

USER MANUAL

FL-2401

240-channel DMX-controller



CAUTION!

Keep this device away from rain and moisture!

Unplug mains lead before opening the housing!

For your own safety, please read this user manual carefully before you initially start-up.

Every person involved with the installation, operation and maintenance of this device has to

- be qualified
- follow the instructions of this manual
- consider this manual to be part of the total product
- keep this manual for the entire service life of the product
- pass this manual on to every further owner or user of the product
- download the latest version of the user manual from the Internet

1. INTRODUCTION

Thank you for having chosen a FL-2401. You will see you acquired a powerful and versatile device.

Unpack your FL-2401.

Before you initial start-up, please make sure that there is no damage caused by transportation. Should there be any, consult your dealer and do not use the device.

2. SAFETY INSTRUCTIONS

This device has left our premises in absolutely perfect condition. In order to maintain this condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.

Important:

Damages caused by the disregard of this user manual are not subject to warranty. The dealer will not accept liability for any resulting defects or problems.

Always plug in the power unit last.

Keep away from heaters and other heating sources!

If the device has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your device. Leave the device switched off until it has reached room temperature.

This device falls under protection-class III. The device always has to be operated with an appropriate transformer.

Always disconnect from the mains, when the device is not in use or before cleaning it.

Please note that damages caused by manual modifications on the device or unauthorized operation by unqualified persons are not subject to warranty.

Keep away children and amateurs from the device!

There are no serviceable parts inside the device. Maintenance and service operations are only to be carried out by authorized dealers.

3. OPERATING DETERMINATIONS

This device is a DMX-controller for controlling DMX-effects or spots in discotheques, on stages etc. This product is allowed to be operated with a direct voltage of DC 9-12 V, 300 mA and was designed for indoor use only.

Do not shake the device. Avoid brute force when installing or operating the device.

When choosing the installation-spot, please make sure that the device is not exposed to extreme heat, moisture or dust. There should not be any cables lying around. You endanger your own and the safety of others!

This device must never be operated or stockpiled in surroundings where splash water, rain, moisture or fog may harm the device. Moisture or very high humidity can reduce the insulation and lead to mortal electrical shocks. When using smoke machines, make sure that the device is never exposed to the direct smoke jet and is installed in a distance of 0.5 meters between smoke machine and device. The room must only be saturated with an amount of smoke that the visibility will always be more than 10 meters.

The ambient temperature must always be between -5° C and +45° C. Keep away from direct insulation (particularly in cars) and heaters.

The relative humidity must not exceed 50 % with an ambient temperature of 45° C.

This device must only be operated in an altitude between -20 and 2000 m over NN.

Never use the device during thunderstorms. Over voltage could destroy the device. Always disconnect the device during thunderstorms.

Operate the device only after having familiarized with its functions. Do not permit operation by persons not qualified for operating the device. Most damages are the result of unprofessional operation!

Please use the original packaging if the device is to be transported.

Please consider that unauthorized modifications on the device are forbidden due to safety reasons!

If this device will be operated in any way different to the one described in this manual, the product may suffer damages and the guarantee becomes void. Furthermore, any other operation may lead to dangers like short circuit, burns, electric shock, etc.

4. DESCRIPTION

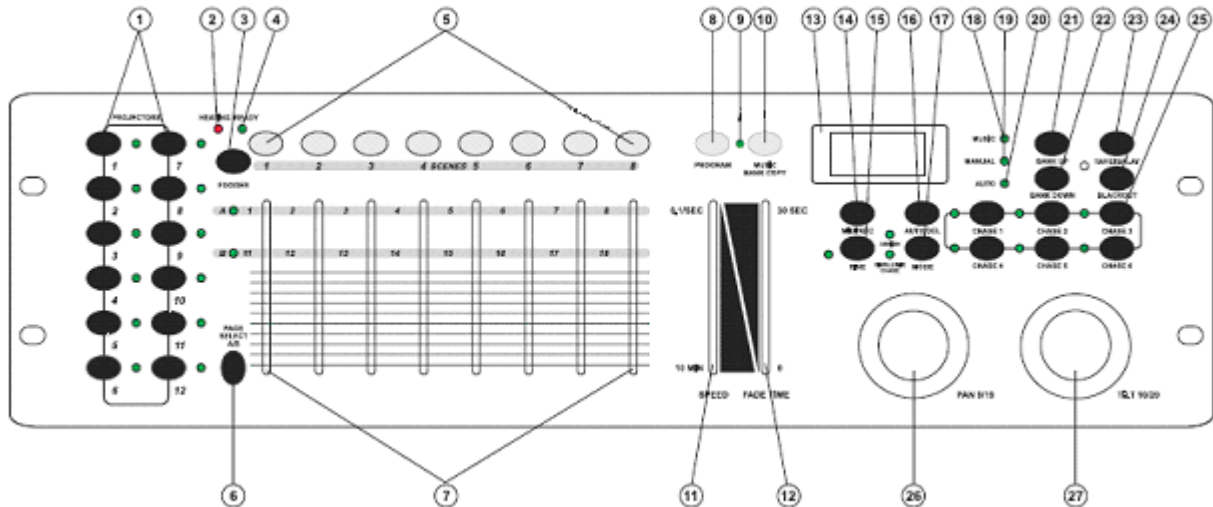
4.1 Features

Compact DMX-controller

- 240 control channel for 12 projectors with up to 20 channels
- 8 channel-faders with two banks for direct control of 16 channels
- Pan/Tilt-encoders
- All channels freely assignable
- All channel faders and encoders can be inverted
- Fine Pan/Tilt movements possible via Fine-button
- Fade Time fader for adjusting the step time
- Fade Time assignable to only PAN/TILT or all DMX-channels
- 240 scenes on 30 banks can be programmed
- 30 programs with up to 8 scenes can be programmed
- 6 chasers with up to 240 scenes can be programmed
- Copy-function for the scenes, programs and banks
- Blackout-function
- Fogger-button for direct fogger control
- Sound control via built-in microphone or RCA-socket
- 19" mounting dimensions with 3 units

4.2 Overview

Overview on the control elements



1) PROJECTOR SELECT BUTTONS

With the Projector select buttons you can choose the desired projector.

2) Heating-LED

3) Fog Machine button

To activate the fog machine.

4) Ready-LED

5) SCENE-BUTTONS

6) PAGE-BUTTON

In the manual mode, you can switch the channel faders from CH 1-8 to CH 9-16 by pressing the Page button.

7) CHANNEL FADERS

For adjusting the different DMX-values. The channels 1-8 can be adjusted directly after pressing the respective projector select button. The channels 9-16 can be adjusted after pressing the Page-button.

8) PROGRAM-BUTTON

9) PROGRAM-LED

10) MUSIC/BANK-COPY-BUTTON

If this LED is on, the controller is in Audio-mode (operation with sound-control).

11) SPEED-FADER

12) FADE TIME-FADER

13) DISPLAY

14) MIDI/REC-BUTTON

15) FINE-BUTTON

16) AUTO/DEL-BUTTON

17) MODE-BUTTON

18) MUSIC-LED

19) MANUAL-LED

20) AUTO-LED

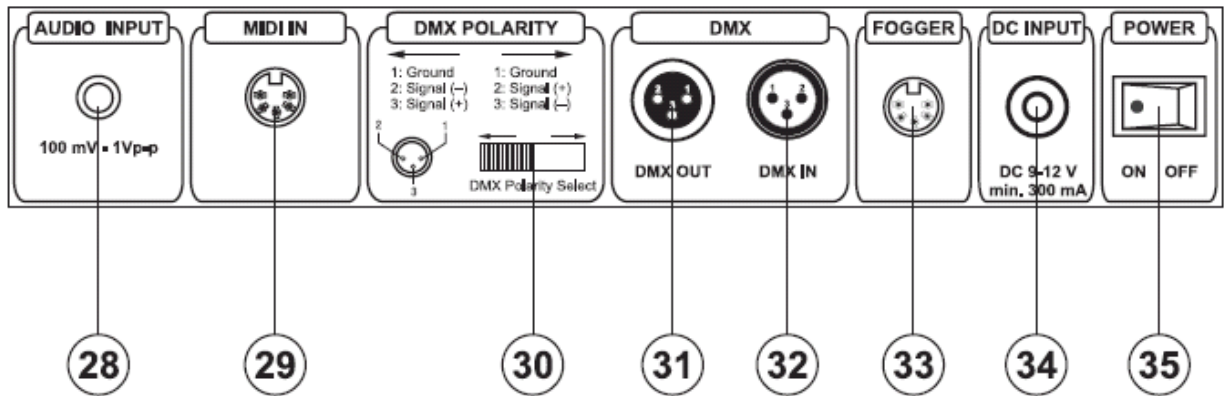
21) BANK UP-BUTTON

22) BANK DOWN-BUTTON

23) TAP/DISPLAY-BUTTON

- 24) BLACKOUT-BUTTON
- 25) CHASE-BUTTONS
- 26) PAN-ENCODER
- 27) TILT-ENCODER

Rear panel:



- 28) Audio input socket
- 29) MIDI input socket
- 30) DMX POLARITY selector
- 31) DMX output socket
- 32) DMX input socket
- 33) Smoke-machine socket
- 34) Power supply socket
- 35) Power switch

5. SETUP

5.1 Installation

Install the device on a plane surface or install it in rack.

Rack-installation: This device is built for 19" racks (483 mm). The rack you use should be a Double-Door-Rack where you can open the front panel and the rear panel. The rack should be provided with a cooling fan.

When mounting the controller into the rack, please make sure that there is enough space around the device so that the heated air can be passed on. Steady overheating will damage your device.

You can fix the controller with four screws M6 in the rack.

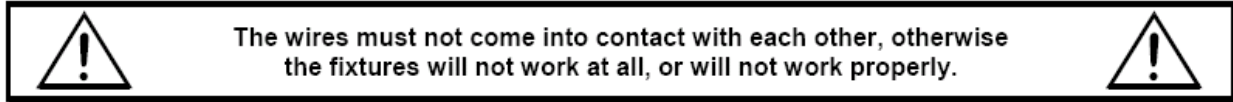
Connect the connection cable of the power-unit with the DC IN-socket. Plug the power unit into your outlet.

5.2 Sound-control

The sound-control works via the built-in microphone or via the sound input socket.

Connect the sound-signal from the mixer (e.g. Master 2) with the RCA-socket on the rear panel (input sensitivity 0.1 V - 1 V).

5.3 DMX-512 connection with the projector



The wires must not come into contact with each other, otherwise the fixtures will not work at all, or will not work properly.

Only use a stereo shielded cable and 3-pin XLR-plugs and connectors in order to connect the controller with the fixture or one fixture with another.

Occupation of the XLR-connection:

You can adjust the XLR polarity via the DMX POLARITY selector.

Building a serial DMX-chain:

Connect the DMX-output of the FL-2401 with the DMX-input of the nearest projector. Always connect one output with the input of the next fixture until all fixtures are connected.

Caution: At the last fixture, the DMX-cable has to be terminated with a terminator. Solder a 120 Ω resistor between Signal (-) and Signal (+) into a 3-pin XLR-plug and plug it in the DMX-output of the last fixture.

Projector addressing

Please note that the FL-2401 assigns the DMX-starting addresses every 16 steps. You have to address every projector to the respective starting address. Otherwise, the channel assignment will not be correct. All projectors with the same starting address work synchronically.

Projector 1 1 Projector 5 81 Projector 9 161
 Projector 2 21 Projector 6 101 Projector 10 181
 Projector 3 41 Projector 7 121 Projector 11 201
 Projector 4 61 Projector 8 141 Projector 12 221

Projector	Starting address	Projector	Starting address	Projector	Starting address
Projector 1	1	Projector 5	81	Projector 9	161
Projector 2	21	Projector 6	101	Projector 10	181
Projector 3	41	Projector 7	121	Projector 11	201
Projector 4	61	Projector 8	141	Projector 12	221

5.4 Assigning the DMX-channels

All channels can freely be assigned.

- 1) Press Fine + Mode buttons until the Assign-LED is lit.
- 2) Select the desired projector with the projector select buttons.
- 3) Adjust the Fade Time fader to select the control channel of the controller. E.g. X or Y.
- 4) Adjust the Speed fader to select the respective projector channel. E.g. Channel 1 or 2.
- 5) Press the Rec-button.
- 6) To set channel 19 and 20, press Page Select button, the Page B LED will be lit. Then repeat step 3 to 5.

Example 1: Assign projector channel 1 to PAN-encoder.

Adjust the Fade Time-Fader to X. Adjust the Speed fader to 1. Press the Rec-button. The projector's PAN-movement can now be controlled via the PAN-encoder.

Example 2: Assign projector channel 3 to control-channel 1.

Adjust the Fade Time-Fader to 1. Adjust the Speed fader to 3. Press the Rec-button. Projector channel 3 (e.g. color-wheel) can now be controlled via channel-fader 1.

Example 3: Assign projector channel 2 TILT-Encoder.

Adjust the Fade Time-Fader to Y. Adjust the Speed fader to 2. Press the Rec-button. The projector's TILT-movement can now be controlled via the TILT-encoder.

Example 4: Assign projector channel 4 to control-channel 2.

Adjust the Fade Time-Fader to 2. Adjust the Speed fader to 4. Press the Rec-button. Projector channel 4 (e.g. gobo-wheel) can now be controlled via channel-fader 2.

7) Press the Fine and Mode-button so that the Assign-LED shuts off.

Delete all channel-assigns

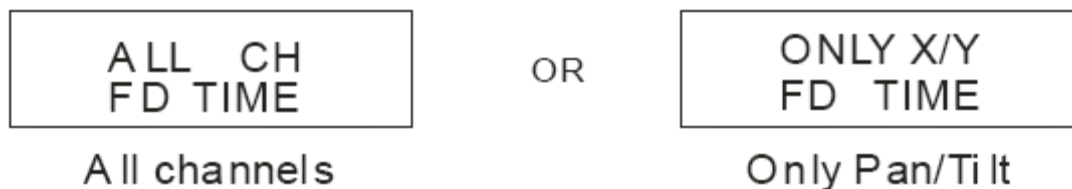
Caution: When you select this function, all programmed channel-assign will irrevocably be lost. Press and hold the Mode-button and the Auto/Del-button while disconnecting the device from the mains. Connect the device to the mains again.

5.5 Assigning the Fade Time

With this function, you can determine if the Fade Time should be assigned only for the Pan/Tilt movement or for all DMX-channels. This makes especially sense when the mirror or Moving-Head movement should be carried out slowly, but the gobos and colours should be changed quickly. Turn the device off.

Press and hold the Mode and Tap/Display-button at the same time.

Turn the device on again. Press the Tap/Display-button in order to switch between the two modes.



Press the Mode and Tap/Display-button at the same time in order to memorize your settings. All LEDs on the panel will flash indicating your settings are saved.

5.6 Invert the faders

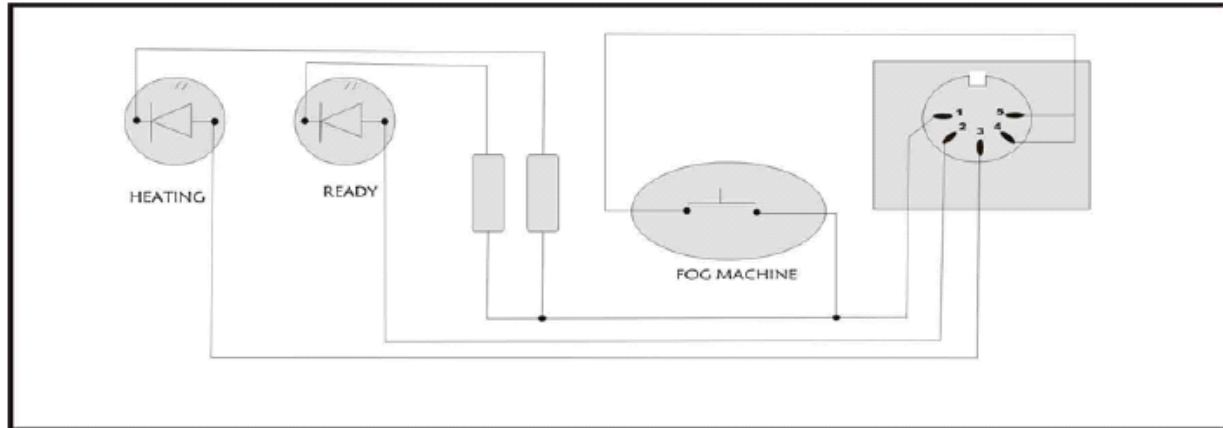
With the CP-240, you can invert the fader way of every channel fader.

- 1) Press the Fine and Mode-buttons, so that the Single/Mix-Chase-LED lights up.
- 2) Select the desired projector via the projector select buttons.
- 3) Adjust the Fade Time-Fader in order to select the desired channel fader (1-8, X, Y).
- 4) Adjust the Speed-fader in order to select Y for inverted or N for not inverted.
- 5) Press the Rec-button.

5.7. Smoke-machine

Please note: Do only connect low-voltage foggers!

The occupation of the Smoke-machine socket is as follows:



6. OPERATION

After you connected the device to the mains, the CP-240 is ready for use. Switch the device on via the Power-switch.

6.1 Manual-mode

6.1.1 Call up projectors manually

In the Manual-mode (Program-LED off), you can call up the connected projectors manually and control them via the channel faders. Please note that the adjusted settings cannot be memorized.

Select the desired projector via the respective projector select button.

Adjust the desired function via the channel faders.

Page Select-button:

Via the Page Select-button, you can adjust the channel faders from CH 1-8 to CH 9-16.

Display-button:

Via the Display-button, you can switch the display of the fader way from DMX-value (0-255) to (0-100).

6.2 Programming

A program is a sequence of different scenes that will be called up one after another. With the CP-240, you can program up to 30 different programs (banks) with up to 8 scenes each.

6.2.1 Programming a program

Press and hold the Program-button until the Program-LED flashes in the display.

Select the desired projector via the projector select buttons. Adjust the desired settings via the respective channel faders. Select the next projector via the projector select buttons and adjust the settings. Press the Rec-button. Select the desired program (bank) via the Bank-buttons. Press the respective Scene-button in order to save the first step. All LEDs on the panel will flash indicating your settings are saved. Program the next steps until the program is finished or the maximum number of steps - 8 - has been reached. Press and hold the Program-button in order to exit the program mode. The controller is now in the blackout-mode (Blackout-LED illuminated).

6.2.2 Running a program

Press the Bank-buttons and select the desired program. Press the Auto-button and the Auto LED is illuminated in the display. Adjust the program speed via the Speed-Fader and the repetition rate via the Fade Time-Fader.

As an alternative, you can adjust the program speed by tapping the Tap-button twice. The time interval between the two taps corresponds to the program speed (up to 10 minutes).

6.2.3 Checking a program

Press and hold the Program-button and select the desired program via the Bank-buttons. Check every scene individually by pressing the respective Scene-button.

6.2.4 Editing a program

Should you notice that a scene does not correspond to your imagination or when programs have to be edited for a new stage, it is necessary to modify a scene manually.

Press and hold the Program-button and select the desired program via the Bank-buttons.

Select the desired scene via the scene button. Select the desired projector via the projector select buttons.

Adjust the desired settings via the respective channel faders. Select the next projector via the projector select buttons and adjust the settings. Press the Rec-button and the respective Scene-button in order to save the edited step. Edit the next steps until the program is finished. Press and hold the Program-button in order to exit the program mode.

6.3 Chaser

A chaser is a sequence of different programs and/or scenes that will be called up one after another. With the FL-2401, you can program up to 6 different chasers with up to 240 steps.

6.3.1 Programming a chaser

Press and hold the Program-button. Select the desired chaser via the Chase-buttons.

Select the desired program via the Bank-buttons. Select the desired scene via the Scene-buttons.

Press the Rec-button. Program the next steps until the chaser is finished or the maximum number of steps - 240 – has been reached. Press and hold the Program-button in order to save the chaser.

Copying a bank into a chaser

As an alternative, you can copy a whole bank (with up to 8 scenes) into a chaser. Select the desired program via the Bank-buttons. Press the Bank Copy-button and the Rec-button. Press and hold the Program-button in order to exit the program mode.

6.3.2 Running a chaser

Press the respective Chaser-button and press the Auto-button. You can adjust the chaser speed by tapping the Tap-button twice. The time interval between the two taps corresponds to the chaser speed (up to 10 minutes).

6.3.3 Checking a chaser

Press and hold the Program-button and select the desired chaser via the Chase-buttons. Press the Display button in order to switch the display to step. Check every scene individually by pressing the respective Bank button.

6.3.4 Editing a chaser

Insert step

Press and hold the Program-button. Select the desired chaser via the Chase-buttons. Press the Display button in order to switch the display to step. Press the respective Bank-button in order to select the scene where the steps is to be inserted.

Press the Rec-button. Select the desired scene via the Bank-buttons and the respective Scene-button. Press the Rec-button once more.

Delete step

Press and hold the Program-button. Select the desired chaser via the Chase-buttons. Press the Display button in order to switch the display to step. Press the respective Bank-buttons in order to select the scene which is to be deleted. Press the Del-button.

Press and hold the Program-button in order to save the edited chaser.

6.3.5 Delete a chaser

Press and hold the Program-button. Select the desired chaser via the Chase-buttons. Press and hold the Del-button and press the Chase-button.

6.3.6 Delete all chasers

Caution: When you select this function, all programmed chaser will irrevocably be lost. The individual scenes and programs are still maintained.

Press and hold the Bank Down-button and the Del-button while disconnecting the device from the mains.

Connect the device to the mains again.

6.4 Copying scenes, programs and records

With the Copy-function, you can make programming of programs and chasers easier by copying already existent scenes into a program.

Copy a scene

Press and hold the Program-button and select the desired program via the Bank-buttons. Press the respective Scene-button. Press the Rec-button and select the desired bank where you want to copy the scene to. Press the desired Scene-button.

Delete a scene

Press and hold the Program-button and select the desired program via the Bank-buttons. Press the respective Scene-button. Press and hold the Del-button and press the desired Scene-button. The DMX value of this scene is set to 0.

Copy a program

Press and hold the Program-button and select the desired program via the Bank-buttons. Press the Rec-button and select the desired bank where you wish to copy the program to. Press the Bank Copy-button.

Delete a program

Press and hold the Program-button and select the desired program via the Bank-buttons. Press and hold the Del-button and press the Bank Copy-button.

Delete all scenes

Caution: When you select this function, all programmed scenes will be irrevocably lost!

Press and hold the Program-button and the Bank Down-button while disconnecting the device from the mains. Connect the device to the mains again.

6.5 Sound-control

You can activate the sound-control by pressing the Music-button (LED flashes). Please note that programs and records are only active in this mode when the controller receives a music-signal. If there is no music present, the program or chaser stops.

7. PROBLEM CHART

PROBLEM	CAUSE	REMEDY
No power.	The power unit is not connected.	Check the connection cable of the power unit and any extension-cables.
No signal output.	Blackout-mode activated.	Switch off blackout by pressing the Blackout-button.

No power. The power unit is not connected. Check the connection cable of the power unit and any extension-cables.

No signal output. Blackout-mode activated. Switch off blackout by pressing the Blackout-button.

8. CLEANING AND MAINTENANCE



We recommend a frequent cleaning of the device. Please use a soft lint-free and moistened cloth. Never use alcohol or solvents!

There are no serviceable parts inside the device. Maintenance and service operations are only to be carried out by authorized dealers.

Should you need any spare parts, please use genuine parts.

Should you have further questions, please contact your dealer.

9. TECHNICAL SPECIFICATIONS

Power supply:	230 V AC, 50 Hz ~ via 9-12 V DC, 300 mA power unit included in the delivery
Power consumption:	5 W
Number of control-channels:	240
Integrated programs:	30 with 8 scenes each
Chasers:	6 x 240 scenes
Sound-control:	via built-in microphone or via audio-input
Audio-input:	RCA
Audio-sensitivity:	0.1 - 1 V
DMX 512-output:	3-pin XLR-connector with polarity selector
Dimensions (LxWxH):	483 x 134 x 90 mm 19" mounting dimensions with 3 u
Minimum mounting depth:	170 mm
Weight:	2.5 kg

Power supply: 230 V AC, 50 Hz ~ via 9-12 V DC, 300 mA power unit included in the delivery

Power consumption: 5 W

Number of control-channels: 240

Integrated programs: 30 with 8 scenes each

Chasers: 6 x 240 scenes

Sound-control: via built-in microphone or via audio-input

Audio-input: RCA

Audio-sensitivity: 0.1 - 1 V

DMX 512-output: 3-pin XLR-connector with polarity selector

Dimensions (LxWxH): 483 x 134 x 90 mm

19" mounting dimensions with 3 u

Minimum mounting depth: 170 mm

Weight: 2.5 kg