

## IMPORTANT FOR YOUR SAFETY!



Whenever you are handling or working with a lead-acid battery, consult your battery owners' manual for instructions and safety precautions.

<b>COOLING FAN</b>	Do not cover the cooling fan openings in order to ensure enough cooling flow. Otherwise the charging current will drop and the charging time will increase proportionally.
<b>BATTERY TYPE</b>	Use the charger for the defined battery type only, (according to the parameters). If the charging profile does not suit the battery type, the battery will not be charged properly and the life time of the battery may be shortened.
<b>GAS</b>	Lead-acid batteries produce hydrogen-oxygen gases which can be explosive and sulfuric acid that can cause severe burns. Make sure working area is well-ventilated. Cigarettes or any open fires or sparks may cause an explosion. Keep all ignition sources away from the battery.
<b>ACID</b>	Battery acid can severely damage your eyes and skin. In event of accident, flush with water and seek medical help immediately. Use proper personal protective devices when handling a damaged or leaking battery. Treat material used to clean up a battery acid spill as hazardous waste.
<b>TOXIC SUBSTANCES</b>	Batteries contain hazardous materials. Among others lead and antimony are toxic substances. Waste lead-acid batteries are hazardous waste and must be treated according to the Battery Disposal Regulations.

Manufacturer:

**Piktronik d. o. o.**  
**Cesta k Tamu 17**  
**SI - 2000 Maribor**

Distributor:

## OPERATING INSTRUCTIONS

### Battery Charger KOP302

KOP302 battery chargers are modern fully automatic devices suitable not only for charging but also for maintaining and monitoring the batteries. The charger stores data about charging times and Ah charged. This data may be accessed for further analysis.

The charger may be used as a stationary device or can be installed and operated in the vehicles. The charger should be mounted horizontally. Any drilled holes or any mechanical changes of the housing may damage the charger.

Your KOP battery charger was factory programmed for a specific battery type. Make sure the charging profile suits your battery type. To change the charging profile for a specific battery type, parameters may be programmed with a PC software package and a programming interface. The programming parameters allow the charger's profile to suit the battery type. Up to five charging phases can be programmed. The charging voltages, currents, charging times, temperature compensation and other control functions can be programmed. Please contact your dealer for further information. When programming the charging profile always follow the battery manufacturer's instructions regarding voltages, currents and charging times.

**Read the operating instructions carefully before using the KOP Battery charger.**

**Note:** Please note, that new batteries reach the maximum capacity after multiple charging cycles have been completed successfully. Old batteries often don't reach the full capacity. This can cause the charging process not to end properly (example: maximum charging time overflow).

## TO START THE CHARGING PROCESS

Establish a safe connection between the battery and the charger first. Then plug the mains connector. This sequence must always be followed in this order. When removing the connection, remove the mains plug from the mains first before disconnecting the battery circuit.

After connecting the battery, the red LED (error LED) flashes several times and then remains OFF. When the charging process starts, the yellow LED comes ON (also a click from the relay in the charger can be heard and the cooling fan starts to operate).

### Indication LED pattern:

**Yellow LED ON:** Main charge phase with maximum charging current











**Yellow LED flashes slowly:** Constant voltage charging phase (about 80% charged)

**Green LED ON:** Battery 100% charged

*NOTE: Function of the yellow LED charging is programmable together with other charging parameters. Description above shows the usual setting.*

If local standards or regulations allow it, the battery may be permanently connected to the charger. The cooling fan is temperature controlled and operates at different speeds. The charging time depends on the battery capacity. If the battery has been partly discharged, the charging process will finish sooner.

## IMPORTANT SAFETY INSTRUCTIONS

-  Read the manual thoroughly.
-  The charger must be used with the original cables only. Do not change, shorten, extend or short circuit the cables.
-  Remove the mains plug from the mains first before braking the battery circuit.
-  Only rechargeable batteries can be used. Do not connect any non-rechargeable batteries (like dry-cell batteries) to the charger.
-  The charger may be used for the correct battery type only.
-  Do not install the charger inside motor-homes, campers or caravans.
-  Check the charger for cable, housing and connector damages before use. Do not operate the charger when damaged. There are no user serviceable parts inside.
-  Do not expose the charger to rain, moisture, direct sunlight or dust.
-  Always disconnect mains after charging and generally when the device is not in use. During the trickle charge the charger remains attached to the mains.
-  Always disconnect the mains during a thunderstorm.

ERRORS	
No LED lights or flashes after the charger has been connected to the mains	1. Check if the battery is properly connected 2. Check the mains 3. Contact your after-sales service point
Red LED flashes periodically : <i>n-times flashes/ 2 s Pause / n-times flashes</i>	Please see the error messages description of flash pattern below
POWER LED lights and LED CHARGING showing short flashes	The battery voltage is too low – lower as the charger parameter "Minimal starting voltage"

Number of LED flashes	Description
1	Charger temperature sensor failed
2	Charging time limit has been exceeded (faulty battery / battery aging)
3	Battery temperature sensor failed or not connected
4	Charger temperature during the charging process is too high
5	Battery voltage too high at start of the charging (incorrect battery)
6	Battery temperature too low
7	Battery temperature too high
8	Charger disconnected from the battery during charging
9	Incorrect parameter checksum
10	Problems with the current measurement offset
11	Incorrect parameter values
12	The current can not be measured/detected
13	Battery charging current measurement is out of range
14	Battery charging current can not be properly controlled

## Technical Specification

Charger type	KOP302-12V	KOP302-24V
Nominal battery voltage	12V	24V
Nominal output current	20A	10A
Peak input power	350 W / 2 A	
Input voltage	230V~ 50/60 Hz	
IP protection grade	IP21	
Weight	2,1 kg	