



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
DANGER!	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.
NOTICE!	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. Only operate the device within the ambient conditions specified in the chapter 'Technical specifications' of this user manual. Avoid heavy temperature fluctuations and do not switch the device on immediately after it was exposed to temperature fluctuations (for example after transport at low outside temperatures). Dust and dirt inside can damage the unit. When operated in harmful ambient conditions (dust, smoke, nicotine, fog, etc.), the unit should be maintained by qualified service personnel at regular intervals to prevent overheating and other malfunction.

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

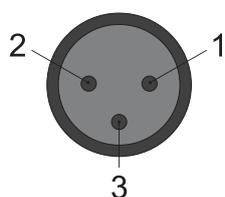
4 Installation

Unpack and check carefully there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the product 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

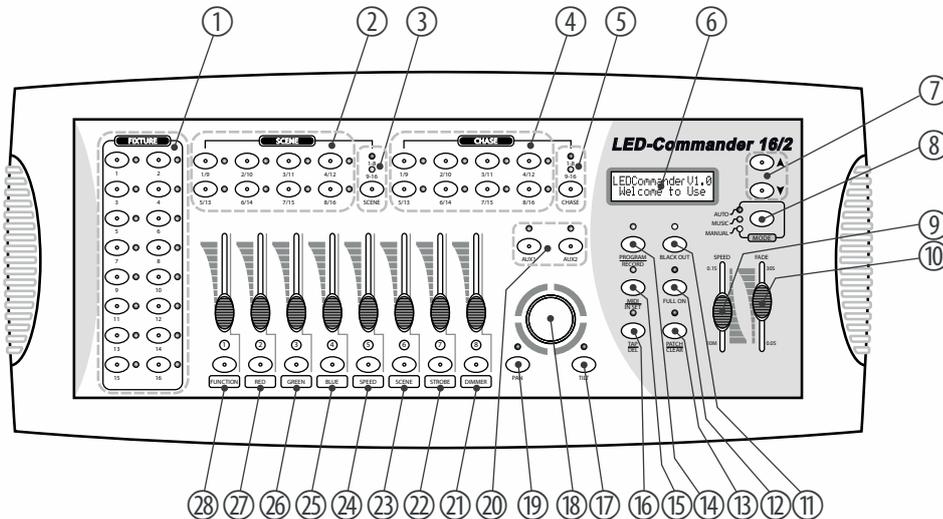
Connect the included power adapter to the 9V connector of the unit and then plug the power adapter into a wall outlet.

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

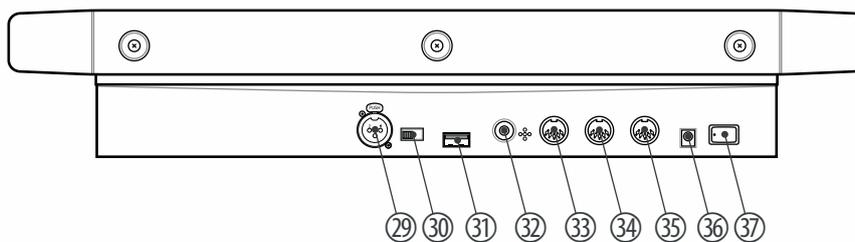


- | | | |
|---|-----------------------------|---|
| 1 | <i>[FIXTURE]</i> | Buttons 1 to 16 to select the control channels. The associated indicator LED shows whether the respective channel is switched (LED on) or deactivated (LED off). |
| 2 | <i>[SCENE]</i> | Eight buttons with double assignment for 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 <i>[SCENE]</i> | 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 | <i>[CHASE]</i> | 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 <i>[CHASE]</i> | 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 | ▲ and ▼ | Navigation buttons to scroll within the display and to select options. |

8	<i>[MODE]</i> Button to switch the operating mode. The associated LED indicates the active operating mode: Auto, music or manual.
9	<i>[SPEED]</i> Slider to manually adjust the chase speed during playback.
10	<i>[FADE]</i> Slider to manually adjust the fade speed during playback.
11	<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	<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	<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	<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	<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	<i>[TAP DEL]</i> With this key you can delete and undo entries.
17	<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	<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	<i>[AUX1 AUX2]</i> These buttons let you switch the AUX channels on (associated LED lights up) or off (LED off).
21	<i>[DIMMER]</i> Slider 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	[STROBE]	Slider with associated flash or selection button for manual setting of the STROBE function (if assigned), or channel control for the assigned DMX channel.
23	[SCENE]	Slider with associated flash or selection button for manual setting of the SCENE function (if assigned), or channel control for the assigned DMX channel.
24	[SPEED]	Slider with associated flash or selection button for manual setting of the SPEED function (if assigned), or channel control for the assigned DMX channel.
25	[BLUE]	Slider 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	[GREEN]	Slider 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	[RED]	Slider 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	[FUNCTION]	Slider 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 connection
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 Operating

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

Operating mode selection

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

- *'Auto'*
In this operating mode, *[FADE]* and *[SPEED]* can be used to control the fade-in and fade-out time and speed, and ▲ and ▼ can be used to control the chaser light speed (setting range: 1 to 200 s).
- *'Music'*
In this operating mode, ▲ and ▼ can be used to set the sound sensitivity (setting range: 0 to 100 %). *[FADE]* can be used to set the fade-in and fade-out time.
- *'Manual'*
In this operating mode, ▲ and ▼ can be used to call up every program step of a chaser sequence (Chase). *[FADE]* 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.

There are two modes for devices with different colour mixture:

- Library1: *'Dimmer control R, G, B'*
- Library2: *'Dimmer control R, G, B, W, A, UV'*

Use ▲ and ▼ to select the desired mode for the selected device.

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 *[PATCH / CLEAR]* 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 *[DIMMER]* again for three seconds.
4. ➤ Hold *[PATCH / CLEAR]* down for three seconds to exit this mode.

Setting the dimmer channel

1. Hold *[PATCH / CLEAR]* down for three seconds.
2. Press *[FIXTURE]* (1 to 16) 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 *[FIXTURES]* (display: 'Set dimmer ok') or to remove the assignment (display: 'Clear dimmer ok').
4. Hold *[PATCH / CLEAR]* 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 *[PATCH / CLEAR]* down for three seconds.
2. Press *[FIXTURE]* (1 to 16) to select the required FIXTURE channel.
3. Select the required channel range with *[SPEED]*.
4. Select the required DMX channel with *[FADE]*.
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 *[PATCH / CLEAR]* 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:



Patch DMX:021
FIX02 Red

Clear channel assignment

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



Patch DMX:002
NO Ass1gn

The channel assignment has been removed.

Playing scenes

1. ➤ De-select all active FIXTURE channels.
2. ➤ Press *[PATCH / CLEAR]* briefly to delete the starting values of the fader function.
3. ➤ Use *[SCENE]* 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. Use *[FADE]* to control the fade-in and fade-out time for all scenes. The LEDs of all selected scenes light up blue.*

Programming scenes

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

1. ➤ De-select all active FIXTURE channels (all blue FIXTURE LEDs off).
2. ➤ Press *[PATCH / CLEAR]* briefly to delete the starting values of the fader function.
3. ➤ Use *[CHASE]* 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 in sequence. The output value of scenes that may be active always has priority.

Programming chaser sequences

1. ▶ Hold *[PROGRAM / RECORD]* down for three seconds to switch to Program/Record mode.
2. ▶ Use *[CHASE]* 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 *[FIXTURE]* to select the channel you wish to program.
4. ▶ Use the Flash controllers 1 to 8 to set the required values.
5. ▶ Press *[PROGRAM / RECORD]* 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 *[PROGRAM / RECORD]* down for three seconds to exit recording mode.

Inserting a program step

1. ▶ Hold *[PROGRAM / RECORD]* down for three seconds to switch to Program/Record mode.
2. ▶ Use *[CHASE]* 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 *[MIDI / IN SET]*.
⇒ The associated display LED flashes.
4. ▶ If necessary, use ▲ and ▼ to select the step number under which you wish to insert the program step.
5. ▶ Use *[FIXTURE]* to select the channel you wish to program.
6. ▶ Use the Flash controllers 1 to 8 to set the required values.
7. ▶ Press *[PROGRAM / RECORD]* 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 250 program steps.
9. ▶ Hold *[PROGRAM / RECORD]* down for three seconds to exit recording mode.

Deleting a program step

1. ➤ Hold *[PROGRAM / RECORD]* down for three seconds to switch to Program/Record mode.
2. ➤ Use *[CHASE]* 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 *[MIDI / IN SET]* and then use ▲ and ▼ to select the step number you wish to delete.
4. ➤ Press *[TAP / DEL]* to delete the program step.
⇒ All LEDs flash three times.
5. ➤ Hold *[PROGRAM / RECORD]* 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. ➤ Hold *[PROGRAM / RECORD]* down 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 *[TAP / DEL]* 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 *[PROGRAM / RECORD]* down for three seconds to exit recording mode.

Assigning DMX channels to AUX channels

1. ➤ Hold *[PATCH / CLEAR]* down for three seconds to switch to Program/Record mode.
2. ➤ Use *[FADE]* and *[SPEED]* to select the DMX channel you wish to assign.
3. ➤ Press *[AUX1]* or *[AUX2]* 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 *[PATCH / CLEAR]* 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 *[PROGRAM / RECORD]*, *[DIMMER]* and *[PATCH / CLEAR]* 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 *[MIDI / IN SET]* down for three seconds to switch to MIDI mode.
2. ➤ Use ▲ and ▼ to select a MIDI channel (1 to 16).
3. ➤ Hold *[MIDI / IN SET]* 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 [MODE] and ▲ down 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.

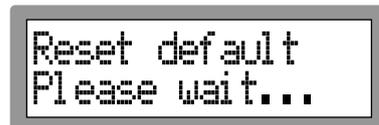
Loading saved settings

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 [MODE] and ▼ down 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 the device off using the main switch.
2. ➤ Hold *[PROGRAM / RECORD]*, *[TAP / DEL]* and *[PATCH / CLEAR]* down simultaneously 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.

To update the firmware, the latest firmware version can be downloaded from our homepage (www.thomann.de).

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. ➤ Rename the file of the firmware version to 'led-commander16-2.sup'.
4. ➤ Connect your USB drive containing the current firmware version to the device's USB port.
5. ➤ Switch off the device.
6. ➤ Hold [PROGRAM | RECORD], [MODE] and ▼ down and switch the device on.
⇒ After two seconds, the display shows 'Press any button | Update firmware'.
7. ➤ Press any button to start the firmware update.
8. ➤ Once installation is complete, the display shows 'Update succeeded | Please reboot'.
9. ➤ 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 protocols	DMX 512	
Input connections	MIDI IN	1 × DIN socket, 5-pin
	Audio signal	RCA socket, 100 mV, 1 Vpp
	Power supply	Socket for connecting the power adapter
	Data transfer	USB 2.0
Output connections	MIDI OUT	1 × DIN socket, 5-pin
	DMX control	XLR chassis socket, 3-pin
	Data transfer	USB 2.0
Transfer	MIDI THROUGH	1 × DIN socket, 5-pin
Power supply	External power adapter, 100 - 240 V ~ 50/60 Hz	
Operating voltage	9 V $\overleftrightarrow{=}$ / 500 mA , centre positive	
Installation	19", 4 RU	
Dimensions (W × H × D)	482 mm × 75 mm × 175 mm	
Weight	3.5 kg	
Ambient conditions	Temperature range	0 °C...40 °C
	Relative humidity	20 %...80 % (non-condensing)

Further information

Preset function	No
External storage option	Yes
DMX universes	1
max. control channels	130
Ethernet	No

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.

