

PX214

AC Dimmer

12 x 2300W

User manual



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

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1 Description

PX214 is a professional 12 x 2300W AC class dimmer. Can be powered from both three, with two or one phase. It allows to control 12 independent channels with a capacity of 2300W each. Advanced electronics allow arbitrary addressing of each channel, the choice of control characteristics, setting limits the output voltage, switching the heat up of the lamps, as well as defining the response to the lack of dimmer control signal.

Built-in "*PLL*", "*soft-start*" and "*even-off*" systems ensure reliable operation in the most extreme conditions. Direct detection of zero in electrical wiring and optical isolation of DMX input guarantees a high resistance to interference. Using three-color LED indicators allows to monitor the work of each circuit and the DMX signal. The device is produced in a casing for wall mounting.

NOTE! The device should be installed in a technical room.

2 Safety conditions

PX214 Dimmer is powered directly from standard 230V AC grid, what cause electric shock when safety rules are not observed. Therefore it is necessary to observe the following:

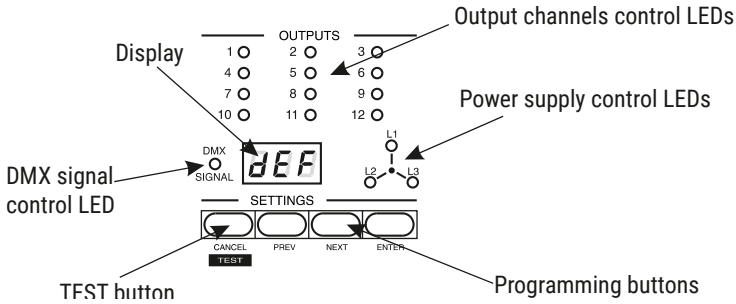
1. Installation of the device, and in particular, connection of power, should be made by a suitably qualified person, as described in the manual.
2. The device can be connected only to 3- or 5-wire installation (with a separate protective conductor).
3. Protect all cables against mechanical and thermal damage.
4. In case of failure of any of the cables, it must be replaced with a cable of the same technical parameters.
5. Use only 3-wire cables of not less than 1.5mm^2 for connecting devices to the dimmer.
6. Each receiver should be powered by a separate cable.
7. Input power must be secured outside a three-phase overcurrent circuit breaker with rated current 40A and C type characteristic.
8. After installation, test the effectiveness of resetting all the equipment controlled.
9. All repairs that require the housing to be removed can only be carried out with power disconnected.
10. The dimmer must be strictly protected against contact with water or other liquids.
11. Avoid sudden shocks, particularly dropping.

12. Do not connect dimmer with damaged (dented) housing to the power supply.
13. Do not operate the device in rooms with humidity above 90%.
14. The device must not be used in rooms with a temperature below +2°C or above +40°C.
15. Clean only with a damp cloth – the dimmer must be at this time completely disconnected from the power supply.

NOTE!!!

1. Improper connection of the protective conductor (yellow-green color) creates the risk of electric shock.
2. Improper connection of the neutral wire (blue color) will automatically turn off the dimmer and start the buzzer.
3. It is also acceptable to power the dimmer with one or two phases.
4. The dimmer can control only the circuits (loads) that are resistive or inductive.
5. Dimmer may not be used to control electronic transformers, electronic ballasts of fluorescent lamps and other equipment containing electronic circuits, except when their manufacturer clearly indicates such possibility.

3 Control elements



3.1 Buttons

Four keys for programming dimmer operation parameters:

- **ENTER** – starts programming mode and confirms settings
- **NEXT** – scrolls menu forwards or increases values set
- **PREV** – scrolls menu backwards and decreases values set
- **CANCEL** – causes exit from the currently programmed parameter without saving the changes or moving to the higher level in the menu
- **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%, lights all the LEDs and all the display segments. It also checks the output lines status (used bulbs).

4 Output signal interruption diagnosis

Three-colors LEDs diagnose status and condition of output channels. Their brightness is proportional to light insensitivity at suitable channel and the LEDs colors **green**, **yellow** and **red** mean in order:

- **green** – normal channel operation
- **yellow** – channel has individual settings
- **red** – cable or bulb damage

The last function (**red** color) is started by pressing and holding the *TEST* key for ~5 seconds, the lights corresponding to all channels in which the circuit is broken will light up in **red**, while the others will turn **green**. After the *TEST* button is released, the dimmer turns back to normal work and all the channels within the damage was diagnoses will be enabled (applies to software 2.04 version or newer).

5 Programmable parameters

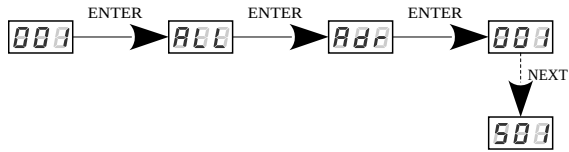
The dimmer allows to define the following operation parameters:

-  – group parameters – the selected settings are common to all channels. In the case of DMX address, the displayed value applies to the first channel, the remaining channels are automatically assigned subsequent addresses.
-  – individual parameters – each channel can have individually set operating parameters. This also applies to the DMX address. The same address can be assigned to several output channels.
-  – measuring functions – enable reading of parameters such as the temperature inside the dimmer or the values of supply voltages
-  – programming scenes and chasers – this function allows you to program:
 - settings for all three scenes
 - twelve steps settings and the speed and fading of programmable chaser
 - speed and fading of the factory-defined chaser

5.1 Group parameters

5.1.1 DMX address

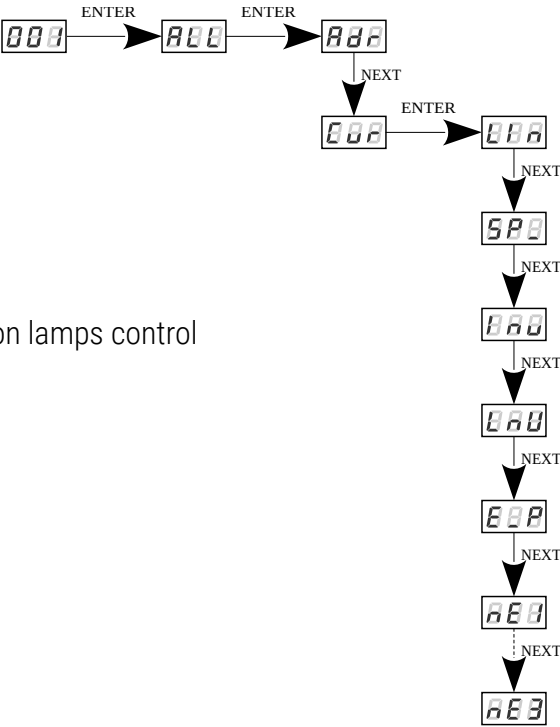
DMX address **AAA** is chosen from the 1 – 501 range (when 501 address is chosen, channel number 12 has the address 512).



5.1.2 Output characteristic

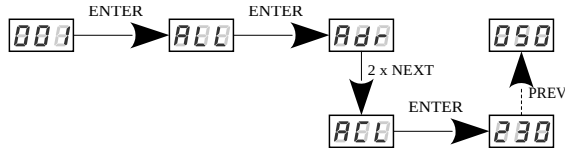
The device has eight different characteristics **000** to choose from:

- **000** – linear
- **500** – switchable
- **000** – inverted
- **000** – logarithmic
- **000** – exponential
- **000** ... **000** – for neon lamps control



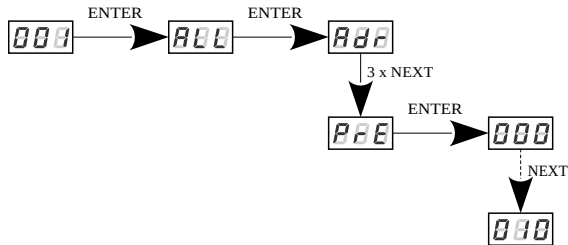
5.1.3 Voltage limits

Limiting the output voltage **ACU** can be set in the range 50 – 230V AC.



5.1.4 Preheat

Heating up **PFE** the bulb filaments, set in the range 0 – 10%.



5.1.5 No DMX signal response

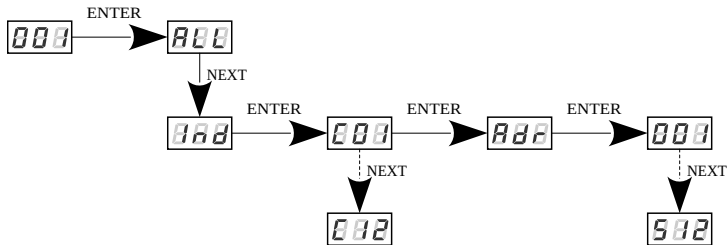
The function **ABS** defines how the dimmer should behave in the event of DMX signal loss, there are 9 options to choose from::

- **0AB** – turning all outputs on at 100%
- **0FF** – turning all outputs off
- **HBB** – the last received value is held
- **BBB** – slow off output in ~20 seconds
- **500** ... **509** – programmable scenes (for more information see section 5.4.1 Scenes)
- **0PP** – programmable chaser (for more information see section 5.4.2 Programmable chaser)

5.2 Individual parameters

5.2.1 DMX address

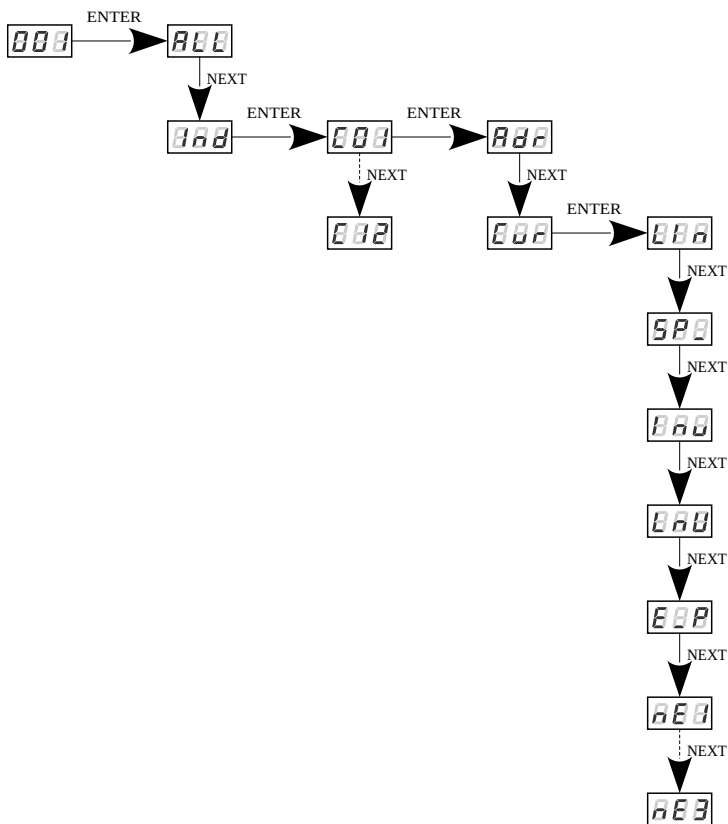
The DMX address **ABE** is selected from the 1 – 512 range for each output channel separately. It is possible to assign multiple channels to one address.



5.2.2 Output characteristic

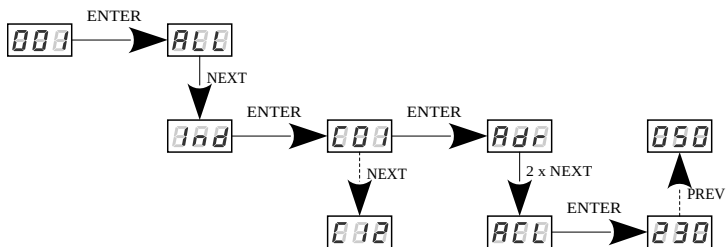
Eight different characteristics **000** are available for each channel separately:

- **000** – linear
- **500** – switchable
- **000** – inverted
- **000** – logarithmic
- **000** – exponential
- **000** ... **000** – for neon lamps control



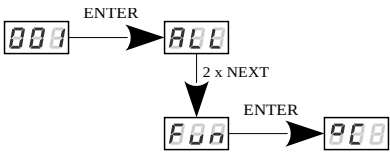
5.2.3 Voltage limits

The output voltage limitation **888** can be set individually on each channel in the range of 50 – 230V AC.



5.3 Measurement functions

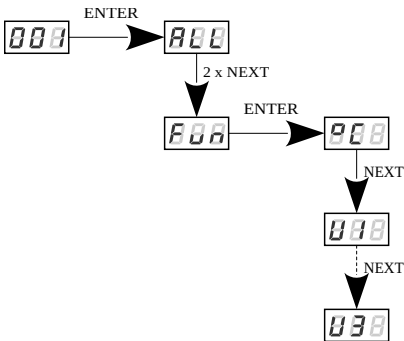
5.3.1 Temperature



The device can check the temperature **900** inside the dimmer.

5.3.2 Voltage

This option enables the reading of measured voltages at the input of

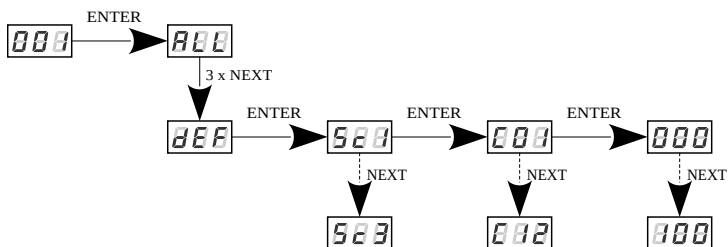


individual phases (**000**, **020**, **030**).

5.4 Scenes and chaser programming

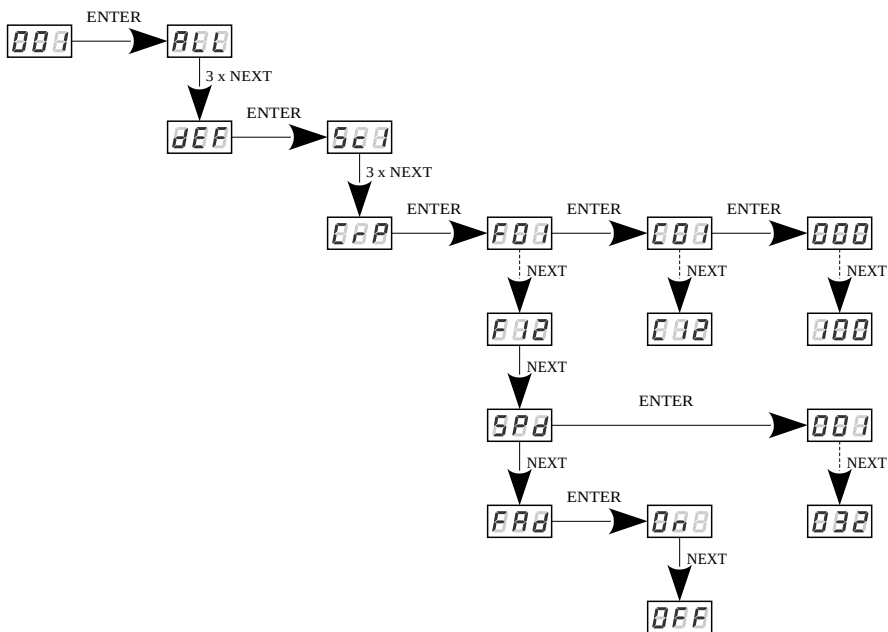
5.4.1 Scenes

The user can program 3 scenes (**500**, **520**, **523**) in which each of the 12 channels can be controlled in the range of 0 – 100%.



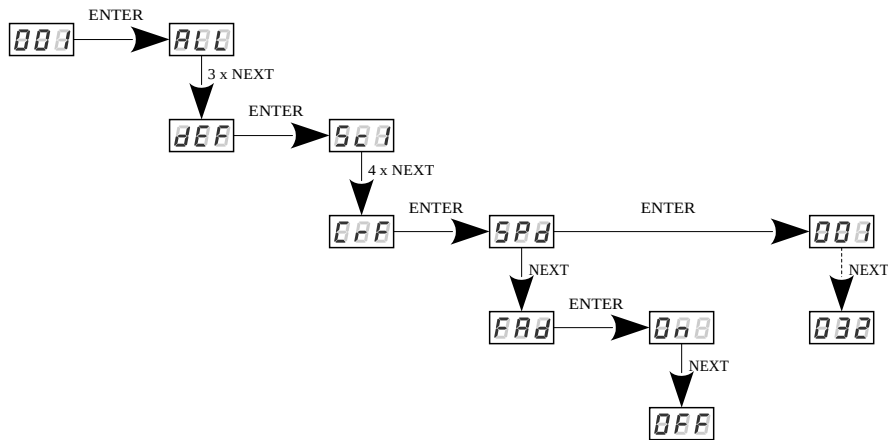
5.4.2 Programmable chaser

The user-programmed chaser **000** has 12 consecutive scenes, and in each of them each channel can be controlled in the range from 0 – 100%. In addition, it is possible to set the speed **SP0** to go the next steps in the range from 1 (slow) to 32 (fast). The **F00** function is responsible for smooth scene changes, it is possible to turn it on or off.



5.4.3 Factory-defined chaser

The factory chaser **0FF** has the option of changing the speed **SPB** settings between scenes by the user and enabling or disabling smooth transitions **FAB** between scenes.



6 Access lock

Because of a great number of possibilities when defining the dimmer functions, all introduced changes can be protected with a code (number in a range from 0 – 255). In this case, user who do not know the password can only read the existing settings without making any changes. The **DEF** position of the main menu will be also hidden.

6.1 Switching on the access lock

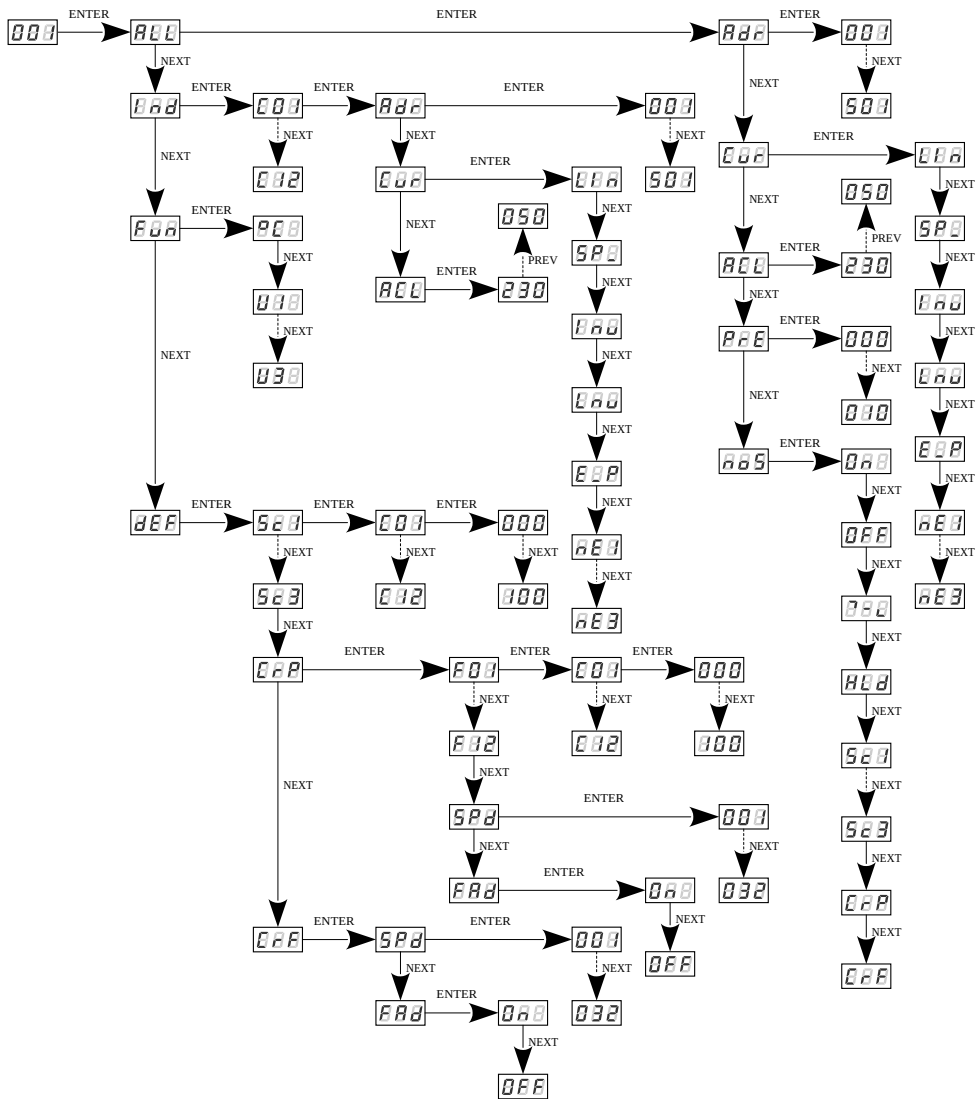
1. In the basic position of the display (DMX address of the first channel) push and hold **TEST** button, push shortly **NEXT** button and release **TEST** button – **PAS** will show up.
2. Press **ENTER** button – **ERR** inscription will show.
3. Push **ENTER** button again – the last set code will show.
4. Set new code using **NEXT** and **PREV** set a new password from range 0 – 255 (or leave the previous one) and confirm changes by pressing the **ENTER** button.
5. From that moment access to programming the dimmer is blocked.

6.2 Switching off the access lock

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 up.
2. Push **ENTER** button – the inscription **856** will show.
3. Push **ENTER** button again – number **828** will show.
4. Set the code using buttons **NEXT** and **PREV** set a password from the range of 0 – 255 and confirm it by pressing **ENTER**.
5. The access to the programming mode of the dimmer is free.

NOTE! Entering an incorrect password displays the word **ERR**. Entering an incorrect password three times completely blocks access to the dimmer programming – message **ERR**. It is necessary to contact service.

7 Dimmer menu scheme



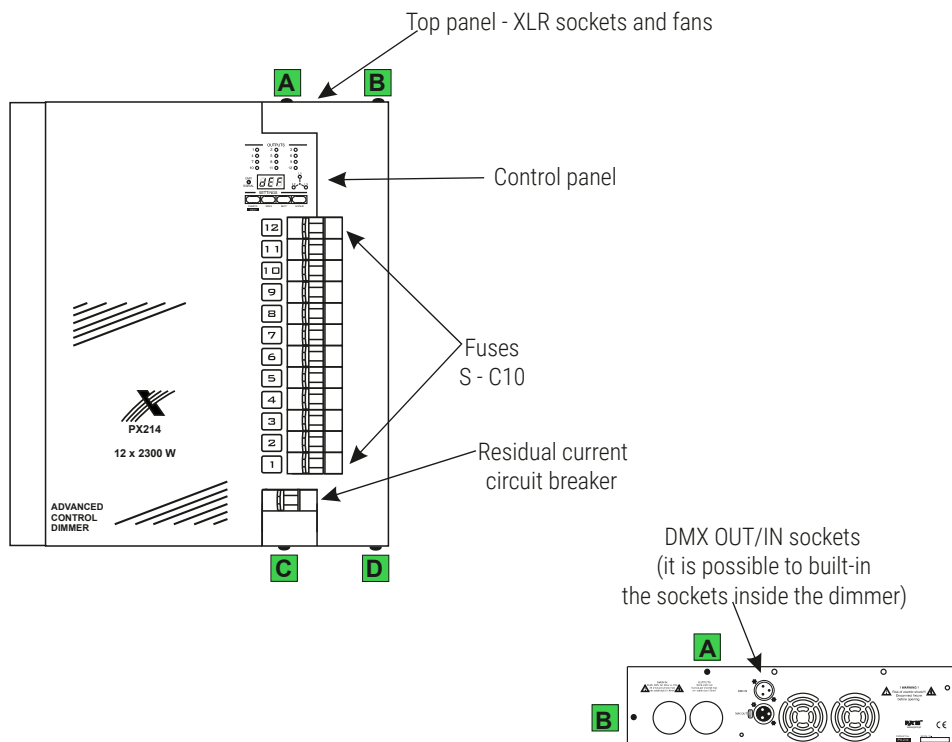
8 Indication lights

The device has 16 built-in controls, which means:

Indicator	Action	Meaning
<i>DMX SIGNAL</i>	shines blue 	presence of DMX signal
<i>OUTPUTS</i>	shines green 	normal operation of the channel
	shines yellow 	the channel has individual settings
	shines red 	cable or bulb damage
<i>L1 / L2 / L3</i>	shines yellow 	phase power supply indication

9 Connection scheme

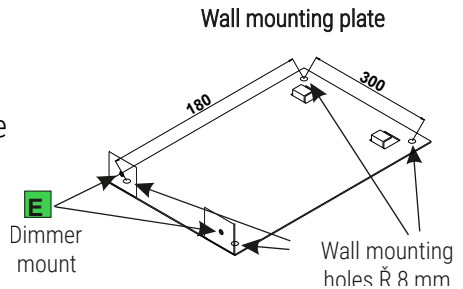
9.1 Dimmer view



9.2 Assembly operations

All electrical connections must be performed only by adequately qualified personnel!!!

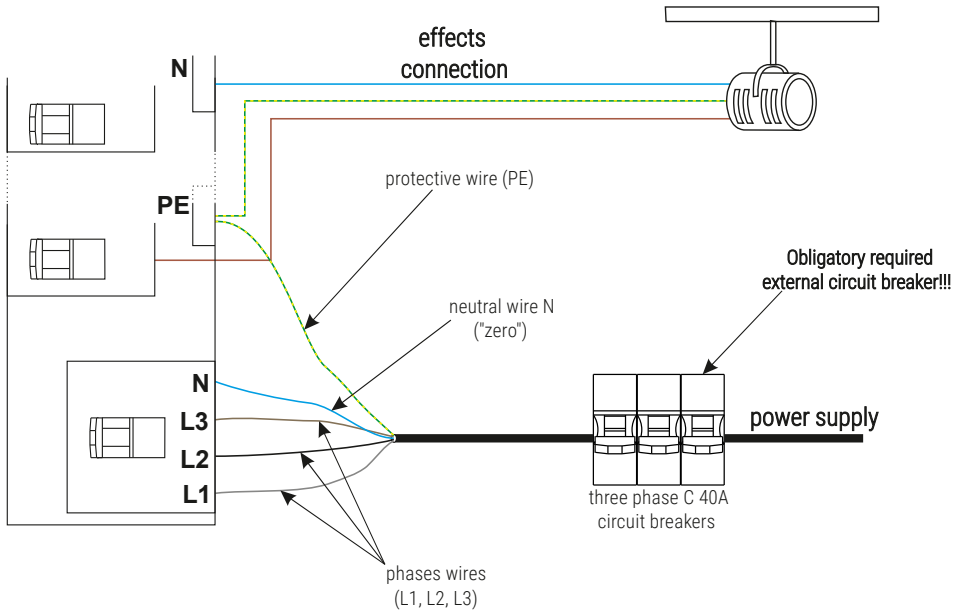
To install the dimmer mounting plate should be attached to the wall. And then unscrew the four screws marked in point 9.1 Dimmer view with the letters "A", "B", "C" and "D", and remove the front cover of the dimmer. The next step is to suspend the device on the mounting plate and fastening it with screws "E" (picture beside) and screw the front panel.



NOTE! Do not remove the screws from the rear panel of the device! It may damage the dimmer.

NOTE! When mounting the dimmer should be left at least 10cm free space above and below to allow proper ventilation.

9.3 Connection scheme



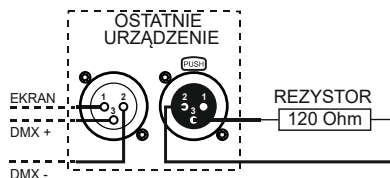
9.3.1 General rules

1. Installation of equipment, in particular, power connection should be made as described in the manual.
2. The device must have a properly connected protective conductor (yellow-green color).
3. Minimum cross-section of the power cord is $5 \times 6\text{mm}^2$.
4. To connect devices to the dimmer use only 3-wire cables with cross-section of not less than $1,5\text{mm}^2$.
5. Each receiver should be powered by a separate cable.
6. It is essential to protect all conductors from mechanical damage.
7. Input power must be secured outside a three-phase residual current breaker with rated current 40A and C type characteristics.

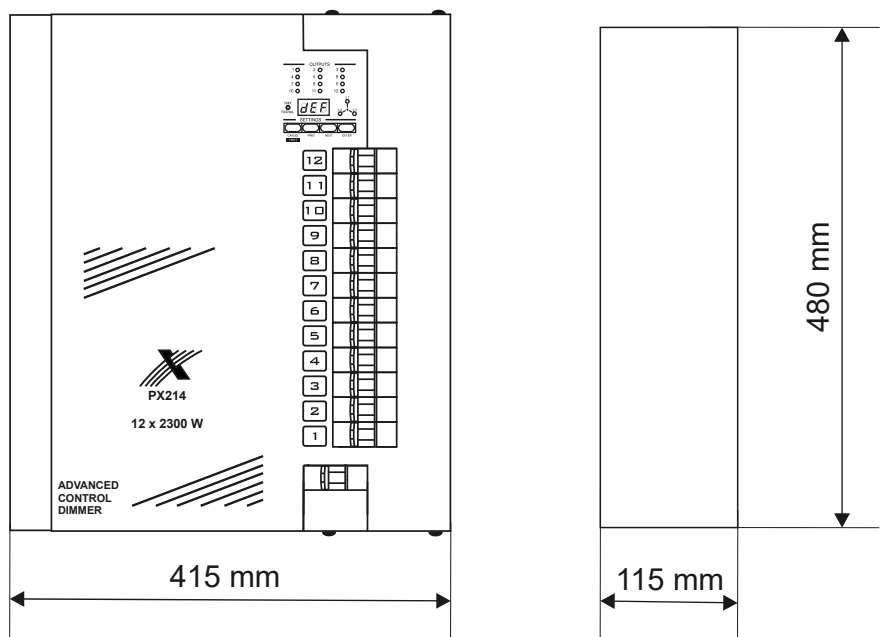
8. After the installation, check the efficacy of the equipment neutralization.

9.4 DMX signal connection

1. The recommended cable for the connection is RS485 (two wires in a shield).
2. Devices must always be connected in series.
3. To split the DMX line, use the Splitter DMX (e.g. PX716).
4. For more devices (over 32) or long distances (more than 300 meters) use DMX Repeater (e.g. PX097). It is recommended not to reach the maximum length and number of devices on the DMX line.
5. It is necessary to install a terminator, i.e. 120 Ohm resistor, in the last device.



10 Dimensions



11 Technical data

type	PX214
DMX channels	512
optical isolation of the DMX line	yes
detection of open circuit	yes
circuit breaker protection	yes
fans	electrically controlled
output carrying capacity	12 x 2300W – continuous resistive load
	12 x 1400VA – continuous inductive load (conventional and neon transformers)
outputs protection	automatic 10A circuit breakers
DMX in / out	3-pin XLR connector
output sockets	screw terminals
power supply	3-NPE AC 400/230V / 50Hz
current consumption	3 x 40A (at full load)
weight	18kg
dimensions	width: 415mm
	height: 480mm
	depth: 115mm

DECLARATION OF CONFORMITY

PXM Marek Żupnik spółka komandytowa
Podłęże 654, 32-003 Podłęże

we declare that our product:

Product name: AC Dimmer 12 x 2300W

Product code: PX214

meets the requirements of the following standards, as well as harmonised standards:

PN-EN IEC 63000:2019-01	EN IEC 63000:2018
PN-EN 62368-1:2015-03	EN 62368-1:2014
PN-EN 61000-4-2:2011	EN 61000-4-2:2009
PN-EN IEC 61000-6-1:2019-03	EN IEC 61000-6-1:2019
PN-EN 61000-6-3:2008	EN 61000-6-3:2007

and meets the essential requirements of the following directives:

2011/65/UE **DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
Text with EEA relevance.

2014/30/UE **DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)
Text with EEA relevance.

2014/35/UE **DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL** of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.


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