

# **PEGASUS<sup>®</sup> FLeX**

## **12-channel Digital Dimmer/Relay Combination**

### **User's manual**

Fourth edition  
Firmware V1.0.6 and above

**Dear Customer!**

Thank you for chose PLS Electronics product. If you have any technical question or you looking for other equipments, don't hesitate to take up the contact with our sales representative or with the manufacturer at the [www.pls.hu](http://www.pls.hu) web site.

This apparatus is a twelve channel digital dimmer and relay combination with DMX 512/1990 or 0-10V control (optional) with additional control possibilities. The light control is produced by a phase angle control technology with additional relay switch for fixed power output. **Safety first! Please read carefully and understand the user manual!**



**The wrapper of the unit is NOT baby toy!**

**Keep it away form babies!**



For technical questions and *original spare parts*

please take up the contact with our sales representative or with the manufacturer at the [www.pls.hu](http://www.pls.hu) web site.



**ATTENTION!**

**DON'T USE WITHOUT PROTECTIVE GROUND!**



**Not allowed to make a parallel connection between any outputs (phases or neutrals) to increase the output current capability of the unit! Otherwise the unit can be damaged!**



**CAUTION!**

**Do not cover any air inlets and fan outlets of the dimmer!**



**Take care to have proper airflow in and out to let cooling the unit.**

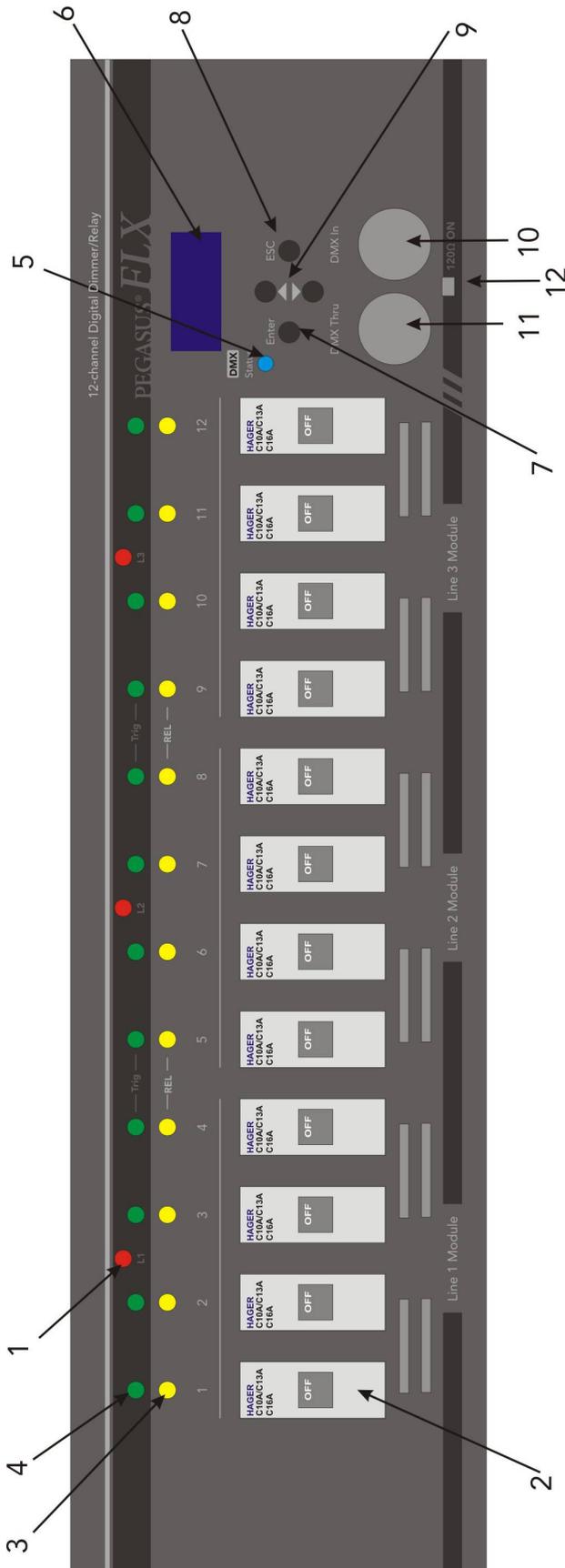


**CAUTION!**

**Disconnect mains before open the dimmer for service!**



**Service allowed only for technicians who had technical course by the sales representative or by the manufacturer!**



## Front parts

- 1 Phase / Module state indicators. If it's ON, the corresponding phase unit is working.
2. Circuit breakers to protect the outputs.
3. These yellow LEDs show the **RELAY** mode. If it is lighting the corresponding channel is in RELAY mode. (see more on page 13 / Curves)
4. These green LEDs show the control level of each channel.
5. DMX control LED ( If it's flashing, the DMX pocket is correct; when OFF, the DMX pocket is incorrect, not present or Analog control (optional) is on.)
6. LCD display
7. ENTER button, use to enter to the menu, select item and confirm the modification of the selected parameter
8. ESCAPE button. Use to exit from the menu or discard the modification of the selected parameter
9. UP/DOWN buttons, use to scroll up/down on the menu list or increase the value/level of the selected parameter
10. DMX input via male XLR connector.
11. DMX throughput via female XLR connector
12. 120 Ohm DMX line termination switch. Switch it to ON position only if this unit is the last on the DMX line! Otherwise left it in **OFF** position!

**Figure 1. Handling units of front part**

On Figure2 and Figure3 you can find the outlet of the backside connectors of the one output per channel versions like **FLX-12xx-S** (Schuko), **FLX-12xx-F** (French/Belgian CEBEC), **FLX-12xx-C** (CEE16/3), **FLX-12xx-PC** (PowerCon) and **FLX-12xx-WL** (Wieland ST17) dimmer

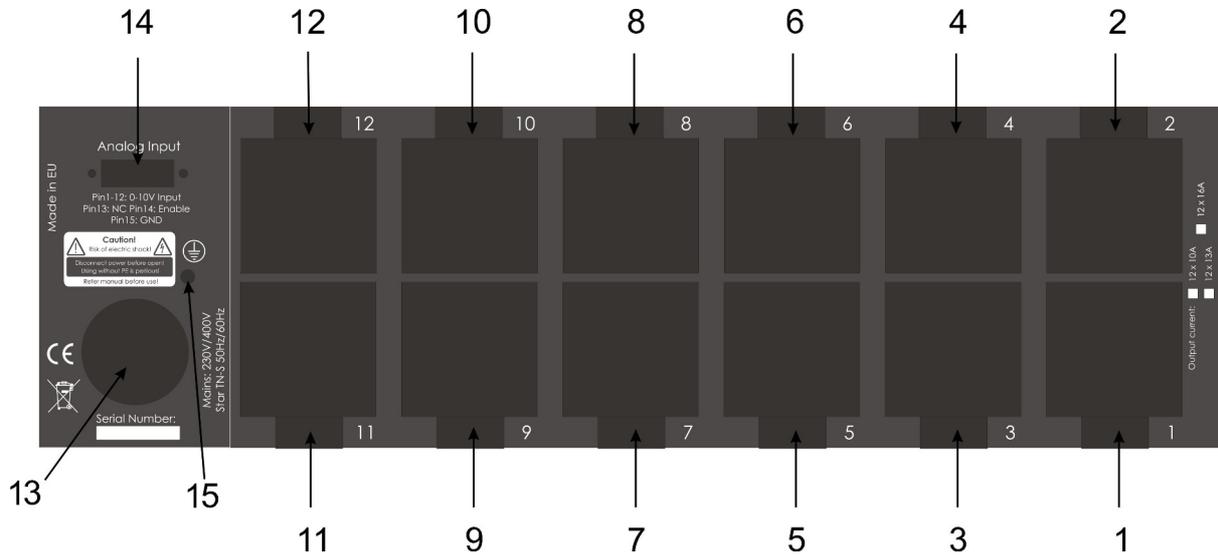


Figure 2. Back part connectors (Schuko, CEBEC, Swiss, Danish and UK BS1363)

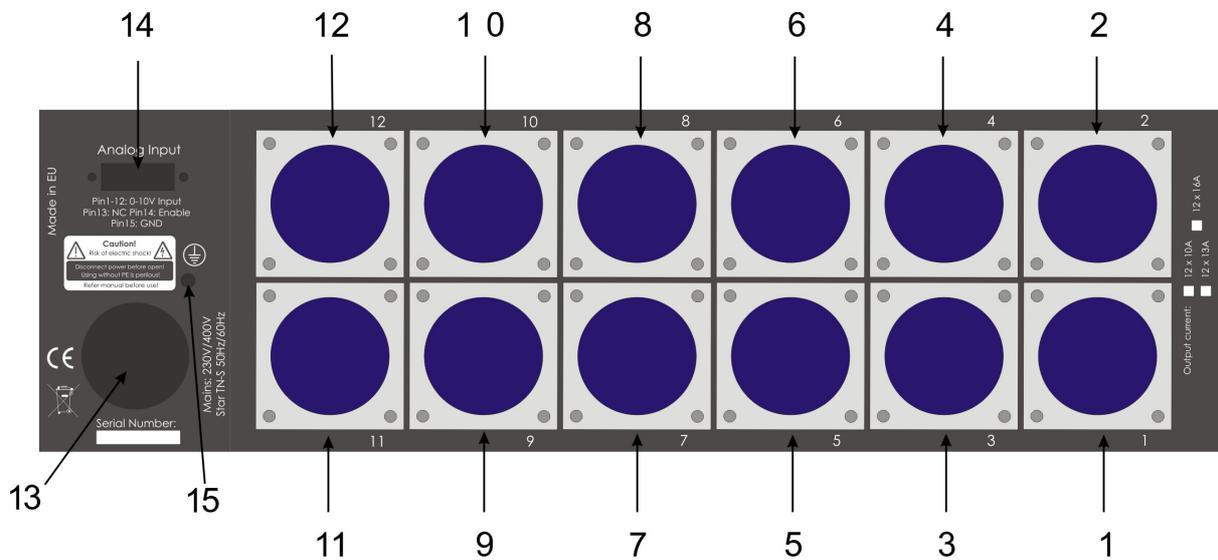
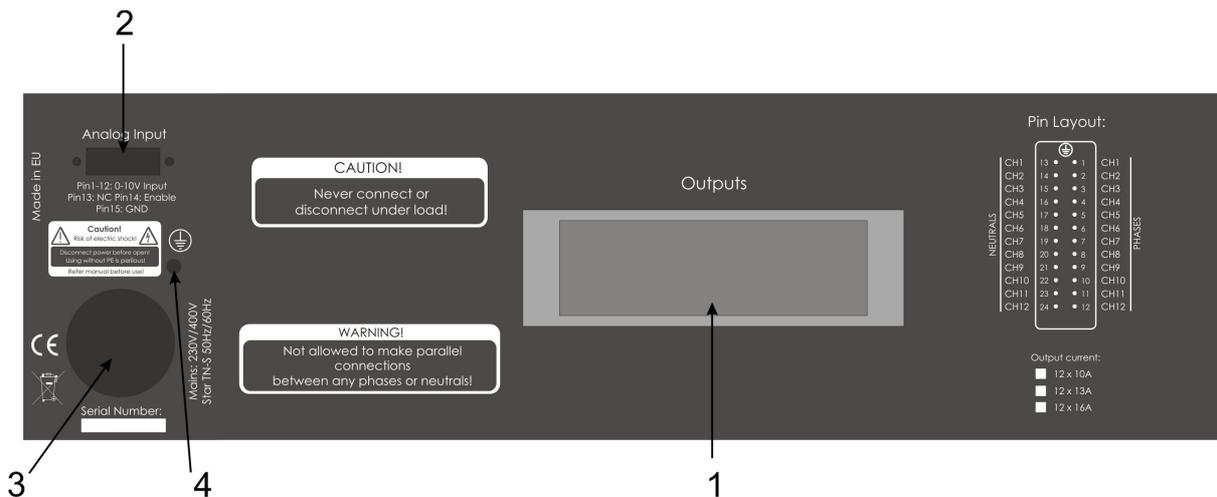


Figure 3. Back part connectors (16A 3P CEE form)

- 1-12. Outputs of the channels from 1 to 12.
- 13. Mains input cable (H07 rubber; 5x6mm<sup>2</sup> or 5x10mm<sup>2</sup>) without CEE male plug
- 14. Analogue input via 15 pole SUB-D male connector (optional). **At -B suffixed version of the FLX dimmer at this position you can find the XLR connectors for DMX!**
- 15. Additional Protect Earth (PE) connection point for outputs with M4 nut

Outlet of the backside connectors of the **FLX-12xx-H1** dimmer:



**Figure 4. Back part connectors (24-pole ‘Harting/ILME’ type)**

1. Outputs for the channels 1 to 12.
2. Analogue input via 15 pole SUB-D male connector (optional). **At -B suffixed version of the FLX dimmer at this position you can find the XLR connectors for DMX!**
3. Mains input cable (H07 rubber; 5x6mm<sup>2</sup> or 5x10mm<sup>2</sup>) without CEE male plug
4. Additional Protect Earth (PE) connection point for outputs with M4 nut

The pin outlet of 24-pole ‘Harting/ILME’ type connector is the follows:

Pin number	Function
<b>1-12</b>	Output <u>phases</u> for channel 1-12
<b>13-24</b>	Output <u>neutrals</u> for channel 1-12
<b>Side connectors</b>	<b>PROTECTIVE EARTH (PE)</b>

Recommended 24-pole male plug (optionally orderable form PLS):

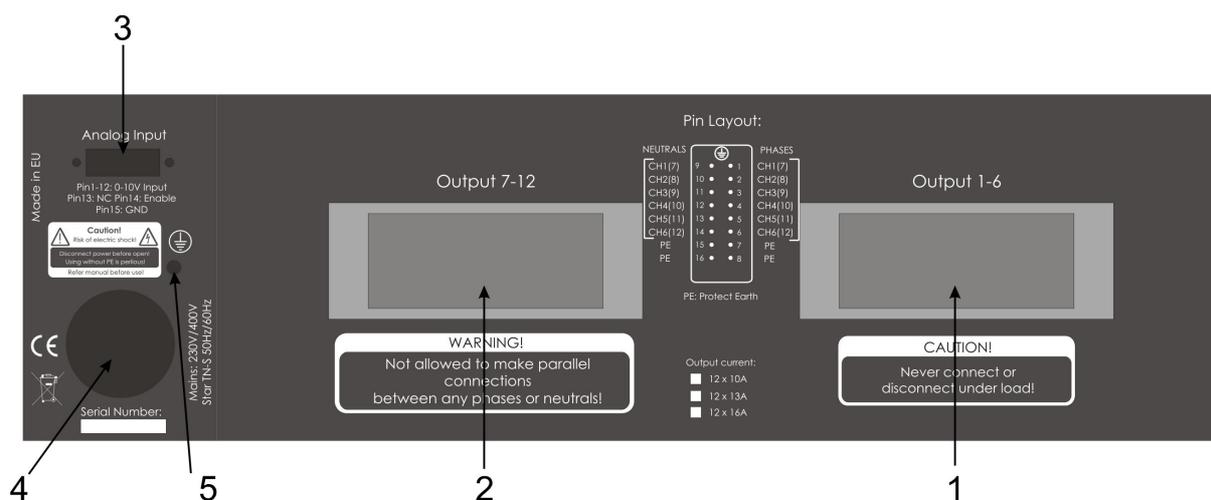
**Male insert:** HDC HE 24 MT (Tension clamp, Weidmüller order no.: 1745850000)

or HDC HE 24 MS (Screw connection, Weidmüller order no.: 1211100000)

**House:** HDC 24B TOBU 1M25G (M25 cable gland Weidmüller order no.: 1787820000)

or HDC 24B TOBU 1M32G (M32 cable gland Weidmüller order no.: 1787810000)

Outlet of the backside connectors of the **FLX-12xx-H2** and **FLX-12xx-H2D** dimmer:



**Figure 5. Back part connectors (2x16-pole ‘Harting/ILME’ type)**

1. Outputs for the channels 1 to 6. This connector referred in the future as **SocketA**.
2. Outputs for the channels 7 to 12. This connector referred in the future as **SocketB**.
3. Analogue input via 15 pole SUB-D male connector (optional). **At -B suffixed version of the FLX dimmer at this position you can find the XLR connectors for DMX!**
4. Mains input cable (H07 rubber; 5x6mm<sup>2</sup> or 5x10mm<sup>2</sup>) without CEE male plug
5. Additional Protect Earth (PE) connection point for outputs with M4 nut

The pin outlet of 16-pole ‘Harting/ILME’ type connectors in **H2 version** is the follows:

Pin number	Function
1, 2, 3, 4, 5, 6	Output <u>phases</u> for channel 1,2,3,4,5,6 respectively on <b>Socket-A</b> and output <u>phases</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b> .
9, 10, 11 12, 13, 14	Output <u>neutrals</u> for channel 1,2,3,4,5,6 respectively at <b>Socket-B</b> and output <u>neutrals</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b> .
7, 8, 15, 16 and the side connectors	<b>PROTECTIVE EARTH (PE)</b>

The pin outlet of the 16-pole ‘Harting/ILME’ type connectors in **H2D version** is the follows:

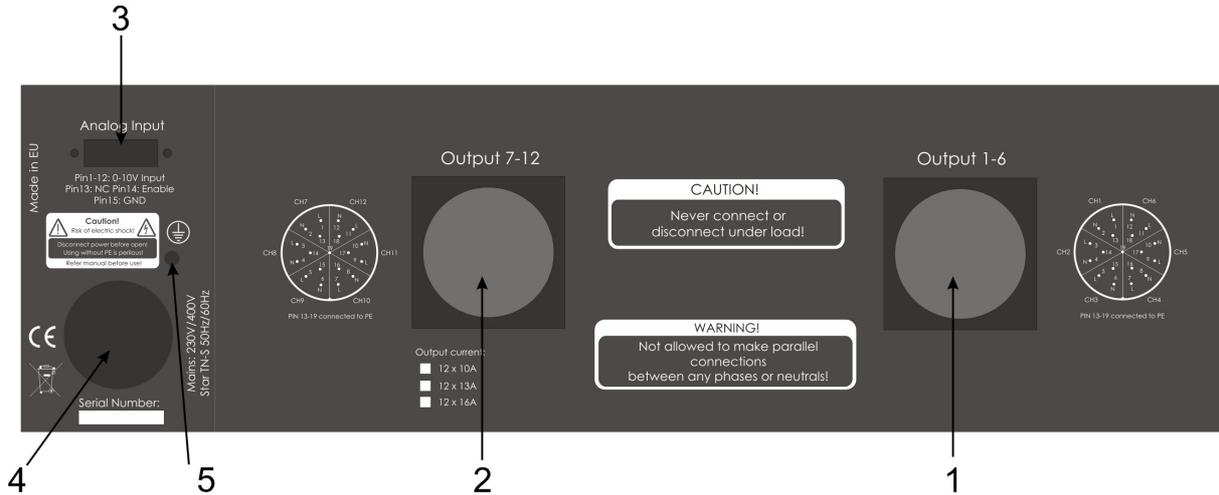
Pin number	Function
1, 3, 5, 7, 9, 11	Output <u>phases</u> for channel 1,2,3,4,5,6 respectively on <b>Socket-A</b> and output <u>phases</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b> .
2, 4, 6, 8, 10, 12	Output <u>neutrals</u> for channel 1,2,3,4,5,6 respectively on <b>Socket-A</b> and output <u>neutrals</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b> .
13, 14, 15, 16 and the side connectors	<b>PROTECTIVE EARTH (PE)</b>

Recommended 16-pole male plug (optionally orderable form PLS):

**Male insert:** HDC HE 16 MT (Tension clamp, Weidmüller order no.: 1745840000)  
 or HDC HE 24 MS (Screw connection, Weidmüller order no.: 1207500000)

**House:** HDC 16B TOBU 1M25G (M25 cable gland Weidmüller order no.: 1788210000)

Outlet of the backside connectors at **FLX-12xx-SX** dimmer:



**Figure 6. Back part connectors (2x19-pole ‘Socapex’ type)**

1. Outputs for the channels 1 to 6. This connector referred in the future as **Socket-A**
2. Outputs for the channels 7 to 12. This connector referred in the future as **Socket-B**
3. Analogue input via 15 pole SUB-D male connector (optional). **At -B suffixed version of the FLX dimmer at this position you can find the XLR connectors for DMX!**
4. Mains input cable (H07 rubber; 5x6mm<sup>2</sup> or 5x10mm<sup>2</sup>) without CEE male plug
5. Additional Protect Earth (PE) connection point for outputs with M4 nut

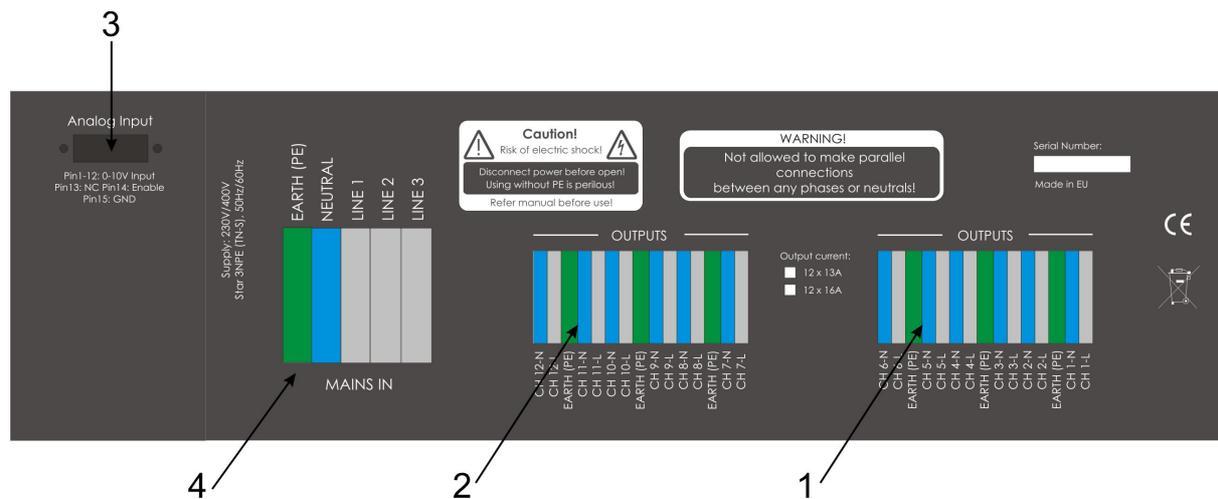
The pin outlet of 19-pole ‘Socapex’ type connectors is the follows:

Pin number	Function
1, 3, 5, 7, 9, 11	Output <u>phases</u> for channel 1,2,3,4,5,6 respectively on <b>Socket-A</b> and output <u>phases</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b>
2, 4, 6, 8, 10, 12	Output <u>neutrals</u> for channel 1,2,3,4,5,6 respectively on <b>Socket-A</b> and output <u>neutrals</u> for channel 7,8,9,10,11,12 respectively on <b>Socket-B</b>
13, 14, 15, 16,17,18,19	<b>PROTECTIVE EARTH (PE)</b>

Recommended male plug (optionally orderable form PLS):

**Male inline plug:** P19-LM-S-M40A (solderable, for cable OD 16-28mm)

Outlet of the backside connectors at **FLX-12xx-STB** dimmer:



**Figure 7. Back part connectors (Screw terminal block input/outputs)**

1. Outputs for the channels 1 to 6. Max wire cross section is 4mm<sup>2</sup>.
2. Outputs for the channels 7 to 12. Max wire cross section is 4mm<sup>2</sup>.
3. Analogue input via 15 pole SUB-D male connector (optional). **At -B suffixed version of the FLX dimmer at this position you can find the XLR connectors for DMX!**
4. Mains input. Max wire cross section is 6mm<sup>2</sup> (12x10A) or 10mm<sup>2</sup> (12x13A and 12x16A)

**CAUTION!**

**Installation of this dimmer version needs a trained service person.**

Take extra care at the installation of the PE, Live and Neutral connections.

The Grey terminals always for LIVE (Line voltage)

Blue ones for the NEUTRAL

Green/Yellow ones for the Protect Earth!

Wrongly connected input mains or outputs can damage the dimmer and the loads!

## 2. Installation of the unit

After unpacking the apparatus is ready for use. **Not to make the cable longer! If it is short, use standard extension. Operating with injured cable is perilous!**

**CAUTION!**

 **The apparatus is NOT waterproof! Protect it from liquids!** 

**Not to use outdoors without appropriate preventive measures.**

**If water or other liquid getting into it, dry up, and take to technician!**

**Working with wet apparatus is PERILOUS!**

The unit has been shipped with 5x6mm<sup>2</sup> (12x10A) or 5x10mm<sup>2</sup> (12x13A and 12x16A) H07 rubber cable (Star only) or with YSLY 7G (star/delta) without CEE male plug (except screw terminal block type models). The correct order of the power cable is the follows:

Cable color / N°	Function (STAR)	Cable N°	Function (DELTA)
Grey (1)	Line 1 (L1 or R)	1,4	Line 1
Black (2)	Line 2 (L2 or S)	2,5	Line 2
Brown (3)	Line 3 (L3 or T)	3,6	Line 3
<b>Blue (4,5,6)</b>	<b>NEUTRAL (N)</b>	Green/Yellow	Protect Earth (PE)
Green/Yellow	Protect Earth (PE)		

**CAUTION!**

**The manufacturer doesn't responsible if the installer/user connect the cable wrongly! The guaranty will be void if the connection order is wrong and the unit can damage too!**

**Before power up, always control the right connection of the Lines, Neutral and the Protect Earth!**

**Consult with the manufacturer or**

**with trained service person if you need help in installation!**

The unit is able to control 12x10A, 12x13A or 12x16A (depends on the dimmer model). The input L1, L2 and L3 lines are connected to the channels as the follow:

1-4 channel to Phase L1; 5-8 channel to Phase L2; 9-12 channel to Phase L3

If necessary the dimmer can be powered from only one phase (L1, L2 and L3 inputs are powered from the same phase). Please consider that in this case the maximum input power is change like this:

- 12 x 10A model: 1 x 40Amps - 12 x 13A model: 1 x 52Amps - 12 x 16A model: 1 x 63Amps

 **These are the absolute maximum ratings!** 

**If you overdrive, the dimmer can DAMAGE!**

### 3. Analog control (optional)

The functions of the SUB-D connector pins are in the following table:

Pin N°	Function
1-12	1-12 Channel IN
13	FIX +10V Output (optional)
14	Analog mode enable input (connect it to GND)
15	GND

The Pin 13 is an optional fix 10V ( $I_{OMAX}=50mA!$ ) output. With this output and twelve potmeters you can make a very simple control board to this dimmer. The control board doesn't need any other power supply. Use 10K to 100K Linear type potmeters.

**If you don't want to use pin 13 leave it UNCONNECTED! The pin 14 must be connected to GND to enable the analog control!** (Just connect the pin 14 to the pin 15.) While the analog control is enabled, the dimmer doesn't receive any data from the DMX line, and the display and the DMX LED are blank. For the analog control cable use a 14 core wire with shield. The cable will be the shortest as possible. The connector type is the SUB-D 15 pin female with house.

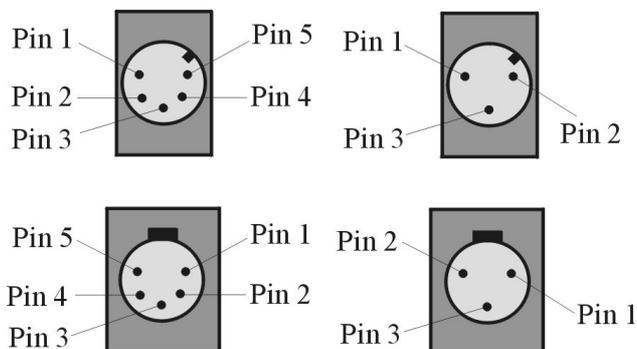
### 4. Digital Control

#### 4.1 DMX input

The DMX input signal must be connect to the DMX In [11] marked connector, which can be found on the front side of the unit. If this unit is the **last one on the DMX network chain** you must take the termination switch on the front panel to **“Term On”** position on the front panel. **Otherwise left it at the other position!**

Pin Number	Function
1	Ground (Shield)
2	Data (-)
3	Data (+)
4	Spare Data (-) NC
5	Spare Data (+) NC

**Table 1.** Functions of XLR pins



**Figure 5.** Outlet of the connectors (front view, the male connectors in the upper line)

**The DMX input of the dimmer is power and opto isolated!**  
**Not recommended to connect the Pin 1 to the Protect Earth (PE)!**  
 The DMX Throughput is **not isolated** from the DMX input and **not refreshed!**

## **4.2 Menu specification**

After pressing the SET button on the dimmer you can reach the following menu points (use UP/DOWN keys to scroll on the menu list)

1. Start Address
2. Test Outputs
3. Run Chaser
4. DMX Patch
5. Dimmer Curves
6. Dimmer Preheats
7. Dimmer MaxLevel
8. Memories
9. If DMX Fails
10. Factory Defaults
11. Dimmer Settings
12. Temperatures

To enter to the selected menu press the SET button again, otherwise press the ESC to go back the standby display.

### **4.2.1. Start address set**

In this menu point you can set the global start address of the dimmer (from the set address the dimmer receives twelve DMX data and control the outputs from 1 to 12). Use the UP/DOWN keys to change the address (from 001 to 512). To save the setting, press SET, otherwise press ESC to go back into the menu list.

If the dimmer is in softpatch mode you have to disable it before you select global DMX address. For it the dimmer ask back when you go into this menu point. To disable the softpatch, press SET after this question displayed ***The factory default is 001.***

### **4.2.2. Test the outputs of the dimmer**

After entering this menu you have to select the testing way, **blinking** (the output blinks on/off in each 1sec) or **steady** (the output in stable). Press SET for selection and now you can select with UP/DOWN keys which channel you want to test (from 1 to 12). Press SET to modify the light output level by the UP/DOWN keys; to choose another output press SET again. Press ESC to exit from this menu.

#### 4.2.3. Chaser

The dimmer has 9 preprogrammed (non-modify able) scenes / chaser effects. After enter to this menu, select with the UP/DOWN keys which chaser you want to play on the output. The first three are fix light outputs (30%, 60% and 100%) for each channel; the last 6 are running chasers. Press SET after selection and the chaser now present on the outputs. To modify the light level (grand master) use the UP/DOWN keys. To select another chaser press SET, to exit from the menu press ESC.

#### 4.2.4. DMX Softpatch

You can select different DMX addresses for each output in this menu. First with the UP/DOWN keys select the output, after press the SET and now select the DMX address for that channel. Press the SET to chose another output and repeat the steps described before.

To exit from this menu press the ESC. Here the dimmer asks back, to enable this settings. If you want to enable, press SET, otherwise ESC. If you choose SET, the global DMX address which selected in the first menu point is now disabled. If you select ESC the selected addresses are stored but not enabled (the global DMX address is enabled).

#### 4.2.5. Dimmer PreHeat

To give preheat level for output enter into this menu point. With the UP/DOWN keys select the output (1-12 or ALL) and after press SET. Now you can set the preheat level by the UP/DOWN keys. A star (\*) indicated next to the level that the data has been changed. Press SET and the level will be stored into the memory and you can select another output or press ESC to exit from this menu without saving you modification.

If you press ESC after pressing the SET (you don't want to adjust more channels) the dimmer stores the data and exit from the menu. ***The factory default is 0% for each output.***

#### 4.2.6. Dimmer MaxLevels

To set limitation for the output level, enter into this menu point. (Here actually the adjusted level limits the DMX input value to the selected level.) **DON'T use this feature to handle 115V bulbs! Choose 120V control curve in the next menu point for those channels!**

With the UP/DOWN keys select the output (1-12 or ALL) and after press SET. Now you can set the maximum level by the UP/DOWN keys. A star (\*) indicated next to the level that the data has been changed. Press SET and the level will be stored into the memory and you can select another output or press ESC to exit from this menu without saving you modification.

If you press ESC after pressing the SET (you don't want to adjust more channels) the dimmer stores the data and exit from the menu. ***The factory default is 100% for each output.***

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### 4.2.7. Dimmer Curves

To select different control curves for each output, enter into this menu point. With the UP/DOWN keys select the output (1-12 or ALL) and after press SET. Now you can set the control curve by the UP/DOWN keys. A star (\*) indicated next to the level that the data has been changed. Press SET and the level will be stored into the memory and you can select another output or press ESC to exit from this menu without saving you modification.

If you press ESC after pressing the SET (you don't want to adjust more channels) the dimmer stores the data and exit from the menu. ***The factory default is RMS Linear for each output.***

- By selecting the **REL** (Relay) the dimmer output switch to RELAY mode. In this case the output controlled by mechanical relays (ON/OFF). The output switches are on above 15% control level and switches off below 12%.
- To have a full independent power on the output selects the **PWR** curve.

### 4.2.8. Memories

Here you can play/record and edit dimmer scenes up to 16 memories. After enter with the UP/DOWN keys select, which function you want to enter.

#### 4.2.8.1. Play Memories

With the UP/DOWN keys select a memory what you want to play and press SET. With the selected Fade In time the dimmer starts to fade (display) the memory. By pressing the ESC you can fade back from the memory.

If the HTP is selected in the PRIORITY menu point (see three sections later) the dimmer continues receiving DMX signal and handle the memory in Highest Takes Precedence priority. Otherwise the DMX data receiving is disabled (but the LED on the front panel still indicate that the DMX is present or not).

#### 4.2.8.2. Edit Memories

With the UP/DOWN keys select the memory location what you want to edit and press SET. After it the stored data is present on the outputs of the dimmer and you can edit it.

With the UP/DOWN keys select the output and press SET to change the value of that output. Press the SET to store the set value or press ESC to exit without saving from this menu point.

Repeat the steps above to adjust the other channels if necessary.

**If the selected memory location is not empty the dimmer prompt you that the location is contain stored data. Press Ok to accept it and you overwrite the existing data or press ESC to choose another location.**

#### ***4.2.8.3. Record Memories***

With this feature you can store DMX data into the memory.

Use the UP/DOWN keys to select memory location where you want to save the DMX input and press SET.

**If the selected memory location is not empty the dimmer prompt you that the location is contain stored data. Press Ok to accept it and you overwrite the existing data or press ESC to choose another location.**

#### ***4.2.8.4. Priority of Memories***

If you want to add the DMX input data with the memory (at playing) chose with the UP/DOWN keys the HTP (highest takes precedence). Otherwise select No DMX to disable the DMX input while memory playing is in progress.

#### **4.2.9. If DMX Fails**

Here you can set how the dimmer react if the DMX signal is fails. You can choose from the following possibilities:

1. **Keep DMX value** (the dimmer keep the output levels infinitely till a new valid DMX pocket not arrive)
2. **Fade Out** (with the selected wait and fade out time the dimmer fade back to zero level after DMX data fails; you can set it in the Dimmer Settings menu section)
3. **Play memory** (The dimmer plays the selected memory location if the DMX fails. You can set after pressing the SET button by the UP/DOWN keys. Press SET to store the selected memory number and ESC to exit to the main menu.)

**After change of these setting you have to restart the dimmer (disconnect-reconnect) to have effect for the next DMX fail.**

#### **4.2.10. Factory defaults**

To store back the factory settings you can choose from three alternatives by the UP/DOWN keys:

1. **Clear Settings** (DMX addressing, softpatch, PreHeat and Maximum levels, Control curves)
2. **Clear Mem** (Clear only the stored memories, not modify the other settings)
3. **Clear ALL** (Clear the setting, the memories and set back the defaults for the dimmer settings as well)

Press the SET at the chosen function or press ESC to exit from this menu point.

#### 4.2.11. Dimmer Settings

By pressing the SET button **three times within two seconds** you enter into the dimmer setting menu point where you can adjust the following preferences:

1. **User Control Curve**

For each DMX input data (0-255) you can set output level (from 0%-100%) to give freedom for special control cases.

2. **If DMX Fails setup**

Here you can select the Wait Time and the Fade Out time for the If DMX Fails menu point.

3. **Display Time**

Here you can select the display backlighting time; the lighting time can be infinitely or can be switch off after a specified time.

4. **Memory Fade Times**

Here you can specify the Fade In and Fade Out times for the memory play back.

#### Technical information

Power supply: .....	TN-S 3x230V/400VAC $\pm 10\%$ (3 x 40A or 3x 63A) or 3PE 230V Delta
Power draw with open outputs:.....	10W
Output connectors:.....	12 x Schuko (-S), 2x 16-pole ‘Harting’ (-H2); 2x 19-pole ‘Socapex (-SX), 12 x CEE16/3P (C) 12 x Neutrik PowerCon 16A (-PC)
Input connectors:.....	15 pin SUB-D male (opt.) and 5 pole XLR male
Noise filters:.....	HF filters at all ch. ( $tr=225\mu S \pm 5\%$ at 12x10A model; $tr=250\mu S \pm 5\%$ at 12x13A and 12x16A models)
Output protection:.....	C10A, C13A or C16A circuit breakers (1P, 1P+N or 2P depends on the model)
Input protection: .....	TVS, opto and power isolation on DMX input <b>(the throughput is not isolated and refreshed!)</b>
Operating temperature:.....	10°C to 35°C (RH: 0-90%, non-condensing)
Storage temperature:.....	-10°C to 60°C
Dimensions:.....	484 x 132 x 350 + connectors
Weight:.....	18Kg



## Declaration of Conformity

We, PLS Electronics Limited declare under sole responsibility that the product:

**Product name:**..... Pegasus ® FLX 12-channel dimmer series  
**Product model** (*output variations*):..... S (Schuko), C (12 x 3 pole 16A CEE)  
F (CEBEC), PC (12 x PowerCon)  
H1 (24-pole 'Harting'), 2H1 (2x24-pole 'Harting')  
H2 (2 x 16-pole 'Harting'), 2H2 (4 x 16-pole 'Harting'),  
SX (2 x 19-pole Socapex), 2SX (4 x 19-pole Socapex)  
STB (Screw terminal blocks input/outputs)  
**Serial Number:**..... n/a  
**Lot:** ..... n/a  
**Item number:**..... One

to which this declaration relates is in conformity with the following standards:

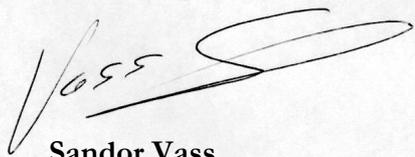
- **EN 55015:2013** Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment (CISPR 15:2013 + IS1:2013 + IS2:2013)
- **EN 61000-6-2:2007** Electromagnetic compatibility (EMC). Part 6-2: Generic standards. Immunity for industrial environments (IEC 61000-6-2:2005)
- **EN 61439-1:2011** Low-voltage switchgear and controlgear assemblies. Part 1: General rules (IEC 61439-1:2011)
- **EN 61439-2:2011** Low-voltage switchgear and controlgear assemblies. Part 2: Power switchgear and controlgear assemblies (IEC 61439-2:2011)

Therefore the upper indicated product **qualifies** the EU 2014/35/EU LV Directive and the 2014/30/EU EMC directive, considering 768/2008/EEC directive for CE.

**Place of issue:**  
Szekesfehervar, HUNGARY

**Date of issue:**  
21.04.2016

**Signature of authorised person:**



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