PX046

AC Dimmer 6 x 3500 W

INSTRUCTION MANUAL

CONTENTS

Manufacturer reserves the right to make modifications in order to improve device operation.

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Ver. 1.1

1. GENERAL DESCRIPTION

PX046 is a professional AC class dimmer 6 x 3500 W, powered with 3 phases, 2 phases or 1 phase. Allows to control 6 independent channels, 3.5 kW each. Advanced electronics allows to address easily each channel, to choose the control curve, to set output voltage limitation and preheat system and to determine dimmer answer for the DMX control signal interruption as well. Built-in PLL, soft-start, soft-on and even-off systems allow for the reliable work even in the most difficult conditions. Direct zero cross-over with opto-isolated DMX input guarantee high noise resistance. Tricolor LEDs for monitoring each channel and DMX control signal. The device comes in the casing 19", 2U high.

2. SAFETY CONDITIONS

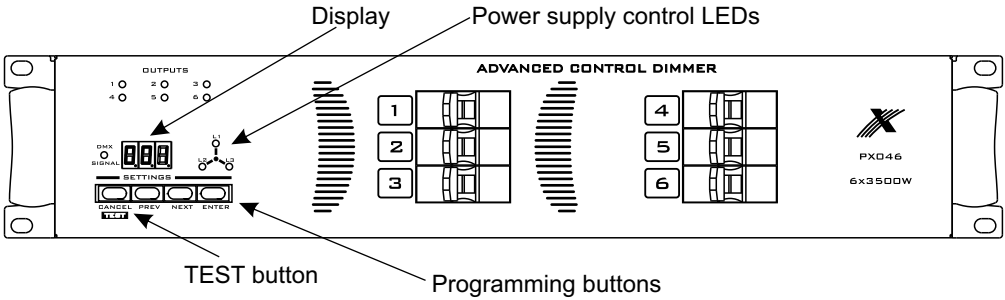
PX046 Dimmer is directly powered from standard 230 V grid what can cause electric shock when safety rules are not observed. Therefore it is necessary to observe the following :

1. Installation, particularly power connection, should be performed according to instruction manual.
2. Dimmer can be connected only to socket which has protecting instalation in working order (3- or 5-wire grid).
3. All the conductors should be protected against mechanical and thermal damage.
4. In the event of damaging any conductor, it should be replaced with a conductor of the same technical data.
5. The external devices can be connected to the dimmer with 3-strand 2.5 mm^2 minimum cross-section area only.
6. Each receiver has to be powered with a separate cable.
7. After the installation is completed, check the neutralization efficacy of all powered devices.
8. All repairs demanding casing opening should be made with cut off power supply.
9. The device should be strictly protected against water and other liquids.
10. All sudden shocks, particularly dropping, should be avoided.
11. Device with damaged (cracked) casing should not be connected to the mains.
12. The device cannot be turned on in places with humidity exceeding 90%.
13. The device cannot be used in places with temperature lower than 2°C or higher than 40°C.
14. Clean only with damp duster - dimmer has to be cut off the power supply.

ATTENTION!!!

1. Improper connection of the protective wire (yellow-green strand) can cause electric shock.
2. Improper connection of the neutral wire (blue strand) automatically switches the dimmer off and activates an acoustic alarm.
3. The dimmer can control resistantive and inductive circuits (loads) only. The dimmer cannot be used for controlling the electronic transformers, electronic ballasts for fluorescent lamps and other devices that have electronic circuits, unless the producer distincly states so.

3. FRONT PANEL



SETTINGS

There are four buttons for dimmer programming:

ENTER - starts programming mode and confirms settings

NEXT - scrolls MENU forward or increases set values

PREV - scrolls MENU backwards and decreases set values

CANCEL - cancels programming (without saving)

DMX SIGNAL

Twinkle LED for DMX signal presence.

TEST

When the dimmer is not in the programming mode (the display shows DMX address), the test button forces all outputs to light up at 100% and lights all the LEDs and all the display segments up. It also checks the output lines status (used bulbs).

DISPLAY

During normal operation shows the DMX address of the first channel. During programming mode shows currently programmed parameter.

L1, L2, L3

Power control LEDs. For the proper work of the dimmer at least L1 LED should be lit up.

DMX IN, DMX OUT (placed on the rear panel)

DMX-512 line input and output. The optical isolation of these sockets reduces the risk of damaging the dimmer and improves its reliability.

4. OUTPUT SIGNAL INTERRUPTION DIAGNOSIS

Three-colours LEDs diagnose status and condition of outputs channels. Their brightness is proportional to light intensivity at suitable channel and the LEDs colours (green, yellow, red) mean in order:

- green - channel is ok (working properly)
- yellow - channel is working with individual settings
- red - channel is working improperly or not working. Posibility of damage of cable or bulb.

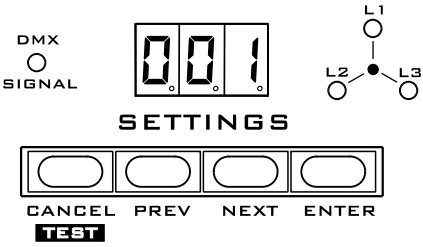
The last function (red sign) is visible while button TEST is pressed and held only. The LEDs that are assigned to damaged channels will turn red, and the others LEDs will light up green.

After the TEST button is released, the dimmer turns back to normal work and all the channels within the damage was diagnosed will be still enabled (applies to software 2.04 version or newer).

5. DIMMER PROGRAMMING

After turning the dimmer on the self-test is being made and the software version appears on the display. When the dimmer operates in a standard mode, the number of the first channel is displayed. Press ENTER to enter the main menu, ALL will be displayed. Press PREV or NEXT to choose the required programming (ALL, Ind, dEF) or measurement (Fun) menu and press ENTER to confirm your selection.

5.1. Moving around the menu



cancel - leaves the currently programmed parameter without saving changes or returns to the higher level in the menu;
by pressing this key during standard operation mode you can check the output circuits status as well

prev - scrolls the menu backwards or decreases the values set

next - scrolls the menu forwards or increases the values set

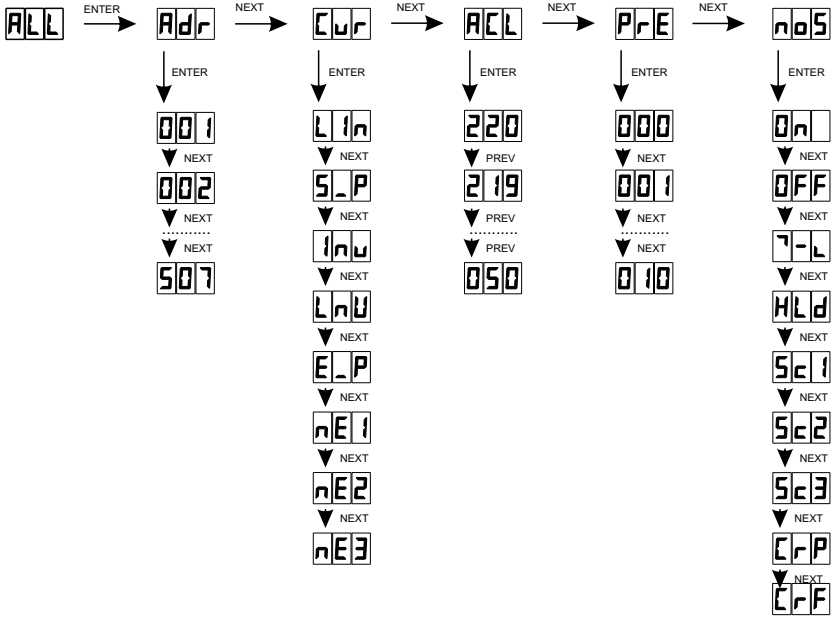
enter - enters the programming mode (submenu) or approves the values set

5.2. Displayed messages meaning

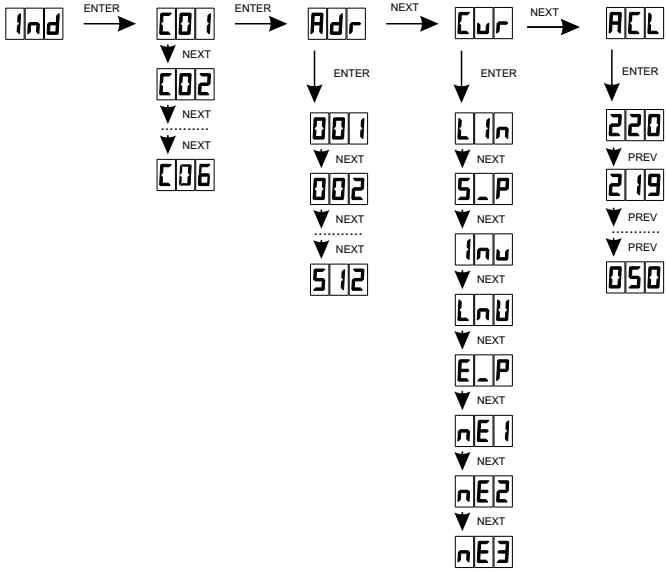
- ALL - group parameters
- Ind - individual parameters
- Fun - measurement functions
- dEF - scenes and chasers programming
- Adr - channels' DMX address
- Cur - dimming characteristics
- ACL - output voltage limitation
- PrE - preheat - bulbs' filaments preheating
- noS - dimmer reaction to DMX signal interruption
- L In - linear characteristics
- SP - switchable (on/off) characteristics
- Inu - inverted characteristics
- LnU - logarythmic characteristics
- E_P - exponential characteristics
- nE1 - nE1 to nE3, characteristics for neon lamps control
- C01 - C01 to C06, dimmer output channels
- F01 - F01 to F06, programmable chasera steps
- FAd - chaser - smooth step-to-step fading
- SPd - chaser speed
- PAS - access lock setting
- Enb - access lock enabled
- dSb - access lock disabled
- bAd - wrong password
- Loc - programming disabled - call service
- Sc1 - Sc1 to Sc3 - scenes to render in case of DMX signal absence
- CrF - factory-defined chaser
- CrP - programmable chaser
- HLd - holding up all control parameters (no DMX)
- 7-L - slowly dimming all the outputs (no DMX)
- °C - device internal temperature
- U 1 - U1, U2, U3 - voltage on the particular power supply phases

5.3. Menu scheme

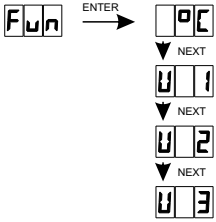
5.3.1. ALL menu



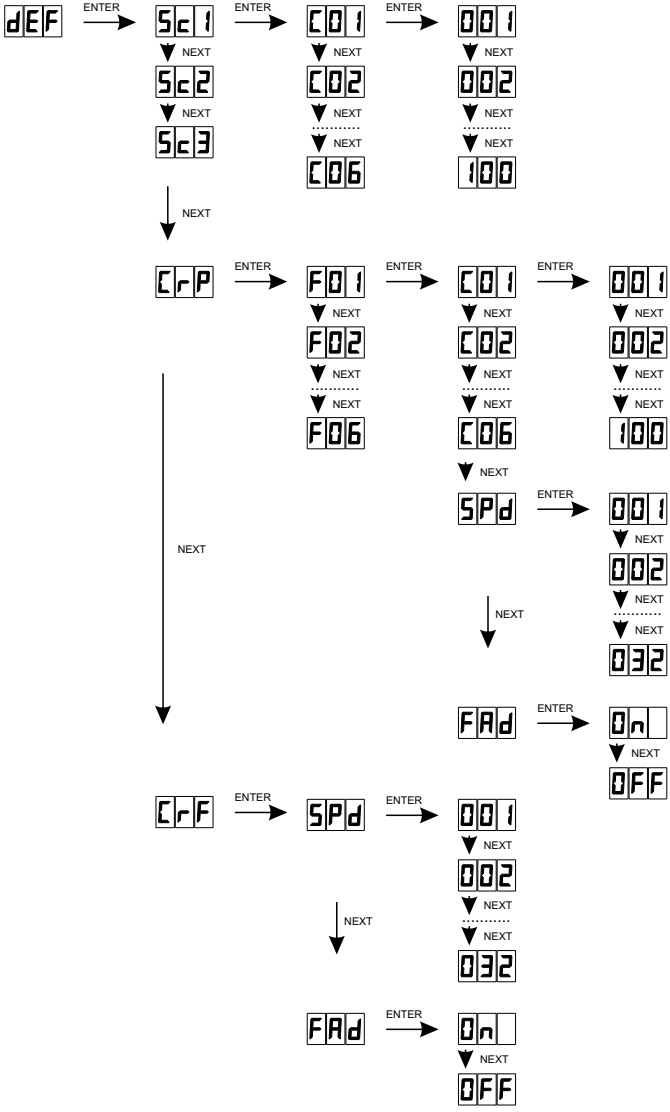
5.3.2. Ind menu



5.3.3. Fun menu



5.3.4. dEF menu



5.4. Group parameters programming (ALL menu)

Programming in this menu is common for all chanels. After ALL is chosen in the main menu, press ENTER and select the parameters with NEXT or PREV keys: Adr - dimmer DMX address, CUr - dimming characteristics, ACL - output voltage limitation, PrE - preheat, noS - dimmer reaction to DMX signal interruption and confirm your selection by pressing ENTER.

ATTENTION: programming in the ALL menu deletes all settings previously defined to the individual channels.

5.4.1. DMX address

After Adr has been selected in the ALL menu, press ENTER. With NEXT or PREV keys set the required DMX address (you may choose from 1 to 507 values) and press ENTER. The defined address will be set for the first channel. The subsequent DMX addresses will be ascribed automatically to the successive channels. When the address is set as 1, channel no. 6 will have set address 6. Choose another parameter to be set or return to the previous menu by pressing CANCEL.

5.4.2. Characteristics

After CUr has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a required dimming characteristics and press ENTER again.

LIn - linear
S_P - switchable (on / off)
InU - inverted linear
LnU - logarythmic
E_P - exponential
nE1 nE2 nE3 - characteristics for neon lamps control

Choose another parameter or press CANCEL to return to the main menu.

5.4.3. Output voltage limitation

After ACL has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a value in a range from 50 to 230 and press ENTER again. The power of output circuits is limited in proportion to the voltage value adjusted. Choose another parameter to set or return to the main menu by pressing CANCEL.

5.4.4. Bulbs preheating

After PrE is selected in the ALL menu, press ENTER. With NEXT or PREV keys set the value in a range from 0 to 10 and press ENTER. Choose another parameter to set or return to the main menu by pressing CANCEL.

5.4.5. Device reaction to DMX signal interruption

After noS has been selected in the ALL menu, press ENTER. With NEXT or PREV keys choose a required option and press ENTER again.

Sc1 Sc2 Sc3 - scenes, that can be programmed in the dEF menu,
On - turning all the outputs on at 100%,
OFF - turning all the outputs off,
F-r - slow dimming of all the outputs (20 seconds approx.),
HLd - all the control values, that have been set before the DMX signal faded, are held,
CrF - factory-defined chaser,
CrP - programmable chaser.

Choose another parameter to set or return to the main menu by pressing CANCEL.

5.5. Individual parameters programming (Ind menu)

In this menu the individual parameters for each of the 6 channels can be set. When Ind has been selected in the main menu, press ENTER.

1. With the NEXT or PREV keys choose a channel to be set (C01...C06) and press ENTER.
2. The Adr will show on a display. Press ENTER, to set the DMX address for the edited channel. With NEXT or PREV keys select the value from 1 to 512 and press ENTER again.
3. Press NEXT key, Cur will be displayed. Press enter to set the dimming characteristics for the edited channel. With NEXT or PREV keys choose a required characteristics and press ENTER again (refer to chapter 5.4.2 for the characteristics' description).
4. Press NEXT, ACL will be displayed. Press ENTER to limit the output voltage for the edited channel. With NEXT or PREV keys set the value from the range from 50 to 230 and press ENTER again.
5. Press CANCEL key to return to Ind menu and set all the remaining channels, according to the procedure described above.
6. Press CANCEL to return to the main menu.

5.6. Scenes and chasers programming (dEF menu)

In this submenu you can define scenes and chasers, that can be rendered automatically when the DMX signal is absent. After dEF has been chosen in the main menu, press ENTER. With NEXT or PREV keys select one of two chasers (CrF , CrP) or one of three scenes (Sc1 , Sc2 , Sc3) and press ENTER again. In the factory-defined chaser you can adjust its speed and fading. The programmable chaser can be defined totally. When configuring the scenes, you can set the brightness for each channel. All scenes and chasers are set by default, but you can customize them according to the description in chapters nos. 5.6.1, 5.6.2 and 5.6.3.

5.6.1. Scenes

1. In the dEF menu, select the scene, you want to define and press ENTER. C01 - first channel will be displayed. Press ENTER to edit this channel.
2. With NEXT or PREV keys adjust the control value for this channel from a range from 1 to 100 (value in percentage) and confirm your selection by pressing ENTER.
3. With NEXT or PREV keys choose another channels and repeat the procedure from point 2.

4. Press CANCEL to return to the dEF menu and repeat the procedure from points 1, 2 and 3 for the remaining scenes.
5. Press CANCEL to return to the main menu.

5.6.2. Factory-defined chaser

After the CrF in the dEF menu has been selected, press ENTER. SPd will be displayed. Press ENTER to set the chaser's speed. With NEXT or PREV keys set the value from 1 to 32 and press ENTER. Press NEXT, FAd will be displayed. Press ENTER, to set the step-to-step fading smoothness. Set On , to turn the fader on, or OFF to turn the fader off and press ENTER. Press CANCEL to return to the main menu.

5.6.3. Programmable chaser

1. After CrP has been chosen in the dEF menu, press ENTER.
2. F01 will be displayed - it is the first step of the program. Press ENTER to edit this step or with the NEXT key go to the another step and press ENTER.
3. C01 will be displayed - it is the first channel. Press ENTER, to edit this channel or, with the NEXT key, go the next channel. Adjust the control value for the selected channel in a range from 0 to 100 (value in percentage) with the NEXT or PREV keys and confirm your settings by pressing ENTER.
4. Adjust the control values for the remaining channels, according to the procedure described in point 3.
5. Press CANCEL, to leave the step edition.
6. Define the remaining steps according to the procedure described in points 2 to 5.
7. Select SPd by pressingNEXT and press ENTER, to set chaser's speed. With NEXT or PREV keys choose a required value in a range from 1 to 32 and press ENTER to confirm.
8. Press NEXT, FAd will be displayed. Press ENTER to set the step-to-step fading smoothness. With NEXT or PREV keys select On to turn the fader on, or OFF to turn the fader off and confirm your selection by pressing ENTER.

Press CANCEL, to leave the chaser edition.

5.7. Measurement functions (Fun menu)

In this menu you can check the temperature inside the dimmer and the voltage at all three power supply phases. After Fun has been selected in the main menu, press ENTER. With NEXT or PREV keys choose a parameter you want to inspect and press ENTER. The value of a selected parameter will be displayed. U 1, U 2, U 3 are for power supply voltage and °C is for the dimmer internal temperature. Press CANCEL to return to the Fun menu.

6. ACCESS LOCK

Because of a great number of possibilities of defining the dimmer functions, all introduced changes can be protected with a code (a number in a range from 1 to 255). In such a case, the users, that do not know the password can read the dimmer settings only, without the ability of making any changes. The dEF position of the main menu will be also hidden.

6.1. Switching the access lock on

1. In the basic position of the display (DMX address of the first channel) push and hold TEST button, push shortly NEXT button and release TEST button - PAS will show.
2. Push ENTER button - Enb inscription will show. (Attention! if dSb is displayed, the access lock has already been set, refer to chapter 6.2 of the present manual)
3. Push ENTER button again and set new code using "PREV" and "NEXT" buttons (or leave the previous one). Confirm changes by pressing the ENTER button.
4. The dimmer will return to the operation mode (DMX address will be displayed). The access to the programming mode is locked.

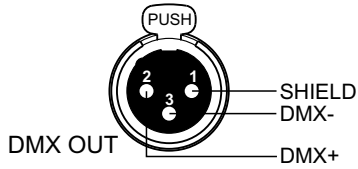
6.2. Switching the access lock off

1. In the basic position of the display (DMX address of the first channel) push and hold TEST button, push shortly NEXT button and release TEST button - PAS will show.
2. Push ENTER button - Enb inscription will show. (Attention! if dSb is displayed, the access lock has not been already set, refer to chapter 6.2 of the present manual)
3. Push ENTER button again, 127 will be displayed. With "PREV" and "NEXT" buttons select your password and confirm your choice by pressing the ENTER button.
4. The dimmer will return to the operation mode (DMX address will be displayed). The access to the programming mode is unlocked.

ATTENTION:

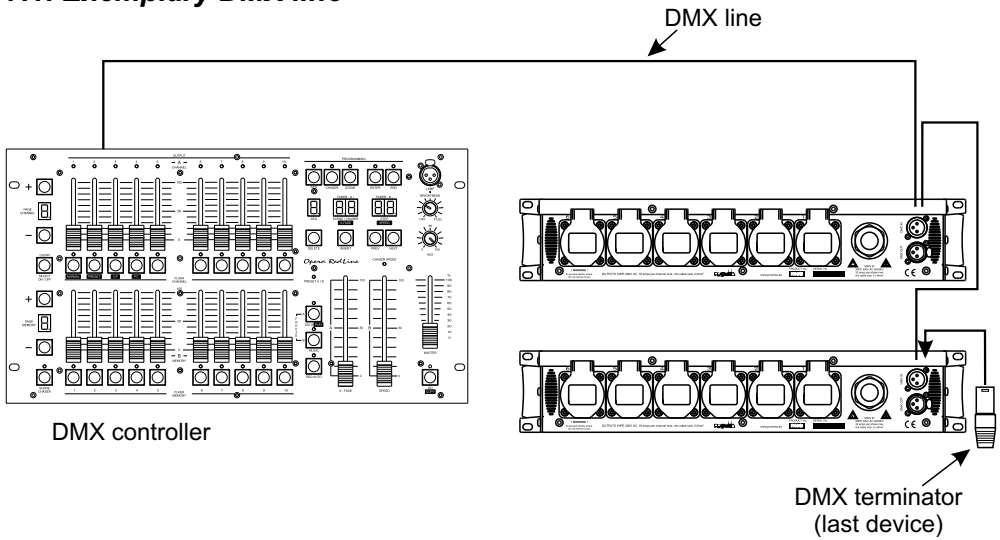
When the wrong code is entered, the inscription bAd is displayed. Repeat the procedure then. When the wrong code is entered three times, the access to the programming mode of the dimmer is completely locked: Loc is displayed. Contact the service in such case.

7. DMX SIGNAL CONNECTION

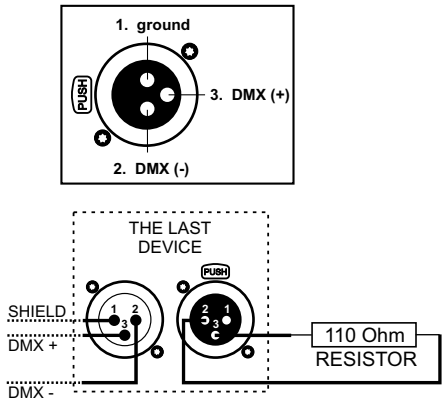


ATTENTION!! The DMX cable shield cannot be connected to the device ground!

7.1. Exemplary DMX line



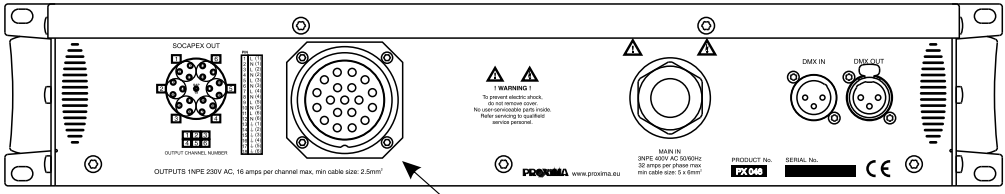
7.2. Rules for creating the DMX installation

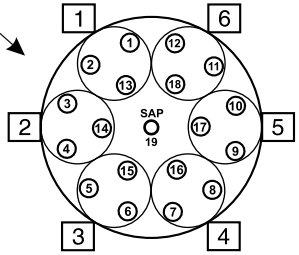


1. To connect devices use of the microphone cable is recommended (two wires in the shield).
2. The devices should be connected in series.
3. To split the DMX line it is necessary to use DMX SPLITTER (PX094).
4. In case of the great number of devices or long distances use DMX REPEATER (PX097). It is an amplifier of the DMX signal.
5. The maximal length of a DMX line is 500 meters.
6. The maximal number of devices in a DMX line is 32.
7. In the last device a terminator (110 Ohm resistor) between 2nd and 3rd DMX output pins should be installed.

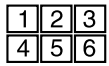
8. OUTPUT SOCKETS CONNECTION

8.1. SOCAPEX sockets



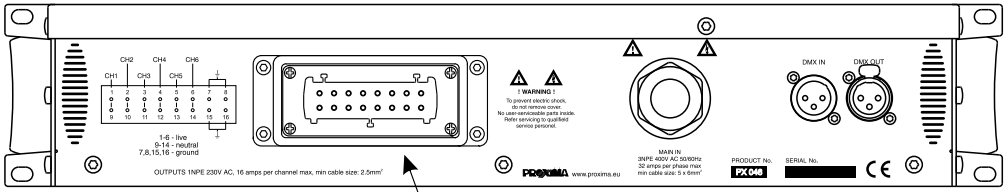


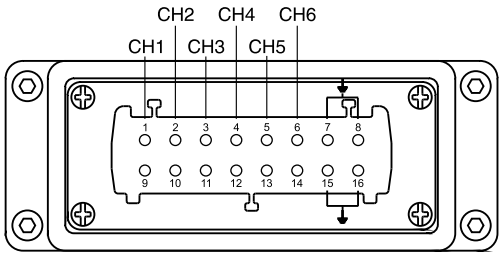
PIN	
1	L (1)
2	N (1)
3	L (2)
4	N (2)
5	L (3)
6	N (3)
7	L (4)
8	N (4)
9	L (5)
10	N (5)
11	L (6)
12	N (6)
13	⏚ (1)
14	⏚ (2)
15	⏚ (3)
16	⏚ (4)
17	⏚ (5)
18	⏚ (6)



OUTPUT CHANNEL NUMBER

8.2. HARTING sockets

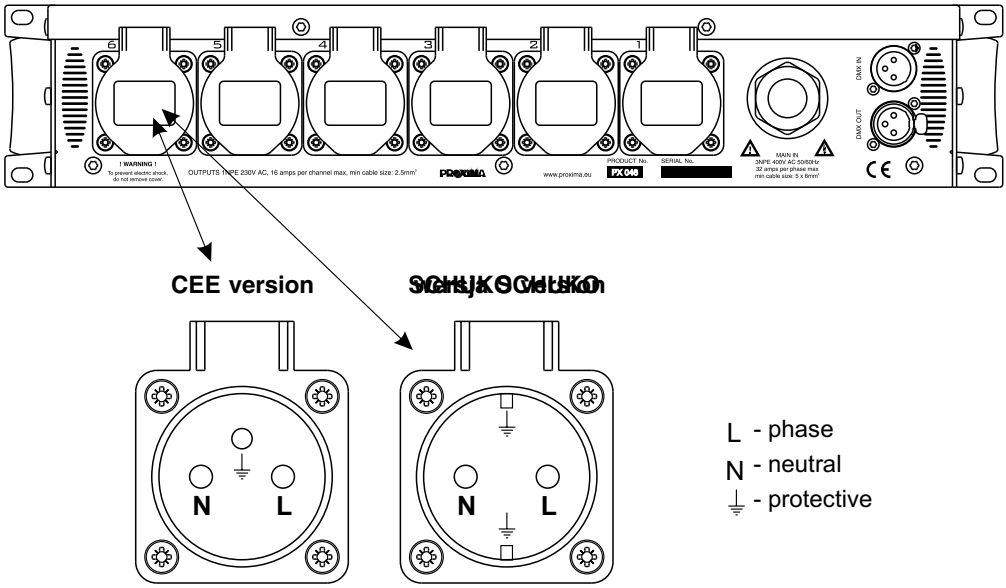




1 - 6 - phase
9 - 14 - neutral
7, 8, 15, 16 - protective

PIN	
1	L
2	L
3	L
4	L
5	L
6	L
7	⏚
8	⏚
9	N
10	N
11	N
12	N
13	N
14	N
15	⏚
16	⏚

8.3. CEE and SCHUKO sockets



10. POWER CABLE CONNECTION

10.1 GENERAL RULES

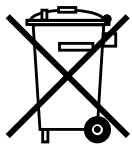
1. Device installation, particularly power supply connection, must be performed according to the instruction manual.
2. The device has to have properly connected the protective cable (yellow-green strand of the power cable).
3. The power circuit for the PX046 dimmer has to be equipped with residual-current circuit breakers.
4. The minimal cross-section area of the power cable is 5 x 4 mm².
5. The external devices can be connected to the dimmer with 3-strand 2.5 mm² minimum cross-section area only.
6. Each receiver has to be powered with a separate cable.
7. All the conductors should be protected against mechanical and thermal damage.
8. After the installation is completed, check the neutralization efficacy of all powered devices.

10.2 POWER CABLE COLOURS

brown strand	= phase 1
black strand	= phase 2
black strand	= phase 3
blue strand	= neutral
green - yellow strand	= protective

11. TECHNICAL SPECIFICATION

- DMX channels	1 - 512
- DMX line optical isolation	yes
- circuit break detection	yes
- supertension protection	yes
- fans	electronically controlled
- outputs load capacity	6 x 3500 W continuous load (resistantive) 6 x 2500 VA continuous load (inductive)
- outputs protection	16 A automatic fuses
- DMX control input	3-pin XLR plug
- DMX control output	3-pin XLR socket
- power supply	3 phases 3 NPE 400 V or one phase 230 V, 50 / 60 Hz
- output sockets	CEE, SOCAPEX, HARTING or SCHUKO
- current consumption	3 x 32 A (at full load)
- weight	12 kg
- dimensions:	
- width	483 mm (19")
- height	88 mm (2U)
- depth	350 mm



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DECLARATION OF CONFORMITY

according to guide lines 73/23/EWG and 89/336/EWG

Name of producer: PXM s.c.

Address of producer: ul. Przemysłowa 12
30-701 Kraków, Poland

declares that the product:

Name of product: **AC Dimmer 6 x 3500 W**

Type: **PX046-H/S/X**

answers the following product specifications:

LVD: **PN-EN 60065**

EMC: **PN-EN 55014**

Additional information:

1. All DMX512 inputs and outputs must be shielded and the shielding must be connected to pin 1 XLR plug.
2. A ground wire of the dimmer load cable must be connected to efficient ground installation.

PXM s.c.
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Kraków, 01.06.2006

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