

RD10 Remote Display User Guide



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Introduction

Thank you for choosing the Spectra Precision® Laser RD10 Remote Display. It is designed to work with the LR30, LR50, and LR60 laser receivers, and it can be mounted in the cab of the machine for easy viewing. The LEDs provide information similar to the LEDs of the receivers. For specific displays and setting, please refer to the receiver user guide.

In addition to providing the standard grade, plumb, and tilt information (where applicable), the RD10 can be used to set an offset and a temporary secondary offset on a receiver. Please note that the tilt indication can be displayed for LR50 and LR60 receivers.

The RD10 gets its power from the receiver batteries. Optional cables are also available for supplying power from the machine battery or a machine power outlet. The RD10's audio jack allows you to use earphones so that you can listen to the audio information when working in noisy conditions.

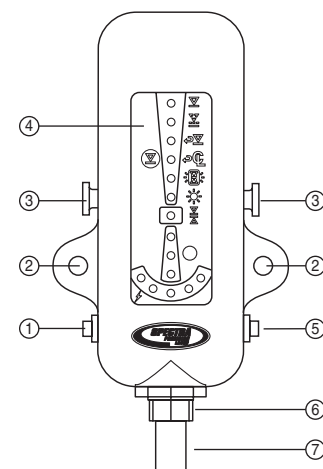
Before using the remote display, be sure to read this user guide carefully. Included in it is information about setting up, using, and maintaining the remote display. Also included in this manual are Notes, which indicate important information unrelated to safety.

Your comments and suggestions are welcome; please contact us at:

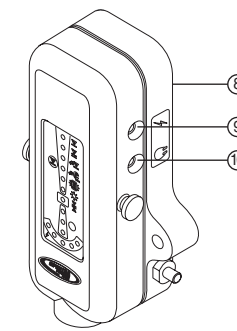
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Features



1. Power/Set-Function Button
2. Mounting-Plate Tab
3. Mounting-Strap Tab
4. LED Display
5. Select-Function Button
6. Cable Connector
7. Communication Cable



8. Mounting Plate
9. Power Jack (3.5 mm)
10. Audio Jack (2.5 mm)

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Installation

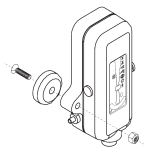
Mounting Hardware

The mounting hardware that is supplied with the RD10 includes magnets, double-sided tape, hook-and-loop fastening strips, and a rubber strap. Holes in the mounting plate are for user-supplied hardware if necessary. An optional swivel mount is also available. Choose the mounting hardware appropriate for your situation.

Position the remote display in the machine's cab so that you can easily see the LED display while operating the machine. Make sure the remote display doesn't obstruct other functions. **Note:** The RD10 has a vented drain hole near the cable connector that must face downward.

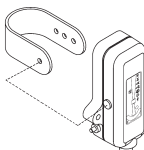
Magnets

1. Install the provided screw through the magnet and mounting-plate tab as shown.
2. Fasten the provided nut onto the screw and tighten.
3. Repeat for the other side.



Mounting Strap

1. Place one of the mounting-strap holes over the mounting-strap tab.
2. Wrap the strap around a suitable support and fasten the other end of the strap to the other mounting-strap tab. Make sure the fit is snug.



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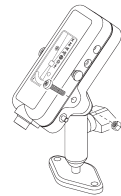
Tape/Fastening Strips

1. Clean the back of the remote display and the area of the machine you want to mount the remote display to.
2. Peel the protective backing from the adhesive side(s) of the tape/fastening strip(s) and apply it to the freshly cleaned surfaces.

Optional Swivel Mount

Mounting hardware is provided in case a suitable mounting location can be found on the machine. Determine which mounting option works best for you. The supplied magnets can be attached to the base of the swivel mount in the same manner that they are attached to the remote display mounting-plate tabs.

1. Align the RD10 mounting-plate tabs and the swivel-mount tabs as shown.
2. Install the provided screw through the mounting plate and the swivel mount.
3. Fasten the provided nut onto the screw and tighten.
4. Repeat for the other side.



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Cables

The remote display gets power from the receiver battery via a cable. It can also get power from the machine battery or a machine power outlet via optional cables. A receiver cable (straight or coil) is required to connect the RD10 to the receiver. If additional length is required, extension cables are also available. **Note:** The receiver must be turned off prior to connecting the cable to the receiver.

Plan the cable routing ahead of time for ease of installation. To avoid cable abrasion, secure all cables with tie wraps or cable clamps. Make sure that excess cable is available at all moving joints of the machine and near the receiver and remote display for adjustment.

Receiver Cable

1. Route the receiver cable from the remote display to where the receiver is mounted.
2. Make sure the receiver power is off.
3. Connect the 7-socket connector to the receiver.
4. Connect the 6-pin connector to the remote display.

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Optional Power Cables

Battery

The remote display operates using machine power that ranges from 10 V dc to 30 V dc. Reverse voltage and over-voltage protection are built in.

1. Route the terminal ends of the power cable to the machine battery.
2. Connect the red wire to the battery's positive (+) terminal. Connect the black wire to the negative (-) terminal.
3. Plug the 3.5 mm barrel connector into the remote display power jack.



Coiled Outlet Adapter

The maximum extended length of the coil cable is 2.4 m (8 ft).

1. Select the 3.5 mm barrel connector. The negative (-) side aligns with the "TIP" side.
2. Plug the connector into the remote display power jack.
3. Plug the adapter into an appropriate power outlet.



Earphones

The RD10 has an earphone jack for audio output. This jack accepts a standard 2.5 mm barrel connector. Earphones that have volume control are recommended. The audio tone beeps quickly when the receiver is above the laser beam, slowly when below it, and continuously when centered in the laser beam or on grade.

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Operation

Power

Turning on/off the remote display and receiver depends on the manufacture date and software version of the receiver. The RD10 is released with receiver software v5.05 installed.

To identify which software version the receiver is using, look for the serial number on the circuit board (located on back of the receiver toward the top). The serial numbers for receivers released with v5.05 software (released September 2006) are as follows: LR30 serial numbers 3+2067; LR50 serial numbers 5+1996; LR60 serial numbers 61520.

For receivers with v5.05 software, the power button on the remote display operates the same as the power button on the receiver.

For receivers with earlier software versions, the power button and some additional functions operate differently. Older software versions lock the receiver keypad, thus disabling all keypad buttons. Because of this lockout, make sure you have selected the settings appropriate for your use prior to connecting the remote display. Refer to the Software Version Operation Table for more information (panel 12).

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Current Software Version: v5.05

Battery Power

The power/set-function button on the remote display turns on/off the receiver and remote display.

1. Press the power/set-function button to turn on the receiver and remote display.
2. Press and hold the power/set-function button for 2 seconds to turn them off.

Machine Power

1. Turn on the machine to turn on the receiver and remote display.
2. Press and hold the remote display power/set-function button for 2 seconds to turn off the receiver and remote display.

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Prior Software Versions

Battery Power

Power must be turned on/off at the receiver.

Machine Power

1. Turn on the machine to turn on the receiver and remote display.
2. Remove the connector from the power jack to turn the power off.

Power ON is indicated by any grade or tilt display LED when the receiver is in the laser beam. The on-grade LED flashes once every 4 seconds if the receiver is not in the laser beam.

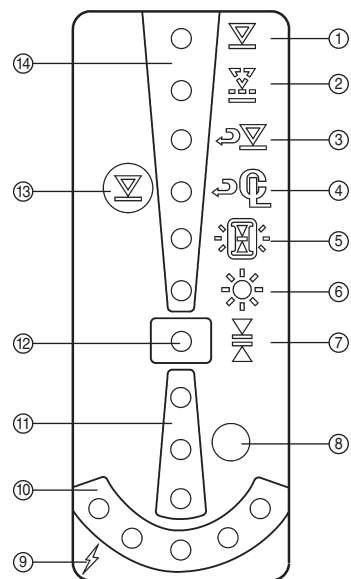
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Software Version Operation Table

RD10/Receiver Feature	Model	Current Version: 5.05	Prior Version: 4.XX
Receiver power on	LR30, LR50, LR60	Can turn on/off	Does not turn on/off
Disable lost-beam display	All	Can turn on/off	Can not turn off
Plumb mode flashes to indicate out of range	LR50, LR60	Flashes the same as the receiver	Does not flash
LED down indications	LR60	7	5
Tilt indication	LR50	Mimics receiver	Always on: Displays fine-tilt accuracy
	LR60	Can turn on/off: Displays fine-tilt accuracy	Always on: Displays fine-tilt accuracy
Locks keypad	LR30, LR50, LR60	No	Yes
Offset functions	LR30	Limited range due to 5 cm (2 in.) proportional photocell array	

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LED Displays and Indications



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For function symbols 1–7, the above-grade LEDs to the left of the symbols light when the function is selected and available to be set. To cycle through the functions, repeatedly press the select-function button. To set the function, press the power/set-function button.

1. Set offset
2. Set temporary offset
3. Return to offset
4. Return to receiver default elevation
5. Turn on/off receiver LEDs
6. Adjust RD10 LED brightness
7. Set deadband for receivers (Not used)
8. Photo sensor—automatically adjusts LED brightness.
9. Power button LED—lights when the power is on.
10. Deadband/Blade-tilt LEDs—light to indicate deadband (all receiver models) and blade tilt (LR50 and LR60 receivers).
11. Below-grade LEDs (red)—light when the implement is below grade.
12. On-grade LED (green)—lights when the implement is on grade.
13. Offset-elevation LED (amber)—lights when the offset (permanent or temporary) is on. The LED remains on when the permanent offset is on. The LED flashes when the temporary offset is on.
14. Above-grade LEDs (red)—light when the implement is above grade.

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Blade-Tilt Indication

LR50

If the LR50 has v5.05 software installed and the blade-tilt function is active, the remote display LEDs mimic the receiver blade-tilt indication and provide 5 channels of tilt information. If the LR50 receiver has v4.00 software, the tilt display is always on with fine tilt accuracy displaying. For more information about specific blade-tilt settings, refer to the receiver user guide.

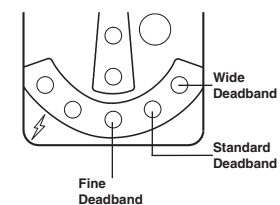
LR60

Although the LR60 has no provision for displaying blade-tilt information on the receiver itself, the blade-tilt function can be activated if the receiver has v5.05 software. To activate the blade-tilt function, simultaneously press the power, plumb, and deadband buttons on the receiver. When this function is active, the receiver's outside green on-grade LEDs flash, the center green LED is on, and the RD10's blade-tilt LEDs are on. To turn off the function, simultaneously press the same three buttons. When the blade-tilt function is off, the receiver's outside green on-grade LEDs flash and the center green LED is off. Blade-tilt accuracy settings are fine and $\pm 0.5^\circ$. If the LR60 receiver has v4.00 software, the tilt display is always on.

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Deadband Indication

The right three LEDs indicate whether the wide, standard, or fine deadband is selected (LED flashes). To temporarily activate the LEDs, press the select-function button. If the receiver has a set-up deadband, the set-up and fine deadbands are both indicated by the fine deadband LED.



Low-Battery Display

The left blade-tilt LED flashes when the battery power is low. If this condition occurs, the blade-tilt display no longer operates. Replace or recharge the receiver batteries.

Lost-Communication Display

The above-grade and below-grade red LEDs and the on-grade green LED alternately flash when communication between the receiver and remote display has been interrupted. Be sure to check all connections.

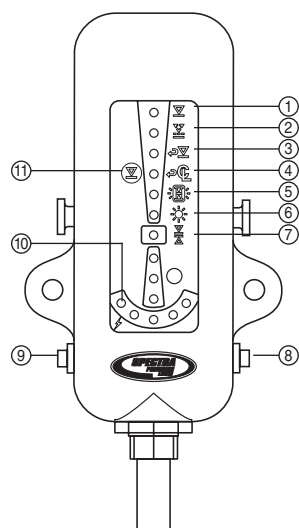
Lost-Beam Display

A sequence of LEDs indicates which direction to move the blade or implement to pick up the laser beam if the receiver vertically moves beyond the laser signal for a short time.

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Functions

To select a function, press the select-function button. Repeatedly pressing this button allows you to cycle through the functions. When the function that you want to use is selected, the above-grade LED to the left of the function symbol lights for 4 seconds. During this time, press the power/set-function button. If the function is not set within this time, the LED goes off and the function button deactivate.



1. Set Offset
2. Set Temporary Offset
3. Return to Offset
4. Return to Receiver Default Elevation
5. Turn On/Off LEDs
6. Adjust LED Brightness
7. Set Deadband
8. Select-Function Button
9. Power/Set-Function Button
10. Low Battery
11. Offset Elevation LED (Amber)

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Set Offset

This function allows a current laser strike location to become the on-grade location. This function is useful for raising or lowering the initial on-grade location. To activate this function:

1. Position the receiver to the desired offset elevation while receiving a laser strike.
2. Press the select-function button (right side) 1 time. The first LED from the top lights.
3. Press the power/set-function button (left side) 1 time to set the function. Make sure you press the button for less than 2 second to avoid turning off the remote display.
 - Note:** If the command is accepted, the green on-grade LED lights and the amber offset-elevation LED lights solidly. If the command is not accepted no changes or indications are shown.
 - Note:** The range over which a receiver will accept this function depends on the model and selected deadband. The acceptance limit on proportional receivers is about 2.5 cm (1 in.) from the edge of the photocell array so that both above and below grade information can be displayed. Refer to the Software Version Operation Table for more information.
 - Note:** The offset function does not operate when the LR60 is in the angle compensation (ACE) mode.
4. To return to the default on-grade location, press the select-function button 4 times. The fourth LED from the top lights.
5. Press the power/set-function button 1 time to set the function. Make sure you press the button for less than 2 second to avoid turning off the remote display.
 - Note:** The amber offset-elevation LED turns off to confirm that you have returned to the default location.

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Set Temporary Offset

This function allows a current laser strike location to become a temporary on-grade location. This function is useful for temporarily raising or lowering the offset on-grade location. To activate this function:

1. Position the receiver to the desired temporary offset elevation while receiving a laser strike.
2. Press the select-function button 2 times. The second LED from the top lights.
3. Press the power/set-function button 1 time to set the function. Make sure you press the button for less than 2 second to avoid turning off the remote display.
 - Note:** If the command is accepted, the green on-grade LED lights and the amber offset-elevation LED flashes.
 - Note:** The temporary offset function does not operate when the LR60 is in the angle compensation (ACE) mode.
4. To return to the initial offset on-grade location, press the select-function button 3 times. The third LED from the top lights.
5. Press the power/set-function button 1 time to set the function. Make sure you press the button for less than 2 second to avoid turning off the remote display.
 - Note:** The amber offset-elevation LED lights solidly to confirm that you have returned to the initial offset location.
6. Alternatively, to return to the default on-grade location, press the select-function button 4 times and press the power/set-function button 1 time.

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Turn On/Off LEDs

This function allows the receiver's LEDs to be turned on/off. Turning them off conserves battery life when the receiver is powered by batteries. To turn on/off the LEDs:

1. Press the select-function button 5 times. The fifth LED from the top lights.
2. Press the power/set-function button 1 time to set the function. The receiver's LEDs will turn on if they were turned off or turn off if they were on.

Adjust LEDs' Brightness

This function allows the receiver LEDs' brightness to be adjusted to suit user preference or light conditions. The default setting is brightness level 6 (level 8 is the brightest). To adjust the brightness:

1. Press the select-function button 6 times. The sixth LED from the top lights.
2. Press the power/set-function button to change the brightness.
 - Note:** Eight levels of brightness are selectable. Each press increases the brightness by one level. When the maximum display is reached, the brightness rolls over to the dimmest display.
 - Note:** After four seconds of no button presses, the brightness is set at the last-selected brightness.

Set Deadband

Currently, this function is not operational for the LR30, LR50, or LR60 receiver.

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Specifications

Compatible Receivers	LR30, LR50, and LR60
Power Options	Receiver cable Machine battery cable, 10–30 V Machine power outlet cable, 12 V
Battery Life (LEDs Off, Default Brightness)	Alkaline: 55 hours Ni-MH: 40 hours
Operating Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Storage Temperature	-40 °C to 70 °C (-40 °F to 140 °F)
Size	11.4 cm x 5.1 cm x 2.8 cm (4.5 in. x 2 in. x 1.1 in.)

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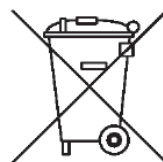
Notice to Our European Union Customers

For product recycling instructions and more information, please go to: www.trimble.com/environment/summary.html

Recycling in Europe

To recycle Trimble WEEE, call: +31 497 53 2430, and ask for the "WEEE associate," or

mail a request for recycling instructions to:
Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL



Please record your product information below. This will help you if you if there are any questions regarding your warranty or service.

PRODUCT: _____
SERIAL NUMBER: _____
DATE OF PURCHASE: _____
PURCHASED FROM: _____
PHONE: _____

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Warranty

Trimble warrants the remote display to be free of defects in material and workmanship for a period of two years.

Trimble or its authorized service center will repair or replace, at its option, any defective part for which notice has been given during the warranty period. If required, travel and per diem expenses to and from the place where repairs are made will be charged to the customer at the prevailing rates.

Customers should send the product to the nearest authorized service center for warranty repairs, freight prepaid. In countries with Trimble subsidiary service centers, the repaired product will be returned to the customer, freight prepaid.

Any evidence of negligent, abnormal use, accident, or any attempt to repair the product by other than factory-authorized personnel using Trimble certified or recommended parts, automatically voids the warranty.

The foregoing states the entire liability of Trimble regarding the purchase and use of its equipment. Trimble will not be held responsible for any consequential loss or damage of any kind.

This warranty is in lieu of all other warranties, except as set forth above, including any implied warranty merchantability of fitness for a particular purpose, are hereby disclaimed. This warranty is in lieu of all other warranties, expressed or implied.

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