strong magnetic field can disrupt the normal operation of such devices. • Battery can cause explosion or injury. Do not dispose in fire or heat. • The short circuit of a battery can cause a fire. Do not short circuit battery when storing it.

 CAUTION
<ul style="list-style-type: none"> Risk of injury to fingers. Do not place fingers on magnet while mounting to equipment. Strong magnetic field. Do not place RD-100W magnetic clamp near any sensitive electronic devices or magnetic storage media such as computer disk. Do not allow skin or clothing to come into contact with acid from the batteries, if this does occur then wash off with copious amounts of water and seek medical advice.

EXCEPTIONS FROM RESPONSIBILITY

- 1)The user of this product is expected to follow all operating instructions and make periodic checks of the product's performance.
- 2)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.
- 3)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.
- 4)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.
- 5)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.
- 6)The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement, or action due to connecting with other products.

Standard Set Composition

- 1 RD-100W Instrument 1pc.
- 2 AA-size dry cells..... 3pcs.
- 3 Instruction manual..... 1pc.

FCC WARNING

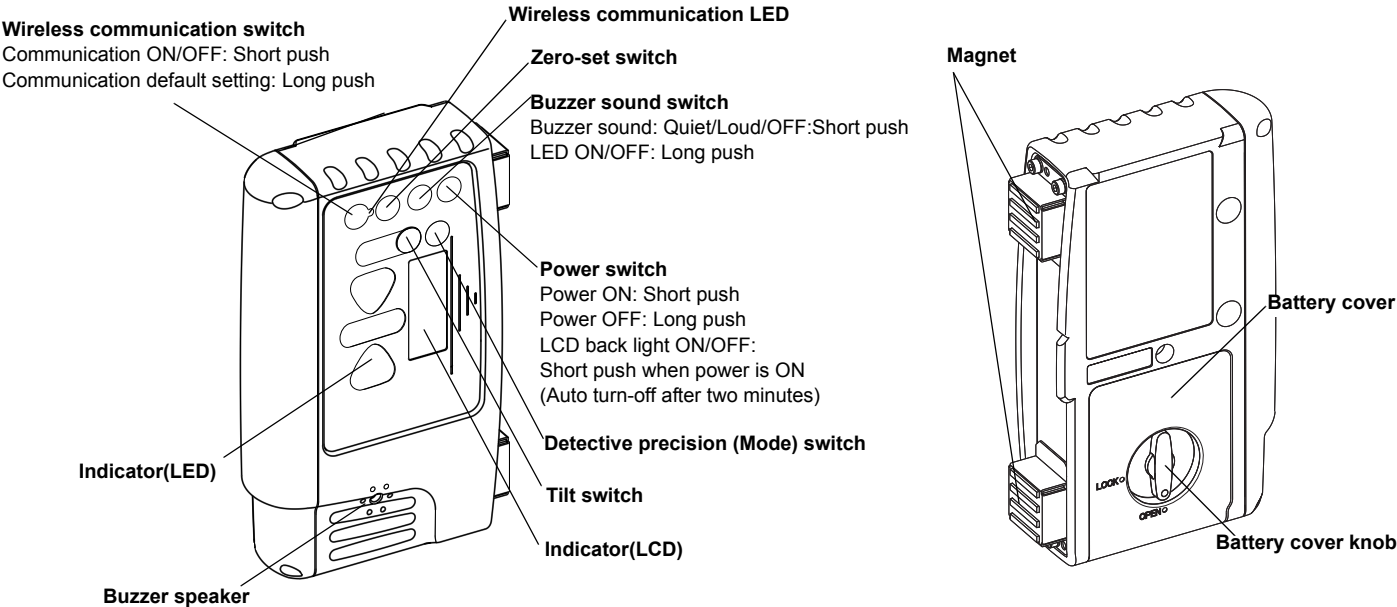
Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment.

In order to comply with FCC radio-frequency radiation exposure guidelines for an uncontrolled exposure, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC/IC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65 and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that it is deemed to comply without testing of specific absorption ratio (SAR).

This device complies with Part 15 of FCC Rules and RSS-Gen of IC Rules. 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.

Nomenclature and Functions



Risk of damage to installation surface of machine, because it uses a strong magnet.
See [Laser beam positions and display patterns] in the Instruction manual for the display area and display pattern.
This instrument is able to perform wireless communication with the LS-B110W/LS-B10W, sold separately.
See the LS-B110W/LS-B10W Instruction manual for details on the LS-B110W/LS-B10W.

How to set up the wireless communication default setting

- Place the LS-B110W/LS-B10W and RD-100W in close position, so that they will not be affected by other wireless communications.
- 1 Turn on the power for both the LS-B110W/LS-B10W and RD-100W.
 - 2 Long-push the wireless communication switch for the LS-B110W/LS-B10W and RD-100W. While setting up, the wireless communication LED (yellow light) will turn on.
 - 3 When the instrument is ready to be used, a buzzer will sound (buzzer sound: peep) and the communication will begin.

- If the communication fails, a buzzer will sound (buzzer sound: pi, pi, pi). Eliminate any influence from other wireless instrument and redo the communication default setting.
- While setting up the default, only the default OFF (short-push of the wireless communication switch) is operable.

How to use wireless communication

- 1 When power for both the LS-B110W/LS-B10W and RD-100W are turned ON, communication will automatically begin.
During communication, the wireless communication LED will flash quickly.
During communication preparation, the wireless communication LED will flash slowly

- When beginning the communication with LS-B110W, detective precision, tilt direction, tilt precision and ON-GRADE position setting will be changed to the same setting as the LS-B110W.
- When the detective precision, tilt direction, tilt precision or ON-GRADE position settings are changed while communicating with LS-B110W, the setting for the LS-B110W will also change in conjunction with the RD-100W.
- When beginning the communication with LS-B10W, detective precision, buzzer sound, LED ON/OFF setting will be changed to the same setting as the LS-B10W.
- When the detective precision, buzzer sound or LED ON/OFF settings are changed while communicating with LS-B10W, the setting for the LS-B10W will also change in conjunction with the RD-100W.
- If you wish to change the LS-B110W/LS-B10W to communicate, redo the communication default setting.

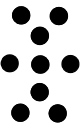
Lighting/Flashing pattern of wireless communication LED

Lights	While setting up the default
Flashes quickly	While LS-B110W/LS-B10W is communicating
Flashes slowly	Communication is in preparation

Indicator

Height alert warning of rotating laser


A flash and a buzzer sound signifies that the height alert function of rotating laser is operating.
(This function is not usable to the rotating laser which does not have the height alert and the function to output alarm signal.)



Indicator(LED)
Flashes slowly

Rotating laser battery warning

A flash shows that the rotating laser power is low.
(This function is not usable to the rotating laser which does not have the function to output alarm signal.)



Higher than datum position

Move the sensor downward.
(Buzzer sound:High frequent beep sound)

Datum position (ON GRADE position)


(Buzzer sound:Continuous beep sound)

Lower than datum position


Move the sensor upward.
(Buzzer sound:Low frequent beep sound)

Battery remaining display

Indicates the battery remaining of remote display as follows.




Battery is sufficient.



Flashing alternately


The power is low, but remote display is still usable.




Dead battery.

Replace the dry battery with new one.


Precision mode




Mode1



Mode2




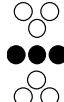


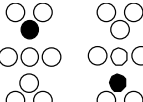


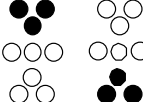




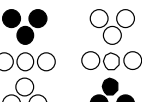


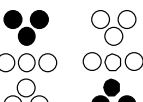
Mode3



Mode4 (Blinking)


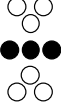


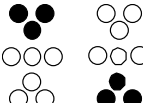






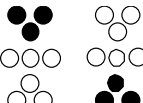


Laser beam positions and display patterns

During communication with LS-B110W

Indicator(LCD)	Indicator(LED)	Detective precision
		Mode1:±3mm Mode2:±6mm Mode3:±15mm Mode4:±30mm
<div></div> <div>No display when in Mode 3 and 4</div>		±15mm/±0.05ft (30mm/0.1ft width)
<div></div> <div>No display when in Mode 4</div>	 <p>Flashes quickly</p>	±30mm/±0.1ft (60mm/0.2ft width)
<div></div>		±50mm/±0.16ft (100mm/0.33ft width)
<div></div>	 <p>Flashes slowly</p>	±70mm/±0.23ft (140mm/0.46ft width)
		±125mm/±0.41ft (250mm/0.82ft width)
<div></div>	 <p>Flashes more slowly</p>	When the laser beam is off to the top or to the bottom

Laser beam positions and display patterns

During communication with LS-B10W

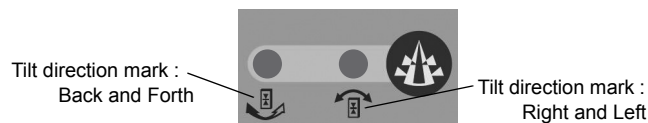
Indicator(LCD)	Indicator(LED)	Detective precision
		Mode1:±2mm Mode2:±6mm Mode3:±12mm Mode4:±30mm
<div></div> <div>No display when in Mode 4</div>	 <p>Flashes quickly</p>	±15mm/±0.05ft (30mm/0.1ft width)
<div></div> <div>No display when in Mode 4</div>		±25mm/±0.08ft (50mm/0.16ft width)
<div></div>		±35mm/±0.11ft (70mm/0.23ft width)
<div></div>	 <p>Flashes slowly</p>	±60mm/±0.2ft (120mm/0.39ft width)
<div></div>		When the laser beam is off to the top or to the bottom

Tilt detection function (During communication with LS-B110W only)

Switching the tilt direction

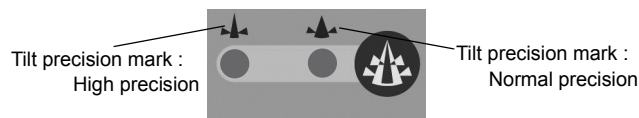
The tilt direction can be changed.

- 1 Long-push the detective precision switch and the tilt switch at the same time. The tilt direction mode setting changes in the following order: "Back and Forth," "OFF" and "Right and Left." At this time, the LED above the mark indicating the tilt direction will flash. The LED will not flash when the tilt detection function is switched OFF.



Switching the tilt precision

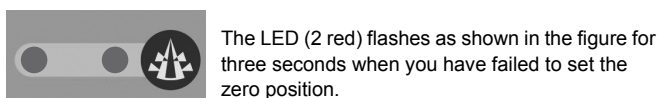
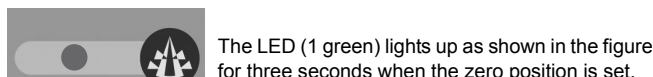
- 1 Short-push the tilt switch. The tilt precision will change. At this time, the LED below the mark indicating the tilt precision will light up.



Zero position setting for the tilt sensor

Before using the tilt detection function, set the zero position of the tilt sensor according to the directions below. The tilt direction must be set before setting the zero position.

- 1 Raise or lower the machine blade or arm where the LS-B110W is installed to position the cutting edge or bucket at the desired slope.
- 2 Long-push the tilt switch on RD-100W. The tilt angle for the LS-B110W will set to 0°.



Tilt angles and display patterns

Tilt directions : Right and Left

	High precision : $\pm 1^\circ$ Normal precision : $\pm 2.5^\circ$
 Flashes quickly	$\pm 5^\circ$
 Flashes slowly	More than $\pm 5^\circ$

Tilt directions : Back and Forth

	High precision : $\pm 1^\circ$ Normal precision : $\pm 2.5^\circ$
 Lights off	High precision : More than $\pm 1^\circ$ Normal precision : More than $\pm 2.5^\circ$

Tilt indication will be displayed during laser detection and for 20 seconds after switch operation.

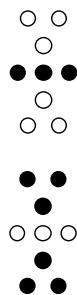
Changing the ON-GRADE position function

(During communication with LS-B110W only)

The ON-GRADE position can be changed to the position where laser beam is detected. Using this function when installing the LS-B110W on the pole of the machine allows easy setting of the height at which the ON-GRADE will be displayed on the LS-B110W. The range in which the ON-GRADE position can be changed is $\pm 75\text{mm}$ (total of 150mm) from the center of the detective range.

In order to set the ON-GRADE position at high precision, set it while the laser beam is stable. When setting the ON-GRADE position while the laser beam is unstable (when using at a long-distance - more than 150m - or when atmospheric condition is unstable due to air shimmering or other conditions), the sensor will automatically detect it and the LED indicating the failure will be displayed while changing the ON-GRADE position.

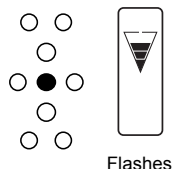
- 1 Long-push the zero-set switch while detecting the laser beam.



When changing the ON-GRADE position, the LED lights up for three seconds, as shown in the figure. The position where the laser beam is being detected will be the ON-GRADE position.

The LED lights up as shown in the figure for three seconds when you have failed to change the ON-GRADE position. Be careful not to change the position at which the laser beam is detected and try setting once again.

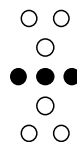
The LED display and LCD display while changing the ON-GRADE position



The LED display indicating beam position and the LED (1 green) in the center will flash. The mark showing laser beam position on the LCD will flash.

Cancellation the ON-GRADE position change

- 1 Long-push the zero-set switch when not detecting the laser beam. The ON-GRADE position will be reset.



When the ON-GRADE position change is cancelled, the LED (3 green) will flash for three seconds.

Specifications

Wireless communication range	: 20m (May vary depending on obstacles between the two instruments and other conditions)
Power source	: AA-size dry cells 3pcs.
Continuous operating time (+20°C/+68°F)	: Approximately 40 hours (Using alkaline manganese dry cells)
Operating temperature	: -20°C~+50°C(-4°F~+122°F)
Water proof	: IP66 (Based on the standard IEC60529)
Dimensions (W/D/H)	: 110x36x176(mm) (4.3"x1.4"x6.9")
Weight (Without cells)	: 0.5kg (1.2lbs)

Detective angle, Detective precision and Laser detecting range may vary depending on rotating laser being used or atmospheric conditions.

JSIMA
Japan Surveying Instruments Manufacturers' Association



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.

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