

Original Operating Manual

Control Panel Comfort for Pedelecs



Series 4313


MARQUARDT

Save for future use!

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1 About this Operating Manual

This manual is a component of the Control Panel Comfort. It allows you to use these devices safely and efficiently. Read the manual carefully before using the device and the Pedelec to become familiar with the functions of the Control Panel Comfort. Take the operating manual along on all trips. This will allow you to read about more rarely-used functions as necessary.

1.1 Presentation

This manual uses the following types of presentation to emphasize specific elements:

Safety information

Safety information is designated using symbols in this manual. Signal words are used to identify safety information and to classify different hazard levels.



WARNING!

This combination of a symbol and signal word indicates a potentially hazardous situation that can lead to death or severe injuries if it is not avoided.



CAUTION!

This combination of a symbol and signal word indicates a potentially hazardous situation that can lead to minor or slight injuries if it is not avoided.



NOTE!

This combination of a symbol and signal word indicates a potentially hazardous situation that can lead to property or environmental damages if it is not avoided.

Tips and Recommendations



This symbol highlights useful tips and recommendations, as well as information for efficient operation without errors.

Additional Presentation Elements

The following types of presentation are used in this manual to highlight operating instructions, results, lists, references, and other elements:

Operating Instructions

Operating instructions are presented as numbered lists. Users must adhere to the specific step sequence. An arrow is used to mark system reactions to the specific operating steps.

Example:

1. First operating step / action
 2. Second operating step / action
- System reaction to the operating step

Lists

Lists that do not require a specific sequence are represented using bullet points. Example:

- Point 1
- Point 2

1.2 Copyright Protection

The content of this manual is protected by copyright. It may only be used in conjunction with use of the equipment described. Any further use is prohibited without the written permission of the manufacturer.

1.3 Contact Information

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2 Safety Information

- Read this operating manual and observe all safety information and instructions. Failures to comply with safety information and instructions may result in electrical shock, fire, and/or severe injuries.
- Save this operating manual. This will allow you to read information on various functions, for instance, at a later time.
- The Control Panel Comfort is part of the pedelec drive system. Read and observe the safety information and instructions in all operating manuals for the pedelec, in particular in the operating manual for the electric drive. This is the only way to ensure you can use the pedelec safely.
- Do not let yourself be distracted by the Control Panel Comfort display. If you do not concentrate exclusively on traffic, you risk becoming involved in an accident. Check the displayed elements, change support levels, activate the pushing aid, and switch the light on or off during travel. Stop before entering data into the Control Panel Comfort.
- Do not open the Control Panel Comfort. Opening the Control Panel Comfort could destroy it, and will nullify any warranty claims.
- Do not use the Control Panel Comfort as a handle. If you lift the pedelec by the Control Panel Comfort, you could irreparably damage the unit.

**WARNING!**

Adjust the Control Panel Comfort basic settings before beginning travel.
Failure to concentrate while riding poses a danger to other road users.



Become familiar with the functions of the pedelec and operations of the Control Panel Comfort before starting your first ride.

Take the operating manual along on all trips. This will allow you to read about more rarely-used functions as necessary.

3 Control Panel Comfort Overview

You can use the Control Panel Comfort to switch the pedelec on and off. The two buttons on the joystick allow you to activate and control support from the electric motor or switch on the headlamp.

You can view your current riding speed on the Control Panel Comfort. In addition, you can see which support level is active, how much power is still available for the support motor, the battery charge status, and whether the light is switched on. Furthermore, you can call up the daily kilometers, average speed, and maximum speed for the current trip. The Control Panel Comfort also displays total kilometers for the pedelec and your maximum speed over the entire distance.

3.1 Components



Fig. 1 Components

1. Control Panel Comfort

3.2 Technical Data

Control Panel Comfort

Length x width x height	72.8 x 50.2 x 44.6 mm
Operating temperature	-10°C to 65°C
Storage temperature	-20°C to 85°C
Protection type	IP65 (HMI) dust-tight, spray protected
ESD Model	Human Body Model (HBM)
USB port	Micro USB Standard 2.0 Full Speed
USB charge function	USB Battery Charging Standard BC1.2 Max. 1.0 A
CAN Interface ISO 11898-5	High-speed CAN

4 Mounting the Control Panel Comfort



Check the fastening screws regularly. Screws can loosen due to vibration, heat, and cold temperatures.

Tighten all screws with the required torque.

The Control Panel Comfort is mounted on the left side of the handlebars. The protruding side faces inward. It does not protrude past the handlebar grips. Position the operating unit close to the grips. All buttons must be easy to operate with your thumb.

1. Use a size 2.5 hex socket to unscrew the hex screw on the operating unit bracket. Open the mounting bracket.
2. Position the operating unit on the left side of the handlebar.
3. Position the connection cable in the operating unit bracket. It must be in the guide grooves inside the bracket, and must be wired to the connection through the opening in the bracket.
4. Close the bracket. Be careful not to damage the connection cable.

The connection cable may not be crushed by the bracket.

5. Use a size 2.5 hex socket to tighten the hex screw on the operating unit bracket. Do not tighten the screw completely.
 - Check the position of the Control Panel Comfort. Can you reach all of the buttons with your thumb? Is the display clearly visible?
 6. Tighten the hex screw using the hex socket (min. torque 0.3 Nm, max. torque 0.5 Nm).
 7. Connect the purple plug on the operating unit with the purple socket on the wiring harness. Ensure the openings on the socket and plug match up so as not to damage the connection.
- The Control Panel Comfort is now mounted.

5 Operating and Display Elements

You can use the buttons on the Control Panel Comfort to ergonomically control the functions of the pedelec system. Your hand can remain on the handlebar while you operate the buttons on the Control Panel Comfort using your thumb. The screens on the operating unit display provide information on your riding situation and support aids.

If Display premium is connected, most information is displayed there. The buttons on the Control Panel Comfort remain active for easy to operate inputs.

5.1 Operating Buttons

You can use the buttons on the Control Panel Comfort to control the functions of the pedelec system.

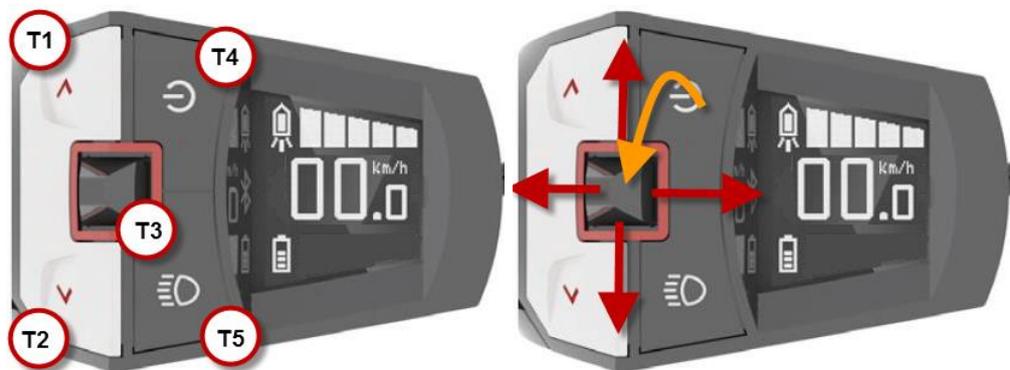


Fig. 2 Buttons and joystick on the Control Panel Comfort

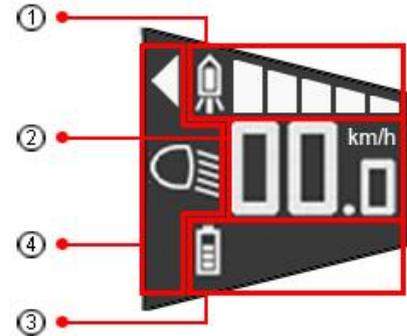
Button	Function
T1	Increase support level Hold > 3s: Activate pushing mode until the button is released.
T2	Reduce support level
T3	Joystick:
↑	One page higher. Switch to Editor mode. One entry up in Editor mode.
←	Move left to next page. Leave mode and confirm value in Editor mode.
■	Edit the highlighted value in Editor mode.
→	Move right to next page. Leave mode and confirm value in Editor mode.
↓	One page down. Switch to Editor mode. One entry up in Editor mode.
T4	Switch Control Panel Comfort on and off.
T5	Brief pressure: Switch light on. Longer pressure: Switch light off. In automatic mode: The light is switched on or off depending on the surrounding light level. You can also switch the light on or off at any time using this switch.

5.2 Control Panel Comfort Display

The display of the Control Panel Comfort offers a variety of information on different pages. Move the joystick side to side to switch between pages. Some of the pages offer additional pages, which you can access by moving the joystick vertically.

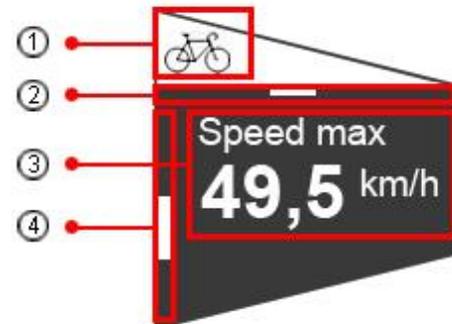
The main page offers the following information:

- 1 Display of current support level.
- 2 Speed
- 3 Status display for
 - Triangle symbol: Pushing aid active.
 - Lighting: Symbols display the status.
- 4 Battery charge level.



The other pages are designed according to the following pattern:

- 1 Symbol for the page.
- 2 Horizontal navigation position.
- 3 Page content.
- 4 Vertical navigation position: Refers to other pages and shows the current position.



Human Power

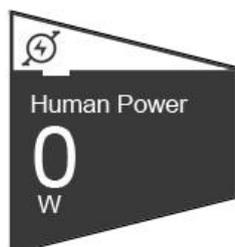


Fig. 3 Comfort page human power

Displays the power currently generated for the pedelec drive by the rider in watts.

Residual Range



Fig. 4 Comfort page residual range

Displays the residual range of the pedelec with support.

Tour Distance



Fig. 5 Comfort page tour distance

Displays the distance traveled since the value was last reset.

This page includes additional pages.

Tour Distance / Average Speed



Fig. 6 Comfort page tour average speed

- Mean speed.

Displays the average speed for the current distance.

Tour Distance / Maximum Speed



Fig. 7 Comfort page tour max. speed

- Maximum speed.
Displays the highest speed for the current distance.

Tour Distance / Reset



Fig. 8 Comfort page tour reset

- Reset – Pressing the joystick marks the RESET button.
- Pressing the joystick again resets the values to “0” for the tour.
The values for distance, average speed, and maximum speed are deleted and set to “0.”

Total Distance



Fig. 9 Comfort page total distance

Displays the total distance traveled with the pedelec.
This display includes an additional page.

Total Distance / Maximum Speed



Fig. 10 Comfort page max. speed

Displays the highest speed reached by the pedelec over the entire distance.

Automatic Light

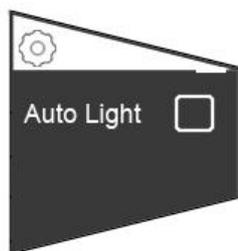


Fig. 11 Comfort page automatic light

Use this page to activate automatic mode for the headlight. The light will then be switched on or off depending on the surrounding light level.

If automatic mode is activated, the headlight symbol will be displayed with an "A" on the main page.

You can press the T5 button to switch the light on or off at any time.

6 Operations

6.1 Turning the Unit On and Off

Turning the Control Panel Comfort On

- Press the T4 button for longer than 2s.
- The display will show the start page, then switch to the main page.

Turning the Control Panel Comfort Off

- Press the T4 button for longer than 2s.
- The display will turn off.

6.2 Operations

6.2.1 Headlight

The T5 button is used to switch the light on or off. If automatic light control is activated, the light will be switched on or off in response to the surrounding light level.

The main page displays the current status of the headlight using the following symbols:

Symbol Headlight

- Headlight off

 Headlight on

 Automatic mode on – headlight off

 Automatic mode headlight on

Switch Headlight On

- Press the T5 button briefly.
- The headlight is switched on.
- The headlight symbol displays normal light status.

Switch Headlight Off

- Press the T5 button for longer than 2s.
- The headlight is switched off.
- The headlight symbol displays the current status.

Switch Headlight Automatic Mode On and Off

You can activate automatic mode for the headlight on the “Automatic light” page.

The automatic mode switches the headlight on and off in response to the surrounding light level.

You can switch the headlight on or off at any time in automatic mode by pressing the T5 button.

6.2.2 Adjust Support

The electric motor on your pedelec supports your pedaling power. Multiple support levels are available. You can also ride without motor support.

- Use the Control Panel Comfort to adjust the level of support (T4 / T2).
- Comfort uses a scale to display the current support level.
- Once you select a level, it is activated immediately.

The illuminated segments on the support display on the main page of the Control Panel Comfort display the active level.

Level	Description
None	Normal cycling conditions. Motor not active.
ECO	Efficient support for maximum battery range
NORMAL	Even support for long distances with long battery range
HIGH	Powerful support for sporty riding, on mountainous terrain, and in city traffic with normal battery range

Activate Support

- The display does not show any support level.
- 1. Press the T1 button on the Control Panel Comfort.
- The electric motor activates to support riding.
- The first segment is illuminated on the support display.

Increasing Support

- 1. Press the T4 button. You will switch to the next higher level.
- The electric motor will provide additional riding support.
- Additional segments are illuminated on the support display.

Reducing Support

- 1. Press the T2 button.
- The electric motor will provide less riding support.
- The number of segments illuminated on the support display will be reduced.

Riding Without Support

- 1. Press the T2 button until no segments are visible on the support display.
- You will ride without motor support.

6.2.3 Pushing Aid

The pushing aid is available for starting riding or for pushing the bicycle. The pedelec drive supports the bicycle's movement. The pushing aid can be activated up to a speed of < 6 km/h.

Use the pushing aid when pushing the bicycle, when starting riding, or for supported start-up on mountainous terrain. Push the bicycle, walking beside it. Use the pushing aid as a start-up aid when you are sitting on the bicycle.

In both cases, the pushing aid will move the pedelec when activated.

**WARNING!**

The pushing aid will move the pedelec.

Hold the handlebar grip and be ready to brake.

Sit on the bicycle and do not press the pedals. Your pushing force, combined with the pushing aid, could accelerate the pedelec very quickly. The second pedal will also move, and can injure you when getting on the bike!

Do not use the pushing aid for slow riding.

Activate Pushing Aid:

- Press and hold the T4 button.
- The pushing aid is active and moves the bicycle.
- The main page of the display shows the triangular symbol for the pushing aid.

Deactivate Pushing Aid:

- Release the T4 button.
- The pushing aid will be deactivated.
- The triangular symbol for the pushing aid will no longer be shown on the main page.

6.3 USB Port

The Control Panel Comfort has a micro USB AB plug. The USB plug is located in the tip of the device over the handlebar, and is protected against dirt and moisture with a rubber cap.

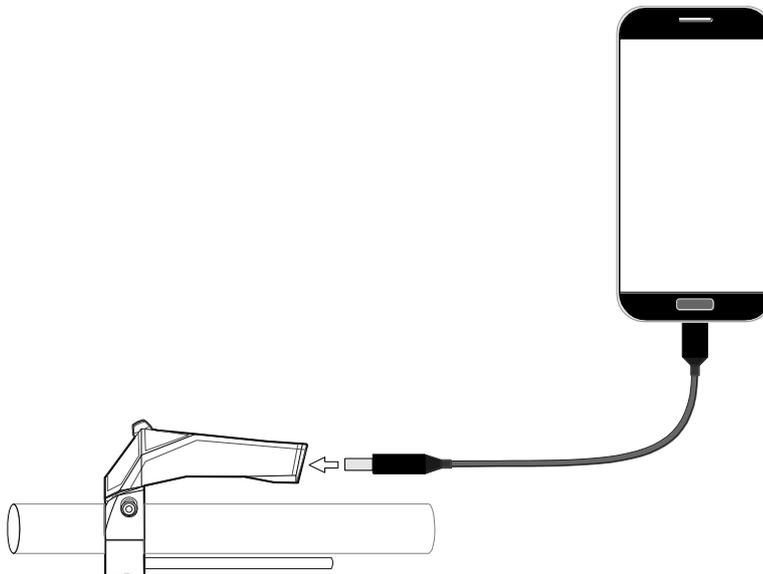


Fig. 12 USB connection

Connect USB Device



NOTE!

For damage to the mobile phone caused by the connection to the control unit Comfort there is no liability.

1. Open the protective rubber cap on the USB connection.
2. Connect the USB device to the USB port – either directly or using a suitable USB cable.
→ The new connection is displayed on the connected device.

Remove USB Device



NOTE!

Observe the information for interrupting the USB connection in the operating manual for the connected device.

1. Remove the USB device or connection cable from the USB port on the Control Panel Comfort.
2. Cover the USB port with the protective rubber cap.



NOTE!

The control unit Comfort is protected against water and dirt only when the rubber protection is closed.

7 Error Codes

The Control Panel Comfort displays error codes for the entire pedelec system. Error codes represent errors recognized by the system. The following table provides the meanings of these error codes. Please note the recommended reactions to error codes.



WARNING!

Pay attention to error codes!

Error codes can indicate serious faults in the pedelec system. These errors prevent safe operation of the pedelec. They may result in personal injury or damage to the pedelec.

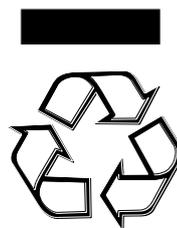
Stop riding the pedelec. Determine the meaning of the error code and observe the recommendations to correct the error.

If you are not certain what the error code means, stop riding and park your bicycle. Contact the manufacturer, retailer, or your workshop for information on what to do next.

Error code	Description	Solution approach
10	The Battery voltage is too low.	Charge the battery pack using the battery charger.
11	The Battery voltage is too high.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
12	The battery is almost / completely discharged.	Charge the battery pack using the battery charger.
20	Electrical measurements are incorrect.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
21	Thermal sensor defective.	
24	The Internal voltage is outside of the working range.	Charge the battery pack using the battery charger.
25	Error in motor current measurement.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
26	A software reset was completed.	
40/41	Overcurrent in the motor.	Reduce the load on the motor by pedaling less or by reducing the assist level.
42	Fault in motor rotation.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
43	Short circuit in motor.	

Error code	Description	Solution approach
44	Overheating of motor.	Reduce the load on the motor by pedaling less or by reducing the assist level.
45	The software has corrected an error in motor rotation.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
46	No motor movements recognized.	
60	Interruption to data exchange on the CAN-BUS.	
70	Force applied to pedal not in valid range.	
71	Turning of pedals not detected.	
72	Force applied to pedal not detected.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
73	The connection to the pedal force sensor has been interrupted.	
74	Errors were found in the data.	
80	Incorrect motor parameter.	
81	Speed signal not recognized.	Ensure that the spoke magnet is correctly positioned relative to the speed sensor.
82	The program was manipulated.	Switch off the system completely and then back on using the Control Panel button T4. If the problem persists, contact your e-bike dealer.
83	Error in program sequence.	
84	Incorrect motor parameter.	

8 Disposal



In accordance with European directive 2012/19/EU covering non-functional electrical devices, and in accordance with European directive 2006/66/EC covering used batteries, devices and batteries must be collected separately and sent for environmentally-appropriate recycling.

Old machinery, replacement parts, and packaging are made of recyclable materials. The owner is obligated to dispose of these properly and in an environmentally-friendly manner in accordance with legal requirements.

All injection-molded plastic components are marked with a recycling symbol.

RoHS directive (2011/65/EU)



