



# LED-Commander 16/2

## DMX controller



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## 1 General notes

This user manual contains important information on safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device, include the manual for the next owner.

Our products are subject to a process of continuous development. We therefore reserve the right to make changes without notice.

### Symbols and signal words

This section provides an overview of the symbols and signal words used in this user manual.

Signal word	Meaning
<b>DANGER!</b>	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
<b>NOTICE!</b>	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.
Warning signs	Type of danger
	Warning – danger zone.

## 2 Safety instructions

### Intended use

This device is intended to be used to control spot lights, dimmers, light effects, moving heads or other DMX-controlled devices. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

### Safety



#### **DANGER!**

##### **Danger for children**

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.



#### **NOTICE!**

##### **External power supply**

The device is powered by an external power supply. Before connecting the external power supply, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly the user.

Unplug the external power supply before electrical storms occur and when the device is unused for long periods of time to reduce the risk of electric shock or fire.



#### **NOTICE!**

##### **Risk of fire**

Do not block areas of ventilation. Do not install the device near any direct heat source. Keep the device away from naked flames.



#### **NOTICE!**

##### **Operating conditions**

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

### 3 Features

- 16 devices controllable via DMX-512
- 2 × 8 memory slots each for scenes and chases
- Faders for fade and scene time and speed, dimmer etc.
- Operation modes: automatic, sound controlled and manual
- Blackout and Full-on-function
- Separate channel assignment
- Backup and firmware update via USB
- USB port for desk light
- 19" housing, 4 RU

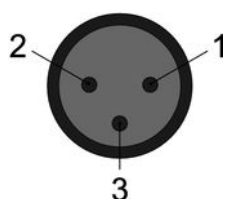
## 4 Installation

Unpack and carefully check that there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the device against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

### Rack mounting

The unit has been designed for rack mounting in a standard 19-inch rack. It occupies four rack units (RU).

### DMX connection



A 3-pin XLR socket is used as DMX output. The following diagram and table show the pin assignment of the XLR socket.

1	Ground
2	DMX data (-)
3	DMX data (+)

### 5 Starting up

Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.

#### **Connecting the power adapter**

Connect the included power adapter to the 9V connector of the unit and then plug the power adapter into a wall outlet.

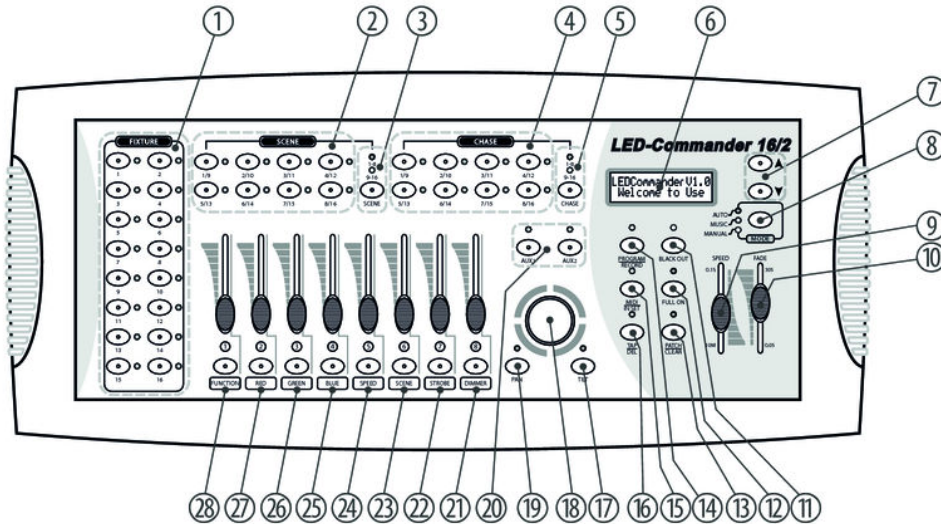
#### **Turning the unit on**

Turn on the device using the main switch on the rear panel. After turning the device on, the display shows the operating mode and the related display LED lights up.



## 6 Connections and operating elements

### Front panel



#### 1 [FIXTURE]

Buttons 1 to 16 to select the control channels. The associated indicator LED shows whether the respective channel is switched (LED on) or deactivated (LED off).

#### 2 [SCENE]

Eight buttons with double assignment for switching on / off up to 16 scenes. The indicator LEDs show which scenes are switched on (LED lights up). Switching between the button groups (banks) 1...8 and 9...16 is done via the shift button (3).

#### 3 Shift button [SCENE]

Button to switch the SCENE buttons. The two indicator LEDs show which button group (banks) 1...8 (red) or 9...16 (green) is currently active.

#### 4 [CHASE]

Eight buttons with double assignment for switching on / off up to 16 chasers. The indicator LEDs show which chasers are switched on (LED lights up). Switching between the button groups (banks) 1...8 and 9...16 is done via the shift button (5).

#### 5 Shift button [CHASE]

Button to switch the CHASE buttons. The two indicator LEDs show which button group (banks) 1...8 (red) or 9...16 (green) is currently active.

#### 6 Device display

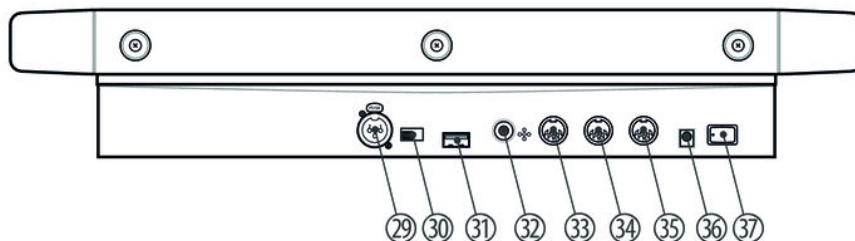
#### 7 Buttons ▲ and ▼

Navigation buttons to scroll within the display and to select options.

8	Shift button <i>[MODE]</i> Button to switch the operating mode. The associated LED indicates the active operating mode: Auto, music or manual.
9	Slider <i>[SPEED]</i> Slider to manually adjust the chase speed during playback.
10	Slider <i>[FADE]</i> Slider to manually adjust the fade speed during playback.
11	Button <i>[BLACKOUT]</i> Button to turn the BLACKOUT function on and off. The associated indicator LED shows whether the respective channel is active (LED flashes) or deactivated (LED off).
12	Button <i>[FULL ON]</i> Button to turn the FULL ON function on and off. The associated indicator LED shows whether the respective channel is active (LED flashes) or deactivated (LED off).
13	Button <i>[PATCH   CLEAR]</i> Press this button for three seconds to change the channel assignments. As soon as the associated indicator LED lights up, the channels can be reassigned. Press the button again for three seconds to exit the mode. Press this button briefly to zero all applied DMX values.
14	Button <i>[PROGRAM   RECORD]</i> Press this button for three seconds to enable the Programme mode. The associated indicator LED shows whether the mode is active (LED flashes) or deactivated (LED off). Press the button again for three seconds to exit the mode.
15	Button <i>[MIDI   IN SET]</i> Press this button for three seconds to open the menu for assigning the MIDI inputs. As soon as the associated indicator LED lights up, the MIDI inputs can be assigned using the SPEED control or the ▲ and ▼ buttons. Press the button again for three seconds to exit the mode.
16	Button <i>[TAP   DEL]</i> With this key you can delete and undo entries.
17	Button <i>[TILT]</i> Press this button to control the inclination of assigned moving heads with the joystick (18). The associated indicator LED flashes as long as the TILT mode is active.
18	Joystick for controlling the connected moving heads. To activate the joystick function, either the TILT (18) or the PAN mode (19) must be activated.
19	Button <i>[PAN]</i> Press this button to control the rotation of assigned moving heads with the joystick (18). The associated indicator LED flashes as long as the PAN mode is active.
20	Buttons <i>[AUX1   AUX2]</i> These buttons let you switch the AUX channels on (associated LED lights up) or off (LED off).
21	Slider <i>[DIMMER]</i> Controller with associated flash or selection button for manual setting of the virtual DIMMER function (if activated), or channel control for the assigned DMX channel.

22	Slider <i>[STROBE]</i> Controller with associated flash or selection button for manual setting of the STROBE function (if assigned), or channel control for the assigned DMX channel.
23	Slider <i>[SCENE]</i> Controller with associated flash or selection button for manual setting of the SCENE function (if assigned), or channel control for the assigned DMX channel.
24	Slider <i>[SPEED]</i> Controller with associated flash or selection button for manual setting of the SPEED function (if assigned), or channel control for the assigned DMX channel.
25	Slider <i>[BLUE]</i> Controller with associated flash or selection button for manual setting of the colour intensity BLUE (if assigned), or channel control for the assigned DMX channel.
26	Slider <i>[GREEN]</i> Controller with associated flash or selection button for manual setting of the colour intensity GREEN (if assigned), or channel control for the assigned DMX channel.
27	Slider <i>[RED]</i> Controller with associated flash or selection button for manual setting of the colour intensity RED (if assigned), or channel control for the assigned DMX channel.
28	Slider <i>[FUNCTION]</i> Controller with associated flash or selection button for manual setting of the function channel (if assigned), or channel control for the assigned DMX channel.

### Rear panel



29	Lockable DMX output socket
30	DMX polarity switch
31	USB port
32	Audio input (line level, 100 mV to 1 Vpp)
33	Output socket MIDI OUT
34	Through socket MIDI THRU
35	Input socket MIDI IN
36	Connection socket for the 9 V power supply unit.
37	Main switch to turn the device on and off.

## 7 Operation

After switching on, the device performs a short self test. The device then automatically switches to "Manual" operating mode and is ready for use.

### Mode selection

The LED Commander 16/2 works in three different operating modes. Press the *[MODE]* button until the required operating mode appears in the display and the associated display also LED lights up.

- *'Auto'*

In this operating mode, the *[FADE]* and *[SPEED]* sliders can be used to control the fade-in and fade-out time and speed, and the ▲ and ▼ buttons can be used to control the chaser light speed (setting range: 1 to 200 s).

- *'Music'*

In this operating mode, the ▲ and ▼ buttons can be used to set the sound sensitivity (setting range: 0 to 100 %). The *[FADE]* slider can be used to set the fade-in and fade-out time.

- *'Manual'*

In this operating mode, the ▲ and ▼ buttons can be used to call up every program step of a chaser sequence (Chase). The *[FADE]* slider can be used to set the fade-in and fade-out time.

### Virtual dimmer

In **factory state**, the device is pre-configured with a virtual dimmer for every *[FIXTURE]*. This is useful if you have LED spotlights without their own master dimmer channel and wish to control them. In this case, fader 8 *[DIMMER]* controls the overall intensity of the *[RED]*, *[GREEN]* and *[BLUE]* channels. You can deactivate this function for every *[FIXTURE]* and use the fader for channel 8 as a normal channel fader for a DMX channel of your choice. It is also possible to change the channel that the virtual dimmer on channel 8 accesses and influences accordingly.

To deactivate the virtual dimmer, proceed as follows:

1. ➤ Hold the *[PATCH / CLEAR]* button down for three seconds.
2. ➤ Select the *[FIXTURE]* button for fixtures 1 to 8 that you want to deactivate the dimmer for.
3. ➤ Press and hold the button for fader 8 *[DIMMER]* for three seconds. To be able to use channel 8 of this fixture as a regular channel fader, you must now assign it to a DMX channel. To do this, proceed as described in "Assigning device channels".
  - ⇒ In the display, as an example, next to the *[FIXTURE]* button, the following appears: *'Fixture01 dimmer Clear ok'*. If the display shows *'Fixture01 dimmer Set ok'*, the virtual dimmer for this fixture has already been deactivated. In this case, press and hold the *[DIMMER]* button again for three seconds.
4. ➤ Hold the *[PATCH / CLEAR]* button down for three seconds to exit this mode.

## Setting the dimmer channel

1. Hold the [PATCH / CLEAR] button down for three seconds.
2. Press the [FIXTURE] (1 to 16) button to select the required FIXTURE channel on which you wish to change the assignment of the virtual dimmer.
3. Hold the button of the required channel controller down for 3 seconds to assign it to the virtual dimmer of the selected [FIXTURE] (display: 'Set dimmer ok') or to remove the assignment (display: 'Clear dimmer ok').
4. Hold the [PATCH / CLEAR] button down for three seconds to exit this mode.

## Assigning device channels

During assignment, one or more DMX channels (1 to 512) can be assigned to a fixture's specific fader. As an example, DMX channel 3, 13 and 23 can be assigned to the second channel fader of fixture 2.

1. Hold the [PATCH / CLEAR] button down for three seconds.
2. Press the [FIXTURE] button (1 to 16) to select the required FIXTURE channel.
3. Select the required channel range with the [SPEED] slider.
4. Select the required DMX channel with the [FADE] slider.
5. Press the Flash button of the function you wish to assign.
6. Repeat steps 2 to 5 in order to assign functions to the remaining sliders.
7. Hold the [PATCH / CLEAR] button down for three seconds to exit this mode.

Example: If the RED function (Flash button 2) is stored to DMX channel 21, the display shows the following values:



## Clear channel assignment

1. Hold the [PATCH / CLEAR] button down for three seconds.
2. De-select all active FIXTURE channels (all blue FIXTURE LEDs off).
3. Using the [FADE] and [SPEED] sliders, select the DMX channel whose assignment you wish to clear.
4. Press the relevant Flash button (1) to clear the channel assignment.
5. Hold the [PATCH / CLEAR] button down for three seconds to exit this mode.



The channel assignment has been removed.

### Playing back scenes

1. ➤ De-select all active FIXTURE channels.
2. ➤ Press the [PATCH / CLEAR] button briefly to delete the starting values of the fader function.
3. ➤ Use the [SCENE] buttons to select the required scene. To do this, switch between the two memory banks using the toggle button if need be.



*You can link multiple scenes so that they run in parallel. Using the [FADE] slider, you can control the fade-in and fade-out time for all scenes. The LEDs of all selected scenes light up blue.*

### Programming scenes

1. ➤ Keep the [PROGRAM / RECORD] button pressed for three seconds to switch to Program/Record mode.
2. ➤ Use the [FIXTURE] buttons to select the channel you wish to program.
3. ➤ Use the Flash controllers 1 to 8 to set the required values.
4. ➤ Press the [PROGRAM / RECORD] button and then for around one second the button of the scene you wish to overwrite.
  - ⇒ All device LEDs flash briefly.
5. ➤ Hold the [PROGRAM / RECORD] button down for three seconds to exit recording mode.



*Scenes that are already allocated are indicated by the LED lighting up blue next to the relevant scene button. These can also be overwritten if required.*

### Playing back chaser sequences

1. ➤ De-select all active FIXTURE channels (all blue FIXTURE LEDs off).
2. ➤ Press the [PATCH / CLEAR] button briefly to delete the starting values of the fader function.
3. ➤ Use the [CHASE] buttons to select the required sequence. To do this, switch between the two memory banks using the toggle button if need be.



*You can activate multiple chasers simultaneously which are then played back in sequence. The output value of scenes that may be active always has priority.*

## Programming chaser sequences

1. ➤ Keep the *[PROGRAM / RECORD]* button pressed for three seconds to switch to Program/Record mode.
2. ➤ Use the *[CHASE]* buttons to select the required sequence. To do this, switch between the two memory banks using the toggle button if need be.  
⇒ The associated CHASE LED lights up.
3. ➤ Use the *[FIXTURE]* buttons to select the channel you wish to program.
4. ➤ Use the Flash controllers 1 to 8 to set the required values.
5. ➤ Press the *[PROGRAM / RECORD]* button to save the new values.  
⇒ All of the device LEDs flash briefly and the following values appear on the display:



6. ➤ Repeat steps 2 to 5 to add further program steps.
7. ➤ Hold the *[PROGRAM / RECORD]* button down for three seconds to exit recording mode.

## Inserting a program step

1. ➤ Keep the *[PROGRAM / RECORD]* button pressed for three seconds to switch to Program/Record mode.
2. ➤ Use the *[CHASE]* buttons to select the sequence you wish to expand. To do this, switch between the two memory banks using the toggle button if need be.
3. ➤ Briefly press the *[MIDI / IN SET]* button.  
⇒ The associated display LED flashes.
4. ➤ If necessary, use the ▲ and ▼ buttons to select the step number under which you wish to insert the program step.
5. ➤ Use the *[FIXTURE]* buttons to select the channel you wish to program.
6. ➤ Use the Flash controllers 1 to 8 to set the required values.
7. ➤ Press the *[PROGRAM / RECORD]* button to save the new values.  
⇒ All display LEDs flash three times.
8. ➤ Repeat steps 4 to 7 to add further program steps. The 16 memory locations can be assigned a total of 2,000 program steps.
9. ➤ Hold the *[PROGRAM / RECORD]* button down for three seconds to exit recording mode.



### Deleting a program step

1. ➤ Keep the *[PROGRAM / RECORD]* button pressed for three seconds to switch to Program/Record mode.
2. ➤ Use the *[CHASE]* buttons to select the sequence you wish to delete a program step from. To do this, switch between the two memory banks using the toggle button if need be.
3. ➤ Press the *[MIDI / IN SET]* button and then select using the ▲ and ▼ buttons the step number you wish to delete.
4. ➤ Press the *[TAP / DEL]* button to delete the program step.  
⇒ All LEDs flash three times.
5. ➤ Hold the *[PROGRAM / RECORD]* button down for three seconds to exit recording mode.

### Deleting chaser sequences or a scene

1. ➤ De-select all active FIXTURE, SCENE and CHASE channels (all blue LEDs off).
2. ➤ Keep the *[PROGRAM / RECORD]* button pressed for three seconds to switch to Program/Record mode.
3. ➤ Switch between the two memory banks "CHASE" and "SCENE" using the toggle button if need be.
4. ➤ Press the *[TAP / DEL]* button and simultaneously the chase button of the sequence or scene you wish to delete.  
Wait a few seconds until the LEDs have gone out.
5. ➤ Hold the *[PROGRAM / RECORD]* button down for three seconds to exit recording mode.

### Assigning DMX channels to AUX channels

1. ➤ Hold the *[Patch / Clear]* button down for three seconds to switch to Program / Record mode.
2. ➤ Using the *[FADE]* and *[SPEED]* sliders, select the DMX channel you wish to assign.
3. ➤ Press the *[AUX1]* or *[AUX2]* button to assign the DMX channel to the corresponding AUX channel.
4. ➤ Repeat steps 2 and 3 to assign as many other DMX channels as you wish.
5. ➤ Hold the *[Patch / Clear]* button down for three seconds to exit recording mode.



*As soon as DMX channels are assigned to an [AUX] button, the value of the assigned channels is set to 255 whenever this button is activated.*

## Renaming Flash functions

1. ➤ Switch off the device.
2. ➤ Hold the *[PROGRAM / RECORD]*, *[DIMMER]* and *[PATCH / CLEAR]* buttons down simultaneously and switch the device back on.  
 ⇒ After two seconds, the following message appears on the display:



3. ➤ Press the Flash button of the function you wish to rename.
4. ➤ On the display, the name can now be changed using the joystick (move to the right/left moves the cursor, move up/down changes the relevant letters of the alphabet).
5. ➤ Repeat steps 3 and 4 to rename any other Flash functions.
6. ➤ Confirm the new designation(s) with *[PROGRAM / RECORD]*.
7. ➤ Switch the device off and back on again to work with the new settings.

## MIDI functions

The MIDI function allows you to connect two DMX controllers or to control the controller via a MIDI keyboard.

1. ➤ Hold the *[MIDI / IN SET]* button down for three seconds to switch to MIDI mode.
2. ➤ Use the ▲ and ▼ buttons to select a MIDI channel (1 to 16).
3. ➤ Hold the *[MIDI / IN SET]* button down for three seconds to exit MIDI mode.

MIDI value	Function	Explanation
0-15	SCENE1-16	Switch scenes 1-16 on/off
16-31	CHASE1-16	Switch chaser sequences 1-16 on/off
32	MANUAL	Manual sequence control
33	MUSIC	Music-controlled sequence
34	AUTO	Automatic sequence control
35	AUX1	Switch AUX1 on/off
36	AUX2	Switch AUX2 on/off
37	▲	Manual sequence control
38	▼	Manual sequence control
39	TAP	Automatic sequence control

MIDI value	Function	Explanation
...	...	...
126	BLACK OUT	BLACK OUT function active

### Saving settings externally

You can save various device settings to a USB drive.

1. ➤ Connect your USB drive to the device's USB port.
2. ➤ Hold the [MODE] and ▲ buttons for two seconds until the display shows 'Press fixture /key save file'.
3. ➤ Press the button of the FIXTURE channel whose settings you wish to save.
  - ⇒ The progress of the saving operation is shown on the display.



*All channel settings are stored together in the file "led-commander 16-2" on the USB drive.*

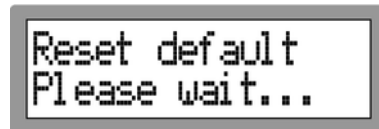
### Loading saved settings

You can load saved device settings from a USB drive to the device memory.

1. ➤ Connect your USB drive containing the saved settings values to the device's USB port.
2. ➤ Hold the [MODE] and ▼ buttons for two seconds until the display shows 'Press fixture /key loader file'.
  - ⇒ The LEDs of the channels for which settings were found on the USB drive light up.
3. ➤ Press the button of the FIXTURE channel whose settings you wish to load.
  - ⇒ The progress of the loading operation is shown on the display. The display then returns to its previous state.

## Reset to factory defaults

1. ➤ Turn off the device using the main switch.
2. ➤ Simultaneously press the *[PROGRAM / RECORD]*, *[TAP / DEL]* and *[PATCH / CLEAR]* buttons and switch the device back on.
  - ⇒ After two seconds, the following message appears on the display:



After resetting to the factory defaults, the FIXTURE channels are set up as follows:

FIXTURE 1	FIXTURE 2	FIXTURE 3	...	FIXTURE 16
FUN CH1	FUN CH11	FUN CH21		FUN CH151
Red CH2	Red CH12	Red CH22		Red CH152
Green CH3	Green CH13	Green CH23		Green CH153
Blue CH4	Blue CH14	Blue CH24		Blue CH154
SPEED CH5	SPEED CH15	SPEED CH25		SPEED CH155
COLOUR CH6	COLOUR CH16	COLOUR CH26		COLOUR CH156
STROBE CH7	STROBE CH17	STROBE CH27		STROBE CH157
DIMMER CH8...CH158: Acts as a virtual dimmer for the red, green and blue channel.				
PAN CH9	PAN CH19	PAN CH29		PAN CH159
TILT CH10	TILT CH20	TILT CH30		TILT CH160

## Updating the firmware

Proceed as follows, to bring the firmware of the device up to date.

Therefore you need a completely empty FAT32 formatted USB drive.

- 1.** ➤ Create a folder in the root directory of the USB drive named "led-commander16-2".
- 2.** ➤ Copy the file containing the current firmware version to the "led-commander16-2" folder.
- 3.** ➤ Connect your USB drive containing the current firmware version to the device's USB port.
- 4.** ➤ Switch off the device.
- 5.** ➤ Hold the *[PROGRAM | RECORD]*, *[MODE]* and ▼ buttons down and switch the device on.  
⇒ After two seconds, the display shows *'Press any button | Update firmware'*.
- 6.** ➤ Press any button to start the firmware update.
- 7.** ➤ Once installation is complete, the display shows *'Update succeeded | Please reboot'*.
- 8.** ➤ Then switch the device off and back on again after a few seconds.  
⇒ The unit will now start with the updated firmware.

## 8 Technical specifications

Control protocol	DMX 512
Voltage supply	Power adapter (9...12 V $\overline{\text{AC}}$ )
Dimensions (W × H × D)	482 mm × 75 mm × 175 mm
Weight	3.5 kg

## 9 Protecting the environment

### Disposal of the packaging material



For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

### Disposal of your old device



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.











