UL633N

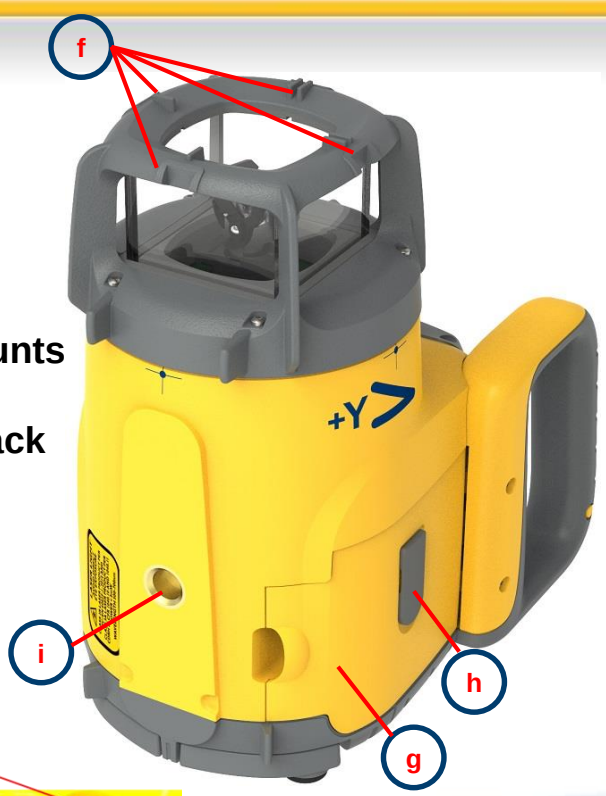
Hands-On training

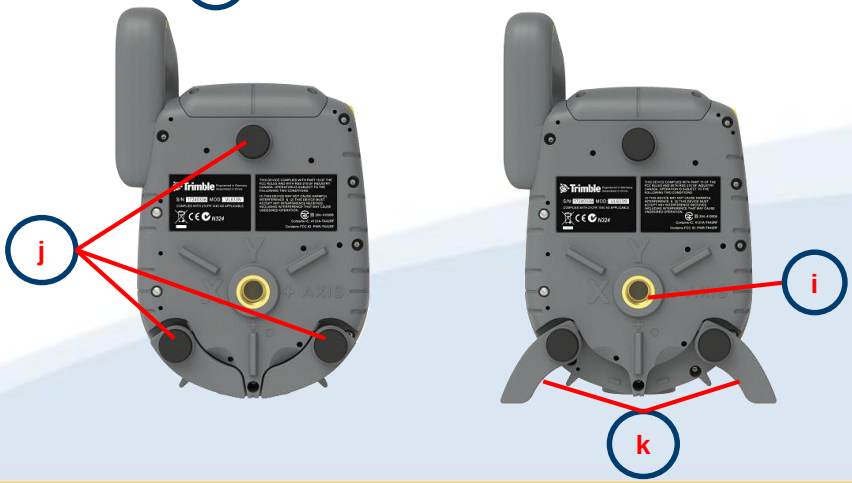
SPECTRA PRECISION

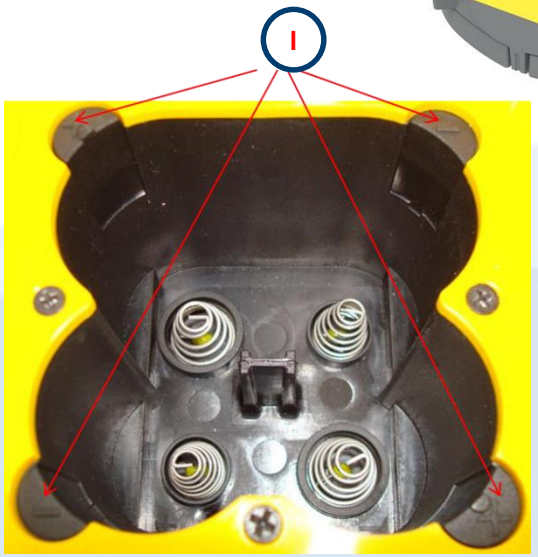
11.07.17

UL633N 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

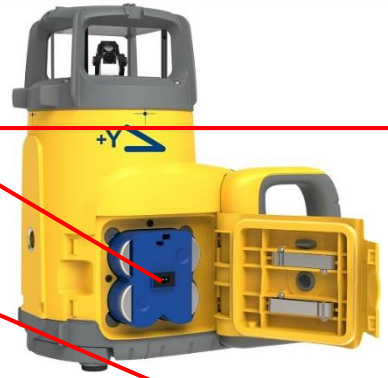






Powering the UL633N

1 – UL is shipped with a rechargeable NiMH battery pack (Q104667), alkaline batteries can be used as a backup.
2 – The rechargeable battery pack can be charged inside as well as outside of the unit
3 – The charger (Q104781) can be used as a power supply when used Indoors
4 – Alkaline batteries can be used as a backup
5 – An external power cable (Q104802) can be used
6 – Plus and minus symbols indicate how to put the alkalines into the battery compartment



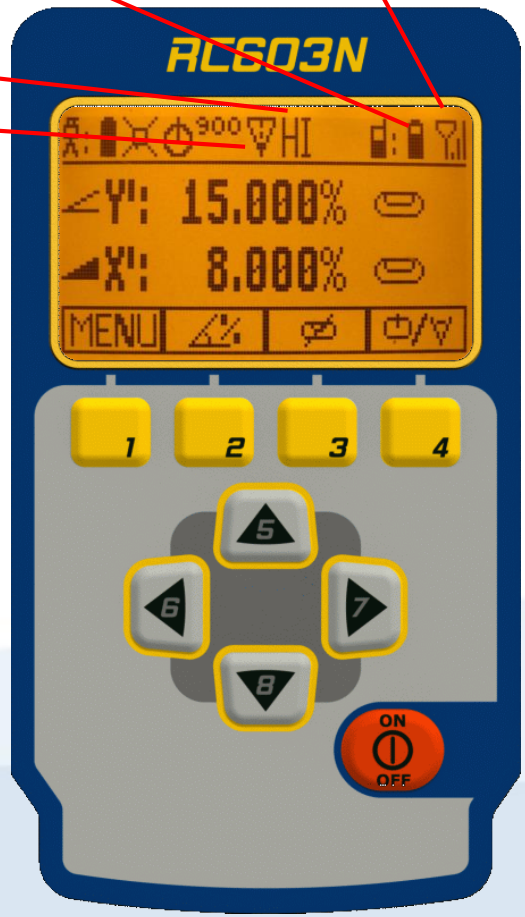
Powering the RC603N

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.

SPECTRA PRECISION

Standard Display

The remote control mirrors the functionality of the UL 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.

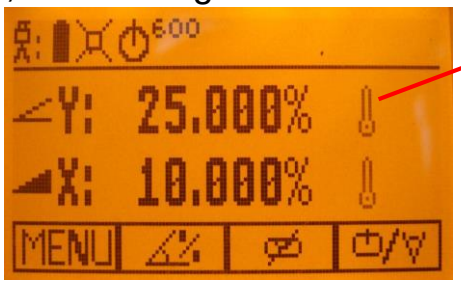
Leveling/Standby – LED (green/red)

SPECTRA PRECISION

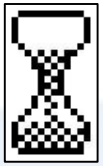
Turning On/Off the Laser

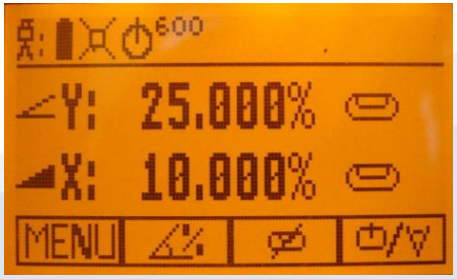
Turning On/Off the laser

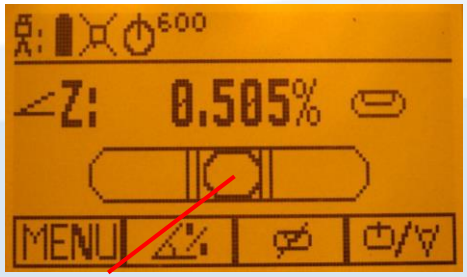
- **Press the power button to turn On/Off the laser.**
  - Depending on the setup (horizontal or vertical) and if a grade value has been dialed in, the unit starts the temperature/reference check while the thermometer symbol is flashing.
  - If there occur additional vibrations at the jobsite during the reference check, the leveling time can be increased.



- When the temperature/reference check has been finished, the standard display appears and the bubble symbols flash until self-leveling has been completed.
- Don’t start a menu function before the reference check has been finished.
- If the self-leveling can’t be finished based on the selected sensitivity, an error message appears





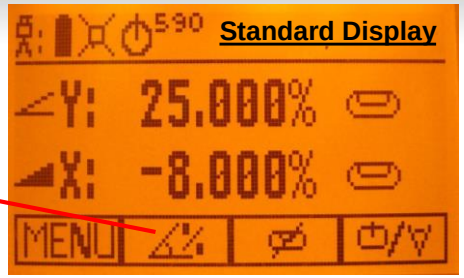


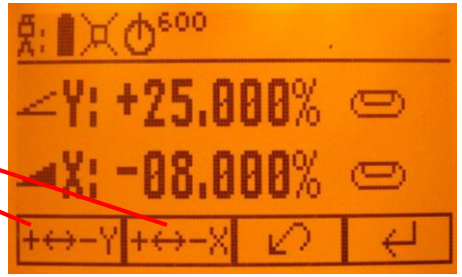
- A **bubble symbol** helps to adjust the unit at the **cross axis** when set up vertical for automatic Spot Align or in vertical manual mode.

Standard Features

X-Y-Z-grade entering

Step and Go mode





Quickly press and release button **2** starts the **grade entering mode**.
Both grade values will be shown.
Press/release button **1** ➔ grade reverse Y
Press/release button **2** ➔ grade reverse X
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

- 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/Z -axis **grade value;** press and hold **buttons 5 + 8 simultaneously** starts **Y/Z - 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:** 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.

Standard Features

X-Y-Z-grade entering

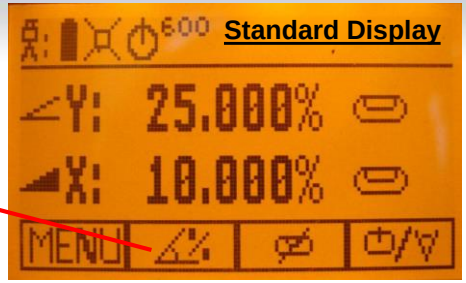
Digit Select mode

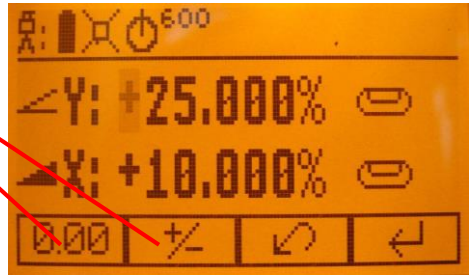
- Quickly press and release **button 2** starts the **grade entering mode.**
- Both grade values will be shown.
- Press/release button **1** ➔ **quick set to 0%**
- Press/release button **2** ➔ **change the sign** of the grade value

Press/release button **3** ➔ return to the standard display.

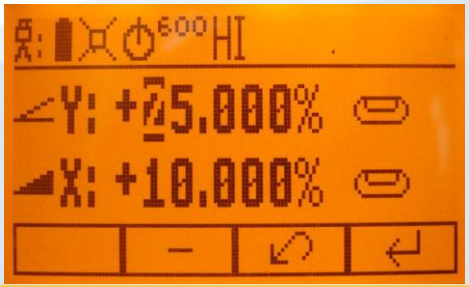
Quickly press and release button **4 to** confirm the selected grade value and return to the standard display

- 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.**
- 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.



Standard Features

Using the 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**.
In **automatic mode,** using **buttons 5/8 increases/decreases rotor speed** from 0 to 80 and then up to 750 rpm **continuously in 10 rpm increments.**

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.

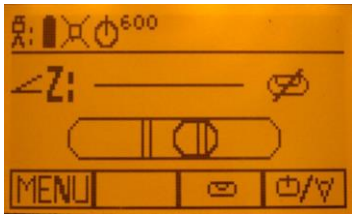
Using the Scan mode

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.

Standard Features

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. An additional bubble helps to adjust the laser on the cross axis when set up vertical.



- **In Manual mode (horizontal), the Y-axis can be sloped** by pressing the **Up-(5) and Down-(8)-** Arrow 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 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 3** again.

Special MENU Features

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 **selected icon** 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).

Note: As soon as the menu has been opened, button **2 (question mark)** can be used to open a help text which explains the selected function more in detail.

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

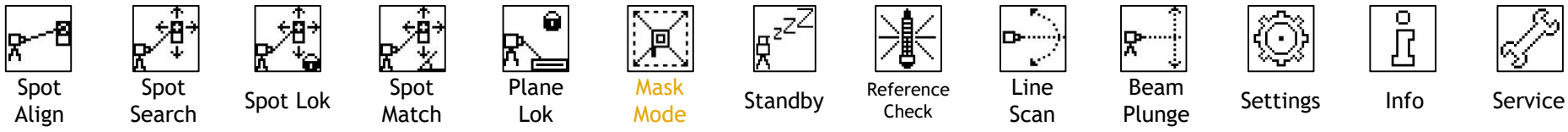
Pressing and releasing **button 3** changes the unit always **back to the standard or previous display.**

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.**

Menu functions when set up horizontal

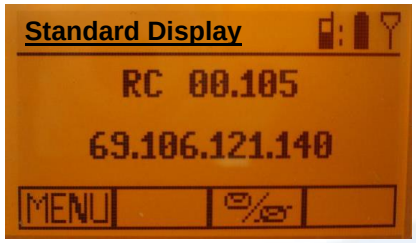
Menu functions when set up vertical

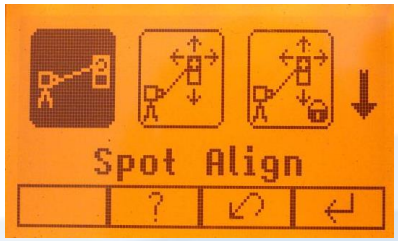


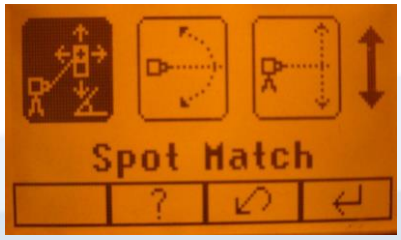
Special MENU Features

Menu Functions (IR controlled)

If the RC603N is paired with a transmitter and the radio connection doesn't work, e.g., through a pipe, the IR connection offers the following functions.
Press and release the **MENU button 1** 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 receive these IR commands.

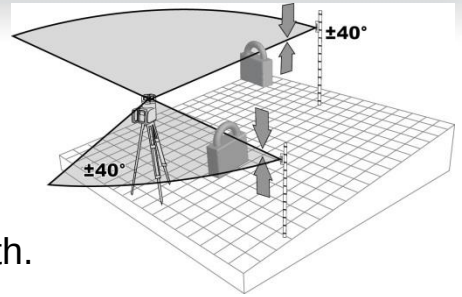






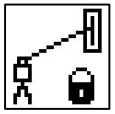
Note: As soon as the menu has been opened, button **2** can be used to open a help text which explains The selected function more in detail.

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 or both axes at each side of the laser. For keeping vertical alignments fixed to a direction point, PlaneLok can be used in both directions on the X-axis or Y-axis or both.

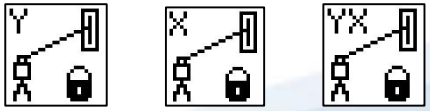
1. Set up the laser over the reference point.
2. Attach the HL760 receiver to a grade rod. Place the receiver at the second point and adjust it to the On-grade position. The receiver should be permanently mounted at this location and at the desired elevation.
3. Use the sighting guides on the top of 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 on both axes is +/-40°).
4. Press and release the **MENU button** at the Standard Display and **select PlaneLok.**



Horizontal setup

Vertical setup

5. When set up horizontally or vertically, press and release **button 4 to open the PlaneLok submenu; select** the **desired PlaneLok axis** then press **button 4 to start PlaneLok.**



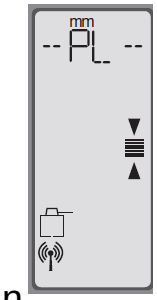
Note: The laser starts to search for the receiver. A flashing **Receiver and Lock symbol** appears at the selected axis and becomes solid when PlaneLok has been completed.

Automatic PlaneLok mode

Note: When used in **vertical mode,** the **receiver** has to be placed with the **photocell on the bottom side.**

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.

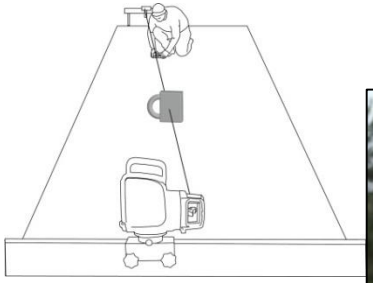


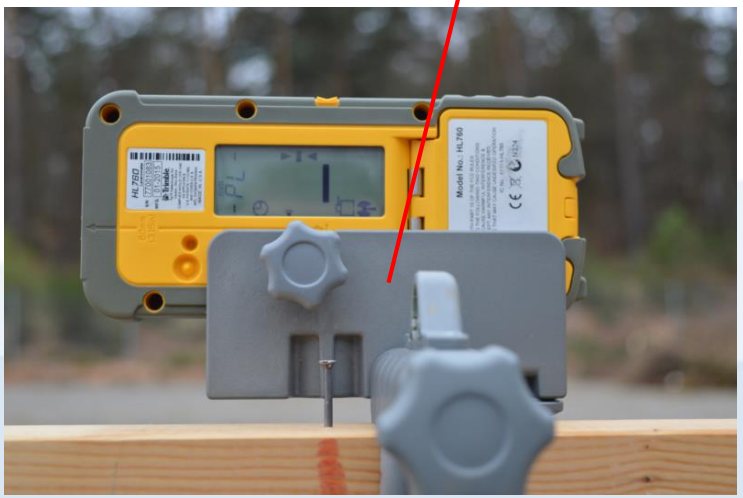
Note: The laser continues to servo to the receiver's signals.

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

Note: If the setup will be disturbed for a minute (beam will be blocked), an Alert comes up. After deleting the error message with **button 4** PlaneLok needs to be started again.

It's recommended to use the **batter board adapter** M402 for setting up the UL633 and the 105516 **vertical adapter** for setting up the HL760.





SPECTRA PRECISION

Steep Slope using PlaneLok

- Set up the UL633N at the bottom part of the steep slope area using the slope bracket **(M402 laser tilting base).**
- Check the laser beam elevation and place the two receivers at the desired hubs.
- Change the UL into manual mode and tilt the unit to the approx. steep slope position until the receiver on top starts to catch the beam.

Steep Slope using PlaneLok

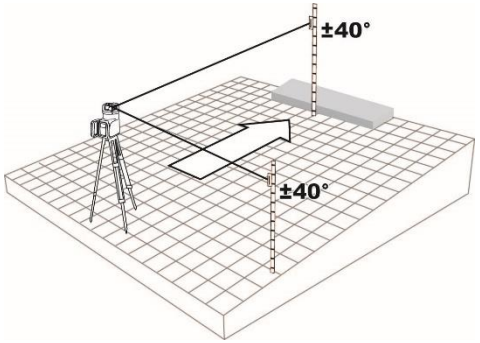
- Select PlaneLok at the menu and start Dual Axis PlaneLok by pressing **button 4**.
- The transmitter starts searching for both receivers and locks the beam at the on-grade position.

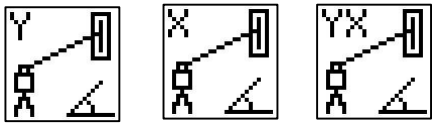
Automatic Grade Match mode

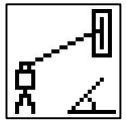
The Grade Match mode can be activated in horizontal automatic and manual mode.

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 or both axes 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 on both axes is +/-40°).
4. Press and release the **MENU button** at the Standard Display and **select Grade Match.**
5. Select the **desired Grade Match axis** then press **button 4 to start Grade Match**.







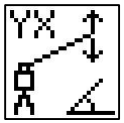
Note: The laser starts to search for the receiver. A flashing **receiver an angle symbol** appears at the selected axis and disappears when Grade Match has been completed.

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.

Manual Grade Match mode

In Manual Grade Match, the beam on both axes can be adjusted to desired positions (Indoors) or to the receiver‘s on-grade position , e.g, when other receivers as the HL760 are used.

1. Press and release the **MENU button** at the Standard Display and **select Grade Match.**
2. Select **Manual Grade Match**  then press **button** 4 to start manual Grade Match.

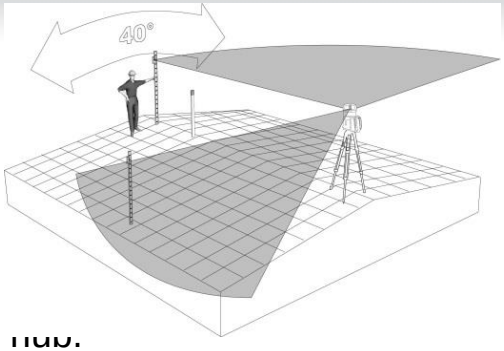
The grade for the **Y-axis** can be adjusted with **button 5/8** while **button 6/7** adjust the **X-axis.**

During Manual Grade Match a **crossed vial and angle symbol**  appear next to the continuously changing Y- and X-axis grade value.

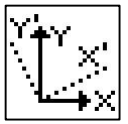
After adjusting to the **receiver’s on-grade position,** press **button 2 (OK)** to go back to automatic mode where the final grade value will be shown for both axes.

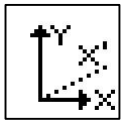
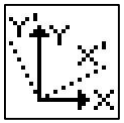
Note: Pressing **button 3 (ESC) exits Manual Grade Match** and changes the unit to manual mode.

Automatic Axis Alignment mode

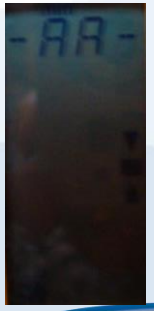


Automatic Axis Alignment mode adjusts automatically the direction the grade axis is pointing to the receiver's location by an electronically simulation of rotating the unit on its base to match the hub.
Using Axis Alignment, the laser axes can be aligned to one or two direction hubs (up to 150 m (490 ft) located on one or both axes 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 on both axes is +/-40°).
4. Press and release the MENU button at the Standard Display and select **Axis Align**. 
5. Adjust the receiver into the beam before starting the automatic Axis Alignment to reduce the time needed for finishing the alignment.
5. Select the **desired axis** then press **button 4** to **start Axis Align**.

Note: The laser starts to search for the receiver while **-AA-** is flashing at the HL760 LCD.



Note: A flashing **Alignment symbol**  appears at the selected axis, becomes solid when Axis Alignment has been completed and then disappers while the flashing bubbles come back. A short line on top of Y and X confirms an Axis Alignment has been completed

SPECTRA PRECISION

Automatic Axis Angle Measurement

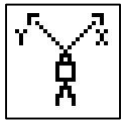
View Axis Angle

Measuring the angle between to existing direction points in a range up to max. +/-40° can be done performing two axis alignments in sequence, e.g., on the Y-axis.

The angle measurement range goes up to 80 degrees with an accuracy of 0.5°.

1. Perform an axis alignment to the first direction point.
2. After the axis alignment has been completed, select **Axis Align** at the menu and press **button 4** to open the **submenu.**
3. Scroll down using **button 8** to the menu icon „**View Align Angles**“  and press **button 4** to display the alignment angles.
4. Perform an axis alignment to the second direction point.
5. After repeating step 2 and 3, the display shows the new alignment angle and the angle difference between the two direction points.

Edit Align Angles



Selecting „**Edit Align Angles**“ allows to dial in an axis angle where the axis direction will be aligned too after a first axis alignment has been performed.

Two rows are available for typing in axis angle values up to 40°.

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 new required axis angles.

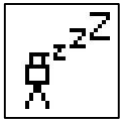
The axes will be adjusted while the display falls back to the main Menu.

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

Mask Mode / Standby

Mask mode

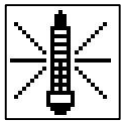
Select the Mask icon and press and release **button 4** to open the **Mask setting menu**.
Depending on which side or corner the beam should be turned off, the required sector can be selected.
Press and release the **buttons 5** to **8** for moving a short flashing line around the mask mode symbol**.**
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).



Standby Mode

Press and release the MENU button at the Standard Display and select **Standby**.
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**.

Reference Check/Rotor Centering

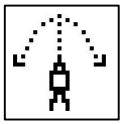


Start Reference Check

When working during temperature changes and over long distances the product requires a frequent reference check to maintain accuracy. The transmitter will do reference check on a regular basis. When carrying out work where accuracy is paramount it is advised to manually prompt a reference check.

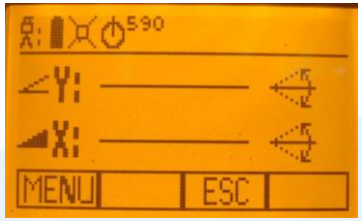
Press and release the MENU button at the Standard display and select Reference Check. Button **4** starts the reference check considering the current temperature inside the housing. While the procedure the rotation will be stopped.

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



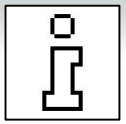
Centering the Rotor

Press and release the MENU button at the Standard Display and select **Centering** where the rotor will be centered approx. 90° perpendicular to the bottom housing. Pressing and releasing **button 4** starts the rotor centering function while the rotor checks the limits of both axes and stops at the center position while changing the unit into manual mode.



Info

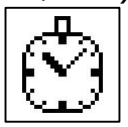
Press and release the MENU button at the Standard Display and select **Info.**



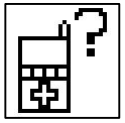
Buttons 6/7 can be used to toggle between **UL, RC** and **Runtime**

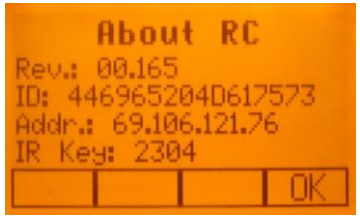
Press and release **button 4** to confirm the selection.

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



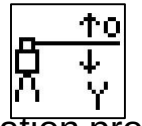
Additional detailed RC information is available using the RC603 menu :

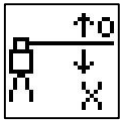


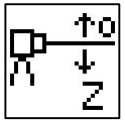


Service

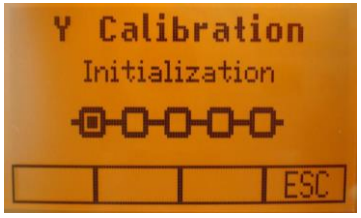
Press and release the MENU button at the Standard Display and select **Service**.
Buttons 6/7 can be used to toggle between **Calibration Y** and **Calibration X** OR **Calibration Z** when set up vertically.

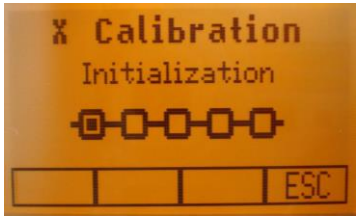


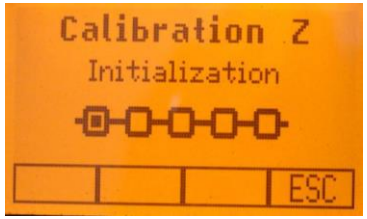




Press and release **button 4** to confirm the selection.
The calibration at the selected axis starts the field calibration procedure.



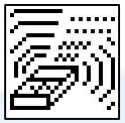




The **RC603N Service menu** offers additional features:

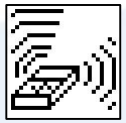
RF IR options

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



RF ON/IR auto

RF Off/IR On



RF ON/IR Off

RF Connectivity

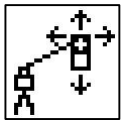
Press and release **button 4** to get a **status** of the current Radio connectivity.

Special Features – Using SF601

Manual Spot Search mode

The Spot Search mode is used for layout applications by 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 1** at the Standard Display and select **Spot Search**.



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.

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

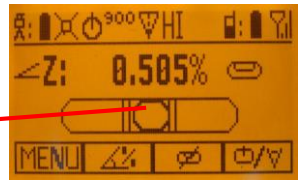
Turning Off the SF601 deactivates the Spot Search mode immediately by deactivating the fan beam.

Special Features - Vertical Setup

Z-Axis Automatic Spot Align

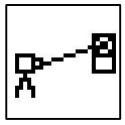
The Spot Finder SF601 guides the plumb beam to the target point in the horizontal axis, while the Z-axis grade value will be maintained.

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.

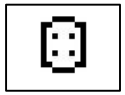


1. Set up the laser over the start point.
2. Adjust the display bubble to the centered position.

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 and select **Spot Align**.
5. Pressing and releasing **button 4** starts the automatic spot alignment while the plumb beam becomes a rotating fan beam (the cone angle of the fan beam is 10°).



Note: The display falls back to the standard display while a **Spot Finder symbol** is flashing. The plumb beam will be automatically aligned to the center of the SF601.

6. 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).

Special Features - Vertical Setup

Z-axis Automatic SpotLok

Automatic SpotLok (like PlaneLok) can be used to align and hold the plumb beam automatically to the SF601's center point continuously adjusting the Z- and X- axis until exiting this mode.

The UL looks always to the center position of the SF601 and re-adjust 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 SpotLok, 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 and select **SpotLok**. 
4. Pressing and releasing **button 4** starts the automatic spot alignment while the plumb beam becomes a rotating fan beam.

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

5. After SpotLok 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.
   After 5 minutes, all 4 LEDs flash every 5 seconds to confirm the correct alignment.

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

Special Features - Vertical Setup

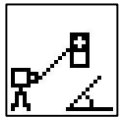
Z-axis Automatic Spot Match

Automatic-Spot-Match can be used for measuring an unknown grade value between two existing elevations e. g., 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.

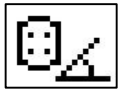
Using Spot Match, the plumb beam can be aligned automatically to one direction hub (up to 80 m (260 ft) located in front of the plumb beam.

1. Set up the laser over the start point, e.g., at the trench start point.
2. Place the **SF601 Spot Finder** at end of the trench.
3. Press and release the MENU button at the Standard Display and select **Spot Match**.
4. Pressing and releasing **button 4** starts the automatic spot alignment while the plumb beam becomes a rotating fan beam.



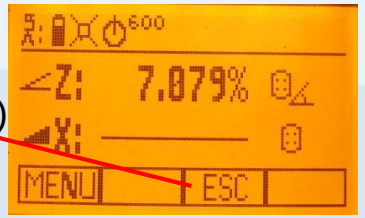
Note: Spot Match can also be started via infrared using the RC603N.

Note: The display falls back to the standard display while a **Spot Finder and angle symbol** is flashing.



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

5. 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.



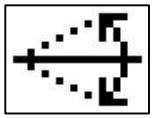
Note: Automatic Spot Match can be exited any time by pressing and releasing button 3 (ESC).

Special Features - Vertical Setup

Line Scan

Line Scan **centers the rotor horizontally** and can be used to align the plumb beam to a desired horizontal position.

Press and release the **MENU button 1** 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 **3** to change the unit back to full automatic mode.

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 1** at the Standard Display and select Beam Plunge.

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.

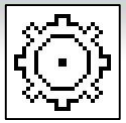
Pressing **button 3** (ESC) stops the movement and changes the unit into manual mode.

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 **3** to change the unit back to full automatic mode.

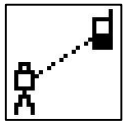
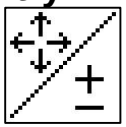
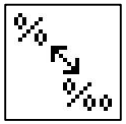
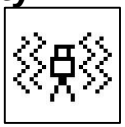
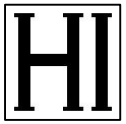
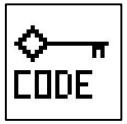
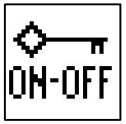
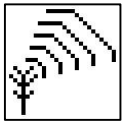
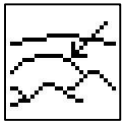
Setting Menu

Press and release the **MENU button 1** at the Standard Display and select **Settings.**



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** 	**Display** 	**Sensitivity** 	**HI-alert** 	**User Name** 
Set Password 	**Password On/Off** 	**RF Channel** 	**Language** 	**Position Info** 	

1. When in Settings, press and release **button 4** at the UL633N to open the **Pairing menu.**
   The display shows the currently paired units (up to two receivers and two remote controls).
2. If already 2 remote controls have been paired, one of them has to
   be deleted using **button 1** (**CLR**).
3. Turn on the RC603N and select the Pairing menu and press button 4.
   The UL633N pairs now automatically with the new remote control.

Pairing the transmitter with a new remote control
The chain symbol at button 1 indicates the remote has not been paired before which means no radio connectivity is given.
Pressing the button 1 will initiate a pairing request. The transmitter has to be in pairing mode as shown above. Note: Make sure that pairing mode is selected only at one transmitter which is within the radio range of the remote during a pairing request. Otherwise pairing procedure can be confused.

Setting Menu

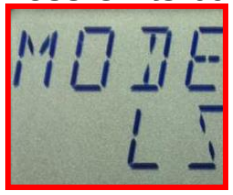
Pairing the transmitter with receiver (HL760)

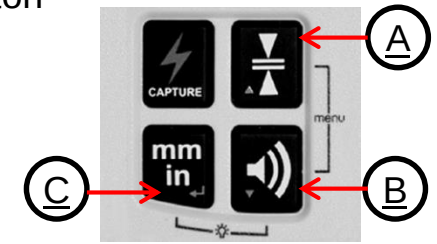
To pair the transmitter and the receiver **select Settings** and press and release **button 4** to open the **Pairing menu**. The display shows the currently paired units (up to 2 receivers). If already 2 receivers have been paired, one or both of them have to be deleted using **button 1** (**CLR**).

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 (**C**) and then press Deadband or Audio button until **LS** is displayed. Press Units button (**C**) again to enter selection.





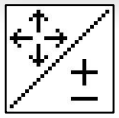
Press and release the Audio button (**B**) – display shows **PAIR**.

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.

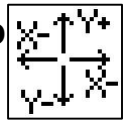
Press and release the HL760 Power button two times to exit the menu. A laser symbol is lit to confirm the receiver works in UL mode.

Setting Menu

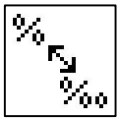


Grade Entry

Select the Grade Entry icon and press and release **button 4** to open the **Grade Entry menu**.

Buttons 6/7 can be used to toggle between **Step and Go**  and **Digit Select.** 

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

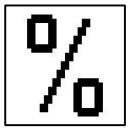
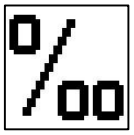
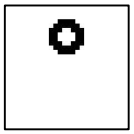


Grade Display

Select the Grade Display icon and press and release button **4** to open the Grade Display menu.

The desired Grade Display Mode (Percent/ Permille/Degree) can be selected using the buttons **6/7**.

Press and release **button 4** to confirm the selected display mode.

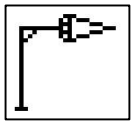
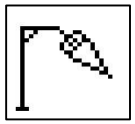
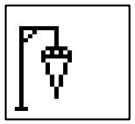
Setting Menu

Sensitivity Selection

Select the Sensitivity icon and press and release **button 4** to open the **Sensitivity menu**.

The desired sensitivity: **Low**, **Mid** (Default) and **High**) can be selected using the **buttons 6/7**.

Press and release **button 4** to confirm the selected Sensitivity.

HI-alert Selection

Select the HI icon and press and release **button 4** to open the **HI-Alert menu**.

The desired HI-alert: **5 min**.(Default), **30 seconds** and **HI-Off**) can be selected using the buttons **6/7**.

Press and release button **4** to confirm the selected HI-alert.

User Name

Select the User name icon and press and release button **4** to open the **User name menu** (Cursor flashes).

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.

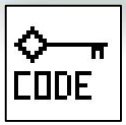
Changing the characters can be done using the buttons **1** and **2**.

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.

Setting Menu



Set Password

Select the Set Password icon 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** and repeat the password at the second row.

Press and release **button 4** to **store the selected password**; unit falls back to the standard menu.

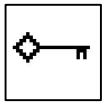
After powering up the unit, the standard display comes up if the correct password will be entered, otherwise the unit turns off automatically.

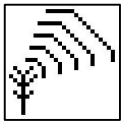
Password On/Off

Select the Set Password ON-Off icon and press and release **button 4** to open the **Password menu**.

Buttons 6/7 can be used to toggle between **Password On** and **Password Off** if a Password has been entered before.

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



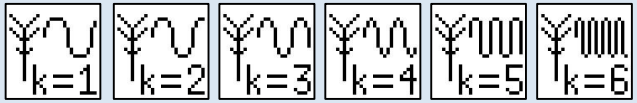


Radio (RF) Channel

Select the RF Channel icon and press and release **button 4** to open the **Radio Channel menu**.

The desired RF Channel: **1** to **6** can be selected using the buttons **6/7**.

Press and release **button 4** to confirm the **selected RF Channel**.



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

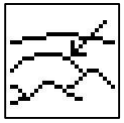
Setting Menu

Select Language

Select the Language icon 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.



Position Info

when working with high grade values 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.

Chose Settings and navigate to the sub menu position info. 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 buttones 5, 6, 7 and 8 the cursor position can be changed.

Restore to default: scroll down to ‚Default position‘. Press button 1 (Set); the unit will change to default values; press button 4 to confirm the change.

Error Messages

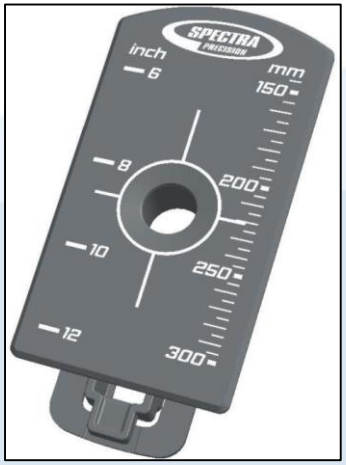
Any error message can be deleted with a short press of **button 4 (OK).**
The table shows the related description and possible solutions.
The next service center should be contacted if a different error message as shown at the table will be displayed.

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
130	Mechanical Limit during Axis Alignment or Grade Match	Re-align the closer to the alignment point; check if existing slope is above +/-25%
131	Rake Angle Limit	Pre-tilt the unit closer to the alignment point
140	Laser beam blocked	Make sure there are no obstacles between the transmitter and the HL750 or SF601
141	Time Out - Alignment 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

SF601 - User Guide

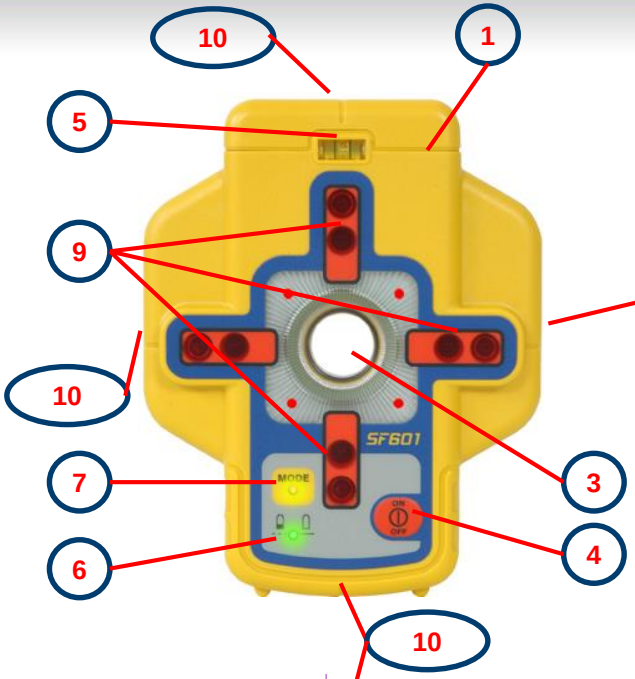
SF601 attached to a grade rod using the standard receiver clamp

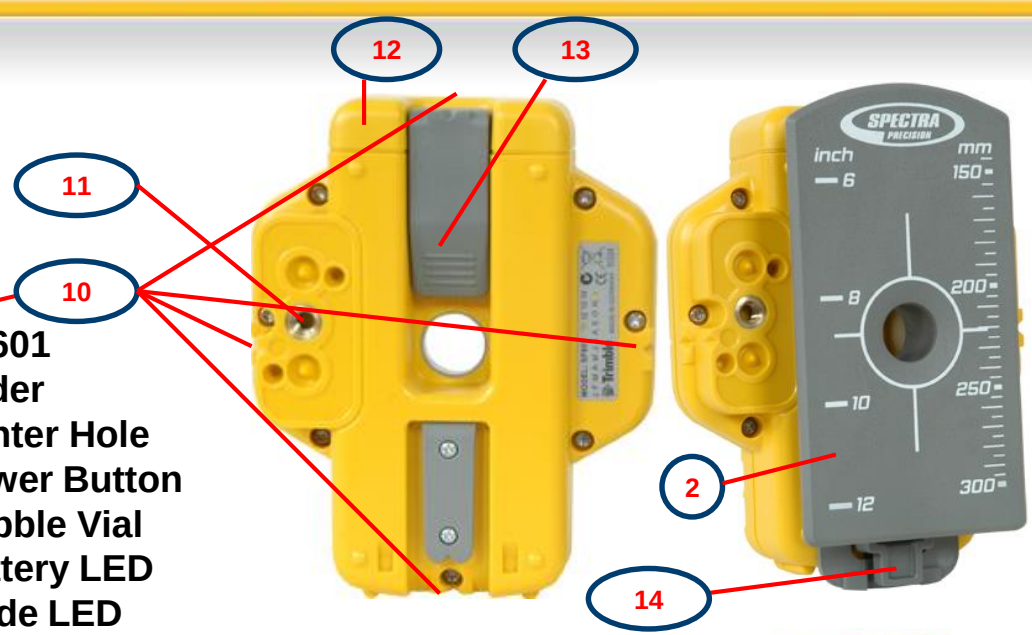
SF601 attached to the optional pipe laser target base



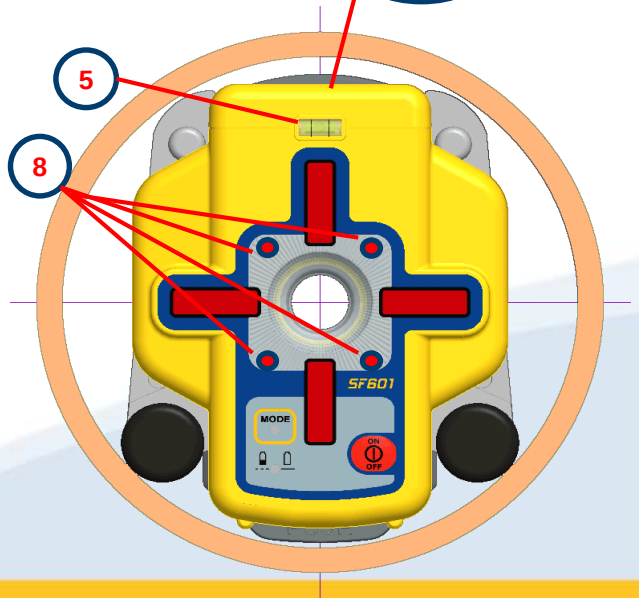
SPECTRA PRECISION

SF601 - Components





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/receivers
10 - Marking notches (front and back)
11 - M6 Clamp Mount
12 - Battery door
13 - Latch for Battery Door
14 - Release Tab Slider



SPECTRA PRECISION

SF601 – Powering/Features and Functions

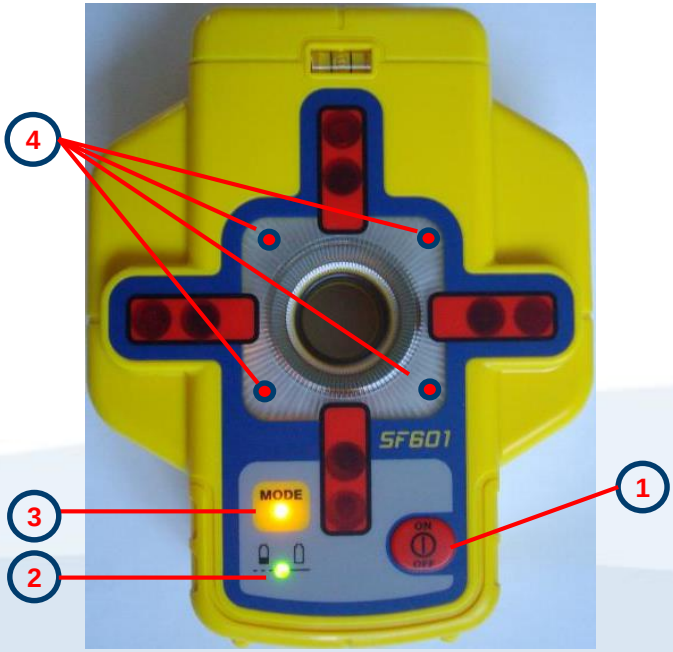
Powering the SF601

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.
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

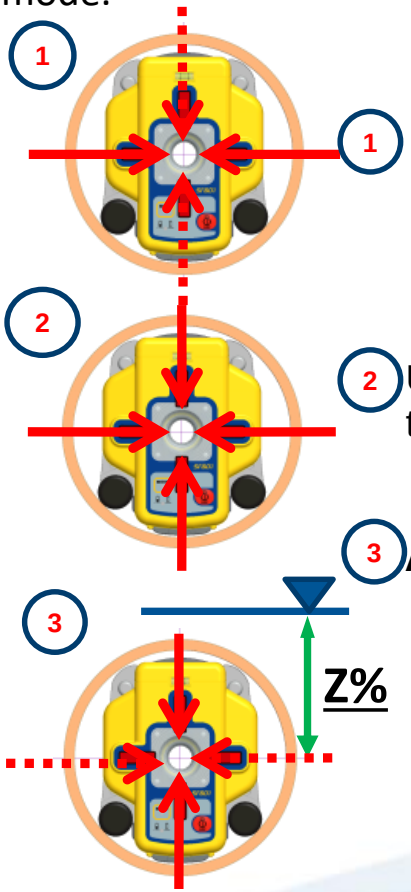
4. Direction LEDs red:

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.

SPECTRA PRECISION

Spot Finder SF601 for vertical UL applications

With the UL633N using IR communication,, 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.



1 **Automatic-Spot Alignment**: SF601 guides the beam to the target point in the horizontal axis, while the Z-axis grade value will be maintained. Used for first and second day alignment (*pipe laying applications*).

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

3 **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.

SPECTRA PRECISION

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:

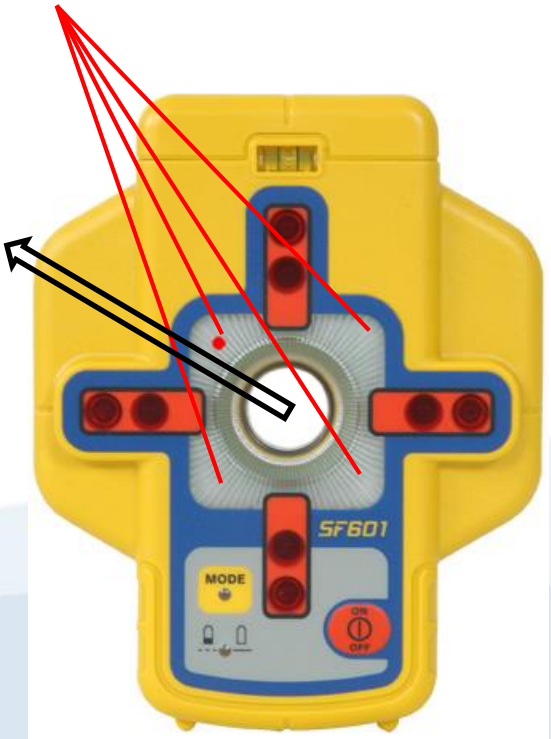
If the fan beam lens will be activated and no automatic mode has been started,
the SF601 is in manual/display mode where the **RED direction LEDs** guide the user to the center position of the fan beam.

Note: IR communication to the UL633N 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.

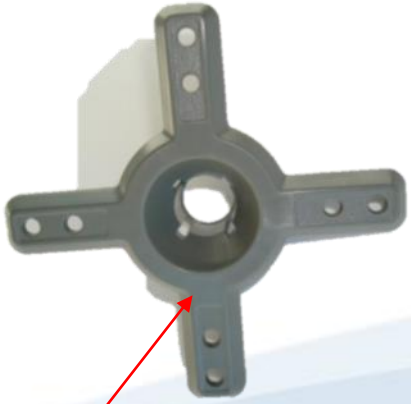
All **4 LEDs are solid red** when the beam is centered

Note: Since the SF601 functionality is based on IR connection and if sunlight goes directly to the IR receiver LEDs, it reduces the operating range dramatically. If possible, swop the UL633N and SF603 position or shadow the SF601.



Sun Shield + SF601 Mount w/ Rubber Strap

Q104865 Spot Finder Adaptor incl. Rubber Strap

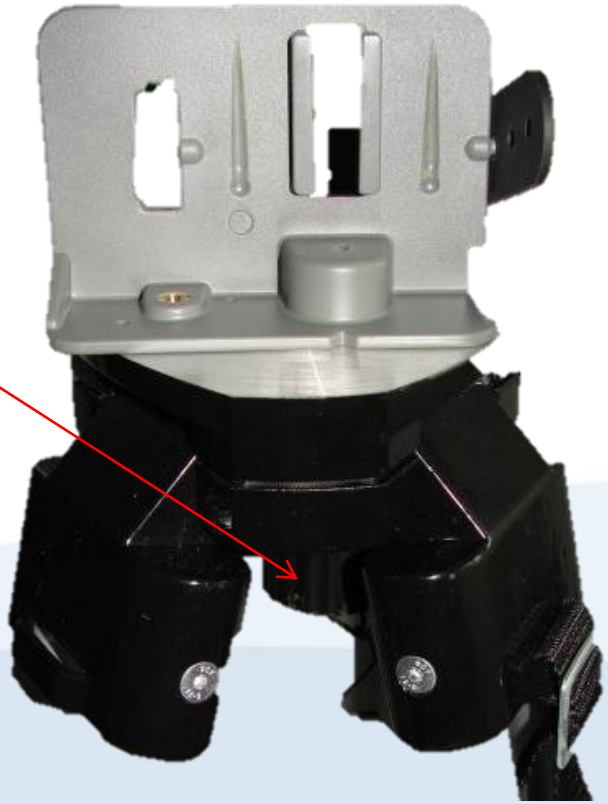


Q104864 Sun Shield for longer range when the SF601 is used in bright sunlight

Pins for Rubber strap

Q104865 Mount: SF601 Tripod Setup

Tripod thread centered with the SF601 and tripod mounting threads



SPECTRA PRECISION

Q104865 Mount: SF601 Batter Board Setup

Marking notch aligned
with the center of the nail

Clamp thread for attaching
the receiver clamp

SPECTRA PRECISION

Q104865 Mount: SF601 Free Standing Setup

Marking notches on both sites