Bosch C70 charger
Operating instructions

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PL
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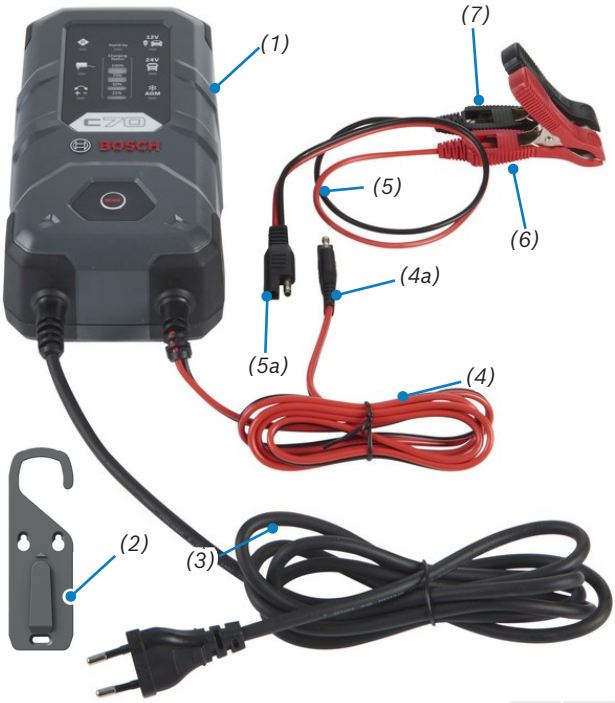
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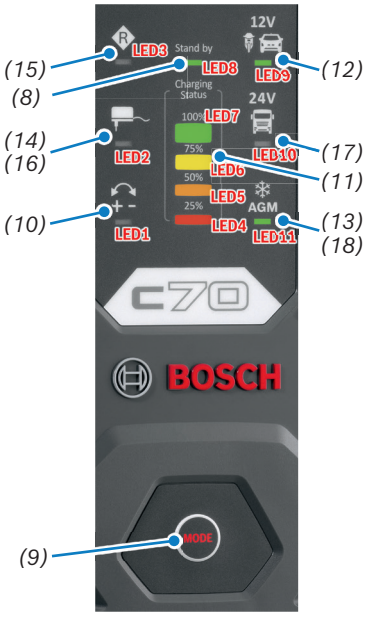
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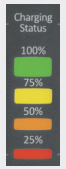
DE	Bedienungsanleitung	**3**
EN	Operating instructions	**12**
FR	Mode d'emploi	**19**
IT	Istruzioni d'uso	**28**
ES	Instrucciones de uso	**36**
TR	Kullanım Kılavuzu	**44**
AR	دليل الاستعمال	**51**
PL	Instrukcja obsługi	**59**
HU	Használati utasítás	**67**
EL	Οδηγίες χρήσης	**75**
DA	Betjeningsvejledning	**83**
NB	Bruksanvisning	**90**
SV	Bruksanvisning	**97**
NL	Bedieningshandleiding	**104**
RU	Инструкция по эксплуатации	**112**
CS	Návod k obsluze	**120**
RO	Instrucțiuni de utilizare	**128**
HR	Upute za upotrebu	**136**
SR	Uputstvo za upotrebu	**143**
	Упутство за употребу	**150**
BG	Ръководство за потребителя	**158**
UK	Інструкція з експлуатації	**166**
SK	Návod na obsluhu	**174**
ET	Kasutusjuhend	**182**
LV	Lietošanas pamācība	**189**
FI	Käyttöohje	**197**
MK	Упатство за работа	**204**
SL	Navodila za uporabo	**212**
SQ	Manuali i përdorimit	**220**

Device description





1	Charger	
2	Mounting hook	
3	Mains cable with mains connection	
4	Charging cable a Plug	
5	Charging cable with clip a Plug	
6	(+) Terminal clamp (red)	
7	(–) Terminal clamp (black)	
8	Standby	
9	Mode selection button	
10	Reverse polarity protection + -	

11	Battery capacity indicator Battery capacity: 100% Battery capacity: 75% Battery capacity: 50% Battery capacity: 25%	
12	Mode 1 | 12 V (motorcycle/car)	
13	Mode 2 | 12 V (charging at 0-4°C in winter or AGM)	
14	Mode 3 | 12 V (maintenance)	
15	Mode 4 | 12 V (regeneration)	
16	Mode 5 | 12 V (voltage maintenance during battery change)	
17	Mode 6 | 24 V (truck)	
18	Mode 7 | 24 V (charging at 0-4°C in winter or AGM)	

1 Technical data

Technical data	
Input voltage	230VAC / 50Hz
Starting current	<50 A
Rated input current	Max. 2A (RMS value)
Input power	190 watts
Rated output voltage	DC 12 V/24 V
Charging voltage	14.4 V/14.7 V (± 0.25 V), 28.8 V/29.4 V (± 0.6 V), 16.5 V/13.6 V (± 0.5 V)
Charging current	10 A (± 10 %), 5 A (± 10 %), 1.5 A (± 0.3 A)
Rated output current	10 A & 5 A
Reverse current [1]	< 5 mA (no AC input)
Protection rating	IP65 (dustproof, waterproof)
Protection class	II (double insulated)
Battery type	12 V & 24 V lead-acid battery (lead acid, EFB, GEL, AGM and open VRLA)
Battery capacity	12 V: 14 Ah - 300 Ah, 24 V: 14 Ah - 120 Ah
Fuse (internal)	5A
Fuse (fuse holder)	40A
Noise level	< 50 dB(A)
Temperature	0°C to + 40°C
Dimensions	215 x 112 x 65.4 mm (L x W x H)

[1)] The reverse current is the current that the charger consumes from the battery when no mains power is connected.

2 Safety



Please read these instructions carefully before using the charger.

⚠ CAUTION

- If the power supply cable is damaged, it must be replaced by the manufacturer or service representative in order to avoid any danger.
- Disconnect the power supply before making or breaking the connections to the battery.
- The battery connection, which is not connected to the vehicle body, must be connected first (+) red. The other connection must be made to the vehicle body (–) black, away from the battery and fuel lines. Only then connect the battery charger to the mains supply.
- After charging, disconnect the battery charger from the mains supply first. Then disconnect the connection to the vehicle body (–) black and battery connection (+) red in this order.

⚠ WARNING

The mains plug must not come into contact with water. Water must be prevented from flowing toward the mains supply to protect users from electrocution.

⚠ WARNING

Danger of explosion and fire!
Explosive gases.

- Prevent any flames or sparks.
- Provide adequate ventilation during the charging process.
- Ensure that the area around the battery is well ventilated during the charging process.



Battery

Use the battery charger only for 12 V 14 Ah - 300 Ah or 24 V 14 Ah - 120 Ah lead-acid type (lead acid, EFB, GEL, AGM, open and VRLA) batteries.

⚠ WARNING

Do not attempt to charge a non-rechargeable battery!



Keep children away from the charger.

- This device 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 the safe use of the device and understand the hazards involved.
- Children must not be allowed to play with the device.
- Cleaning and maintenance must not be performed by children without supervision.
- For indoor use only.

Environmentally friendly disposal 

Help protect the environment! Please observe the local regulations. Electrical devices that are no longer usable must be collected separately and disposed of in an environmentally friendly manner.

The packaging is made of ecological materials that can be disposed of in local recycling plants.

3 Operation

3.1 Before initial start-up

1. Read the battery operating instructions before connecting the charger.
2. Follow the vehicle manufacturer's recommendation if the battery is still connected to the vehicle.
3. Clean the battery terminals. Do not allow the dirt to come into contact with your eyes, skin or mouth. Wash your hands thoroughly after contact with the battery connections.
4. Provide adequate ventilation. Gaseous hydrogen (oxyhydrogen) can escape from the battery during charging and trickle charging.

3.2 Connection

1. Connect the (+) terminal (red) of the charger to the (+) terminal of the battery.
2. Connect the (–) terminal (black) of the charger to the (–) terminal of the battery.
3. The (–) terminal clamp (black) can also be connected to the vehicle body, but far away from fuel lines.

Note: Make sure that the (+) and (–) terminals are firmly connected.
Only then connect the mains cable.

3.3 Terminating the connection

1. Put the charger into standby mode by pressing the mode button.
2. Always disconnect the mains plug from the mains first.
3. Disconnect the (–) terminal (black) of the charger from the (–) terminal of the battery.
4. Disconnect the (+) terminal (red) of the charger from the (+) terminal of the battery.

3.4 Overheating protection

If the device becomes too hot during the charging process, the output power and output current are automatically reduced to prevent damage to the device.

3.5 Standby and reverse polarity protection

Mode	Indicator	Explanation
Standby		Lights up during power on and in the event of faults
Reverse polarity protection		Lights up when the terminal clamps are reversed

4 Mode selection

1. Select the desired mode by pressing the mode selection button.
2. The LED for the desired mode will light up.
3. If no further action is subsequently taken, the charging process will start after 5 seconds.

Mode	Output	Indicator	Operation	Battery types[1] supported
Mode 1 Motorcycle/ car mode	14.4 V 10 A		Press the button once to select mode 1 ■ LED 9 lights up	12 V lead acid, EFB and most GEL batteries
Mode 2 12 V cold/ AGM mode	14.7 V 10 A		Press the button twice to select mode 2 ■ LEDs 9 and 11 light up	Cold state (0-4°C) of 12 V lead acid, AGM, EFB and GEL batteries.
Mode 3 maintenance mode[2]	13.6 V 5 A		Press the button three times to select mode 3 ■ LED 2 flashes ■ LED 9 lights up	12 V lead acid, EFB and most GEL batteries
Mode 4 Regeneration mode[3]	16.5 V 1.5 A		Press the button four times to select mode 4, ■ LED 3 flashes ■ LED 9 lights up	Suitable for the regeneration of 12 V batteries after short-term extreme discharge
Mode 5 voltage maintenance mode[4]	13.6 V 5A		Do not connect a battery. Press and hold the mode button for 5s to switch to mode 5 ■ LED 2 and LED 9 light up	Can be used to supply the vehicle electronics without interruption when changing the 12 V battery (connection to the battery terminals on the vehicle side)
Mode 6 Truck 24 V mode	28.8 V / 5 A		Press the button once to select mode 6 ■ LED 10 lights up	24 V lead acid, EFB and most GEL batteries

Mode	Output	Indicator	Operation	Battery types[1] supported
Mode 7 24 V cold/ AGM mode	29.4 V 5A		Press the button twice to select mode 7, ■ LEDs 10 and 11 light up	Cold state (0-4°C) of 24 V lead acid, EFB and most GEL batteries. And for many 24 V AGM batteries

Note:

1) This charger is only valid for batteries with a battery capacity > 14 Ah.
2) The maintenance mode can be used to maintain the battery voltage if the battery is not used for an extended period of time.
3) For regeneration mode, make sure that all connections between the battery and the vehicle electrical system are disconnected.
4) For certain vehicles, it is important not to disconnect the vehicle electronics from the power supply when changing the battery. In such cases, the power supply mode can be used to supply power to the vehicle electronics during battery replacement.

If the load voltage is below 7.5 V, the charger will switch to standby mode. There is no reverse polarity protection in this mode.

4.1 Pulse charging

This is an automatic charging function that cannot be selected manually.

- Modes 1 & 2:
  If the battery voltage is between 7.5 V (± 0.5 V) and 10.5 V (± 0.5 V) at the start of the charging process, the charger will automatically switch to pulse charging.
- Modes 6 & 7:
  If the battery voltage is between 16 V (± 0.5 V) and 21 V (± 0.5 V) at the start of the charging process, the charger will automatically switch to pulse charging.

4.2 Trickle charging phase

The charger has an automatic trickle charging phase with max. 800 mA at full charge.

4.3 Maintenance phase

When the battery is fully charged, “100%” LED lights up. The charger will start the maintenance phase to keep the battery capacity in full condition.

4.4 Memory function

If the charger is disconnected from the mains during the charging process, the device saves the previously selected mode. When reconnected to the mains and with the same battery type (12V or 24V), the device will automatically start in the last mode.
Caution: If the connected battery type is different from the last one used (e.g. if you were in cold/AGM mode last time and you need to connect a normal lead-acid battery this time), please reselect the mode manually to avoid overcharging or damage.
There is no memory function for mode 3 (maintenance mode), mode 4 (regeneration mode) & mode 5 (power supply mode).

4.5 Battery detection

Once the charger is connected to a 14.6 V - 21 V battery, 12 V & 24 V LEDs will flash al-

ternately. The charger will attempt to detect the battery voltage using an elaborate measurement process. After 1-3 minutes, the charger will detect whether the battery is 12 V or 24 V and switch to the corresponding 12 V motorcycle/car mode or 24 V truck mode.

4.6 Override mode

If the charger detects a connected battery as a 12 V battery and switches to 12 V mode, but the user is very sure that the battery type is 24 V, the user can press and hold the mode button for 5 seconds to switch the charger to any 24 V charging mode.

⚠ CAUTION

The 24 V mode can charge the battery from a voltage as low as 5.5 V. As a result, a 12 V battery could be overcharged and cause further hazards (increased gassing, explosion, fire...) to humans and animals.

4.7 Device protection function

In the event of a short circuit on the charging cable, the fuse (4a) on the charging cable prevents damage to the device and the electrical system.

5 Maintenance and care

Always remove the mains plug from the socket before cleaning the charger. The charger is maintenance-free.

1. Switch off the device.
2. Use a dry cloth to clean the plastic surfaces of the device.
3. Never use solvents or other aggressive cleaning agents.
4. To maintain operational safety, the devices must only be repaired by the manufacturer or its service representative using original spare parts.
5. For Li-Ion ($LiFePO_4$) batteries, please use the Bosch C40-Li or C80-Li.
6. For 6 V batteries, please use the C30, C40-Li or C80-Li.

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