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## 1. SAFETY INSTRUCTIONS



**SAVE THESE INSTRUCTIONS.** This manual contains important safety and operating instructions. You may need to refer to these instructions at a later date.

1. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
2. If the power cord is damaged, then it must be replaced by the manufacturer, an authorized service centre or qualified person in order to avoid any hazard or personal injury.
3. **CAUTION.** Charge only wet cell, lead-acid, automotive type rechargeable batteries.
4. Ensure sufficient ventilation when charging.
5. Use the car charger only for charging and maintenance charging of undamaged 6 V-/12 V-lead batteries from 1,2Ah up to 120 Ah capacity with electrolyte solution AGM or gel! Otherwise, explosion, personal injury or property damage may be the consequence.
6. Above all, the charger terminal must be connected with the battery pole, which has no connection with the vehicle chassis. Then, the terminal must be connected with the chassis at an appropriate distance from the battery and the fuel line. As the last step, the charger plug must be connected with the power outlet.
7. When the charging is finished, disconnect the charger plug from the power outlet. Then disconnect the terminal from the chassis, and finally the terminal from the battery.
8. The charger must be connected to power supply in accordance with the local installation regulations.
9. Do not expose charger to rain or snow.
10. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
11. Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.

12. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:

- a. That pins on plug of extension cord are the same number, size, and shape as those of plug on charger;
- b. That extension cord is properly wired and in good electrical condition;
- c. If the length of the extension cord is less than 15 meter, use a 0.75 mm<sup>2</sup> cord, if 30 meter – 1 mm<sup>2</sup>, 60 meter – 1.5 mm<sup>2</sup>.

13. Do not operate a charger with a damaged cord or plug, replace the cord or plug immediately.

14. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.

15. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

16. To reduce risk of electric shock, unplug charger from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

17. **WARNING - RISK OF FORMATION OF EXPLOSIVE GASES. INSTRUCTIONS EXACTLY EACH TIME BEFORE USING CHARGER.**

b. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.

a. **WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. IT IS OF UTMOST IMPORTANCE TO READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY EACH TIME BEFORE USING CHARGER.**

b. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on the engine.

## 2. PERSONAL SAFETY PRECAUTIONS

1. It is preferable, if there is someone within the range of your voice or close enough to come to your aid when you work near a lead-acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
3. Wear complete eye protection, and clothing protection. Avoid touching eyes while working near battery.
4. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enter eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.
8. Use the charger for charging AGM/GEL/WET batteries. It is not intended to supply power to a low-voltage electrical system other than in a starter motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
9. NEVER charge a frozen battery.

## 3. OPERATING INSTRUCTIONS

## PREPARING TO CHARGE

- a. If necessary to remove battery from vehicle to charge, always remove the grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- b. Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
- c. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- d. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.
- e. Study all the battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- f. Determine voltage of battery by referring to car owner's manual and make sure that output voltage is set at correct voltage. If charger has adjustable charge rate, charge battery initially at lowest rate.

## CHARGER LOCATION

- a. Locate charger as far away from battery as output cables permit.
- b. Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- c. Never allow battery acid to drip on charger when reading gravity or filling battery.
- d. Do not operate charger in a closed-in area, or restrict ventilation in any way.
- e. Do not set a battery on top of charger.

## **FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:**

- a. Position ac and dc cords to reduce risk of damage by hood, door, or moving engine part.
- b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- c. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- d. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see item „e”. If positive post is grounded to the chassis, see item „f”.
- e. For negative-grounded vehicle, connect POSITIVE (RED) clamp from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clamp to vehicle chassis or engine block away from battery. Do not connect clamp to carburetor, fuel lines, or sheet metal body parts. Connect to a heavy gage metal part of the frame or engine block.
- f. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Do not connect clamp to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gage metal part of the frame or engine block.
- g. When disconnecting charger, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.
- h. See operating instructions for length of charge information.

## **FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:**

- a. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
- b. Connect POSITIVE (RED) charger clamp to POSITIVE (POS, P, +) post of battery.
- c. Position yourself and free end of cable as far away from battery as possible - then connect NEGATIVE (BLACK) charger clamp to free end of cable.

- d. Do not face battery when making final connection.
- e. When disconnecting charger, always do so in reverse sequence of connecting procedure and break the first connection while as far away from battery as practical.
- f. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

### AC POWER CORD CONNECTION INSTRUCTIONS

The plug must be plugged into an outlet that is properly installed in accordance with all local codes and ordinances.

**DANGER.** Never alter AC cord or plug provided - if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

### ADDITIONAL FEATURES

- a. **REVERSE POLARITY PROTECTION** The REVERSE POLARITY INDICATOR will light and the power will not be sent to output cables if a reverse connection is detected.
- b. **SHORT CIRCUIT PROTECTION** This protection is triggered if the charger detects less than 0.5V across the clamps, and no power will be sent to output cables.
- c. **OVER-VOLTAGE PROTECTION** When the charger is set to charge in a different voltage than the detected voltage of the battery, this protection will be engaged.
- d. **BATTERY DIAGNOSTICS FUNCTION** The charger continuously monitors battery condition and may report certain charging failures as fault codes. Conditions that cause the errors include: if the battery voltage does not rise appropriately during the charging process (indicating a shorted cell) or if the maximum charge time has been exceeded, etc.
- e. **OVERHEAT PROTECTION** The charger is designed to decrease the charging current and even shut itself off if overheating is detected. Once the charger cools down, it will resume charging automatically.
- g. **MODE-SETTING MEMORY FUNCTION** The microprocessor inside the charger has mode-setting memory function, which means the charger can directly enter into the mode the users set last time. Owing to this the user does not have to worry that they will forget the settings used when the charger was in use last time. Also, the time required to prepare the charger for operation will be shortened.

## 4. APPLIANCE DESCRIPTION

The charger is intended solely for short-term and trickle charging on open lead-acid batteries and a variety of sealed, maintenance-free lead acid batteries with a nominal voltage of 6 volts or 12 volts and a capacity of 1.2 to 120 Ah as commonly installed in vehicles.

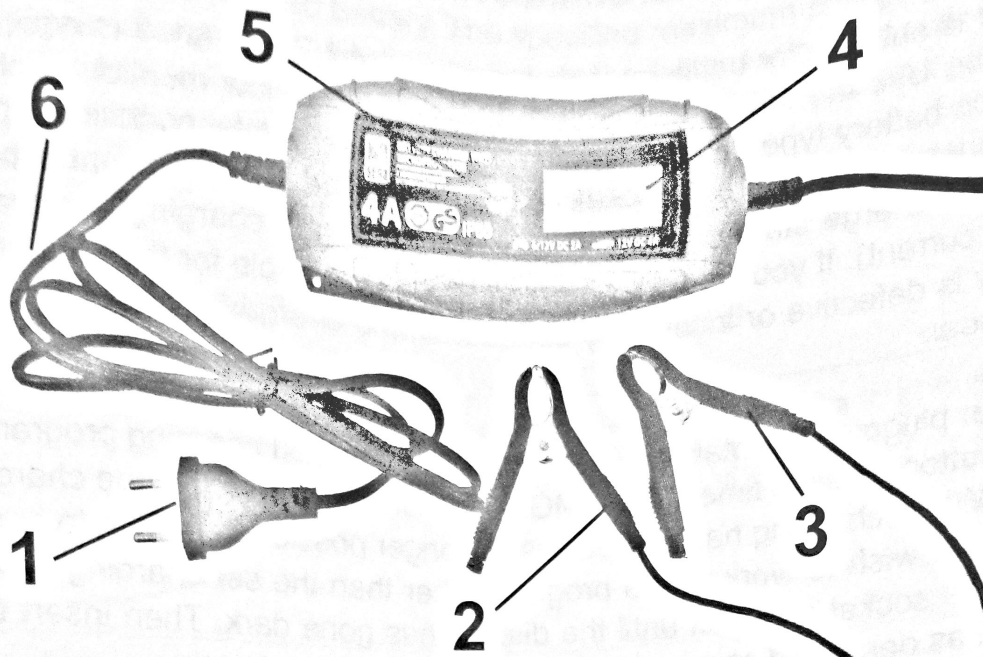
Suitable batteries include:

- Lead-acid batteries (WET)
- Gel batteries (gel-like electrolyte)
- AGM batteries (electrolyte absorbed in glass mat)
- Maintenance-free lead acid batteries (MF)

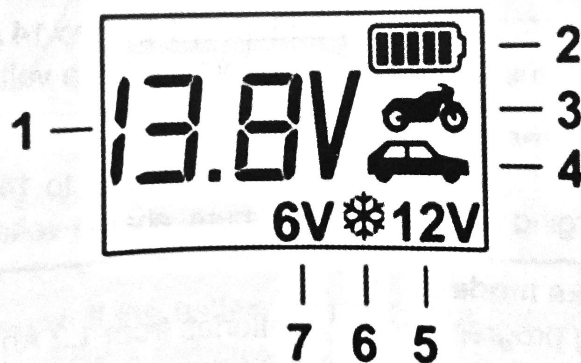


This charger must not be used on other rechargeable battery types such as NiCd, NiMH or Li-ion, or on non-rechargeable batteries. The charger may not be used as a starter aid. First charge the battery of your vehicle fully and remove the charger before starting the vehicle. The charger may not be used as a source of direct current or for other purposes. The battery charger is designed for use in dry and protected environments at temperatures of -5 °C to +40°C. This charger is not intended for commercial use!

## Description



1. Power plug
2. Black crocodile clip (NEG)
3. Red crocodile clip (POS)
4. Display
5. Mode key
6. Mains cable



## Display

1. Battery voltage
2. Battery charge status
3. Motorbike charging program
4. Car charging program
5. 12 V charging program
6. Winter charging program
7. 6 V charging program

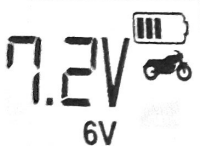
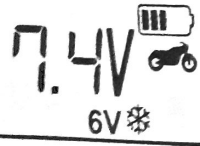
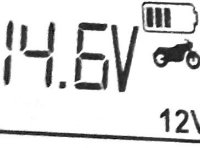
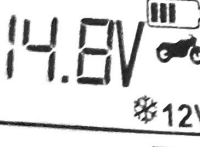
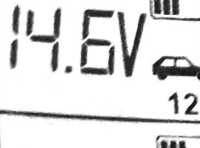

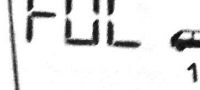
## 5. CHARGING PROCESS

The charger is suitable for batteries with a capacity of 1,2-120 Ah. It is equipped with a micro-processor. Use the MODE key to select one of the below mentioned charging modes depending on battery type, battery condition and environmental conditions. Once you have selected a charging mode, the charger will automatically detect the connected battery (voltage, capacity, charge status) and calculate the necessary charging parameters (charging voltage and current). If you select a charging mode unsuitable for the connected battery, or if the battery is defective or incorrectly connected, the charger will not charge and the fault icon will appear.

Caution: After plugging the mains cable in select the desired charging program by operating the MODE button multiple times. If the MODE button is not pressed, the charging process is not started. When charging has started it is no longer possible to switch to another charging program. If you wish to work with a program other than the set charging program, pull the plug out of the socket and wait until the display has gone dark. Then insert the plug again and proceed as described above.

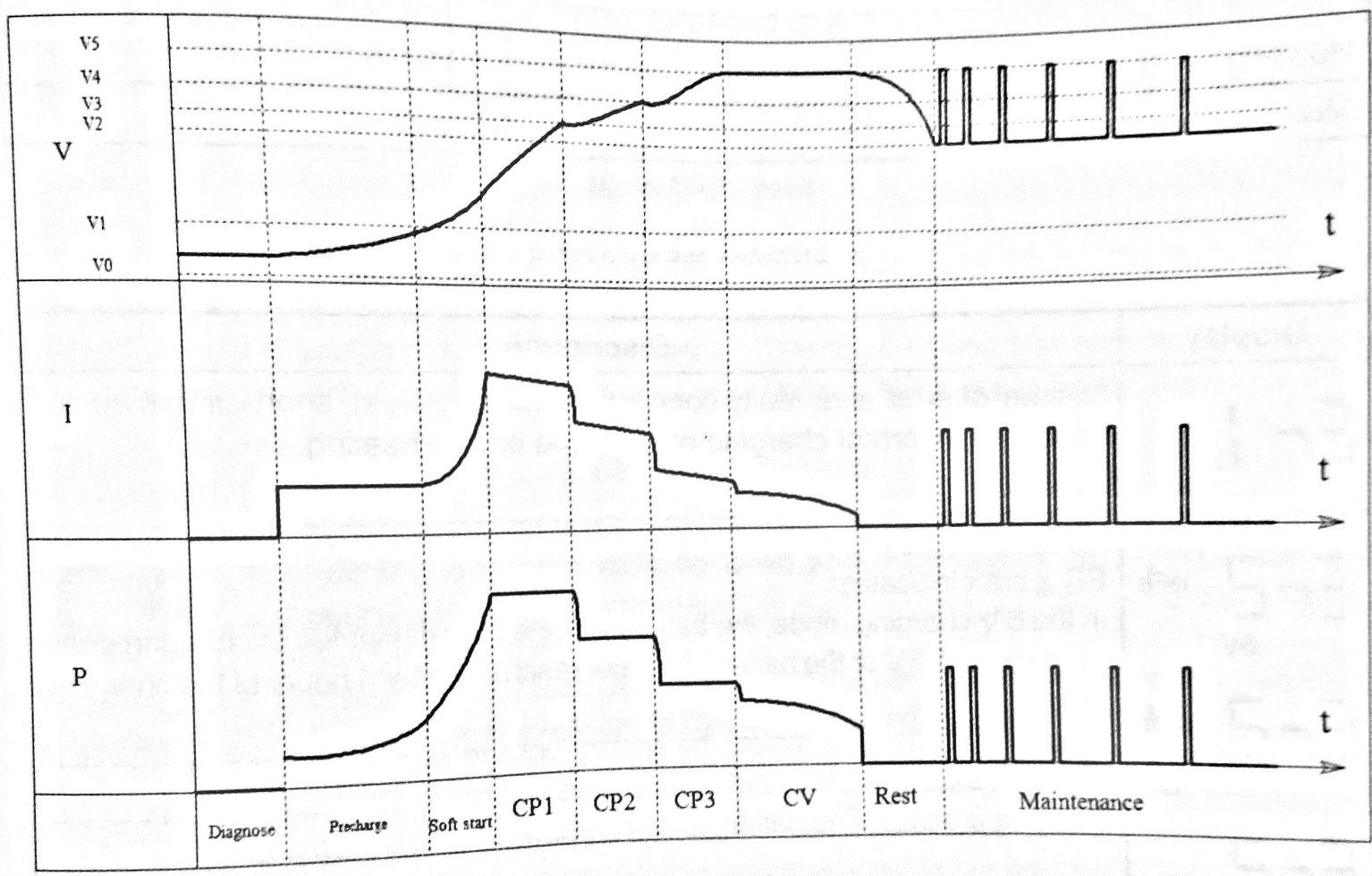
By pressing (multiple times) the MODE button, you can select the appropriate charging program for your needs.

The charging programs appear in the following order and may be selected by pressing the MODE button:

Display	Description
 7.2V 6V	<b>6 Volt mode</b> Charging program for 6 V batteries, 1.2 Ah to 14 Ah, temperatures above 0°C, charging current: 2 A maximum, charge voltage: 7.2 V
 7.4V 6V ❄️	<b>6 Volt winter mode</b> Charging program for 6 V batteries, 1.2 Ah to 14 Ah, temperature below 0°C charging current: 2 A maximum, charge voltage: 7.4 V
 14.6V 12V	<b>Motorbike mode</b> Charging program for 12 V batteries from 1.2 Ah to 14 Ah, temperatures above 0°C, charging current: 2 A maximum, charge voltage: 14.6 V
 14.8V ❄️ 12V	<b>Motorbike winter mode</b> Charging program for 12 V batteries from 1.2 Ah to 14 Ah, temperatures below 0°C, charging current: 2 A maximum, charge voltage: 14.8 V
 14.6V 12V	<b>Car mode</b> Charging program for 12 V batteries from 14 Ah to 120 Ah, temperatures above 0°C, charging current: 4 A maximum, charge voltage: 14.6 V
 14.8V ❄️ 12V	<b>Car winter mode</b> Charging program for 12V batteries from 14 Ah to 120 Ah, temperatures below 0°C, charging current: 4 A maximum, charge voltage: 14.8 V
 FUL 12V	<b>Battery maintenance charge mode</b> As soon as the battery is fully charged, the charger switches over automatically to battery maintenance charge mode. This is indicated appropriately on the display.

Depending on the charging state of the battery, the device adapts the charging current in order to best charge the connected battery. The specified maximum charging current is only used during the main charging phase. Shortly before the full charging capacity is achieved, the device switches to a lower charging current. This ensures that the battery is gently and optimally charged to full capacity. The battery symbol (2) in the display shows on the display indicates the current filling level of the battery.

### AUTOMATIC CHARGING STAGES






- Stage 1 - Diagnosis: Analyze if the battery can accept a charge or not, and then prevent charging from proceeding on the a defective battery
- Stage 2 - Pre-charge: If the battery voltage is less than 12V, charge it at the smaller current, which will protect the battery better;
- Stage 3 - Soft start: Charge the battery to the maximum current gradually and never suddenly.
- Stage 4, 5, 6 – CP1/CP2/CP3: The charger automatically adjusts the current according to the battery status in constant current, which benefits the battery for a long life;
- Stage 7- CV (Constant Voltage): The battery is charged to nearly full, and will stop if the battery is fully charged;
- Stage 8 - Resting: The charger will cut off with full charged statement, and achieves the high energy efficiency;
- Stage 9 - Maintenance: The charger monitors a fully charged battery automatically. If the battery falls below 12.8V DC after 2 minutes, the charger will restart from stage 3 to stage 7.






## 6. TECHNICAL SPECIFICATIONS

Technical specifications	6V mode	12V mode
Operating voltage:	220-240V AC, 50-60 Hz	220-240V AC, 50-60 Hz
Output voltage:	6V DC	12V DC
Max. Charging voltage:	7,2 V / 7.4 V	14.6V/14.8V
Charging current:	2,0 A	2,0 A / 4,0 A
Ambient temperatures:	-5°C to +40°C	-5°C to +40°C
Housing IP class:	IP65	IP65
Model No.	010303	

## 7. ERROR MESSAGES

Display	Description
Er 1	Display of error after faulty connection (wrong poles), short-circuit, selection of an incorrect charging programme or overheating.
Er 2  6V	ER 2 error indicates: In the 6 V charging mode, the battery voltage after 4 minutes of charging does not exceed 5.5 V or the battery does not reach 6 V after 4 hours of the charging process. In the 12 V charging mode, the battery voltage after 4 minutes of charging does not exceed 11 V or the battery does not reach 12 V after 4 hours of the charging process. The battery is damaged and must be replaced.
Er 2  12V	
Er 2  12V	

## 8. SYMBOL EXPLANATION

	Read instruction-manual before use!		Electrical products may not be disposed of in the household waste!
	For indoor use only! (Dry environment)		Corresponds to EC directives
	Insulated housing (Protection class II)	<b>IP65</b>	IP-protection class Spray water protected



## 9. DISPOSAL



In accordance with WEEE Directive 2012/19/EC, the symbol of the crossed-out wheeled bin on a product means that electrical and electronic products are subject to separate collection and must not be disposed of in normal waste bins. Environmental care is of paramount importance to us. Awareness that we produce electronic devices obliges us to dispose of used electronic components and devices in a manner that is for nature. Therefore, the company received a registration number assigned by the Chief Inspector of Environmental Protection. By segregating waste intended for recycling we help to protect the natural environment. It is the user's responsibility to deliver all used equipment to a designated collection point in order to recycle waste from electrical and electronic equipment.

## 10. WARRANTY

The manufacturer shall grant the product warranty for a period of 24 months from the date of purchase.

All questions and issues related to the operation of the product must be sent to the following e-mail address: [reklamacje@sena.com.pl](mailto:reklamacje@sena.com.pl) or telephone number: +48 366 57 10.

## 11. CE DECLARATION



The product has been manufactured and marketed in accordance with the requirements of the electromagnetic compatibility directive and low-voltage directive.

For this reason, the product has been CE marked and the declaration of conformity has been issued for it. This declaration is available to market supervision authorities.