

DIMLUX



XTREME SERIES LED
XTREME SERIES LED +NIR



USER MANUAL

Engineered & Designed in Holland

www.dimlux.nl
Manual version 0313 2023

KNOWLEDGE BASE

Direct link: www.dimlux.nl/knowledge-base



Scan the QR-code to go to our online knowledge base with more tutorials and videos.

**THE FUTURE OF GROWING
JUST GOT BRIGHTER.**

IMPORTANT SAFETY PRECAUTIONS & EXPLANATION OF SYMBOLS

- It is important that you read this manual thoroughly before attempting to install or operate any Dimlux Xtreme Series LED system.
- After successful installation and configuration of the system, be sure to retain this manual in a safe place for future reference. Safety is a key component to a long lasting and trouble-free installation.
- It is important you read, fully understand, and observe the subsequent safety precautions. If you are not comfortable with the installation of high performance lighting systems, you should seek the help of a qualified installation professional.
- **NOTICE:** Do not touch the fixture anywhere besides the controller area while in operation.
- Connect the system only to the power sources of the appropriate voltage using the AC plug type received. Protect power cables from being pinched, walked on, or otherwise damaged. Be especially careful where the power cable enters the power outlet and the unit. Only connect the system to an electrical outlet or extension cord of appropriate type and rating.
- **DO NOT** defeat the safety purpose of a grounding or polarized plug by removing ground pins or using unsafe adapters. A polarized plug has two blades –one wider than the other. A grounding plug has a third ground prong in addition to the two main conductors. The wide blade or third grounding prong is provided for your safety.

If the provided plug does not fit your outlet, consult an electrician to replace your obsolete outlet. If you replace the power cord, only use one of similar type and equal or greater current rating.

- The system should only be cleaned as directed in the section General Care. You should seek service for your system by qualified service personnel if any of the following occur:
 1. The power-supply cord or the plug has been damaged
 2. The unit has been exposed to moisture
 3. The unit exhibits a marked change in performance
 4. A hinge looks damaged, or is unable to keep the unit straight

CULTIVATION BEST PRACTICES

- Check the growth and health of your plants regularly.

Because the LED fixture barely radiates any heat towards the plants, the plant temperature will tend to be considerably lower than with HPS or MH. Moreover, when only the ambient temperature is being controlled, the plant temperature can vary enormously. It is recommended to work with the Dimlux Plant temperature camera to determine the correct Vapor-pressure deficit. Adjustments to H₂O, CO₂, RH, nutrients, and temperature are usually required.

Dimlux lighting systems can deliver very high PPF levels, typically more than experienced in nature. Many plants prefer higher temperatures when exposed to higher PPF. Experiment with higher temperatures to achieve the best yield.

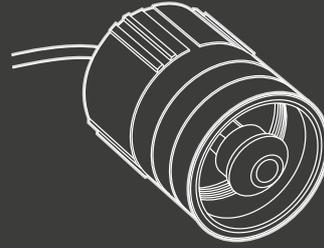
- The Xtreme Series LED is designed to provide a uniform light distribution in the shape of a square. There is a very simple way to determine the minimum height of the fixture. The rule of thumb is that the shortest distance from fixture to crop is half the distance between the fixtures (center to center size) in a multi-fixture set-up. It doesn't matter whether the LED is 500 Watt or 1000 Watt. A 1000 Watt fixture should illuminate a larger area than a 500 Watt fixture.

GENERAL CARE

- Natural convection removes heat from the heatsink. In order for the system to properly cool itself, at least 5cm (two inches) of space is required between the fixture and the ceiling of your grow area. Failure to do so may shorten the fixture's lifespan.
- To achieve the optimal lifespan and performance of your fixtures, routinely check for and remove excess dust, debris, and mineral build up from the body, heat sinks, and lenses.
- Cleaning should always be done with the fixture disconnected from the power source. The body, heat sinks, and lenses can be cleaned with compressed air, or with a dry or damp cloth, without using soap or solvents.

DIMLUX PLANT TEMPERATURE CAMERA

With this DimLux plant temperature camera, the DimLux Xtreme Series LED can indicate whether the crop is in the ideal temperature range. When connected to the Maxi Controller, the lighting dims based on the plant temperature if it gets too high due to, for example, a water shortage. If the set value is exceeded, it is dimmed first to keep the temperature under control. If the temperature rises despite dimming, half of the dimmed lamps will switch off, if the temperature continues to rise, all lamps will switch off for at least 20 minutes.



DIMLUX PLANT TEMPERATURE CAMERA
FOR THE INTRODUCTION OF THE DIMLUX XTREME SERIES LED WE HAVE DEVELOPED THE NEW DIGITAL DIMLUX PT CAMERA



Scan the QR-code and read more about the Dimlux PT Camera.

dimlux.nl/product/dimlux-plant-temperature-sensor



WARNING:
THESE PRODUCTS MAY REPRESENT A POSSIBLE SHOCK OR FIRE HAZARD IF IMPROPERLY INSTALLED OR ATTACHED IN ANY WAY. PRODUCTS SHOULD BE INSTALLED IN ACCORDANCE WITH THE OWNERS MANUAL, CURRENT ELECTRICAL CODES AND/OR THE CURRENT NATIONAL ELECTRIC CODE (NEC).



LAST AND MOST IMPORTANT, PLEASE RECYCLE ALL PACKAGING MATERIAL. FUTURE GENERATIONS WILL THANK YOU.

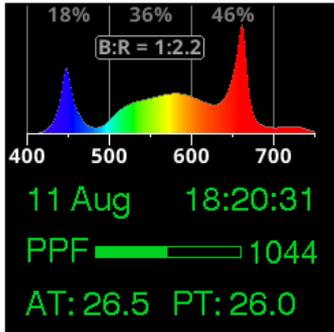


WARNING:
 Risk of electrical shock. To reduce the possibility of serious injury, always take the proper precautions and unplug the fixture before performing any maintenance, repairs, moving or cleaning. LED fixture surfaces may be hot. Allow sufficient cooling time before handling.

WARNING:
 The Fixture is IP62 rated and designed to be used in wet locations. The fixture is resistant against water droplets from above, but not against water streams or internal condensation. In the event that the fixture gets wet, first disengage the circuit breaker, then unplug the fixture, before proceeding to dry the fixture.

CAUTION:
 Regularly check the LED fixture for dust or dirt buildup. Clean if necessary. Contamination may cause overheating and decreased performance.

CAUTION:
 To reduce the risk of overheating or fire, always allow for adequate ventilation of fixtures. Never place an operating fixture face down on a flush surface.



The horizontal axis ranges from 400nm to 700nm (nonNIR variants) or 400nm to 750nm (+NIR variants). Note that 400-700nm corresponds to the PAR range, but the 400-750nm range has not been named yet. These ranges are used because they contain most of the spectral power for the respective models. Advertised PPF and PPF Total numbers are unrelated to the spectrum visualization.

The vertical axis is auto scaling and the unit is $\mu\text{mol/s/nm}$. Spectra in $\mu\text{mol/s/nm}$ look different from spectra in W/nm (sometimes found in other products).

In addition to the spectral distribution chart, the following decorations can be seen on the chart:

- Percentages of blues (400-500nm), greens (500-600nm), and reds (600-700nm) relative to PAR
- Grid lines and wavelength labels
- B:R ratio, which equals "1:x" where x is reds÷blues. When x exceeds 10.0, "1:--" is shown
- A 'night mode' indicator, is when the outputs are off because of scheduled night

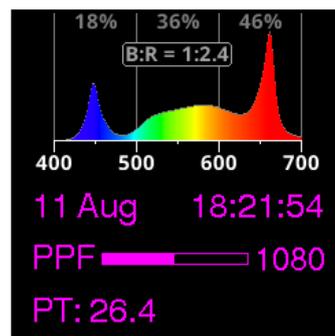
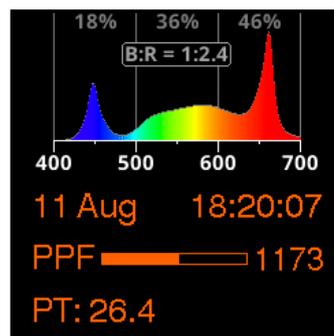
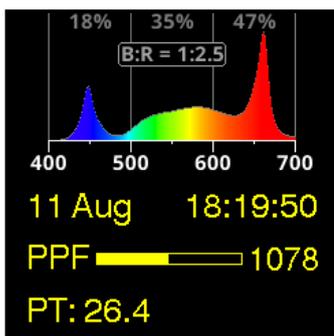
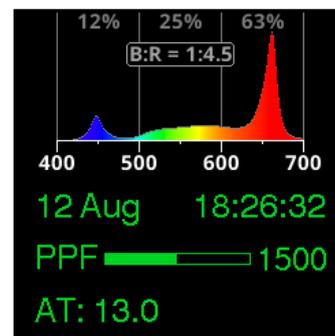
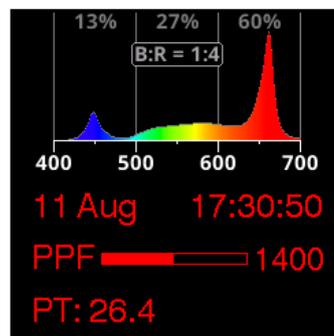
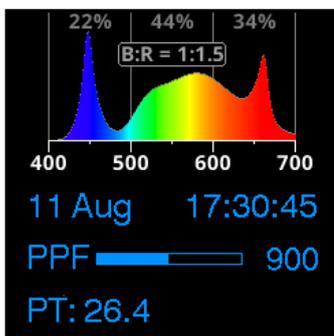
The first three decorations can be disabled on the menu. → See chapter [Menu System](#)

STATUS SCREEN

The status screen refers to the bottom half of the screen when the menu is not active. The components of the status screen are:

- Date and time
- Power setting
- Sensor value
 - AT = Ambient Temperature
 - PT = Plant (leaf) Temperature

The status screen is rendered in a color that represents the current growing program or control mode. By observing the color, the current mode can be seen at a glance.



MODES OF CONTROL

The fixture differentiates between six different growing programs and control modes, Growing programs are for local control, and control modes refer to remote control. The color of the text on the Status Screen and the Status LED show which mode currently controls the outputs:

Growing programs:

- Grow Grow program (B:R ratio = 1:1.5)
- Bloom Bloom program (B:R ratio = 1:4)
- Manual Manual program

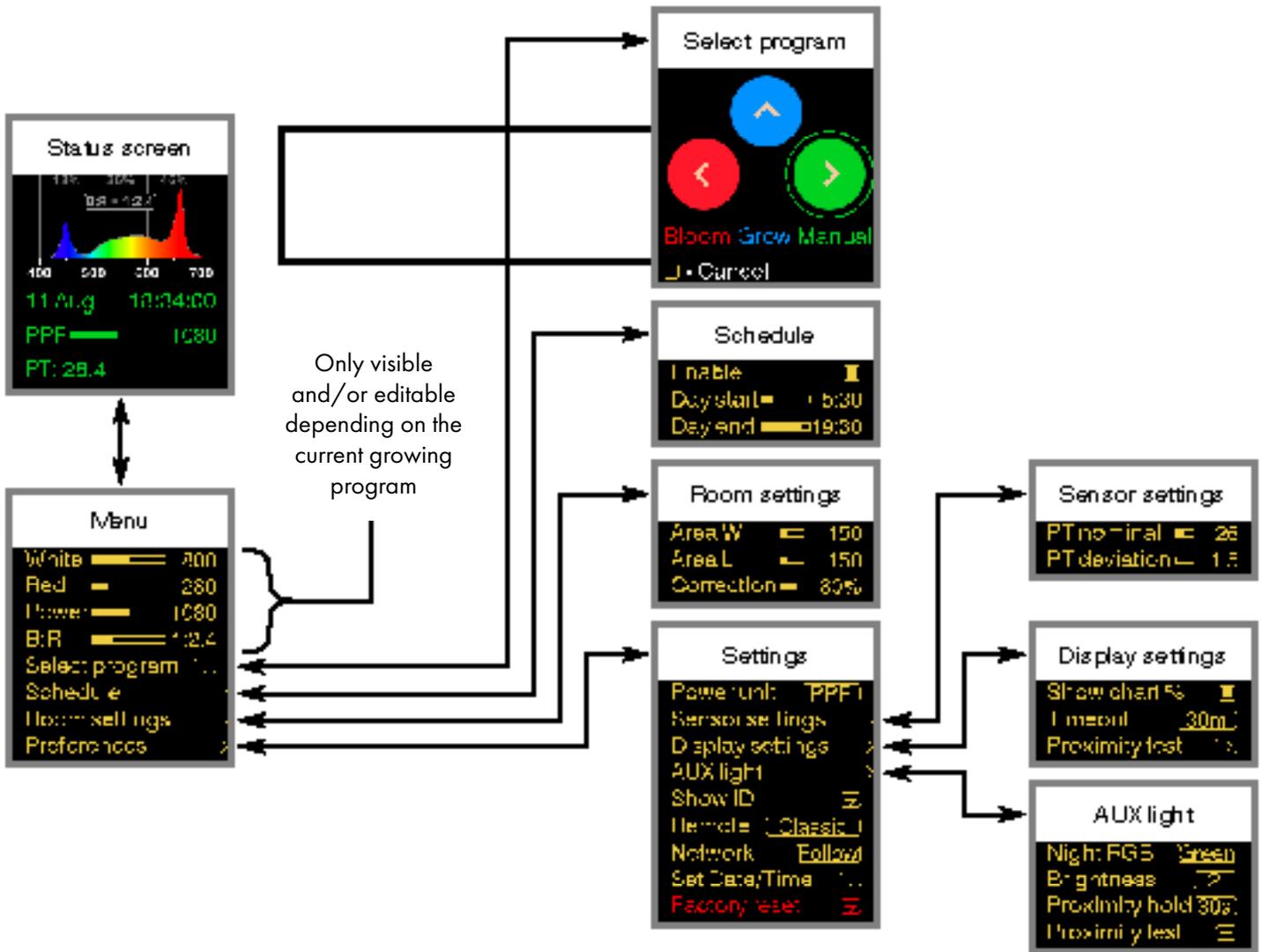
Control modes:

- Analog "LED" Remote control, B:R ratio can be controlled remotely
- Analog "Classic" Remote control, B:R ratio determined by the selected program
- Digital Any kind of digital remote control

The priority of the control modes is Digital > Analog > Manual. When a higher mode of control is present, it has priority over lower ones.

→ For more details on these programs and modes, see chapters [First Time Use](#) and [Chaining Fixtures](#)

MENU SYSTEM



Status screen Displays the date/time, power control slider, and up to two sensor values.

Menu Contains the channel controls (only if the **Manual** program is selected), quick access to some common settings, and the Preferences submenu which contains the remainder of the settings.

Select program Lets the user choose between the local growing programs.

- **Grow** Sets the B:R ratio to 1:1.5 and the schedule from 6:00 to 24:00
- **Bloom** Sets the B:R ratio to 1:4.0 and the schedule from 12:00 to 24:00
- **Manual** Enables the manual control sliders in the menu and turns the schedule off

Schedule Enable Enables the schedule. The schedule will determine a 24 hour day/night cycle to turn the light on or off.
The schedule is only used for local and 'Leader' control, and will be ignored for remote control and in 'follower' mode.

Day start Sets the start and end of the day. This can be configured by hand in steps of 30 minutes. 'Day end'

[0:00-23:30]
(step 0:30)

can be set before 'Day start', in which case the day cycle will continue past midnight. (0:00 and 24:00 are the same, just with a different representation).

Day end

[0:30-24:00]
(step 0:30)

Room settings

Area W

[0-200]
(step 5)

The size (in centimeter) of the effective illuminated area of this fixture. This can be the size of a growing tent for a single fixture, or the spacing of fixtures in a grid.

Area L

[0-200]
(step 5)

Correction

The correction factor for taking into account wall and other losses. When set lower than 100%, the displayed PPF and DLI values are proportionally lowered.

Preferences

Power unit

[% , Watt, PPF, PPF, DLI]

The displayed power unit. → See chapter [Changing the Power Unit](#).

Show ID

Show the network ID (unique identifier for each fixture), hardware version, software version, and system temperature.

Analog ctrl

[LED, Classic]

Select which of the two Analog Protocols will be used, "Maxi LED" or "Classic".

→ For more information, see chapter [Chaining Fixtures](#).

Network

[Lead & Follow]

Select whether this controller acts as "Leader" or "Follower" for chaining.

→ For more information, see chapter [Chaining Fixtures](#).

Set Date/Time

Set the internal clock. → See section [Checking the Clock](#).

Factory Reset

Resets all user-accessible settings and preferences to their default values. After rebooting, it presents the 'Select Program' screen.

Sensor settings

PT Nominal

[0-50]
(step 1)

Configure the ideal plant temperature (in °C)

→ For more information, see the chapter on [Peripheral Devices](#), section [Plant Temperature \(PT\) Camera](#).

PT deviation

[0.5-10]
(step 0.5)

The number of degrees the measured plant temperature may deviate from the nominal value.

Display settings

Show chart %

Whether to show informative overlays on the chart. Specifically, this enables the grid lines, R:G:B percentages, and B:R ratio. Disable this for a cleaner look. The "Night Mode" notification will be shown on the chart regardless of this option.

Timeout

The duration the display should stay on after the last

[10s, 1m, 30m, Never] event and when proximity is no longer detected.

Proximity test Test the proximity sensor (unaffected by the timeout) using a full-screen display that's easy to recognize from a distance. The sensor can detect from up to 3 meters in ideal conditions.

Aux light

Night RGB Specify the color the auxiliary light will be at night.
[Red, Green, Blue]

Brightness Choose the brightness of the proximity light.
[Off, 1, 2, 3, 4, 5, 6, 7, Max]

Proximity hold The duration the 'Working light' should stay on after proximity is no longer detected.
[<5s, 10s, 15s, 30s, → For more information, see chapter [Working Light](#).
1m, 2m, 5m, 10m, 15m, 30m, 1h]

Proximity test Test the proximity sensor (unaffected by hold timers) using a full-screen display that's easy to recognize from a distance. The sensor can detect from up to 3 meters in ideal conditions.

SMARTPORTS

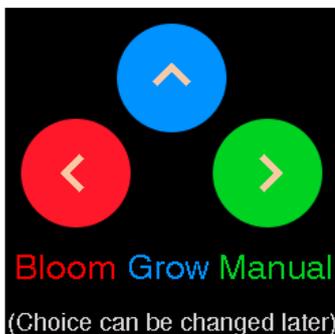
The fixture is fitted with three Smart Protocol interfaces (Smartports), which are used to chain fixtures and attach controllers and peripheral devices.

The main roles of these ports are as follows:

- **IN** connects to the controller or the previous fixture in a chain
- **OUT1** connects to the next fixture in a chain
- **OUT2** is for peripheral devices

→ For more details on chaining fixtures, see chapter [Chaining Fixtures](#),

FIRST TIME USE



When the fixture is first powered up after exiting the factory, it shows the 'Select Program' screen. You're allowed to choose a growing program, though it's not strictly required to select a program if the fixture will be remote controlled (using a controller or as a Follower in Leader/Follower configuration). The growing program is used for local control, Leader control, and for Analog "Classic" remote control (which is not capable of conveying multiple channels or the ratio between channels).

The choice depends on the intended use:

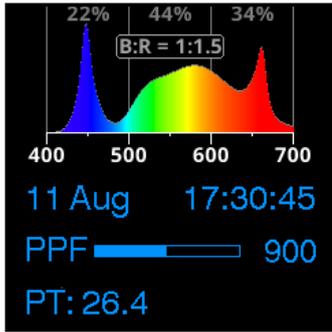
- **Grow** Sets the B:R ratio to 1:1.5 and the schedule from 6:00 to 24:00
- **Bloom** Sets the B:R ratio to 1:4.0 and the schedule from 12:00 to 24:00
- **Manual** Enables the manual control sliders in the menu and turns the schedule off

 Each time a growing program is selected, the schedule is changed as described above, even when selecting a program that was already active. Changes you made to the schedule may be lost when changing the program.

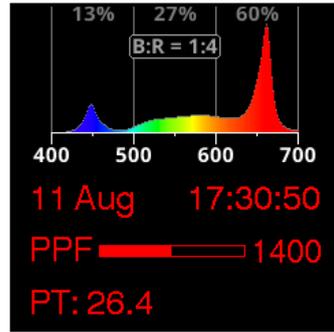
After choosing a growing program, you end back at in the Status Screen. After subsequent power cycles the display will go directly to the Status Screen without first showing the Select Program screen. The Select Program screen can still be entered via the menu.

The current program is indicated by the color of the Status Screen, as well as in the Select program screen when this is invoked afterwards.

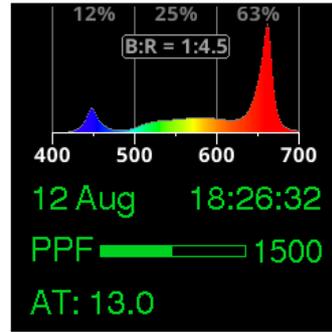
DIMLUX XTREME SERIES LED



Status screen in Grow program



Status screen in Bloom program



Status screen in Manual program

The chosen growing program will be remembered until it's changed. The growing program, as well as all the preferences, are stored in internal flash memory and remembered even when the fixture is powered down.

The Grow program never automatically transitions to the Bloom program. This has to be done manually or with a digital remote controller.

CHECKING THE CLOCK

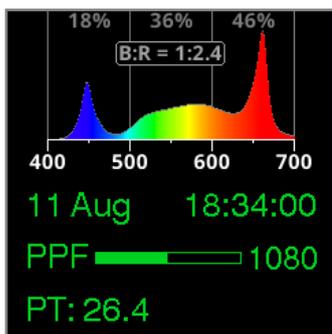
Check if the date and time displayed on the status screen are correct.



To change the clock:

- Enter the menu
- Enter **Preferences**,
- Enter **Set Date/Time**,
- Using , , correct the value of each field
- Navigate to **Save**, , and **execute**,
- (optional) Return to the Status Screen using (2x)

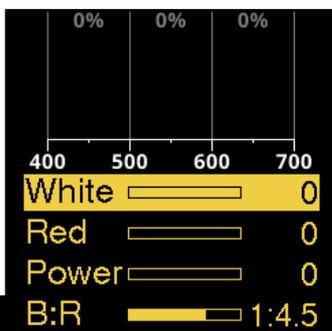
CONTROLLING THE OUTPUT POWER



In the **Manual** program, both outputs can be adjusted independently or in conjunction, using four sliders in the menu. The **Grow** and **Bloom** programs greatly simplify this by predefining the B:R ratio (not user configurable) and hiding the sliders from the menu, leaving only one control for the user. It's recommended to start with one of these () and move on to **Manual** once you are more familiar with the features and capabilities.

→ On the Status Screen, the buttons adjust the output power

MANUAL GROWING PROGRAM



In this program, four additional sliders appear at the top of the menu. Two sliders allow for individual control of the White and Red channels, while the other sliders allow for the more intuitive method of power and B:R ratio.

The Power slider and the slider on the Status Screen work identically. When increasing the power from zero, the initial B:R ratio is equal to the maximum B:R ratio of the fixture model, usually 1:4.5 or 1:4. If the B:R ratio was changed in the menu, the fixture will attempt to keep this ration when changing the power slider (Some caveats apply, described below.)

Individual control

The two channels of the fixture are controlled independently. The sliders are named:

- **White**
- **Red**

Adjusting White and Red channels individually gives you the most control over the fixture.

When increasing from 0%, it jumps to 5% first. Depending on the configured display unit (see above) it may show other values, but it is still a 5% step. This is a limitation of the LED drivers, which cannot be used between 0% and 5%. Attempting to set a channel below 5% turns that driver off.

When adjusting the Red channel high and White channel low, the B:R slider may display an out-of-range value ("1:--"). This is only the way it's displayed and does not affect the real output. However, when switching to power/ratio control, the B:R ratio will be constrained to the range designed for manual control (1:1 to 1:6).

Power and ratio control

The output will be computed based on preferred power and B:R ratio sliders. The sliders are named:

- **Power** (works identically to the slider on the Status Screen)
- **B:R**

Controlling the output using the Power and B:R Ratio controls is often the most natural way of thinking about what a plant needs at any stage in its life.

Power controls the White and Red channels simultaneously while trying to keep the B:R ratio at the same value (rounded to 1 decimal).

By definition, the Power is the maximum between the White and Red channels, when expressed in percentage. This guarantees that when power = 100%, at least one of the channels is 100%. Which one this is depends on the B:R ratio. When Power is 100%, this does not mean 100% of the rated power of the fixture is used. That only happens when the White and Red channels are simultaneously 100%.

B:R controls the ratio between the white and red channels, expressed in the ratio between light in the ranges 400-500nm (blue) and 600-700nm (red). The ratio can be varied between 1:1 and 1:6 in steps of 0.1.

When adjusting the B:R ratio, it will try to keep the Power control at the same value.

The White channel by itself has a B:R ratio of 1:1 (it emits as many blue photons as red).

The ratio will not exactly be 1:1 when you check the measurements with a spectrophotometer, but it will be close enough for most purposes. The Red channel by definition has a ratio of 0:1, or 1:∞ (expressed on the display as 1:--).

Because of space limitation, any ratio over 1:10 will be displayed as 1:--, both in the chart and at the B:R setting.

The ratio is also displayed in the spectrum if the option "Show chart %" is enabled.

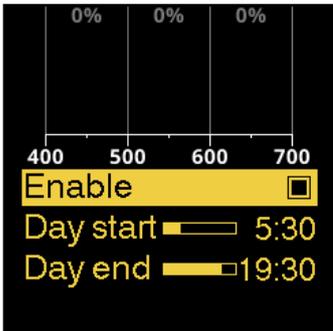


Caveats: When decrementing the power below circa 40%, the Red channel will approach 5% where the B:R cannot be maintained anymore.



For example, when white is 50% and red is 5%, the B:R slider shows 1:1.3. decrementing the Power slider from 50% to 40% and back to 50% causes the Red slider to drop below 5%, so it becomes 0%. This in turn causes the B:R ratio to become 1:1. Incrementing the power back to 50% does not restore the old B:R ratio.

SETTING THE SCHEDULE



The fixture contains a real-time clock and a simple schedule that determines the day/night cycle.

When changing the growing program, some or all of the schedule parameters will be changed in the following way:

- **Grow** program: Enables the schedule and sets Day to 06:00 and Night to 24:00 (18h total),
- **Bloom** program: Enables the schedule and sets Day to 12:00 and Night to 24:00 (12h total),
- **Manual** program: Disables the schedule, and times stay unchanged.

After selecting a program, the schedule can be adjusted to fit your application.

Enabling the schedule doesn't automatically mean it will be used. The schedule is only used (i.e. active) when the fixture is controlled locally and ignored when controlled remotely.

If and how the schedule is used depends on the current mode of control.

Local control

The schedule can be used to set a day/night cycle.

The schedule consists of the following settings, and can be adjusted both via the menu of the fixture, and remotely using digital controllers:

- **Enable** [on/off]
- **Day start** [0:00-23:59]
- **Day end** [0:01-24:00]

Via the menu, the times can only be adjusted in half-hour increments.

In Day mode, the output is allowed to turn on depending on the output settings. In Night mode, the outputs are turned off. When attempting to turn the output on during Night, a message "Night mode" is displayed on the screen, as well as the power values that it would output if it were day.

The length of the schedule also determines the displayed DLI, but it doesn't determine the output power. For example, when you increase the day length, you'll also have to decrease the output power to keep the same DLI.

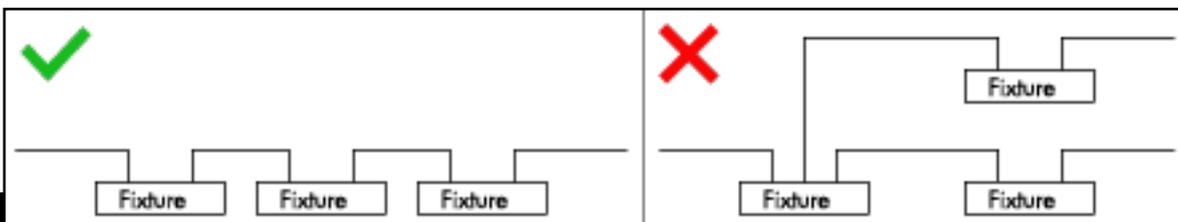
Remote control

When the fixture is remote controlled, the day/night cycle is determined by the controller. The schedule is not used.

CHAINING FIXTURES

To control an entire chain simultaneously, the fixtures need to be physically connected. Wireless connections are not supported.

Chaining fixtures has to be done by daisy-chaining. The controller (if any) must be connected to the IN port of the first fixture. The OUT1 port should connect to the IN port of the next fixture, and so on. Fixtures should never be connected as a 'tree' topology.



A network consisting of interconnected devices is limited to 1000 digital devices in total. This includes fixtures, ballasts, peripheral devices, and controllers. Analog controllers and analog sensors are not counted.

 The supplied red Dimlux Interlink cables use a larger copper diameter for lower analog losses. When not using analog control signals, regular internet cables (not crossover cables) will work as well. It's recommended to always use Dimlux Interlink cables even if you plan a room that will be digitally controlled, in case you later want to change to analog, or use analog as a fall-back safety measure.

 These ports are NOT internet ports, and connecting them to any internet devices, such as desktops, laptops, switches, routers, and modems, may cause permanent damage to them.

 Using regular internet cables may be dangerous. If the internet cable is accidentally a crossover cable, attached analog devices such as the Maxi Controller will get permanently damaged.

 Splitters should never be used to connect any Smartport devices. This holds even if only analog control signals are used.

1. Invisible from the user, all Smartports regularly 'talk' to their direct neighbors to detect topology changes.
2. Analog sensors will not be read correctly, as the electrical load on the sensor will be affected.
3. Feeding analog control signals back into the OUTx ports is not recommended.

Daisy-chained fixtures can be controlled in several different ways, depending on which external controller is used.

- Leader/Follower mode without external controller
- Analog chaining using **any analog controller**
- Chaining using **any analog controller**
- Analog chaining using **New Maxi Controller (SW version 3.3 or later)**
- Chaining using **New Maxi Controller (SW version 3.3 or later)**

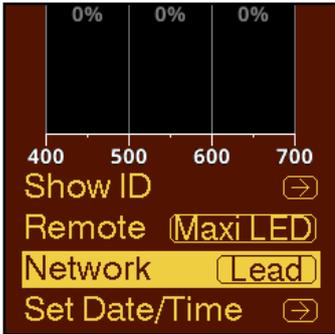
Pros/cons:

Control method	Chain length	Accuracy	Where to set the color mix
Leader/Follower mode	≤1000	100%	On the first fixture
Analog (Any analog controller)	≤100	≥70%	On every fixture (caveats apply)
Chaining (Any analog controller)	≤1000	≥90%	On the first fixture (caveats apply)
Analog (New Maxi Controller)	≤200	≥95%	On the Maxi Controller
Chaining (New Maxi Controller)	≤1000	≥95%	On the Maxi Controller

* For the caveats, → see chapter [Manual Control Program](#), section [Power and ratio control](#).

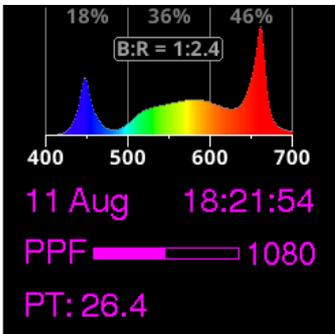
LEADER/FOLLOWER MODE WITHOUT EXTERNAL CONTROLLER

In Leader/Follower mode, a single fixture can be appointed as a 'controller', and all other 'follower' fixtures will receive output control values from this fixture.



To enable this:

- Enter the menu 
- Enter **Preferences**,   
- Go to **Network**,  
- Change the value to **Lead**,  



By default, all fixtures in a chain are set to "Follow". A Follower fixture can be controlled both locally and remotely, unless there's a "Leader" fixture present on the network. In that case none of the connected Follower fixtures can be controlled locally or with analog control. They will be in  **Digital Control** mode.

→ To learn how to control the "Leader" fixture using a manual program, see chapter [Modes of Operation](#).



There should be only one leader per chain. In case there are multiple leaders present in the same chain, each follower will decide for itself which leader to follow, and this choice can be different for each follower.

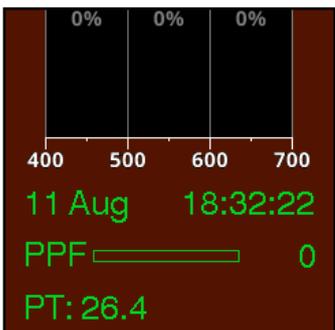
This can be identified by looking for presumed follower fixtures whose status LED is not  **Purple**



When follower fixtures have seen a leader signal, they will lock on to that signal. When the signal is stopped or interrupted, they go into "Digital Lost" alarm.

This also happens when setting a leading fixture back to follow mode, and this is nothing to worry about.

→ For more details, see section [Alarms](#).



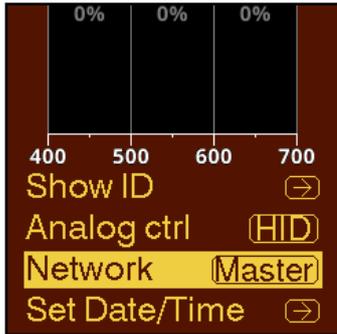
When "Leader" mode is active, it's indicated by a different background color.

ANALOG CHAINING USING ANY ANALOG CONTROLLER

Unless you only have a single fixture to remote control, it will be easier to use chaining. If your Maxi Controller has software version 3.3 or above, you can also use Digital chaining, which has pros and cons compared to chaining.

With this method, up to 100 fixtures in a line are supported. Even with 100 fixtures, analog losses in the interconnect cables will cause the fixtures at the end of the line to be less bright than the fixtures at the front. This is no different from analog-controlled Classic ballasts.

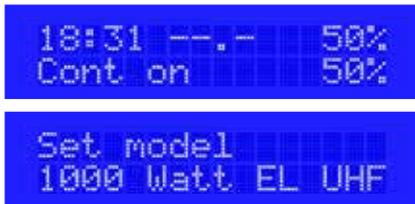
It is not possible to adjust the intensity between 0% and 50% with these controllers.



To enable this:

- Enter the menu
- Enter **Preferences**,
- Go to **Remote**,
- Change remote **Classic**,
- Repeat for every fixture classic in the chain

The way the B:R ratio for remote control is determined is to copy the B:R ratio from local control.



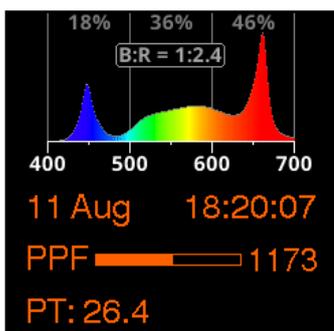
If you're using a **Maxi Controller**, enable this:

- Go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to Model
- Press **SET**, (start changing the setting)
- Change the value to **1000 Watt EL UHF**,
- Press **SET** (confirm setting change)
- Press **ESCAPE** (back to the status screen)

You'll need to repeat the next steps for every fixture in the chain, every time the fixtures are power cycled.

To choose the spectrum (White/Red or B:R ratio):

- If the fixture(s) are already in **Analog "Classic"** mode:
 - Disconnect the controller cable
 - Power-cycle the chain
- If needed, select the desired growing program, as explained in 1st Time Use
- If you selected the **Manual** program
 - Enter the menu
 - Change the value of the color sliders to achieve the desired spectrum,
- Reconnect the controller cable



When an analog signal is detected, the fixtures will be in **Analog "Classic"** Control mode. Fixtures that are incorrectly set will still pass the analog signal but those fixtures will not be controlled.

TrolMaster controllers are supported via the "TrolMaster LMA-12 Lighting Control Adapter D".

DIMLUX XTREME SERIES LED

 The supplied red 'Dimlux Interconnect' cables use a larger copper diameter for less analog losses. Regular network cables (not crossover cables) will have more losses which manifests in even lower light intensities at the end of the chain.

 These ports are NOT network ports, and connecting them to any network devices, such as computers, laptops, switches, routers, and modems, may cause permanent damage.

 Using regular network cables may be dangerous. If the network cable is accidentally a crossover cable, the Maxi Controller will be permanently damaged.

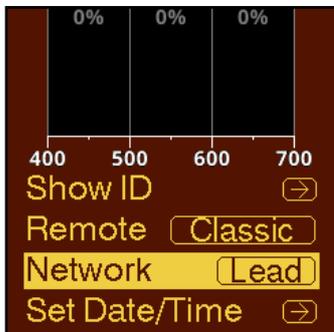


 When Slave fixtures have seen an analog signal, they will lock on to that signal. When the signal is stopped or interrupted, they go into "Analog Lost" alarm.
→ For more details, see section [Alarms](#).

CHAINING USING ANY ANALOG CONTROLLER

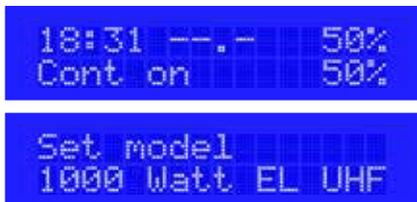
This method utilizes a Leader/Follower configuration to convert the analog signal digital, which is then relayed to the rest of the chain.

The analog signal must be connected to the first fixture, and this fixture must be set to 'Lead'. Additional fixtures should be left in 'Follow' mode.



To enable this:

- Enter the **menu** 
- Enter **Preferences**,   
- Go to **Analog ctrl**,  
- Change remote **Classic**,  
- Go to **Network**,  
- Change the value to **Lead**,  



If you're using a **Maxi Controller**, it needs to be configured:

- Press **ESCAPE** to go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to **Model**
- Press **SET**, (start changing the setting)
- Change the value to **1000 Watt EL UHF**,  
- Press **SET** (confirm setting change)
- Press **ESCAPE** (back to the status screen)

When an analog signal is detected, the leader will be in  **Analog "Classic"** Control mode.

The rest of the chain, the followers, will be in  **Digital Control** mode.

The analog controller can only control the output power. To control the color mix, it must be selected/configured on the first fixture, either by activating a growing program or manually using the  **Manual** program.



When the first fixture has seen the analog signal, it will lock on to that signal. When the signal is stopped or interrupted, it goes into "Analog Lost" alarm.
 → For more details, see section [Alarms](#).



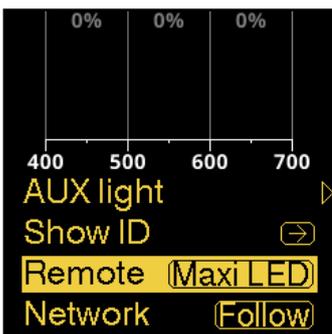
When follower fixtures have seen a leader's signal, they will lock on to that signal. When the signal is stopped or interrupted, they go into "Digital Lost" alarm.
 → For more details, see section [Alarms](#).

ANALOG CHAINING USING NEW MAXI CONTROLLER (SW VERSION 3.3 OR LATER)

Despite being analog, multiple channels can be controlled over a single line by using time slices. Using the same time slices, calibration values are transmitted to compensate for analog losses, guaranteeing a consistent light output along the chain. As a consequence, this protocol is somewhat slower than classic analog signals, with a delay of up to 4 seconds.

The advantage over Analog chaining is that the chosen spectrum is retained between power cycles.

The disadvantage is that the Maxi Controller is only able to control the white and red channels separately, and not in conjunction like with the fixture's Power and B:R sliders.



To enable this (note: this is already enabled by default):

- Enter the menu
- Enter **Preferences**,
- Go to **Remote**,
- Change the value to **Maxi LED**,
- Repeat for every fixture in the chain



To enable this (note: this is already enabled by default):

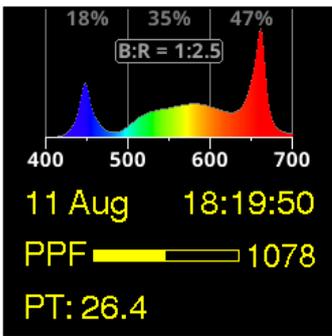
- Go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to **Model**
- Press **SET**, (start changing the setting)
- Change the value to **Xtreme LED** or **Xtreme LED+addon**,
- This depends on whether your fixtures are equipped with a NIR Add-on or not. (→ See chapter [Peripheral Devices](#))
- Press **SET** (confirm setting change)
- Press **ESCAPE** (back to the status screen)



To enable this (note: this is already enabled by default):

- Go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to **LED RED/WHITE**, \wedge \vee
- Press **SET**
- Change the max brightness for White, \wedge \vee
- Press **SET**
- Change the max brightness for Red, \wedge \vee
- Press **SET** (confirm setting change)
- Press **ESCAPE** (back to the status screen)

Typically, for reasonable B:R ratios, White is left at 100% and Red is dimmed.



When an analog signal is detected, the fixtures will be in **Analog "LED" Control mode**. Fixtures with the Analog ctrl mode improperly set will do nothing, but the analog signal is passed nonetheless.



The supplied red Dimlux Interlink cables use a larger copper diameter for lower analog losses. When not using analog control signals, regular internet cables (not crossover cables) will work as well. It's recommended to always use Dimlux Interlink cables even if you plan a room that will be digitally controlled, in case you later want to change to analog, or use analog as a fall-back safety measure.



These ports are NOT internet ports, and connecting them to any internet devices, such as desktops, laptops, switches, routers, and modems, may cause permanent damage to them.

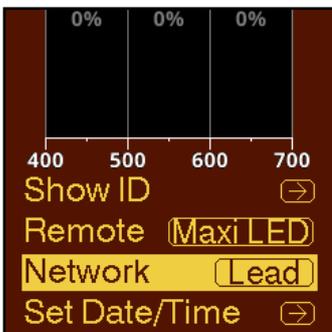


Using regular internet cables may be dangerous. If the internet cable is accidentally a crossover cable, attached analog devices such as the Maxi Controller will get permanently damaged.

CHAINING USING NEW MAXI CONTROLLER (SW VERSION 3.3 OR LATER)

This method utilizes a Leader/Follower configuration to convert the analog signal digital, which is then relayed to the rest of the chain.

The analog signal must be connected to the first fixture, and this fixture must be set to 'Leader'. Additional fixtures should be left in "Follow" mode.



To enable this:

- Enter the **menu** \square
- Enter **Preferences**, \wedge \vee , \rightarrow
- Go to **Analog ctrl**, \wedge \vee
- Change remote **Maxi LED**, \leftarrow \rightarrow
- Go to **Network**, \wedge \vee
- Change the value to **Lead**, \leftarrow \rightarrow



On the **Maxi Controller**, enable this:

- Press **ESCAPE** to go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to **Model**
- Press **SET**, (start changing the setting)
- Change the value to **Xtreme LED**, **^** **v**
(or to **Xtreme LED+addon** if you're using one or more add-ons)
- Press **SET** (confirm setting change)
- Press **ESCAPE** (back to the status screen)

When an analog signal is detected, the leader will be in **Analog "Maxi LED" Control mode**.
The rest of the chain, the followers, will be in **Digital Control mode**.



To adjust the color mix:

- Go to the lighting status screen (see image)
- Press **SET**, (enter settings menu)
- Go to **LED WHITE/RED**, **^** **v**
- Press **SET**, (start changing the setting)
- Change the value for White, **^** **v**
- Press **SET**, (next setting)
- Change the value for Red, **^** **v**
- Press **SET** (confirm setting change)
(When you chose **Xtreme LED+addon**, four settings will be asked instead)
- Press **ESCAPE** (back to the status screen)

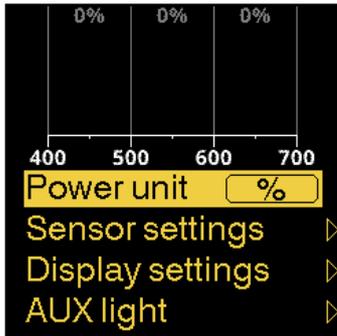


When the first fixture has seen the analog signal, it will lock on to that signal. When the signal is stopped or interrupted, it goes into "Analog Lost" alarm.
→ For more details, see section [Alarms](#).



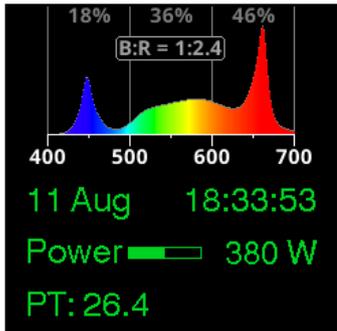
When follower fixtures have seen a Leader signal, they will lock on to that signal. When the signal is stopped or interrupted, they go into "Digital Lost" alarm.
→ For more details, see section [Alarms](#).

CHANGING THE POWER UNIT

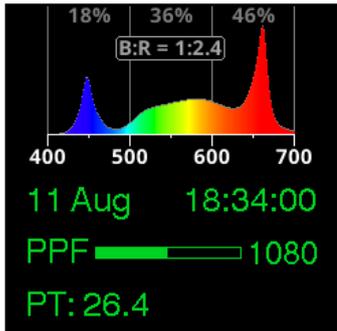


The Power Unit is used to render power indicator on the display. It can be one of the following units:

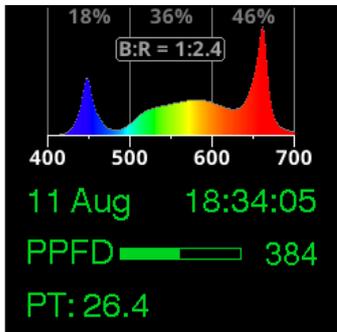
- % Percentage of maximum
- **Watt** Electrical power
- **PPF** Photosynthetic Photon Flux
- **PPFD** Photosynthetic Photon Flux Density
- **DLI** Daily Light Integral



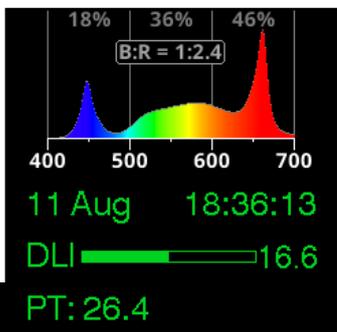
Watts shows the amount of electrical power supplies to the LEDs. The power consumed by the fixture will be about 10% higher because of the losses in the drivers.



PPF shows the total amount of photons emitted per second by the LEDs in the PAR range (400-700nm). The unit is $\mu\text{mol}/\text{s}$. This value is theoretical and may differ from fixture to fixture. Note that this value excludes the NIR contribution of the "+NIR" models.



PPFD shows the amount of light the plant will receive per square meter. This is similar to PPF, but divided by the configured surface area and multiplied by the configured 'correction factor.' The unit is $\mu\text{mol}/\text{s}/\text{m}^2$. When setting the surface area to 100x100cm and the correction factor to 100%, this number will equal the PPF. When the area is doubled (approx 141x141 cm), the PPFD will be half the PPF. When the correction factor is 50%, the displayed PPFD will be halved.



DLI shows the amount of light the plant will receive during a day cycle. This is similar to PPFD but multiplied by the number of seconds in a day cycle, according to the schedule. This option is only available when the schedule is enabled and unavailable during remote control.

To change the power unit:

1. Enter the menu, 
2. Enter **Preferences**,  , 
3. Go to **Power Unit**,  
4. Change the value to PPF or PPFD,  

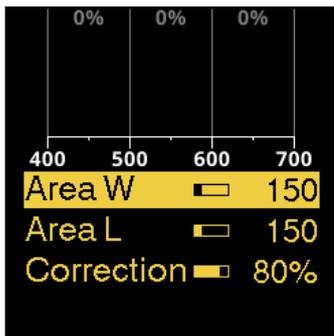
CHANGING THE ROOM SETTINGS

For correct PPFD and DLI calculations, some parameters of the room need to be entered.

PPFD is the PPF per square meter. It is often more logical to specify the amount of light in terms of photons that the plant receives rather than the number of photons the fixture emits, which is what PPF does.

DLI is calculation-wise one step further and specifies the number of photons the plant receives per day cycle rather than per second.

When the schedule is inactive, the DLI is equal to PPFD times 0.0864 (the number of seconds in a day, divided by 1,000,000). The PPFD is displayed in $\mu\text{mol}/\text{s}/\text{m}^2$ whereas DLI is specified in $\text{mol}/\text{d}/\text{m}^2$. (Note the missing μ sign)



To configure the room:

1. Enter the menu, 
2. Enter **Room settings**,  , 
3. Change the values of **Area W** and **Area L** to match the surface area illuminated by this fixture (usually the grid spacing),  
4. Change the value of Correction to adjust for differences between displayed and measured PPFD values

The correction factor accounts for wall (reflection) losses and out-of-bound losses (illuminating the path rather than the plants). The default is 80%.

How to calibrate the Correction factor:

1. Get a hold of a light meter capable of measuring PAR values, fitted with a cosine-corrected light collector
2. Set the fixture's power unit to PPFD
3. Set the Correction value to 100%
4. Turn on the outputs and take note of the displayed PPFD value. Call this PPFD1
5. Using the PAR meter, measure the PPFD (400-700nm) at soil level, unobscured by anything like the canopy. Measure in, or convert the unit to $\mu\text{mol}/\text{s}/\text{m}^2$ (note 1). Call this PPFD2
6. Calculate $\text{PPFD2} \div \text{PPFD1} \times 100\%$. This value should be less than 100% if done right
7. Enter this value in the **Correction** setting

Note 1) Different representations of the same unit include $\mu\text{mol}/\text{m}^2/\text{s}$, $\mu\text{mol}/\text{s}/\text{m}^2$, and $\mu\text{mol s}^{-1} \text{m}^{-2}$.

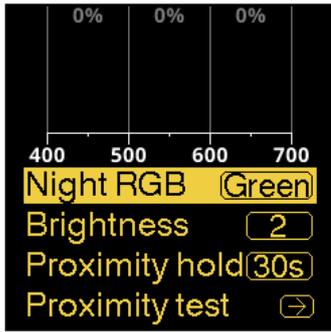
WORKING LIGHT

The working light is a feature of the auxiliary lights, and the motion sensor to automatically provide some low-intensity localized light during the night cycle. The sensor can detect a person approaching from up to 3 meters away (depending on the direction).

This feature is enabled by default. When the growing area is not in total darkness during the plant's night cycle, this feature may be turned off.

The night light is only active when:

- The output is set to 0% (either locally or remotely), or
- The schedule is enabled, is active, and it determines the current time of day is night



To use this feature:

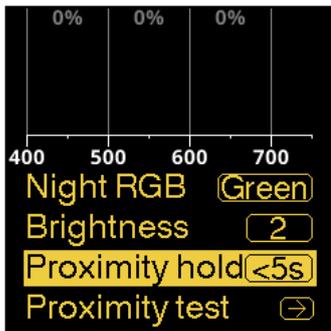
1. Enter the menu,
2. Enter **Preferences**,
3. Enter **Aux Light**,
4. Go to **Brightness**,

Change the value to anything but **Off**



To test the proximity sensor:

1. Navigate to the **AUX light** menu
2. Enter **Proximity test**,
3. Stay still and wait until the text changes to **No detection**
(this takes at least 5 seconds from the last detected movement)
4. Move your hand in front of the plastic cap to the right of the buttons until you see **Detected**
5. Press (back to the menu)



To test the working lights:

1. Turn the output to 0%
2. Navigate to the **AUX light** menu
3. Go to **Proximity hold**,
4. Change the value to the lowest setting (**<5s**),
5. Wait until the auxiliary lights turn off
6. Move your hand in front of the plastic cap to the right of the buttons until you see the auxiliary lights should turn on

The duration, intensity, and color of the Night Light can be adjusted to minimize or eliminate effects on the plant's night cycle

Night RGB

[Red, Green, Blue]

Specify the color the auxiliary light will be at night. Choose a color that will least affect your crop's night rhythm. This light will be used during the night to provide night light (solid color) and alarms (blinking).

Brightness

[Off, 1, 2, 3, 4, 5, 6, 7, Max]

Choose the brightness of the auxiliary lights during night. Each numbered value has about the same PPF regardless of chosen color. Each number is approximately twice as bright as the previous. **Max** is the brightest a color can be, and has a different PPF for each color.

Proximity hold

[<5s, 10s, 15s, 30s, 1m, 2m, 5m, 10m, 15m, 30m, 1h]

The duration of the night light should stay on after proximity is no longer detected.

The default color is **green**, which is an industry standard, but a recent study (2022) points out that some plants may actually be affected less by blue light.

PERIPHERAL DEVICES

Any port on any fixture in the chain can be used for connecting Smart Protocol compatible devices.

Below is a list of currently supported devices. More will be added in the future and supported via software updates.

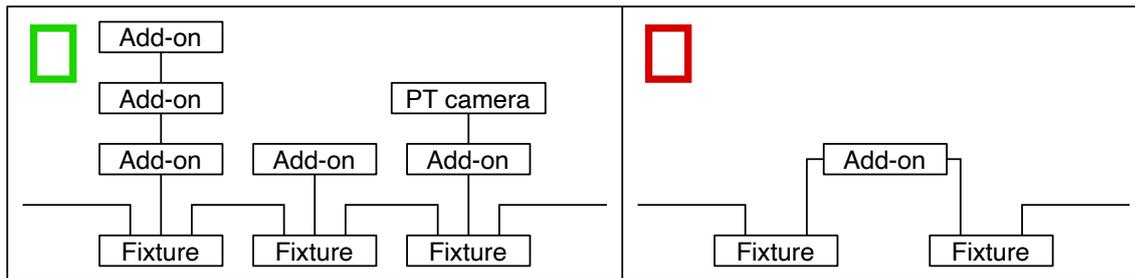
- Add-ons
 - Dimlux Xtreme NIR+UV-A Add-on
 - Dimlux Xtreme UV-B Add-on

- Digital peripherals
 - Dimlux Digital Plant Temperature (PT) camera
- Analog sensors
 - Dimlux Ambient Temperature (AT) sensor
 - Dimlux Light sensor (experimental)

How to Connect

Peripheral devices should be connected to the OUT2 port. Some peripheral devices have two Smartports of themselves to allow them to daisy-chain to the next peripheral device.

 Peripherals should never be connected in between fixtures:



ADD-ONS

Dimlux Xtreme NIR+UV-A Add-on

This add-on adds two independently controllable colors of light to the spectrum of the parent fixture.

- NIR (670-760nm), sometimes called Far-red, IR-A, or just IR, and
- UV-A (370-405nm) light

Benefits

Far-red

- Can be used as photosynthesis booster in combination with red light
- When used after sunset, accelerates the nighttime metabolism and the sleep rhythm
- Accelerates flower setting and possibly shortens the night and lengthens the day for more photosynthesis (higher DLI)
- In the growing and early blooming phase, plants can be grown taller
- Conversely, plants can be kept very compact initially (far-red off) and when switching to the flowering phase (turning far-red on), the synergistic effect of the extra far-red can be exploited

Benefits

UV-A

- Increases resistance to fungi, and other pathogens
- Increases resin production which brings out flavonoids and terpenes
- Makes the plant stronger, healthier, shorter and increases root production
- The leaves will become darker green caused by more pigmentation
- Adds extra photons used in photosynthesis, resulting in more yield
- When combined with a UV-B add-on, the UV-A helps protect against damage to DNA, proteins and nucleic acids in plant cells caused by UV-B
- When UV-A and UV-B are combined in the right amounts and for the right duration, they have a synergistic stress response effect that makes them even more potent while also being less harmful than UV-B alone

Local control of these add-ons via the parent fixture is not yet supported (as of software version 1.9.x). They can, however, be controlled stand-alone or by Maxi Controller. Consult the add-on manual for stand-alone operating instructions. When the parent fixture is controlled by a Maxi Controller, the extra channels will automatically be relayed to the add-on(s).

For the Maxi Controller, a setting must be changed to output add-on signals
 → See chapter [Chaining Fixtures](#), section [Chaining Using New Maxi Controller](#).

Dimlux Xtreme UV-B Add-on

This add-on adds broadband UV-B (275-375nm) light using a T5 Fluorescent tube.

Benefits

- Increases potency and resin production which brings out flavonoids and terpenes, like UV-A, but much more powerful
- Suppresses pathogens, fungi and spider mites
- Ideal when combined with UV-A Add-on, which increases UV-B resistance of DNA, proteins, and nucleic acids in plant cells
- When UV-A and UV-B are combined in the right amounts and for the right duration, they have a synergistic stress response effect that makes them even more potent while also being less harmful than UV-B alone

Local control of these add-ons via the parent fixture is not yet supported (as of software version 1.9.x). They can, however, be controlled stand-alone. For this, only daisy-chain the power cord, but leave both Smartports unconnected. Consult the add-on manual for operating instructions.

DIGITAL PERIPHERALS

Digital Plant Temperature (PT) Camera

This device measures the temperature of a wide area of the canopy, using an infrared sensor. When aimed at the center of the crop, it will monitor and display the temperature of the canopy.

In the menu, the nominal plant temperature and a deviation (sometimes called bandwidth or an interval) can be configured. The status screen always shows the current plant temperature. When the main lights are on, and the temperature falls outside of this interval, the auxiliary lights will blink blue (for cold) or red (for hot). When the lights are off or when it is scheduled night, it will do nothing.

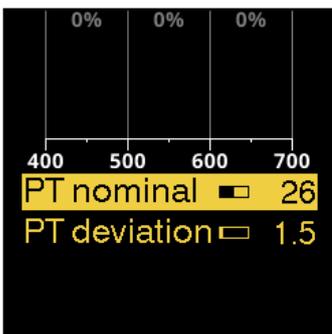


When the temperature falls outside of the interval, the output power is not adjusted automatically. This can currently only be achieved using a Maxi controller and an Analog Plant Temperature Camera (a different product).

When bought separately, the Plant Temperature Camera includes a swivel mount and replacement cap for the fixture. This must be installed to the right of the buttons by replacing the existing plastic cap. A Phillips PH2 or Pozidriv PZ2 screwdriver is needed for this.

To install:

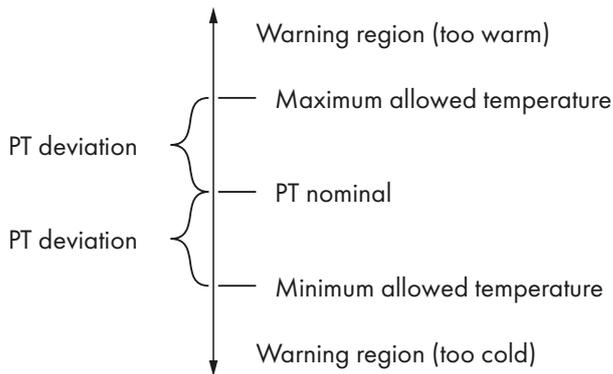
1. Take the swivel mount and use the side screw to thoroughly tighten the ball
2. Screw the swivel mount tightly into the end cap
3. Screw this combination into the PT camera
4. Unscrew the cap from the fixture next to the buttons (keep the four screws)
⚠ Don't touch the electronics as it may cause a static discharge
5. Using the same screws, fix the new end cap in place. It will only fit one way, with the curved side in line with the curve of the fixture
6. Connect the camera cable to the fixture (preferably to the OUT2 port)
7. Aim the camera at the center of the crop under the fixture by untightening and re-tighten the ball



To use:

1. Enter the menu,
2. Enter **Preferences**,
3. Go to **Sensor Settings**,
4. Go to **PT Nominal**,
5. Change the value to the desired temperature in °C,
6. Go to **PT deviation**,
7. Change the value to the desired maximum deviation
8. Repeat for every fixture with a PT camera attached

The **PT nominal** and **PT deviation** settings are related like this:



To Test:

1. Turn on the outputs in any way you see fit. Also, make sure the schedule is inactive or in day mode. Turn the intensity down to make it easier to see the PT warning
2. Go to the Status screen and take note of the PT temperature
3. Navigate to the **Sensor settings** menu
4. Set **PT deviation** to a small value like 1.5°C
5. Set the **PT nominal** value to a few degrees below the measured PT temperature
6. Check if the auxiliary lights blink blue
7. Set the **PT nominal** value to a few degrees above the measured PT temperature
8. Check if the auxiliary lights blink red
9. When it doesn't work, double-check the PT temperature in step 2 above.



Don't use your skin to test the PT camera. Your skin might be surprisingly cold or warm, depending on your body's thermoregulation



Only a single Plant Temperature camera should be connected to the same fixture at any time to prevent undefined behavior.



Connecting multiple PT cameras to different fixtures in the same chain is fine, and will increase the probability of detecting leaf temperatures that are outside the desired ranges.

ANALOG SENSORS

Analog sensors must be connected to one of the two OUTx ports (despite the name of the ports).



Analog sensors will not work on the IN port and this may even damage the sensor.

Ambient Temperature (AT) Sensor

This can measure the temperature of the air or anything the probe is in contact with. The temperature value is shown on the display, but doesn't control anything. The range is approximately -40°C to 125°C. The 1-meter version of the AT sensor is intended to be hung from the port directly into the canopy.

Light Sensor

This is an experimental sensor that presents itself as an AT sensor. It's capable of discerning low light levels of about 1-400 lux. (In comparison, light emitted from a 1000W fixture at full power is in the vicinity of 75,000 lux at 80cm.) The light intensity is displayed as a temperature. Higher temperatures mean more light, but the relationship is strongly non-linear.

BACKUP POWER

When a single fixture loses power, it would normally break the chain of digital communication. Using the backup power output of the *next* fixture in the chain, the communications part of the fixture can be kept powered to keep relaying digital signals.

The chain of digital communications still breaks when two or more subsequent fixtures lose power.

ALARMS

Alarms can occur when an abnormal condition is detected that may affect or endanger the plants, the fixture, or your property.

When an alarm occurs, the outputs are shut off, the auxiliary lights will blink, and an alarm is displayed on the screen.

The next list describes the different types of alarms:



Condition

Electronics are remote-controlled and the signal is lost for more than 15 seconds.

Autonomous action

The outputs are shut off to prevent staying on uncontrolled and damaging the plants.

Corrective action

To test if the incoming interlink cable is faulty, try replacing it. To test if a fixture is faulty, move the incoming cable from the OUT1 to the OUT2 smartport of the previous fixture. It may be a bad plug on the fixture. It's easy to permanently damage Smartport by accidentally yanking the cable up or down.



Condition

Fixture is remote controlled digitally or is a follower, and the signal is lost for more than 15 seconds.

Autonomous action

The outputs are shut off to prevent staying on uncontrolled and damaging the plants.

Corrective action

If the leader fixture is no longer set to leader, then this is expected. The alarm can be resolved by setting the power to 0% using digital or Leader control, connecting an analog remote controller (set above 5%), or power-cycling the fixture. When this doesn't help, it can be a cable issue as described under 'Analog lost'.



Condition

Driver too hot (above 65°C).

Autonomous action

Main lights shut off to prevent internal damage.

Corrective action

If the ambient temperature is above 40°C, bring it down. Don't place the fixture too close to the ceiling. Try to increase airflow nearby the fixture. If this fixture reports an abnormal temperature, it may be defective. The alarm can be resolved by setting the power to 0% using remote control and waiting until the temperature drops below 63°C. For local control a power cycle is required.

During an alarm, the color and intensity of the working light are the same as those configured for the 'Night Light'.

→ See chapter [Working Light](#).

Note: The cumulative duration of the blinking alarm lights may be enough disturb the plant's night cycle.

'Lost' Alarm Triggering Mechanism

The fixture applies a three-step process for handling a 'Lost' condition:

- For the first 15 seconds, the last known output value is maintained, and no alarm is shown
- After 15 seconds, the the alarm is shown and the outputs turn off. The alarm can still be resolved as if nothing happened by restoring the connection
- After 30 seconds, the alarm locks, and the alarm can only be resolved by the above stated 'corrective actions'

UPDATING THE SOFTWARE

The software can be updated to gain new features and bug fixes. At the moment, fixtures can only be updated individually.

To update:

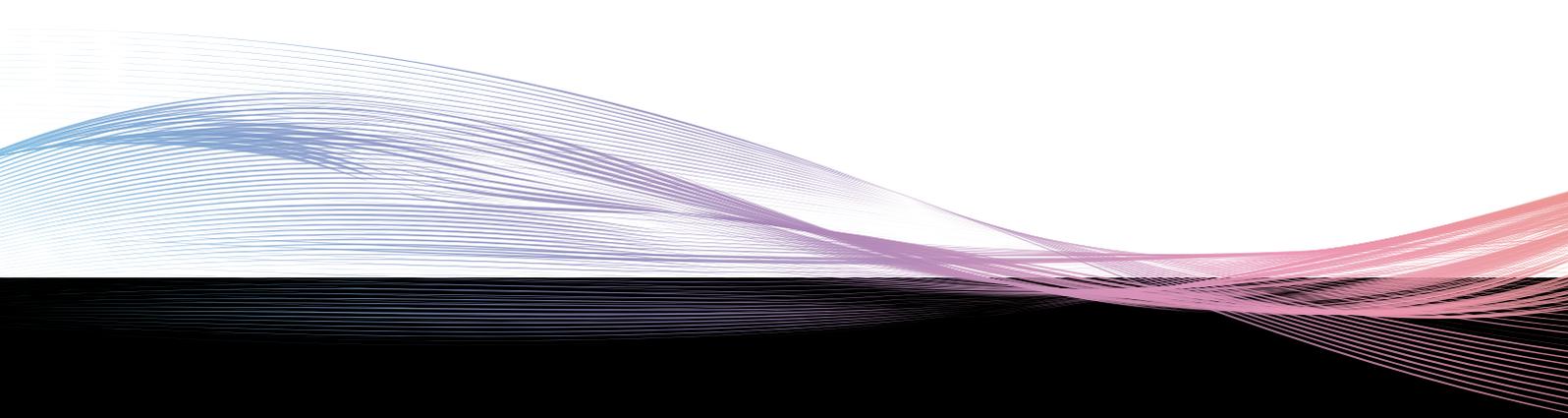
1. Download the latest software version from <https://airsupplies-holland.com/DimluxOpticclimateUpdater>
2. Start the Dimlux Updater. The updater will try download the latest update. If it fails, as a fallback it still comes bundled with a usable update
3. Get a Dimlux Interlink cable and insert both ends into the fixture. This 'trick' enables the internal Wi-Fi access point
4. Wait for the fixture to finish rebooting
5. Connect to a wireless network with a name starting with 'xtremeled'. (This disconnects you from the internet!)
6. Follow the on-screen steps to start updating
7. Updating may take some time(usually 2 minutes) depending on the quality of the wireless connection

If you can't find a wireless network starting with 'xtremeled,' or when the update keeps failing, bring the PC closer to the fixture.

DIMLUX



XTREME SERIES LED
XTREME SERIES LED +NIR



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USER MANUAL

Engineered & Designed in Holland

www.dimlux.nl

Manual version 0313 2023

KNOWLEDGE BASE

Direct link:

www.dimlux.nl/knowledge-base



Scan the QR-code to go to our onlineknowledge base with more tutorials and videos.