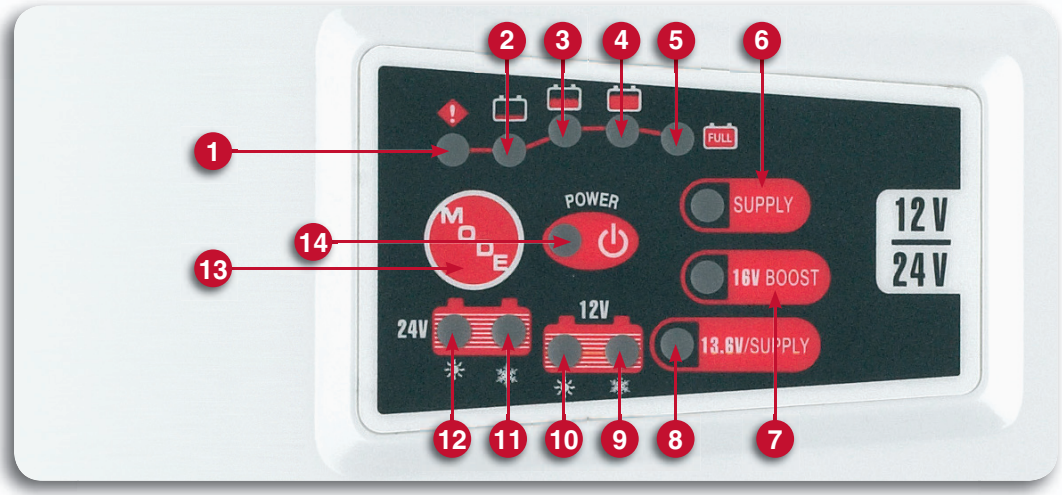
CHARGE BOX 7.0

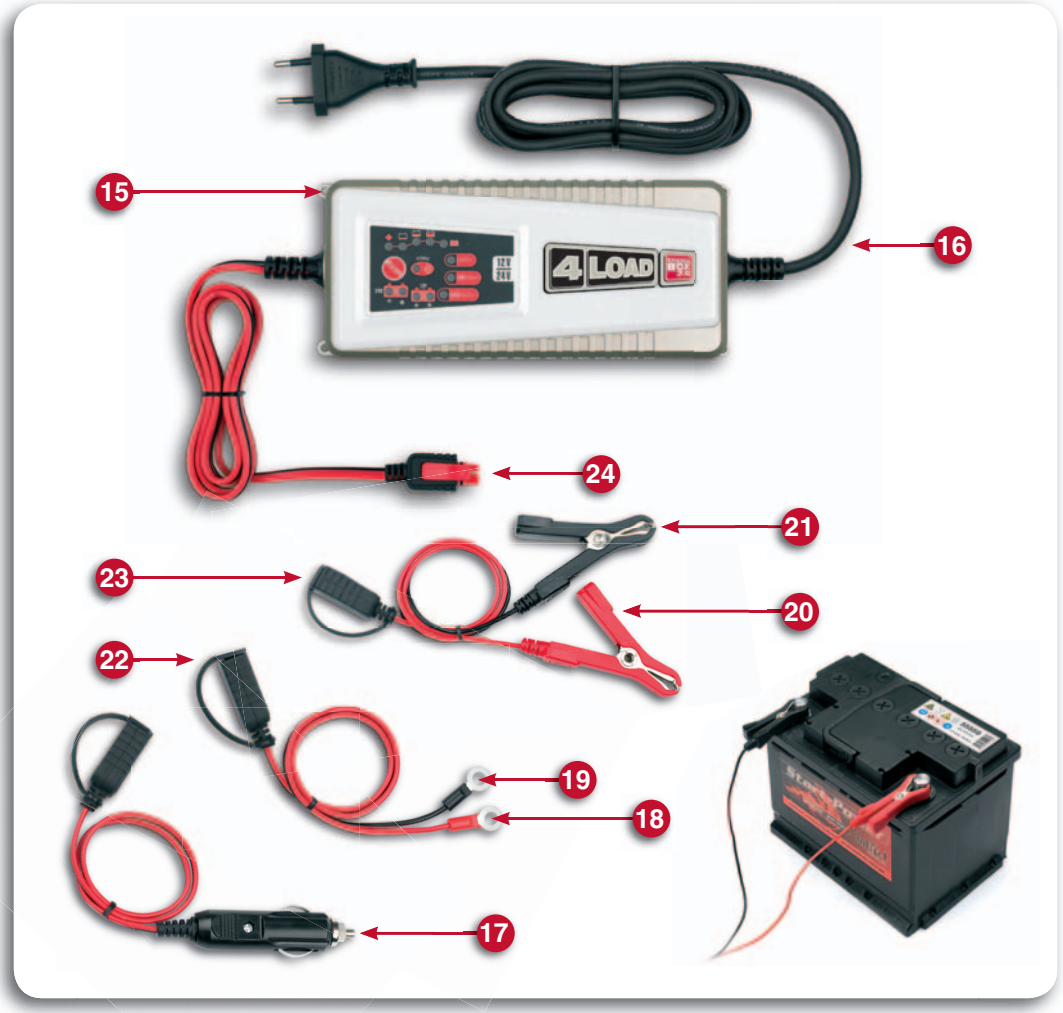
BATTERY-CHARGER 7,0 AMP

GB USER MANUAL

4 LOAD CHARGE BOX 7.0

WWW.4LOAD.DE


1
2
3
4
5
6
7
8
9
10
11
12
13
14
POWER
MODE
FULL
SUPPLY
16V BOOST
13.8V/SUPPLY
12V
24V
12 V
24 V


15
16
24
21
23
20
22
19
18
17
4 LOAD

The following pictogrammes / symbols are used in these operating instructions:			
	Read the operating instructions!	**W**	Watts (effective power)
	Always heed warning labels and safety instructions!	**V~**	Volt (AC)
	Caution - Danger of electric shock! Hazardous voltage – danger to life!	**A/Ah/ mA**	Amps / Amp-hours / Milliamps
	Explosive material!	**Hz**	Hertz (mains frequency)
	Risk of fire!	⎓	Direct current (Type of current and voltage)
	Keep children and other people away from the battery charger during its operation.		Dispose packaging and appliance in an environmentally-friendly way!

Battery charger CHARGEBOX 7.0

❑ Introduction

❑ For your safety

Read the directions for use through carefully.

❑ Intended use

The CHARGEBOX 7.0 is suitable for charging and trickle charging 12 V and 24 V lead-storage batteries with electrolytic solution, AGM or gel. Use the charger in a well-ventilated room. The manufacturer is not liable for any damage arising from improper use. The device is not intended for commercial use.

❑ Scope of delivery

1 CHARGEBOX 7.0 charger
1 Power cable with mains plug
1 Charging cable with 2 connecting terminals
1 Charging cable with 2 ring terminals
1 Charging cable with 12 V plug
1 Storage bag (depending on the model)
1 Directions for use

❑ Description of parts

① ◇! "Error"
② ▬ "Charging" (-25%)
③ ▬ "Charging" (-50%)
④ ▬ "Charging" (-75%)
⑤ ▬ Trickle charging (100%)
⑥ SUPPLY LED ("Electrical power supply")
⑦ Regeneration mode (16 V BOOST)
⑧ Maintenance mode (13.6 V / SUPPLY)
⑨ "Mode 4" (14.7 V)
⑩ "Mode 3" (14.4 V)
⑪ "Mode 2" (29.4 V)
⑫ "Mode 1" (28.8 V)
⑬ "MODE" button
⑭ "POWER" display (ON / OFF)
⑮ Charger

⑯ Power cable with mains plug
⑰ Charging cable with 12 V plug
⑱ "+"-pole connecting cable ring terminal (red)
⑲ "–"-pole connecting cable ring terminal (black)
⑳ "+"-pole alligator clip (red)
㉑ "–"-pole alligator clip (black)
㉒ Connecting cable ring terminals
㉓ Connecting cable connecting terminals
㉔ Connection adaptor

❑ Technical data

Primary

Rated input voltage:	220 - 240 V ~ 50 / 60 Hz
Starting current:	< 50 A
Rated input current:	max. 1.2 A (actual value)
Power consumption:	135 W

Secondary

Rated compensating voltage:	12 V ⎓ 24 V ⎓
Charging voltage:	28.8 V / 29.4 V (±2%), 14.4 V / 14.7 V (±0.25 V), 13.6 V / 16.5 V (±0.25 V)
Charging current:	7 A (±10%), 5 A (±10%), 3.5 A (±10%), 3 A (±10%), 1.5 A (±10%)
Rated equalising current:	3.5 A / 7 A
Ripple**:	max. 150 mV
Reverse current*:	< 5 mA (no AC input)
System of protection:	IP 65 (dustproof, waterproof)
Battery type:	12 V + 24 V-lead-acid batteries (AGM, GEL, MF, open and VRLA)
Battery capacity:	12 V : 14 Ah - 230 Ah / 24 V : 14 Ah - 120 Ah
Fuse (internal):	10 A
Noise level:	> 50dB
Ambient temperature:	0 - +40 °C
Dimensions:	200 x 80 x 50 mm (l x w x h)

* = Reverse current is the current that the charger uses from the battery when it is not connected to the mains current.

** = Noise figure is the nuisance value of the current and voltage.

❑ Safety

Safety information

- Do not operate the appliance with a damaged cable, power cord or plug.
- ⚠ **Caution!** A damaged power cord causes danger to life by electric shock.
- If damaged, have the power cord repaired by authorised and trained technicians only!
-  Do not allow toddlers or children near the charging station without supervision! Children cannot assess the potential danger in the handling of electrical equipment.
- Children or persons who lack the knowledge or experience to use the device or whose physical, sensory or intellectual capacities are limited must never be allowed to use the device without supervision or instruction by a person responsible for their safety.
-  **Explosion hazard!** Protect yourself from a highly explosive oxyhydrogen gas reaction! Gaseous hydrogen can leak from the battery during the charging and discharging process. Oxyhydrogen gas is an explosive mixture of gaseous hydrogen and oxygen. The result is the so-called oxyhydrogen reaction upon contact with open fire (flames, embers or sparks)! Carry out the charging or discharging procedure in a wellventilated room protected from the weather. Make sure that there are no sources of open fire (flames, embers or sparks) in the vicinity when charging or discharging batteries!
-  **Danger of explosion and fire!** Make sure that explosive and flammable substances e.g. petrol or solvents can be ignited when using the charging station!
- ⚠ **Danger of chemical burns!** Protect your eyes and skin against chemical burns caused by acid (sulphuric acid) upon contact with the battery! Do not look directly at the connected battery.

-  **Wear protective goggles! Wear protective gloves!**
  If your eyes or skin come into contact with sulphuric acid, rinse the affected part of the body with plenty of clear running water and seek immediate medical assistance!
-  **Protect yourself from an electric shock!** When connecting the charging station, use a screwdriver and a spanner with an insulated handle!
- **Caution! Risk of injury!** Do not use the charger to charge dry-cell batteries
- On no account should you take the charger apart. A charger that has not been properly assembled can lead to a life-threatening electrical shock.
- Do not use the charging station for charging or trickle-charging a damaged or frozen battery!
- Before connecting to the mains, make sure that the mains current is equipped with standard 230 V ~ 50 Hz, PEN conductor, a 16 A fuse and a residual-current circuit-breaker!
- Only touch the pole connecting cables ("–" and "+") in the insulated area!
- Only carry out the assembly, maintenance and servicing of the charging station when it is disconnected from the power supply!
- Do not position the charging station near a fire or subject it to heat or to long-term temperatures exceeding 50 °C! The output capacity of your charging station is automatically reduces at high temperatures.
- Do not cover the charger!
- Protect the electrical contacts of the battery against short-circuiting!
- Do not place the charging station driectly on or next to the battery!
- Set the charger up as far away from the battery as the charging cable allows.
-  **Protect yourself from electric shock.** Never touch both alligator clips at the same time when the charger is operating
- Remove the power cable from the socket before connecting the charging cable to the battery or disconnecting the cable from the battery.
- After completing the charging and floating charge operation on a battery permanently installed in the vehicle, first disconnect the cable of the negative (minus) pole (black) of the charger from the negative (minus) pole of the battery.
- Always turn your face away from the battery when you connect the charging cable to the battery.
- In case of malfunction or damage, immediately disconnect the charging station from the mains!
- Have the charging station repaired by authorised and trained specialists only! Please contact the service department for your country!
- Before connecting the charging station, read the information on battery maintenance in the operating instructions of the battery!
- Before connecting the charging station to a battery permanently installed in a vehicle, read the information on electrical safety and maintenance in the operating instuctions of the vehicle!
- Disconnect the charger from the mains current and the battery when not in use!

❑ Properties

This device is designed for charging open batteries and a variety of closed batteries that are used in cars, motorbikes and a few other vehicles - e.g. WET (with liquid electrolyte), GEL (with a gel electrolyte) or AGM batteries (with electrolyte-absorbing mats). The battery capacity ranges from 12 V (14 Ah) to 12 V (230 Ah) or from 24 V (14 Ah) to 24 V (120 Ah). A special design feature of the device permits the battery to be recharged to nearly 100% of its capacity. In addition, long-term connection of the battery to the charger is possible when not in use in order to maintain it in its best possible condition without damaging it. The charger has a total of 6 charging modes for various batteries in various conditions. This enables charging to be safer and more efficient. In contrast to conventional products, the charger has a special function that enables nearly completely flat batteries to be recharged. The highest protective measures against incorrect use and short-circuiting ensure safe operation. Thanks to an integrated switch, the charger only starts the charging process when the charging mode has been selected. This means that the spark that often occurs when connecting the battery is completely avoided.

❑ Before starting device up for the first time

- Clean the battery clips. Make sure that your eyes do not come into contact with rust.
- Ensure sufficient ventilation. Gaseous hydrogen can leak out when charging or trickle charging the battery.

❑ Operation

❑ Connection

- □ Connect the connecting cable ㉒ or ㉓ to the connection adaptor ㉔.
- □ Clamp the "+"-pole (red) ⑱, ⑳ of the charger to the "+"-pole of the battery.
- □ Clamp the "–"-pole (black) ⑲, ㉑ of the charger to the "–"-pole of the battery.
  Note: Make sure that the "+"-pole ⑱, ⑳ or the "–"-pole ⑲, ㉑ sits firmly.
- □ Connect the power cable ⑯ to the mains current.

As soon as you have connected the battery to the charger, the charger automatically switches to STANDBY mode. The "POWER" display ⑭ glows.
Note: The charger has its own reverse battery protection. The LED ⚠ "Error" ① shines when the "+"-pole ⑱, ⑳ or "–"- pole ⑲, ㉑ has been wrongly connected.

❑ Disconnecting

- □ Disconnect the power cable ⑯ from the mains current.
- □ Remove the "–"-pole (black) ⑲, ㉑ of the charger from the "–"-pole of the battery.
- □ Remove the "+"-pole (red) ⑱, ⑳ of the charger from the "+"-pole of the battery.

❑ Select mode of operation

- □ Press the "MODE" button ⑬ to select the mode of operation you want to have. The LED for the mode of operation you want will glow steadily.

You can choose between the following modes of operation:

Mode 1 ☀ 28.8 V (24 V / 3.5 A):
Suitable for batteries with a capacity of more than 14 Ah in normal conditions. Charging mode for open batteries, MF and for most GEL batteries.

- The LED for Mode 1 ⑫ lights up. As soon as the integrated switch is thrown, the appropriate LED for the state-of-charge also comes on (see "State of charge"). The charging process starts with an amperage of 3.5 A. As soon as the battery has been fully charged (28.8 V) the following LEDs light up: ▬ ②, ▬ ③, ▬ ④ and ▬ ⑤.
  The charger changes over to trickle charging. If the voltage of the battery falls below 25.6 V, the charging process starts up again with an amperage of 1.5 A until the battery has been fully charged again (28.8 V).

Mode 2 ❄ 29.4 V (24 V / 3.5 A):
Suitable for batteries with a capacity of more than 14 Ah in cold conditions or also for many AGM batteries (with electrolyte-absorbing mats) with a capacity of more than 14 Ah.

- The LED for Mode 2 ⑪ lights up. As soon as the integrated switch is thrown, the appropriate LED for the state-of-charge also comes on (see "State of charge"). The charging process starts with an amperage of 3.5 A. As soon as the battery has been fully charged (29.4 V) the following LEDs light up: ▬ ②, ▬ ③, ▬ ④ and ▬ ⑤.
  The charger changes over to trickle charging. If the voltage of the battery falls below 25.6 V, the charging process starts up again with an amperage of 1.5 A until the battery has been fully charged again (28.8 V).

Mode 3 ☀ 14.4 V (12 V / 7 A):
Suitable for batteries with a capacity of more than 14 Ah in normal conditions. Charging mode for open batteries, MF and for most GEL batteries.

- The LED for Mode 3 ⑩ lights up. As soon as the integrated switch is thrown, the appropriate LED

for the state-of-charge also comes on (see "State of charge"). The charging process starts with an amperage of 7 A. As soon as the battery has been fully charged (14.4 V), the following LEDs light up: ▬ ②, ▬ ③, ▬ ④ and ▬ ⑤.
The charger changes over to trickle charging. If the voltage of the battery falls below 12.8 V, the charging process starts up again with an amperage of 1.5 A until the battery has been fully charged again (14.4 V).

Mode 4 ❄ 14.7 V (12 V / 7 A):
Suitable for batteries with a capacity of more than 14 Ah in cold conditions or also for many AGM batteries (with electrolyte-absorbing mats) with a capacity of more than 14 Ah.

- The LED for Mode 4 ⑨ lights up. As soon as the integrated switch is thrown, the appropriate LED for the state-of-charge also comes on (see "State of charge"). The charging process starts with an amperage of 7 A. As soon as the battery has been fully charged (14.7 V) the following LEDs light up: ▬ ②, ▬ ③, ▬ ④ and ▬ ⑤.
The charger changes over to trickle charging. If the voltage of the battery falls below 12.8 V, the charging process starts up again with an amperage of 1.5 A until the battery has been fully charged again (14.4 V).

❑ State of charge

The state-of-charge of the connected battery is indicated on the charger as follows:

LED	Display				
▬ ②	flashes	steady glow	steady glow	steady glow	steady glow
▬ ③	off	flashes	steady glow	steady glow	steady glow
▬ ④	off	off	flashes	steady glow	steady glow
▬ ⑤	off	off	off	flashes	steady glow
State-of-charge	- 25%	- 50%	- 75%	- 100%	100%

❑ Trickle charging (13.6 V / SUPPLY)

Note: In this mode, the charger has overload protection (max. 6.0 A).
Note: As soon as the output voltage falls below 4.5 V, the charger automatically switches to STANDBY mode.
Caution! There is no reverse battery protection in this mode (see "Connecting")!

Suitable for maintaining the state-of-charge of batteries with a capacity of more than 14 Ah in normal conditions or for an electrical power supply of 13.6 V / 5 A.

12 V SLA batteries (sealed lead-acid batteries):
- The LED for the maintenance mode ⑧ lights up. As soon as the integrated switch is thrown, the LED for the maintenance mode ⑧ flashes. The process starts with an amperage of 13.6 A (±0.25 V) / 5 A (±10 %).

Using it as a power source:
□ Press the "MODE" button ⑬ down for about 3 seconds.
- The LED for the maintenance mode ⑧ lights up. As soon as the integrated switch is thrown, the LED for the SUPPLY ⑥ lights up. The electrical power supply starts with an amperage of 13.6 A (±0.25 V) / 5 A (±10 %).

❑ Regeneration mode (16 V BOOST)

Note: This mode is only suitable for 12 V batteries.
Note: In this mode, the batteries have to be charged fully!

Suitable for the regeneration of completely flat batteries with a capacity of more than 14 Ah in normal conditions.

- The LED for the regeneration mode ⑦ lights up. As soon as the integrated switch is thrown, the LED for the regeneration mode ⑦ flashes. The process starts with an amperage of 16.5 A (±0.25 V) / 1.5 A (±10 %).
  Note: If the battery is nearly completely flat, the LED for the regeneration mode ⑦ could flash for up to 3 hours. During this time, constant amperage of 1500 mA will flow into the battery in order to restore the battery's capacity. After a maximum of 4 hours, the regeneration mode switches itself off. If the battery has still not been fully charged, the charger will switch to normal charging mode (mode 1 - 4).

❑ Impulse charging

As soon as the charger starts the charging process, it automatically recognises the battery voltage. It changes over to impulse charging when the battery voltage is in the area of 4.5 V / 14 V to 10.5 V / 21 V. This impulse charging continues until the battery voltage rises to more than 10.5 V / 21 V; after that the charger changes back to the charging mode selected before. This process is able to regenerate most flat, used or overcharged batteries so that they can be re-used.

❑ Charger protection function

As soon as an abnormal situation such as a short-circuit, regeneration process of more than 7 hours, charging process of more than 41 hours, battery voltage less than 4.5 V (with 12-V batteries) or 16 V (with 24-V batteries), open electric circuit or reversed polarity occurs, the charger switches over to STANDBY mode. If you do not input any other setting, the system will remain on STANDBY. With reversed polarity, the LED ◇ "Error" ① will light up. This way, the sparks that often arise during the connection process are avoided.

❑ Overheating protection

If the appliance becomes too hot during charging, the power output is automatically reduced. This protects the appliance from damage.

❑ Memory function

Note: The memory function is not active in maintenance and regeneration mode.

The charger has a memory function. As soon as the charger has been connected to the mains supply, it automatically switches to the mode of operation last used. Due to the variety of different batteries and conditions, we recommend you check the mode of operation carefully and make any manual adjustments if necessary (See "Selecting mode of operation").

❑ Average charging time

Battery type (Ah)	For about 80% state-of-charge (time in hours)	
	12 V	24 V
14	2,5	4,9
60	7,5	15
100	12	24
120	15	30
230	29	

❑ Maintenance

The appliance is maintenance-free.

❑ Disposal

The packaging is wholly composed of environmentally-friendly materials that can be disposed of at a local recycling centre.

Do not dispose of electrical appliances in household waste.

❑ Information

❑ Servicing

- **Have your device repaired only by qualified specialist personnel using original manufacturer parts only.** This will ensure that your device remains safe to use.

We reserve the right to make technical modifications in the course of product development.

4 Load GmbH

Glendale Str. 4
87700 Memmingen
Germany
www.4load.de