Power Express

Modular Control System for lighting, drapes and other power circuits control

1 Introduction

Modular control system for lighting system, drapes control and other power circuits control. It is suitable wherever sensitive work with light system is needed, or central control and control of power circuits by integrated control system is necessary.

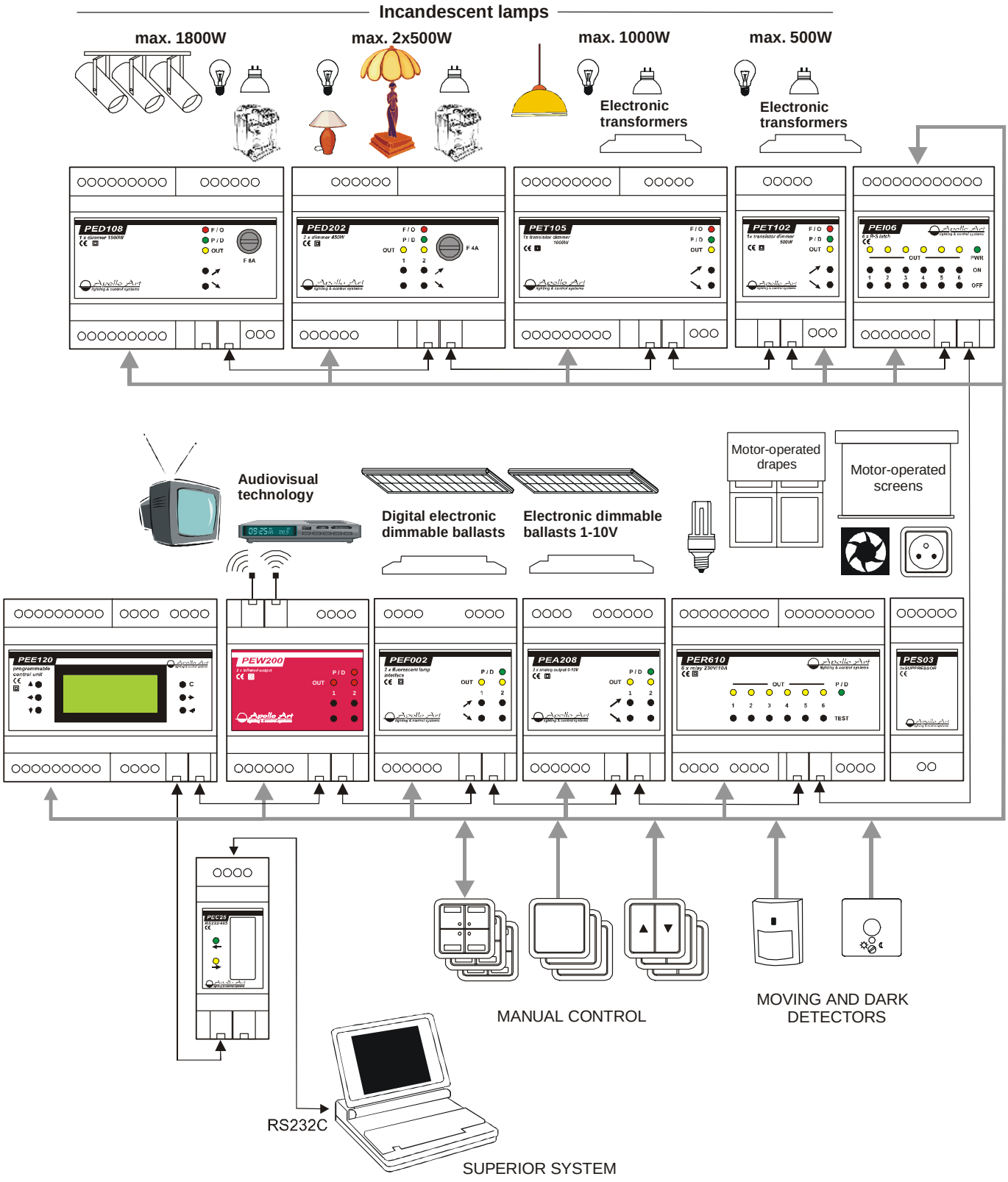
Usage for:

- Smart houses
- Conference and versatile halls, boardrooms, meeting rooms, showrooms
- Classrooms, auditorium (with video projection)
- Entertaining halls
- Theatres, galleries, museums
- Information centers
- Exhibition stands

System Features

- Up to 320 analog outputs
- Up to 960 binary outputs
- Simple installation (into switchboard on DIN rail)
- Small dimensions
- Consistent galvanic isolation between control and power circuits
- Easy programming of parameters (PC under Windows)
- Immediate information about current status of the units
- Link possibility to superior system (system of integrated control, PC)
- Manual control from current press buttons and switches (great variety of designs and colors)
- Communication between units and palatal switchboards via one twisted cable.

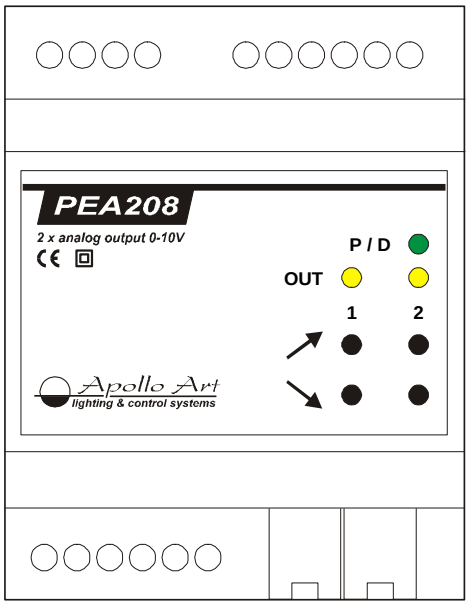
2 System Block Diagram



3 Control units

PEA208	Two analog outputs low voltage 0-10V, 50mA
PEC25	RS232/RS485 Converter
PED108	Dimmer for continuous control of resistive and inductive load up to 8Amps, 230V
PED202	Two channel dimmer 230V up to 2.7Amps per channel, up to 4Amps total load
PEE120	Programmable unit for storage of scenes
PEF150	Control unit for fluorescent lamps with DALI digital dimmable electronic ballasts
PEF200	Control unit for two circuits of fluorescent lamps with DSI digital dimmable electronic ballasts
PER610	Six relays for load up to 10Amps, 230V
PES03	EMI suppressor unit for 3 switching channels
PET102	Transistor dimmer for control of resistive and capacitive load up to 2Amps, 230V
PET105	Transistor dimmer for control of resistive and capacitive load up to 5Amps, 230V
PEW200	Two channel unit for wireless infrared control
FDC13	Control unit for fluorescent lamps electronic ballasts, type FDC13

3.1 Analog outputs unit, type PEA208

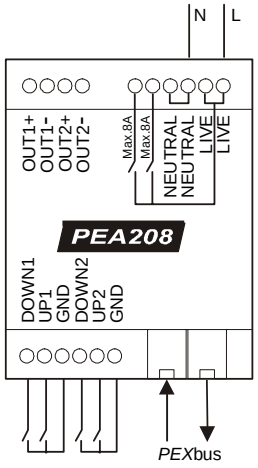


- two independent analog outputs 0-10 V
- 10 bits resolution
- possibility to control devices with interface 0-10V (dimmable ballast for fluorescent lamps, dimmers, frequency converters ...)
- ability to sink current up to 100mA each output (more then 100 of ballasts)
- two switching outputs (automatically switched on if analog output voltage is greater then 1V (for power supply of ballasts)
- control by bus *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (input response, min., max. value of output voltage, dimming speed)
- indication of power supply and output level
- easy installation, small dimensions

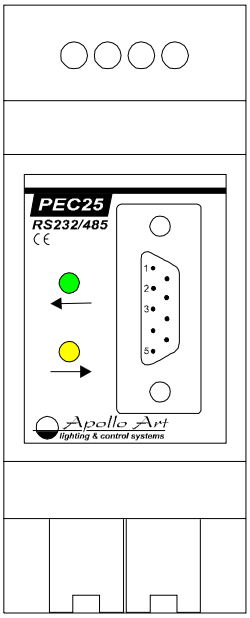
3.1.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of regulated outputs:	2
D/A converter resolution:	10 bits (1024 levels)
Max. load of analog outputs:	100mA sink,15mA source every output
Number of relay outputs:	2
Max. load of relays outputs:	230V/8A every output
Insulation strength:	2.5 kV between power and control circuits
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Operating ambient temp.:	0 to 60^{o}C
Storage temperature:	- 20 to 90°C
Weight:	0.25 kg
Dimensions: w x h x d:	(71 x 90 x 58) mm (4 modules, 17.5 mm each)

3.1.2 Terminals connection



3.2 RS-232/485 Data Converter, type PEC 25

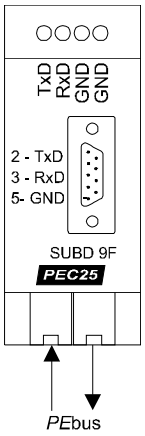


- data converter from RS232 to RS485 (*PEXbus*)
- automatic half duplex
- transmission way indication
- power supply from Power Express units
- easy installation
- small dimensions

3.2.1 Technical specification

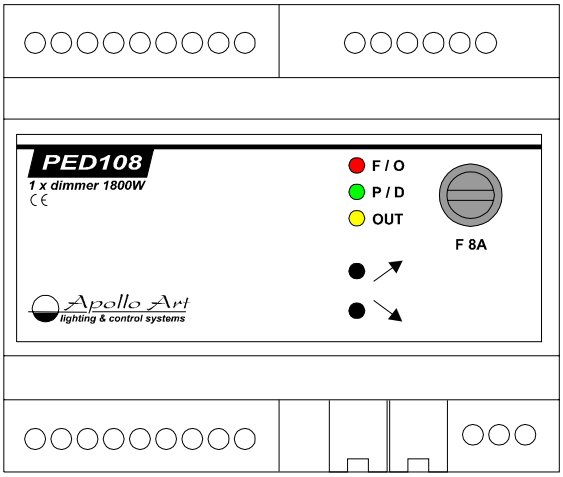
Power requirements:	From *PEXbus* or externally 7.5 - 24 V DC/100mA
Baud rate:	19200 bits/s
Input/output connectors:	RS232 – 9 pin female D connector or terminals up to 1.5 mm^2 RS485 - 2x connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Dimensions: w x h x d:	(36 x 90 x 58) mm (2 modules, 17.5 mm each)

3.2.2 Terminals connection



Connector and terminals are connected in paral
TxD transmit data
RxD receive data
GND digital ground

3.3 Dimmer, type PED 108

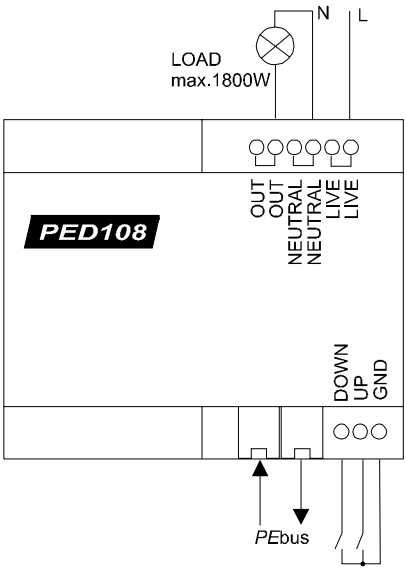


- dimmer for resistive and inductive loads up to 8A
- control by bus *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (input response, min., max. value of output voltage, dimming speed)
- indication of output level, max. temperature overload and over-current fuse
- easy installation
- small dimensions

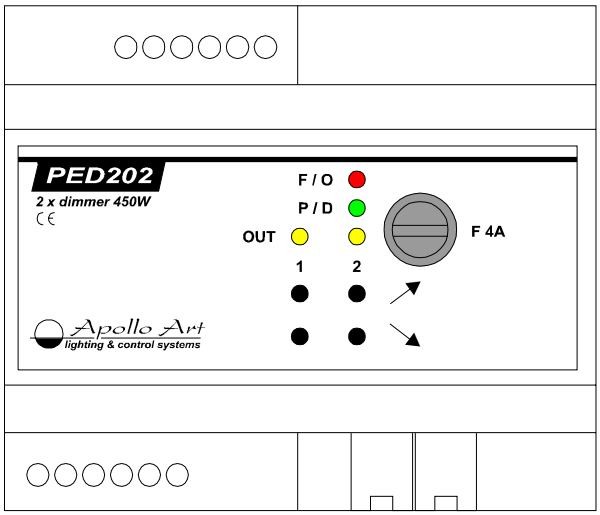
3.3.1 Technical specification

Power requirements:	230V / 50/60Hz, 8 Amps
Number of regulated outputs:	1
Max. load:	8 Amps
Over-current protection:	Quick acting fuse 5x20mm, 8 Amps
EMI radiation:	According to EN55014 and EN55011 standard
Insulation strength:	2.5 kV between power and control circuits
Way of regulation:	Leading - edge phase control
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Cooling System:	Passive aluminum heatsink
Operating ambient temp.:	0 to 40°C
Storage temperature:	- 20 to 90°C
Weight:	0.75 kg
Dimensions w x h x d:	(106 x 90 x 58) mm (6 modules, 17.5 mm each)

3.3.2 Terminals connection



3.4 Dimmer, type PED 202

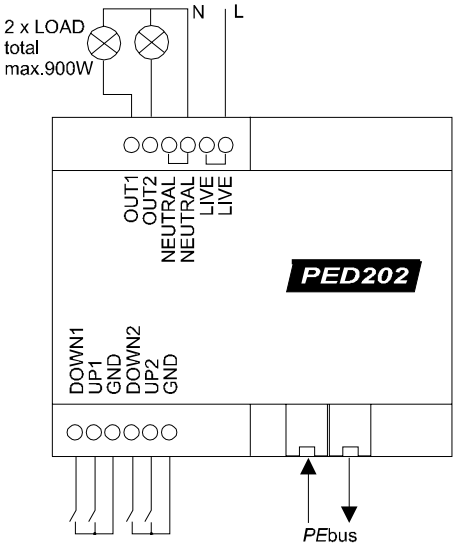


- dimmer for resistive and inductive loads up to 4A
- two individually regulated outputs
- control by *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (input response, min., max. value of output voltage, dimming speed)
- indication of output level, max. temperature overload and over-current fuse
- easy installation
- small dimensions

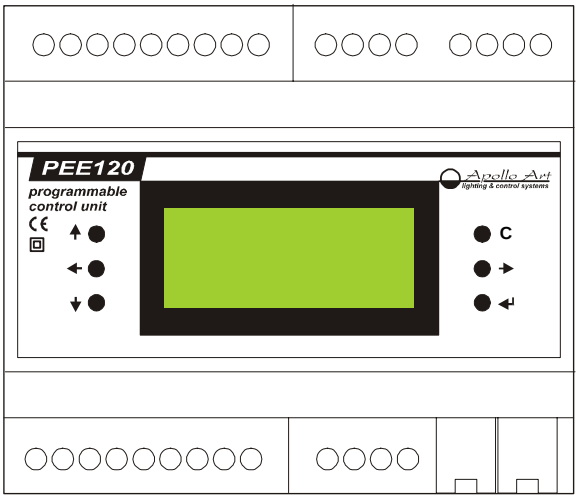
3.4.1 Technical Specification

Power requirements:	230V / 50/60Hz, 4 Amps
Number of regulated outputs:	2
Max. load:	2.7 Amps per channel, 4 Amps total
Over-current protection:	Quick acting fuse 5x20mm, 4 Amps
EMI radiation:	According to EN55014 and EN55011 standard
Insulation strength:	2.5 kV between power and control circuits
Way of regulation:	Leading - edge phase control
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Cooling System:	Passive aluminum heatsink
Operating ambient temp.:	0 to 40^{o}C
Storage temperature:	- 20 to 90°C
Weight:	0.5 kg
Dimensions w x h x d:	(106 x 90 x 58) mm (6 modules 17.5 mm each)

3.4.2 Terminals connection



3.5 Programmable control unit, type PEE120

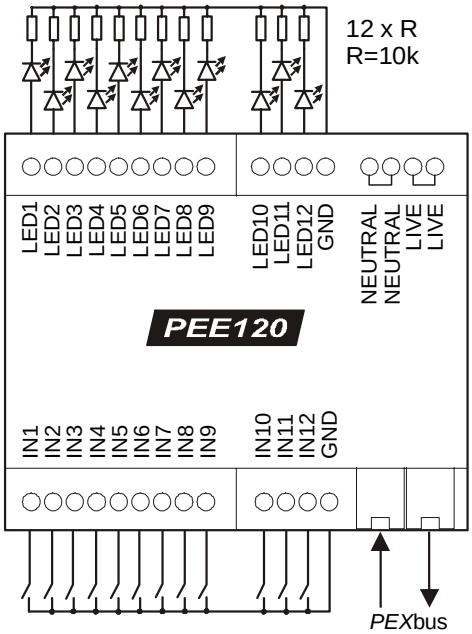


- Programmable controller for Power Express units
- 12 scenes, 40 cues each
- initiation of scenes by real time, external buttons or after power up
- chase time for each scene
- 12 programmable outputs for LED indication of selected scene
- edit buttons and four line display on front panel
- easy installation
- small dimensions

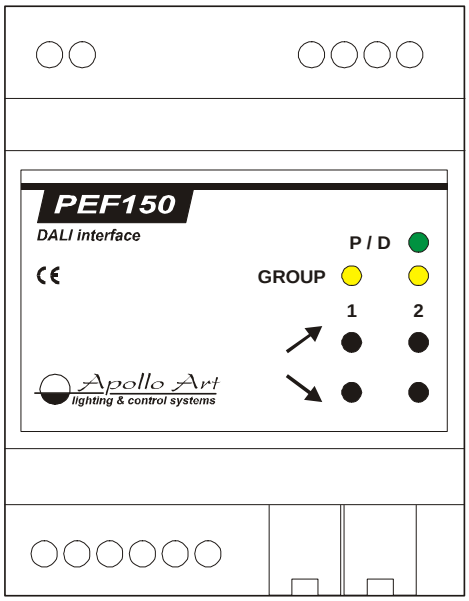
3.5.1 Technical Specification

Power requirements:	230V / 50/60Hz, 0.1Amps
Number of scenes:	12
Max. load of LED outputs:	100 mA per output, 150 mA total
EMI radiation:	According to EN55014 and EN55011 standard
Insulation strength:	2.5 kV between power and control circuits
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Operating ambient temp.:	0 to 50°C
Storage temperature:	- 20 to 90°C
Weight:	0.5 kg
Dimensions w x h x d:	(106 x 90 x 58) mm (6 modules 17.5 mm each)

3.5.2 Terminals connection



3.6 Fluorescent ballasts control unit, type PEF 150

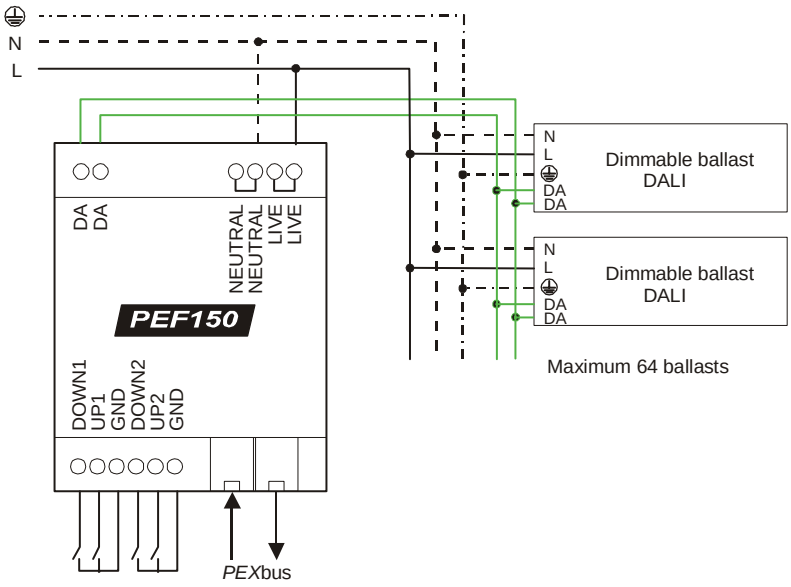


- Possibility to control up to 64 dimmable ballasts for fluorescent lamps on one bus divided up to 15 independent groups
- compatible with ballasts DALI (Philips, Osram, Tridonic, Helvar ...)
- control of all groups by *PEXbus* and two of them by external press buttons
- test buttons on front panel
- programmable parameters (inputs response, min. and max. value of output voltage, scan speed)
- indication of power and output level
- easy installation
- small dimensions

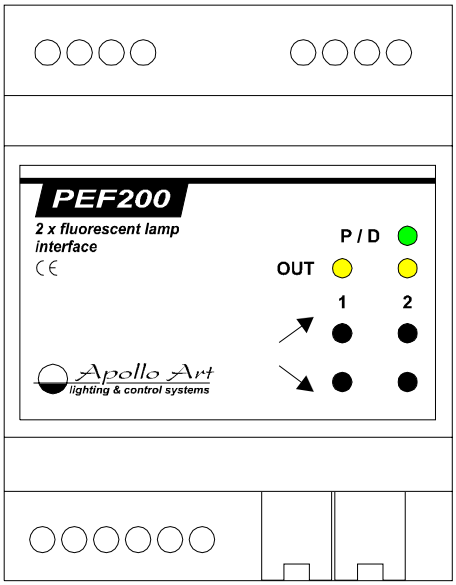
3.6.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of regulated groups:	15
Max. load:	64 electronic ballasts
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Weight:	0.25 kg
Dimensions w x h x d:	(71 x 90 x 58) mm (4 modules 17.5 mm each)

3.6.2 Terminals connection



3.7 Fluorescent ballasts control unit, type PEF 200

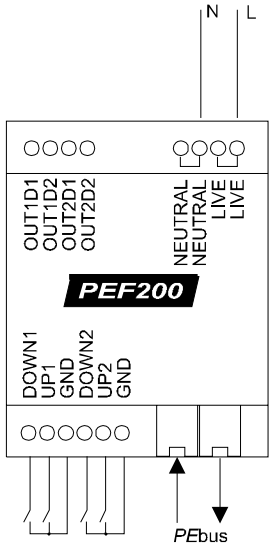


- two independent outputs for control of dimming ballasts for fluorescent lamps (TRIDONIC, ZUMTOBEL)
- control by *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (inputs response, min. and max. value of output voltage, scan speed)
- indication of power and output level
- easy installation
- small dimensions

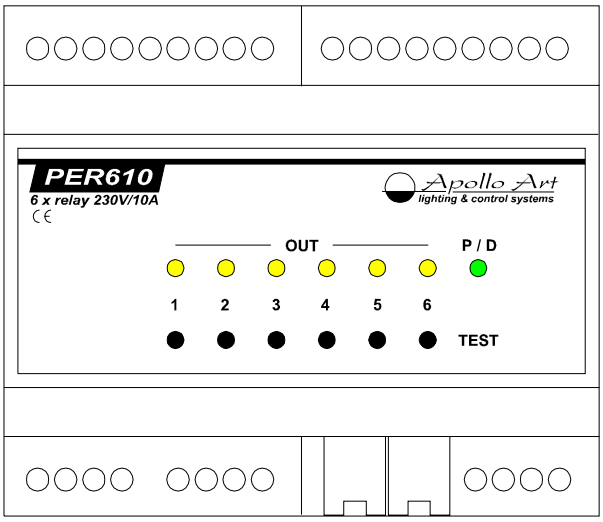
3.7.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of regulated outputs:	2
Max. load:	50 electronic ballasts for each output
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Weight:	0.25 kg
Dimensions w x h x d:	(71 x 90 x 58) mm (4 modules 17.5 mm each)

3.7.2 Terminals connection



3.8 Relay unit, type PER 610

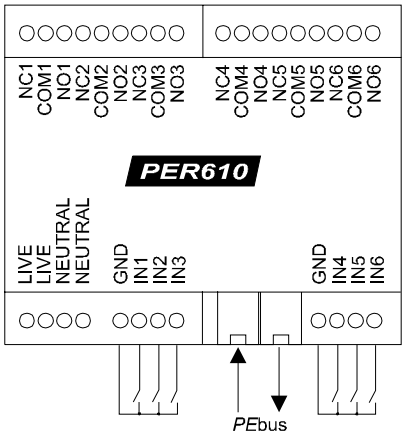


- relay unit for loads 10A
- 6 independent potential free switching output
- control by bus *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters of each relay (response on input, delayed off/on, memory, motor control sequence)
- indication of power supply and outputs
- easy installation
- small dimensions

3.8.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of regulated outputs:	6
Max. load:	230V/10A each output
Insulation strength:	2.5 kV between power and control circuits
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Weight:	0.5 kg
Dimensions w x h x d:	(106 x 90 x 58) mm (6 modules, 17.5 mm each)

3.8.2 Terminals connection



NC normally closed
COM common
NO normally opened

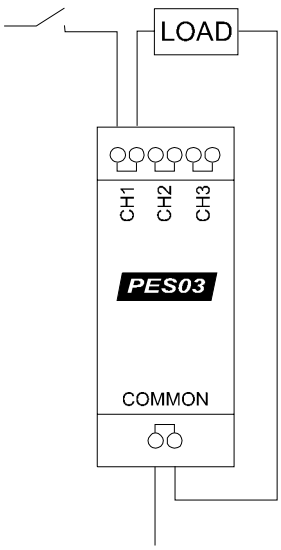
3.9 EMI suppressor unit, type PES 03

- EMI suppressor unit for voltage up to 275V
- 3 suppressed channels
- easy installation
- small dimensions

3.9.1 Technical specification

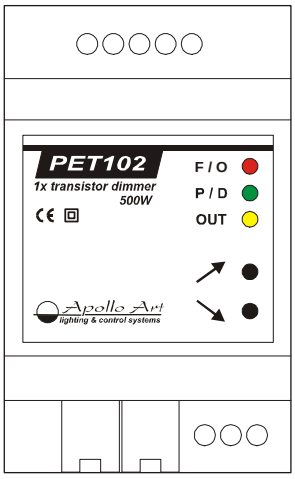
Power requirements:	-
Number of suppressed channels:	3
Max. load voltage:	275V AC
Max. load current:	10 Amps
Terminals:	For conductors up to S = 1.5 mm^2
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 100°C
Weight:	0.1 kg
Dimensions w x h x d:	(36 x 90 x 58) mm (2 modules, 17.5 mm each)

3.9.2 Terminals connection



In connection with PER610 suitable for suppression of noise peaks generated especially during switching inductive loads (motors of drapes or screens)

3.10 Dimmer, type PET102 (105)

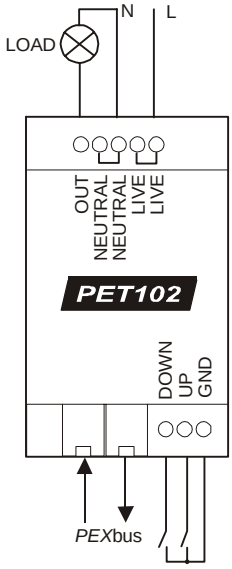


- dimmer for resistive and capacitive loads up to 2A (5A) suitable for dimming of electronic transformers
- control by bus *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (input response, min., max. value of output voltage, dimming speed)
- electronic fuse
- indication of output level, max. temperature overload and over-current fuse
- easy installation
- small dimensions

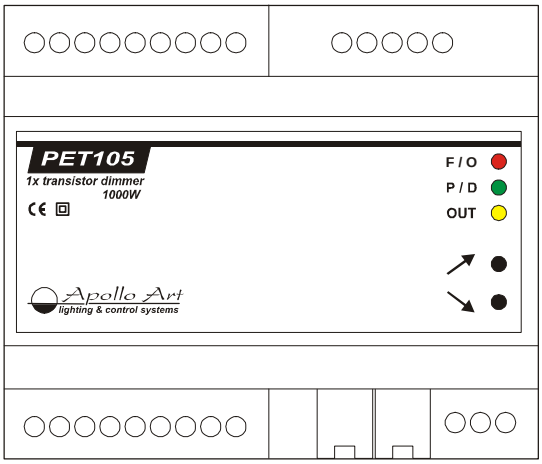
3.10.1 Technical specification

Power requirements:	230V / 50/60Hz, 2 Amps
Number of regulated outputs:	1
Max. load:	2 Amps (5 Amps)
Over-current protection:	Electronic fuse
EMI radiation:	According to EN55014 and EN55011 standard
Insulation strength:	2.5 kV between power and control circuits
Way of regulation:	Trailing - edge phase control
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Cooling System:	Passive aluminum heatsink
Operating ambient temp.:	0 to 40^oC
Storage temperature:	- 20 to 90°C
Weight:	0.5 kg
Dimensions w x h x d:	(53 x 90 x 58) mm (3 modules, 17.5 mm each)

3.10.2 Terminals connection



3.11 Dimmer, type PET105

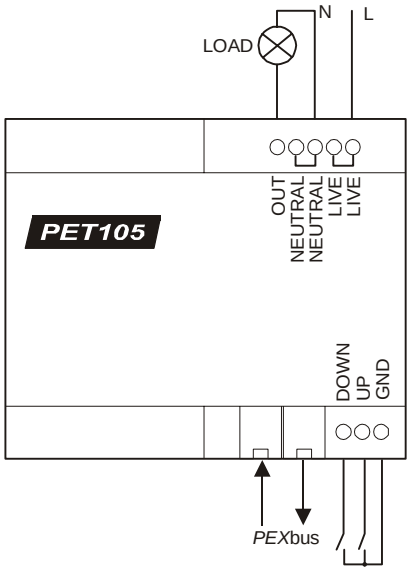


- dimmer for resistive and capacitive loads up to 5A suitable for dimming of electronic transformers
- control by bus *PEXbus* and external press buttons
- test buttons on front panel
- programmable parameters (input response, min., max. value of output voltage, dimming speed)
- electronic fuse
- indication of output level, max. temperature overload and over-current fuse
- easy installation
- small dimensions

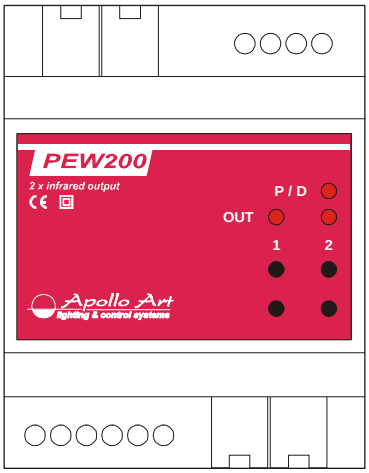
3.11.1 Technical specification

Power requirements:	230V / 50/60Hz, 5 Amps
Number of regulated outputs:	1
Max. load:	5 Amps
Over-current protection:	Electronic fuse
EMI radiation:	According to EN55014 and EN55011 standard
Insulation strength:	2.5 kV between power and control circuits
Way of regulation:	Trailing - edge phase control
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	Connector RJ-11-4
Cooling System:	Passive aluminum heatsink
Operating ambient temp.:	0 to 40°C
Storage temperature:	- 20 to 90°C
Weight:	0.75 kg
Dimensions w x h x d:	(106 x 90 x 58) mm (6 modules, 17.5 mm each)

3.11.2 Terminals connection



3.12 Infrared control unit, type PEW 200

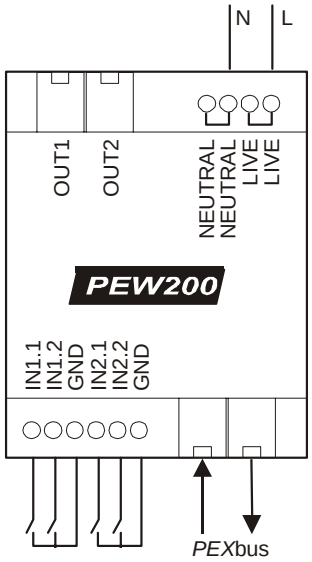


- two independent outputs for infrared control
- ability to learn up to 50 different IR codes
- control by *PEXbus* and external press buttons
- test buttons on front panel
- programmable number of repeating of code
- indication of power and output transmitting
- easy installation
- small dimensions

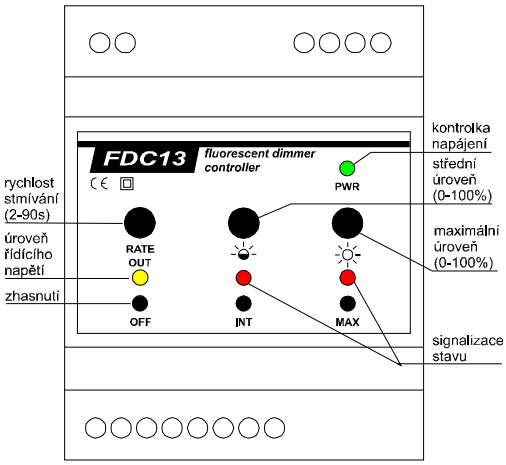
3.12.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of outputs for IR transmitters:	2
Max. load:	5 IR transmitters for each output
Carrier frequency of receiver:	36 - 40 kHz
Carrier frequency of transmitter:	38 kHz
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output for IR transmitters:	connector RJ-11-4
Input/Output *PEXbus*:	connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Weight:	0.25 kg
Dimensions w x h x d:	(71 x 90 x 58) mm (4 modules 17.5 mm each)

3.12.2 Terminals connection



3.13 Control unit for fluorescent lamps electronic ballasts, type FDC13



- output 0-10V for control fluorescent lamps electronic dimmable ballasts
- compatible with ballasts by Philips, Siemens, Helvar, Magnetek
- control by external press buttons
- test buttons on front panel
- programmable parameters (inputs response, min. and max. value of output voltage, scan speed)
- indication of power and output level
- easy installation
- small dimensions

3.13.1 Technical specification

Power requirements:	230V / 50/60Hz, 50 mA
Number of regulated groups:	1
Max. load of output relay:	10A / 250V AC
Control voltage:	0 - 11V DC
Max. current of control voltage:	20mA (c. 30 electronic ballasts)
Control terminals:	For conductors up to S = 1.5 mm^2
Power supply terminals:	For conductors up to S = 1.5 mm^2
Output terminals:	For conductors up to S = 1.5 mm^2
Input/Output *PEXbus*:	connector RJ-11-4
Operating ambient temp.:	0 to 60°C
Storage temperature:	- 20 to 90°C
Weight:	0.25 kg
Dimensions w x h x d:	(71 x 90 x 58) mm (4 modules 17.5 mm each)

3.13.2 Terminals connection