INSTRUCTIONS FOR USE

Pulse battery charger AP–180

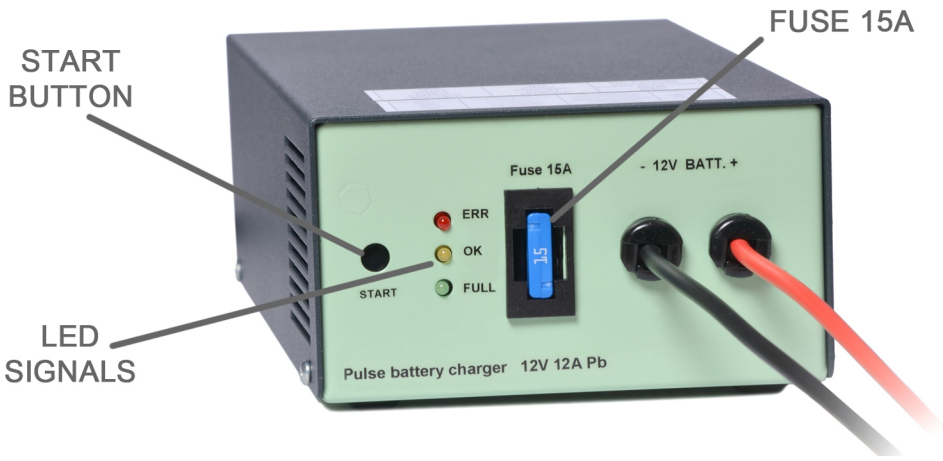
12V 12A, 24V 6A, 36V 3,6A, 48V 3A, 60V 2,5A

CHARGER CHARACTERISTICS

- **Pulsed charge current**
- Charger that can "listen" to the chemistry of the battery
- **Fast, smooth and battery friendly charging**
- Battery determines charging current by itself under supervision of Intelligent microprocessor pulse charging system
- **4 charging programs**, **STA** (standard), **AGM**, **GEL**, **CaCaWET** starter battery
- There is no warming up effect, which reduces battery life at overcharge
- **4 charging phase: bulk charge, absorption, equalization, float charge**
- Regenerate cells majorly, when they were charged improperly - Battery desulfatization effect
- **Pulse-charging prolong the battery life.**
- Safe against short-circuit
- Precise full charge indicator (green LED)
- Working temperature range from 0º to +35ºC
- Charging is independent of oscillations in the supply voltage (PWM technology)
- **START button for completely discharged battery**

CHARGER PARTS

CHARGER OVERVIEW



INSTRUCTIONS FOR CONNECTING THE CHARGER WITH BATTERY

Battery charger AP-180 is suitable for charging only lead (Pb) batteries from all together capacity of min. 6Ah (at 12V charger). Maximum capacity of charged battery is not limited. Battery charger is for (we recommend that the charging time is not too long) battery systems up to 200Ah total capacity. **Check if charger and battery have the same voltage!**

Charger model:	AP-180 12V	AP-180 24V	AP-180 36V	AP-180 48V	AP-180 60V
Minimum battery capacity:	**6Ah**	**3Ah**	**2Ah**	**1Ah**	**1Ah**

- Plug the charger (230Vac cable) into the mains.
- Switch on the main supply switcher (POWER) on back of the charger.
- All three LEDs flash briefly, the charger is ready to charge.
- **BLACK** on **–** poll of the battery
- **RED** on **+** poll of the battery
- At correct connection YELLOW LED indicator lights on. The battery is charging.
- When the battery is full, GREEN LED indicator lights on.

If the charger does not activate by flashing a yellow LED:

Battery voltage is too low (fully discharged battery) - Press START button for forced charging.

The front panel fuse is burn. The fuse on the front panel should be only 15A (for the 12V charger, for the rest of chargers, see the table below).

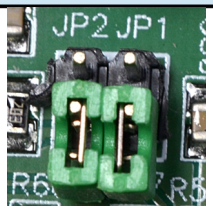
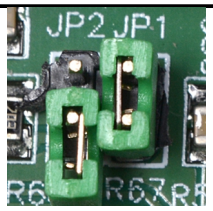
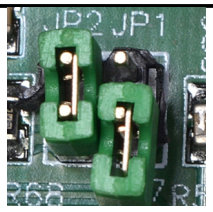
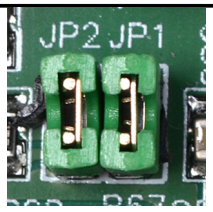
Charger model:	AP-180 12V	AP-180 24V	AP-180 36V	AP-180 48V	AP-180 60V
Front panel fuse:	**15A**	**10A**	**7,5A**	**5A**	**5A**

LEGEND OF LED SIGNALS WHILE CHARGING THE BATTERY

LED	LED activity	Charge phase	battery charge level
RED, **YELLOW**, **GREEN**	short blink all LEDs	charger is ready	/
YELLOW	blinks	bulk charge (Bulk)	< 65%
YELLOW	continuously lit	absorption I charge (Abso1)	65%...75%
GREEN	blinks	absorption II charge (Abso2)	75%...85%
GREEN	2x fast blink	equalization charge (Equal)	85%...90%
GREEN	continuously lit	float charge (Float)	>90%
RED	continuously lit	temperature off (Error)	/

CHARGING PROGRAMS

To set the correct charging program it is necessary to remove the cover. First disconnect the charger from the network and disconnect the battery from the charger. There are 4 screws on both sides, unscrew them. Charger has 4 charging programes for 4 types of lead batteries: **standard (STA)** or **universal**, programe for wet hermetic start battery **CaCaWET**, **AGM and GEL**. Set the battery type with jumpers **JP1** and **JP2.**

Jumpers position	JP2	JP1	Type of battery
	Disconect (**0**)	Disconect (**0**)	**UNI** (universal) **and** **STA** (standard)
	Disconect (**0**)	Conect (**1**)	**CaCaWET**
	Conect (**1**)	Disconect (**0**)	**AGM**
	Conect (**1**)	Conect (**1**)	**GEL**

DESCRIPTION OF CHARGE PHASE

Charge phase:		Description:
Bulk	**BULK CHARGE**	Charges the battery up to 65%, delivering a lot of energy to the battery in a short time.
Abso 1	**ABSORPTION I**	The charge is slowed down so that the battery absorbs more energy. The battery reaches 65..75% of the capacity.
Abso 2	**ABSORPTION II**	Charge current is gradually reduced. The battery reaches 75..85% of the capacity.
Equal	**EQUALIZATION**	At this phase, levels between different filled cells are equalized. The battery reaches 90..95% of the capacity.
Float	**FLOAT CHARGE**	Keeps the battery at 100% of the capacity without causing damage to the battery. Also, can not over-charge the battery.

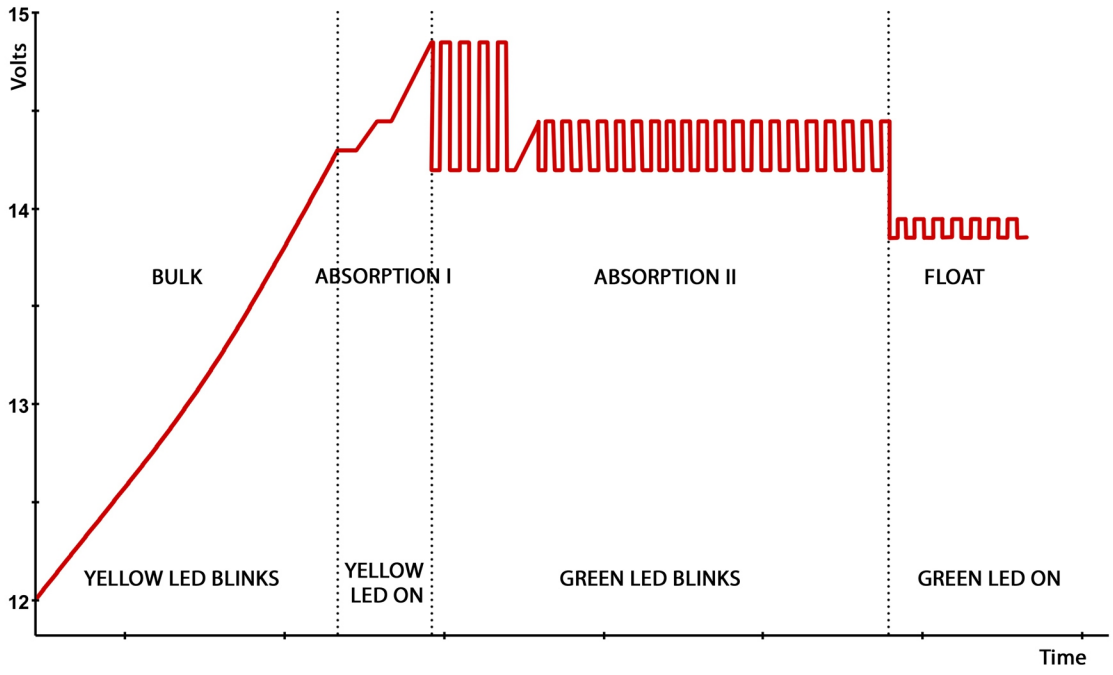
DESCRIPTION OF THE PULSE BATTERY CHARGING TECHNOLOGY

Pulse charging system is electrode specific charging system; it is new technology of battery charging. It presents a small revolution on this area, because the results in practice are drastically better. With this technology is possible very fast and very precise charging, because only electrochemical condition of battery "dictates" the charging phase and charging current, which is momentarily correctly for the battery.

When charging with pulse charger AP-180, does not come to the gasification of the electrolyte and warming up, that destroys (breaks) cell lead-acid batteries. So as a result, pulse charging majorly prolong battery life and shortens the charging time.

We can say that pulse charging technology works as transformer between battery chemistry and signals that commands the charge. Each battery is treated individually. Your experience with this charging method please send to info@eyra-elektronika.si .

CHARGING DIAGRAM



HOW AND WHEN TO USE THE BURST CHARGING

When charging an over-discharged battery which has a voltage below 6V (at 12V charger), the system does not start charging, even though the charger is properly connected. In this case, press **START HELP** button to activate forced charging with the single-pulse. If necessary, press the button several times (up to 100x). When the 6V voltage is reached at 12V charger (For the other chargers, see table below), the yellow LED flashes, then the system automatically starts charging.

Charger model:	AP-180 12V	AP-180 24V	AP-180 36V	AP-180 48V	AP-180 60V
Start charge at:	**6V**	**12V**	**18V**	**24V**	**30V**

TECHNICAL DATA OF THE CHARGER

- type of battery: Pb battery: standard (STA) or universal, AGM, GEL, CaCaWET
- charge phases: bulk / absorption I / absorption II / equalization / float
- capacity of battery: minimum 6Ah (at 12V charger), maximum is not limited
- battery voltage: 12V, 24V, 36V, 48V, 60V
- nominal charging current (max): 12A, 6A, 3,6A, 3A, 2,5A intelligent pulse system
- charging mode: pulse charging system 20Hz
- main voltage: 195V – 242VAC
- main voltage frequency: 40 … 60Hz
- max. power: 200 VA
- activating the output voltage: min. batt. voltage at 6V, 12V, 18V, 24V, 30V
- ambient temperature: from 0 °C to +35 °C
- short contact output: : fully protected (fuse remains whole)
- wrong polarity output (main output): fuse FKS 15A (at 12V charger) -fuse burn
- main input fuse: T 3,15A (on the main grid side -230V)
- cooling: fan
- dimensions:: 120 x 65 x 225 mm
- weight: 1,3 kg
- signals: red, yellow and green LED indicator
- IP protect: IP20
- housing grounding: housing grounded, Class I
- recommended battery capacity: 1...200Ah
- field of use: el. bikes, el. vehicles, el. wheelchairs, motorcycles, cars, tractors, quadricycles, workshops ...

TROUBLESHOOTING

Error	Cause	Solution
The charger is connected to the mains, power switch is ON. LED signals not blinks.	- there is no mains voltage 230Vac	- ensure supply voltage 230Vac
Battery is connected but the charger is not charging, all LED blinking.	- to low voltage on the battery (over-discharged battery) - the fuse on the front panel is burn	- use **START** button - replace the fuse
Red LED is on.	- devices has overheated - to high ambient temperatures - fan error	- reduce the ambient temperature - service intervention - clean up fan

WARNING!

- **The charger is designed for indoor use (do not expose the charger to rain).**
- **Polarity + and - must not be confused!**
- **During charging ensure adequate ventilation!**
- **Never hold with hand red and black crocodile + and – and push BURST button!**
- **We recommend disconnecting the battery from the car if the CaCaWET charging program is used.**
- The charger AP-180 has a built-in security feature that stops the automatic charging start if charger detects an over-discharged battery. **Over-discharged battery could be in damage.** In this case press **START** button to activate forced charging with the single-pulse. If necessary, press the button several times (up to 100x). When the 6V voltage is reached at 12V charger, the yellow LED flashes, then the system automatically starts charging. **From this moment on, the user is obliged to control the charging of batteries. Because in case of a defect on the battery, it can overheat, begin to gasify and in extreme cases may happen an explosion and / or a fire.**

SERVICE AND GUARANTEE

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Slovenia

Tel.++386 (0)1 7869-037 Fax++386 (0)1 7869-038
e-mail: info@eyra-elektronika.si http://www.eyra-elektronika.si

GUARANTEE STATEMENT

Guarantee conditions:

1. **The guarantee is valid for 24 months from the date of sale.**
2. **The guarantee repairs are carried out exclusively by an authorized service center.**
3. **The guarantee applies only to the charger, and not to any other device connected to this module.**
4. **The guarantee and liability does not include any fees, postal costs, damages and any costs related to the failure of this device.**
5. **The guarantee does not apply to batteries, mechanical damage or lightning strikes.**
6. **The guarantee does not apply if the device was mounted or used in violation of the instructions.**
7. **The guarantee does not apply if an unauthorized person interferes with the device.**
8. **If, during the guarantee period the device is not repaired within 45 days from the date of receipt in our service center, we are obliged to replace it with a new one.**
9. **The guarantee period shall be extended for the period of repair.**
10. **The original invoice must be submitted for the enforcement of the guarantee.**

seller :

company:

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name and surname of the seller:

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signature of the seller:

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date of sale:

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stamp: