

THYRISTOR CHARGER-RECTIFIER



Description:

Chargers-rectifiers are used for uninterrupted supply of consumers with DC voltage, they charge batteries and supply consumers at the same time, they are fully automated and do not require supervision and management, once set parameters in the device are permanently stored for an unlimited period.

- When the mains voltage disappears (or is outside the limit), the consumers continue to be powered from the battery - without pause, when the batteries are discharged to the permitted limit, the output to the consumers and the entire device are turned off. When the mains voltage returns to the permitted limits, the device restarts (in a situation where the batteries are empty and the device is turned off) and continues to charge the batteries (in accordance with the set voltage and charging current) and supplies the consumers.
- They are used to supply equipment with DC voltage in: Transformer stations, Railways, Waterworks, Electric network, etc
- We have many solutions of device models with the following output voltages (nominal):
24V dc / 48V dc / 110V dc / 220V dc
- Output current range: min 20A -max 125A
- Charger rectifiers can be powered from a Three-phase or Single-phase alternating mains voltage (option).
- Special models with a double system of rectifiers and batteries, this devices have two independent chargers-rectifiers and two inputs for batteries. There are two options: The first option 110V +12V, the second option 220Vdc +24Vdc. When the battery is empty, at a certain level, it turns on another source, for example when the battery voltage drops to 100V, the second 12V battery is switched on and at the output we have 112V. When the mains voltage returns, the additional battery is turned off from the output. These devices are intended to maintain a stable voltage according to consumers, when the battery is discharged.
- Devices on the front have a panel with a display and buttons for setting parameters.
- Devices have outputs for remote signaling (relay contacts) and an output for RS 485 communication.
- A large number of quality protections: Overload (excessive charging current of batteries or consumers), Overheating, Too high voltage (at the input and output of the device), Too deep voltage (at the input and output of the device), from the reverse polarity of the batteries at the input, from too deep discharge of the batteries.
- DSP technology-,,digital signal procesor,,
- Light and sound signals for alarm conditions.
- IUU charging characteristics, DIN41773. Four charging mode: auto / float / boost / equalizing.

- Galvanic separation between, mains supply and batteries.
- Cooling - forced, active air flow regulation, or natural.
- The rectifier contains electrolytic capacitors for filtering the output voltage, that is ability the for operation without batteries.
- In the input circuit - EMI filters for interference and Varistor protection against overvoltage peaks.

Possibility to adjust the charging modes:

- automatic mode
- float mode
- boost mode
- equalize mode

Adjustable parameters:

- Float voltage in automatic mode
- Boost voltage in automatic mode
- Equalize Charge voltage
- Maximum charging current (common for all charging modes)
- Current level for automatic mode when switching from boost to float mode
 - Current level for automatic mode when switching from float to boost mode

Alarms for the following situation:

- Reverse polarity of the battery
- Battery voltage out of range
- Charging current is too high or load current is too high
- Loads on battery
- Power block overheated (transformer or coolers for semiconductors)
- System malfunction
- Mains voltage failure
- If Equalize mode is selected and there are loads at the output, device back to Auto mode

Measurements:

Alphanumeric display:

- Battery and rectifier voltage
- Charging current
- Load current
- Mains voltage

LED indicator:

- Battery on the Output (Green light)
- Battery Empty (Red light)

Remote signaling:

- First relay: battery voltage-low
- Second relay: alarm group (charging voltage higher than set and second signal load current and charging current, collectively or individually higher than allowed)

- The device has an output for RS 485 communication through which the device sends its address and all vital parameters such as measured values and alarm status (sends information all the time for every 1 sec).
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The device has terminals for:

- 1) +/- battery input
- 2) +/- output for load
- 3) Mains input
- 4) Outputs for remote signaling relay contacts
- 5) RS485 communication

FRONT PANEL LAYOUT:



- Power switch to turn the source on / off
- Green light is on, when the battery is connected
- Red light is on, when the battery is discharged to the permitted limit
- Alphanumeric display is used to display the various parameters already described
- Key for MENU when pressed - enter the setup menu
- Arrow keys up and down are used to select the charging mode, adjust the current and voltage in the resolution +/- 1.

Manufactured in accordance with the following standards and directives:

<p>Electromagnetic Compatibility Directive</p>	<p>2014/30/EU EMC Directive: EN ISO 61204-3:2018 / EN 61000-4-2 EN ISO 61204-3:2018 / EN 61000-4-3 EN ISO 61204-3:2018 / EN 61000-4-4 EN ISO 61204-3:2018 / EN 61000-4-5 EN ISO 61204-3:2018 / EN 61000-4-6 EN ISO 61204-3:2018 / EN 61000-4-11</p>
<p>Low Voltage Directive</p>	<p>2014/35/EU LVD Directive: EN 62368-1:2023</p>

**1.0 TECHNICAL CHARACTERISTICS FOR CHARGERS-RECTIFIERS
18V / 24V –25A**

MODEL:	PI 1825	PI 2425
Input voltage:	220V +/-25%	220V +/-20%
Frequency:	50Hz ili 83Hz	
Nominal output voltage:	18 V	24 V
Voltage tolerance:	+ / - 1%	
Max Output current (consumers + battery charging):	25A	
Current Setting:	min 1A / max 25A	
Voltage Setting:	20V –28V	
Purpose:	Uninterrupted supply for ramps, on rail-road crossings, high operational reliability, long life, without repair for long period.	
Protected from:	Overloading at the output, overcharging, too deep battery discharge, high or low voltage at the input or output, overheating, disturbances at the input.	
Front panel:	Alpha-numeric display to show: Input mains voltage / Battery-consumer voltage / Battery charging current / Consumer current / Charging mode / Device status -Keys for parameter settings	
Cooling:	Natural	
Batteries:	18V	24V
Charging characteristics:	IUU, DIN 41773 Four charging mode: auto / float / boost / equalizing	
Battery monitoring (battery disconnected):	Yes	
Battery testing:	Yes (adjustible)	
Communication:	Relay signaling: First relay: Overcharge / Overload Second relay: Low battery voltage level / Interruption of battery supply	
Humidity:	max 90%	
Operating temperature range:	min –30C / max +65C	
Protection level:	IP20	
Dimensions: Height: Width: Depth:	34 cm 35 cm 22 cm	
Weight:	32 kg	
Noise level:	at 1m < 50db	
Permissible installation height at rated load:	<3000 m above sea level	
Warranty:	2 years	

1.1 TECHNICAL CHARACTERISTICS FOR CHARGERS-RECTIFIERS 24V / 48V:

MODEL:	MPI 2463	TPI 2463	MPI 4863	TPI 4863
Input voltage:	220V +/-20%	3 x 220V +/-20%	220V +/-20%	3 x 220V +/-20%
Frequency:	50Hz +/- 10 %			
Nominal output voltage:	24V	24V	48V	48V
Voltage tolerance:	+ / - 1%			
Max Output current (consumers + battery charging):	63A			
Current Setting:	Min 1A / max 100%			
Voltage Setting:	No (factory settings)		+ / - 15 %	
Protected from:	Overloading at the output, overcharging, too deep battery discharge, high or low voltage at the input or output, overheating, disturbances at the input.			
Front panel:	Alpha-numeric display to show: Input mains voltage / Battery-consumer voltage / Battery charging current / Consumer current / Charging mode / Device status -Keys for parameter settings -Led indicators: Battery on output / Battery empty			
Batteries:	24V		48V	
Charging characteristics:	IUU, DIN 41773 Four charging mode: auto / float / boost / equalizing			
Communication:	RS 485 Relay signaling			
Humidity:	up to 90%, without condensation			
Operating temperature range:	min -5°C / Max +45°C			
Protection level:	IP 21			
Dimesions: Height: Width: Depth:	100 cm 60 cm 60 cm		85 cm 60 cm 35 cm	
Weight:	62 kg	64 kg	67 kg	81 kg
Noise level:	at 1m < 50db			
Permissible installation height at rated load:	<3000m above sea level			
Warranty:	2 years			

1.2 TECHNICAL CHARACTERISTICS FOR CHARGERS-RECTIFIERS 110V:

MODEL:	MPI 110-30	MPI 110-40	TPI 110-25	TPI 110-63
Input voltage:	220V +/-20%	220V +/-20%	3 x 220V +/-20%	3 x 220V +/-20%
Frequency:	50Hz +/- 10 %			
Nominal output voltage:	110V	110V	110V	110V
Voltage tolerance:	+ / - 1%			
Max Output current (consumers + battery charging):	30A	40A	25A	63A
Current Setting:	Min 1A / max 100%			
Voltage Setting:	+ / - 15 %			
Protected from:	Overloading at the output, overcharging, too deep battery discharge, high or low voltage at the input or output, overheating, disturbances at the input.			
Front panel:	Alpha-numeric display to show: Input mains voltage / Battery-consumer voltage / Battery charging current / Consumer current / Charging mode / Device status -Keys for parameter settings -Led indicators: Battery on output / Battery empty			
Batteries:	110V NiCD/ Pb Optional capacity			
Charging characteristics:	IUU, DIN 41773 Four charging mode: auto / float / boost / equalizing			
Communication:	RS 485 Relay signaling			
Humidity:	up to 90%, without condensation			
Operating temperature range:	min -5°C / Max +45°C			
Protection level:	IP 21			
Dimesions:				
Height:	85 cm	100 cm	85 cm	100 cm
Width:	60 cm	60 cm	60 cm	60 cm
Depth:	35 cm	60 cm	35 cm	60 cm
Weight:	67 kg	98 kg	85 kg	120 kg
Noise level:	at 1m < 50db			
Permissible installation height at rated load:	<3000m above sea level			
Warranty:	2 years			

1.2 TECHNICAL CHARACTERISTICS FOR CHARGERS-RECTIFIERS 110V / 220V

MODEL:	TPI 110-125	TPI 220-30	TPI 220-50	TPI 220-100
Input voltage:	3 x 220V +/-20%			
Frequency:	50Hz +/- 10 %			
Nominal output voltage:	110V	110V	110V	110V
Voltage tolerance:	+ / - 1%			
Max Output current (consumers + battery charging):	125A	30A	50A	100A
Current Setting:	Min 1A / max 100%			
Voltage Setting:	+ / - 15 %			
Protected from:	Overloading at the output, overcharging, too deep battery discharge, high or low voltage at the input or output, overheating, disturbances at the input.			
Front panel:	Alpha-numeric display to show: Input mains voltage / Battery-consumer voltage / Battery charging current / Consumer current / Charging mode / Device status -Keys for parameter settings -Led indicators: Battery on output / Battery empty			
Batteries:	110V NiCD/ Pb Optional capacity	220V NiCD/ Pb Optional capacity		
Charging characteristics:	IUU, DIN 41773 Four charging mode: auto / float / boost / equalizing			
Communication:	RS 485 Relay signaling			
Humidity:	up to 90%, without condensation			
Operating temperature range:	min -5°C / Max +45°C			
Protection level:	IP 21			
Dimesions:				
Height:	160 cm	160 cm	160 cm	200 cm
Width:	60 cm	60 cm	160 cm	60 cm
Depth:	60 cm	60 cm	60 cm	60 cm
Weight:	142 kg	98 kg	142 kg	260 kg
Noise level:	at 1m < 50db			
Permissible installation height at rated load:	<3000m above sea level			
Warranty:	2 years			

1.4 TECHNICAL CHARACTERISTICS FOR CHARGERS-RECTIFIERS 110V / 220V WITH DUAL POWER SUPPLY SYSTEM:

MODEL:	TPI 110-63DG	TPI 110-125DG	TPI 220-50DG	TPI 220-100DG
Input voltage:	3x220V +/-20%			
Frequency:	50Hz +/- 10 %			
Nominal output voltage, first rectifier:	110V	110V	220V	220V
Nominal output voltage, second rectifier:	12V	12V	24V	24V
Voltage tolerance:	+ / - 1%			
Max Output current (consumers + battery charging):	63A	125A	50A	100A
Max charging current second rectifier:	25A	35A / 80A	25A	35A / 80A
Current Setting:	Min 1A / max 100%			
Voltage Setting:	+ / - 15 %			
Protected of:	Overloading at the output, overcharging, too deep battery discharge, high or low voltage at the input or output, overheating, disturbances at the input.			
Front panel:	Alpha-numeric display to show: Input mains voltage / Battery-consumer voltage / Battery charging current / Consumer current / Charging mode / Device status -Keys for parameter settings -Led indicators: Battery on output / Battery empty			
Batteries:	110V / 12V NiCD/ Pb Optional capacity		220V / 24V NiCD/ Pb Optional capacity	
Charging characteristics:	IUU, DIN 41773 Four charging mode: auto / float / boost / equalizing			
Communication:	RS 485 Relay signaling			
Humidity:	up to 90%, without condensation			
Operating temperature range:	min -5°C / Max +45°C			
Protection level:	IP 21			
Dimesions:				
Height:	160 cm	160 cm	160 cm	200 cm
Width:	60 cm	60 cm	160 cm	60 cm
Depth:	60 cm	60 cm	60 cm	60 cm
Weight:	128kg	151 kg	151 kg	280 kg
Noise level:	at 1m < 50db			
Permissible installation height at rated load:	<3000m above sea level			
Warranty:	2 years			

**Appearance for Models:
PI 1825 / PI2425**



**Appearance for Models:
MPI 2463 / TPI 2463 / MPI 110-40**



**Appearance for Models:
MPI 4863 / TPI 4863/ MPI 110-30 / TPI 110-25**



**Appearance for Models:
TPI 110-63 / TPI 110-125 / TPI 220-30 / TPI 220-50**



Appearance for Models:
TPI 220-100



Appearance for Models:
TPI 110-63DG / TPI 110-125DG



Appearance for Models:
TPI 220-50DG / TPI 220-100DG

