AlgaeTron AG 130-ECO

Instruction Guide

Please read this Guide before operating this product

Photon Systems Instruments

PSI, spol. s r.o., Drasov 470, 664 24 Drasov, Czech Republic
Fax: +420 511 440 901, Phone: +420 511 440 011, http://www.psi.cz

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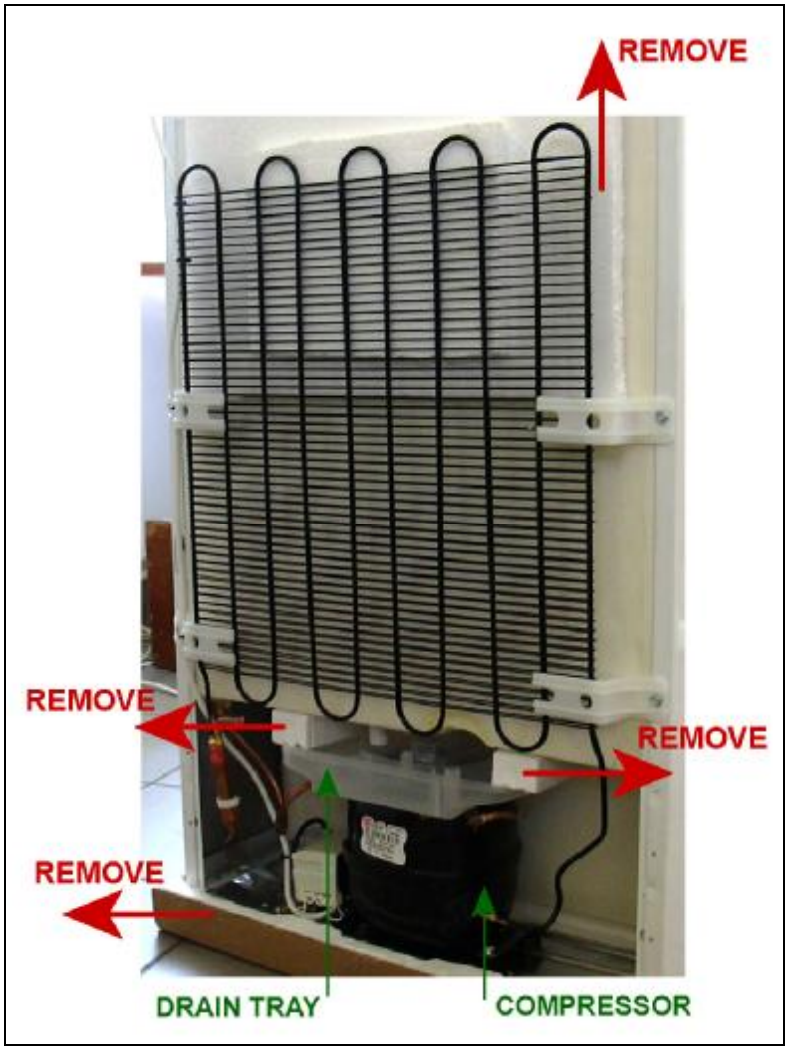
1. Warnings and Safety Precautions

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

- **Remove all packaging and transit protectors before connecting the AlgaeTron to the electricity supply.**
- **Remove the polystyrene block(s) inserted between the compressor and the chamber *(see the picture below).***
- **Do not remove the plastic drain tray fitted above the compressor *(see the picture below).***
- **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.

WARNING:

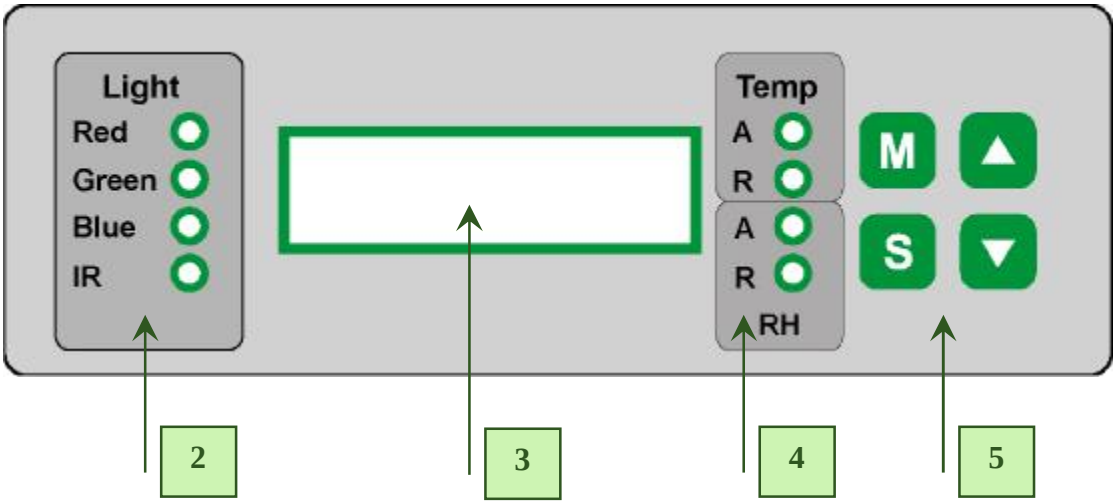
THE ALGAETRON AG 130-ECO IS CONSIDERED CLASS 1M* LED PRODUCT. LED RADIATION MAY BE HARMFUL TO EYE, AVOID DIRECT AND STRONGLY REFLECTED EXPOSURE. IT IS REASONABLE TO USE PROTECTIVE GLASSES.

*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.

2. Device Description and Installation

- Place the AlgaeTron on a flat, firm and dry surface! Let it stand up and w**ait 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 **[1]** to ensure sufficient distance for heat removal from the condenser!

FRONT PANEL:



[2] – Four LED indicators: Indicating whether the corresponding light is connected.

Note: Only two LED indicators are mounted in the WIR version (White + IR light).

[3] – Two-line display.

[4] – Four LED indicators: Indicating the status of a performed function.

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

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

[5] – Four control keys:

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

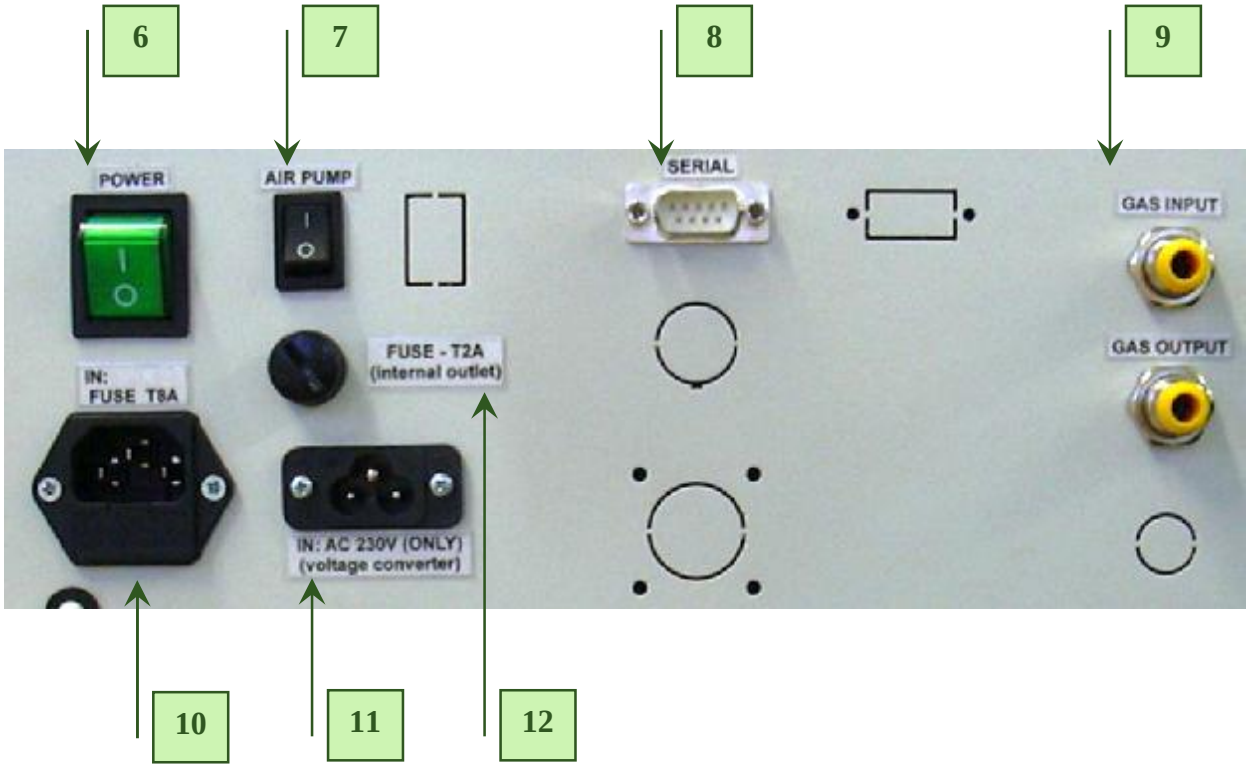
[S]: Used to move forward in the menu tree or to save the selection.

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

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

See Chapter 3 of this Guide for more information on the FytoScope control.

REAR PANEL:



[6] – ON/OFF power switch (mains).

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

Note: The air pump switch is not included in the standard device version.

[8] – Firmware communication connector.

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

Note: External gas control system is not included in the standard device version.

[10] – 230 V mains power connector: Used when the device is to be powered from 230 V supply system. The connector includes a safety fuse (its value in amperes is indicated on the label). The mains cable **[13]** is supplied by the manufacturer as a standard device accessory.

[11] – 230 V mains power connector: This connector is mounted ONLY when the AlgaeTron is to be installed in a country using 110 V supply system. In this case, the electricity is supplied to the device via a voltage converter.

[12] – Internal outlet fuse.

[13] – Cable 230 V.

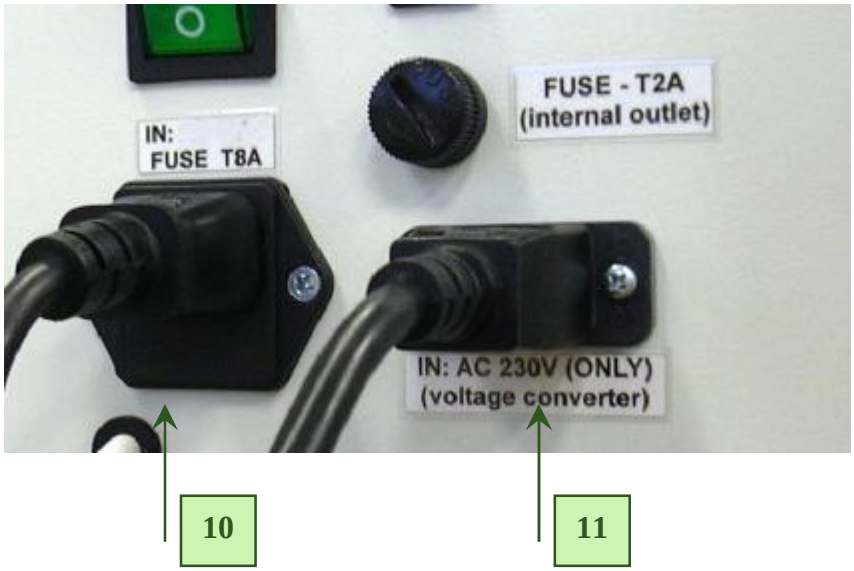
WIRING IN 230 VOLTAGE:

Use provided standard cords and plugs – see **[13]**. No special handling is required.

WIRING IN 110 VOLTAGE:

- **When the AlgaeTron is to be powered from 110 voltage, the power for the refrigeration compressor must be supplied via a provided voltage converter!**

- **In this case, both power feeding cables (110 V and 230 V) must be connected [10] and [11]!**

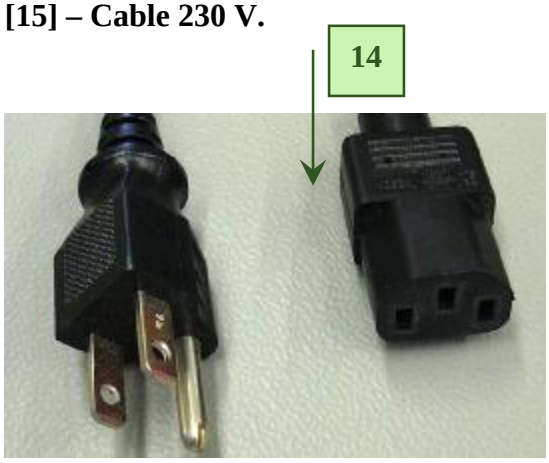


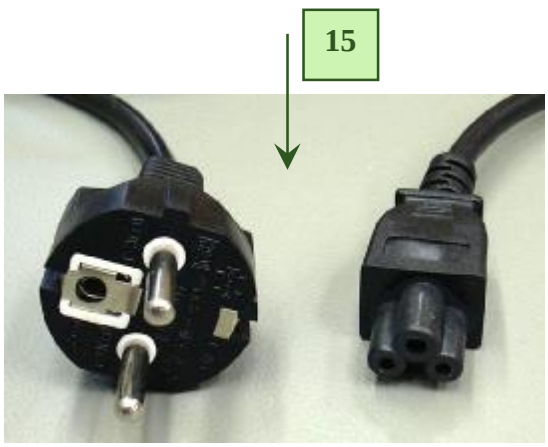
[10] – 110 V connector: Use a proper cable **[14]** *(see the picture below left)* for connection to a 110 V electrical socket.

[11] – 230 V connector: This connector carries power to the refrigeration compressor working with 230 V. Use a proper cable **[15]** *(see the picture below right)* for connecting the AlgaeTron **[11]** with the **supplied voltage converter**. Connect the voltage converter to a 110 V electrical socket.

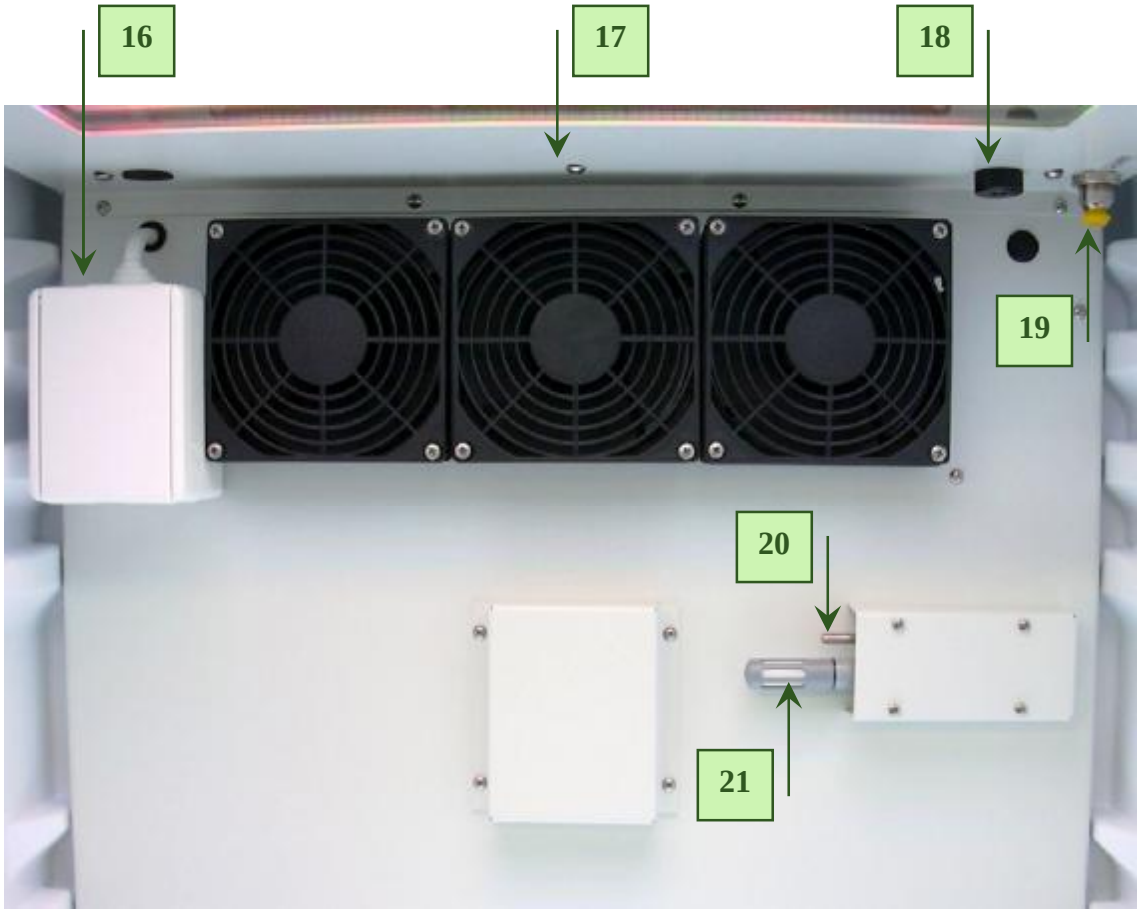
[14] – Cable 110 V.

[15] – Cable 230 V.





INTERIOR:



[16] – Inside electrical outlet: Serves for connecting supplementary accessories (shakers, etc.) inside the AlgaeTron. The outlet has a fuse, which is situated on the rear panel of the device **[12]**.
To connect supplementary accessories to the outlet, use only the cable **[13]** supplied by the manufacturer!
Be aware that using accessories that produce too much heat can influence temperature regulation inside the AlgaeTron!

[17] – Airflow Fans: Provide proper air circulation as well as even temperature distribution inside the AlgaeTron.

[18] – Air Inlet: Serves driving the air into the chamber. The air flow rate is about 250 l/hour. 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].**

[19] – Gas ports: Provide connection to an external gas control system.

Note: The external gas control system is not included in the standard device version.

[20] – Temperature detector.

[21] – Relative humidity detector.

SHELVING:

Supplied are two different shelves. The shelf labeled “LOWER” (with wide rear edge) can be positioned in the lowest level only **[22]**. The shelf labeled “UPPER” can be positioned in any other level **[23]**.

ORBITAL SHAKER:

The supplied shaker has a strong housing made from composite material, which is corrosion resistant and ensures easy cleaning. The shaking table is made from a solid plastic. This makes the whole unit easy to clean and resistant to abrasion and a wide range of chemicals.

SHAKER INSTALLATION:

Place the shaker into the AlgaeTron and plug it into the inside electrical outlet **[16].**

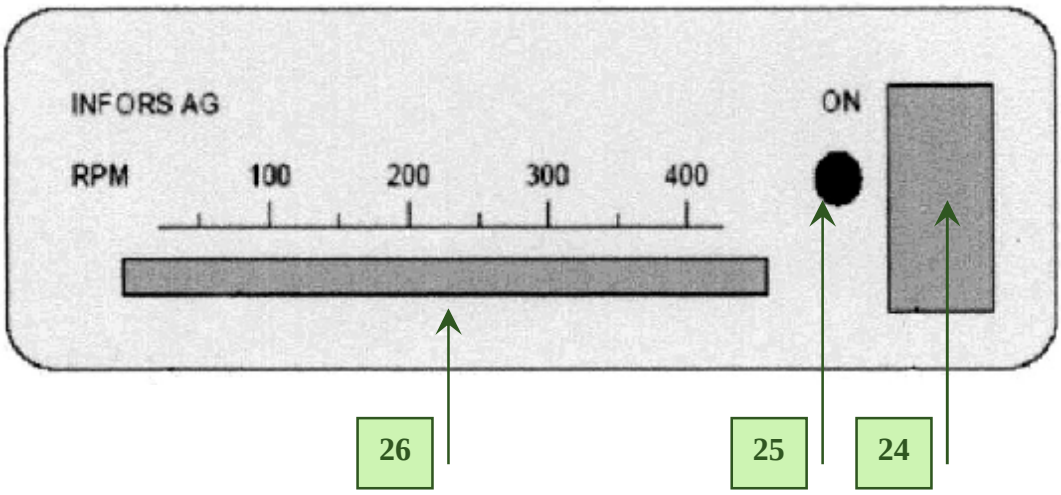
Do not overweight the shaker! Maximum loading weight of the top desk is 3 kg.

Loading capacity:

50 ml flasks:	35 pc
100 ml flasks:	23 pc
250 ml flasks:	12 pc
500 ml flasks:	8 pc

SHAKER CONTROL:

- Turn ON the shaker **[24].**
- When the LED indicator **[25]** lights up the shaker is ready to be used.
- Set the desired speed **[26]**. Rotation speed can be adjusted at any time during the shaking. Do not exceed the maximum rotation speed - 400 RPM! For Test-Run (no loading on the desk), do not exceed the value of 100 RPM!
- After finishing the work, set the slider to 0 RPM.



3. AlgaeTron Control

AlgaeTron AG 130-ECO is manufactured in two standard light color versions:

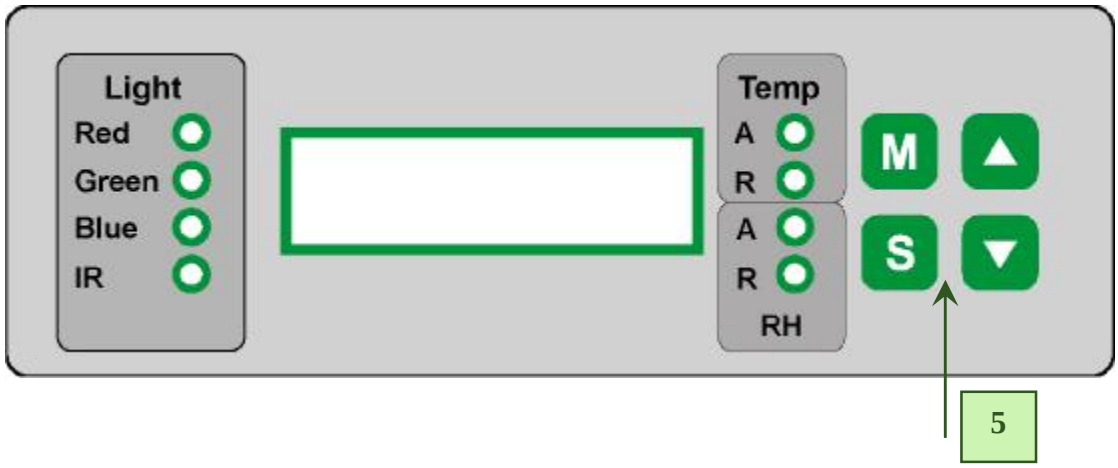
WIR: White + InfraRed LEDs

RGBIR: Red + Green + Blue + InfraRed LEDs

Both versions provide:

- Precise control of illumination in mode, intensity and timing;
- Separate control of particular light colors;
- Control of the interior temperature and relative humidity.

For light, temperature and humidity control, use four keys located at the right part of the front panel **[5]**:



EXPLANATION TO THE ALGAETRON CONTROL:

Multi-level menu control:

- 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 13 to 20 of this Guide for the graphical presentation of single menus and for explanations of their particular options.

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

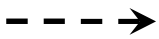
[M] key: Used to move back in the menu tree or to exit the menu.

[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**.**

Blue color represents the **Main Menu**.

Yellow color represents the **first-level** nested sub-menu.

Green color corresponds to the **second-level** nested sub-menu.

Orange color corresponds to the **third-level** nested sub-menu.

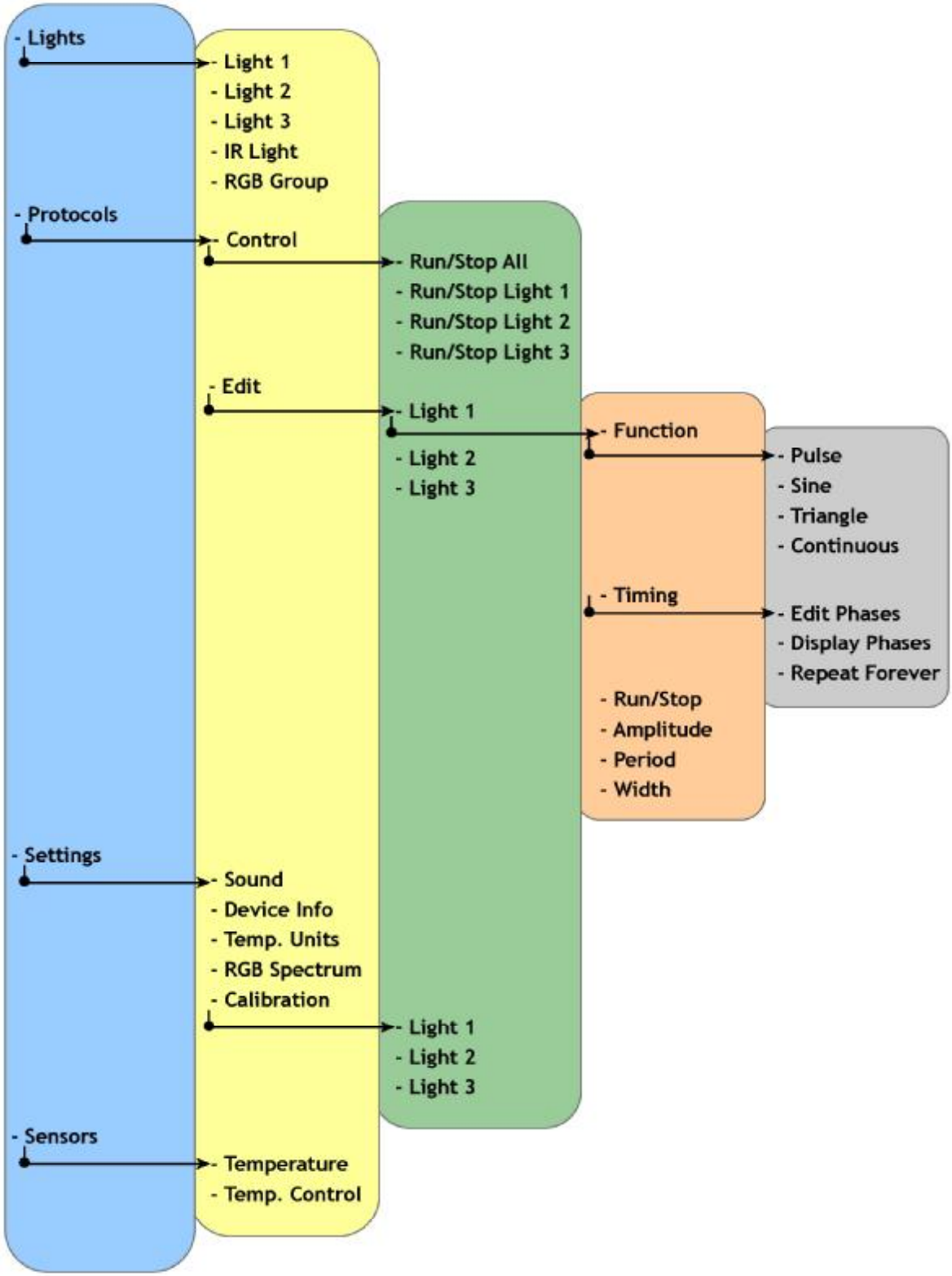
Grey color corresponds to the **fourth-level** nested sub-menu.

* *The AlgaeTron screen does not reflect this color differentiation.*

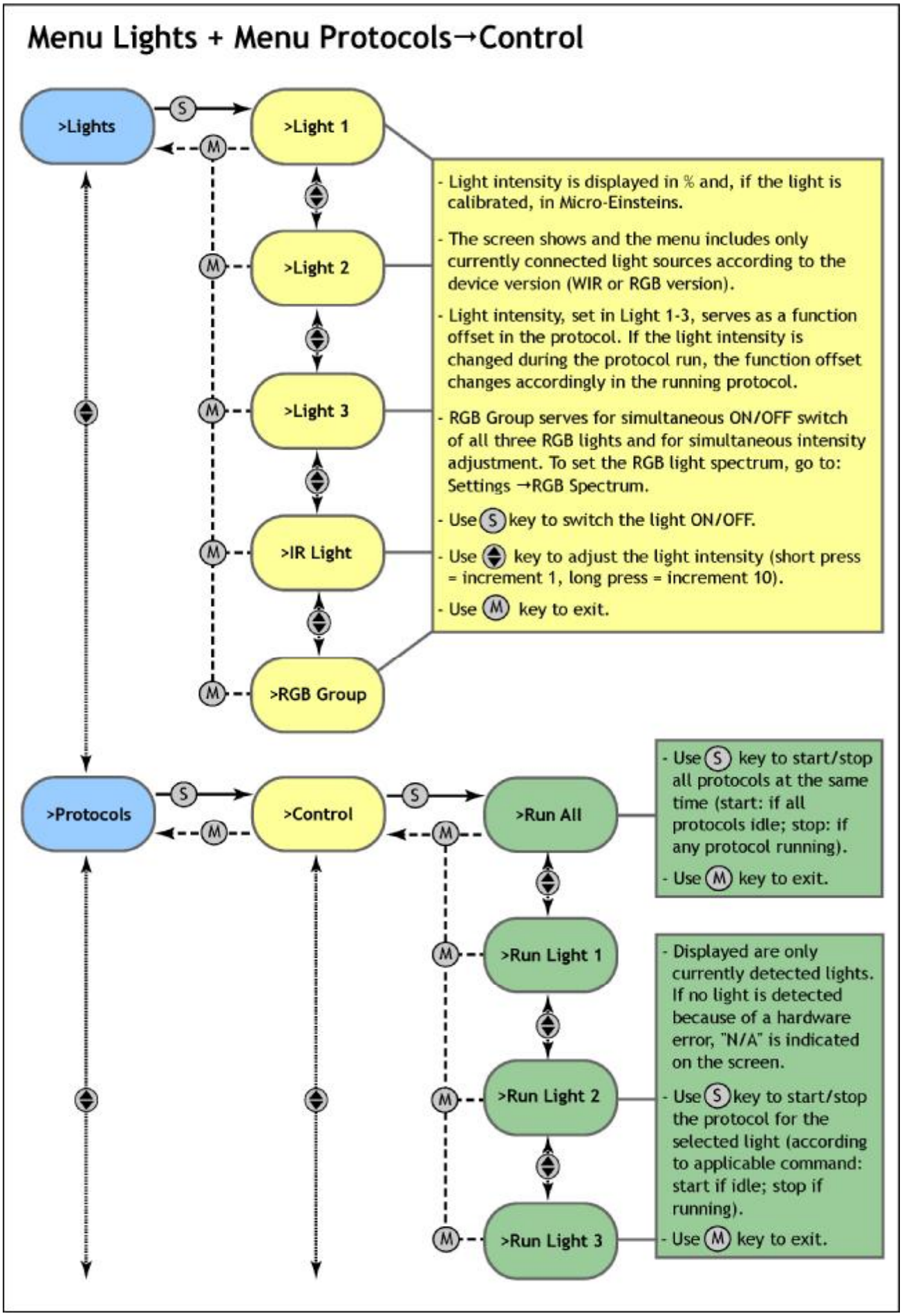
Note:

After 10 seconds of no action, an idle screen appears; displayed is the actual temperature inside the AlgaeTron.

Menu Tree - Main



Menu Lights + Menu Protocols→Control



Menu Protocols→Edit→LightN

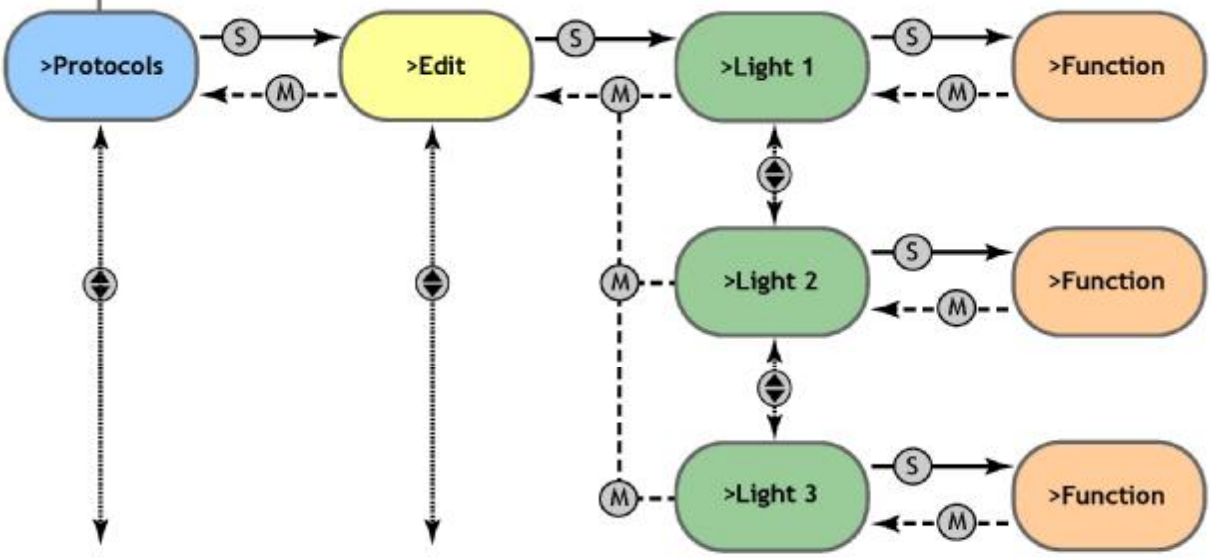
EACH PROTOCOL CONSISTS OF THREE INDEPENDENTLY CONFIGURABLE PHASES:

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.

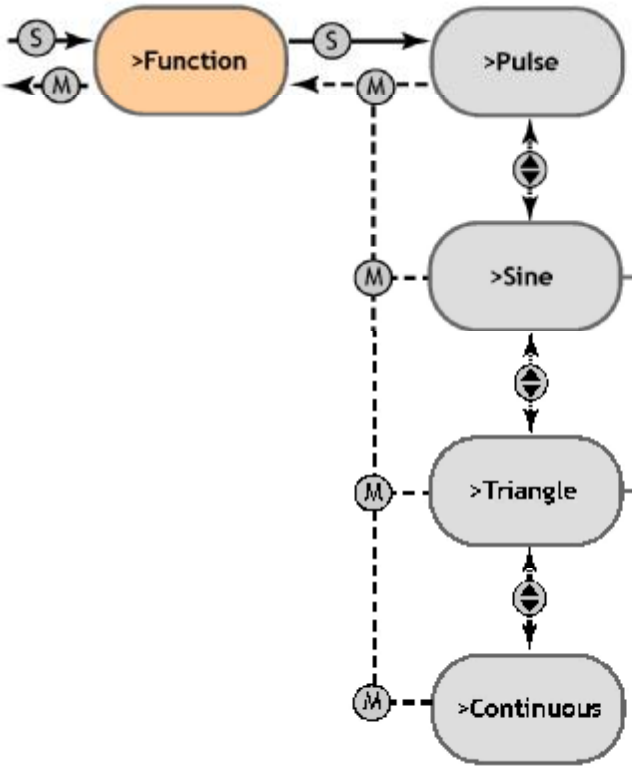
OTHER EDITABLE PROTOCOL FUNCTIONS:

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.

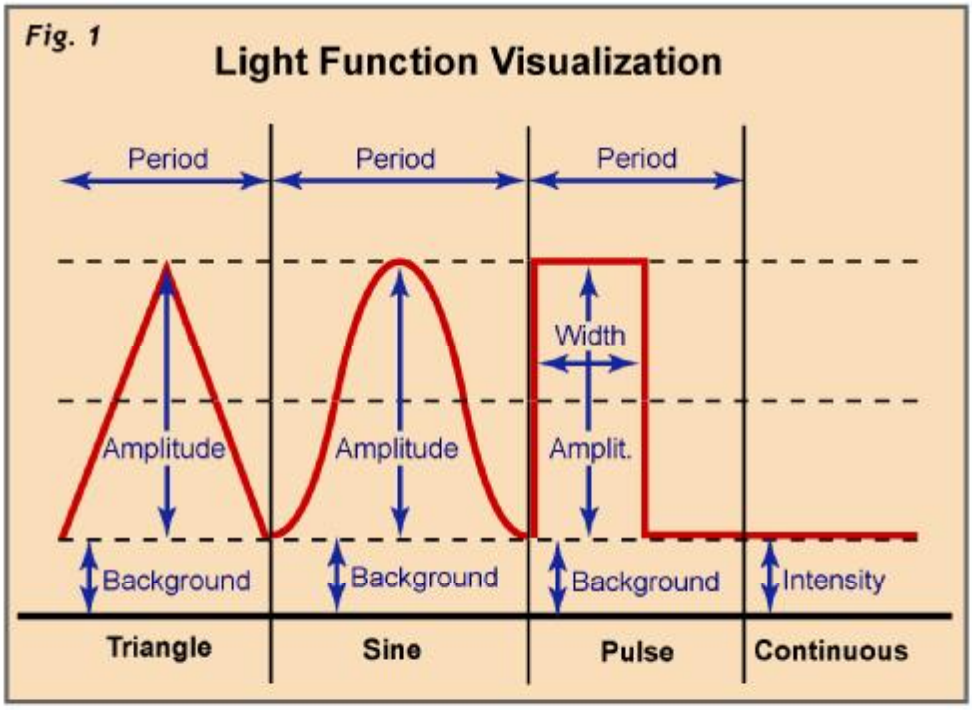


Menu Protocols→Edit→Light→Function

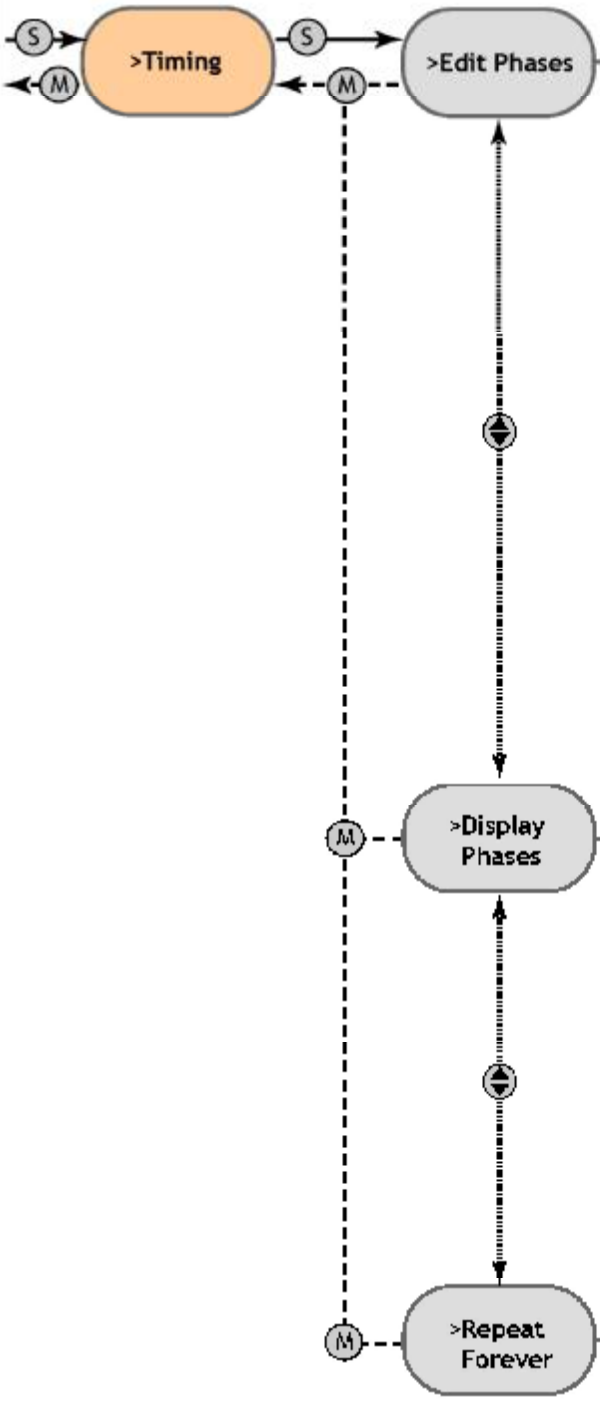


- AVAILABLE ARE FOUR LIGHT FUNCTIONS: PULSE, SINE, TRIANGLE, AND CONTINUOUS.
- The choice of function influences active or inactive items in the menu (see Fig. 1 below).
  Amplitude is displayed in the Sine, Triangle, Pulse, and Continuous function.
  Period is displayed in the Sine, Triangle, and Pulse function.
  Width is displayed in the Pulse function.
- Use ⇕ key to scroll.
- Use (S) key to save your selection and to exit.
- Use (M) key to exit (no save).

Fig. 1



Menu Protocols→Edit→Light→Timing



FIVE INPUT VALUES CAN BE EDITED FOR EACH PROTOCOL PHASE:

1. Phase N LP-value = edit light period as a number value.
2. Phase N LP units = edit light period in time units (s = second, m = minute, h = hour).
3. Phase N DP value = edit dark period as a number value.
4. Phase N DP unit = edit dark period in time units (s = second, m = minute, h = hour).
5. Phase N repeats = number of repeats.

- If all 5 values for one phase are set, the zero phase check is performed automatically.
- If "M" key for exit is used, then currently edited phase is zeroed.
- Use ⇕ key for value change.
- Use (S) key to confirm and to go to next step.
- Use (M) key to exit (no save).

FOR VIEWING PREVIOUSLY DEFINED PROTOCOL PHASES (PHASE 1-3):

- Example and explanation of a displayed phase definition:

  Phase N
  L11s D 2s 3x

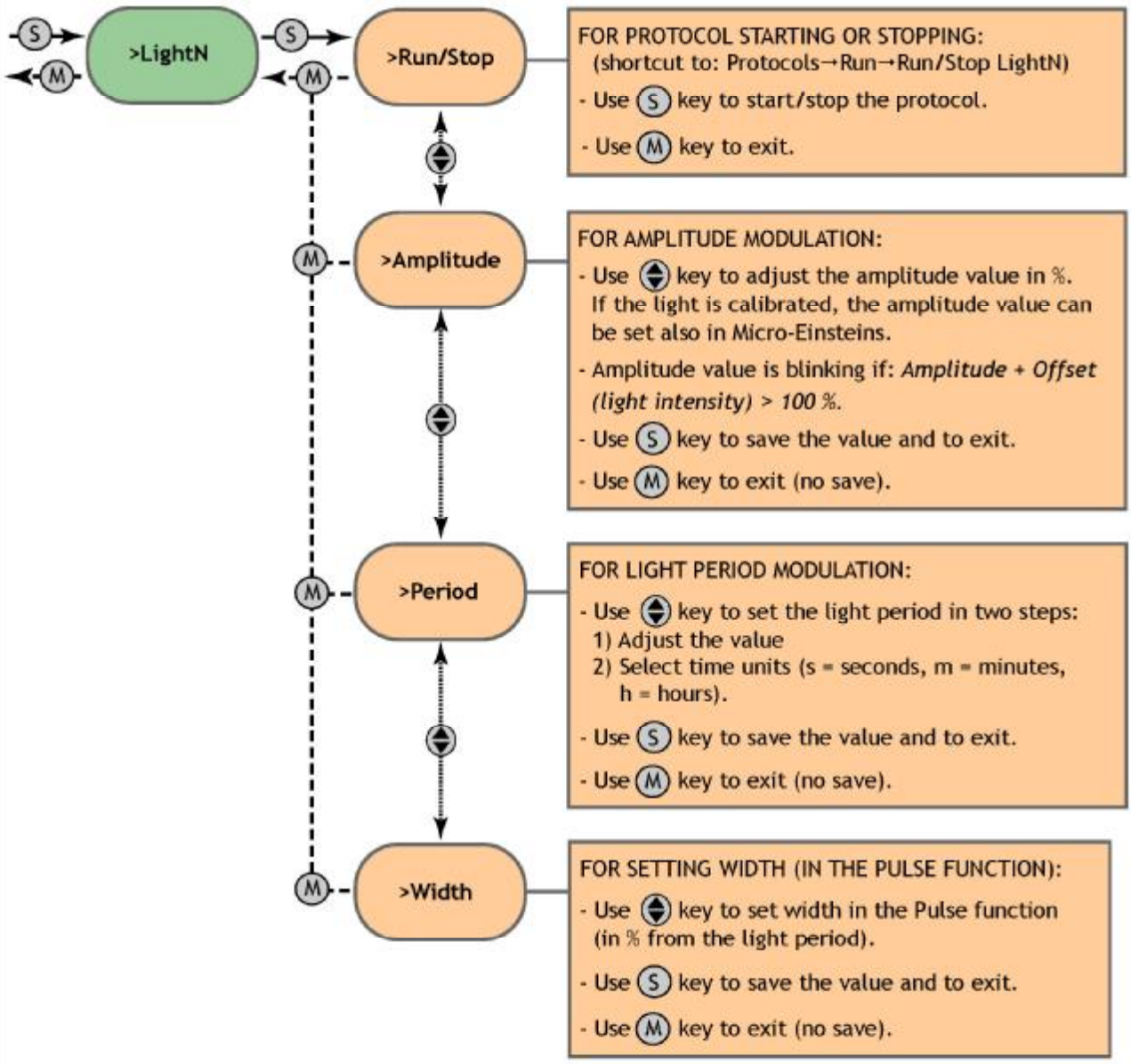
  where: L11s = light (light ON) for 11 seconds
  D2s = dark (light OFF) for 2 seconds
  3x = number of repeats for this phase

- Use ⇕ or (S) keys to list among Phases 1 to 4.
- Use (M) key to exit.

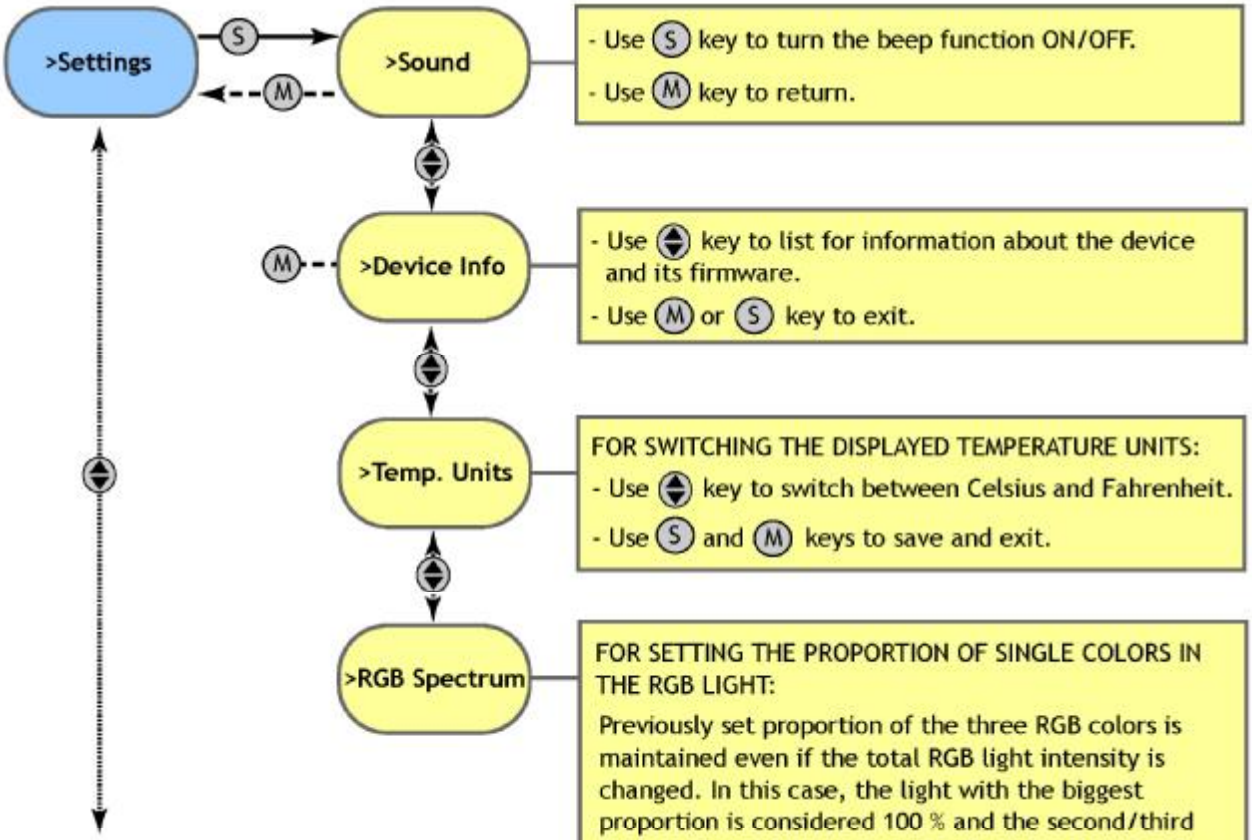
FOR INFINITE PROTOCOL REPETITION:

- Use ⇕ key to opt for YES or NO.
- Use (S) key to save your choice.
- Use (M) key to exit.

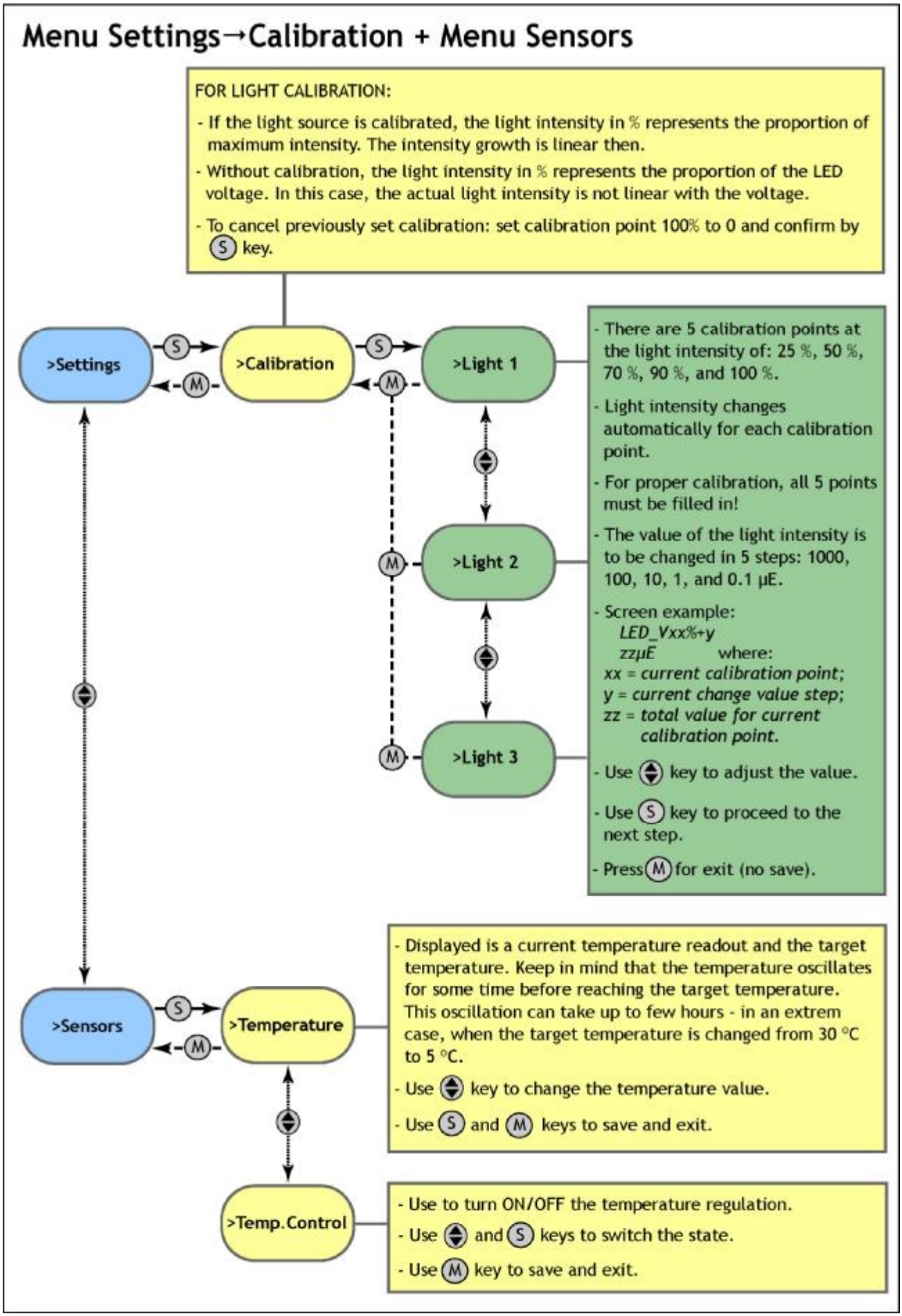
Menu Protocols→Edit→LightN→



Menu Settings



Menu Settings→Calibration + Menu Sensors



4. Technical Data

ALGAETRON:

Temperature range (°C)	**+5…+50**
LED Light Illumination (cm)	**25 x 35**
External Dimensions (H x L x D cm)	**100 x 55 x 62**
Internal Dimensions (H x L x D cm)	**69 x 42 x 40**
Weight (kg)	**55**
Internal Volume (l)	**124**
Refrigerant	**R134a**
Power / Power Input (W)	**300 / 500**
Compressor 220 – 240 V ~ 50 Hz 160 W 0,70 A	

ORBITAL SHAKER:

Shaker Speed (RPM)	**40-400**
Throw (mm)	**Ø 12.5**
Permissible Ambient Temperature (°C)	**4 - 60**
Permissible Ambient Humidity (%)	**Up to 80**
Weight (kg)	**9**
Maximum Loading Weight (kg)	**3**
Dimensions W x D x H (cm)	**39 x 32 x 9**
Power Supply 115/ 230 V +/-10% ~ 50/60 Hz	

5. Statement of Limited Warranty

- This Limited Warranty applies only to the AlgaeTron AG 130-ECO. It is valid 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.

For customer support, please write to: ***support@psi.cz***