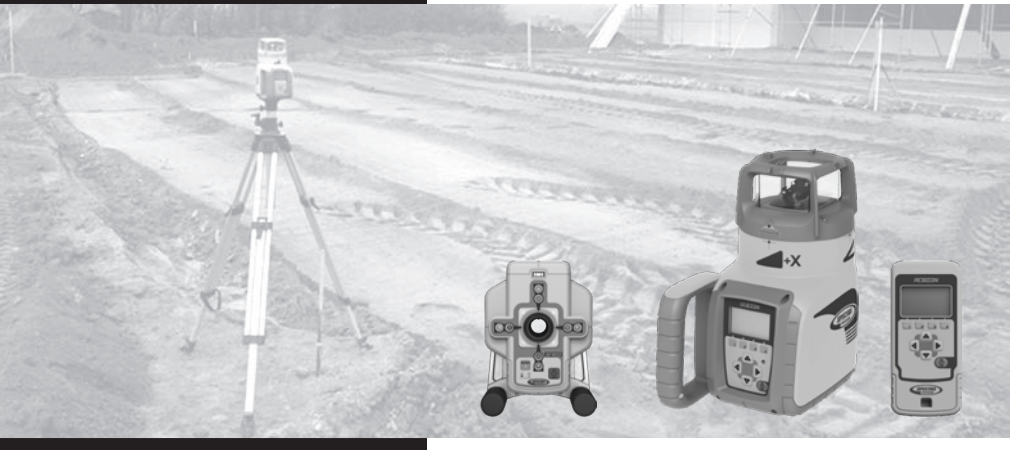
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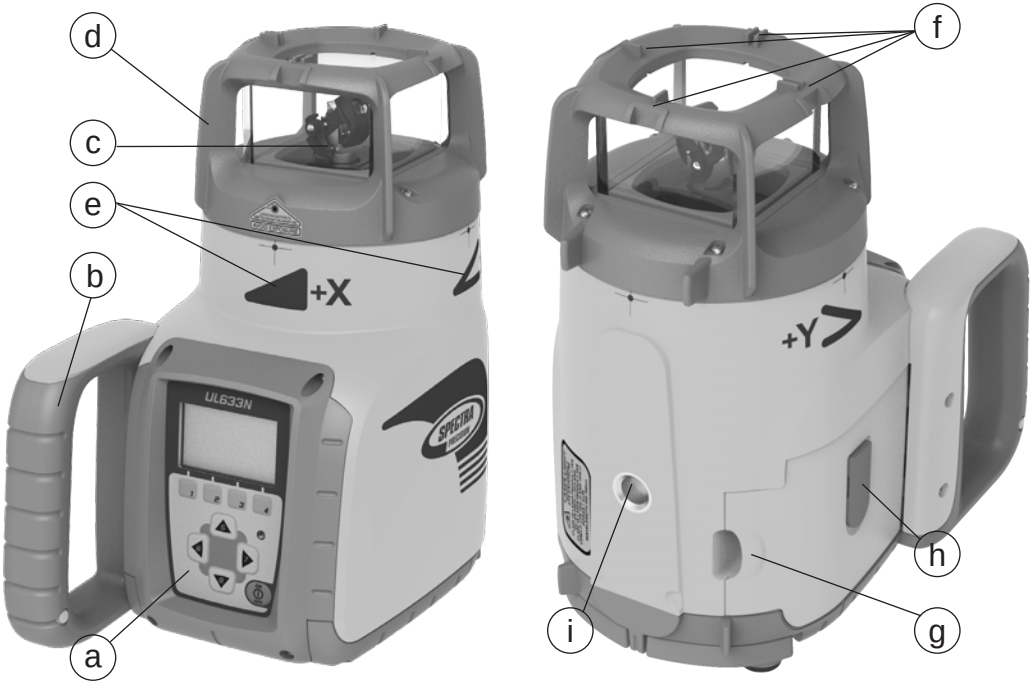
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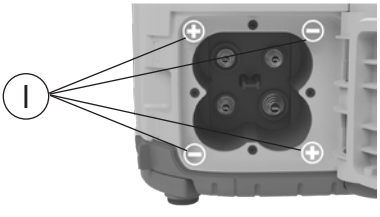
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Manuel de l´utilisateur
Guida per l´uso
Gúia del usuario
Gebruikershandleiding
Operatörshandbok
Betjeningsvejledning
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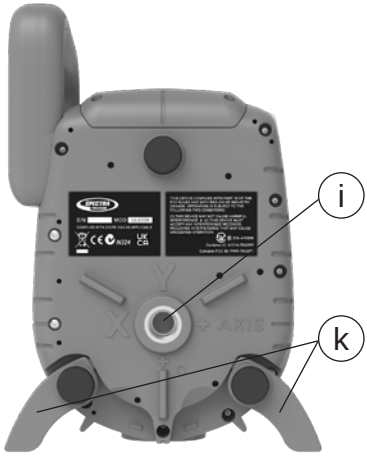
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(Alkaline batteries not included)







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1 INTRODUCTION

Thank you for choosing one of the Spectra Precision Lasers from the family of precision lasers.
The universal laser is an easy-to-use tool that offers accurate horizontal, vertical and sloped laser reference up to 1300 ft (400 m) away using a receiver. The plumb beam can be detected automatically and manually using the additional SpotFinder.

2 FOR YOUR SAFETY

For hazardless and safe operation, read all the user guide instructions.



- Use of this product by people other than those trained on this product may result in exposure to hazardous laser light.
- Do not remove warning labels from the unit.
- The UL633N is Class 3A/3R (IEC 60825-1:2014).
- Never look into the laser beam or direct it to the eyes of other people.
- Always operate the unit in a way that prevents the beam from getting into people‘s eyes.
- If initial service is required, which results in the removal of the outer protective cover, removal must only be performed by factory-trained personnel.

Caution: Use of other than the described user and calibration tools or other procedures may result in exposure to hazardous laser light.

Caution: Using different than described at the UL633N user guide, may result in unsafe operation.

3 COMPONENTS

a Keypad/LCD-Display
b Handle
c Rotor with fan beam lens
d Sunshade
e Axes-Alignment-Marks
f Sighting Guides/Scope Mounts
g Battery door
h Rubber Cover/Recharge Jack
i 5/8” x 11 Tripod Mounts
j Rubber Feet
k Turnable Legs
l Plus and Minus Battery Diagrams

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4 HOW TO USE THE LASER SYSTEM

4.1 POWERING THE LASER

4.1.1 Batteries
WARNING

Ni-MH batteries may contain small amounts of harmful substances. Be sure to charge the battery before using it for the first time, and after not using it for an extended length of time. Charge only with specified chargers according to device manufacturer's instructions. Do not open the battery, dispose of in fire or short circuit; it may ignite, explode, leak or get hot causing personal injury. Dispose in accordance with all applicable federal, state, and local regulations. Keep the battery away from children. If swallowed, do not induce vomiting. Seek medical attention immediately

4.1.2 Recharging the Batteries



The laser might be shipped with a rechargeable Ni-MH battery pack.
Note: The approximate charge of the batteries is shown at the left top side of the LCD.

The charger requires approx. 10 hours to charge empty rechargeable batteries.

For charging, connect the plug of the charger to the recharge jack of the battery pack.

New or long-time out-of-use rechargeable batteries reach their best performance after being charged and recharged five times. For Indoor applications the charger can be used as a power supply for the laser.

Alkaline batteries can be used as a backup. Alkaline batteries are not included. Insert 4 D-cell batteries noting the plus (+) and minus (-) diagrams inside the battery housing.

The batteries should only be charged when the laser is between 50° F and 104° F (10°C to 40°C). Charging at a higher temperature may damage the batteries. Charging at a lower temperature may increase the charge time and decrease the charge capacity, resulting in loss of performance and shortened life expectancy.

4.2 RC603N Radio/IR Remote Control





4.2.1 Powering the RC603N
1. Open the battery door using a coin or similar pry device to release the battery door tab on the RC603N. RC603N will be shipped with alkaline batteries. Rechargeable batteries can be used optional but need to be charged externally
2. Insert two AA batteries noting the plus (+) and minus (-) diagrams inside the battery housing.
3. Close the battery door. Push down until it "clicks" into the locked position.

4.2.2 Turning On/Off the RC603N
The radio/IR remote control is a hand-held device that allows you to send operational commands to the laser from a remote location.

Press the power button to turn on the radio remote control. The symbol " " and additional vertical bars appear in the right corner of the remote's top display line indicating the radio connection status between the laser and the remote control. If the RC603N is outside the radio operating range the remote switches automatically into the IR connection capability.

Note: When the remote control is initially turned on, the standard display (model number and software version) appear for the first 3 seconds, then the axes symbols and last-entered grade for each axis appear in the LCD.

With every button press, the LCD backlight is activated and turns off automatically if no button is pressed for 8 seconds.

To turn off the radio remote control, press the power button for two secounds.

Note: 5 minutes after the last button press, the remote control turns off automatically.

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4.3 ST805 SIGNAL TRANSPORTER

4.3.1 POWERING THE ST805

1.Open the battery door using a coin or similar pry device to release the battery door tab on the ST805. ST805 will be shipped with alkaline batteries. Rechargeable batteries can be used optional but need to be charged externally.

2.Insert two AA batteries noting the plus (+) and minus (-) diagrams inside the battery housing.

3.Close the battery door. Push down until it “clicks” into the locked position.

4.3.2 Turning On/Off the ST805

The signal transporter (ST) is a hand-held device that extends the radio range of a laser which is paired with the ST. Press the power button to power on the signal transporter. All LEDs turn on for three seconds. Finally a flashing yellow status LED shows the signal transporter has been paired with a laser but this laser is not available. A solid blinking yellow status LED is showing that the radio connection between the signal transporter and the paired laser has been established.

5 LASER SETUP

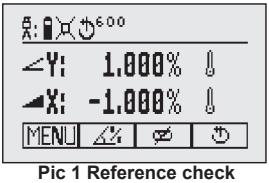
Position the laser horizontally (tripod mount and rubber feet downward!) on a **stable** platform, wall mount or tripod at the desired elevation.
The laser recognizes automatically whether it is used horizontally or vertically when switched on.

5.1 Turning On/Off the laser

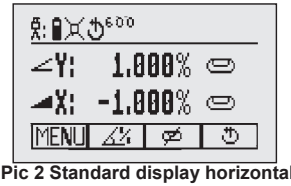
Press the power button for one second to turn On the laser.

Press the power button for two seconds to turn Off the laser.

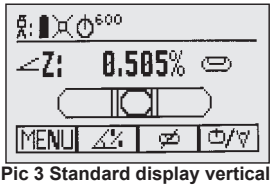
Note: When a grade value has been entered and after temperature change of more than 9°F (5°C), the unit starts the temperature/reference check while the thermometer symbol is flashing (Pic 1).



Pic 1 Reference check



Pic 2 Standard display horizontal



Pic 3 Standard display vertical

Another temperature check takes place after 20 min. and finally every 60 min. When the temperature/reference check has been finished, the standard display appears and the bubble symbols flash until self-leveling has been completed (Pic 2).

If the self-leveling can’t be finished based on the selected sensitivity, an error message appears.

A bubble symbol helps to adjust the unit at the cross axis when set up vertical for automatic Spot Align or in vertical manual mode.

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5.2 Features and Functions

5.2.1 Standard Display

The remote control mirrors the functionality of the laser keypad



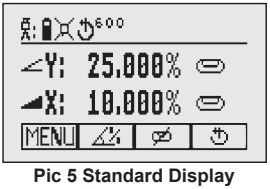
Button 1: Quickly press and release starts the **MENU** entry.
Button 2: Quickly press and release starts the grade entering mode.
Button 3: Quickly press and release activates/ deactivates the manual mode.
Button 4: Quickly press and release to toggle through the pre-selected rotation speeds. Press and hold for three seconds changes the unit into scan mode. When in scan mode, quickly press and release button 4 toggles through the pre-selected scan sizes.
Button 5, 8: up/down arrow buttons.
Button 6, 7: left/right arrow buttons.
Button 9: ON/OFF button - press for 1 second to turn on the unit; press and hold for 2 seconds to turn off the unit.
Leveling/Standby – LED (green/red)



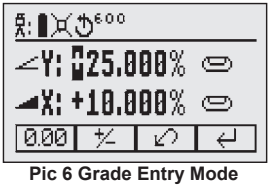
5.3 Standard Features

5.3.1 X-Y-Z-grade entering – Digit Select mode (Default)

Quickly press and release button **2** (Pic 5) starts the grade entering mode.
Both grade values will be shown.
A cursor (Pic 6) blinks at the current position which can be changed.
Press/release button **1** ⇨ quick set to 0%
Press/release button **2** ⇨ change the sign in front of the grade value
Press/release button **3** ⇨ return to the standard display.
Quickly press and release button **4** to confirm the selected grade value and return to the standard display.



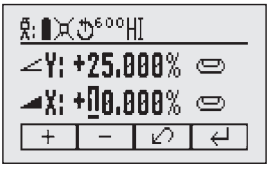
Pic 5 Standard Display



Pic 6 Grade Entry Mode

Press and release button **5** or **8** (down or up) to move the cursor to the X- or Y-axis (not used in Z- mode).
Pressing and releasing button **6** or **7** (right or left) moves the cursor to the right/left.
Use button **1** or **2** (Plus or Minus) to set the desired digit (Pic 9).
The laser will self-level to the required grade position after confirming the grade change with button **4**.

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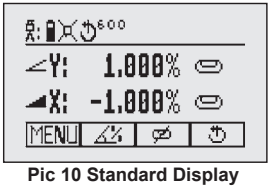
Pic 9 Set Digit

Note: The bubble symbols at the laser and remote control LCD will flash until the laser has been self-leveled to the requested grade position.

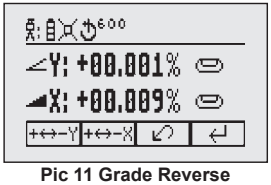
5.3.2 X-Y-Z-grade entering – Step and Go mode

How to change to ‚Step and Go' mode see chapter 8.5

Quickly press and release button **2** (Pic 10) starts the grade entering mode. Both grade values will be shown.
Press/release button **1** ⇨ grade reverse Y (Pic 11)
Press/release button **2** ⇨ grade reverse X (Pic 11)
Press/release button **3** ⇨ return to the standard display
Quickly press and release button **4** to confirm the selected grade value and
return to the standard display



Pic 10 Standard Display



Pic 11 Grade Reverse

Press and hold button **6** or **7** (left/right) to change X- axis grade value after the comma; press and hold buttons **6** + **7** simultaneously starts X-axis quick change mode where the grade value in front of the comma will be set to 0% and then starts changing in 1% increments.

Press and hold button **5** or **8** (up/down) for changing Y -axis grade value; press and hold buttons **5** + **8** simultaneously starts Y - axis quick change mode where the grade value in front of the comma will be set to 0% and then starts changing in 1% increments.

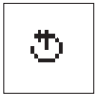
Note: The speed of the grade value change increases with the amount of time the button is held down.

Note: The grade value for both axes increases in 1.00% increments. When the grade value for either axis reaches its highest amount, the grade value switches to the lowest value for that axis. For example, the value switches from +25% to -25%.

The laser will self-level to the required grade position after confirming the grade change with button **4**.

Note: The bubble symbols at the laser's LCD will flash until the laser has been self-leveled to the requested grade position.

5.3.3 Rotation Mode



Repeatedly pressing the button **4** toggles through 0, 80, 200, 600, 750 rpm regardless if the unit is in automatic or manual mode.
At 0 rpm, the beam stops automatically close to the +Y- axis center position.
When set up in automatic or grade mode, using buttons **5/8** increases/decreases rotor speed from 0 to 80 and then up to 750 rpm continuously in 10 rpm increments.

5.3.4 Pointing Mode

At 0 rpm, buttons **6/7** move the beam to the left/right side. When set up vertically at 0 rpm, button **5/8** move the beam clockwise/counterclockwise.
Note: Press and hold button **4** for three seconds to change the unit from rotation mode (default) into scan mode.

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5.3.5 Scan Mode



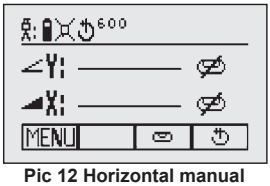
Press and hold button **4** at the Standard Display for three seconds to change the unit into scan mode.
Quickly press and release button **4** to toggle between the pre-selected scan sizes 5, 15, 45, 90, 180 degrees and 0; regardless if the unit is in automatic or manual mode.
When working in horizontal automatic mode, press and hold button **5/8** to increase/decrease the line size in 5 degrees increments. Press and hold button **6/7** moves the scan line to the right/left direction.
When used in automatic vertical mode, pressing and holding button **5/8** moves the scan line counterclockwise/clockwise. When set up vertical, pressing and holding button **6/7** moves the scan line into the right/left direction regardless if in automatic or manual mode.
Note: Press and hold button **4** for three seconds to change the unit back to rotation mode (default) mode.

5.3.6 Manual Mode

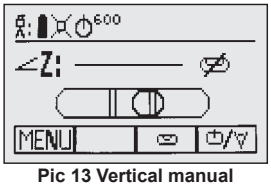




Pressing and releasing button **3** at the Standard Display activates/deactivates the manual mode regardless if set up horizontal or vertical.
Manual mode is indicated by horizontal lines next to the axes symbols (Pic 12).
An additional bubble helps to adjust the laser on the cross axis when set up vertical (Pic 13).



Pic 12 Horizontal manual



Pic 13 Vertical manual

In manual mode (horizontal), the Y-axis can be sloped by pressing the Up-(**5**) and Down-Arrow-(**8**) buttons on the laser's keypad or the remote control. Additionally, the X-axis can be sloped by pressing the Left-(**6**) and Right-(**7**) Arrow-buttons on the laser or remote control.

In manual vertical mode, the up and down arrow buttons adjust the Z-axis slope, and the left and right arrow buttons align the laser beam to the right/left side.

To resume automatic self-leveling mode, press the manual button again.

6 SPECIAL MENU FEATURES

6.1 Menu Functions (Radio controlled)

Press and release button **1** at the Standard Display to enter the MENU.

The menu offers always only the features which can be selected depending on the setup (horizontal or vertical).

The icon of the selected function will be highlighted.

A down arrow at the the right site indicates that the user can scroll down through the menu using the button **8** (down arrow).

After going to the next menu row, an up/down arrow at the the right site indicates that the user can scroll up/down through the menu (4 different screens) using the buttons **5/8** (up/down arrows).

Pressing and releasing button **3** changes the unit always back to the standard or previous display.

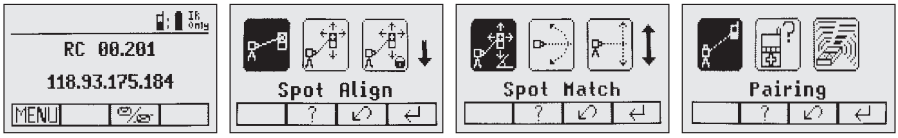
Press and release the buttons **6/7** until the desired icon at the selected menu row is highlighted.

Press and release button **4** to open the submenu OR start the selected function.

6.2 Menu Functions (IR controlled)

If the RC603N is paired with a transmitter and the radio connection is not available, e.g., through a pipe, the IR connection offers reduced functions such as Spot Align, Spot Match and Pairing.

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Press and release the MENU button at the Standard Display.

Pressing and releasing button **3** changes the unit always back to the standard or previous display.

Press and release the buttons **5** to **8** until the desired icon is highlighted.

Press and release button **4** to open the submenu OR start the selected function.

Note: Pairing function is needed to pair an already paired remote with a new transmitter.

The new transmitter has to be set to the pairing dialog for this operation. Otherwise the pairing can not be successful processed.

The pairing information of the previous pairing is still stored in the previous paired transmitter and should be deleted in the pairing dialog of this transmitter

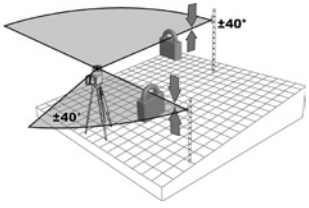
Note: If a remote is paired with a transmitter the IR signals of the remote (in case of an interrupted radio connection) will transmitted in a **private mode** so that only the paired transmitter can received these IR commands.

6.3 Automatic PlaneLok Mode

The PlaneLok mode can be activated in horizontal and vertical automatic and manual mode.

In PlaneLok mode when set up horizontal, the beam will be locked to a fixed elevation point (up to 150 m (490 ft) located on one axis at each side of the laser.

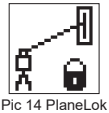
For keeping vertical alignments fixed to a direction point, PlaneLok can be used in both directions on the Y-axis and/or on the X-axis.

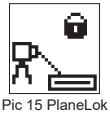


Note: In every PlaneLok mode the laser continues to servo to the receiver's signals. Any loss of signal over an extended period of time (1 minute) causes the laser to go into the HI-alert condition (beam turns off, rotor stops and a warning message occurs at the LCD. PlaneLok mode can be reactivated after the error message has been deleted with button 4. Exiting of PlaneLok mode can be done by pressing button 3 (ESC) or any HL760 button.

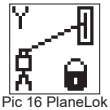
Horizontal Set Up:

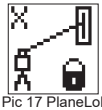
1. Set up the laser over the reference point.
2. Attach the HL760 receiver to a grade rod. Place the receiver at the second point and adjust it to the On-grade position. The receiver should be permanently mounted at this location and at the desired elevation.
3. Use the sighting guides on the top of the laser to align the laser to the receiver. Turn the laser on the tripod until it is roughly aligned to the receiver's position (the alignment range for both axes is +/-40°).
4. Press and release the MENU button at the Standard Display and select PlaneLok (Pic 14).


Pic 14 PlaneLok horizontal


Pic 15 PlaneLok vertical

5. When set up horizontally, press and release button **4** to open the PlaneLok submenu; select the desired PlaneLok axis Y (Pic 16) or X (Pic 17) or Y and X-axis (Pic 18) then press button **4** to start PlaneLok.


Pic 16 PlaneLok Y-Axis


Pic 17 PlaneLok X-Axis


Pic 18 PlaneLok Y- and X-Axis

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Note: The laser starts to search for the receiver. A flashing Receiver and Lock symbol appears at the selected axis and becomes solid when PlaneLok has been completed.

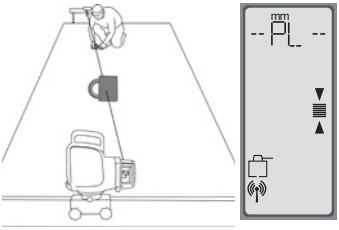


Pic 19 PlaneLok symbol

The HL760 display shows a flashing –**PL**– during the time the laser is searching and adjusting the beam to the on-grade position.

When PlaneLok is complete, –**PL**– stops flashing at the HL760 display.

6. Exiting of PlaneLok can be done by pressing button **3** (ESC).



Vertical Set Up:

1. Set up the laser over the reference point

2. Attach the HL760 receiver (with the vertical adapter) to the next reference point

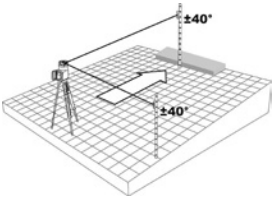
3. Press and release the MENU button at the Standard Display and select PlaneLok (Pic 15). Press and release button 4 to open the PlaneLok submenu; select the Y axis (Pic 16) or X-axis (Pic 17) or Y- and X-axis (Pic 18) and press and release button 4 to start PlaneLok.

Note: When used in vertical mode, the receiver has to be placed with the photocell on the bottom side; for Y-PlaneLok, align the top of the receiver to the top of the laser. The HL760 display shows a flashing – PL – during the time the laser is searching and adjusting the beam to the on grade position. When PlanLok is complete, - PL – stops flashing at the HL760 display.

4. Exiting of PlaneLok can be done by pressing button 3 (ESC).

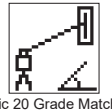
6.4 Automatic Grade Match

The Grade Match mode can be activated in horizontal automatic and manual mode.



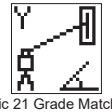
In Grade Match mode, the laser can be used to measure the existing grade value between two known elevation points (up to 150 m (490 ft) located on one axis at each side of the laser

1. Set up the laser over the reference point.
2. Attach the HL760 receiver to a grade rod. Check the laser's elevation next to the laser then position the receiver at the second point WITHOUT changing the receiver's elevation on the rod.
3. Use the sighting guides on the top of the laser to align the laser to the receiver. Turn the laser on the tripod until it is roughly aligned to the receiver's position (the alignment range for both axes is +/-40°).
4. Press and release the MENU button at the Standard Display and select Grade Match. (Pic 20)

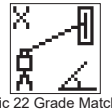


Pic 20 Grade Match

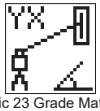
5. Select the desired Grade Match axis Y (Pic 21) or X (Pic 22) or Y and X (Pic 23) then press button **4** to start Grade Match.



Pic 21 Grade Match Y-Axis



Pic 22 Grade Match X-Axis



Pic 23 Grade Match Y-/X-Axis

Note: The laser starts to search for the receiver. A flashing Receiver and angle symbol appears at the selected axis and disappears when Grade Match has been completed.

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While the laser is searching and adjusting the beam to the on-grade position, the HL760 display shows a flashing –**GM**–.
When Grade Match has been completed, the HL760 goes back to the standard elevation display. The remote control as well as the laser will display the final measured grade value.





Note: If Grade match can't be completed by checking the limits, the laser comes with an Error message (Grade Match has Failed) which can be deleted with button **4** (OK). The HL760 goes back to standard elevation indication.

6.5 Manual Grade Match

Navigate to the menu Grade Match (Pic 20). Choose the submenu Grade Match Man. (Pic 25)



Pic 25
Grade Match manual

In Manual Grade Match, the beam on both axes can be adjusted to the receiver's on-grade position, e.g, when other receivers as the HL760 are used. The grade for the Y-axis can be adjusted with button **5/8** while button **6/7** adjust the X-axis. During Manual Grade Match a crossed vial and angle (Pic 26) symbol appear next to the continuously changing Y- and X-axis grade value. After adjusting to the receiver's on-grade position, press button **2** (OK) to go back to automatic mode where the final grade value will be shown for both axes.



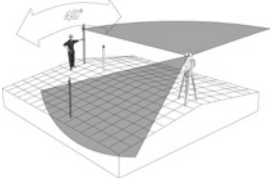
Pic 26

Note: Pressing button **3** (ESC) exits Manual Grade Match and changes the unit to manual mode..

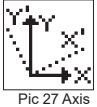
6.6 Axis Alignment

6.6.1 Automatic Axis Alignment

Automatic Axis Alignment mode adjusts automatically the direction the grade axis is pointing to the receiver's location by an electronically simulation of rotating the unit on its base to match the hub. Using Axis Alignment, the laser axis can be aligned to one direction hub (up to 150 m (490 ft) located on one axis at each side of the laser.



1. Set up the laser over the reference point.
2. Place the grade rod with the attached HL760 receiver at the desired direction hub.
3. Use the sighting guides on the top of the laser to align the laser to the receiver. Turn the laser on the tripod until it is roughly aligned to the receiver's position (the alignment range for both axes is +/-40°).
4. Press and release the MENU button at the Standard Display and select Axis Align. (Pic 27)

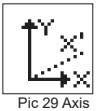


Pic 27 Axis
Alignment horizontal

5. Select the desired axis Y (Pic 28) or X (Pic 29) or Y and X (Pic 30) then press button 4 to start Axis Align.



Pic 28 Axis
Alignment Y Axis



Pic 29 Axis
Alignment X-Axis



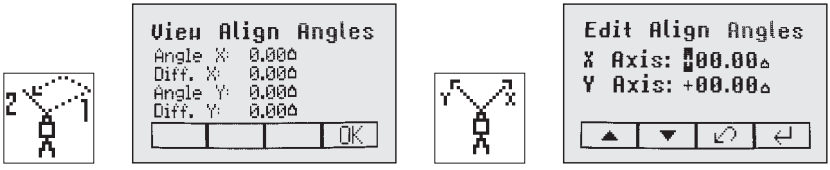
Pic 30 Axis Alignment
Y andX-Axis

Note: Adjusting the receiver into the beam before starting the automatic Axis Alignment reduces the time needed for finishing the alignment.

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6.6.2 View Align Angles

Selecting the submenu „**View Align Angles**“ shows the alignment angle after an axis alignment has been completed. This function can be used to measure an angle difference between two direction hubs in a range up to max. 80° by performing two axis alignments in sequence.



6.6.3 Edit Align Angles

The submenu „**Edit Align Angles**“ selection allows to dial in an axis angle where the axis direction will be aligned too after a first axis alignment has been done. Two rows are available for typing in axis angle values.

Button **5** and **8** can be used to toggle between both rows. Changing the sign and numbers can be done using the buttons **1** and **2**.

Press and release button **4** to confirm the selected axis angles. The axes will be adjusted while the display falls back to the main Menu.

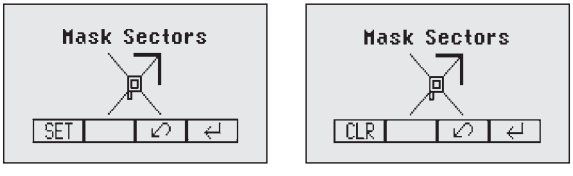
Press and release button **3** (ESC) to exit the Angle functions.

6.7 Mask mode



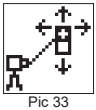
Pic 32
Mask Mode

Select the Mask icon (Pic 32) and press and release button **4** to open the Mask setting menu. Depending on which side or corner the beam should be turned off, the required sector can be selected. Press and release the buttons **5** to **8** for moving a short flashing line around the mask mode symbol. For selecting the sector where the bar is flashing, press and release button **1** (SET). After setting the first sector, button **1** changes to show CLR which offeres the capability of deleting the selected mask sector again. Use button **5** to **8** to move the flashing bar to other required areas and repeat the setting process. When all areas have been set, press button **4** to store the mask sector selection until the unit will be turned off.



Note: The unit always powers up with the mask mode deactivated (default).

6.8 Manual Spot Search mode



Pic 33
Spot Search

The Spot Search mode is used for detecting the plumb beam manually using the Spot Finder SF601 and can be activated in horizontal and vertical automatic and manual mode.

Press and release the MENU button at the Standard Display and select Spot Search (Pic 33).

Pressing button **4** activates the fan beam while the rotation speed changes to 750 rpm and the unit goes back to the standard display.

The 4 red LEDs around the center hole guide the user to the plumb beam‘s center position - all 4 LEDs on => confirmation the SF601 has been set to the correct center position.

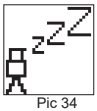
To switch off the Sport Search mode press and release the MENU button and select Spot Search (Pic 33); pressing button 4 switches off the Spot Search mode. The regular plumb beam is visible again and the unit goes back to previous rotation speed.

Note: Manual Spot Search can also be activated any time by turning on the Spot Finder SF601.

Turning Off the SF601 deactivates the Spot Search mode immediately by deactivating the fan beam.

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6.9 Activating/Deactivating Standby mode



Pic 34
Standby

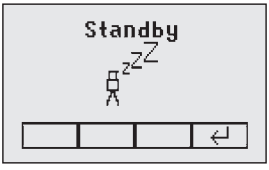
Press and release the MENU button at the Standard Display and select Standby (Pic 31).

Pressing and releasing button **4** activates the Standby mode.

The self-leveling will be stopped and the beam will be turned off while the HI alert is still active.

The display shows the standby symbol and the Level/Standby LED flashes red every 5 seconds.

To deactivate Standby mode and restore full operation of the laser, press and release button **4**.



6.10 Start Reference Check



Pic 35
Reference
Check

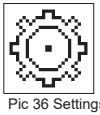
When working during temperature changes and over long distances the product requires a frequent reference check to maintain accuracy and avoid errors caused by drift. The transmitter will do an automatic upon start up and after 20 minutes of operation. It will repeat the reference check every 60 minutes and when there is a 5°C (9°F) or 2°C (4°F) change within the product. (See section 8.9). When carrying out work where accuracy is paramount it is advised to manually prompt a reference check at regular intervals.

Press and release the MENU button at the Standard Display and select Reference Check (Pic 35).

Pressing and releasing button **4** starts the Reference Check considering the current temperature inside the housing. While the rotor checks the correct position the rotation will be stopped.

Note: A grade value has to be entered before the unit starts the reference check.

6.11 Setting Menu



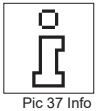
Pic 36 Settings

Press and release the MENU button at the Standard Display and select Settings (Pic 36).

Press and release button **4** to open the Setting Menu; select the desired function then press button **4** to open the selected submenu function OR start the selected function.

Please see the Setting Menu details at the end of the user guide.

6.12 Info



Pic 37 Info

Press and release the MENU button at the Standard Display and select Info (Pic 37).

Buttons **6/7** can be used to toggle between UL, RC and Runtime.

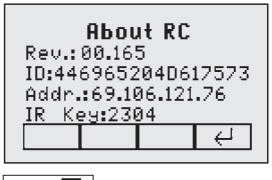
Press and release button **4** to confirm the selection.

The UL/RC information (software version, ID, etc.) or the runtime of the UL will be displayed.





Pic 38 Info UL





Pic 39 Info RC





Pic 40 Runtimes

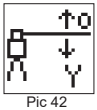
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6.13 Service

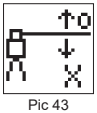


Pic 41
Service

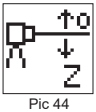
Press and release the MENU button at the Standard Display and select Service (Pic 41). Buttons **6/7** can be used to toggle between **Calibration Y** and **Calibration X** OR **Calibration Z** when set up vertically.



Pic 42
Calibration Y

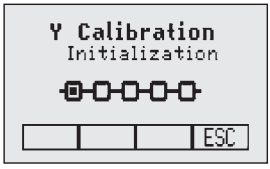


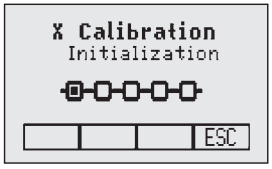
Pic 43
Calibration X

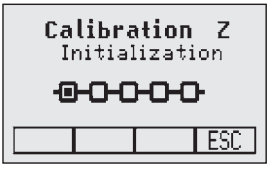


Pic 44
Calibration Z

Press and release button **4** to confirm the selection. The calibration at the selected axis starts the field calibration procedure.







6.14 RC603N Service menu:

This menu is available only via the RC603N.

6.14.1 RF IR options



Pic 45 RF IR
Options

Choose menu ‚RF IR Options' (Pic 45). Press and release button **4** to confirm the selection and select one of the following options:

RF On; IR auto => Radio on all times; IR will be activated automatically after radio connection has been lost.

RF Off; IR On => Radio turned Off; IR always activated

RF On; IR Off => Radio turned On; IR always Off



Pic 46 RF On;
IR Auto

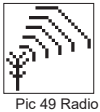


Pic 47 RF Off;
IR On



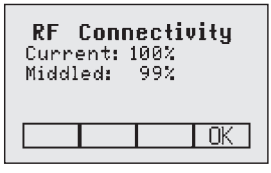
Pic 48 RF On;
IR Off

6.14.2 RF Connectivity



Pic 49 Radio
Connectivity

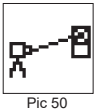
Press and release button **4** to get a status of the current Radio connectivity (Pic 49).



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7 SPECIAL FEATURES - VERTICAL SETUP

7.1 Z-Axis Automatic Spot Align



Pic 50
Spot Align

The Spot Finder SF601 guides the plumb beam to the target point in the horizontal axis, while the Z-axis grade value will be maintained. Using Spot Alignment, the plumb beam can be aligned automatically to one direction hub (up to 80 m (260 ft) located in front of the plumb beam.

1. Set up the laser over the start point.
2. Adjust the display bubble to the centered position.
3. Turn on and attach the SF601 Spot Finder at the desired direction hub.
4. Press and release the MENU button at the Standard Display; select Spot Align (Pic 50) and start the function using button **4** (fan beam will be activated).

Note: Spot Align can also be started using the RC603N via infrared.

Note: The display falls back to the standard display while a Spot Finder symbol (Pic 51) is flashing.



Pic 51
SpotFinder

The plumb beam will be automatically aligned to the center of the SF601.

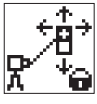
5. After alingment is complete (all 4 red LEDs at the SF601 are on), the plumb beam will move vertically to the previous dialed in Z-axis grade value.

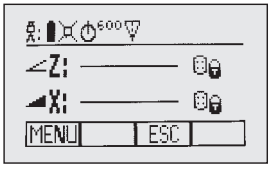
Note: Automatic Spot Align can be exited any time by pressing and releasing button **3** (ESC).

7.2 Z-axis Automatic Spot Lok

Automatic SpotLok (like PlaneLok) can be used to align and hold the plumb beam automatically to the SF601's center point and continuously adjusting the Z- and X- axis until exiting this mode. The UL looks always to the center position of the SF601 and re-adjusts the beam immediately to the center to avoid any setup/alignment drift caused by vibrations or temperature influences (e.g. when working on concrete pads, facade applications). Using Spot Lok, the plumb beam can be aligned automatically to one direction hub (up to 80 m (260 ft) located in front of the plumb beam.

1. Set up the laser over the start point.
2. Place the SF601 Spot Finder at the second reference point.
3. Press and release the MENU button at the Standard Display, select Spot Lok (Pic 52) and start the function using button **4** (fan beam will be activated).





Note: Spot Lok can also be started via infrared using the RC603N.

Note: The display falls back to the standard display while a Spot Finder and lock icon (Pic 53) is flashing. The plumb beam will be automatically aligned to the center of the SF601.



Pic 53
Lock Mode

4. After Spot Lok is complete all 4 red LEDs at the SF601 are on and the icons stop flashing. The transmitter's plumb beam is always checking for perfect alignment to the center of the SF601. All 4 LEDs flash every 5 seconds to confirm the correct alignment.

Note: Automatic Spot Lok can be exited any time by pressing and releasing button **3** (ESC).

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7.3 Z-axis Automatic Spot Match

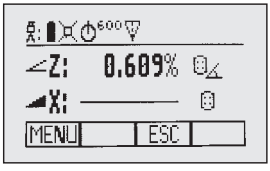
Automatic-Spot-Match can be used for measuring an unknown grade value between two existing elevations e. g., in an existing pipe which needs to be replaced or an open trench with an unknown grade value.

The plumb beam will be automatically aligned to the SF601 center point (Z- and X- axis) and switches back to automatic Z-axis grade mode while displaying the measured Z-grade value.

Using Spot Match, the plumb beam can be aligned automatically to one direction hub (up to 80 m (260 ft) located in front of the plumb beam..

1. Set up the laser over the start point.
2. Place the SF601 Spot Finder at the second reference point.
3. Press and release the MENU button at the Standard Display, select Spot Match (Pic 54) and start the function using button **4** (fan beam will be activated).





Note: Spot Match can also be started via infrared using the RC603N.

Note: The display falls back to the standard display while a Spot Finder and angle symbol (Pic 55) is flashing. The plumb beam will be automatically aligned to the center of the SF601.

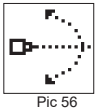


Pic 55
Angle Symbol

4. When Spot Match has been completed, the fan beam will be turned off and the UL calculates the grade value between both elevation points. The calculated grade value will be displayed at the UL's and RC's display.

Note: Automatic Spot Match can be exited any time by pressing and releasing button **3** (ESC).

7.4 Line Scan



Pic 56
Line Scan

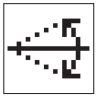
Line Scan (Pic 56) centers the rotor horizontally and can be used to align the plumb beam to a desired horizontal position. Press and release the MENU button at the Standard Display and select Line Scan. Pressing and releasing button **4** activates the Line Scan mode while the rotor checks the limits of the X- axis and stops at the center position.

Pressing button **3** (ESC) stops the movement and changes the unit into manual mode.

Corrections up and down can be done using button **5/8**; for left/right corrections use button **6/7**.

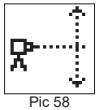
Press and release the manual button to change the unit back to full automatic mode.

During the Line Scan process the center move symbol (Pic 57) is flashing.



Pic 57
Center Move

7.5 Beam Plunge



Pic 58
Beam Plunge

Beam Plunge centers the rotor vertically and can be used to align the plumb beam to a desired vertical position, e.g., when doing Interior layout.

Press and release the MENU button at the Standard Display and select Beam Plunge (Pic 58). Pressing and releasing button **4** activates the Beam Plunge mode while the rotor checks the limits of the Y- axis and stops at the center position.

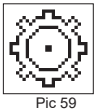
Pressing button **3** (ESC) stops the movement and changes the unit into manual mode.

Corrections up and down can be done using button **5/8**; for left/right corrections use button **6/7**.

Press and release the manual button to change the unit back to full automatic mode.

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8 Settings



Pic 59
Settings

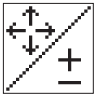
Press and release the MENU button at the Standard Display and select Settings (Pic 59).

Press and release button **4** to open the Setting Menu; select the desired function then press button **4** to open the selected submenu function OR start the selected function.

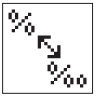
The Setting Menu offers the following functions:



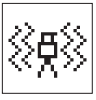
Pairing



Grade Entry



Grade Display



Sensitivity



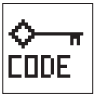
HI-Alert



Reference Temperature



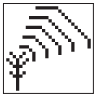
User Name



Set Password



Password On/Off



RF-Channel



Select Language



Position Info

8.1 Pairing



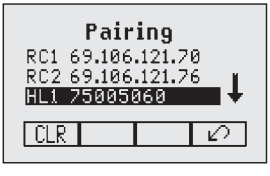
Pic 71 Pairing

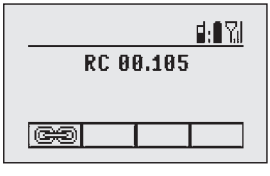
Pairing is needed to couple different devices with the laser. The laser is able to communicate with several numbers of other radio network participants and pairing is the process to link these to each other. Buying the laser all devices should be paired but for some reasons this may not be true or the pairing has been lost. So you can pair the devices as described in the following sections.

Note: Make sure that pairing mode is selected only at one laser which is within the radio range of the remote during a pairing request. Otherwise pairing procedure can be confused.

8.2 Pairing the laser with remote control

Start with the laser. When in menu Settings (Pic 59), press and release button 4 to open the pairing menu (Pic 71). The display shows the currently paired units (up to two remotes). Make sure at least one RC slot is free for the remote to be paired. If no free RC slot is available, choose one of them and delete it using button 1 (CLR). Press button 2 to start the pairing process. Continue with the remote choosing the symbol pairing (Pic 71); the pairing starts automatically. After successful pairing, the laser display shows the ID of the remote in the pairing list. On the laser press button 3 at least once to leave the pairing menu or three times to get back to the standard display. The laser is now ready to operate.

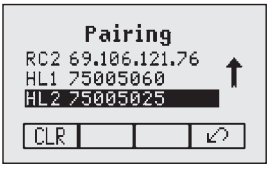


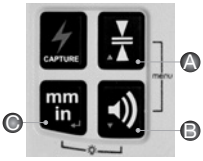


8.3 Pairing the laser with receiver HL760

To pair the laser and the receiver select Settings and press and release button **4** to open the Pairing menu (Pic 71). The display shows the currently paired units (up to 2 receivers). If already 2 receivers have been paired, one or both of them have to be deleted using button **1** (CLR).

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Next, turn on the receiver then press and hold the Deadband (A) and the Audio (B) buttons for two seconds. After two seconds the display shows MENU first, then RDIO.

Press and release the Units (C) button – display shows the current radio mode.

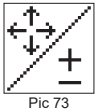


If not already set to **LS**, press Units button and then press Deadband or Audio button until **LS** is displayed. Press Units button again to enter selection. Press and release the Audio button – display shows PAIR. Press the Units button again – the display shows PAIR and a rotating bar. After completing PAIR, OK will be displayed. The UL633N pairs now automatically with the new receiver. Press and release the Power button two times to exit the menu. A laser symbol is lit to confirm the receiver can communicate with the laser. On the laser press button 3 at least once to leave the pairing menu or three times to get back to the standard display. The laser is now ready to operate.

8.4 Pairing the laser with the signal transporter (ST805)

Make sure the ST805 is switched off. Start with the Laser. When in menu Settings (Pic 59), press and release button 4 to open the pairing menu (Pic 71). The display shows the currently paired units (one signal transporter max). Make sure the ST slot is free for the signal transporter to be paired. If the slot is not free, choose the ST slot and delete it using button 1 (CLR). Press button 2 to start the pairing process. Switch on the signal transporter. The signal transporter pairs automatically with the laser. If the pairing was successful the address or ID of the paired ST is shown in the pairing list; also the signal transporter shows a solid blinking yellow status LED. On the laser press button 3 at least once to leave the pairing menu or three times to get back to the standard display. The laser is now ready to operate.

8.5 Grade Entry



Pic 73
Grade Entry

Select the Grade Entry icon (Pic 73) and press and release button **4** to open the Grade Entry menu.

Buttons **6/7** can be used to toggle between Step and Go (Pic 74) and Digit Select (Pic 75).

Press and release button **4** to confirm the selection.



Pic 74
Step and Go



Pic 75
Digit Select

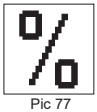
8.6 Grade Display



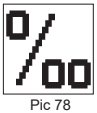
Pic 76
Grade Display

Select the Grade Display icon (Pic 76) and press and release button **4** to open the Grade Display menu.

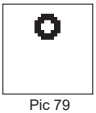
The desired Grade Display Mode (Percent (Pic 77)/ Permille (Pic 78)/Degree (Pic 79)) can be selected using the buttons **6/7**. Press and release button **4** to confirm the selected display mode.



Pic 77
Percent



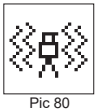
Pic 78
Per mill



Pic 79
Degree

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8.7 Sensitivity Selection



Pic 80
Sensitivity

Select the Sensitivity icon and press and release button **4** to open the Sensitivity menu (Pic 80). The desired Sensitivity: Low (Pic 81), Mid (Pic 82) (Default) and High (Pic 83)) can be selected using the buttons **6/7**. Press and release button **4** to confirm the selected Sensitivity.



Pic 81 Low



Pic 82 Mid



Pic 83 High

8.8 HI-alert Selection



Select the HI icon (Pic 84) and press and release button **4** to open the HI-alert menu. The desired HI-alert: 5 min.((Pic 85); Default), 30 seconds (Pic 86) and HI-Off (Pic 87) can be selected using the buttons **6/7**. Press and release button **4** to confirm the selected HI-alert.

Pic 84 Hi Alert



Pic 85 HI-alert
5 minutes

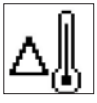


Pic 86 HI-alert
30 seconds



Pic 87 HI-alert
OFF

8.9 Reference Temperature



Pic 88 Ref. Temp

Select the Reference Temperature icon (Pic 88) and press and release button **4** to open the Reference Temperature menu. The desired reference temperature: 2°C / 5°F (Pic 89) or 5°C / 9°F (Pic 90) (default) can be selected using the buttons 6/7. Press and release button 4 to confirm the selected reference tenperature.



Pic 89 2°C/4°F



Pic 90 5°C/9°F

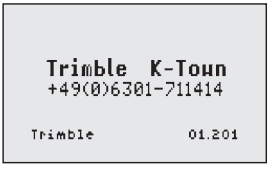
8.10 User Name



Pic 91
User Name

Select the User name icon (Pic 91) and press and release button **4** to open the User name menu. One row for typing names in big font (15) and one row in small font (18) for letters or numbers are available. Button **5** and **8** can be used to toggle between both rows. Changing the characters can be done using the buttons **1** and **2**. Press and release button **4** to confirm the selected user name. The display falls back to the main menu. Any time the unit will be powered up, the User info will be displayed for couple seconds.





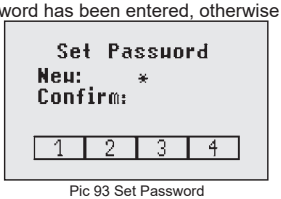
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8.11 Set Password

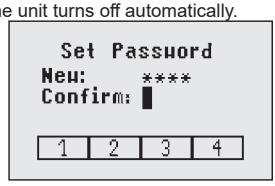


Pic 92 Set Password

"Set password" can be used to define a key that is requested during the unit powering up. This can prevent the unauthorized usage of the transmitter. Enter Menu -> Settings -> Set Password. Select the Set Password icon (Pic 92) and press and release button 4 to open the Password menu. Use Button 1 to 8 to type in a password containing of 4 digits (Pic 93) and repeat the password at the second row. (Pic 94) Press and release button 4 to store the selected password;
unit falls back to the standard menu. After powering up the unit, the standard display comes up if the correct password has been entered, otherwise the unit turns off automatically.



Pic 93 Set Password



Pic 94 Confirm Password

8.12 Password On/Off



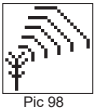
Pic 95 Password On/Off

Select the Set Password ON-Off icon (Pic 95) and press and release button **4** to open the Password menu. Buttons **6/7** can be used to toggle between Password On (Pic 96) and Password Off (Pic 97) if a Password has been entered before. Press and release button **4** to confirm the selection.


Pic 96 Password On


Pic 97 Password Off

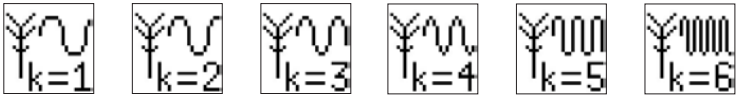
8.13 Radio (RF) Channel


Pic 98 RF Channel

In the RF Channel menu the user can change the radio channel. This may help to overcome some radio connectivity issues based on heavy radio traffic at the job site. In the menu "Settings" (Pic 59) select the RF Channel icon (Pic 98) and press and release button 4 to open the Radio Channel menu (Pic 98). The RF channel selection dialog contains six radio channels. Choose one channel and press and release button 4 to confirm the selected radio channel.

Note: After changing the RF channel, the RC, HL and ST needs to be paired again.

Note: To achieve the best radio performance, it is recommended to use the products in a height of app. 1m using a tripod or similar items.



8.14 Select Language


Pic 99 Language

Select the Language icon (Pic 99) and press and release button **4** to open the Language menu. Use button **5** to **8** to select the required local language (EN, DE, IT, FR, ES, PT, NL, DA, NO, SV, FI, PL, TR, CZ).Press and release button **4** to store the selected language; unit falls back to the standard menu.

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8.15 Position Info



Pic 100
Position Info

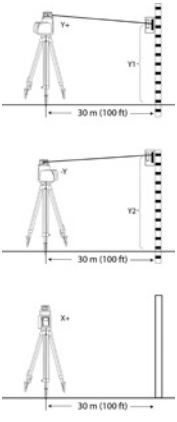
When working with high grade values (> 10%) or at extreme the product requires the position info to maintain accuracy and avoid errors caused by different gravity. The user has the chance to provide the position info of the job site to the product. This is the degree of latitude as well as the altitude.

Choose Menu Settings (Pic 59) and navigate to the sub menu Position Info (Pic 100). Press button 4 to activate the submenu. With buttons 1 and 2 the different values can be increased/decreased. Also '+' or '-' for the latitude can be changed with buttons 1 and 2. With buttons 5, 6, 7 and 8 the cursor position can be changed.

Note: To restore the default value scroll down with arrow buttons 5 or 8 to 'Default position'. Press button 1 ('Set'); the unit will change the settings to the default values. Press button 4 to confirm the change.

9 CALIBRATION

9.1 Checking Calibration of the Y- and X-Axes



1. Set up the laser 30 m (100 ft) from a wall and allow it to level.
2. Set the grade to 0.000% in both axes.
3. Raise/lower the receiver until you get an on-grade reading for the +Y axis. Using the on-grade marking notch as a reference, make a mark on the wall.

Note: For increased precision, use the super fine-sensitivity setting (1.0 mm/ 1/16 in.) on the receiver.

4. Rotate the laser 180° (-Y axis toward the wall) and allow the laser to re-level.
5. Raise/lower the receiver until you get an on-grade reading for the –Y/axis. Using the on-grade marking notch as a reference, make a mark on the wall.
6. Measure the difference between the two marks. If they differ more than 3 mm at 30 m (1/8 inch at 100 feet), the laser needs calibrating.
7. After checking the Y-axis, rotate the laser 90°. Repeat the above starting with the + X axis facing the wall.

9.2 Checking Calibration of the Z-(vertical) Axis

To check vertical calibration, you need a plumb bob with at least 10m (30ft) of string.

1. Suspend the plumb bob in front of a house i.e., attached to a window frame whose window height is at least 10m (30ft).
2. Set up the laser in vertical so that the laser beam strikes the receiver's on-grade position at the top of the string.
3. Look for any deviation using the receiver from the top of the string to the bottom of it. If the deviation is more than 1mm (<1/16 in.), the vertical axis needs calibrating.

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10 Troubleshooting

Any error message can be deleted with a short press of button **4** (OK). The table shows the related description and possible solutions. The next service center should be contacted if a different error message as shown at the table will be displayed.

Error codes	Description	Solution
21	Temporary EEprom problem	Repeat pairing and re-enter the customer settings
120	HI alert - Unit Height changed	Check laser beam elevation after deleting the HI alert
130	Mechanical Limit during Axis Alignment, Grade Match or Spot Match	Re-align the unit closer to the alignment point; check if existing slope is above +/-25%
131	Rake Angle Limit	Re-align the unit closer to the alignment point
140	Laser beam blocked	Make sure there are no obstacles between the transmitter and the HL760 or SF601
141	Time Out - Function could not be completed in the allowed time	Check radio operating range/ connection; check stable laser setup
150	No receiver - Receiver not available for single axis automatic function	Make sure the receiver is on and paired
151	No receivers - Both receivers are not available for automatic alignment function	Make sure both receivers are on and paired
152	No receiver - The laser searched for the receiver but could not find it	Check the operating range for auto function and restart the auto alignment
153	Lost Receiver - The laser searched and found the receiver but then lost it	Check the operating range for auto function and restart the auto alignment
160	X,Y or Z level sensor defect	Contact service center

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SF601 attached to a grade rod
using the standard receiver clamp

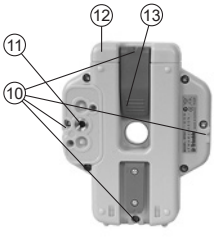




SF601 attached to the
optional pipe laser target base

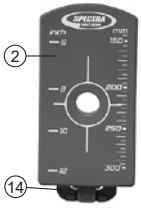
Components SF601







1. SF601
2. Slider
3. Center Hole
4. Power Button
5. Bubble Vial
6. Battery LED
7. Mode LED
8. Red Direction LEDs
9. IR transmitters/receiver
10. Marking notches (front and back)
11. M6 Clamp Mount
12. Battery door
13. Latch for Battery Door
14. Release Tab Slider







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Powering the SF601

1. Open the battery door pulling the battery door latch.
   The SF601will be shipped with alkaline batteries.
   Rechargeable batteries can be used optional but need to be charged externally
2. Insert four AA batteries noting the plus (+) and minus (-) diagrams inside on the battery door.
3. Close the battery door. Push down until it “clicks” into the locked position.



SF601 - Features and Functions

1. Power/Mode Button: Press and release the power button to turn ON the SF601.

All display LED’s will light for 1.0 sec.

Press and hold power button for >1 sec. to turn OFF the SF601. After 1 sec. all display LED’s will light 1.0 sec.

Note: If the SF601 has been turned on, a short button press activates/deactivates the fan beam lens (a previously chosen automatic mode will be exited automatically).

LED’s:

2. LED1:

solid green when SF601 is on and battery OK

blinking red if battery voltage is 3,8V<V bat <4V

solid red if battery voltage is <3,8V;

SF601 turns off automatically after 5 min.



3. Mode LED2:

yellow solid: automatic mode

flashing: none or lost signal

off: manual mode

4. Direction LEDs red:

Manual mode: pointing towards the center of the plumb beam.

All 4 LEDs are solid red when the beam is centered.

Automatic Spot Lock mode: solid for 5 min., then LED’s flash every 5 seconds.

Using the SpotFinder SF601 for vertical UL applications

With the UL633N using IR connection, the SF601 can be used in three different automatic modes Automatic-Spot Alignment, SpotLok and Spot-Match and in addition in a manual/display (Spot Search) mode to detect the plumb beam (fan beam).



Automatic-Spot Alignment: SF601 guides the beam to the target point in the horizontal axis, while the Z-axis grade value will be maintained.

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Using **SpotLok mode** (like PlaneLok) aligns and holds the plumb beam automatically to the SF601 center point (both axes) until exiting this mode.



Automatic-Spot-Match: (like Grade Match- two existing elevation points will be connected to measure the grade value between these two points) aligns the plumb beam automatically to the SF601 center point (both axes) and moves back to Z-axis automatic mode while displaying the measured Z-axis grade value.

Note: When Automatic Spot Alignment and Automatic Spot-Match have been completed, the UL633N turns off the fan beam automatically.

Note: With a quick press and release of the SF601 power button, the fan beam lens at the UL633N will be activated/deactivated while a previous activated auto mode will be exited.

SF601 – Manual/Display Mode

With a quick press and release of the SF601 power button, the fan beam lens at the UL633N will be activated/deactivated while a previous activated automatic mode will be exited.

Manual/Display (Spot Search) mode: If the fan beam lens will be activated and no automatic mode has been started, the SF601 is in manual/display mode where the RED direction LEDs guide the user to the center position of the fan beam.

Note: IR communication is disabled.

The direction LEDs work similar like using the pipe laser target, e.g., if **the left top LED is on**, the SF601 has to be moved to the left/up position to bring the center hole into the center of the beam.

All **4 LEDs are solid red** when the beam is centered.



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12 PROTECTING THE UNIT

Do not expose the unit to extreme temperatures or temperature changes (do not leave inside the car). The unit is very robust and can resist damage if dropped even from tripod height. Before continuing your work, always check the leveling accuracy. See Checking Calibration section. The laser is water proof and can be used indoors and outdoors.

13 CLEANING AND MAINTENANCE

Dirt and water on the glass parts of laser or prism will influence beam quality and operating range considerably. Clean with cotton swabs. Remove dirt on the housing with a lint-free, warm, wet and smooth cloth. Do not use harsh cleansers or solvents. Allow the unit to air dry after cleaning it.

14 PROTECTING THE ENVIRONMENT

The unit, accessories and packaging ought to be recycled. All plastic parts are marked for recycling according to material type.



Do not throw used batteries into the garbage, water or fire. Remove them in compliance with environmental requirements.

15 WARRANTY

Spectra Precision LLC warrants the UL633N to be free of defects in material and workmanship for a period of 5 years. Spectra Precision LLC or its authorized service center will repair or replace, at its option, any defective part, or the entire product, 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 Spectra Precision LLC or the nearest authorized service center for warranty repairs or exchange, freight prepaid. Any evidence of negligent, abnormal use, accident, or any attempt to repair the product by other than factory-authorized personnel using Spectra Precision LLC certified or recommended parts, automatically voids the warranty. Special precautions have been taken to ensure the calibration of the laser; however, calibration is not covered by this warranty. Maintenance of the calibration is the responsibility of the user. The foregoing states the entire liability of Spectra Precision LLC regarding the purchase and use of its equipment. Spectra Precision LLC 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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16 TECHNICAL DATA

16.1 UL633N

Leveling accuracy[1,3]:	± 0.5 mm/10 m, 1/16“ @ 100 ft, 10 arc seconds
Grade accuracy[1,3]:	± 1.0 mm/10 m, 1/8“ @ 100 ft, 20 arc seconds
Grade temperature drift sensitivity:	± 0,3 mm / 10 m / 1°C; 1/16” @ 310 ft. @ 1°F
Rotation:	0 - 750 rpm
Scan mode:	5 preset sizes + variable adjustment
Operational area[1,2]:	appr. 400 m (1300 feet) radius with detector
Laser type:	650 nm
Laser class:	Class3
Self-leveling range:	appr. ± 14°
Grade range (Y;X):	± 25% both axes (not simultaneously)
Grade range (Z):	± 25%
Leveling indicators:	LCD indications and LED flashes
Radio range (HL760)[1,2,4]:	up to 150 m (490 ft)
Power source:	4 x 1,5 V D alkaline batteries or NiMH battery pack
Battery life[1]:	35 hours NiMH; 40 hours alkaline
Operating temp.:	-20°C to 50°C (-4°F to 122°F)
Storage temp.:	-20°C to 70°C (-4°F to 158°F)
Tripod attachments:	5/8 x 11 horizontally and vertically
Dust and Water proof:	IP67
Weight:	3.1 kg (6.8 lbs)
Low voltage indication:	LCD battery indicator
Low voltage disconnection:	unit shuts off

16.2 Remote Control RC603N

Radio Operating range[1,2,4]:	up to 150 m (490 ft)
IR Operating range[1]:	up to 80 m (260 ft)
Power source:	2 x 1.5V AA alkaline batteries
Battery life[1]:	130 hours
Dust and Water proof:	IP66
Weight:	0.26 kg (0.4 lbs)

16.3 Spot Finder SF601

Operating range[1,2,4]:	up to 80 m (260 ft)
Power source:	4 x 1.5V AA alkaline batteries
Battery life[1] :	30 hours
Dust and Water proof :	IP67
Weight:	0.43 kg (0.4 lbs)

1) at 21°Celsius
2) under optimal atmospheric circumstances
3) along the axis
4) Heigt of instruments 1m (e.g. with tripod)

17 DECLARATION OF CONFORMITY

We
Spectra Precision (Kaiserslautern) GmbH
Declare under our sole responsibility that the products
UL633N and **RC603N**
To which this declaration relates is in conformity with the following standards:
EN 50371:2002, EN 60825-1:2014, ETSI EN 300328 V1.7.1:2006, ETSI EN 301489-1 V1.9.2:2011, ETSI EN 301489-3 V1.4.1:2002
following the provisions of directive **R&TTE 1999/5/EC.**
The managing director

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18 ELECTRO-MAGNETIC COMPATIBILITY

Declaration of Conformity

This digital apparatus does not exceed the Class B Limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This device complies with part 15 off the FCC rules. Operation is subject to the condition that this device does not cause harmful interference.

Note: The product been tested and found to comply with the 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. The product 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 or television reception, which can be determined by turning the product off and on. The user is encouraged to try to eliminate the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the product and the receiver.

• For more information, consult your dealer or an experienced radio/television technician.

Caution: Caution: Changes or modifications to the product that are not expressly approved by Spectra Precision LLC could void authority to use the equipment.

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