

MANUAL
LIGHTBRUSH[®] RGB-MODULE
LIGHTBRUSH[®] RGB-CUBE

- RGB-MODULE 1500**
- RGB-MODULE 1200**
- RGB-MODULE 590**
- RGB-CUBE**



230 V VERSION

USER INSTRUCTIONS FOR LIGHTBRUSH® RGB-MODULE / RGB-CUBE

- ▶ Before switching the unit on for the first time, please read these instructions and keep them in a safe place!

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SAFETY PRECAUTIONS

- ▶ Protect units against humidity.
- ▶ Operate LIGHTBRUSH® RGB modules only within dry, closed premises.
- ▶ Do not use faulty cables.
- ▶ Make sure you disconnect the power plug before cleaning or opening the unit, or before changing lamps.
- ▶ In case of unexpected failure, unplug unit and have it examined.
- ▶ All Units should be serviced by a qualified technician only.
- ▶ Use only parts and accessories approved by DERKSEN® Light Technology.
- ▶ Install the units only on firm, flat surfaces. Before their first use, the RGB modules must be secured with screws to a floor, wall or ceiling.

INSTALLATION AND CONNECTION

Floor, Wall or Ceiling Installation

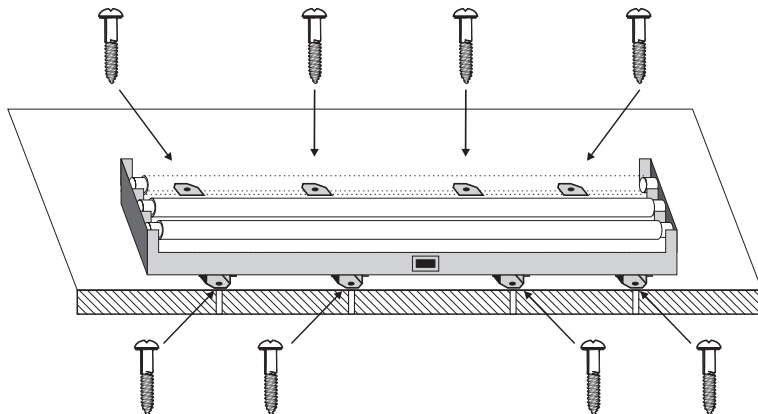
Select a firm, flat surface. **The LIGHTBRUSH® RGB module can be used only once it has been securely screwed to a floor, wall or ceiling.** It is necessary to screw the unit tightly to its location, in order to prevent it from tilting, sliding or dropping. Proceed as follows to securely mount the LIGHTBRUSH® RGB module:

Example for Securing the Unit with Screws to a Wooden Floor:

Position the LIGHTBRUSH® RGB module on the selected location and align it. 1,500 mm and 1,200 mm RGB modules provide for 8 mounting screws, the 590 mm RGB modules provide for 4 mounting screws. Mark the position of the 8 (4) mounting holes on the side of the housing to the floor, wall, or ceiling. Pre-drill holes on the wooden floor ensuring that the size of the holes matches the size of the screws and the strength of the wood.

► **We recommend to use 8 (4) 5 x 40 mm Spax wood screws.**

Screw the LIGHTBRUSH® module firmly to the floor, wall, or ceiling. Routinely check the screws to ensure that they are tightened.



Important Note: The mounting method described here serves as an example only! **Use proper mounting materials for installation on other materials.**

Cable Connection and Routing

Connect the power cable of the LIGHTBRUSH® master module to a wall outlet (230 V/50 Hz). Fuse (circuit breaker): 16 Amps.

In order to connect a LIGHTBRUSH® slave module to the master unit, you need only **one** cable (data bus/power connection, 7-pin) that feeds the unit with power and transmits the control signal. If several LIGHTBRUSH® slave modules are to be used, the slave modules are connected to each other. Each slave module is connected to the subsequent slave module with a cable (data bus/power connection, 7-pin) that feeds the unit with power and transmits the control signal.

Ensure that you plug the 7-pin plug according to its colour coding firmly into the connector socket until it is firmly seated and secured by the locking mechanism. To release the locking mechanism press the black button on top of the plug. The plug must not be exposed to any mechanical stress. Therefore, please ensure that all cables are routed correctly. The data/power line is available in lengths between 0.5 m and 25 m.

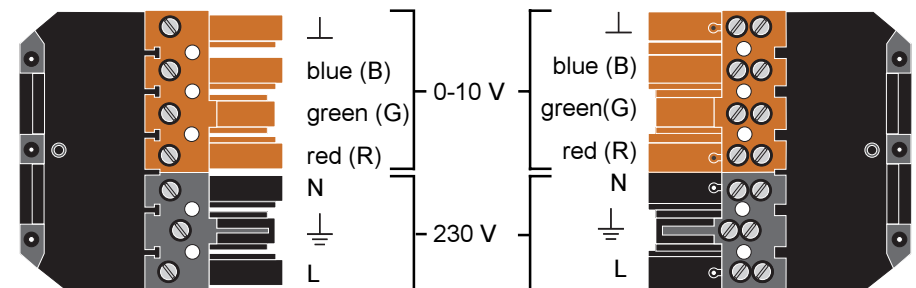
► **All cables must be protected against mechanical stress.**

Data bus/ power cables routed over walls or ceilings must be secured at regular intervals of 2 m (at least once per meter). Cables routed on floors require additional protection against mechanical stress (such as being stepped on).

Cables may be protected with ducts or tubes, e.g. When routing cables, always verify that there is no pull on the plugs.

Plug Designations for Data/Power Connections:

► **Caution:** The plug and the connector (WIELAND type) are under **control power (0-10 Volt)** and under **mains power (230 V)**.



Data/Power-Connection Plug

Data/Power-Connection Connector

LIGHTBRUSH® Slave Unit Operation

Since the LIGHTBRUSH® master unit provides the master-slave set-up with power, the entire unit is switched on and off through the master unit.

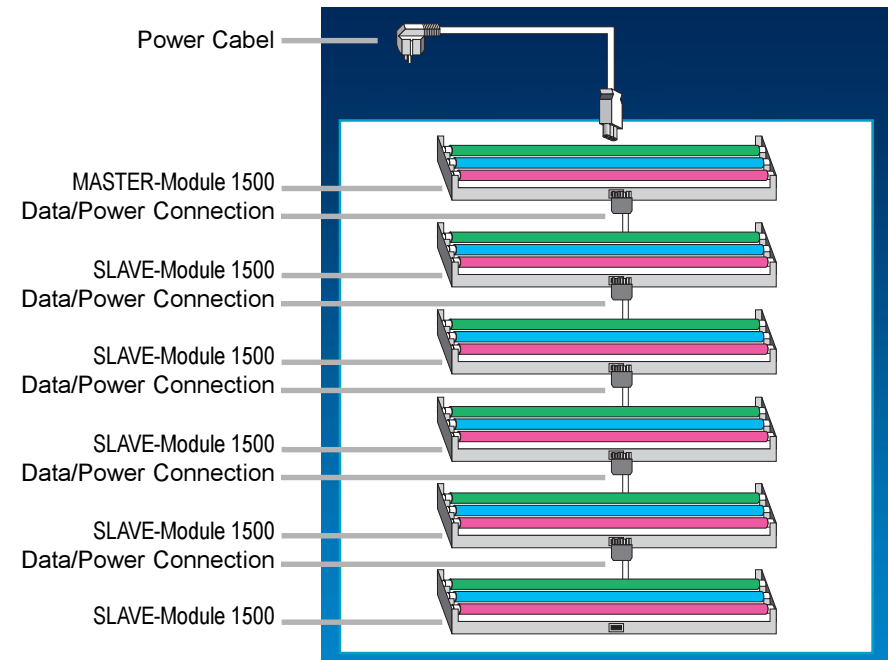
Please refer to the **maximum possible number of LIGHTBRUSH® Slave Modules**:

- ▶ The maximum **capacity** of the LIGHTBRUSH® master module is 3200 VA. The maximum number of slave modules for operation with a LIGHTBRUSH® master module depends on total power consumption. **The power consumption of the slave units must not exceed 3200 VA!**
- ▶ The maximum **control power** of the LIGHTBRUSH® master module suffices to control 30 units. You may exceed the maximum number of 30 units if you choose to connect lower power consumption slave modules (such as LIGHTBRUSH® Slave Module 590) to the LIGHTBRUSH® master module.
- ▶ If the power consumption of the slave units exceeds a total of 3200 VA and/or if more than 30 units are to be connected to the master unit, the system can be expanded with a LIGHTBRUSH® Intermediate Amplifier (Item No. 09918600). The amplifier automatically amplifies the **capacity** and **control power** - for an additional 30 units and a possible additional intermediate amplifier.

Infrared Receiver for LIGHTBRUSH® Remote Control

The LIGHTBRUSH® master module is equipped with an IR receiver (infrared receiver). It connects to the side of the master module with a 1.5 m cable. Depending on the location and position of your set-up, mount the IR receiver so that it allows for easy remote control pointing. Please ensure that the receiver's infrared sensor is not obstructed. Where possible, the receiver should be installed outside of the boundaries of your wall/floor/ceiling set-up.

EXAMPLE FOR ILLUMINATION OF AN AREA (such as a wall area measuring 2000x2000x400 mm in W/H/D):



How to Configure Lightbrush® for Evenly Distributed Illuminations

For the colour illumination of an area, certain aspects should be considered during planning/installation:

- ▶ the depth of the housing
- ▶ the transparency of the front pane
- ▶ the number of modules

It is important that the 16.7 million colour shades of the LIGHTBRUSH® RGB system have an even and colour-homogenous appearance.

- ▶ no shadow formation
- ▶ no detection of individual fluorescent lamps

1. The ideal housing depth ranges between 300 and 400 mm. The housing depth equals the distance between the back and the front pane (such as Plexiglas with a 47% transparency, film or gauze). Smaller depths (such as 200 mm) are possible, but this would require **more** modules for even illumination.

2. Formular for Determining the Number of Required LIGHTBRUSH® RGB-Module

- ▶ **Housing depth x 0.8 = distance between modules**
(distance to be measured from module centre to module centre)

The following example demonstrates that the required number of RGB modules for an area of 2,000 x 2,000 mm depends on the housing depth:

2.1 Housing depth **200 mm** x 0.8 = 160 mm distance, consequently, **12 Modules** 1,500 mm are required for a 2,000 x 2,000 mm area.

2.2 Housing depth **300 mm** x 0.8 = 240 mm distance, consequently, **8 Modules** 1,500 mm are required for a 2,000 x 2,000 mm area.

2.3 Housing depth **400 mm** x 0.8 = 320 mm distance, consequently, **6 Modules** 1,500 mm are required for a 2,000 x 2,000 mm area.

2.4 Housing depth **500 mm** x 0.8 = 400 mm distance, consequently, **4 - 5 Modules** 1,500 mm are required for a 2,000 x 2,000 mm area.

With increased housing depths and less RGB modules, the light intensity of the area illumination will decrease accordingly. A certain number of modules should be considered. In our example, optimum results are obtained with a housing depth of **400 mm** and a total of **6 LIGHTBRUSH® RGB modules** (2.3).

OPERATION AND PROGRAMMING

Your LIGHTBRUSH® colour light system is ready for use after you have installed and correctly connected the master and slave modules as previously described. Before operating the units and designing your own colour programs please ensure that the power plug is plugged in.

Basic Features:

Your Lightbrush® colour-light-system is ready for use after plug-in. The system will rest in stand-by-mode and can be switched on/off by remote control (button “**ON/OFF**”).

Even if the system is unplugged or a power failure takes place, your personal settings and programs will not be deleted. The microprocessor is equipped with a **memory function** that will preserve the most recent settings and programs. When you switch the system on it will start up in the last operation mode.

The universal **Remote Control** (part # 09918100) is compatible with all Lightbrush® Systems. It is necessary for controlling and programming. Direct your remote control close to your colour light system [no hyphens]. When you press a button, a short acoustic signal (“beep”) will sound to confirm that your command is received. If there is no acoustic signal, your command can not be executed because you have already reached maximum or minimum settings. For example: you push the button “**BRIGHT**” several times until maximum brightness is reached. If you keep on pushing “**BRIGHT**” there will be no acoustic signal because brightness cannot be increased anymore.

If there is no acoustic signal at all, please make sure that your Lightbrush® system is plugged in and power is switched on. Please hold the remote control close enough to the system and point directly towards it.

LIGHTBRUSH® Remote Control:
all functions at one glance...



1. Preset Programs (Factory Settings)

After you switched the colour light system on, you can immediately select one of the preset programs. If you want to know how to create your own colour change program, please proceed to chapter 2.

Select one of the preset programs with the blue buttons on your remote control (from **1** to **8**):

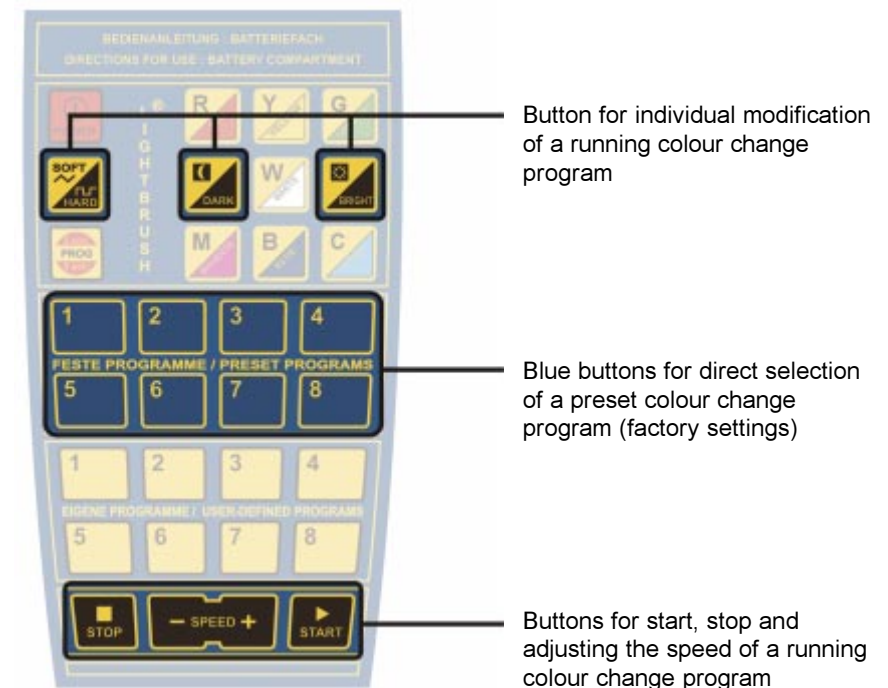
- blue button **1** : displaying all colours, following the RGB-concept.
- blue button **2** : displaying only red colours.
- blue button **3** : displaying only green colours.
- blue button **4** : displaying only blue colours.
- blue button **5** : „Spring“ – displaying green, yellow and orange colours
- blue button **6** : „Summer“ – displaying red, pink and blue colours
- blue button **7** : „Autumn“ – displaying red, brown and yellow colours
- blue button **8** : „Winter“ – displaying white light with shifting brightness

Note: the selected program runs in an endless loop. After you pushed a button, there is a delay of approximately 1 second until the selected program starts.

Modification of Preset Programs:

Any colour change program can be modified during operation by the colour control functions of your remote control:

- Button „**DARK**“: brightness of all colours will be decreased.
- Button „**BRIGHT**“: brightness of all colours will be increased.
- Button „**SPEED**“: speed of changing can be adjusted (range: 1 - 255 seconds per each single colour).
- Button „**STOP**“: colour change will be „frozen“.
- Button „**START**“: colour change will be started.
- Button „**SOFT-HARD**“: transition mode of colours can be changed:
„SOFT“ = smooth, slow transition of colours;
„HARD“ = abrupt, fast change of colours



2. Creating Custom Colour Sequences:

In order to adapt the colour light system to individual requirements, it is possible to **create and store user-defined colour change programs**. Therefore you can define step by step every single scene of your program. Up to 8 different user-defined programs can be stored and assigned to the yellow buttons of the remote control. The programs can be recalled at any time, even after a power failure (memory function!). Please follow the instructions below:

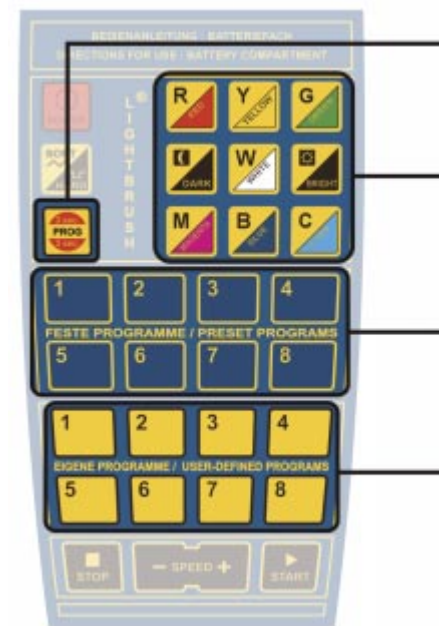
- Step 1: Push the button „**PROGRAMM**“ for approx. 3 seconds to enter the programming mode.
- Step 2: Push one of the **yellow** buttons (eg. **1**) in order to assign your program to it. Later you can recall your program by pushing it.
- Step 3: Using the **blue** buttons (from **1-8**) you can select a single scene of your colour change program. Please press the **blue** button **1** to define colour for the first scene.
- Step 4: Adjust the colour of the first scene by the **colour control functions** of your remote control. Only when you are satisfied with the selected colour continue with the second scene...
- Step 5: Press the **blue** button **2**, to define colour for the second scene of your program.
- Step 6: Adjust the colour of the second scene by the **colour control functions** of your remote control. Only when you are satisfied with the selected colour continue with the third scene...
- Step 7: Select additional scenes with the **blue** buttons **3-8** and adjust the colour for each single scene.
- Step 8: Press the button „**PROGRAMM**“ to end programming mode. Now the complete program can be recalled and started by the yellow button **1**.

Create other colour change programs following the instruction above. A maximum number of 8 programs can be stored (**yellow** buttons **1-8**).

Note:

- ▶ During programming, previous scenes can be recalled by the **blue** buttons, in order to test or adjust the colour of a previous scene.
- ▶ A colour change program may consist of less than 8 scenes. Once you are satisfied with the number of scenes, just press the button „**PROGRAMM**“ to end programming.

- ▶ User-defined programs will be overwritten automatically when you assign a new program to a place (**yellow** buttons from **1-8**) that is already “occupied” by an old program.



Use the „**PROGRAMM**“ button to access the programming. To activate it, hold the button for approx. 3 seconds.

Colour Control Field

Use the blue buttons to access the individual scenes of your colour change program.

Use the yellow buttons to save up to 8 of your own colour change programs.

The Colour Control Field

Colours can be mixed easily following the colour palette concept:

- Button „**R**“ (red): part of red light will be increased.
- Button „**Y**“ (yellow): part of yellow light will be increased.
- Button „**G**“ (green): part of green light will be increased.
- Button „**DARK**“: brightness will be decreased.
- Button „**BRIGHT**“: brightness will be increased.
- Button „**W**“ (white): part of white light will be increased.
- Button „**M**“ (magenta): part of pink light will be increased.
- Button „**B**“ (blue): part of blue light will be increased
- Button „**C**“ (cyan): part of green-blue light will be increased

Modification Of User-Defined Programs:

Any colour change program can be modified during operation by the colour control functions of your remote control (see: „Modification of Preset Programs“, p. 10).

DMX 512 CONTROL (OPTIONAL)

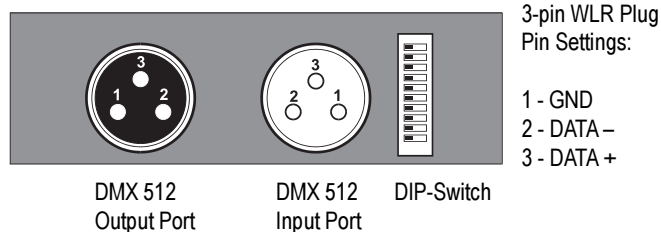
LIGHTBRUSH® systems can be controlled with an optional supplementary DMX 512 board. The board can be ordered directly from DERKSEN® Lichttechnik. The supplementary board is installed in the housing of the LIGHTBRUSH® master module and connects to the main board with a ribbon cable. The standard DMX input and output ports are accessible from the exterior of the housing.

► Important for the safety of your system: The supplementary board complies with all requirements under the new international **DMX 512 A** standard:

- The input and output ports are **galvanically balanced**.
- The DMX data is utilized only if the start code value is „0“.
- The DMX 512 A is backward-compatible with existing DMX standards.

► **Certified Quality:** The supplementary DMX 512 board of DERKSEN® Lichttechnik has been certified under the terms of the **German technical control board („TÜV“)**! All components of the LIGHTBRUSH® colour light system have the **GS mark** (safety-tested) and the **CE mark** (compliance with European safety standards).

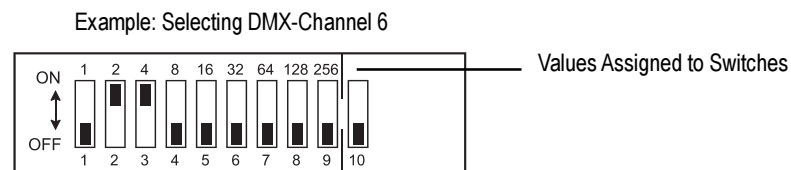
Supplementary DMX 512 Board Connections:



Setting the DIP Switches at the DMX 512 Connection:



Switches 1-9 are used to select the DMX channels. In the „ON“ position, the value assigned to the switch will be added to the total value. Example: Switch 2 (value 2) and switch 3 (value 4) are set to „ON“. This results in the selection of channel 6 (value 2+4). No function has been assigned to switch 10.



Remote control operation is switched automatically to DMX control once the ribbon cable is plugged into the main board.

REPLACING THE LAMPS

For economic reasons, we suggest to replace the entire lamp set, even if only one lamp fails. Use only fluorescent lamps as recommended by the manufacturer. Ensure that the replacement lamps have the proper length and wattage.

Caution: The lamps come in three colours (red - green - blue), even though the glass tube itself appears as uniformly white. Please refer to the written specifications printed on the fluorescent lamps!

► Protect yourself against electrical hazard by unplugging the unit before proceeding!

- Unlock faulty lamps by turning them 90°, and remove the lamp.
- Insert the replacement lamp with the appropriate colour into its assigned socket. Ensure to follow the colour coding (red - green - blue) in the housing and the specifications printed on the lamp.
- Lock the replacement lamp in place by turning it 90°.
- The RGB module is now again ready for use.

CHANGING THE BATTERY

The universal remote control operates with a **commercial 9 V block battery**. Open the battery compartment on the back of the remote control and replace the old battery with a new one.

CLEANING THE UNIT

Only the exterior of the unit may be cleaned. For interior cleaning, please contact an authorized technician or ship the unit to the manufacturer's factory.

Housing Exterior: Clean the exterior with a dry, soft cloth. Do not use cleaning solutions such as alcohol since this could damage the colour. Do not use compressed air, sprays or similar means.

TECHNICAL SPECIFICATIONS:

W!important notes for electricians, in accordance with the **recommendations** of OS-RAM and PHILIPS:

Operation within an electrical circuit that is protected against fault current (fault current switch):

FFI switch (fault current protection switch - surge protector) - **30 mA:**

maximum 10 LIGHTBRUSH® columns, or
maximum 10 LIGHTBRUSH® modules 1500, or
maximum 10 LIGHTBRUSH® modules 1200, or
maximum 10 LIGHTBRUSH® modules 590, or

maximum 10 LIGHTBRUSH® Cubes.

Explanatory Note: Switches of this type contain „Y“ condensers that work against the EARTH and consequently reduce fault current.

LIGHTBRUSH® Master-Module 1500:

Item No. 09916200

Colour Light Module with Control Unit
Type: RGB 1500 / Master

W/H/D: 1546 x 87.5 x 153 mm

Housing: Alu-polished

Weight: 4.1 kg

Power Input Plug 230 Volt, 16 A

Rated Power (Consumption): 180 VA

Power Output: 3200 VA

Features:

Microprocessor for the control of 16.7 million colours, can be controlled and programmed with (optional) remote control, 3 1500 mm RGB fluorescent lamps, 58 W each, data bus connector/power connection to control slave modules.

Slave module connection up to 3200 VA, depending on power supply.

LIGHTBRUSH® Slave-Module 1500:

Item No. 09916300

Colour Light Module **without** Control Unit
Type: RGB 1500 / Slave

W/H/D: 1546 x 87.5 x 153 mm

Housing: Alu-polished

Weight: 4.0 kg

Rated Power (Consumption): 180 VA

Features:

3 1500 mm RGB fluorescent lamps, 58 W each, data bus connector/power connection for the operation of additional slave columns, **without** control unit and remote control.

LIGHTBRUSH® Master-Module 1200:
Item No. 09916400

Colour Light Module with Control Unit
Type: RGB 1200 / Master

W/H/D: 1246 x 87.5 x 153 mm
Housing: Alu-polished
Weight: 3.6 kg
Power Input Plug 230 Volt, 16 A
Rated Power (Consumption): 120 VA
Power Output: 3200 VA
Features:
Microprocessor for the control of 16.7 million colours, can be controlled and programmed with (optional) remote control, 3 1200 mm RGB fluorescent lamps, 36 W each, data bus connector/power connection to control slave modules.
Slave module connection up to 3200 VA, depending on power supply.

LIGHTBRUSH® Master-Module 590:
Item No. 09916600

Colour Light Module with Control Unit
Type: RGB 590 / Master

W/H/D: 1246 x 87.5 x 153 mm
Housing: Alu-polished
Weight: 2.5 kg
Power Input Plug 230 Volt, 16 A
Rated Power (Consumption): 60 VA
Power Output: 3200 VA
Features:
Microprocessor for the control of 16.7 million colours, can be controlled and programmed with (optional) remote control, 3 590 mm RGB fluorescent lamps, 18 W each, data bus connector/power connection to control slave modules.
Slave module connection up to 3200 VA, depending on power supply.

LIGHTBRUSH® Slave-Module 1200:
Item No. 09916500

Colour Light Module **without** Control Unit
Type: RGB 1200 / Slave

W/H/D: 1246 x 87.5 x 153 mm
Housing: Alu-polished
Weight: 3.5 kg
Rated Power (Consumption): 120 VA
Features:
3 1200 mm RGB fluorescent lamps, 36 W each, data bus connector/power connection for the operation of additional slave columns, **without** control unit and remote control.

LIGHTBRUSH® Slave-Module 590:
Item No. 09916700

Colour Light Module **without** Control Unit
Type: RGB 590 / Slave

W/H/D: 1246 x 87.5x 153 mm
Housing: Alu-polished
Weight: 2.4 kg
Rated Power (Consumption): 60 VA
Features:
3 590 mm RGB fluorescent lamps, 18 W each, data bus connector/power connection for the operation of additional slave columns, **without** control unit and remote control.

LIGHTBRUSH® Master-Cube:
Item No. 09919100

Colour Light Cube with Control Unit
Type: RGB 2 x 590 / Master

W/H/D: 640 x 640 x 340 mm
Housing: Sheet steel, white
Weight: 13.0 kg
Power Input Plug 230 Volt, 16 A
Rated Power (Consumption): 120 VA
Power Output: 3200 VA
Features:
Microprocessor for the control of 16.7 million colours, can be controlled and programmed with (optional) remote control, 6 590 mm RGB fluorescent lamps, 18 W each, data bus connector/power connection to control slave cubes.
Slave unit connection up to 3200 VA, depending on power supply.

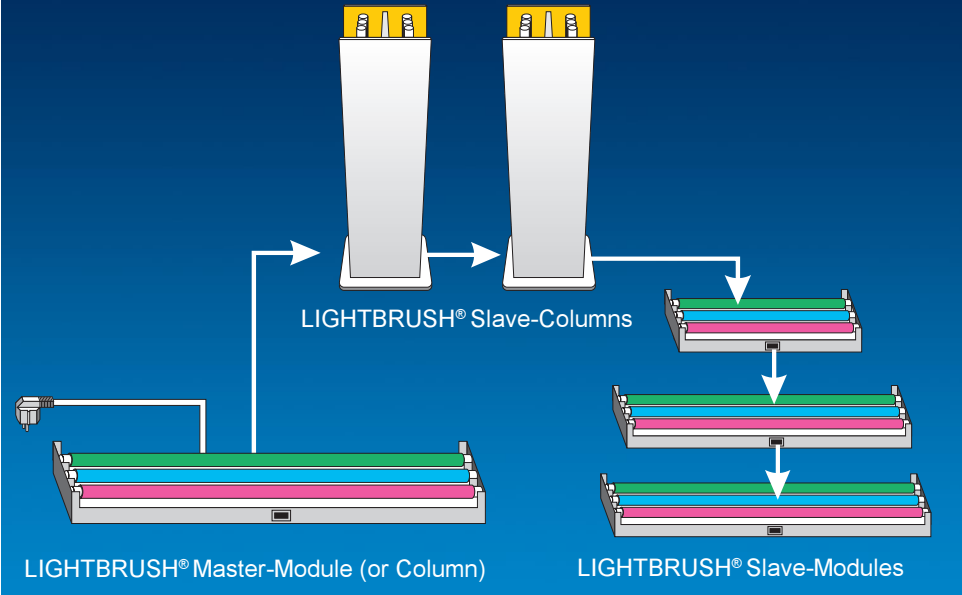
LIGHTBRUSH® Slave-Cube:
Item No. 09919200

Colour Light Cube **without** Control Unit
Type: RGB 2 x 590 / Slave

W/H/D: 640 x 640 x 340 mm
Housing: Sheet steel, white
Weight: 12.7 kg
Rated Power (Consumption): 120 VA
Features:
6 590 mm RGB fluorescent lamps, 18 W each, data bus connector/power connection for the operation of additional slave cubes, **without** control unit and remote control.

Subject to technical and optical modifications!

► All LIGHTBRUSH® Systems can be combined with each other!



SAFETY:

All LIGHTBRUSH® Systems have the following test certificates:



EN 61547 (Interference Resistance)
EN 50081-1 (Emission)

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LIGHT ► TECHNOLOGY

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