

SEARCHLIGHT SYSTEM BY COLORLIGHT

USER'S MANUAL



CL20, CL25, CL35

Revision nr: F1.1
Revision date: 2014-04





Safety reminder

Remember to break all electrical power to system before starting any work in the electrical box or the searchlight unit.

All information in this manual was correct at time of publication. However, as our engineers are always updating and improving our products, your system's software might provide a slightly different appearance or modified functionality than presented in this manual.

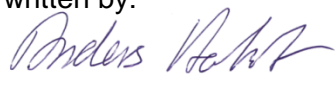
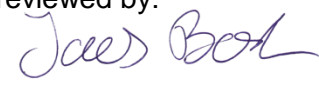
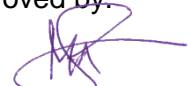
If your system lacks any function presented in this manual, there is possibly a software update available to resolve this, please contact ColorLight for more information.

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1. WARNINGS AND INFORMATION



High voltage!

Before opening any part of the searchlight system, make sure all power is switched off!



Bulbs

HID (High-intensity discharge) bulbs operate at a high internal pressure and high temperature and should be handled with care.

Never bump, drop, apply excessive stress, or scratch the bulb. This could cause the bulb to burst! Do not operate any bulbs with any traces of scratches, cracks, or physical damage

Always transport the bulb in the provided protective case or cover until installation! Save the protective case or cover and packaging materials (box) for bulbs that have been used to their rated service life. Use the protective case when disposing of the bulbs.



Always use safety glasses and body protection when installing or removing the bulbs.

When changing bulbs be sure to not touch the surface of the bulbs with bare fingers. If inadvertently touched with bare fingers it should be degreased immediately with alcohol and a soft lint free cloth. Be sure to wipe dry the bulb surface afterwards.

Never touch the bulb when it is on, or soon after it has been turned off, as it is hot and will cause serious burns. Bulbs should be allowed to cool for a minimum of ten (10) minutes after the light is turned off.

The light should never under any circumstances be turned on without frontglass.



UV-light! (models -12, -21, -22)

The UV-light used by ColorLight is chosen for most efficient result in marine applications. The wavelengths are below 400 nanometers, thus not visible for the human eye. An intensive radiation is generated from the high luminance of the arch inside the bulb and should not be glared into from close distance. Intentionally ColorLight is allowing a small leakage of white light making the beam vaguely detectable in fog. Avoid quick switch on and switch off as it may shorten the lifetime of the bulb. Allow a couple of minutes cool down period, if possible.

UV-light overheat

CL20, CL25 and CL35 searchlights are designed and built primarily for the marine environment.

UV light generates a lot of heat and we use ambient air as a coolant for our lamp body. For uses other than marine this must be taken into account so that sufficient cooling is available or to adapt the operating time to prevent overheating damage such as cracked UV glass.

Eye safe exposure time for UV

CL25-12/21, CL35-12/21: Max 2 minutes at 1 m. Max 4 minutes at 2 m. Max 9 minutes at 4 m. Max 65 minutes at 9 m.

CL25-22, CL35-22: Max 1 minute at 1 m. Max 2 minutes at 2 m. Max 4 minutes at 4 m.
Max 30 minutes at 9 m.

Welding eye glasses are recommended if you for some reasons have to expose your eyes longer periods at those close distances.

We see no reason for such exposure even at service activities. Sunglasses are also good protection.



Reflectors

The parabolic reflectors developed by ColorLight have an extremely smooth surface to focus the light in wide or narrow beam. Bare fingers should never touch the reflector surface. If inadvertently touched, the reflector surface should immediately be degreased with alcohol and a soft lint free cloth.



Light beam heat damage and Ethernet communications guard OP WDT

This searchlight is built for use on long distances and the high-intensity light from the searchlight can, if set at a narrow beam, cause severe damage to surfaces closer than 1 meter. To avoid that the searchlight is forgotten with the light on, always use the feature “off and park” when not using the searchlight. If however a hardware failure occurs that breaks the Ethernet communication between the box and operator panel, a safety function will step in and automatically turn off the light within 3 seconds, the OP WDT will also interrupt an ongoing sweep or surveillance activity. OP WDT is disabled by default, to enable see [12.5.1 \(4.1\) OP WDT](#).

If protection hoods are used over searchlight body the system main power switch in the electric box should be off; this is a precaution to reduce the risk of fire if the hoods are not removed before turning the lights on.

Cleaning

Never wash the searchlight with water under high pressure because this can penetrate through the seals and cause damage to mechanical and electrical components.

Do not use strong solvents such as thinner or acetone to clean the searchlight body or the operator panel.

Deicing

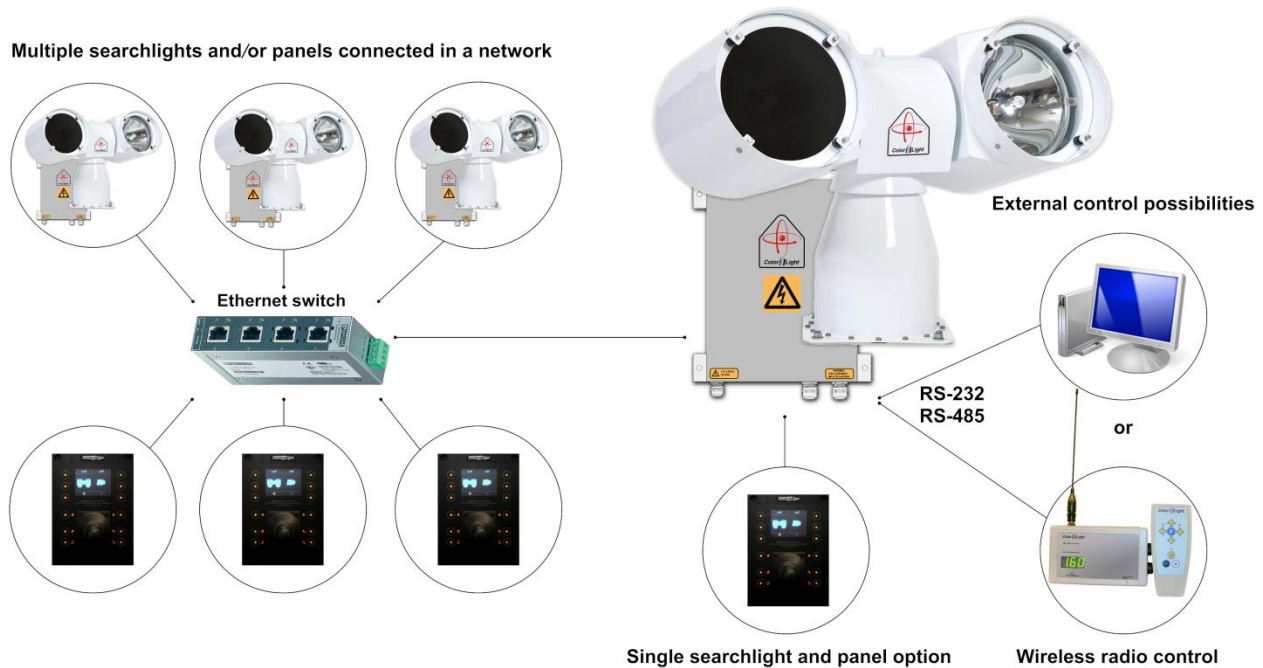
Removal of ice should be done with caution. Physical violence can damage the front glass or the searchlight driving mechanics. Instead turn on the lights and let the heat melt the ice.

Recycling and disposal

HMI bulbs used for model CL25 and CL35 contains mercury and must be recycled or disposed according to applicable local and national regulations.



2. COLORLIGHT SEARCHLIGHT SYSTEM



ColorLight has with its newly developed control system for searchlights opened for a flexible and future-proof system in which several searchlight assemblies (CL20, CL25 and CL35) and operator panels can be connected to a dedicated network and communicate via the Ethernet infrastructure.

Control-computers and navigation equipment are other examples of devices that can be part of this network.

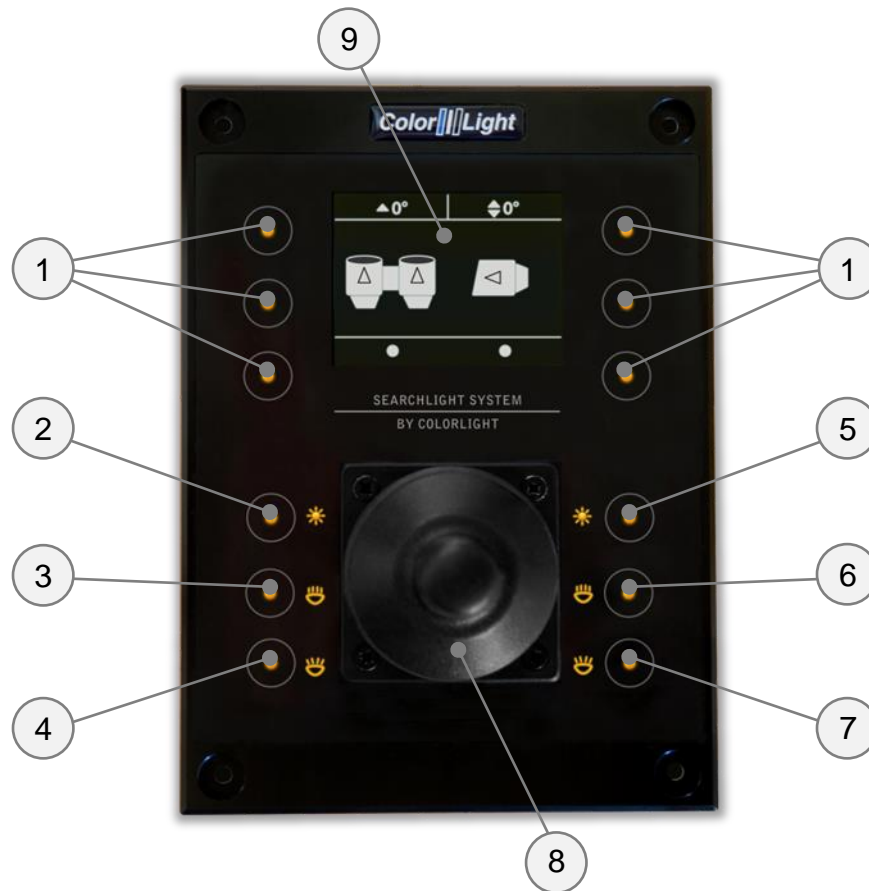
For external communication between the electrical box and its various controllers we use the TCP / IP protocol through the Ethernet infrastructure, but for internal communication between the box and searchlight we have chosen to work with CAN bus technology.

CAN (Controller Area Network) is a network standard originally developed for the automotive industry and with only two wires it's possible to transmit a variety of control data and information.

The searchlights drive motors (horizontal and vertical) are of the type brushless servo motors, with excellent performance, long lifetime and high reliability.

The motor drivers are located inside the searchlight and are of an "intelligent" type, which constantly analyzes the motor condition, and if problems arise, such as tripped over current protection; this will be presented as an alarm in the operator panel.

3. OPERATOR PANEL, OVERVIEW



1. **"Soft button"**: the function appears in the display window next to the button.
2. **Left lamp on/off**, standard for -12, -21 (optional for -11, -22 if "Single lamp mode" = **On** *¹).
3. **Left focus** (same function as No.4 *²), (move left to spot *³).
4. **Left focus** (same function as No.3 *²), (move left to flood *³).
5. **Right lamp on/off**, standard for -12, -21 (optional for -11, -22 if "Single lamp mode" = **On** *¹).
6. **Right focus** (same function as No.7 *²), (move right to spot *³).
7. **Right focus** (same function as No.6 *²), (move right to flood *³).
8. **Joystick**.
9. **Display**.

*¹ See [11.8.6.5 Single lamp mode](#) (standard function available from ver. 0.5.3.11).

*² Continuous focus (standard), see [9.1 Type 1, continuous focus](#).

*³ Absolute focus (optional for CL25) see [9.2 Type 2, absolute focus](#).

Note: Several sections of the manual refer to the above figures.

4. DISPLAY SYMBOLS AND MESSAGES



Symbol for switched off white light.



Symbol for switched on white light.



Error symbol for white light indicates a problem during switch on or if the bulb breaks down during operation. The operator has three switch-on attempts in a two minute interval without setting the sum alarm output. This symbol is only valid for CL25 and CL35 (CL20 does not have this feature).



Symbol for switched off UV light (black light).



Symbol for switched on UV light (black light).



Error symbol for UV light indicates a problem during switch on or if the bulb breaks down during operation. The operator has three switch-on attempts in a two minute interval without setting the sum alarm output. This symbol is only valid for CL25 and CL35 (CL20 does not have this feature).



Symbol for any electro-mechanic error. Might be referred as an over voltage or over current for motor drivers. Communication error with motor drivers will result in the same symbol. This error symbol can be reset by simply enter the main menu and select status. Then press “dismiss”. If over current have occurred the problem might be referred as a stucked lamp housing – check for any icing issues. Each axis has its own symbol showing in upper left or right corner of the display.



This symbol indicates that the bulb has less than 200 hours left of expected lifetime. This warning can be chosen by the operator to be shown or not. Please see [11.8.4 Lamp life](#) for more detailed instruction. Each bulb has its own symbol showing in the lower left or right corner of the display.



This symbol indicates that the expected lifetime of the bulb now has expired. The only way to reset this symbol is by entering the “Usage Stats” menu at the diagnostic display inside the electrical box. See [12.4 Category 3: Usage Stats](#). Certainly this reset should only be done together with a bulb replacement!



This symbol and a similar symbol indicate the direction of the lamp housing both for the vertical axis and for the horizontal axis. The arrows in the shown symbol indicate the elevation angle for the vertical axis according to the horizontal-plane.

For the horizontal symbol and axis these small arrows indicate if the housing is directed to the left, front, right or back of the centerline.



If the arrows are replaced by question marks then the system needs to be internally calibrated. This is the normal state after power up after a total power loss to the system. The easiest way to do the internal calibration is by simply choose the “Park” in the quick start menu, please see [10.6 Off and park](#).

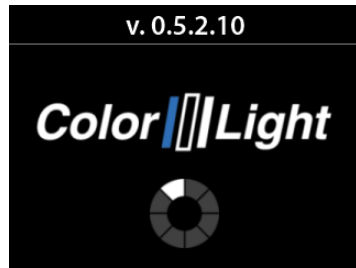
4.1 Ebox alarm relay

The searchlights electrical and mechanical condition are constantly monitored and if there is a malfunction in the system this is indicated by icons in the panel display with clarifying warning messages found in the panels status menu. The control box also has a relay output that can be connected to the boat monitoring system; see the wiring diagram for connection details.

The following errors trigger the alarm output.

Message	Fault
Communication error	Transmission issues on the CAN bus
Over current	Overcurrent protection triggered, movement blocked
Over voltage	Overvoltage protection triggered, voltage to searchlight motordriver/s have exceeded 30Vdc.
Under voltage	Undervoltage protection triggered, voltage to searchlight motordriver/s has fallen below 10Vdc
OPWDT (message in box only)	Ethernet communication broken to all panels, see (4.1) OP WDT . Fault auto-resets if contact is restored with at least one panel

5. ACTIONS AFTER INSTALLATION OR POWER FAILURE

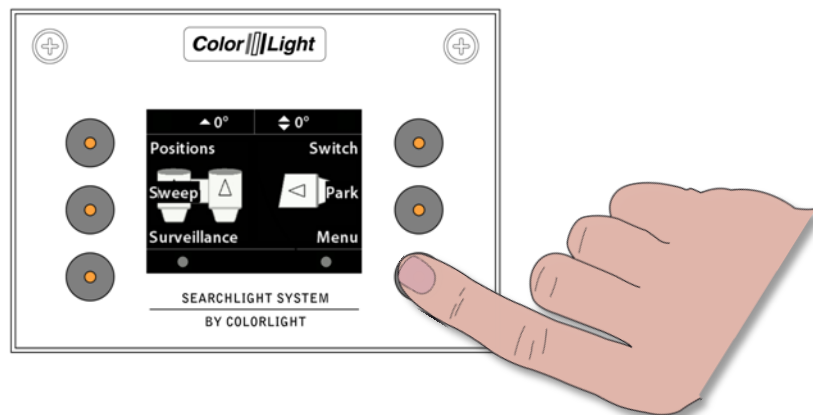


At system startup, the panels will start to scan the network to find connected electrical boxes, during this time, the panel software version will be displayed. If not the panel made contact by displaying home screen within 30 seconds, it may be due to the following:

- Electrical box is not turned on, applies only if the panel has a separate power supply.
- There are problems in the network cabling between the electrical box and the operator panel.

At the first boot after installation or power failure, the searchlight must be synchronized with the control system.

After installation or power failure of the electric box you can still use the searchlights main functions like joystick control, light on/off and focus but in order to be able to use positioning functions such as display indicator*, parking position, sweep*, fixed positions* or surveillance*, the searchlight must be synchronized with the control system.



The easiest way to synchronize the system after reboot is to enter the quick start menu and select the **“Park”** function. Now the searchlight will synchronize and then park if a parking position has been set.

If necessary the origin can be set after the steps above to give an accurate readout of the indicator*. To set the origin, please see [11.8.6.1 Store origin](#).

*Standard function for CL25/CL35, from 2014- also standard for CL20

6. STARTING SYSTEM

When the system is in sleep the buttons and symbols glow with orange light and the display is totally shut down to save power. Buttons and symbols are always active but dimmed to a lower intensity during sleep.

Pressing any button on the operator panel will activate the system and the display will now show the position indicator* image or just the ColorLight logotype. Buttons and symbols are now brighter and both buttons, symbols and display intensity can be adjusted, please see [11.8.1 Backlight brightness](#).

*Standard function for CL25/CL35, from 2014- also standard for CL20

7. JOYSTICK FUNCTIONS

The joystick (8) moves the searchlight horizontally and vertically. There are no limitations to the movement of the searchlight thanks to the slip ring technology developed by ColorLight.

The more the joystick is moved to its end position the faster the searchlight rotates.

Searchlight rotation speed can be set, see [11.8.5 Maximum rotation speed](#).

The vertical axis reaction according to the joysticks movement can be reversed if decided by operator. To change this reaction please see [11.8.3 Joystick direction](#).

The joystick can also be used to navigate in menus containing more than one choice.

Move the joystick up or down to navigate in the menu. In most menus joystick moved to the right will act as “**OK**” button and moved to the left will go back one step as the “**Back**” button.

8. SWITCH ON LIGHT

The searchlight is equipped with two bulbs with either double white (CLXX-11) or double UV (CLXX-22) or a combination of white and UV light.

As default the double white or double UV will be turned on by pressing button(2) or (5), both lights will then be lit with a slight delay in between, no matter which button is used.

To turn off the light, press button (2) or (5) again.

There are however occasions when it may be useful to give each bulb a dedicated light button, this setting is done in the "Single lamp mode" menu, please see [11.8.6.5 Single lamp mode](#).

If the light is a combination of white/UV, light will always be lit separately. Button (2) will lit left light and button (5) the right light. To turn off light, press the same button again.

In the bottom part of the display there are two sun-symbols that indicates the status of each bulb.

CL25 and CL35

If the system is unable to switch on the bulbs there will be a red exclamation mark over the sun-symbol for the no working bulb. This error might occur if the operator decides to switch on a bulb that recently has been shut off without any time to cool down before the next switch on. Normally wait a few seconds (the longer the better) and try again. The system accepts three turn on attempts (initiated by the operator) in a two minute time interval before the sum-alarm is activated.

If the bulb breaks during operation the sum-alarm will be activated directly. The error symbol with the exclamation mark over the sun-symbol will show again in the display over the corresponding bulb.

There is a bulb warning feature in the system. This warning can be chosen by the operator to be shown or not by switch on or off the function in the settings menu, please see [11.8.4 Lamp life](#).



This warning feature will show a white triangle symbol when the estimated bulb life left is less than 200 hours. The symbol will be shown at the displays bottom left or right corner according to left or right bulb.



When the expected lifetime is expired the white triangle will change to a red triangle. The only way to reset this symbol is by entering the "lamp life" menu at the diagnostic display inside the electrical box. To get to the correct menu use the three buttons below the display. Under the lamp life menu there are two choices: "usage statistics" and "reset counters". Select "reset counters" and select the corresponding lamp housing for which the counter should be reset. Certainly this reset should only be done together with a bulb replacement!

9. FOCUS

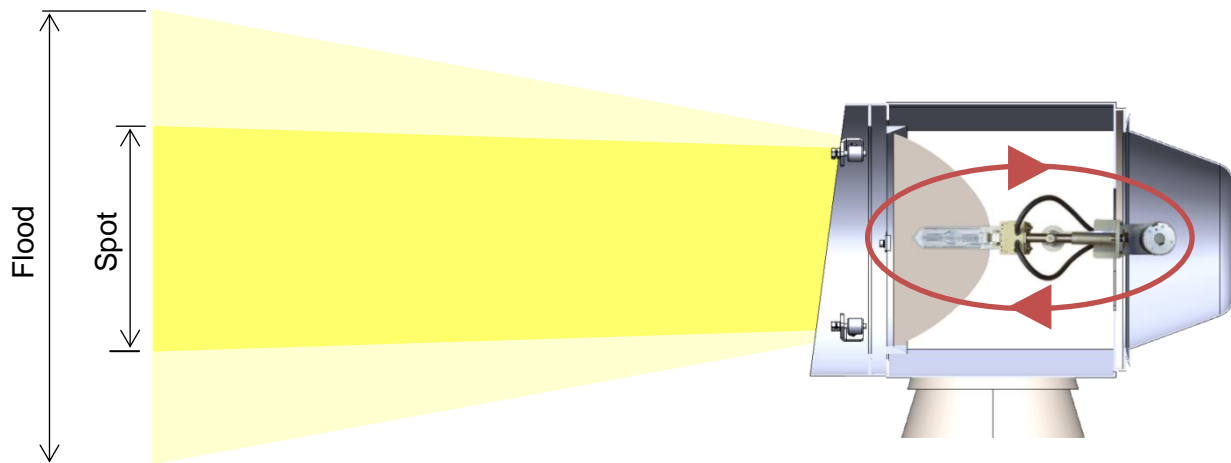
9.1 Type 1, continuous focus (standard)

Note: Button numbers below refers to [OPERATOR PANEL, OVERVIEW](#).



Pressing the focus buttons (3) or (4) changes the focus for the left lamp house and buttons (6) or (7) changes focus for the right lamp house.

Release the button when the required focus is found.



As long as a focus button is pressed the bulb moves in and out which changes the focus of the light between 4-20 degrees for model CL20, CL25 and 3-20 degrees for model CL35.

Note: Pressing button (3) and (6) or (4) and (7) at the same time will cause an electric collision which stops the focus from changing. Releasing one of the buttons will continue the focusing of the pressed button. To focus with both lights simultaneously hold (3) and (7) or (4) and (6).

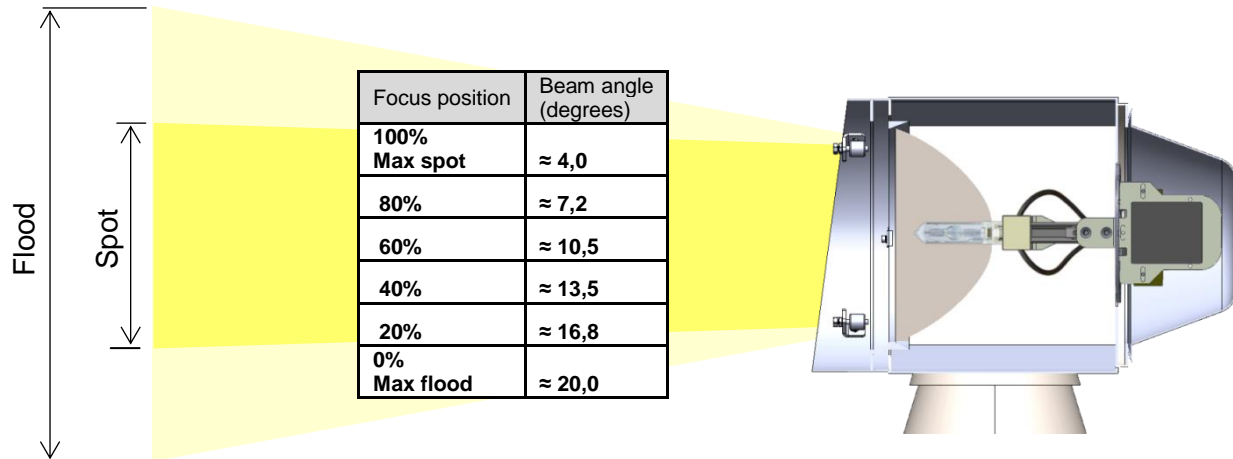
9.2 Type 2, absolute focus (optional for CL25)


Note: Button numbers below refers to [OPERATOR PANEL, OVERVIEW](#).


This feature enables adjusting a defined beam width (focus) of the lamps by means of a step motor.

Focusing from control panel is made in 20%-steps by pressing the focus button for spot or flood repeatedly, or, if the buttons is held longer than 0,6 second, the focus moves directly to desired end position.

This focus unit is also controllable via the serial interface RS232 or RS485 and can then be commanded to any focus position within the range 4-20 degrees (stepless control).



Pressing the spot buttons  changes the focus towards spot on corresponding lamp house in predefined steps according to table above.

Pressing the flood buttons  changes the focus towards flood.
Release the button when the required focus is found.

Note: If the system is manually rebooted or starts up after a power failure, the focus unit will always automatically move back to 0% in order to avoid the risk of burning surfaces on the boat with the intense light beam.

10. QUICK START MENU

The operator panel features a quick start menu where you can reach some of the searchlights functions.

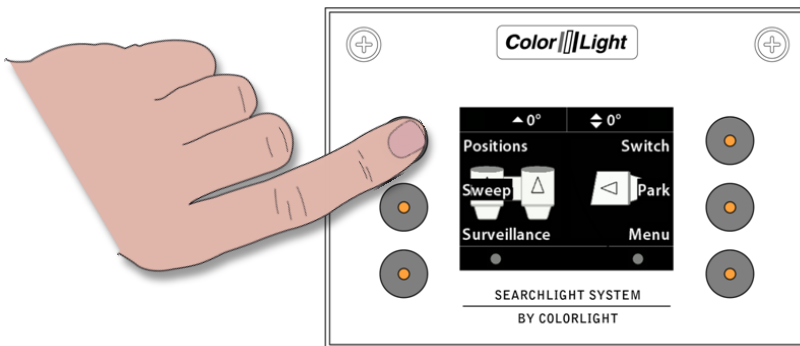
To open up the quick start menu, press any of the quick start menu buttons (1) when showing the logo or indicator page. The quick start menu will close after 5 seconds.

10.1 Fixed positions (optional function)

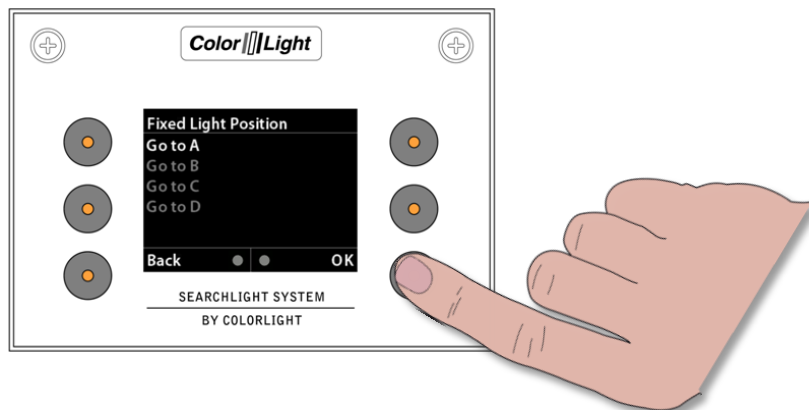
Fixed position is an option for the ColorLight Searchlight System and can only be accessed if activated.

There are up to four different programmable fixed positions in ColorLight Searchlight System.

10.1.1 Go to fixed position



To enter the "Fixed Light Position" submenu, open up the quick start menu and press the upper left button "Positions".

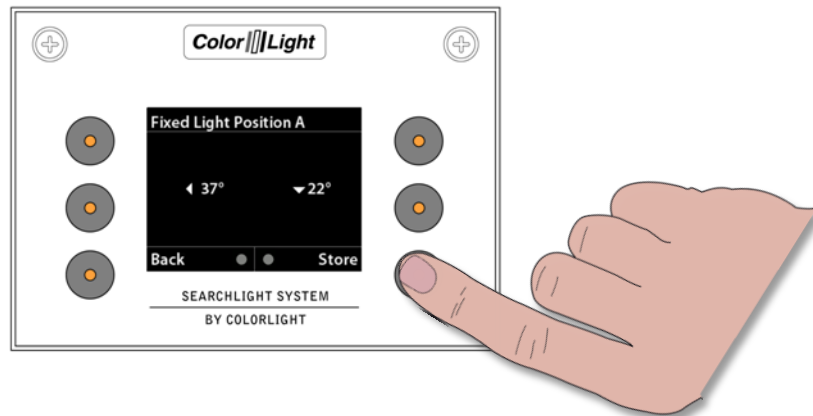


There are up to four fixed position memories (A, B, C and D) which can be individually programmed.

By selecting one of the positions the menu will change and show the current direction of the searchlight in degrees and move the searchlight to this preprogrammed position automatically.

10.1.2 Store fixed position

If no position has been stored or the searchlight is already at the stored position it will not move.



To store a new or change a fixed position, enter one of the regarded memories (**A, B, C** or **D**) in the menu. If there is already a preprogrammed fixed position stored at the selected memory, the searchlight will start to move to that position. Either select a free memory or, if you want to change this item, take control over the searchlight by moving the joystick (also aborting an eventual movement of the searchlight).

Now – by using the joystick - move the searchlight to the desired new position and press **“Store”**.

The current position is now stored.

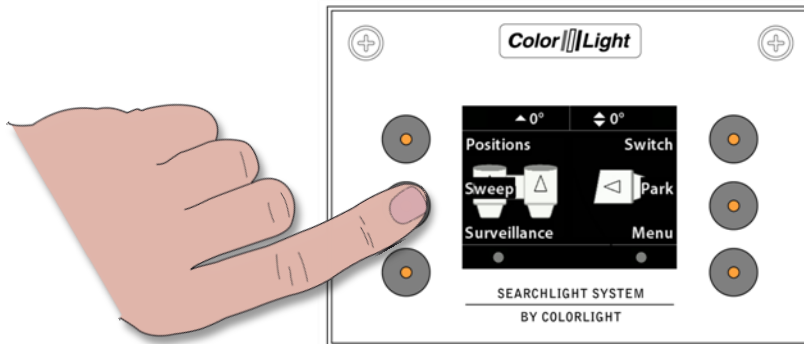
Note that you always overwrite a previously stored position.

10.2 Sweep (optional function)

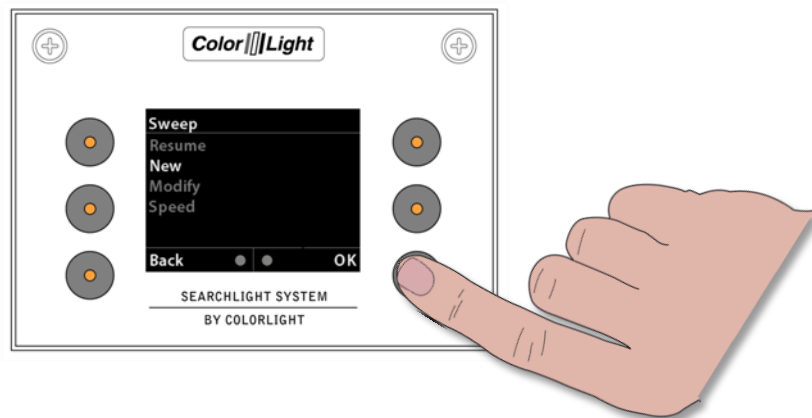
Sweep is an option for the ColorLight Searchlight System and can only be accessed if activated.

At sweep mode, the searchlight automatically moves back and forth between two individually programmable positions in the horizontal plane.

10.2.1 New Sweep



To enter the **"Sweep"** submenu, open up the quick start menu and press the left middle button **"Sweep"**.

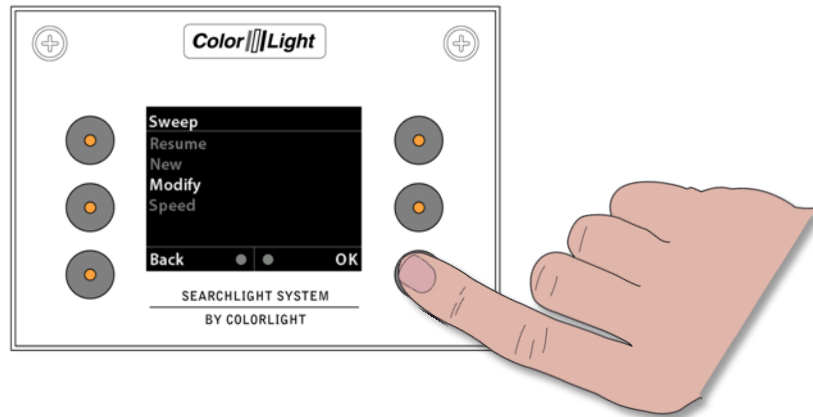


To start a new sweep, navigate down to **"New"** in the **"Sweep"** menu and press **"OK"**. The default setting for a sweep is a horizontal sweep of 20°.

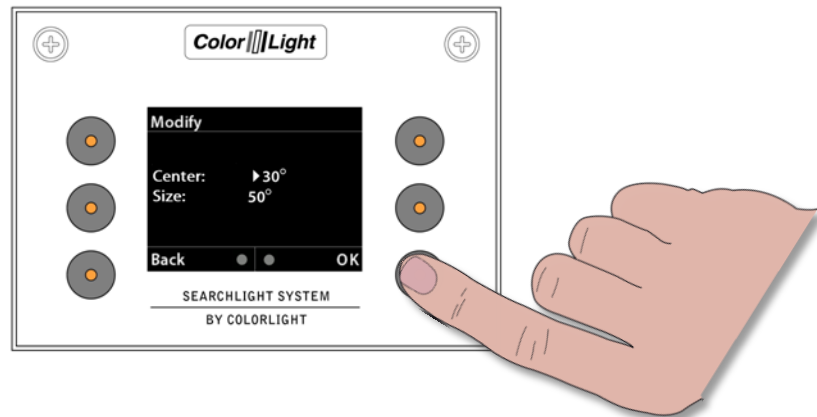
To stop a sweep enter the **"Sweep"** submenu and choose **"Stop"** or just move the searchlight by using the joystick.

To resume the sweep enter the **"Sweep"** submenu and choose **"resume"**.

10.2.2 Modify sweep parameters



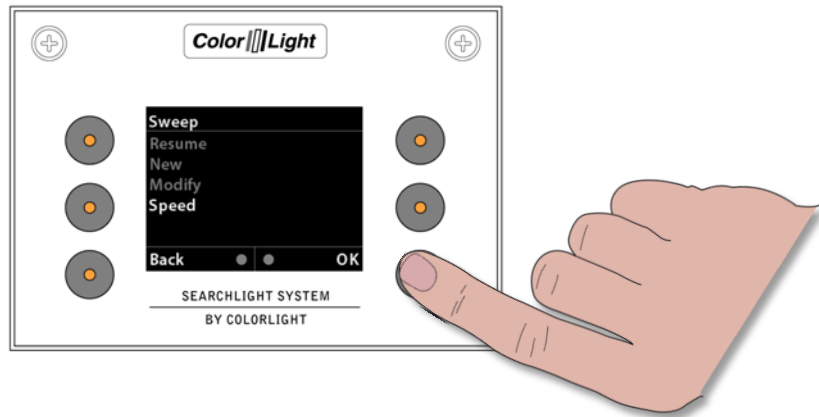
To modify the sweep angle and / or the center of the sweep enter the “**Sweep**” menu and navigate down to “**Modify**”, press “**OK**”.



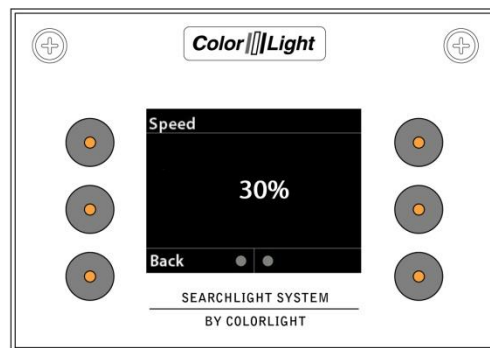
This menu changes the sweep angle and center point of the sweep, modification can be carried out both during movement and while searchlight is standing still.

To change the center point of the horizontal sweep move the joystick to the left or right until the desired center point is reached.

To change size of the sweep angle move the joystick up or down.
Press “**OK**” to save and update the searchlight with the new values.



The default speed of the sweep is set to 50% of the maximum speed of the searchlight. To change the speed of the sweep enter the “**Sweep**” menu and navigate down to “**Speed**”. Press “**OK**” to enter the “**Speed**” submenu.



To change the speed move the joystick up or down to desired speed, press “**OK**” to update the searchlight with the new speed.

Note: If the rotation speed is updated during runtime this will effect only after the searchlight has reached its next end point.

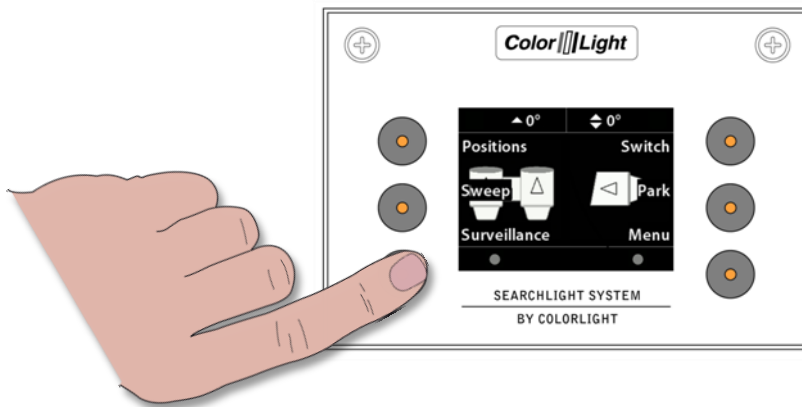
10.3 Surveillance (optional function)

Surveillance is an optional function for the ColorLight Searchlight System and can only be accessed if activated.

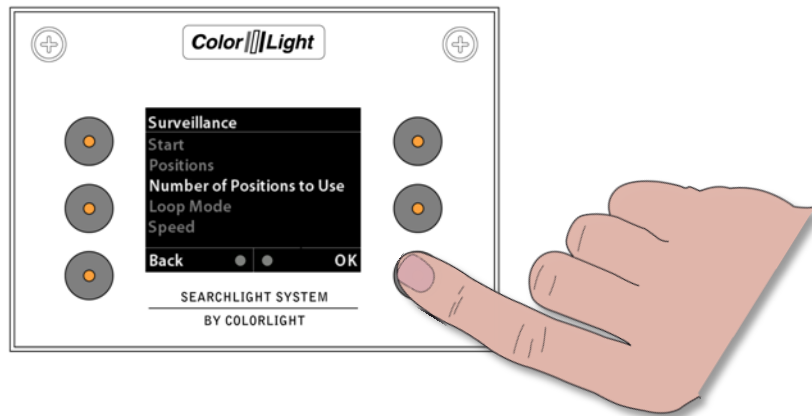
This is an advanced sweep, where up to five different points, at any azimuth and elevation can be set for surveillance.

10.3.1 Setting a new surveillance sweep

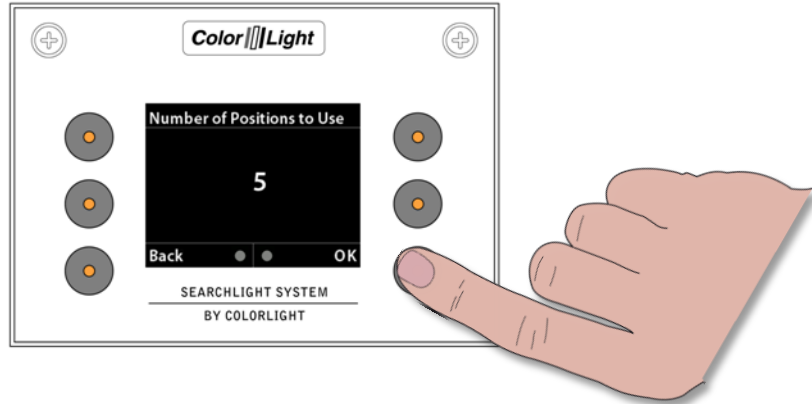
To set a new surveillance sweep the number of positions must first be set.



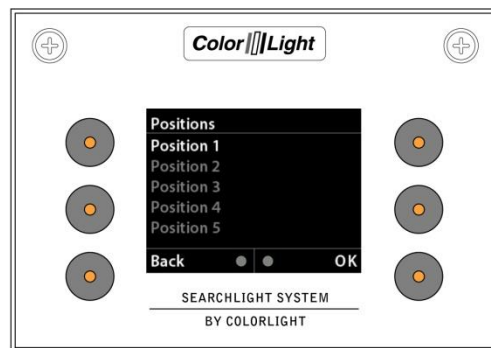
To enter the “**Surveillance**” submenu, open up the quick start menu and press the bottom left button.



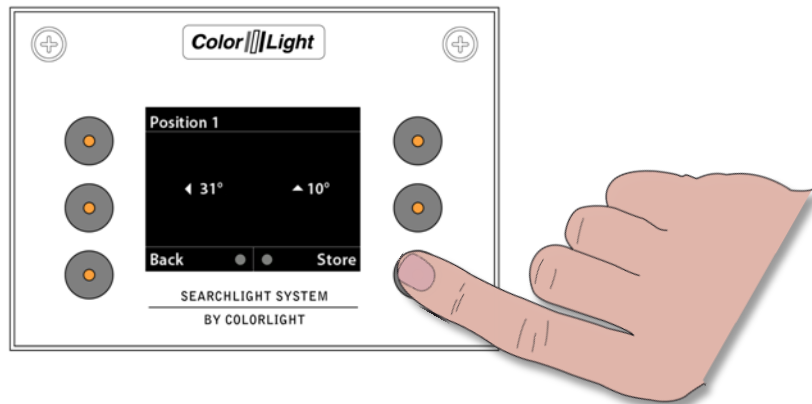
Navigate down to “**Number of Positions to Use**” and press “**OK**”.



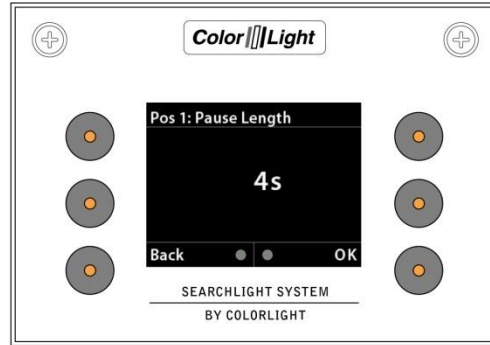
Select the requested number of positions (max. five) to be used in this surveillance sweep. Press “OK” to save and return to the “**Surveillance**” submenu.



To set the positions in a surveillance sweep enter the “**Positions**” menu in the “**Surveillance**” submenu. The selected number of positions is shown in the display.



To set a position, enter the desired position, then move the searchlight to the by using the desired position by the joystick. Press “**Store**” to store each position.



After pressing **“Store”** a new menu will appear, **“Pause Length”**. This defines how long the searchlight will rest at this position before starting to move to the next position. Pause length can be set between zero and ten seconds.

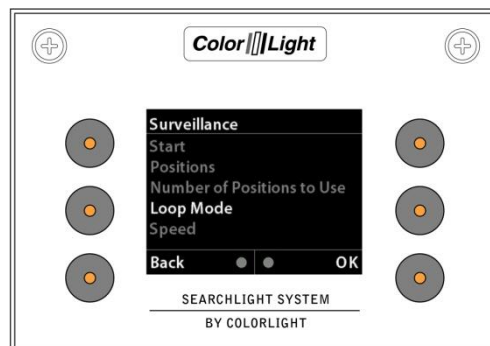
Repeat this for the desired number of positions.

When done go back to the **“Surveillance”** submenu by pressing **“Back”**.

Navigate to **“Start”** and press **“OK”** to start the surveillance sweep.

The surveillance sweep will start from position one and go to position two and so until the searchlight has come to the number set in **“Number of Positions to Use”**

10.3.2 Changing surveillance settings



Surveillance has a couple of different settings, **“Loop Mode”** and **“Speed”**.

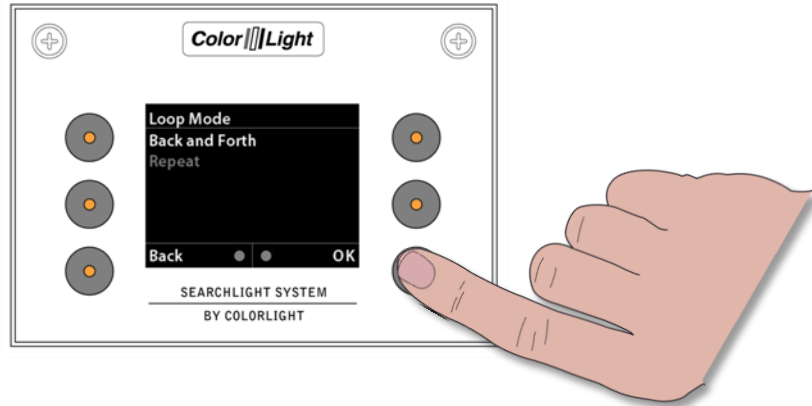
In **“Loop Mode”** there are two choices, **“Back and Forth”** and **“Repeat”**.

To set **“Back and Forth”** or **“Repeat”** enter the **“Surveillance”** submenu then **“Loop Mode”**.

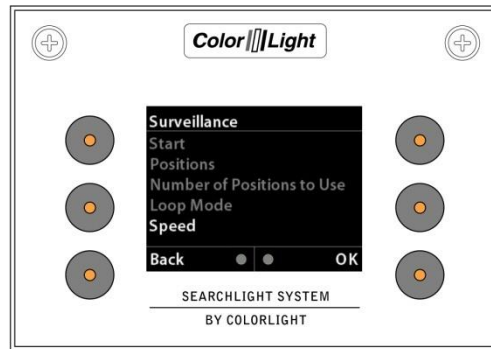
When using **“Back and Forth”** the surveillance sweep will go from position one to two and so on until it reaches the last one set in **“Number of Positions to Use”**. Then it will start calling these positions in reverse order!

When using **“Repeat”** the surveillance sweep will go from position one to two and so on until it reaches the last one set in **“Number of Positions to Use”**.

From there it will start the same sequence at position one instead of going to the previous position.

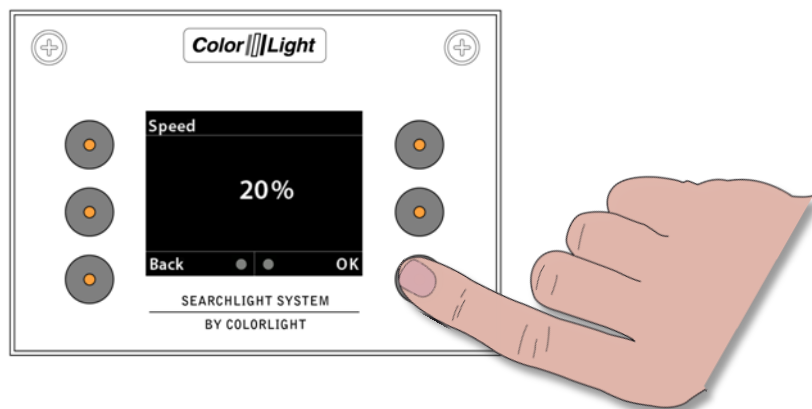


Navigate to the preferred setting and press “OK” to save the setting and return to the “Surveillance” menu.



“Speed” is where the speed of the rotation of the searchlight is set. Default setting is 50% of maximum speed of the searchlight.

To change the actual speed of the surveillance sweep enter the “Surveillance” submenu then “Speed”.

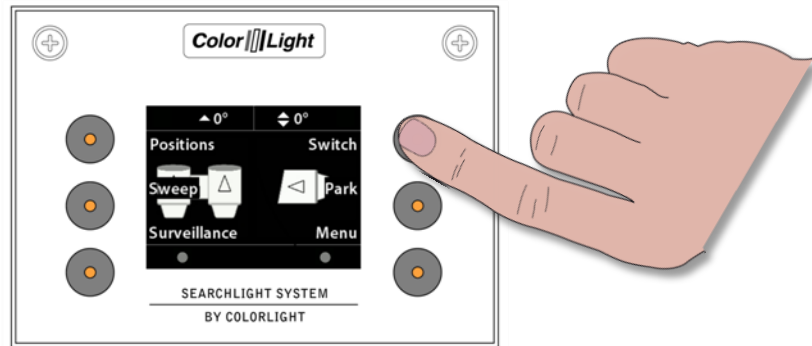


Change the setting by moving the joystick up or down in the speed menu until the requested value is shown. The speed can be set between 5-100% of the maximum rotation speed.

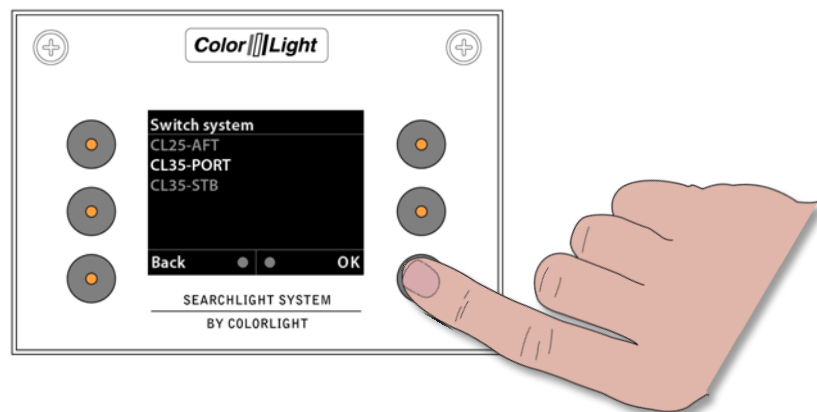
Note: If the rotation speed is updated during runtime this will effect only after the searchlight has reached its next end point.

10.4 Switch

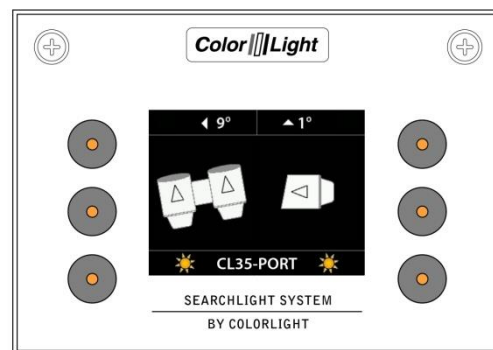
If there are more than one ColorLight Searchlight in the system any operating panel can control any of the connected ColorLight searchlights. Every searchlight should be given a unique name during installation for this to work properly.



To enter the “**Switch**” submenu open up the quick start menu and press the upper right button.



In this menu all the available searchlights should be listed. To change which searchlight being controlled, navigate to the desired searchlight and press “**OK**”.

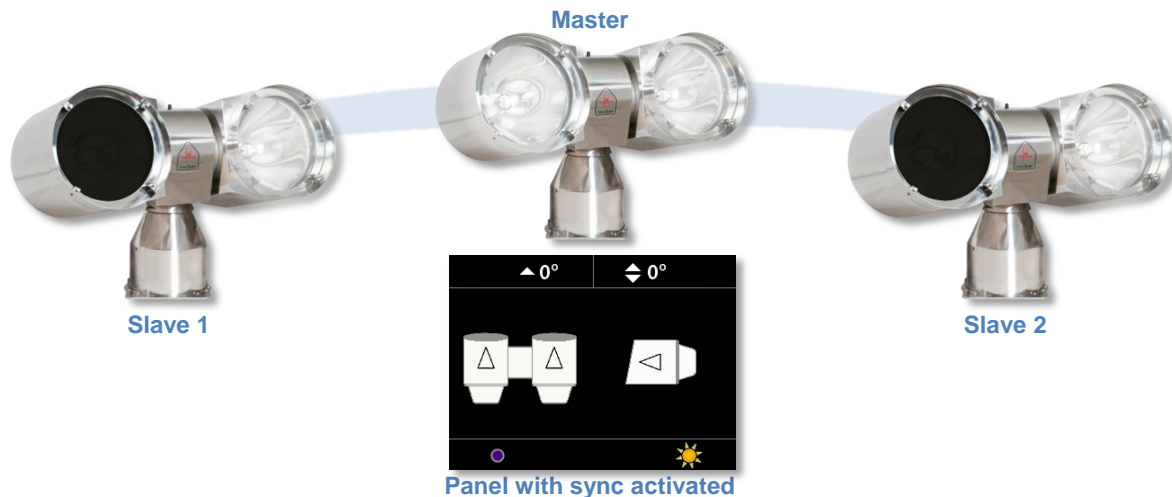


The operating panel should now control the newly selected searchlight which is shown on the indicator page.

10.5 Synchronized control (optional function from ver. 0.5.0.8)

This function is available in the “**Switch**” submenu if there is more than one ColorLight Search Light in the network and at least one operator panel has the option “**Synchronized control**” enabled. The feature gives the user control over multiple searchlights at the same time from a single operator panel and can therefore obtain optimal light on the same area.

For this feature to be easy to handle, the searchlights should be given a unique name, for example by mounting location on the boat, please see [11.8.6.3 Name system](#).



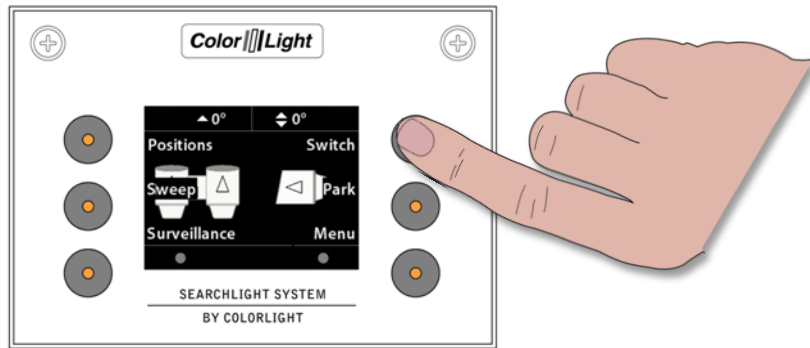
The following basic functions will be synchronized if “Sync” is enabled in the operator panel:

- **Horizontal and vertical movement** based on position, i.e. there may be a small discrepancy during real-time movement with joystick but the final position will always be identical on all synced system when movement stops.
- **Light / on off**, white light button will turn on and off all the white lights on master and synchronized slaves and UV button does the same with any UV light.
- **Off and park**, if the parking command in panel is selected, the master and all connected slaves will simultaneously turn off the lights and park.

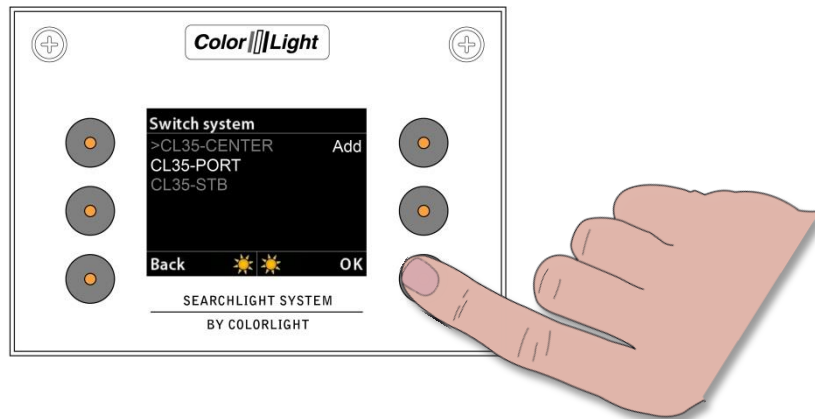
The Sweep, Fixed positions or Surveillance features will not be synchronized, but only started on the searchlight in the network that the operator panel points to, even if this searchlight is the master.

Important, the following settings must have been performed during installation or power failure on each of the systems in the network before they can be included in the synchronized group control.

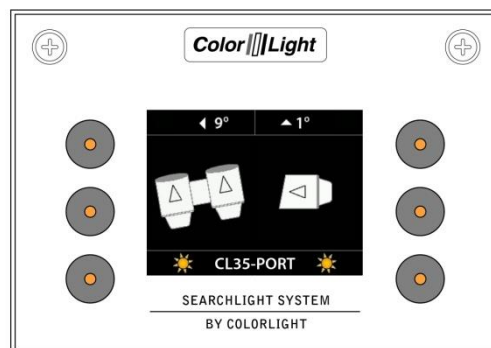
- Actions after installation or power failure please see [5. ACTIONS AFTER INSTALLATION OR POWER FAILURE](#).
- *Store origin*, please see [11.8.6.1 Store origin](#).



To enter the “Switch” submenu open up the quick start menu and press the upper right button.



In this menu all the available searchlights should be listed. To change which searchlight being controlled, navigate to the desired searchlight and press “OK”.

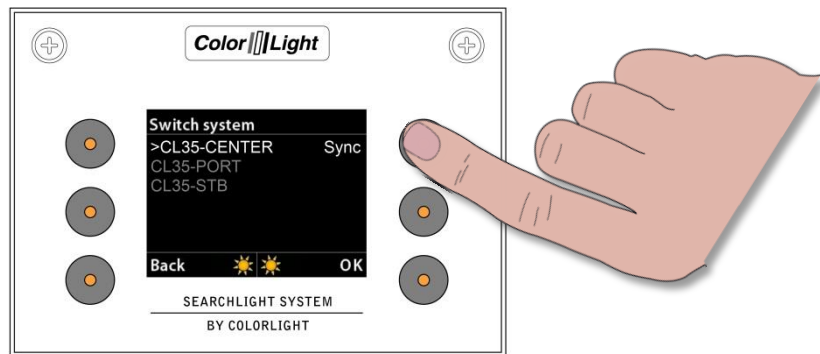


The operating panel should now control the newly selected searchlight which is shown on the indicator page.

10.5.1 Set the master control searchlight on/off

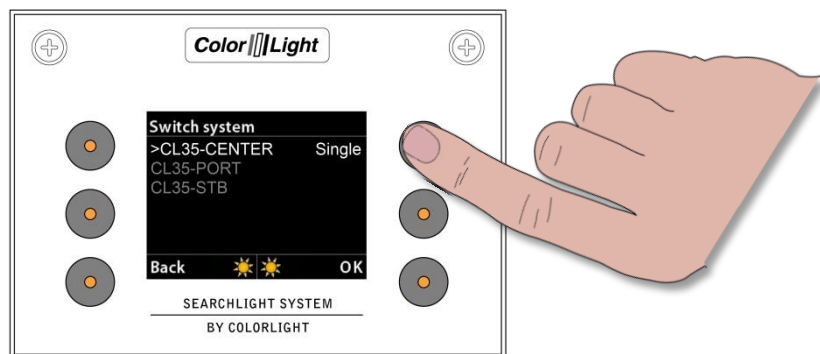
The master is the searchlight that you actively control with your operator panel and it is the master's indicator and error message that is displayed in the operator panel display. Light icons however, changes to the configurations that are available in the group at the moment.

If the master has two white lights (11) and you add a slave who has one white and one UV (12), the master's indicator field will immediately update so that there is a UV light available in the group.



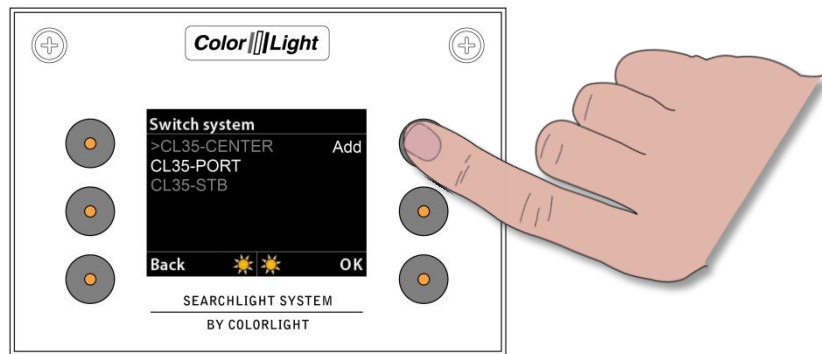
Once you have switched over to the searchlight which you want to be master in the system, press the **"Sync"** button, In this case, we choose CL35 CENTER as our master. The arrow in front of the selected CL35 CENTER tells us that this system is the "master" in the network and if the sync function is activated all the slaves will follow the masters movement.

Important, to add and remove slaves, please see [10.5.2 Add and remove slaves.](#)

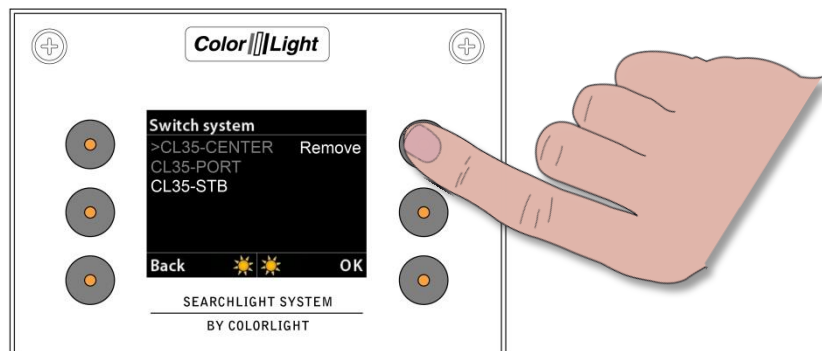


To disconnect the master and run the CL35 CENTER searchlight as a single searchlight go into the **"Switch"** submenu, navigate to the master searchlight and press the **"Single"** button.

10.5.2 Add and remove slaves

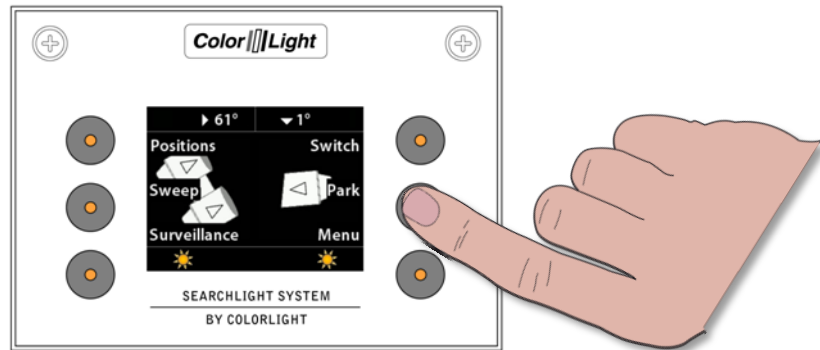


Add or remove one or more slaves is done by entering the "**switch**" submenu and with the joystick scroll through the list of available headlights, If the searchlight in the list is not connected in the synchronized group control, the text "**Add**" appears next to the top left button, to add this searchlight to the group, press the "**Add**" button.



If the searchlight marked is already listed as slave in the group, the text "**Remove**" appears next to the top left button, to remove this searchlight from the group, press the "**Remove**" button.

10.6 Off and park



By pressing the button next to **"Park"**, any lighted lamp will be turned off and the searchlight will automatically look up the preprogrammed parking position, during this time you'll see **"Parking ..."** in the bottom middle of the display.

When parked, the operator panel will turn off the display after a few seconds and the LEDs behind the buttons will be dimmed to a lower intensity.

11. MAIN MENU

From the quick start menu, select **"Menu"** to enter the system's main menu.

To navigate in the main menu, use the joystick; push the joystick forward/up once to go up one step in the menu and backwards/down to go down one step. Keep holding the joystick up or down will scroll up and down in menus with "autorepeat".

To confirm your choice use **"OK"** button and to leave the displayed menu, use the button **"Back"**. In many menus the joystick can be used as the **"OK"** button if moved to the right and as the **"Back"** button if moved to the left.

11.1 Off and Park

Please see [10.6 Off and park](#) for information regarding this menu choice.

11.2 Switch system

Please see [10.4 Switch](#) for information regarding this menu choice.

11.3 Light Position

Please see [10.1 Fixed positions](#) for information regarding this menu choice.

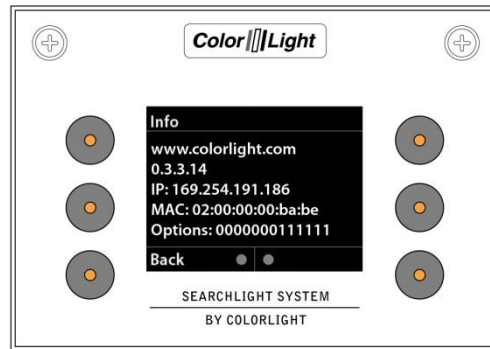
11.4 Sweep

Please see [10.2 Sweep](#) for information regarding this menu choice.

11.5 Surveillance

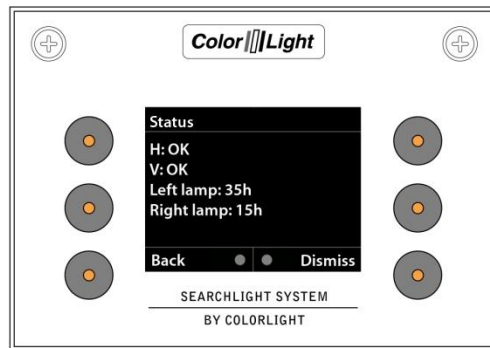
Please see [10.3 Surveillance](#) for information regarding this menu choice.

11.6 Info



This menu shows information that is needed to be known during support from ColorLight or if any optional functions should be added to the operator panel after purchase (more about this under [11.8.6.7 Options setup](#)).

11.7 Status



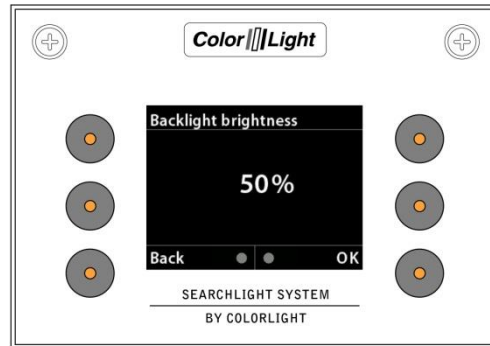
This menu will give information in form of text messages if there is errors in the system, it also contains a **“bulb life”** counter showing total burning time in hours. Errors can be reset from this menu by simply press the button marked **“Dismiss”**, if errors persist despite resetting, contact ColorLight.

Message	Fault	Remedy
Communication error	Transmission issues on the CAN bus	Check for loose wires in the electrical box and contact ColorLight.
Over current	Overcurrent protection triggered, movement blocked	Make sure that the searchlight is able to rotate freely. In winter, heavy icing can be the cause of this error.
Over voltage	Overvoltage protection triggered, voltage to searchlight motordriver/s have exceeded 30Vdc.	Reset the error, if error recurs repeatedly, please contact ColorLight.
Under voltage	Undervoltage protection triggered, voltage to searchlight motordriver/s has fallen below 10Vdc	Reset the error, if error recurs repeatedly, please contact ColorLight.

11.8 Settings

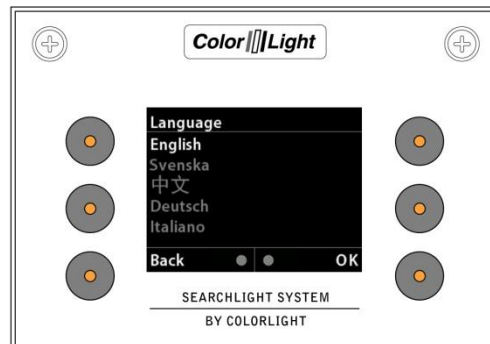
This opens a new menu with six sub menus.

11.8.1 Backlight brightness (adjust the button´s/ display light intensity)



In this menu the light intensity of the button LEDs and display is set. The adjustment is done by moving the joystick forward for increasing the intensity and backward to decrease. Select 0%, button lights will turn of completely. The choice is confirmed with “OK”.

11.8.2 Language

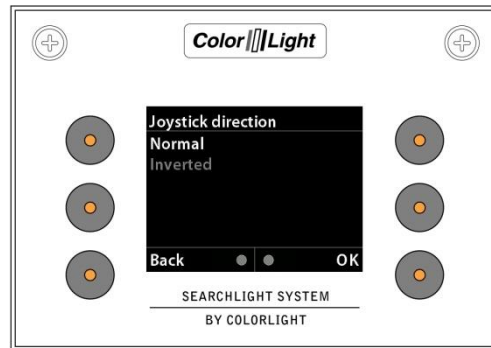


The language in the display can be changed depending on which language sets that are installed in the operator panel.

Currently, the following languages are available (Q2 2013):
English, Swedish, Chinese, French, German, Italian, Portuguese, Russian.

If you find that your language is missing, please contact ColorLight

11.8.3 Joystick direction



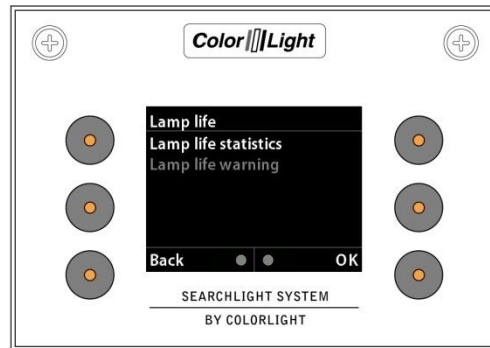
Some operators want to have their joystick to move the lamp housing vertically in the same direction as the joysticks physical direction:

(joystick up=lamp housing moving upwards), this is called “**Inverted**” in the menu.

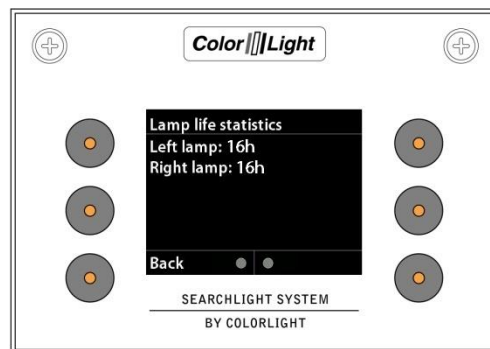
Normally the joystick acts like an aeroplane joystick:

(joystick up=lamp housing moving downwards), this is called “**Normal**” in the menu.

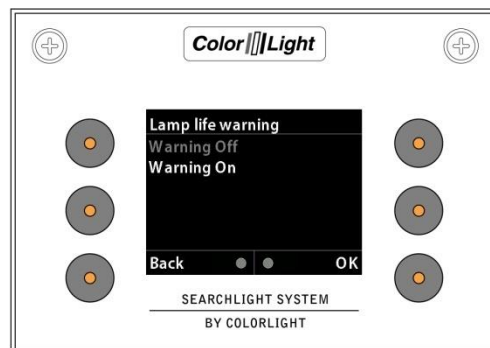
11.8.4 Lamp life



In this menu there are two sub menus, “**Lamp life statistics**” and “**Lamp life warning**”.



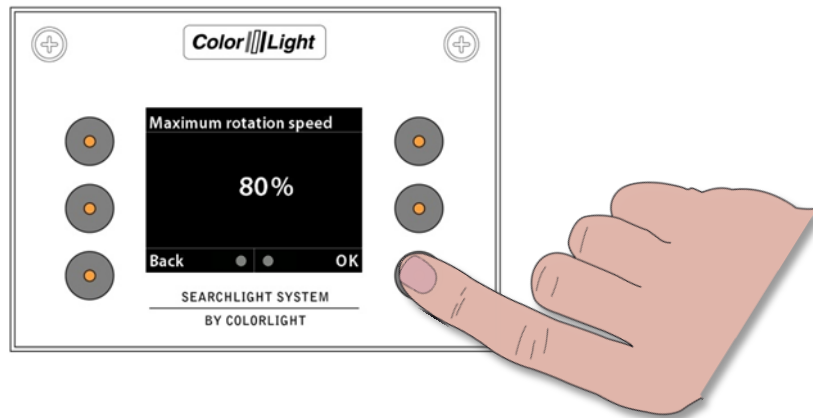
“**Lamp life statistics**” menu will show a display similar to the status display in [11.7 Status](#). The only difference is that no errors will be presented in this display.



“**Lamp life warning**” menu will make it possible for the operator to choose if the lamp life warning feature should be activated or not. See [8. SWITCH ON LIGHT](#). The warning is normally enabled when system is shipped from ColorLight.

11.8.5 Maximum rotation speed

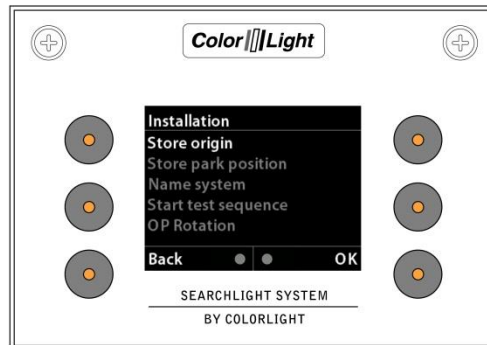
This menu gives the operator the opportunity to limit the actual maximum rotation speed of the searchlight in relation to its absolute maximum rotation speed.



The adjustment is done by moving the joystick forward to change speed in increments of 5% and backwards to decrease. Minimum speed is 20% and maximum 100%, when the choice is confirmed with "OK", the display jump back to the previous "Settings" - menu.

11.8.6 Installation

In this menu there are six sub menus each described below:



11.8.6.1 Store origin

This menu is used to calibrate the systems “ZERO” point for both vertical and horizontal axis.

Before the “**Store origin**” command is stored it is necessary that the synchronization between operator panel and electrical box is done properly. The easiest way to do the synchronization is by turning the system off with the “**Park**” command, please see [10.6 Off and park](#).

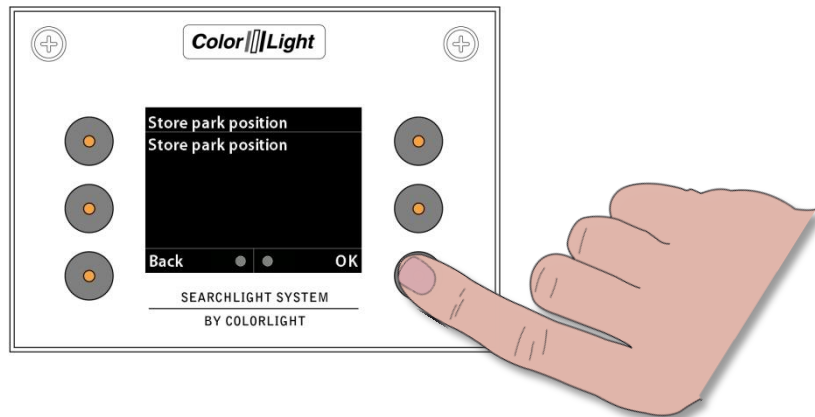
Start the system according to [6. STARTING SYSTEM](#) (normal start). Now the position of the lamp housings should be adjusted to be in level with horizontal plane and in direction straight forward of the vessel (normally)! Then “**Store origin**” is executed and setting is stored.

11.8.6.2 Store park position

This menu enables the storing of a park position (lamp housing pointing at any direction when the “Park” command is selected).

Before changing the default park position it’s necessary that the synchronization between operator panel and electrical box is done properly. The easiest way to do the synchronization is by just turn the system off with the “Park” command, please see [10.6 Off and park](#).

From the default logo screen or display indicator*-screen, move the searchlight to the new desired park position and when satisfied select **menu>settings>Installation** and enter sub menu “Store park position”.

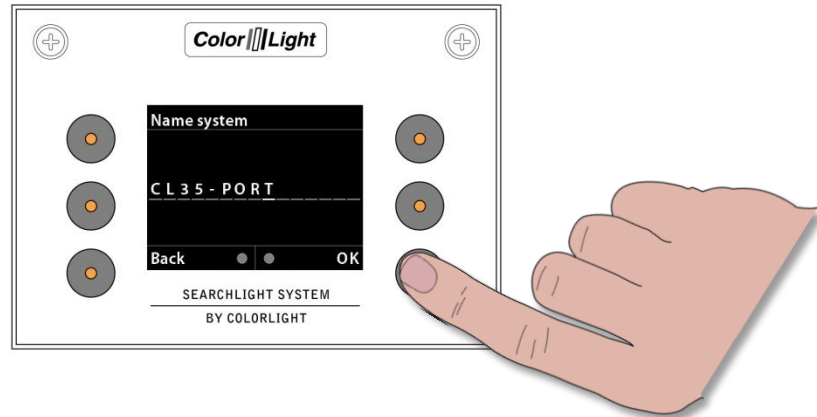


Press “OK” to save the new park position and return to the default logo screen or display indicator*-screen

ColorLight recommend that the park position should be approximately 75 degrees down for CL20/CL25 and 50 degrees down for CL35 on the vertical axis relatively to the horizontal plane. This recommended parking position is the default setting from factory and also the most effective position to avoid sand, rain, snow etc. to hit the glass in front of the lamps.

11.8.6.3 Name system

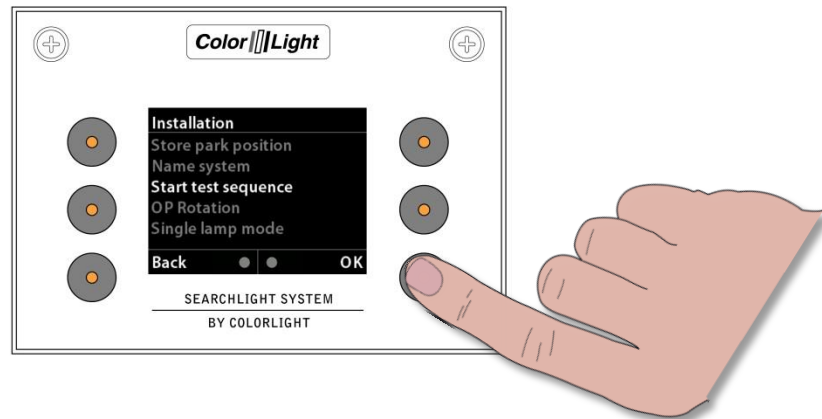
The dedicated ColorLight network can contain several searchlights and operator panels. To make the whole network easy to navigate; each electrical box and its corresponding searchlight can be named to a well-known name for the operator.



The name is set by moving the joystick up and down to select correct character. To move to next character in the name the joystick is moved to the right. Finish the name process and save the name by select “**OK**” by pushing the button at the right bottom corner of the display.

11.8.6.4 Start test sequence

This menu starts a test sequence which tests the movement of the lamp housings and focus for each lamp house one at a time.



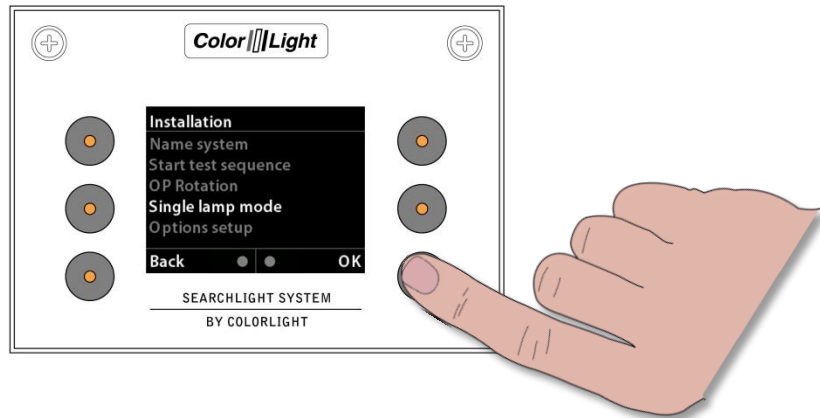
The test sequence will perform as follows:

- At test sequence startup the lamp housing will be moved to parking position.
- The horizontal axis will be rotated one full revolution clockwise.
- The vertical axis will be rotated one full revolution clockwise.
- The left lamp houses focus motor is activated during 10seconds.
- The right lamp houses focus motor is activated during 10secinds.

The whole sequence above will be repeated 5 times before the test sequence is automatically abandoned. Every even time the rotation will be anti clockwise and every odd time the rotation will be clockwise. During the test sequence the operator can switch on and off lights by simply press the button (2) and (5) according to the figure in [3. OPERATOR PANEL, OVERVIEW](#). The test sequence can't be abandoned by the operator without switching off the main power in the electrical box.

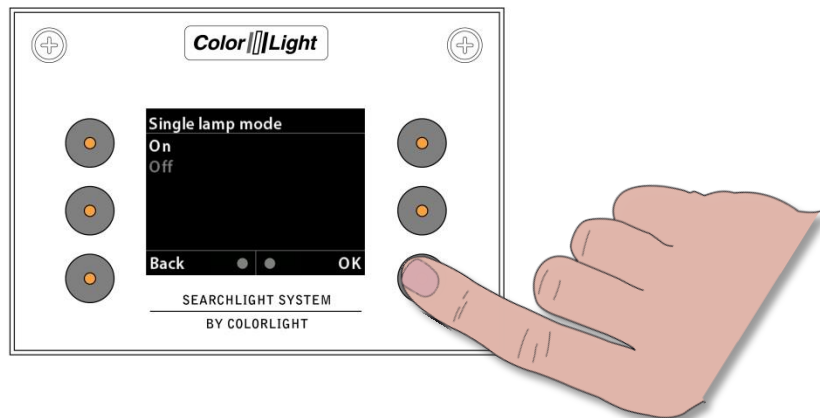
11.8.6.5 Single lamp mode (standard function available from ver. 0.5.3.11)

Note: Button numbers below refers to [OPERATOR PANEL, OVERVIEW](#).



Normally, for double white (CLXX-11) or double UV (CLXX-22) configuration one wants to ignite both bulbs simultaneously and thereby obtain maximum light intensity with the push of a single button.

However, there are occasions when it may be useful to give each bulb a dedicated light button, this setting is done in the "**Single lamp mode**" menu.



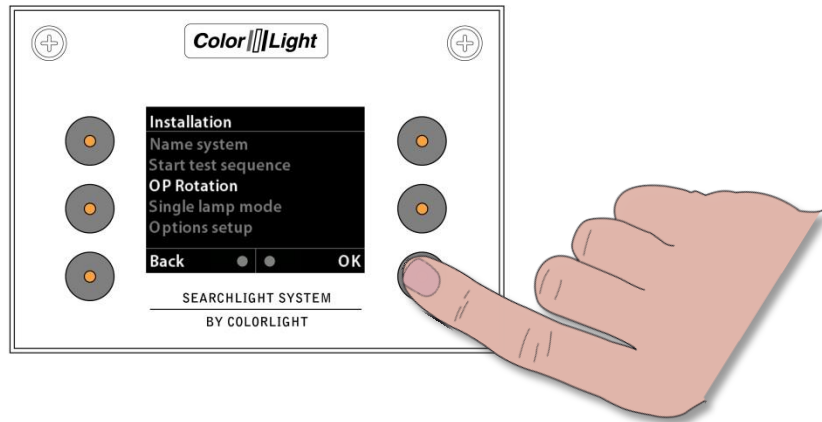
By selecting single lamp mode "On" and confirm by pressing "OK", the left bulb will turn on / off by pressing the left light button (2) and right bulb on / off by pressing the right light button (5).

Note: The function "park" turns off both lights at the same time regardless of the setting in this menu.

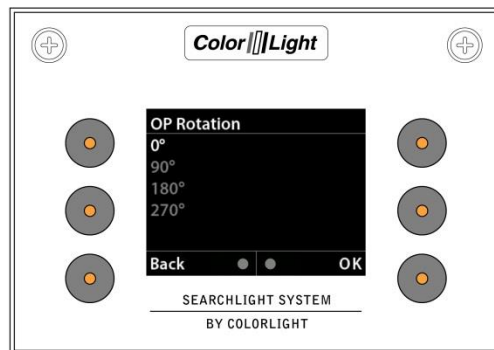
The default setting at delivery is "both bulbs on" by pressing left light button (2) or right light button (5)

11.8.6.6 OP Rotation (standard function available from ver. 0.5.2.10)

This menu is used if you have mounted an operator panel pointing in a different direction than towards the bow of the boat.



The defaults setting when delivered (0 degrees) requires that the operator panel is mounted pointing towards the bow of the boat, [see illustration on page 44](#).

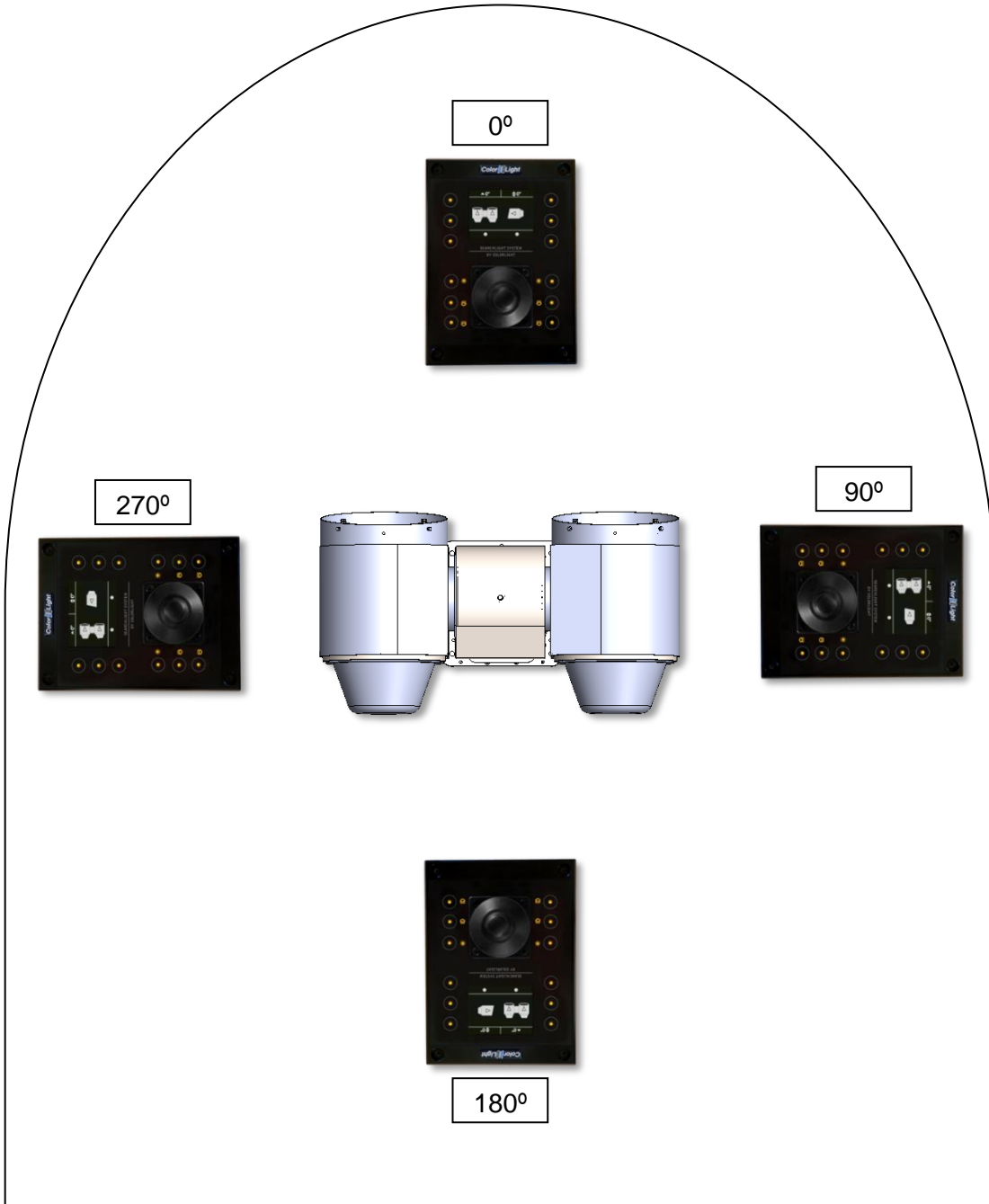


By changing this setting you can compensate for different mounting positions while maintaining accurate indicator function, you can choose from four different positions.

- 0 degrees (default)
- 90 degrees
- 180 degree
- 270 degree

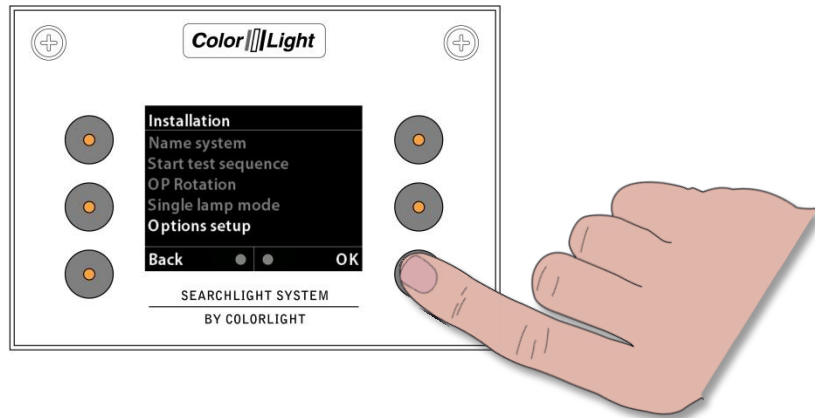
Press "OK" to save and exit back to the "Installation" submenu.

OP Rotation illustration.

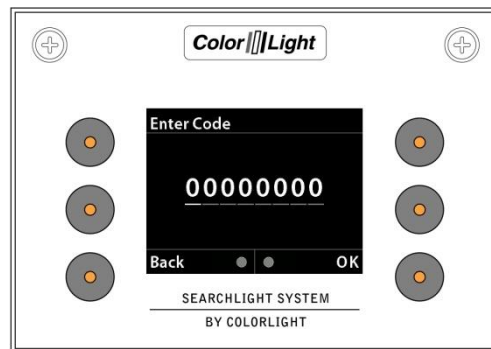


11.8.6.7 Options setup

This menu is used to install special “codes” to get access to optional functions.



Press “OK” to enter the “Enter Code”-screen.



The code is entered by moving the joystick up and down to select correct character. To move to next character the joystick is moved to the right. Finish the process by select “OK” by pushing the button at the right bottom corner of the display

The “codes” are individual for each operator panel. To get access to the “codes” the customer needs to call ColorLight for quotation. ColorLight need the MAC address for the relevant operator panel to be able to get the right code for their customer. Please see [11.6 Info](#).

The following options are available and can be directly accessed by entering a code:

Display indicator,

Fixed positions, please see [10.1 Fixed positions](#).

Sweep (auto sweep horizontal), please see [10.2 Sweep](#).

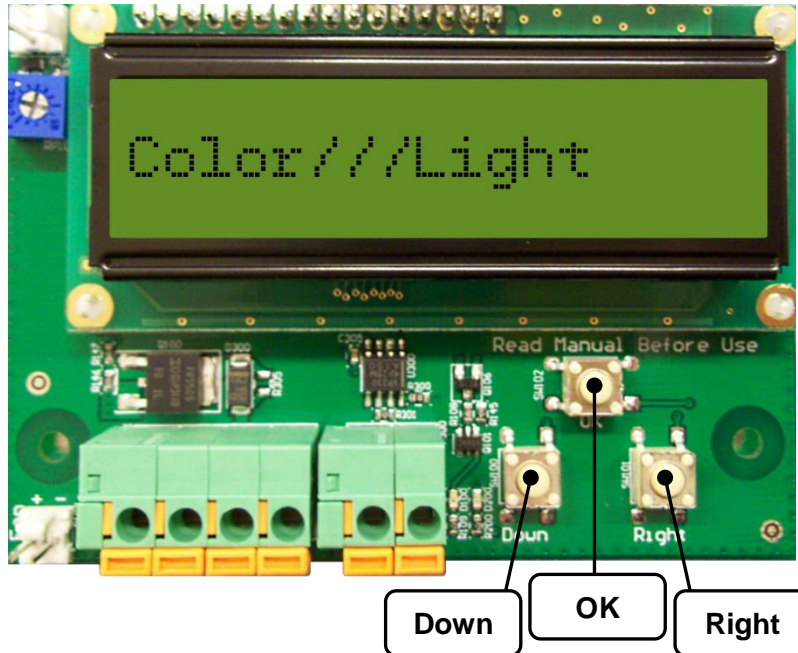
Surveillance, please see [10.3 Surveillance](#).

Synchronized control, please see [10.5 Synchronized control](#).

Language [11.8.2 Language](#).

12. CABINET CARD MENU SYSTEM

This chapter describes the menu system of the ColorLight Cabinet Card displayed on the on-board LCD.



12.1 Menu navigation

The user interacts with the menu system using the three buttons, the “**Down**” button, the “**Right**” button and the “**OK**” button.

12.1.1 Down Button

The main function of the “**Down**” button is to shift between the menu categories. It also has two alternate generic functions.

1. While in submenus listing items of various types the “**Down**” button scrolls down in the list.
2. While entering a value of some sort, the “**Down**” button decrements that value.

12.1.2 Right Button

The main function of the “**Right**” button is to shift between the submenus of the selected menu category. It also has two alternate generic functions.

1. While in submenus listing items of various types the “**Right**” button scrolls up in the list.
2. While entering a value of some sort, the “**Right**” button increments that value.

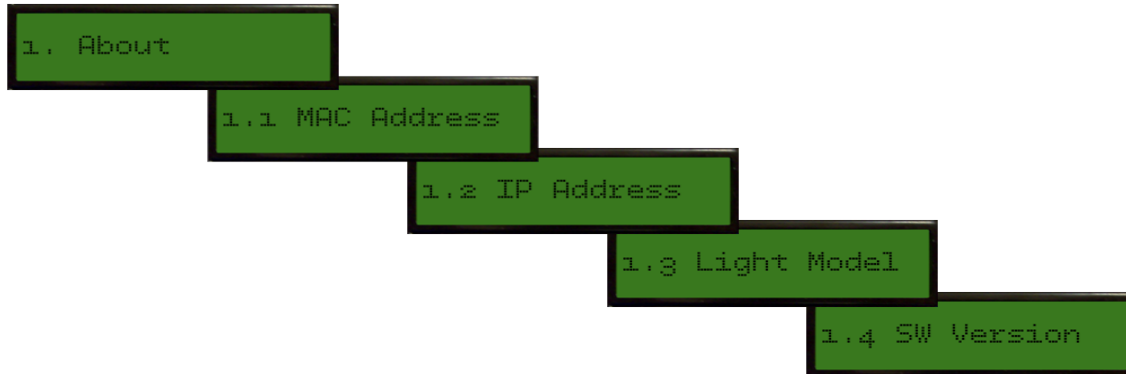
12.1.3 OK Button

The “**OK**” button enters and exits submenus.

1. About	1.1 MAC Address	1.2 IP Address	1.3 Light Model	1.4 SW Version
2. Diagnostics	2.1 Start	2.2 View Results		
3. Usage Stats	3.1 Left Light	3.2 Right Light	3.3 Reset Left	3. 4 Reset Right
4. Settings	4.1 OP WDT	4.2 OP WDT Stats	4.3 OP WDT Reset	

12.2 Category 1: About

In this chapter all of Category 1 menu items will be explained.



12.2.1 (1.1) MAC Address

Displays the MAC address of the Cabinet Card, according to the standard (IEEE 802) in six groups of two hexadecimal digits, separated by colons (:), in transmission order, e.g. “01:23:45:67:89:ab”. One exception from the standard is made, the leftmost colon is missing, due to the 16 character limit of the LCD.

12.2.2 (1.2) IP Address

Displays the IPv4 address of the Cabinet Card, in four groups of one to three decimal digits, separated by dots (.), e.g. “169.254.17.5”.

12.2.3 (1.3) Light Model

Displays the searchlight model that the Cabinet Card is configured to use, e.g. “Model: CL25-12”.

12.2.4 (1.4) SW Version

Displays the firmware version of the Cabinet Card, e.g. “0.1.2.3”.

12.3 Category 2: Diagnostics (support tool)

In this chapter all of Category 2 menu items will be explained.



12.3.1 (2.1) Start

Press the OK button to run the on-board diagnostic test suite to sense the electrical and mechanical condition of the searchlight. (contact Colorlight for help with this feature).

T1. Measurement of voltage and current when the searchlight is in “non operating mode”

T2 (HCW). Measurement of current drawn by the horizontal motor; motor rotates clockwise for 30 seconds.

T3 (HCCW). Measurement of current drawn by the horizontal motor; motor rotates counterclockwise for 30 seconds.

T4 (VCW). Measurement of current drawn by the vertical motor; motor rotates clockwise for 30 seconds.

T5 (VCCW). Measurement of current drawn by the vertical motor; motor rotates counterclockwise for 30 seconds and the value is temporary stored.

T6 (Rfoc). Measurement of current drawn by the right focus motor; runs for 30 seconds.

T7 (Lfoc). Measurement of current drawn by the left focus motor; runs for 30 seconds.

T8 (H MAG). Test of horizontal magnetic sensor; the horizontal motor is running at full speed for a predetermined time and number of triggers is recorded.

T9 (V MAG). Test of vertical magnetic sensor; the vertical motor is running at full speed for a predetermined time and number of triggers is recorded.

T10 (Lights). Lamp test; both lights should ignite and be lit for 30 seconds.

To avoid burning anything with the bright light the test is performed with both axis rotating in half speed. The result is temporary stored.

T11 (OP count). Counting the number of connected operator terminals in the network.

12.3.2 (2.2) View Results

Displays the result of the last run diagnostics test suite.

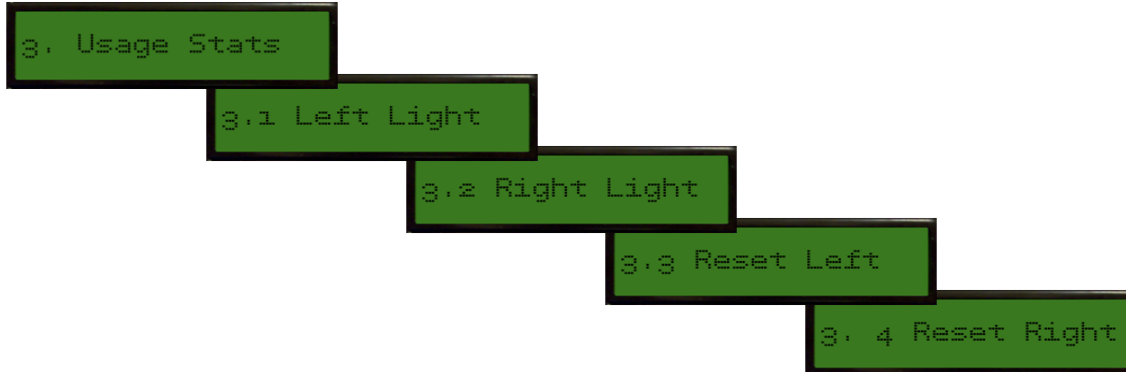
Use the “**Down**” button to cycle through the tests results.

Use the “**Right**” button to cycle through different test result information for the selected test.

Only applicable for test “T1” and test “T10”.

12.4 Category 3: Usage Stats

In this chapter all of Category 3 menu items will be explained.



12.4.1 (3.1) Left Light

Displays the usage of the left light source in hours:minutes:seconds, e.g. “Left: 1:23:45”.

12.4.2 (3.2) Right Light

Displays the usage of the right light source in hours:minutes:seconds, e.g. “Right: 1:23:45”.

12.4.3 (3.3) Reset Left

Resets the usage counter of the left light source.

A confirmation message, “**If sure press OK**”, is displayed upon entering the menu. Press the “**OK**” button at this point to reset the counter and exit the menu. Press the “**Down**” or “**Right**” button to exit the menu without resetting the counter.

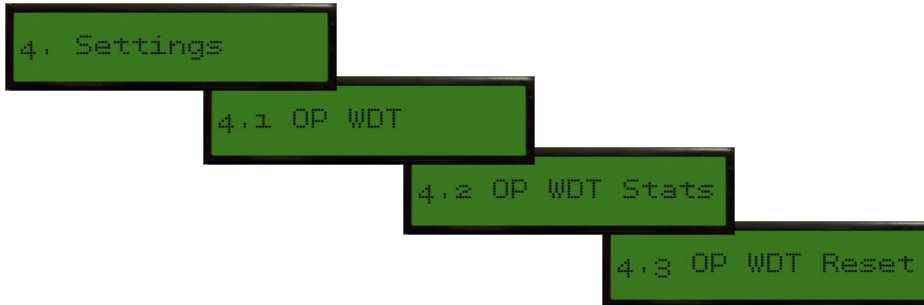
12.4.4 (3.4) Reset Right

Resets the usage counter of the right light source.

A confirmation message, “**If sure press OK**”, is displayed upon entering the menu. Press the “**OK**” button at this point to reset the counter and exit the menu. Press the “**Down**” or “**Right**” button to exit the menu without resetting the counter.

12.5 Category 4: Settings

In this chapter all of Category 4 menu items will be explained.



12.5.1 (4.1) OP WDT

Ethernet communications guard OP WDT (Operator Panel Watchdog Timer)

This searchlight is built for use on long distances and the high-intensity light from the searchlight can, if set at a narrow beam, cause severe damage to surfaces closer than 1 meter. To avoid that the searchlight is forgotten with the light on, always use the feature “off and park” when not using the searchlight.

If however a hardware failure occurs that breaks the Ethernet communication between the box and operator panel, a safety function will step in and automatically turn off the light within 3 seconds, the OP WDT will also interrupt an ongoing sweep or surveillance activity.



If an OP WDT event has occurred an error message will be displayed in the electrical box and the alarm relay (CL25/35) will trigger. When communication returns the message will disappear and the alarm will be reset.

For multiple panel systems: OP WDT will step in only when communication is lost to all panels.

Possible reasons why OP WDT turn off the lights:

- The power supply to the operator panel is broken.
- The power supply to the Ethernet switch (if any) is broken.
- Broken Ethernet cable between electrical box/ Ethernet switch (if any) and operator panel.

OP WDT is disabled by default, to enable press “**OK**” button in menu “4.1 OP WDT” screen and press the “**Down**” or “**Right**” button to toggle the function on/off.



12.5.2 (4.2) OP WDT Stats

Displays a counter that keeps track of the number of times the Ethernet communication has recovered from an OP WDT event.

In case of suspected cable problems with connected operator panels, this counter can be helpful when troubleshooting.



12.5.3 (4.3) OP WDT Reset

Resets the OP WDT counter.

A confirmation message, “**If sure press OK**”, is displayed upon entering the menu. Press the “**OK**” button at this point to reset the counter and exit the menu. Press the “**Down**” or “**Right**” button to exit the menu without resetting the counter.

13. SUPPORT

If you have questions about the searchlight and its features, please contact ColorLight technical support worldwide, see www.colorlight.com for contact details.

Or contact ColorLight head office:

ColorLight AB
Engineering-ColorLight
cl@colorlight.com
Phone: +46 353 8270
Fax: +46 35 38279

Need technical Support?
Follow the link below and fill out the form, we will contact you shortly.
<http://www.colorlight.com/tech-support/service-request.html>

If you want to upgrade your system with additional options as described in User's Manual, section (11.8.6.7), please contact:

ColorLight AB
Phone: +46 35 38280
Fax: +46 35 38279
www.colorlight.com
info@colorlight.com

Delivery address:

ColorLight AB
Kassakällor Erikslund 917
SE-313 95 Åled
Sweden

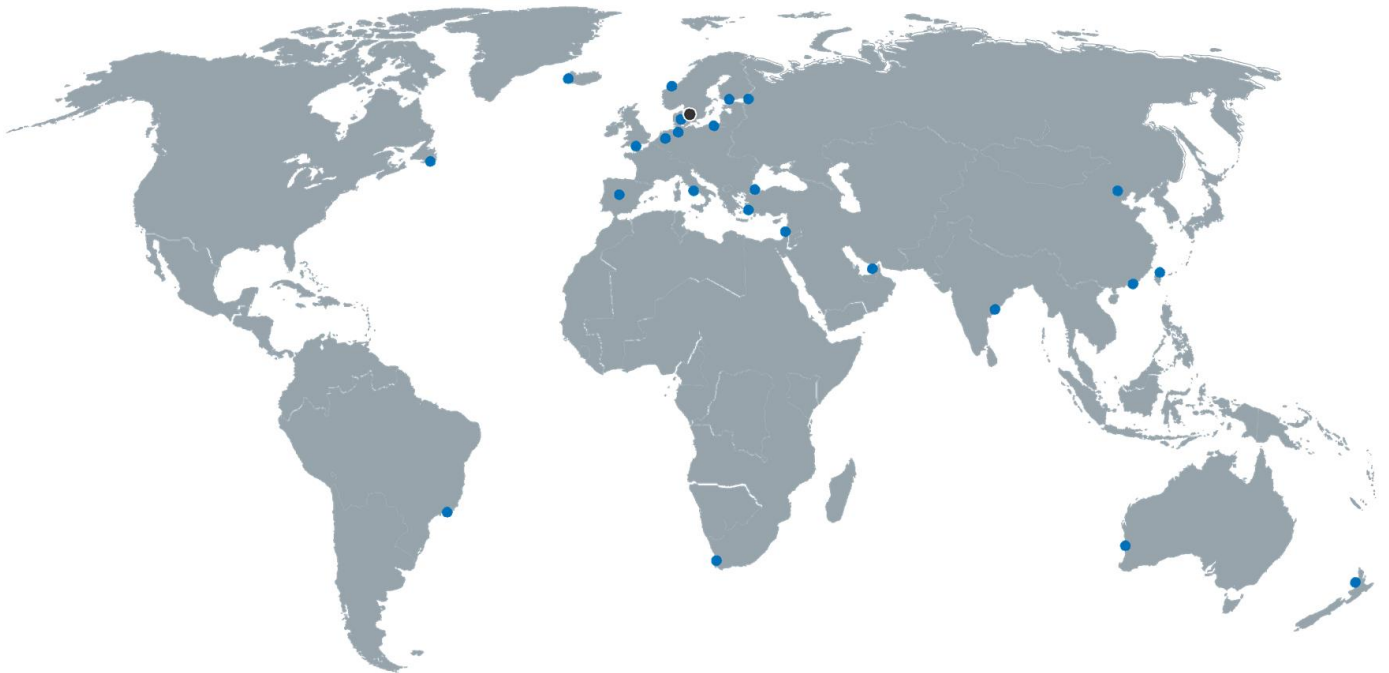
Notes:

VISIBILITY | VERSATILITY | VALUE



COLORLIGHT

We look forward to serve you with the Future Searchlight Solution - wherever you are



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