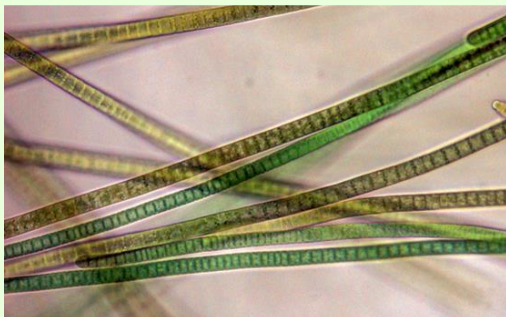
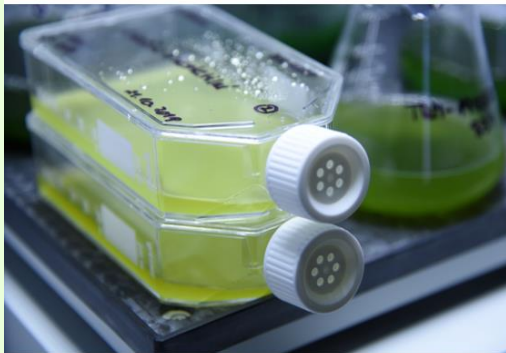


AlgaeTron AG 130

Manual and User Guide

Please read this manual before operating this product



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The contents of this manual have been verified to correspond to the specifications of the device. However, deviations cannot be ruled out. Therefore, a complete correspondence between the manual and the real device cannot be guaranteed. The information in this manual is regularly checked, and corrections may be made in subsequent versions.

The visualizations shown in this manual are only illustrative.


This manual is an integral part of the purchase and delivery of equipment and its accessories and both Parties must abide by it.

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1 WARNINGS AND SAFETY PRECAUTIONS



Read this manual carefully before operating the device. If you are not sure about anything in the manual, contact the manufacturer for clarification.

	<p>By accepting the device, the customer agrees to follow the instructions in this guide.</p>
---	---

Always follow corresponding manuals while working with the AlgaeTron device or doing the maintenance.

It is forbidden to interfere with the hardware of the AlgaeTron device in any way without previous agreement with the manufacturer.

The following table presents basic highlight symbols used in this manual:

Symbol	Description
	<p>Important information, read carefully.</p>
	<p>Complementary and additional information.</p>



Tab. 1 Used symbols.

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE TURNING THE ALGAETRON ON:

- Remove all packaging and transit protectors before connecting the AlgaeTron to the electricity supply.
- Let the AlgaeTron stand up after the transport and **WAIT AT LEAST 12 HOURS** before plugging it in.
- Use only the cables supplied by the manufacturer.
- Keep the device dry and avoid working in high humidity environment!
- The manufacturer is not responsible for any damage due to improper or incompetent operation!

GENERAL ELECTRICAL SAFETY GUIDELINES:

- Routinely check the devices and their wiring.
- Replace worn or damaged cords immediately.
- Use electrical extension cords wisely and do not overload them.
- Place the devices on a flat and firm surface. Keep them away from wet floors and counters.
- Avoid touching the device, socket outlet or switch if your hands are wet.
- Do not perform any alterations to the electrical part of the devices or their components.

	
	<p>WARNING:</p> <p>THE ALGAETRON AG 130 IS CONSIDERED CLASS 1M* LED PRODUCT. LED RADIATION MAY BE HARMFUL TO EYE, AVOID DIRECT AND STRONGLY REFLECTED EXPOSURE. IT IS REASONABLE TO USE PROTECTIVE GLASSES.</p> <p><i>*Class 1M: Laser and LED equipment that is safe under reasonably foreseeable conditions of operation for use with the naked eye. Looking directly into the source of radiation by employing optics within the beam such as magnifying glass, telescope or microscope can be potentially hazardous.</i></p>

2 TECHNICAL SPECIFICATION

Temperature range:

+15 °C to +50 °C (with maximum illumination)

+10 °C to +55 °C (with maximum illumination) - optional

LED Light Illumination:

LED panel 250 x 350 mm

Light intensity:

Standard: up to 500 $\mu\text{mol.m}^{-2}\text{s}^{-1}$ for cool / warm white or RGBIR;

Light upgrade: up to 1.000 $\mu\text{mol.m}^{-2}\text{s}^{-1}$ for cool / warm white or RGBIR;

External Dimensions (H x W x D):

1000 x 550 x 620 mm

Internal Dimensions (H x W x D):

690 x 420 x 400 mm

Growth Area:

0.14 m²

Weight:

55 kg

Internal Volume:

124 l

Air Ventilation:

250 l/h

Power:

500 W

3 GENERAL INFORMATION

AlgaeTron AG 130 is a floor standing incubated shaker that provides well-defined culture conditions for growing algae and cyanobacteria in Petri dishes or Erlenmeyer flasks. It is equipped with a large, easy-to-read display screen clearly showing operating parameters and actual values. Intuitive programming allows multiple parameter changes to timing, light intensity, light characteristics, temperature, and shaking power.

With its compact dimensions and small footprint, the AlgaeTron AG 130 saves precious laboratory space and is perfect for small-scale applications. It has one illuminated space with an additional bottom shelf.

AlgaeTron AG 130 features an internal electrical outlet (EU type) for attachment of a dedicated orbital shaker SHK-2013. Use of different types of shakers is not recommended!

Optionally, the AlgaeTron may be supplemented with a Gas Mixing System GMS 150 that can bring pure or mixed gases into the incubator to allow cultivation conditions under controlled air compositions. Concentration of gases inside of the cultivator may be modulated according to user's defined protocol with optional high-precision Gas Mixing System GMS 150.

This manual contains technical information about AlgaeTron AG 130, description of instrumentation delivered with the device and step by step instructions for successful installation and operation of the incubator.

AG 130 illumination:

Independently programmable LED-based illumination:

- white + far-red LED light
- light modulation according to a predefined function (continuous, pulse, sine, triangle);
- precise intensity control in the range of 1 % to 100 %;
- timing steps from seconds to hours and days;
- user-programmed function (optional) or daylight simulation (optional);
- minimum undesirable heating

Light intensity:

standard: up to $500 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ for cool / warm white;

optional: up to $1.000 \mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ for cool / warm white;

4 COMPONENTS OF AG 130

Please, find below a list of standard AlgaeTron AG 130 components delivered to the customer.



Check the contents of the package and compare it with enclosed standard package list.

List of standard AG 130 components:

- The cultivation unit.
- Two slide out cultivation shelves.
- One inbuilt LED light panel.
- Power cord.
- USB flash disc with Device Control Center.
- Serial cable with USB adapter for data transfer or firmware upgrade.
- Instruction Manual.
- Protective glasses.

Optional accessories/components:

- Gas mixing GMS 150 system.
- Orbital shaker equipped either with non-skid rubber mat or sticky pads or Erlenmeyer attachment of different size.
- Incorporated module for measuring Ft and QY.

5 DEVICE DESCRIPTION AND INSTALATION

5.1 DEVICE INSTALLATION

- Place the AlgaeTron on a flat, firm and dry surface! Let it stand up and wait at **least 12 hours before plugging it in!**
- Place the AlgaeTron into a well-ventilated room with ambient temperature not exceeding 25 °C!
- **Do not cover the upper part of the AlgaeTron!** Ventilation holes cooling the device electronics are installed on the AlgaeTron top.
- If you place the rear of the AlgaeTron against the wall, use plastic distance tubes (**only for 230V version**).

Fig. 1-1 to ensure sufficient distance for heat removal from the condenser!



Fig. 1 Plastic distance tubes.

5.2 DESCRIPTION OF THE ALGAETRON CONTROL UNIT FRONT PANEL

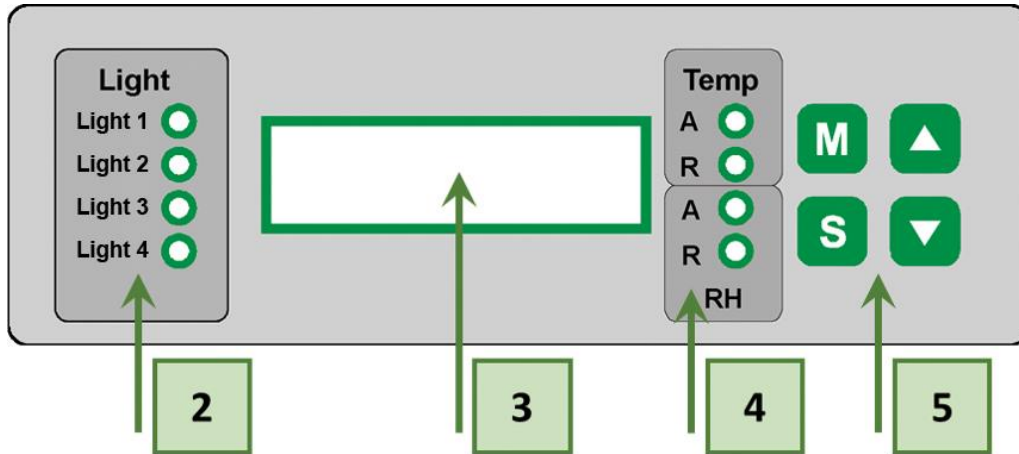



Fig. 2 Front Panel.

[2] Light panel indicators: Indicating whether the corresponding light is active.

	Only two LED indicators are mounted for the AG 130 White + IR light version.
---	--

[3] Two-line LCD display.

[4] Temperature and Relative humidity (RH) indicators: Indicating the status of thermoregulation and humidity.

[A]: Indicates the **Active** state of Thermoregulation [Temp] / Humidity [RH]

[R]: Indicates **Reaching** the desired Temperature [Temp] / Humidity [RH]


[5] Four control keys:

[M]: Used to move back in the menu tree or to exit the menu.

[S]: Used to move forward in the menu tree or to save the selection.

[▲]: Used to move up in the menu or to add value.

[▼]: Used to move down in the menu or to subtract value.

	See Chapter AlgaeTron AG 130 Control on page 17 for more information about the AlgaeTron Control Panel operation.
---	---

5.3 DESCRIPTION OF THE ALGAETRON REAR PANEL AND CONNECTION TO 230 OR 110 V POWER SUPPLY

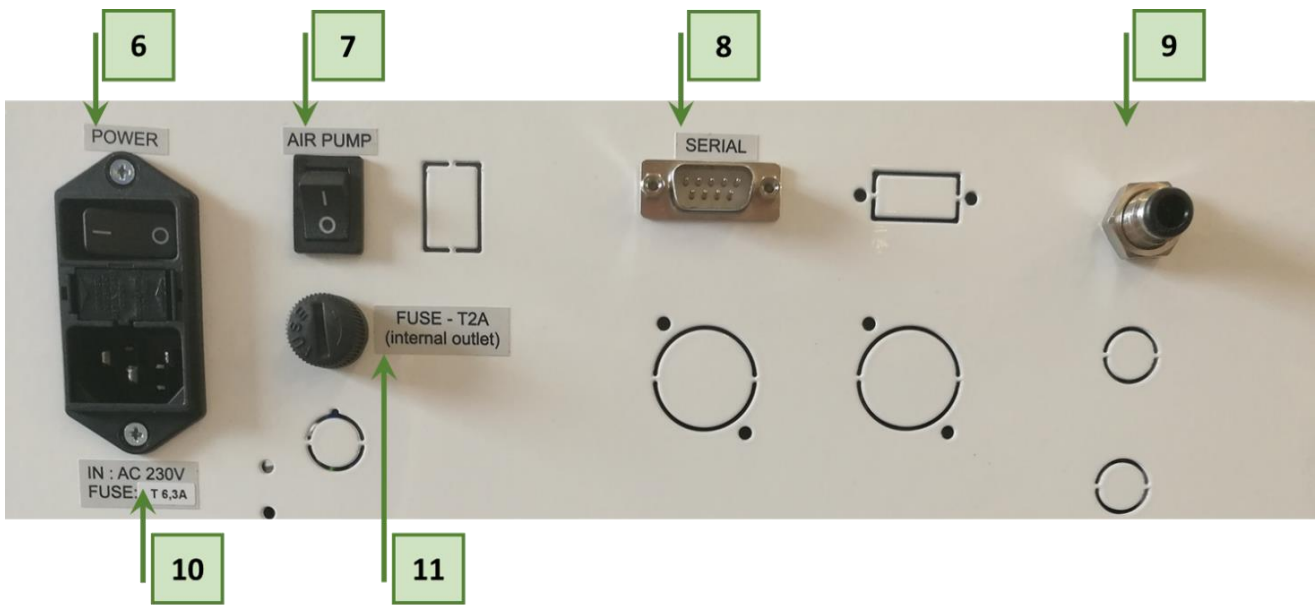



Fig. 3 Rear Panel.


[6] ON/OFF power switch (mains).

[7] ON/OFF power switch for an optional air pump.

	<p>The air pump switch is not included in the standard device version.</p>
---	--

[8] Firmware communication connector.

[9] Gas port: Provide connection to an external gas control system (via corrosion resistant connectors and 6 mm thermoplastic tubing).

	<p>External gas control system is not included in the standard device version.</p>
---	--

[10] 230 or 110 V power connector: The type of a power connector depends on the supply system in concerned country. The connector includes a safety fuse (its value in amperes is indicated on the label). The mains cable is supplied by the manufacturer as a standard device accessory.

[11] Internal outlet fuse related to the inner power sockets.

5.4 DESCRIPTION OF THE ALGAETRON INTERIOR SPACE

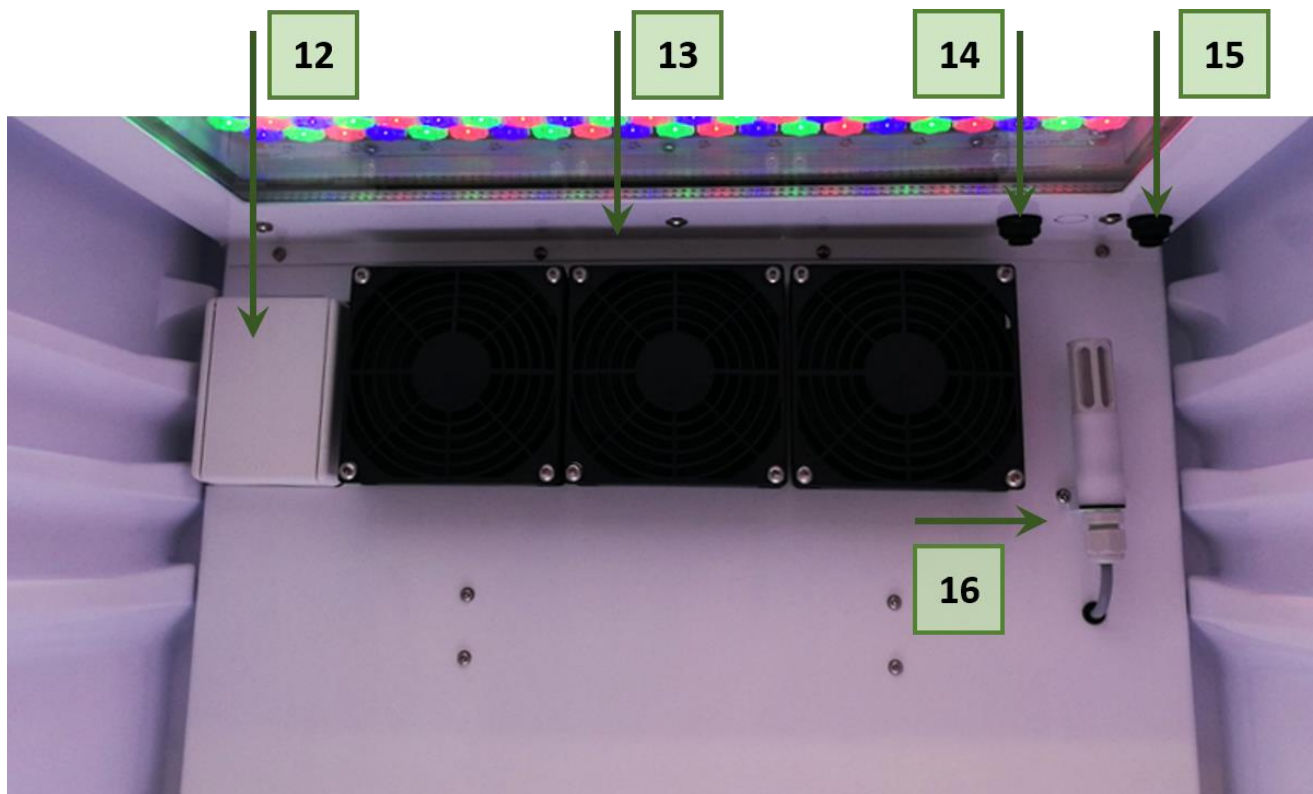



Fig. 4 The back-wall of the AG interior.


[12] Inside electrical socket is intended for connection of supplementary accessories (shaker SHK-2013, etc.) inside the AlgaeTron. The outlet has a fuse, which is situated on the rear panel of the device (see feature **[11]** in Fig. 3).

	<p>The internal socket in the AG 130 is intended only for use with the Shaker supplied by PSI. Using this socket for any other appliance is not recommended because it may cause damage to the AG 130 and it may cause loss of warranty.</p> <p>If - in an exceptional case - a different appliance should be used by the customer, it always must be consulted with PSI technician prior to use – write to info@psi.cz or support@psi.cz</p> <p>Be aware that using accessories that produce too much heat can influence temperature regulation inside the AlgaeTron AG 130!</p>
---	--

[13] Airflow Fans provide proper air circulation and uniform temperature distribution inside the AlgaeTron AG 130.

[14] Air Inlet is an entry point of air into the chamber (via internal air pump). The air flow rate can represent up to 250 l/min if the pump is switched ON. When the AlgaeTron is turned ON/OFF, the air pump automatically turns ON/OFF as well. Optionally, a power switch (ON/OFF) can be mounted for separate control of the air pump **[7]**.

[15] Gas port provide connection to an external gas control system.

	<p>The external gas control system is not included in the standard device version.</p>
---	--

[16] Temperature and relative humidity detector.

5.5 DESCRIPTION OF THE ALGAETRON SHELVING

For the illustration of inner space of the AlgaeTron see Fig. 5. Two shelves [17] and [18] are supplied for placement of samples or shaker.

The shelf labelled “LOWER” (with wide rear edge) can be positioned in the lowest level only [17]. The shelf labelled “UPPER” can be positioned in any other level [18].

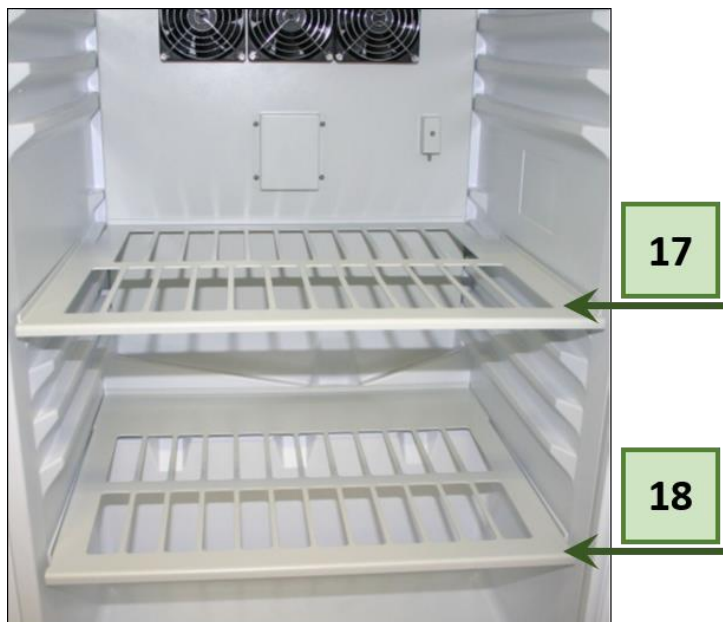


Fig. 5 The AlgaeTron FS 130 shelving.

6 OPTIONAL MODULES

6.1 ORBITAL SHAKER

The supplied orbital shaker is SHK-2013. It has a strong housing made from composite material, which is corrosion resistant and ensures easy cleaning. The shaking table is equipped with a solid non-skid rubber mat. This makes the whole unit easy to clean and resistant to abrasion and a wide range of chemicals. Optionally, sticky pads or Erlenmeyer attachments of different size can be delivered.

The shaker can be operated in two modes: continuous and time-controlled shaking. A digital process timer allows for unattended operation and can be set from 1 to 999 minutes. When the set time has elapsed, an acoustic alarm will sound and the operation stops. The rotation speed ranges between 30 – 500 rpm and the platform size amounts to 290 – 258 mm.



Use of different shakers than SHK-2013 is not recommended! It may cause unpredictable problems and could result in AlgaeTron damage and loss of warranty.

6.1.1 SHAKER INSTALLATION

Place the shaker into the AlgaeTron AG 130 and plug it into the inner electrical socket [12].

Do not overweight the shaker! Maximum is 5 kg.

Loading capacity:

50 ml flasks:	25 pc
100 ml flasks:	12 pc
250 ml flasks:	9 pc
500 ml flasks:	6 pc



Fig. 6 Orbital shaker.

6.1.2 SHAKER CONTROL

The orbital shaker is controlled through several buttons placed on the front panel.

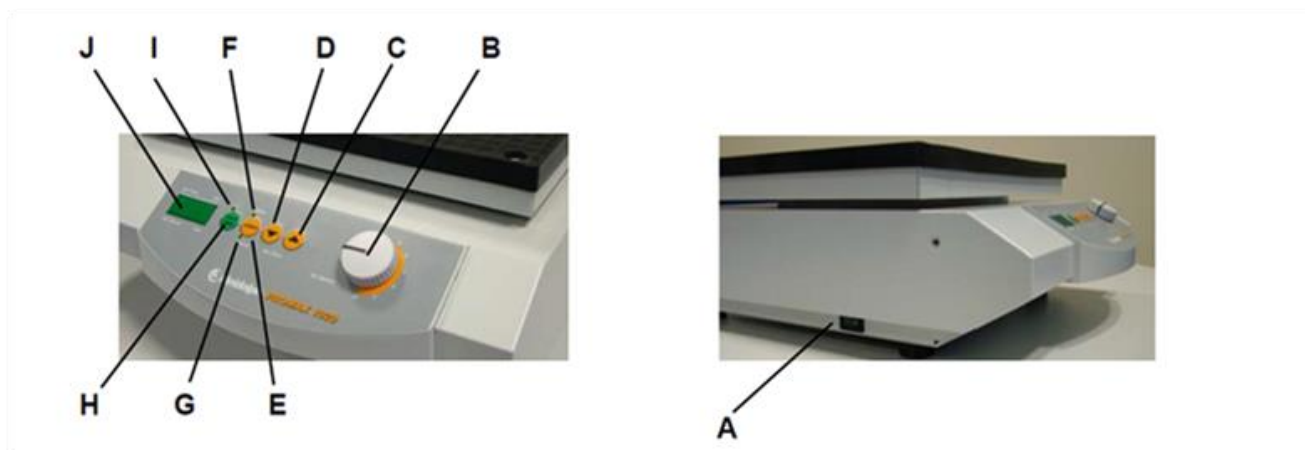


Fig. 7 Shaker control.

The control panel includes following controls:

- A 2-pole master switch (toggle-type, lighted green on the left side of the unit)
- B Setting knob, shaking frequency
- C Set Time key \uparrow : time up
- D Set Time key \downarrow : time down
- E Select key: display selector: shaking frequency (Act Speed) / time (Act Time)
- F LED Time: time appears in display
- G LED Speed: rotational speed (shaking frequency) appears in display
- H Start / Stop key: to START / STOP shaking action
- I LED Start / Stop: lighting, while item is running
- J 4-digit display

Continuous shaking:

- Turn item ON with master switch (A).
- Set time with \uparrow and \downarrow keys to 000 (depress \uparrow and \downarrow together).
- Start continuous operation by hitting the Start / Stop key. Start and Speed LEDs turn on, shaking frequency is displayed (4-digit display).
- Set shaking frequency with knob (B).
- Hitting Start / Stop key will stop shaking.

Timer controlled shaking:

- Set time between 0 and 999 minutes with Set Time \uparrow or Set Time \downarrow keys.
- Short hits on the keys change time setting slowly, whereas depressing keys is going to change time rapidly. Depressing the Set Time \uparrow and Set Time \downarrow keys reset the timer to 000.
- Depressing the Start / Stop key (H) starts shaking at the frequency selected with knob (B) and for the time interval set before. Start LED turns ON.
- Time lapse appears in a 3-digit display. Time LED turn ON.
- Current shaking action may be discontinued with the Start / Stop key (H). Actual time won't change. Hitting this Start / Stop key continues shaking at the moment it had been discontinued.
- In case of a power supply failure or interruption (item turned OFF), this feature is lost.
- Hitting the Select key during timer-controlled operation, you may change display from time to shaking frequency and vice versa.
- Speed LED turns ON. Timer LED flashes to indicate timer operation mode.

- Timer LED also flashes, when timer-controlled operation was discontinued with the Start / Stop key.

Repetition:

- Repeating last timer controlled operation does not require new time setting, as long as you did not touch the master switch.

Time modification during shaking operation:

- Time setting may be changed during shaking, while timer is running and even when timer controlled operation was discontinued.
- Memory timer will keep initial value in its memory.

6.1.3 TECHNICAL DATA

Shaker speed:

30 – 500 RPM

Orbit:

10 mm

Permissible Ambient Temperature:

0 – 50 °C

Permissible Ambient Humidity:

80 %

Weight:

8 kg

Maximum Loading Capacity:

5 kg

Dimensions (D x W x H):

375 x 320 x 125 mm


Power Supply:

115 / 230 V_{AC} +/-10%; ~ 50/60 H

7 ALGAETRON AG 130 CONTROL

Explanation of symbols and color differentiation used in the graphical presentation:

The following pages show a graphical representation of the operation scheme for the AlgaeTron. This scheme is structured in five levels. Individual levels are marked with a different color for an easier orientation in the scheme.

	The AlgaeTron AG 130 front panel does not reflect this color differentiation.
---	---

- Main menu - Blue
- First-level nested sub-menu - Yellow
- Second-level nested sub-menu - Green
- Third -level nested sub-menu - Orange
- Fourth-level nested sub-menu – Grey

See pages 18 - 27 of this Manual for the graphical representation of individual menus and for explanations of their functions.

[M] key Used to move back in the menu tree or to exit the menu.

[S] key Used to move forward in the menu tree or to save your selection.

[↑] key Used to move up in the menu or to add value.

[↓] key Used to move down in the menu or to subtract value.

Full-line arrows are used for the **[S]** key.



Dashed-line arrows are used for the **[M]** key.

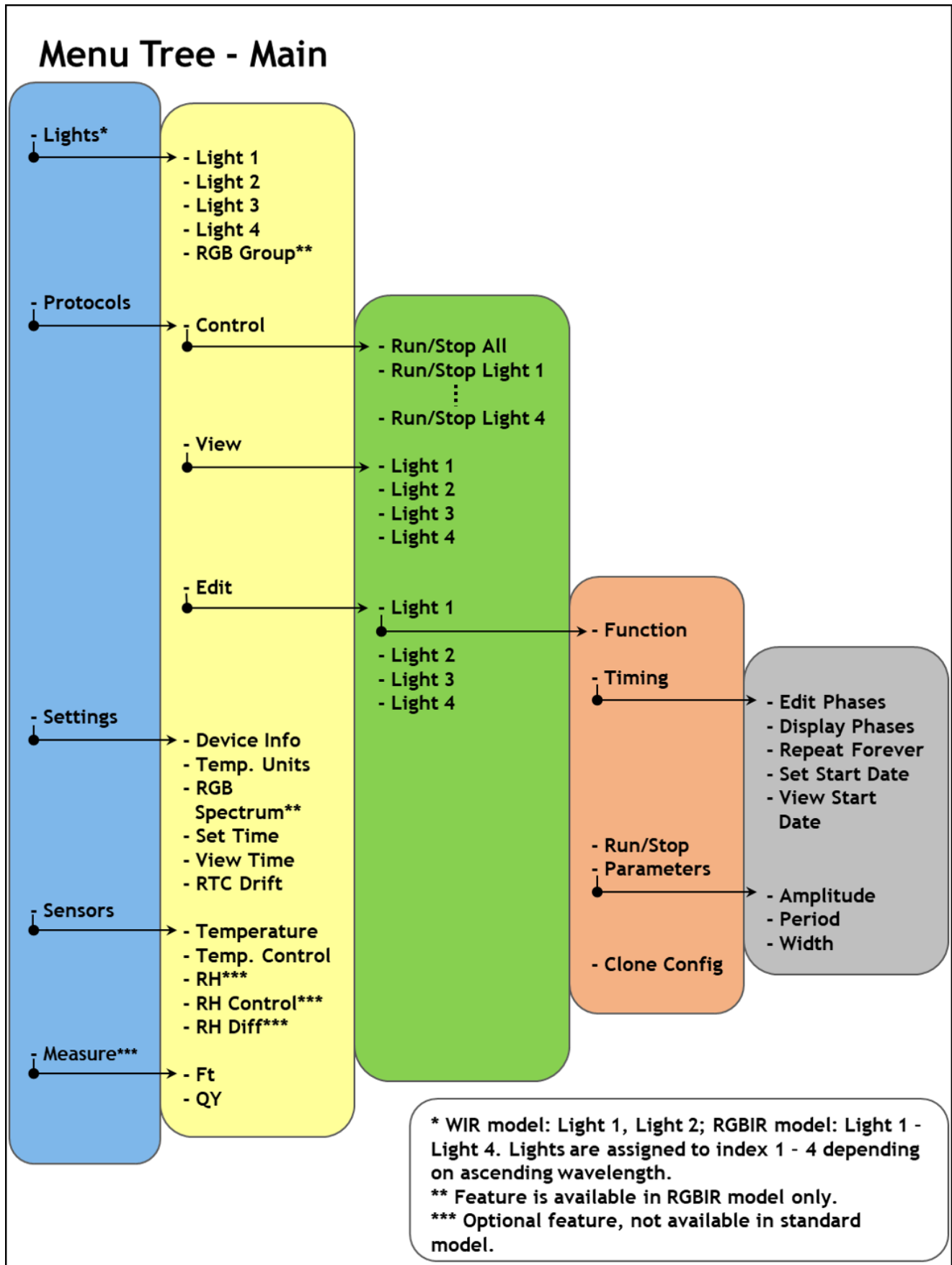


Dotted-line arrows are used for the **[UP/DOWN]** keys.

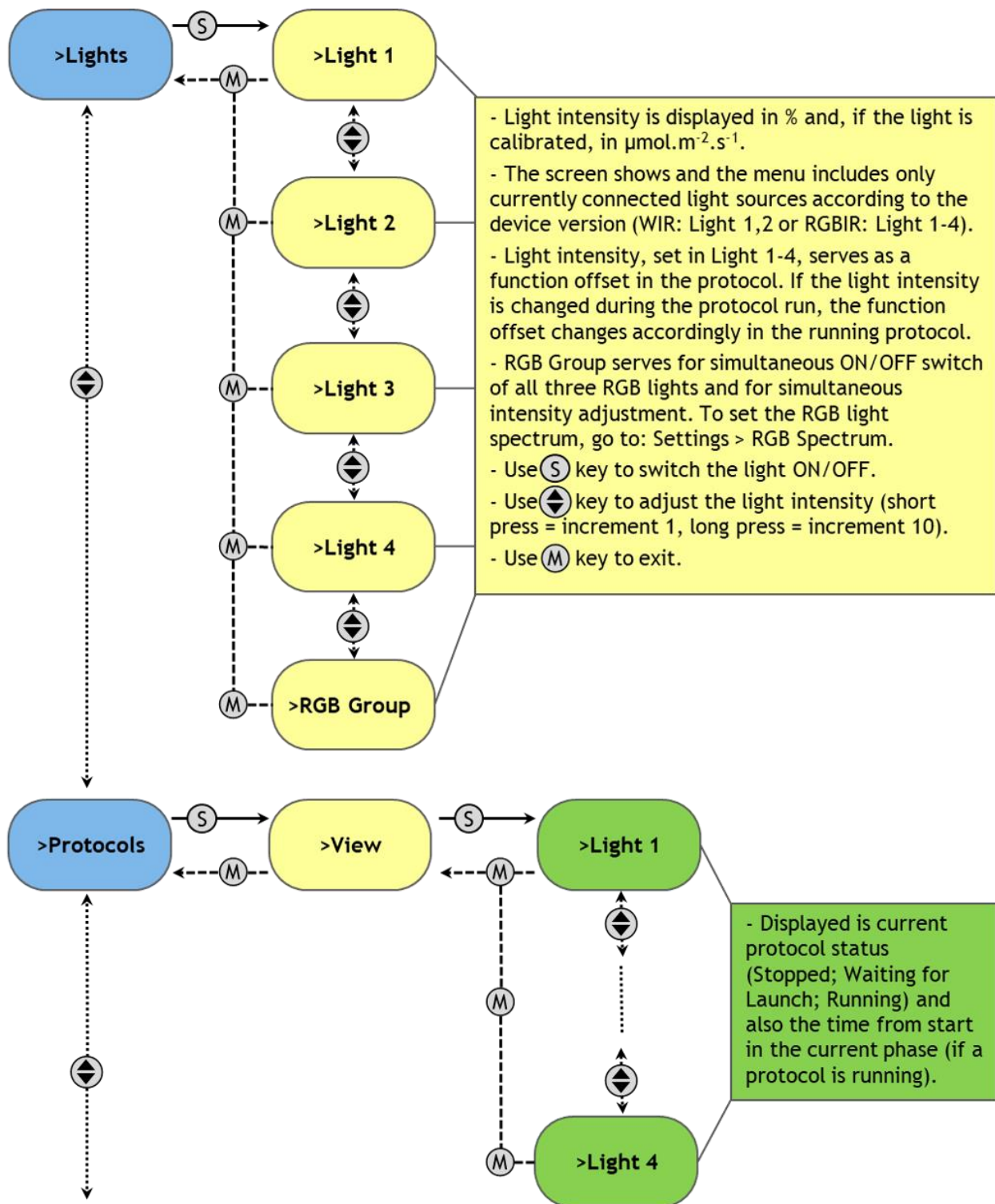


After 10 seconds of no activity within the menu settings the display on the AlgaeTron returns to the current temperature readings.

8 CONTROL MENU TREE



Menu Lights. Menu Protocols → View



Menu Protocols → Control → LightN

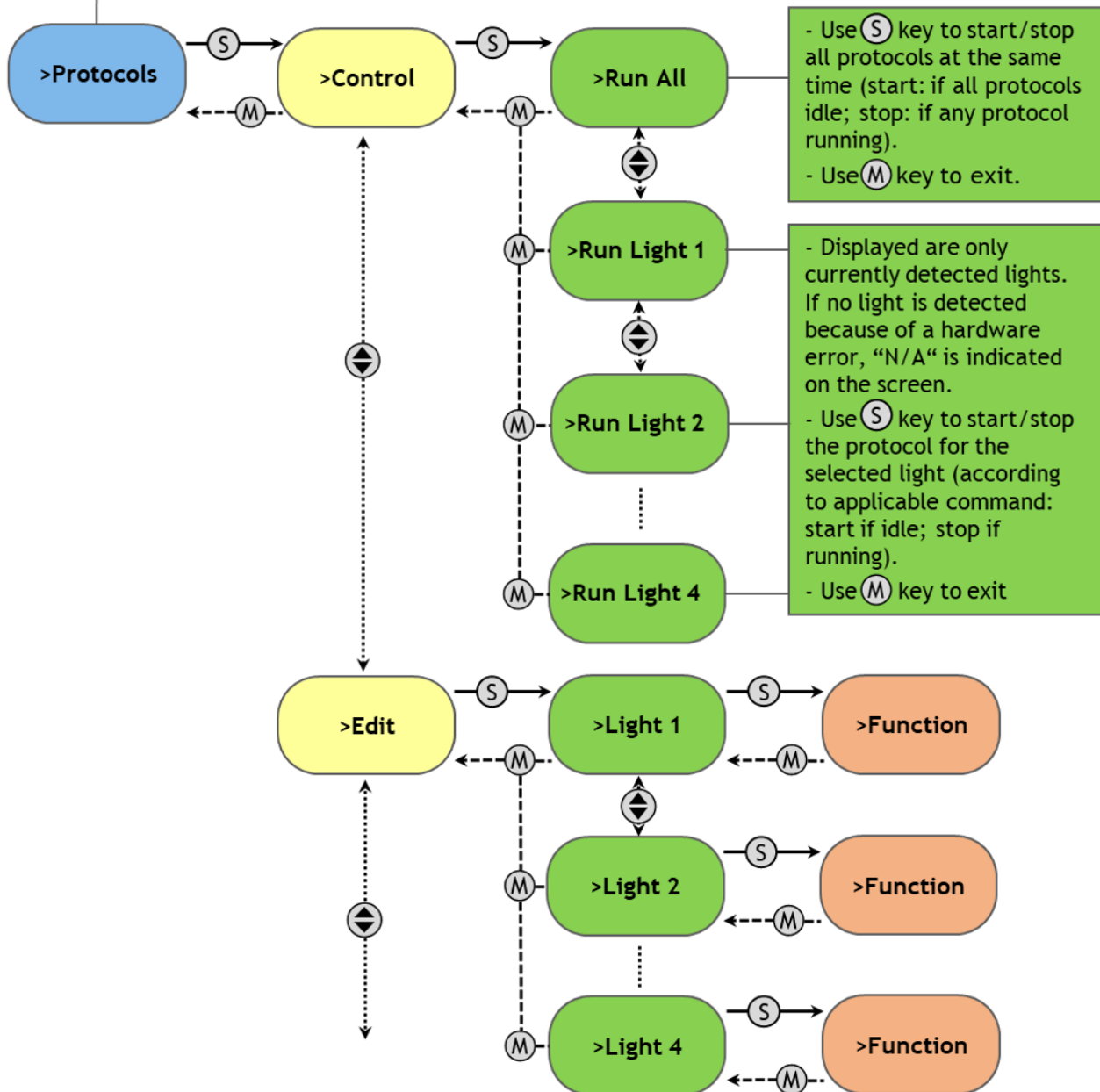
EACH PROTOCOL CONSISTS OF THREE INDEPENDENTLY CONFIGURABLE PHASES:

- 1) Light Period (LP) = Time period during which the defined function is performed.
- 2) Dark Period (DP) = Time period during which the light is off.
- 3) Repeats = Number of repeats for the phase.

OTHER EDITABLE PROTOCOL FUNCTIONS:

Repeat forever = The whole protocol runs in infinite loop.

Zero phase = LP + DP = 0; or Repeats = 0. Editing of phases is finished when the Zero phase is confirmed.



Menu Protocols → Edit → LightN → Function

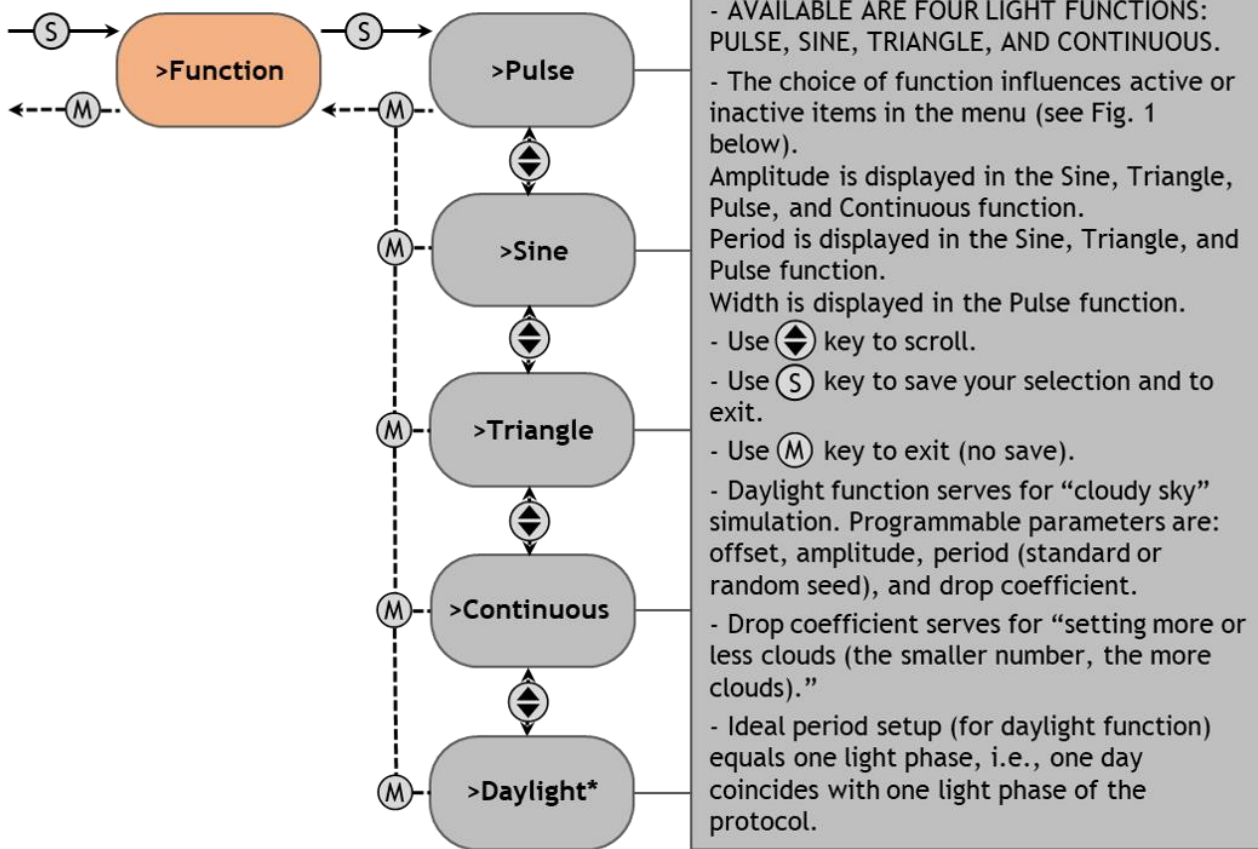
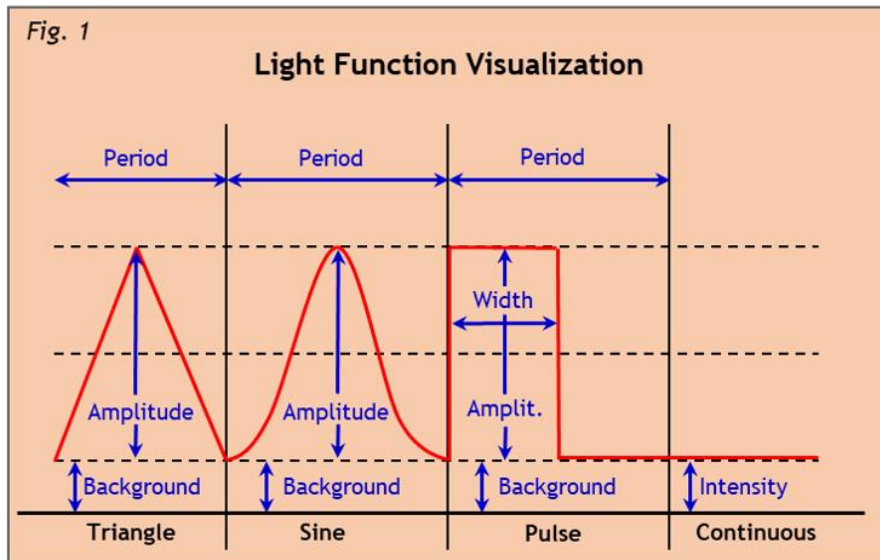
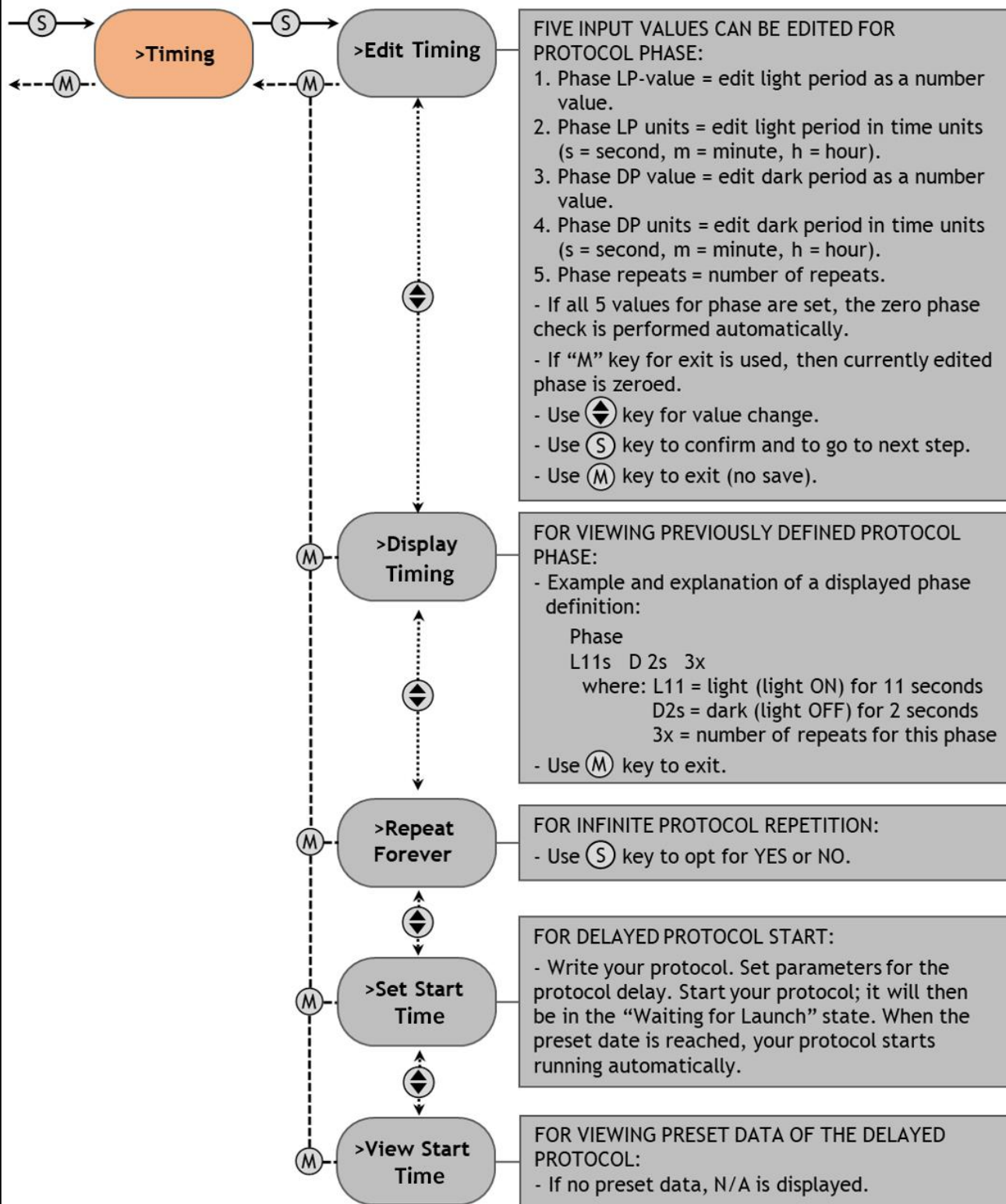


Fig. 1

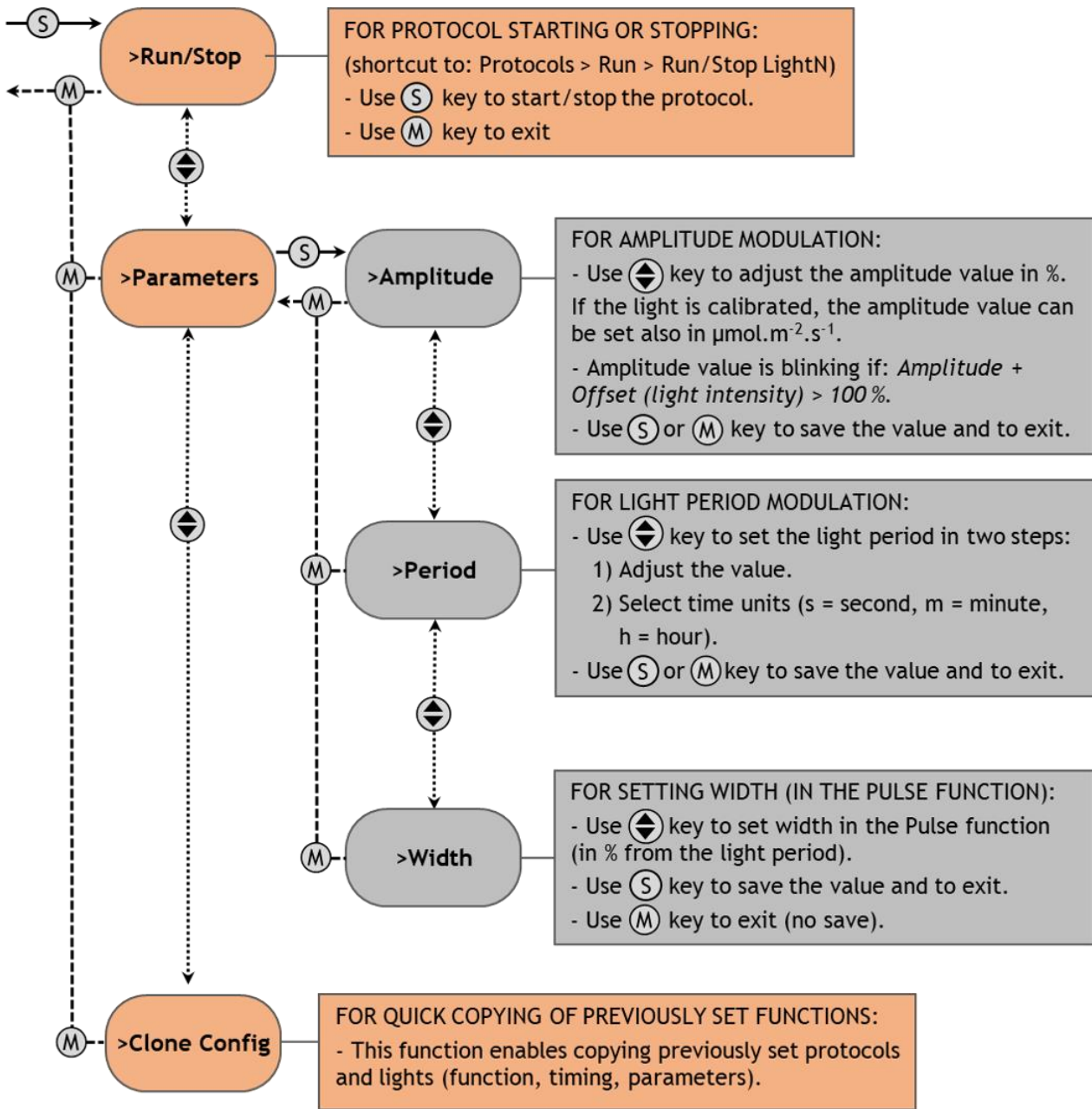


* There is a PC application for daylight protocol light curve visualization available as an upgrade to the standard package. Seed parameter in the Daylight protocol is used to synchronize this application and the device, so with the same protocol settings, it produces identical light curve.

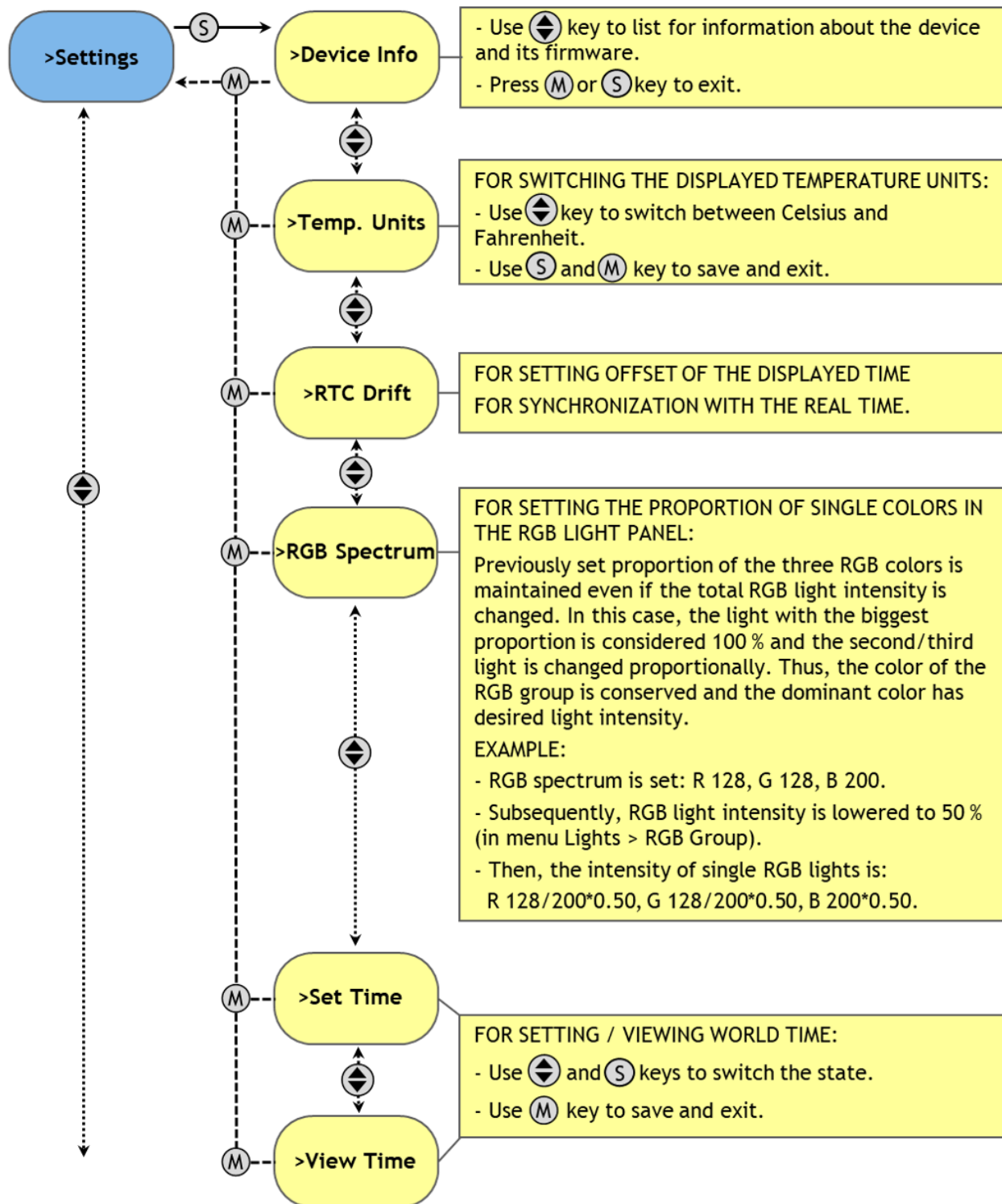
Menu Protocols → Edit → LightN → Timing



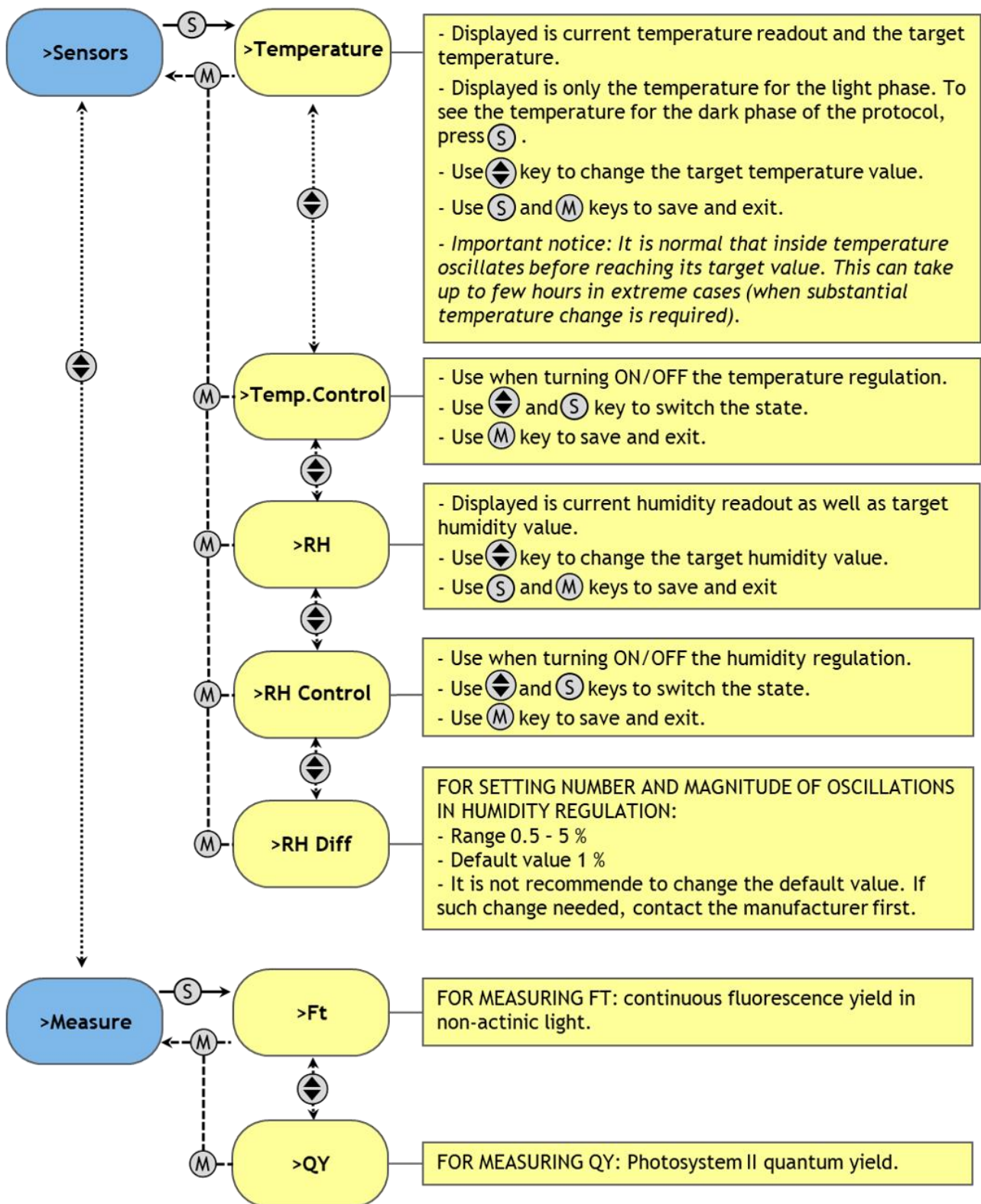
Menu Protocols → Edit → LightN → Run/Stop... Clone Config



Menu Settings → RGB Spectrum



Menu Sensors. Menu Measure



EXAMPLES OF LIGHT PROTOCOLS CONFIGURED VIA THE CONTROL UNIT FRONT PANEL



Please note that after light protocol termination the lights will be adjusted according to the lights setting in the main menu.

CIRCADIAN CYCLE

The example of five-days long experiment using a diurnal Light/Dark phases is described below. Light phase (LP) takes 16 hours whereas Dark phase only 8 hours (DP; automatically $0 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$). Light intensity during the Light phase is set to a constant level at $200 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$. The Light protocol is identical for all lights. The cultivation temperature is different for Light phase (25°C) and Dark phase (20°C).

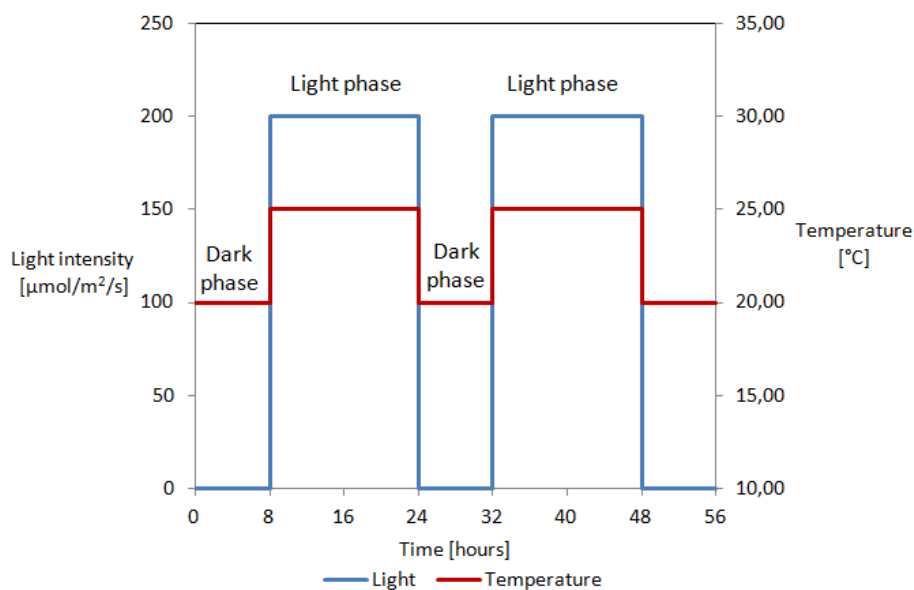


Fig. 8 Graph illustrating circadian cycle protocol.

1. Setting of the light intensity during the Light phase.

Lights > All Lights > $200 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

2. Definition of phases timing for Light 1.

Protocols > Edit > Light 1 > Timing > Edit Phases > Timing: LP value

LP [16] s

> Timing: LP units

LP 16 [h]

> Timing: DP value

DP [8] s

> Timing: DP units

DP 8 [h]

> Timing: repeats

Repeats [5] x

- Cloning of phases timing to the rest of lights.

Protocols > Edit > Light 2 > Clone Config > Light 1

Protocols > Edit > Light 3 > Clone Config > Light 1

Protocols > Edit > Light 4 > Clone Config > Light 1

- Simultaneous start of light protocol in all cultivation tubes.

Protocols > Control > Run

- Temperature setting.

Sensors > Tcontrol > ON

Sensors > Temperature > Current t X °C

Target L t 25 °C

>Current t X °C

Target D t 20 °C

PULSE CYCLE

An illustration of an alternation of Dark and Light phases with short light Pulses during the Light Phase. The duration of Dark as well as Light phase is 2 minutes (= 120 s). The PULSE amplitude is $300 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$, period 24 s ($120/24 = 5$ pulses within one Light phase) and width is 50 % (= 12 s PULSE + 12 s background). No background is set during the Light phase in the first example (**Error! Reference source not found.**); $150 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ as the background is set in the following example (**Error! Reference source not found.**). The Light protocol is same for all lights.

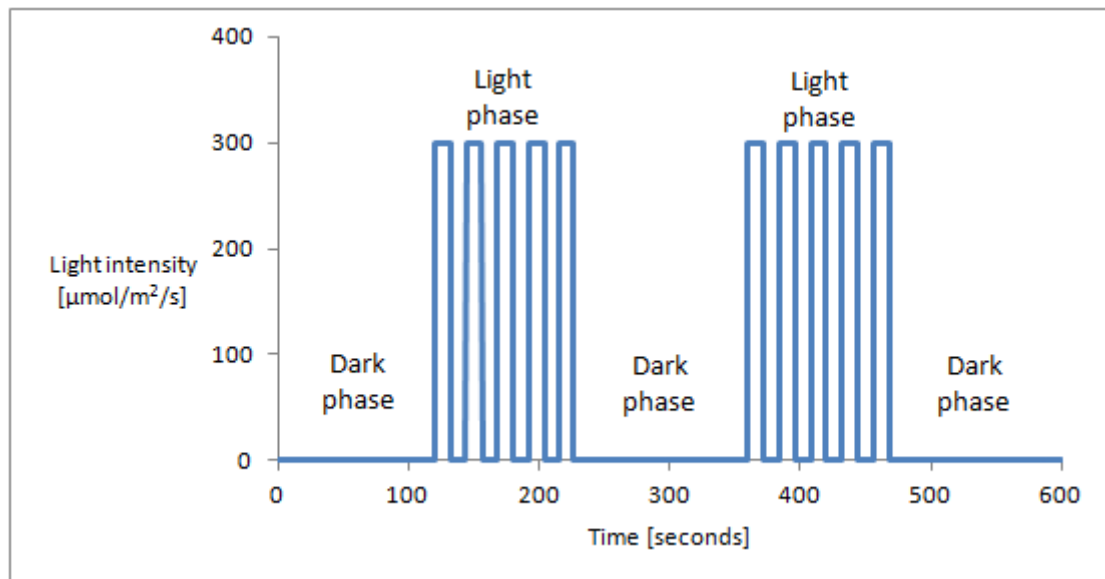


Fig. 9 Graph illustrating the pulse protocol without background.

- PULSE light function without background – all lights in main menu should be set to $0 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

Lights > All Lights > $0 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

- Definition of phases timing of Light 1.

Protocols > Edit > Light 1 > Timing > Edit Phases > Timing: LP value

LP [2] s

> Timing: LP units

LP 2 [m]
> **Timing: DP value**
DP [2] m
> **Timing: DP units**
DP 2 [m]
> **Timing: repeats**
Repeats [1] x
> RepForever > YES

3. Definition of PULSE light function of Light 1.

Protocols > Edit > Light 1 > Function > PULSE
> Params > Amplitude 300 $\mu\text{mol.m}^{-2}.\text{s}^{-1}$
> Period 24 s
> Width 50 %

4. Cloning of phases timing to the rest of lights.

Protocols > Edit > Light 2 > Clone Config > Light 1

Protocols > Edit > Light 3 > Clone Config > Light 1

Protocols > Edit > Light 4 > Clone Config > Light 1

5. Simultaneous start of light protocol in all cultivation tubes.

Protocols > Control > Run

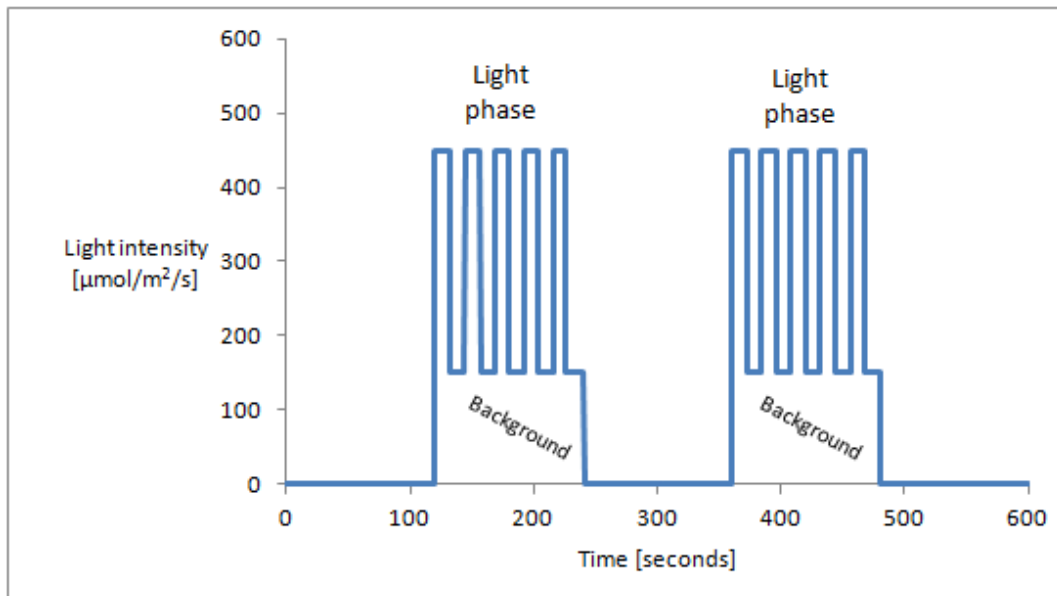


Fig. 10 Graph illustrating the pulse protocol with background.

1. PULSE light function with background – all lights in main menu should be set to $150 \mu\text{mol.m}^{-2}.\text{s}^{-1}$

Lights > All Lights > 150 $\mu\text{mol.m}^{-2}.\text{s}^{-1}$

2. Definition of phases timing of Light 1.

Protocols > Edit > Light 1 > Timing > Edit Phases > Timing: LP value

LP [2] s

> **Timing: LP units**

LP 2 [m]

> **Timing: DP value**

DP [2] m

> **Timing: DP units**

DP 2 [m]

> **Timing: repeats**

Repeats [1] x

> **RepForever > YES**

3. Definition of PULSE light function of Light 1.

Protocols > Edit > Light 1 > Function > PULSE

> **Params > Amplitude 300 $\mu\text{mol.m}^{-2}.\text{s}^{-1}$ (+ 150 $\mu\text{mol.m}^{-2}.\text{s}^{-1}$ background)**

> **Period 24 s**

> **Width 50 %**

4. Cloning of phases timing to the rest of lights.

Protocols > Edit > Light 2 > Clone Config > Light 1

Protocols > Edit > Light 3 > Clone Config > Light 1

Protocols > Edit > Light 4 > Clone Config > Light 1

5. Simultaneous start of light protocol in all cultivation tubes.

Protocols > Control > Run

SINE CIRCADIAN CYCLE

An example of 24-hours cycle consisting a Light phase with SINE function and a Dark phase. The duration of each phase is 12 hrs. The SINE amplitude is $150 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$, period 12 h (**Error! Reference source not found.**). The Light protocol is same for all 8 cultivation tubes.

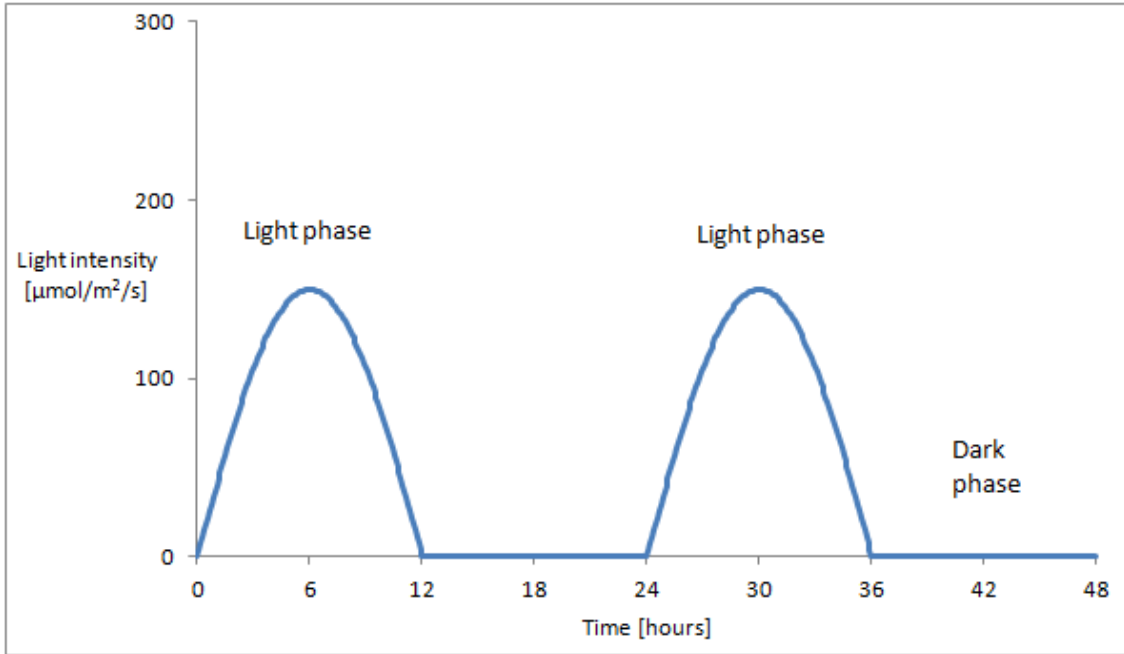


Fig. 11 Graph illustrating sine circadian light protocol.

1. SINE light function without background – all lights in main menu should be set to $0 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

Lights > All Lights > $0 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

2. Definition of phases timing of Light 1.

Protocols > Edit > Light 1 > Timing > Edit Phases > Timing: LP value

LP [12] s

> Timing: LP units

LP 12 [h]

> Timing: DP value

DP [12] h

> Timing: DP units

DP 12 [h]

> Timing: repeats

Repeats [1] x

> RepForever > YES

3. Definition of SINE light function of Light 1.

Protocols > Edit > Light 1 > Function > SINE

> Params > Amplitude $150 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$

> Period 12 h

4. Cloning of phases timing to the rest of lights.

Protocols > Edit > Light 2 > Clone Config > Light 1

Protocols > Edit > Light 3 > Clone Config > Light 1

Protocols > Edit > Light 4 > Clone Config > Light 1

5. Simultaneous start of light protocol in all cultivation tubes.

Protocols > Control > Run

9 WARRANTY TERMS AND CONDITIONS

- This Limited Warranty applies only to the AlgaeTron AG 130 device. It is valid for one year from the date of shipment.
- If at any time within this warranty period the instrument does not function as warranted, return it and the manufacturer will repair or replace it at no charge. The customer is responsible for shipping and insurance charges (for the full product value) to PSI. The manufacturer is responsible for shipping and insurance on return of the instrument to the customer.
- No warranty will apply to any instrument that has been (i) modified, altered, or repaired by persons unauthorized by the manufacturer; (ii) subjected to misuse, negligence, or accident; (iii) connected, installed, adjusted, or used otherwise than in accordance with the instructions supplied by the manufacturer.
- The warranty is return-to-base only and does not include on-site repair charges such as labor, travel, or other expenses associated with the repair or installation of replacement parts at the customer's site.
- The manufacturer repairs or replaces faulty instruments as quickly as possible; the maximum time is one month.
- The manufacturer will keep spare parts or their adequate substitutes for a period of at least five years.
- Returned instruments must be packaged sufficiently so as not to assume any transit damage. If damage is caused due to insufficient packaging, the instrument will be treated as an out-of-warranty repair and charged as such.
- PSI also offers out-of-warranty repairs. These are usually returned to the customer on a cash-on-delivery basis.
- *Wear & Tear Items* (such as sealing, tubing, padding, etc.) are excluded from this warranty. The term *Wear & Tear* denotes the damage that naturally and inevitably occurs as a result of normal use or aging even when an item is used competently and with care and proper maintenance.

10 TROUBLESHOOTING AND CUSTOMER SUPPORT

In case of troubles and for customer support, please, visit [FAQ](#) on our websites, write to support@psi.cz or contact your local distributor.