



# M100

## Battery charger

For lead-acid batteries 14-225Ah



User Manual and guide to professional battery charging for Starter and Deep Cycle batteries.

Model 1007

EN

### INTRODUCTION

Congratulations on your purchase of your new professional M100 Switch Mode Charger with Pulse Maintenance, Float, Analysis and Recond. M100 is a member of a family of professional chargers from CTEK SWEDEN AB. It represents the state-of-the-art technology for battery charging. A M100 will prolong the lifetime of your battery. Read this user manual and follow the instructions carefully before using the charger.

### SAFETY

- The charger is designed for lead-acid batteries from 14-225Ah. Do not use the charger for any other purpose.
- Use safety glasses and turn your head away when connecting or disconnecting a battery.
- Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes. Seek medical advice.
- Make sure that the cable is not pinched or in contact with warm surfaces or sharp edges.
- While charging, a battery can emit explosive gases, so it is important to avoid sparks in the immediate area.
- Always provide for proper ventilation during charging.
- Avoid covering the charger.
- Make sure that the electrical cable does not come into contact with water.
- Never charge a frozen battery.
- Never charge a damaged battery.
- Do not place the charger on the battery while charging.
- The electrical connection must fulfil the national heavy current requirements.
- Check charger cabling before use. Make sure there are no cracks in the cabling or in the protective covering. A charger with damaged cables may not be used.
- Always check that the charger has gone over to maintenance charging mode before leaving the charger unattended and connected for long periods. If the charger had not gone over to maintenance charging within 3 days, this is an indication of a problem. In this case the charger must be disconnected manually.
- All batteries fail sooner or later. A battery that fails during charging is normally taken care of by the chargers advanced control, but certain uncommon errors in the battery can still arise. Don't leave the battery charger unattended for a longer period of time.
- Only mount the charger on a flat surface.
- This equipment may not be used by children or by those who can not read and understand the manual if they are not supervised by a responsible person who can guarantee that the battery charger is being used in a safe manner. Store and use the battery charger out of the reach of children. Make sure that children do not play with the battery charger.

### BATTERY TYPES AND SETTINGS

M100 can easily be configured to charge many different types of 12V lead-acid batteries; wet batteries, MF, AGM and for most GEL-batteries. The following recommendations should, however, only be seen as guidelines. When in doubt, always consult the battery manufacturer for further instructions. Settings are made by pressing the "MODE-button" and stepping forward by pressing the button one step at a time, releasing the button when the required mode is reached. After approx. 2 seconds, the charger activates the chosen mode. The selected mode is saved in the charger's memory and remains even when the charger is switched off.

Primary charging where approximately 80% of the charging happens. The charger delivers maximum voltage until the terminal voltage has risen to the preset level. After a number of hours, the charger goes on to the next phase, even if maximum voltage is not reached. Bulk is indicated by lamp 2.

Connecting the provided cables with eyelet terminals:

Make sure that the cable is not pinched or in contact with warm surfaces or sharp edges. When the cable is mounted on the battery, it should not be connected to the charger. Connect the eyelet terminals to the battery's poles - the red cable to the positive pole and the black cable to the negative pole. After this, the quick connector can be connected.

Reverse Polarity Protection

If the battery cables are connected incorrectly, the reverse polarity protection will make sure that neither the charger nor the battery are damaged. In this case, the red warning lamp (0) will be lit.

### MODE

#### "NORMAL" (14.4V)

Normal setting for wet batteries, MF and for most Gel batteries.

#### "Mode "AGM" (14.7V)

This setting is recommended for batteries at temperatures below 5°C. It is also recommended for many AGM batteries. This setting is not recommended for maintenance charging when the temperature at times exceeds +5°C. In this case, the NORMAL mode is recommended.

#### "SUPPLY" (13.6V)

In this mode, the charger provides a constant voltage of 13.6V. This is the best maintenance mode for batteries where maximum capacity is important. It is not appropriate to charge a completely discharged battery in Supply mode, since this will not result in a completely charged battery. The M100 can also be used as a power supply without a battery attached in this setting. No counter voltage is required to start the charger in this mode. Note that the charger is not spark free in this mode.

#### "RECOND" (15.7V, 1.5A 0.5-4h)

This mode is used to recondition very discharged batteries where you could expect a stratified acid (high acid weight in the bottom, low on top). Use this mode with care because it can cause some water loss. 15.7V is normally not a problem for electronics, but consult the manufacturer when in doubt. Life of light bulbs can be reduced by higher voltages. Try to avoid using 12V lamps connected to the battery during this phase. Maximum effect and minimum risk for electronics is achieved by disconnecting the battery before charging.

### CHARGING

#### Charging batteries mounted in a vehicle:

1. The power cord should be disconnected before connecting or disconnecting the battery leads.

2. Identify the pole that is grounded (attached to the chassis). Ground is normally connected to the negative terminal.

3. Charging a negatively grounded battery. Connect the red cable to the positive pole of the battery and the black cable to the vehicle's chassis. Be careful not to connect the black cable in the vicinity of a fuel pipe or the battery.

4. Charging a positively grounded battery. Connect the black cable to the negative pole of the battery and the red cable to the vehicle's chassis. Be careful not to connect the red cable in the vicinity of a fuel pipe or the battery.

#### Charging of a battery not connected to a vehicle:

1. The power cord should be disconnected before connecting or disconnecting the battery leads.

2. Connect the red cable to the positive pole of the battery and the black cable to the negative pole.

#### Connecting the provided cables with eyelet terminals:

Make sure that the cable is not pinched or in contact with warm surfaces or sharp edges. When the cable is mounted on the battery, it should not be connected to the charger. Connect the eyelet terminals to the battery's poles - the red cable to the positive pole and the black cable to the negative pole. After this, the quick connector can be connected.

#### Reverse Polarity Protection

If the battery cables are connected incorrectly, the reverse polarity protection will make sure that neither the charger nor the battery are damaged. In this case, the red warning lamp (0) will be lit.

### Start charging

#### "Lamp 1"

1. Connect the power cord to the power outlet.

#### "Lamp 2"

2. Set the proper charging mode for the battery by pushing the Mode button until the correct setting is lit. Choosing settings for your battery is described under "BATTERY TYPES AND SETTINGS".

#### "Lamp 3"

3. The lamp for Deep Discharged battery (1) will indicate if the battery voltage is maintained with constant voltage, 13.6V. Float-maintenance is indicated by lamp 4.

#### "Lamp 4"

4. Normal charging is indicated by the following lamps: Deep Discharged (1), Bulk Charge (2), Absorption Charge (3) or Maintenance Charging (4). When the maintenance lamp is lit, the battery is fully charged. The charge will restart if the voltage drops. The charger can be connected for months.

#### "Lamp 5"

5. If the battery cables are connected incorrectly, the reverse polarity protection will make sure that neither the charger nor the battery are damaged. In this case, the red warning lamp (0) will be lit.

#### "Lamp 6"

6. If nothing happens. If the setting lamp is lit but no other light comes on, the connection to the battery or to the chassis may be poor, or the battery may be faulty. Start by improving the contact between the battery and the charger.

#### "Lamp 7"

7. Charging can be interrupted at any time by disconnecting the power cord from the wall socket or by putting the charger in "Standby" mode (lamp A). Always disconnect the power cord from the socket before removing the battery cables. When you interrupt charging of a battery mounted in a vehicle, always disconnect the battery cable from the chassis before removing the other battery cable.

#### "Lamp 8"

8. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 9"

If the battery is charged and/or the battery's terminal voltage drops, the charger starts a charge pulse until the voltage has reached the preset level 14.4V or 14.7V. The charge pulse is then interrupted and the cycle is repeated as long as the charger is in pulse maintenance phase. If the terminal voltage drops even lower, the charger automatically reverts to the beginning of the charging curve. Pulse maintenance phase is indicated by lamp 4. If possible, check the water level in the battery.

#### "Lamp 10"

10. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 11"

11. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 12"

12. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 13"

13. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 14"

14. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 15"

15. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 16"

16. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 17"

17. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 18"

18. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 19"

19. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 20"

20. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 21"

21. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 22"

22. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 23"

23. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 24"

24. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 25"

25. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 26"

26. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 27"

27. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 28"

28. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 29"

29. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 30"

30. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 31"

31. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 32"

32. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 33"

33. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 34"

34. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 35"

35. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 36"

36. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 37"

37. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 38"

38. The state of charge varies between 95% and 100%. The battery receives a pulse when the voltage sinks, keeping the battery in good shape when it is not being used. The charger can be connected for months.

#### "Lamp 39"

39. The state of charge varies between 95%



**Some experts believe the incorrect or prolonged use of almost any product could cause serious injury or death. For information that may reduce your risk of serious injury or death consult the points below and additionally, the information available at [www.datastreamserver.com/safety](http://www.datastreamserver.com/safety)**

- Consult all documentation, packaging and product labelling before use. Note that some products feature online documentation which should be printed and kept with the product.
- Check product for loose / broken / damaged / missing parts, wear or leaks (if applicable) before each use. Never use a product with loose / broken / damaged / missing parts, wear or leaks (if applicable).
- Products must be inspected and serviced (if applicable) by a qualified specialist every 6 months assuming average residential use by a person of average weight and strength, above average technical aptitude, on a property matching average metropolitan specification. Intended use outside these guidelines could indicate the product is not suitable for intended use or may require more regular inspection or servicing.
- Ensure all possible users of the product have completed an industry recognised training course before being given access to the product.

- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or your description of the application. Be sure to attain third party approval for your application from a qualified specialist before use regardless of prior assurances by the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (take an automobile, aircraft, computer or ball point pen for example) there is always a small chance of a technical issue that needs to be repaired or may require replacement of the product or a part. If the possibility of such failure and the associated time it takes to rectify could in any situation inconvenience the user, business or employee or could financially affect the user, business or employee then the product is not suitable for your requirements. This product is not for use where incorrect operation or a failure of any kind, including but not limited to a condition requiring product return, replacement, service by a technician or replacement of parts could cause a financial loss, loss of employee time or an inconvenience requiring compensation.
- If this item has been purchased in error considering the points above simply contact the retailer directly for details of their returns policies if required.