Introduction
Thank you for choosing the Spectra Precision Laser Receiver LR50. The laser receiver is a rugged, multi-purpose, electronic device that emits a laser light generated by strobing laser transmitters. The receiver works with nearly all models of strobing lasers and is designed for both indoor and outdoor use.

Before using the receiver, be sure to read this user guide carefully. Included in it is information about setting up, using, and maintaining the receiver. Also included in this guide are WARNINGS, CAUTIONS, and NOTES. Each of these words represents a level of danger or concern. A WARNING indicates a hazard or unsafe practice that could result in serious injury or death. A CAUTION indicates a hazard or unsafe practice that could result in minor injury or property damage. A NOTE indicates important information unrelated to safety.

Your comments and suggestions are welcome; please contact us at: Trimble - Spectra Precision Division 5475 Kellenburger Road Dayton, Ohio 45424-1099 U.S.A. Phone: (937) 245-1333 (800) 358-7880 Fax: (937) 235-9004

NOTE: The LR50W ships configured to wireless (Radio) communication mode for use with a RD20 remote display. To change to wired (RS-485) mode for use with a Trimble Touchpanel Buttons

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5-Light Blade-Tilt Indication

On-grade Location Indicators

Alkaline Batteries

1. Hold the receiver to the accessory connector is pointing up.
2. Remove the dust cap from the accessory connector.
3. Loosen the two thumbscrews and remove the battery-access cover.
4. Install four "C" alkaline batteries as shown on the label diagram inside the battery compartment noting the (+) and (-) terminals.
5. Replace the battery-access cover firmly tighten the two thumb screws.
6. Place the accessory connector dust cap.

Plumb Hydrate Batteries (Ni-MH)

Rechargeable batteries require an initial and subsequent charging time of approximately 5 hours. Two or three charging cycles may be required to obtain maximum battery life.

1. Remove the dust cap from the accessory connector.
2. Insert the cannon adapter into the receiver accessory connector aligning the dot and connector key. Insert the charge female head into the cannon adapter.
3. Make sure the proper AC power source is on the charger.
4. To change the power adapter, press the tab release in the direction indicated by the arrow and remove the existing prong. Insert the proper adapter and release the tab.
5. Plug the charge into an appropriate outlet. The receiver will not operate when it is charging.

The charge-status indicator located on the back of the housing remains solid for approximately 5 minutes when the receiver is charging. The LED remains solid when the batteries are charging.

Change Status Indicator

Solid = Charging

Solid = Battery Problems

Flashing/Flashing Complex

Temperature Out-of-Limits

Battery Replacement

1. Remove the dust cap. Loosen the two thumbscrews, and remove the battery-access cover.
2. Remove the old batteries. Install new batteries as previously described. See "Alkaline Batteries" for more information.
3. Replace the access cover, firmly tighten the two thumb screws, and replace the dust cap.

Note: Refer to your local requirements for proper battery disposal.

Display-Brightness Button

The display-brightness button controls the brightness for the LED grade display and blade tilt display. Options include Bright and Dim. Use this feature for normal and lower light brightness conditions and for heavy duty operations. Use "Dim" conserve battery life.

To show the "X" symbol on the blade display, press and hold the display-brightness button. The cannon LED will display a "X" symbol on the display. The receiver is out of level. To turn off the "X" display, press the button again.

Features and Functions

1. Aluminum-Cast Upper and Lower Housings—protect the receiver from impact.
2. Polycarbonate Housing—promotes the electronic housing.
3. Rain Resistant Windows—include four sets of photos for eye protection to allow for a 180° field of view.
4. Super-Bright LEDs—are highly visible and graphically display blade or bucket position.
5. Power Button—turns the receiver on and off.
6. LED Status Indicators—on-grade location, deadband selection, and low-battery warning. They also function as the blade-tilt indicators.
7. Touch Panel Buttons—functions up to the blade-tilt selection, on-grade location, deadband (accuracy), plumb indication, and display brightness. Their secondary functions are to select blade-tilt accuracy, plumb accuracy indication, laser-beam averaging, and laser out-of-level warning.
8. Mounting Knobs—are attached to stainless steel clamps. The large-to-small clamps allow for and easy and rapid installation to the mast or magnetic to the receiver.
9. Access Screws—all easy access to battery compartments or the receiver can be replaced.
10. Accessory Connector—connects the cable to the optional remote display, machine, power cable, or automatic control box. The connector also accepts Ni-MH battery charger.

Blade-Tilt Button

Press the blade-tilt button to turn on/off the display. The LED status indicators display in a rolling sequence. When the function is turned on, the LEDs on the center are illuminated. When the function is turned off, the LEDs on the center are turned off.

When blade tilt is activated the LEDs provide 5 channels of tilt indication. The center LED on the left when the blade or the bucket is tilted within the tilt accuracy setting. The right side lights when the operator’s right side of the blade or bucket is tilted low. The left side lights when the left side of the blade is tilted low. Initially the blade-tilt function is set to level. It can be set to the center button or offset button.

Blade-tilt accuracy

Blade-tilt accuracy has three options: fine, standard, and wide. To cycle through and select one of these options, press and hold the power button, then press the blade-tilt button. The current selection shows rapidly. To change the current selection continue pressing this button combination while the status LED is flashing.

Blade-Tilt Accuracy

Fine = ±0.5°

Standard = ±1°

Wide = ±2°

Center/Offset On-Grade Button

Center on-grade is selected for typical grading or cut/fill operations. This mode indicates an equal amount of grade information above and below on-grade.

Low Battery Indicator

Solid – Charging

Solid – Battery Problems

Flashing/Flashing Complex

Temperature Out-of-Limits

On-grade Location Indicators

Low Battery Indicator Combination

5-Light Blade-Tilt Indication

On-grade Deadband Indicators

Blade-Tilt Button

Deadband (Accuracy) Button

Primary Function

Low Battery Display

ON-GRADE Button

On-Grade Accuracy

On-Declared Readback

On-Ground Ready

Touchpanel Buttons

Secondary Function

Alkaline Batteries

CAUTION: Do not attempt to charge alkaline or other disposable batteries.

NOTE: The receiver should only be charged when the receiver is between 0° C to 45° C (32° F to 115° F).
The temperature indication includes status charge and charge-error indicators located on the back of the housing.

Charge Status Indicator

Solid = Charging

Solid = Battery Problems

Flashing/Flashing Complex

Temperature Out-of-Limits

Charge Error Indicator

Solid = Battery Problems

Flashing/Flashing Complex

Temperature Out-of-Limits

Battery Replacement

1. Remove the dust cap.
2. Remove the old batteries.
3. Install new batteries as previously described. See "Alkaline Batteries" for more information.
4. Replace the access cover, firmly tighten the two thumb screws, and replace the dust cap.

Note: Refer to your local requirements for proper battery disposal.

Using the Receiver

Power Button

Press the power button to turn on the receiver.

NOTE: All the LEDs light briefly. Quickly following, each LED-grade display row turns on and off from top to bottom and each status indicator turns on and off. Additionally, the current deadband status and on-grade location momentarily display. If the receiver is out of a laser beam, the center green LED flashes to confirm power is on. If the receiver is in a laser beam, a corresponding LED grade display lights.

2. To activate the secondary functions, press and hold the power button while the receiver is on and then press the touch-panel buttons. These functions are indicated by the symbols above the buttons.
3. To turn off the receiver, press and hold the power button until the LEDs light; then release the button. Settings will be retained the next time the unit is turned on.

Out-of-Level Warning

The secondary function for the display-blank-out button is the laser out-of-level (OOL) warning. The function is used with lasers that can indicate that they are out of level by dropping their reticle speed. The factory default setting is for the warning to be off.

To activate the out-of-level warning, turn on the receiver. Press and hold the button. Press and release the display-blank-out button. The center green LED lights to confirm that the warning is on. Pressing the button again while the LEDs are activated. The LEDs then display the new setting.

When the receiver is in the laser beam, simply press the button and the setting changes.

Safety

Please follow all operating and safety instructions in this guide and that of your machine and follow the multipurpose checks of the product’s performance. Trimble or its representatives assume no responsibility for the results of the use of this product including any indirect, incidental, consequential, and lost of profits. Check your work frequently.

WARNING: When working near construction or agricultural machinery, follow all applicable regulations as described in the machine’s user guide.

WARNING: When excavating, follow all excavation and trench safety regulations and practices.

WARNING: Be aware of all overhead obstructions and electrical power lines. Otherwise, the blade-tilt display. Options include Bright and Dim. Use this feature for normal and lower light conditions and for heavy duty operations. Use "Dim" conserve battery life.

To show the "X" symbol on the blade display, press and hold the display-brightness button. The cannon LED will display a "X" symbol on the display. The receiver is out of level. To turn off the "X" display, press the button again.

When the warning is turned on and the laser drops to 140 RPM, a flashing "X" appears on the display to indicate that the laser is out of level.

Display-Brightness Button

The display-brightness button controls the brightness for the LED grade display and blade tilt display. Options include Bright and Dim. Use this feature for normal and lower light conditions and for heavy duty operations. Use "Dim" conserve battery life.

To show the "X" symbol on the blade display, press and hold the display-brightness button. The cannon LED will display a "X" symbol on the display. The receiver is out of level. To turn off the "X" display, press the button again.

When the warning is turned on and the laser drops to 140 RPM, a flashing "X" appears on the display to indicate that the laser is out of level.

Laser Out of Level Off

Laser Out of Level On

Laser Out of Level ON

Laser Out of Level OFF

Laser Out of Level OFF

Laser Out of Level ON

Laser Out of Level OFF

Laser Out of Level ON

Laser Out of Level ON
3. To reset the blade-tilt indication back to level, position the blade to level using a four-foot level or other method. Repeat the above procedure with the blade level.

4. To mount the receiver on the mast, turn the top and bottom mounting knobs counterclockwise until the clamps in back open enough to fit around the mounting mast. Place the receiver on the mast. Turn the knobs clockwise to tighten the clamps.

Note: The receiver will mount to round tubing that has a 42 mm to 50 mm (1.66 in. to 2.00 in.) diameter. The length is the height of the instrument (HI) plus the depth of cut from the horizontal plane to the center of the bucket (L). The receiver can be used for any machine operation. For more information about laser setup, please refer to the machine's user manual.

**Slope Matching**

The factory default setting for the blade-tilt indicator is level. The blade-tilt indicator can be nulled or set to zero for a blade slope other than level.

1. Position the machine and dig to the desired finished elevation.

2. Place the bucket in the grade-checking position and situate the machine so a grade reading is taken. The bucket can be fully extended or curled as long as the bottom of the bucket contact the ground. (If checking grade with the bucket curled or other position, point the bucket to the point of the bucket that makes contact with the ground.)

3. Mount the mast on the side of the dipper arm.

4. Mount the receiver on the mast.

5. Place the receiver at the desired slope.

6. Turn on the receiver and select the desired on-grade symbol.

**Excavating**

When an excavator is bucket moving, the dipper arm should be vertical or nearly vertical and the bucket positioned so that it can be easily put in the same position each time a grade reading is taken. The bucket can be fully extended or curled as long as the bottom of the bucket contact the ground. (If checking grade with the bucket curled or other position, point the bucket to the point of the bucket that makes contact with the ground.)

1. Position the machine and dig to the desired finished elevation.

2. Place the bucket in the grade-checking position and situate the machine so a grade reading is taken. The bucket can be fully extended or curled as long as the bottom of the bucket contact the ground.

3. Take a sample reading with the bucket "on-grade" and check to make sure the elevation is correct.

4. To turn the receiver off, select off on-grade and the smallest deadband.

5. Take grade readings with the bucket in the grade-checking position and the grade display LEDs on.

6. Take a sample reading with the bucket "on-grade" and check to make sure the elevation is correct.

Declaration of Conformity

This receiver to which this declaration relates is in conformity with the essential requirements and other relevant requirements of the Directive 2004/108/EC (EMC), Directive 2006/95/EC (LVD) and Council Directive 1999/5/EC R&TTE.

Safety: (article 3.1a) BS EN60950-1: 2006/A12:2011 EN 62311:2008

EMC: (article 3.1b) IETSI EN 301 489-1 V1.9.2 (2011-09) in accordance with the specific requirements of CISP22 Class A

IETSI EN 301 489-17 V2.1.1 (2009-05)

Spectrum: (article 3.2) IETSI EN 300 328 V1.7.1 (2006-10), EN10690-9-2, EN10690-9-3, EN10690-9-6, EN10690-9-8

We hereby declare that the equipment specified above conforms to the above Directive(s).

Trimble Navigation Ltd.
August 24, 2012

4570 Kellerman Road
Dayton, OH 45424-1099 U.S.A.

Notice to Our European Union Customers

For product recycling instructions and further information, please go to: www.trimble.com/environmental_summary.html

Recycling in Europe

To recycle Trimble WEEE, call: +31 497 33 2430, and ask for the WEEE associate. Or mail a request for recycling instructions to: Trimble Europe B.V.

Meerheide 45
5521 OZ Eersel, NL

Specifications

**Laser Receiver Range**

**Operating Range**: Over 600 ft (150 ft) radius, Laser Elevation

**Laser Power**: Minimum: 100 mW, Maximum: 1000 mW

**Vertical Sensitivity**: 15 mm ± 0.5° (0.59 in. ± 0.02°)

**Accuracy**: Time: ±0.10 mm (±0.004 in.)

**Slant**: ±0.20 mm (±0.01 in.)

**Power Cable**: 10-30 V dc

**Remote Display Option**: Yes

**Automatic Control Capability**: Yes, with CB20, CB25 and CB30 Control Box

**Blade-Tilt & Plumb-Swing Accuracy**: ±0.5°, ±1.5°, ±2.5°

**Vertical Reception**: 171 mm (6.75 in.)

**Operating Range**: Over 460 m (1500 ft) radius, laser dependent

**Operating Temperature**: –20 °C to +60 °C (–4 °F to 140 °F)

**Vertical Displacement**: 20 mm (2.0 in.)

**Square Tube**: 42 mm to 50 mm (1.66 in. to 2.00 in.)

**Water Proof**: Yes

**Power**: Ni-MH 45 hours, Display Dim / 30 hours, Display Bright

**Warranty**: Trimble warrants the receiver to be free of defects in material and workmanship for a period of two years.

Trimble or an 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 Trimble 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 negligence, abnormal use, accidents, 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 enumerates all of the warranties, express or implied, in this warranty, and without limitation, any and all warranties, whether express or implied, are hereby disclaimed. This warranty in lieu of all other warranties, expressed or implied.