DEALERGUIDE

Cortina E-Lett

CORTINA

INHOUDSOPGAVE

INTRODUCTION

This manual provides technical support to dealers about the Promovec electric drive system. This dealer's manual is intended primarily for use by professional bicycle mechanics. Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manual. If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your Cortina dealer or Kruitbosch for assistance.

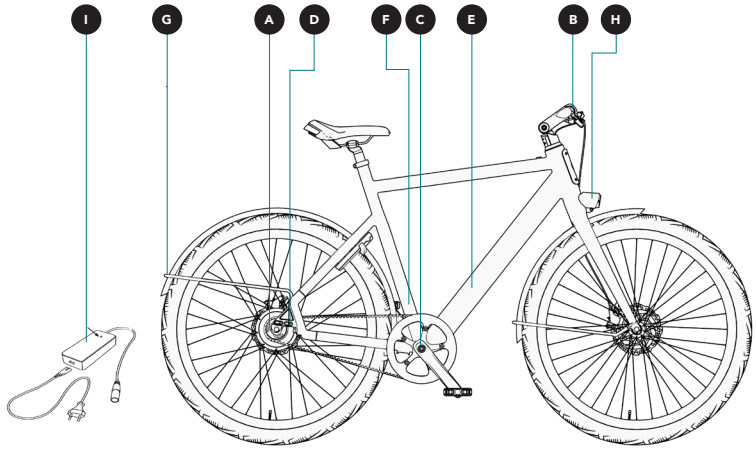
- Make sure to read all manuals included with the product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at https://portal.kruitbosch.nl/b2b/nl/e-bike-systemen/page/e-bike-systemen
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

Important!

- Be sure to follow the instructions provided in the manuals when installing the product.
- Only use Promovec genuine parts. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure.
- For information on products not explained in this manual, refer to the manuals for each product.

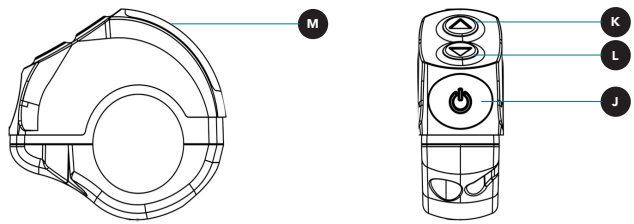
Cortina Electric bicycles and batteries are manufactured in accordance with the EN 15194:2017 standard.

1 THE BICYCLE



Parts

A Motor
B Control display
C Rotation sensor
D Speed sensor
E Battery
F Charger connection
G Rear lights
H Front lights
I Charger
J On/off button
K More assist/lights
  a. More assist: press briefly
  b. Lights: press for 2 seconds.
L Less assist/walk assist
  a. Less assist: press briefly
  b. Walk assist: keep pressed,
    assist starts after 2 seconds
M Display
  a. 5 levels in blue LEDs indicate the battery charge status.
  b. 5 levels in green LEDs indicate the assist setting.



Weight

The total weight of the Cortina E-Lett is 21.5 kg

Bicycle wiring connections

Figures XX, XX and XX depict the wiring connections for the individual bicycle electrical components. More detailed instructions for connecting these parts are provided in Chapter XX.

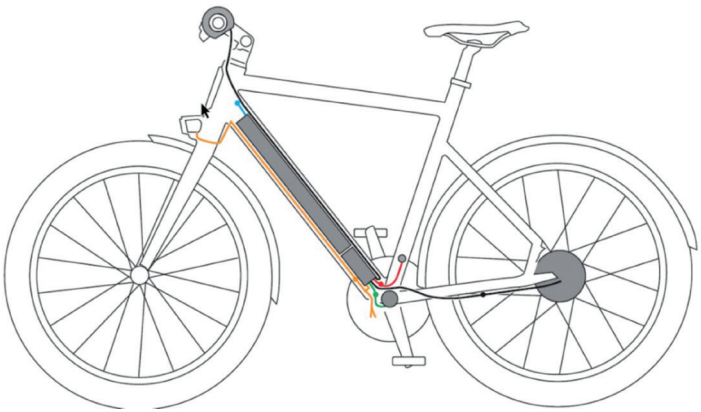
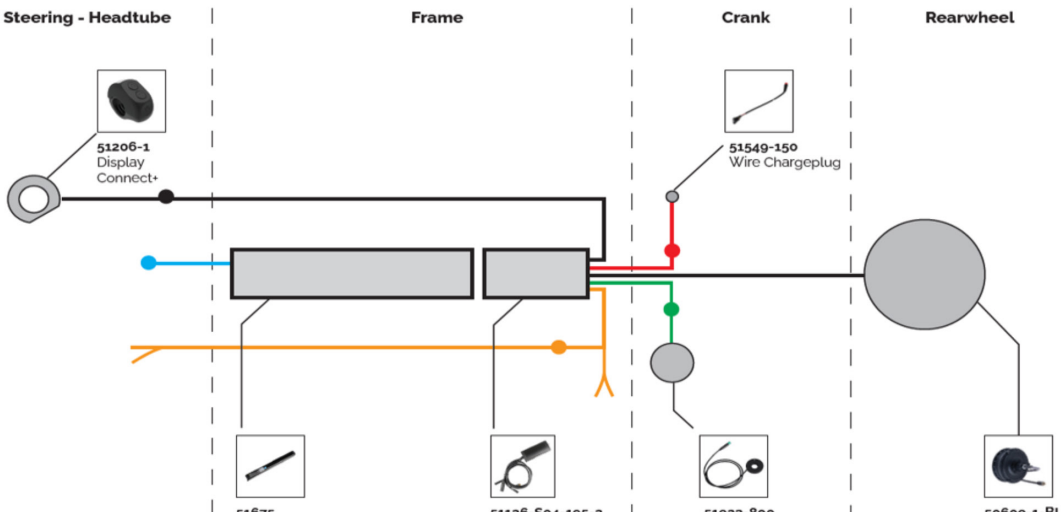


Figure 1.1 Scheme of the bike connections

1. Rotation sensor cable - green
2. Display cable - black
3. Light cables - orange
4. Motor cable rear - black
5. Charging port cable - red
6. Read out cable – blue



Use of the bike

The pedal assist is activated as soon as you push the pedals, except in the walk function. The motor power is in line with the assist level on the display. As soon as you stop pedaling or when you have reached a speed of 25km/h, the assist is switched off. The pedal assist will be activated again automatically, once you start pedaling again and the speed is below 25km/h.

Battery

First use

Charge the battery completely. You can charge the battery whilst it is on the bike. The table below shows how long it takes to fully charge your battery.

Type	350Wh
Normal charge time (2 Amperes)	05:30 hours

During charging, a red light on the charger comes on. The light turns green when the battery is fully charged. On the display you can see how much charge the battery still has.

Display – Connect+

The display can be operated with 3 buttons.

- 5 levels in blue LEDs indicate the battery charge status.
- 5 levels in green LEDs indicate the assist setting.
- Flashing LEDs represent error codes.

Note! When the first LED in the battery charge status flashes, a blue LED, this means a fault has been detected in the system.

Assist functions

The display has 2 different assist functions:

- Assist levels (1-5), can be selected by using up/down buttons.
- Walk assist is selected by holding down the "down" button.
- Light is switched on and off by holding down the "up" button.

If walk-assist function is supported by the bike, it allows you to drive up to 6 km/h without the use of the pedals and regardless of the assist level setting. This function is, for example, used on hills and other rough paths.

Note: I have not used the battery for a while and now I cannot turn it on. What can I do? When the bicycle is not used for a longer period of time the battery goes into deep sleep mode. Then connect the battery to the charger for at least 5 seconds to reactivate the battery

ILLUSTRATION 1: BUTTONS ON STAND ALONE DISPLAY

2 APP

App functions

Extra functions when the app is used

When your phone is paired with Bluetooth, it is possible to access a number of extra functions, such as:

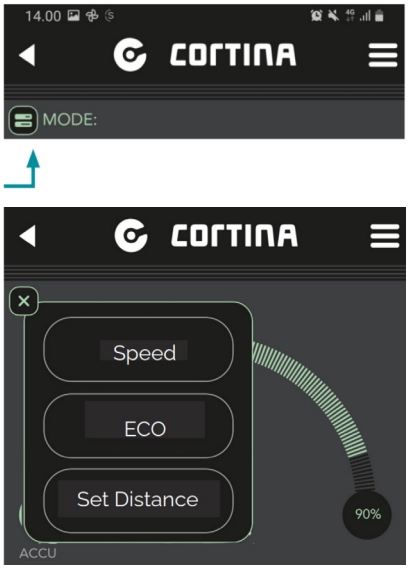
- Current speed
- Trip information
- Ride mode (eco/speed/limp function)
- Map
- Basic functions (battery status, assist level, etc.)

Mode – Driving modes

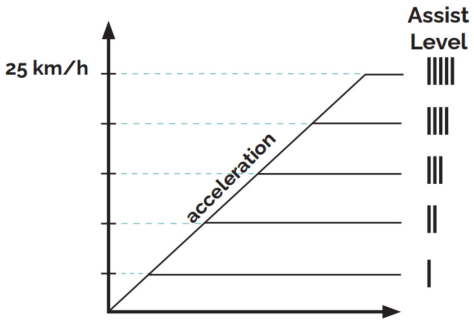
By using the App, you can choose from 3 different forms of support:

- Speed mode
- ECO mode
- 'Bring Me Home'-modus (set the distance)

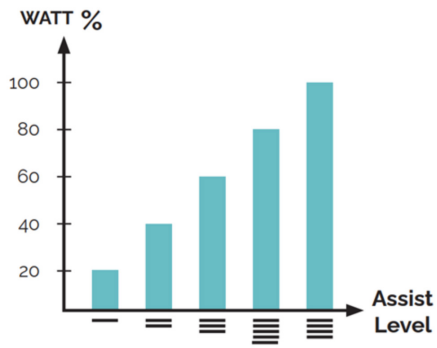
You select your preferred mode by going to 'MODE' in the app. Select 'Mode' and choose your desired form of support. Below, we explain what the different forms of support mean for your driving experience.



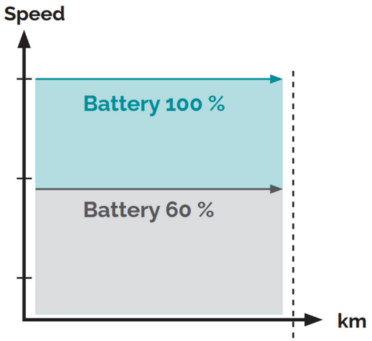
Speed mode
In this mode, at the chosen 'assistance level', the system provides full drive power up to and including the selected speed level. By using your selected support level, you determine your speed.



Eco mode
In the ECO mode, at a chosen 'assistance level', the system provides a specified amount of drive power between 0-25 km/h. By using your chosen support level, you determine how strong the 'boost' is.



Bring Me Home (set the distance)
With this unique mode, you assure yourself that you can get home with the remaining battery capacity, without losing support along the way. By setting a distance, the system manages power consumption and motor support throughout the ride to ensure the entered distance is achieved.



Connecting New devices
Attention! The app "Cortina E-Lett" must be downloaded before it is possible to access the above functions.

Download the Cortina E-Lett app

iOS
https://apps.apple.com/gb/app/ebike-connect/id1458723615

Android
https://play.google.com/store/apps/details?id=com.ektos.e.bike.client

Moet dit stukje over de app niet juist aan het begin van dit hoofdstuk? Het staat zo vreemd om af te sluiten met de downloadlinks

Make sure the Bluetooth function on your phone is enabled. Open the app and follow the instructions on the screen.

1. Start by switching on the bike.
2. Select “add new bike” in the app and a list of available bikes will appear on your screen.
3. Select your bike and follow the instructions on the screen. It is possible to give your own name to the bike when it has been added to the list.
4. Return to the start screen and select your new, added bike.
5. Your bike is now paired with the app!

Note: With the app you have the option to connect with multiple e-bikes and select the specific one you need before your departure.

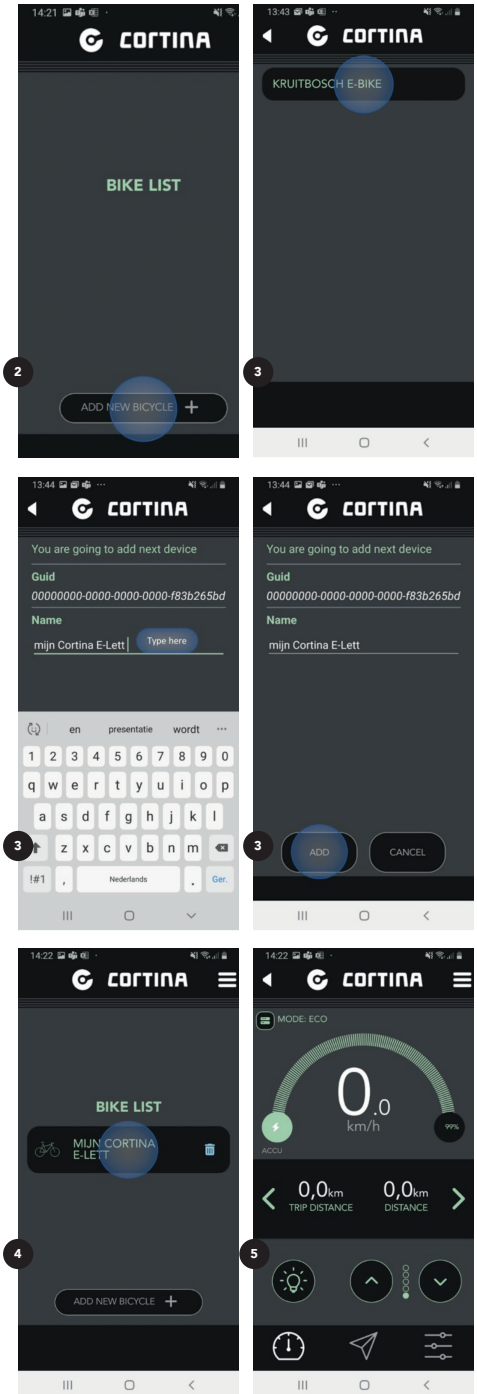
Problem shooting in the app

When you have problems with using the app, try the following steps:

1. Check Bluetooth is enabled on your phone.
2. Start the app again.
3. Update the Cortina app to the latest version.
4. Make sure your phone is not connected in the app and in the Bluetooth settings.

If this does not solve your problem, contact your dealer or Cortina.

Dit stuk hierboven heb ik gekopieerd uit de laatste versie van de E-Lett start guide, deze is door meerderen gecontroleerd en lijkt ook volledieger.



3 BATTERY

Introduction

This chapter covers information about batteries supplied by Promovec A/S.

The new fully integrated battery comes with state-of-the-art technology, which includes the new 21700 cell type. The cell format is distinguished by having more charge cycles (longer life) and a greater energy density (more energy per volume). Battery electronics (BMS) take care of the battery cells, protect them from dangerous situations and their settings ensure their long-term proper function. Protection against short circuiting, overcharging, undercharging, high and low temperature and defective cell protection are all implemented.

As lithium batteries are classified in UN3481 class 9, the battery is supplied in ADR transport packaging certified for ground transportation. We recommend you keep this packaging should the need arise to ship the battery in the future.

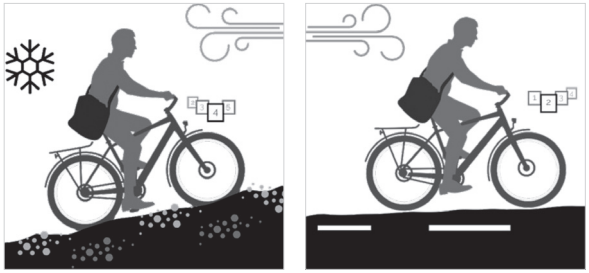
Battery capacity and use

The e-bike uses maintenance-free Li-ION batteries. The battery delivered with this bike is approximately 30% charged at the factory. Before using the battery, it must be fully charged with the supplied charger (Green LED light). We recommend that the battery stays connected to the charger for 24 hours after the green light appears, as it provides a better balance between each cell in the battery. The optimal charging environment would be at 20°C or 68°F.

Range

Frequent charging of the Li-ION battery can extend the battery life. Be aware that the capacity of the batteries decreases over time. Several factors, such as low temperatures, tire pressure, weather/road conditions, user weight and own physical effort has an influence on the range of the battery. As a user, you therefore have a considerable influence on the range.

Titel bij de symbolen zoals in de start guide?



User weight: The user weight has an influence on the range of the e-bike. A user weighing 100 kg will have a shorter range than a person weighing 70 kg.

Tire pressure: The rolling resistance increases when tire pressure is low. The e-bike will have a longer range on tires inflated to max tire pressure compared to tires with low tire pressure.

Road conditions: Gravel or rough trails increases rolling resistance. Newly laid asphalt has a lower rolling resistance compared to gravel, giving a longer range.

Temperature: The battery is most efficient at temperatures between medium temperatures between 0°C to 25°C. A shorter range must be expected when the temperature is below 0°C. The battery should be charged indoors at normal room temperature during the winter when the temperature drops below 0°C

Assist level: Low assist level gives longer range than riding with high assist level.

Wind: Headwind increases the resistance giving a shorter range than riding with tail- wind.

4 RECHARGING

Important! Safety instructions

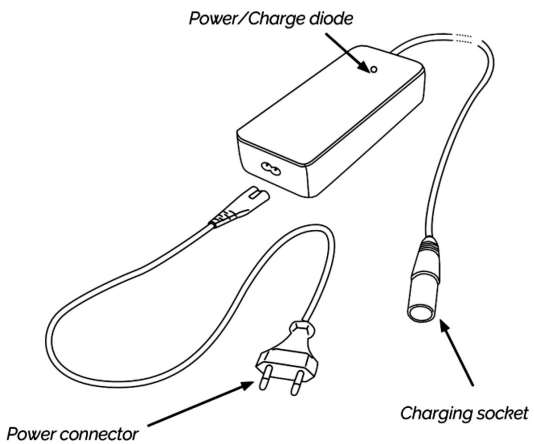
Always read the safety instructions before use.

Warning

- To ensure that the charger and battery are handled in a safe way, and that users involved understand the danger thereby, charging of the battery must only be handled by persons aged 8 and up.
- Persons with reduced physical, sensory or mental abilities, lack of experience or knowledge must be supervised or trained in the use of the battery and charger.
- Do not let children play with the battery and/or charger. Children must be supervised if they perform any kind of cleaning and/or maintenance.
- Do NOT attempt to recharge non-rechargeable batteries with the battery charger
- For safety reasons, if charging the battery indoors the battery should be recharged in a room with a smoke detector installed.
- Do not place the charger or the battery near flammable materials. Ensure the battery and charger are placed on a fireproof surface before charging.

Battery Charger

The charger will be supplied with single socket.



Charging must be done indoors or in an open shed as the charger is only splash proof. Charging should be done at 18–20°C. We do not recommend to charge the battery if the temperature is below 0°C or over 45°C.

Note! It is important that the order of the points for charging the battery is followed, regardless of whether the battery is mounted/removed.

Connecting the charger

- Plug the charger into the battery charging port
- If the battery charger is connected to mains, the diode lights red (With no battery connected)
- When the battery is connected to the charger and the diode lights red, then the battery should be recharged
- When the Power/Charge LED shows green, the battery has been recharged
- Turn the power off before disconnecting the charger from the battery.

General

To keep the battery in good condition, we recommend that you occasionally charge the battery for a minimum of 24 hours after the green light appears. The reason being that this will balance out each cell, providing a healthy battery.

After charging, insert the small rubber cover into the battery slot to protect it against dirt.

When a battery has been fully recharged, the battery charger will enter stand-by state and use very little power. It is recommended to unplug the charging socket and switch off the charger if you do not need the battery for a long time.

The battery must be charged with the charger that follows with the e-bike. Depending on the type of charger, it charges with 2 amps under optimum conditions. It is indicated on the charger how many amps it charges with.

The table below illustrates charging time at 20°C:

Type	350Wh
Normal charge time (2 Amperes)	05:30 hours

Dubbele tabel??

If the e-bike is set aside for storage (more than one month), for example winter storage we recommend:

- Fully recharge the battery before storage
- Recharge the battery once a month
- Store the battery at normal room temperature

Battery Disposal

Batteries contain substances that can be harmful to human health and the environment if not handled properly. Batteries are marked with the crossed-out garbage. It symbolizes that wasted batteries must not be disposed of with normal household waste but must be collected separately.

It is important that you submit your used batteries to the collection systems established. In this way, you help to ensure that the batteries are recycled in accordance with the law and will not harm the environment.

All municipalities have established collection systems, where wasted portable batteries can be collected from households or free can either be submitted at recycling stations and other collection sites. Additional information is available from your local authorities.

5 ABOUT THE SYSTEM

Motor

The compact rear wheel motor gives you an excellent feeling of a seamless ride. The motor gives you all the support you need both at low and high speeds. The motor is really silent and starts working as soon as you start cycling, so you can get started easily even with a single speed.

Control Unit

The control unit handles communication and control of the electric bicycle. Motor output power is controlled based on the support settings, and the signals from the bottom bracket sensor.

Pedal support and walk assist are both disabled once the battery is discharged (0%). Even if the battery is discharged, we guarantee that the lights will remain operational for at least one more hour. The control unit will then completely switch off the electrical system.

The control unit provides electrical system diagnostics during use by recording errors (see Chapter XX) and using tests in diagnostics (see Chapter XX). All settings are saved in the control unit.

Bottom Bracket (BB) set

Rotation sensor

6 TECHNICAL SPECIFICATIONS

General	
Category	City and hybrid bikes
Nominal voltage e-system	36V
Maximum speed assist	25 km/h
Walk assist	up to 6 km/h
Type display	Connect Plus
Weight	~ 19.5 kg, including battery

Torque	
Handlebars	12 – 15 Nm
Stem	18 – 22 Nm
Saddle post	8 – 10 Nm
Axle nut front wheel	30 – 45 Nm
Axle nut back wheel with motor	25 – 35 Nm

Battery	
Location	In the down tube
Type	Lithium-ion 36V
Capacity	350 Wh
Action radius with minimum assist*	90 km
Action radius with maximum assist*	35 km
Operating temperature	-5°C to 40°C
Storage temperature	-5°C to 40°C
Permitted charging temperature range	0°C to 35°C
Safety features	Depth discharge, overload, peak current, overheating

** Maximum distance under ideal cycling conditions and with a new battery*

Motor	
Configuration	Promovec rear-wheel motor
Capacity	250W nominal
Nominal voltage	36V DC

Charger	
Input	100-240V, 2.2A, 50-60Hz
Output	42.0V/2A (standard)

7 SERVICE

Youtube Learning video's

1. E-Lett Promovec display testen
https://www.youtube.com/watch?v=0XyJjNn5aOU

2. E-Lett Promovec display vervangen
https://www.youtube.com/watch?v=uuH669Qz3q0

3. E-Lett Promovec controller uitnemen
https://www.youtube.com/watch?v=O15CHZ-3e1M

4. E-Lett Promovec accu uitnemen
https://www.youtube.com/watch?v=Ax5SW_K6K-I

5. E-Lett Promovec accu diagnose
https://www.youtube.com/watch?v=SM4rTbRXNjo

6. E-Lett Promovec laadplug rubber vervangen
https://www.youtube.com/watch?v=vns84BbN2Io

7. E-Lett Promovec laadplug testen
https://www.youtube.com/watch?v=58IvIFmuRVc

8. E-Lett Promovec laadplug vervangen
https://www.youtube.com/watch?v=rV73qI2Gmmg

9. E-Lett Promovec rotatiesensor testen
https://www.youtube.com/watch?v=A-E0dlCCnWQ

10. E-Lett Promovec rotatiesensor vervangen
https://www.youtube.com/watch?v=gLSZDK0

Promovec video's

How to pair your display:
https://youtu.be/LZHgKPraIBg

Settings for backlight and change between metric and imperial unit of length:
https://youtu.be/TTIzjYc9Aew

Using assist levels, bike modes and the map:
https://youtu.be/cZkBSOM0j0U

Flashing	List of error codes		
	Problem	**Problem indication/description**	**Solution**
1	Motor	The motor may be defective. This is likely to be caused by a problem with electricity consumption or a blocked motor.	Contact your Cortina dealer. They can work out exactly what the problem with the motor is.
2	Speed sensor	Speed sensor	Check the cables for damage and check the connectors are dry and connected properly. It may be the controller has to be replaced, contact your Cortina dealer.
3	Display	Check the connection between the display and the controller.	Check the cables for damage and check the connectors are dry and connected properly. It may be the controller has to be replaced, contact your Cortina dealer.
4	Low battery voltage	Battery voltage is low	Charge the battery and start the system again.
6	Speed sensor	No signal from the speed sensor. Damaged cable, connector or motor.	Check the cables for damage and check the connectors are dry and connected properly. Contact your Cortina dealer if the problem persists.
7	Battery	Battery error detected. Requires a read-out of the BMS (Battery Management System)	Ask your Cortina dealer to read out the BMS.
8	Overload	Possible causes: wheel is blocked, problem with motor, controller or connection.	Check if there are causes that could block the motor or the rear wheel. Switch the system off and back on again. Contact your Cortina dealer if the problem persists.
9	Communication	Check the wiring that is connected to the controller. Check if it is connected and not damaged.	Check the cables for damage and check the connectors are dry and connected properly. Contact your Cortina dealer if the problem persists.
10	High voltage	Check the battery specifications.	Ask your dealer to read out the battery.
11	Display	The connection with the display is loose or the cable/connector is damaged.	Check the cables for damage and check the connectors are dry and connected properly. Contact your Cortina dealer if the problem persists.
12	Temperature	Overload or motor problems.	Reduce the load or leave the motor to cool down. Contact your Cortina dealer if the problem persists.

**Check whether the cables of the connections are:*

- *connected*
- *dry*
- *intact: no hidden or damaged pins.*

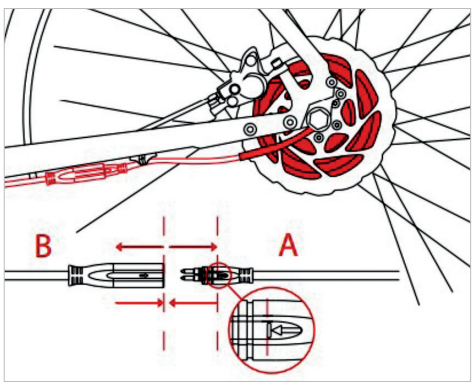
8 ASSEMBLY

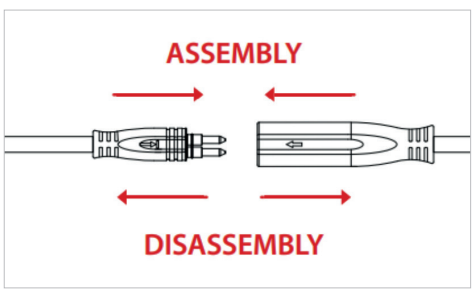
Advice

You can also watch our instruction movies on https://portal.kruitbosch.nl/b2b/nl/promovec/page/promovec

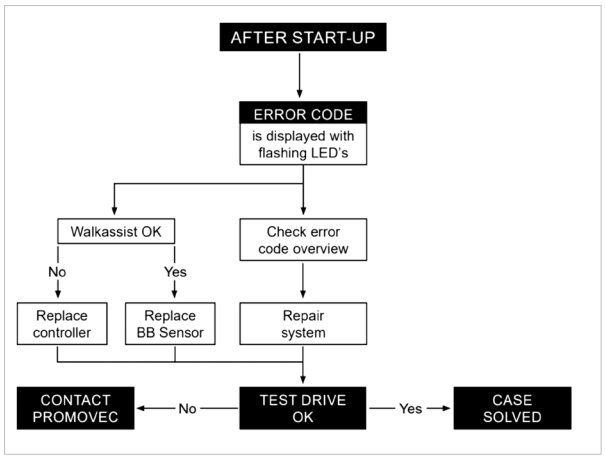
Rear motor

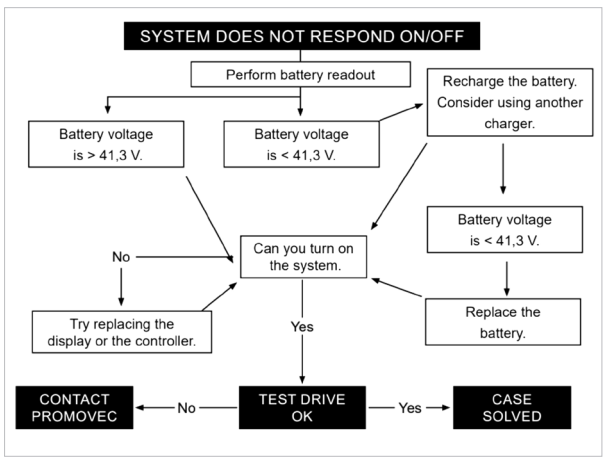
- Place the wheel with the new motor into the rear dropout of the bike (Fig. XX). Carefully position the cable when inserting into the forks to avoid damage – the cable outlet must point downwards!
- Mount the rear wheel to the rear dropout. Use a lock washer with a catch.
- Secure the motor cable to the chain stay with cable ties.
- Plug the motor cable connector into the connector of the motor extension cable (Fig 4.3 and 4.4). Ensure the arrows are properly aligned!
- Mount the cable using a cable tie.





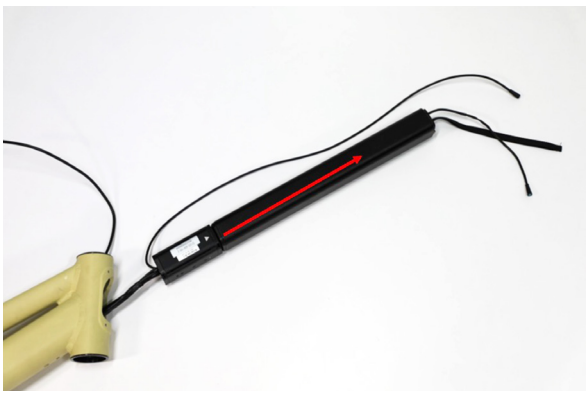
Motor Troubleshooting





Control Unit

- If you need to remove the controller, make sure that all wires are unplugged. Otherwise the controller will not follow the battery out of the frame
- If you just need to remove the battery, this is not needed. Then only the battery will slide out
- Also make sure to unscrew the bolts holding the controller and battery secured in the frame before disasembly
- Again consider if you need to remove the battery alone or the controller as well



Placement Battery

For now please follow the instruction as in the video below: https://www.youtube.com/watch?v=Ax5SW_K6K-I

Charging port

Will follow soon.

Display

Will follow soon.

Bottom Bracket (BB) set and Sensor

Install the bottom bracket, then place the sensor over the crank axle on the left side. When installing the crank arm, tat least 1 mm clearance between sensor and crank arm.

PARTS: 51923-080 Sensor BB Speed compact

Connect arrow to arrow

Arrange plug and wire in the frame

Promovec®
sustainable e-bikes

Readout of battery-data with “BMS Communication Tool”

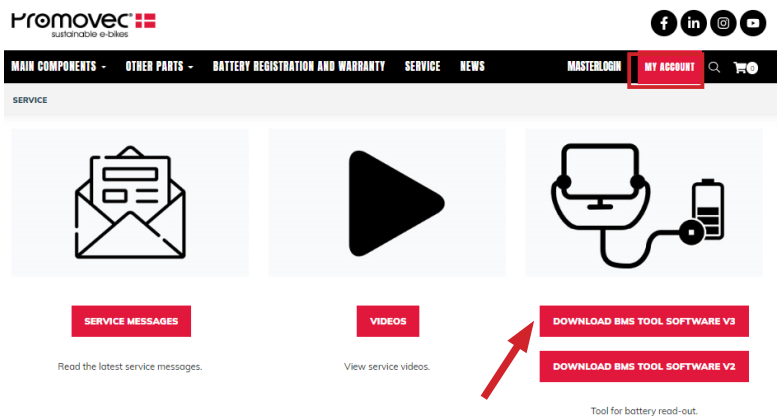
Pro-Movec A/S
Langdyssen 6
DK-8200 Aarhus N

Tlf. +45 7027 2623
Fax. +45 7027 2429
info@promovec.dk

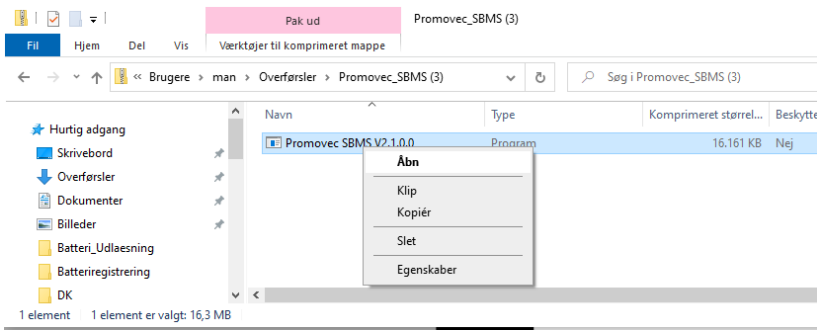
STEP
1

Download the battery read out software from Promovec's homepage and install it on your PC. Login with your retailer login, select "SERVICE" and click on "DOWNLOAD BMS TOOL SOFTWARE".

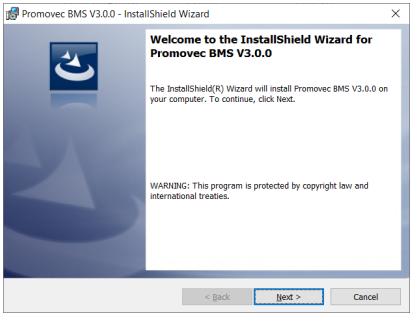
www.promovec.com



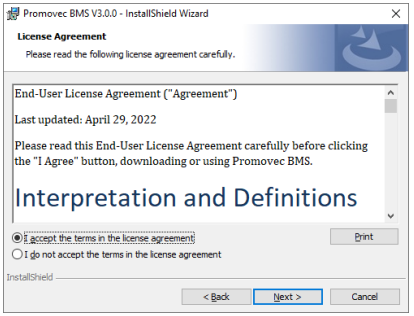
Select "Download BMS TOOL SOFTWARE" -> show in folder



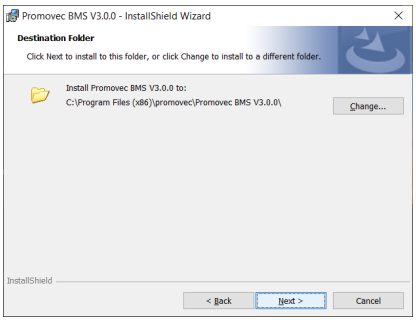
Open "Promovec.BMS.V3.0"



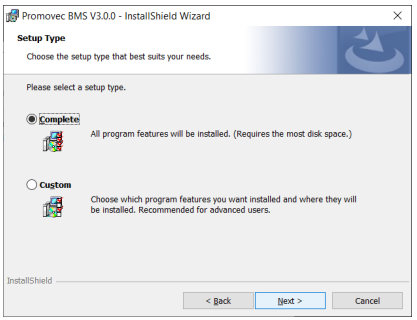
Select "Next"



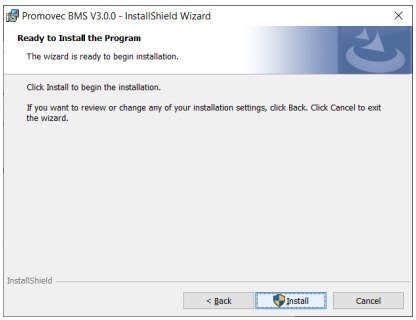
Read "License agreement", "I accept...and Next



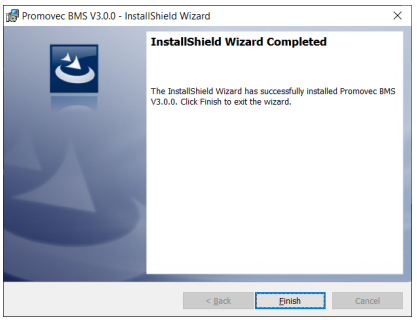
Select "Next"



Select "Complete" and "Next"

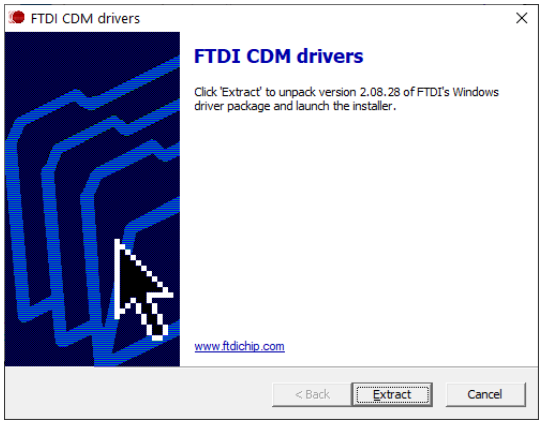


Select "Install" and the installation process starts.

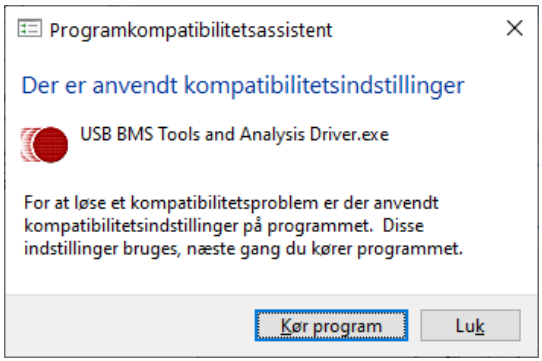


Select "Finish" to end the process

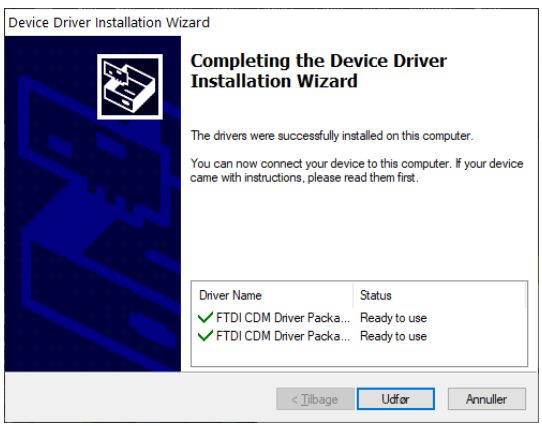
Install "USB BMS Tools Driver" included in the zip filen.



Click "Extract"



"Run program"



"Complete"

STEP 2

Parts required:

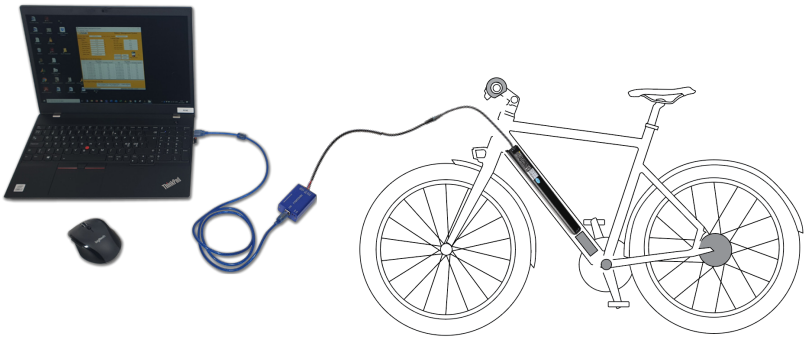
USB cable

Read out box

Read out Wire

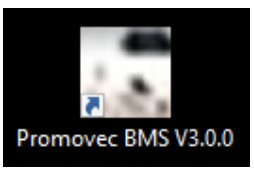
Battery

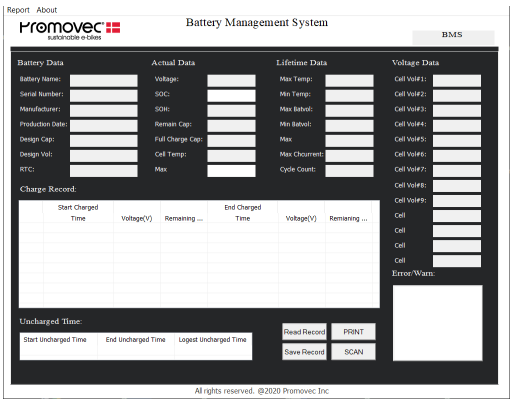
STEP 3



STEP 4

Start the program "Promovec BMS"



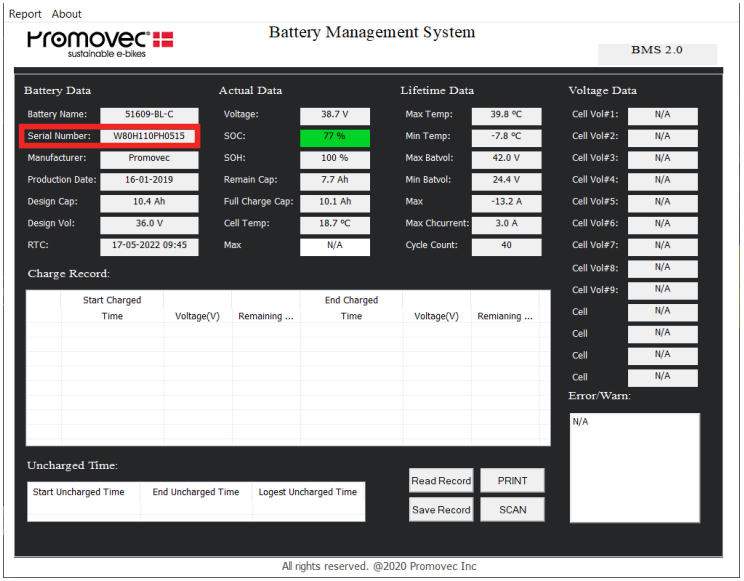


The program is ready to scan, connect a batttery and select "SCAN"

STEP

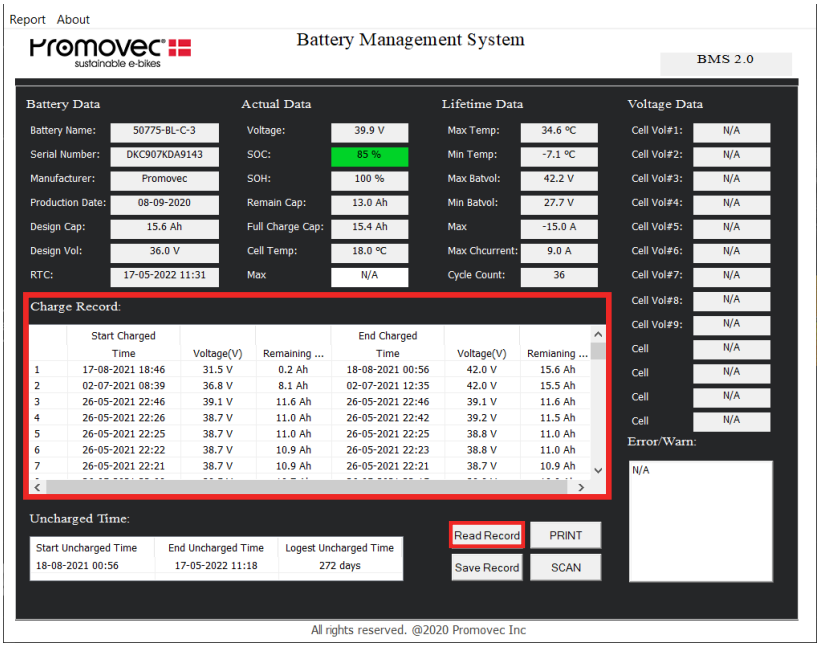
5

The battery serial number is visible after a readout top left in the “Battery Management System”



STEP
6

Select “Read Record” and a charge record will be displayed.



Explanation covering the data in the program window, see page 10.

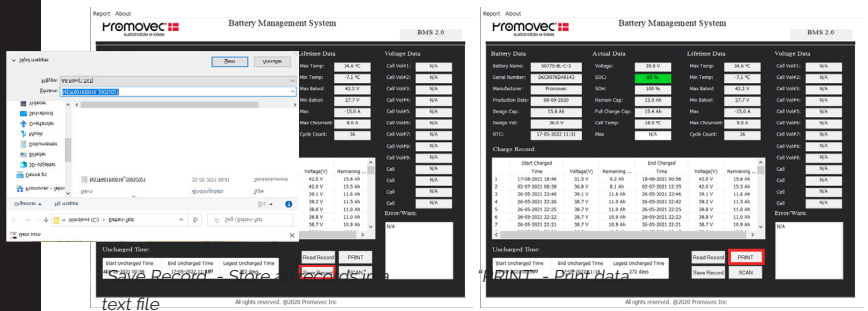
Note! When a new battery is connected the data from the previous battery read will remain until a new “SCAN” and “Read Record is performed.

STEP

7

Select “Save Record” to save the data displayed on-screen. Select “Print” if you want a printed report.

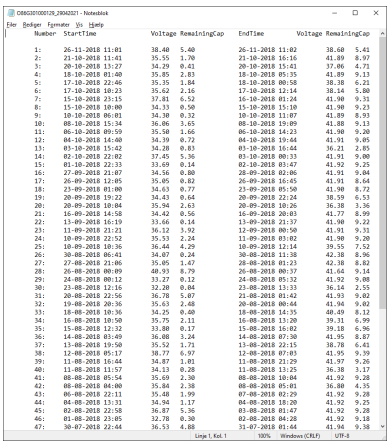
Note! When a another battery is connected the data must be read again “Read record.



“Save Record” - Store data in a text file

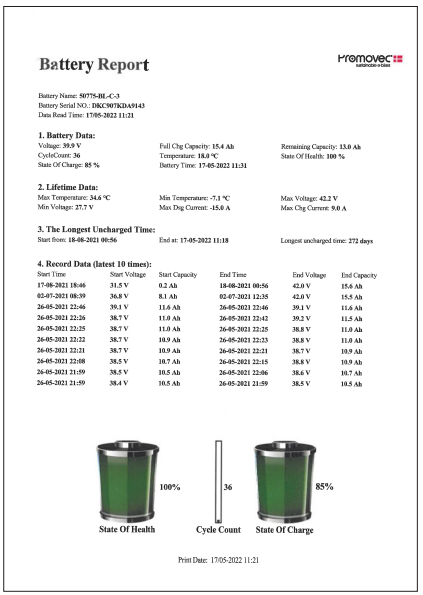
“PRINT” - Print data

Saved report



“Save record” example

Printed report

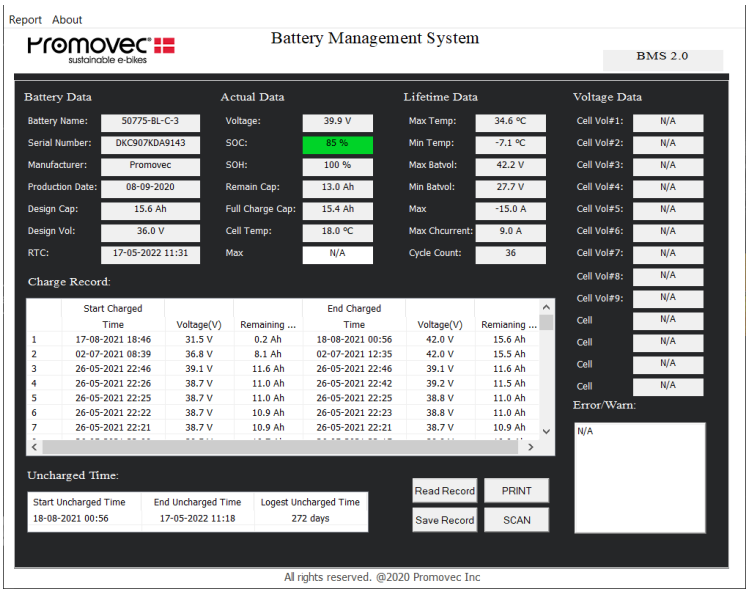


“PRINT” example

STEP
8

Readout of data. The battery name and serial number is displayed in the top left of the window. The fields under:

- Battery Data indicates battery properties
- Actual Data indicates the state of the battery when reading it
- Lifetime Data indicates minimum and maximum registrations



Charge-data decoding and troubleshooting:

Actual Data -> MAX VolDiff:

1. If the value is higher than 500 mV, recharge the battery for 24 hours
2. read the battery
3. If the value remains above 500 mV, consider changing the battery

Charge record

- Readings where entries in the “Time” column are close to each other could indicate a BMS error.. Connect a charger to the battery and charge the battery to 100% to verify if there is a problem.
- If the information in the column “Voltage (V) under “End Charge” is less than 41,3 V after the battery has been fully charged, charge the battery with a new/other charger.

Lifetime Data

Min. Batvol: If the battery has been read to a value below 30 V it can indicate an error in the BMS.

Error/Warn

Messages in the "Error/Warn" window is described below as "Change the battery" or "For information only.

ERROR/WARN - CHANGE BATTERY
Cell Drop Error
Imbalance
Record Error
RTC Error
Discharging Mosfet Error
Charging Mosfet Error
MOS Temperature Sensor Error
Cell Temperature Sensor Error
ROM Error

ERROR/WARN - INFORMATION ONLY
Protection Chip Error
Estimate Error
Over Charge
Primary Over Discharge
Secondary Over Discharge
Primary Over Current
Secondary Over Current
Over Charge Current
Pre-Start Fail
Pre-Charge Over time
Over Discharge Temperature
Over Charge Temperature
Under Discharge Temperature
Under Charge Temperature
Over Temperature of Discharge Mosfet
Over temperature of Charge Mosfet
Over temperature of Pre-Start circuit
Discharge Fuse Burned
Charging Fuse Burned
Third Over Current
Forth Over Current

BATTERY DATA
RTC: Last time “Read”

ACTUAL DATA
Voltage: Voltage read
SOC: State of charge
SOH: State of health
Remain Cap: Remaining capacity
Full Charge Cap: 100% charge capacity
Cell temp: Battery emperature
MAX: **BMS2 batteries:** N/A **BMS3 batteries:** Max. difference between cells.

CHARGE RECORD
All registrations is displayed here with “Read Record”

UNCHARGED TIME
The longest period the battery without charge.

LIFETIME DATA
Max TMP: Highest temperature registered
Min Temp: Lowest temperature registered
Max Batvol: The highest voltage level registered
Min Batvol: The Lowest voltage level registered
Max: The highest amount of amp’s the battery has been discharged with.
Max Chg Current: The highest amount of amp’s the battery has been discharged with.
Cycle Count: Total charge cycle count.*

VOLTAGE DATA
Available with BMS 3 batteries. Provides data for each cell.

RAPPORTER
Read Record: Charging records displays in “Charge Record”
Save Record: Save the records on a text file
PRINT: Print a report for the customer or documentation. Includes the last 10 charging registrations.

* One cycle equals:
  - 100% discharge + 100% charged
  - (50% discharge + 50% charge) 2 times
  - (20% discharge + 20% charge) 5 times

‘‘ The battery can register up to 800 charges. A full report can be saved to the PC with “Save record”

STEP
9

Warranty checklist

- Check that the battery has been registered and is within the warranty period
- “Full charge Capacity” is more than 70% of the capacity.
- “State of Health” must be more than 70%
- When “Longest uncharged time” is more than 30 days it may result in the warranty not covering.

Battery complaint checklist

1. Measure the battery, “Step A” page 13
2. The battery has been charged with two different chargers to rule out problems with the charger
3. Check charging inlet and power-on/off lock

STEP
A

Measuring the battery (Carrier batteries)

Picture 1: Set the voltage meter to DC-Voltage and measure the battery. When a battery has been fully charged the battery must measure at least 41.3 V.

ABOUT PROMOVEC

Promovec is a Danish e-bike manufacturer and developer

Promovec manufactures e-bikes for major international brands and advanced battery solutions for e-bikes

In the production of all Promovec's products we seek sustainable and high-quality solutions to best serve both the planet and our customers.

For more information about Promovec visit www.promovec.com or drop by one of our social media platforms.

DANISH DESIGN | DANISH DEVELOPMENT

Readout of battery-data with "BMS Communication Tool"