



# Display V02 & Remote V01



**User Manual**  
EN

# 1 Safety



This instruction contains information that you must observe for your personal safety and to prevent personal injury and damage to property. They are highlighted by warning triangles and shown below according to the degree of danger.

- ▶ Read the instructions completely before start-up and use. This will help you to avoid hazards and errors.
- ▶ Keep the manual for future reference. This user manual is an integral part of the product and must be handed over or sold to third parties.

## NOTE

Also observe the additional documentation for the other components of the HPR50 drive system as well as the documentation enclosed with your e-bike.

## 1.1 Hazard classification

### HAZARD

The signal word indicates a hazard with a **high** degree of risk which will result in death or serious injury if not avoided..

### WARNING

The signal word indicates a hazard with a **medium** level of risk which will result in death or serious injury if not avoided.

### CAUTION

The signal word indicates a hazard with a **low** level of risk which could result in a minor or moderate injury if not avoided.

## NOTE

A note in the sense of this instruction is important information about the product or the respective part of the instruction to which special attention is to be drawn.

## 1.2 Intended Use

The display V02 and the remote V01 of the drive system are intended exclusively for displaying information and operating your e-bike and must not be used for other purposes.

Any other use or use that goes beyond this is considered improper and will result in the loss of the warranty. In case of non-intended use, TQ-Systems GmbH assumes no liability for any damage that may occur and no warranty for proper and functional operation of the product.

Intended use also includes observing these instructions and all information contained therein as well as the information on intended use in the supplementary

documents enclosed with the e-bike.

Faultless and safe operation of the product requires proper transport, storage, installation and operation.

## 1.3 Safety instructions for working on the e-bike

Make sure that the HPR50 drive system is no longer supplied with power before doing any work (e.g. cleaning, chain maintenance, etc.) on the e-bike:

- Switch off the drive system at the display and wait until the display has disappeared.

Otherwise, there is a risk that the drive unit may start in an uncontrolled way and cause serious injuries, e.g. crushing, pinching or shearing of the hands.

All work such as repair, assembly, service and maintenance be carried out exclusively by a bicycle dealer authorized by TQ.

## 1.4 Safety instructions for the display und remote

- Do not be distracted by the information shown on the display while riding, concentrate exclusively on the traffic. Otherwise there is a risk of an accident.
- Stop your e-bike when you want to perform actions other than changing the assistance level.
- The walk assist that can be activated via the remote must only be used to push the e-bike. Make sure that both wheels of the e-bike are in contact with the ground. Otherwise there is a risk of injury.
- When the walk assist is activated, make sure that your legs are at a safe distance from the pedals. Otherwise there is a risk of injury from the rotating pedals.

## 1.5 Riding safety instructions

Observe the following points to avoid injuries due to a fall when starting with high torque:

- We recommend that you wear a suitable helmet and protective clothing every time you ride. Please observe the regulations of your country.
- The assistance provided by the drive system depends firstly on the selected assistance mode and secondly on the force exerted by the rider on the pedals. The higher the force applied to the pedals, the greater the motor assistance. The drive support stops as soon as you stop pedaling.
- Adjust the riding speed, the assistance level and the selected gear to the respective riding situation.

### CAUTION

#### **Risk of injury**

Practice the handling of the e-bike and its functions without assistance from the drive unit at first. Then gradually increase the assistance mode.

## 1.6 Safety instructions for using Bluetooth® and ANT+

- Do not use Bluetooth® and ANT+ technology in areas where the use of electronic devices with radio technologies is prohibited, such as hospitals or medical facilities. Otherwise, medical devices such as pacemakers may be disturbed by the radio waves and patients may be endangered.
- People with medical devices such as pacemakers or defibrillators should check with the respective manufacturers in advance that the function of the medical devices is not affected by the Bluetooth® and ANT+ technology.
- Do not use Bluetooth® and ANT+ technology near devices with automatic control, such as automatic doors or fire alarms. Otherwise, the radio waves may affect the devices and cause an accident due to possible malfunction or accidental operation.

## **1.7 FCC**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

No changes shall be made to the equipment without the manufacturer's permission as this may void the user's authority to operate the equipment

This equipment complies with the RF exposure limits in FCC § 1.1310.

## **1.8 ISED**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with the RF exposure evaluation requirements of RSS-102.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) le dispositif ne doit pas produire de brouillage préjudiciable, et
- (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Cet équipement est conforme aux exigences d'évaluation de l'exposition aux RF de RSS-102.

# 2      Technical data

## 2.1      Display

Screen diagonal	2 inch
State of charge indication	Seperate for battery and range extender
Connectivity	Bluetooth, ANT+ (Radio network standard with low power consumption)
Protection class	IP66
Dimension	74 mm x 32 mm x 12,5 mm / 2,91" x 1,26" x 0,49"
Weight	35 g / 1,23 oz
Operating temperature	-5 °C to +40 °C / 23 °F to 104 °F
Storage temperature	0 °C to +40 °C / 32 °F to 140 °F

Tab. 1:      Technical data – Display

## 2.2      Remote

Protection class	IP66
Weight with cable	25 g / 0,88 oz
Operating temperature	-5 °C to +40 °C / 23 °F to 104 °F
Storage temperature	0 °C to +40 °C / 32 °F to 104 °F

Tab. 2:      Technical data – Remote

# 3      Operation and indication components

## 3.1      Overview display

Pos. in Fig. 1	Description
1	State of charge battery (max. 10 bars, 1 bar corresponds 10 %)
2	State of charge range extender (max. 5 bars, 1 bar corresponds 20 %)
3	Display panel for different screen views with riding information (see section 6 on page 10)
4	Assist mode (OFF, I, II, III)
5	Button

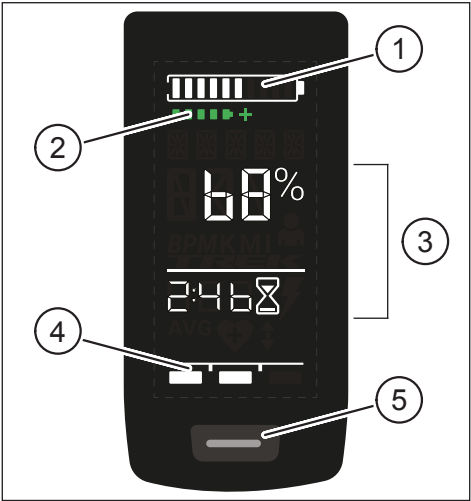


Fig. 1:      Operation and indication components on display

## 3.2      Overview remote

Pos. in Fig. 2	Description
1	UP Button
2	DOWN Button

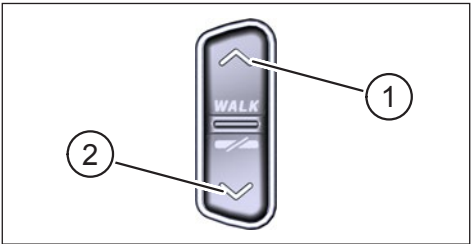


Fig. 2:      Operation on the remote

## 4 Operation

- Make sure that the battery is sufficiently charged before operation.

### Switch on drive system:

- Switch on the drive unit by **shortly** pressing the button (see Fig. 3) on the display.

### Switch off drive system:

- Switch off the drive unit by **long** pressing the button (see Fig. 3) on the display.

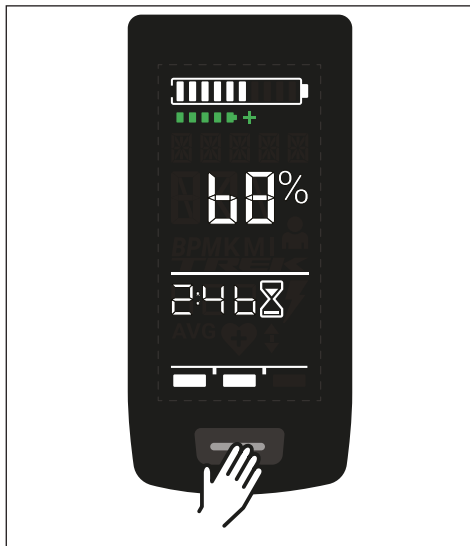


Fig. 3: Bedientaste am Display



# 5 Setup-Mode

## 5.1 Setup-Mode activate

- ▶ Switch **off** the drive system.
- ▶ Press and hold the button on the display (pos. 5 in Fig. 1) and the DOWN button on the remote (pos. 2 in Fig. 2) for at least 5 seconds.

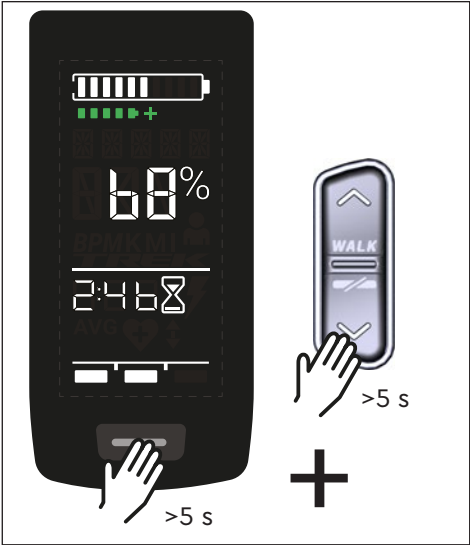


Fig. 4: Setup-Modus aktivieren

## 5.2 Settings

The following settings can be made in the setup-mode:

Setting	Default value	Possible values
Measure	metric (km)	metric (km) or angloamerican (mi)
Acoustic acknowledge signal	ON (sounds with each buttonpress)	ON, OFF
Walk assist	ON	ON, OFF

Tab. 3: Settings in Setup-Mode

- ▶ Use the buttons on the remote to scroll through the respective menu.
- ▶ Confirm the selection made with the button on the display. The next selection is then displayed or the setup mode is terminated.
- ▶ The display screen can be changed by pressing the remote button (> 3s) if the walk assist function is deactivated due to country-specific laws and regulations.

## 6 Riding information

In the center of the display, riding information can be shown on 4 different screen views. Regardless of the currently selected view, the state of charge of the battery and optional range extender is displayed at the top edge and the selected assistance mode is displayed at the bottom edge.

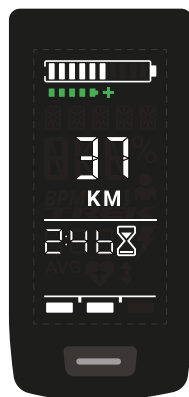
- With a **short** press on the button on the display (pos. 5 in Fig. 1) you switch to the next screen view.

### Screen view



### Riding information

- Battery state of charge in percent (68 % in this example).
- Remaining time for drive unit support (in this example 2 h and 46 min).



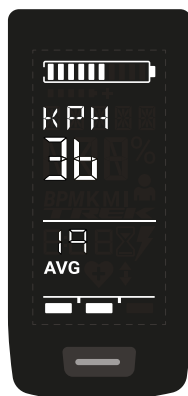
- Riding range in kilometers or miles (37 km in this example), the range calculation is an estimate that depends on many parameters (see section 11.3 on page 17).
- Remaining time for drive unit support (2 h and 46 min in this example).

## Screen view



## Riding information

- Current rider power in watt (163 W in this example).
- Current drive unit power in watts (203 W in this example).



- Current speed (36 km/h in this example) in kilometers per hour (KPH) or miles per hour (MPH).
- Average speed AVG (19 km/h in this example) in kilometers per hour or miles per hour.



- Current rider cadence in revolutions per minute (61 RPM in this example).

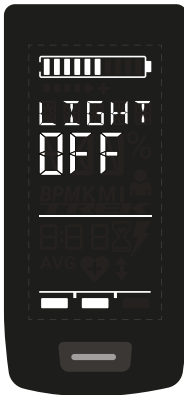
## Screen view



## Riding information

- Activated light (LIGHT ON)
- Switch on the light by pressing the UP button and DOWN button at the same time.

Depending on whether the e-bike is equipped with light and TQ smartbox. (Please see the smartbox manual for more information).



- Deactivated light (LIGHT OFF)
- Switch off the light by pressing the UP button and DOWN button at the same time.

Tab. 4: Display – Riding information

## 7 Select assist mode

You can choose between 3 assist modes or switch off the assist from the drive unit. The selected assist mode I, II or III is shown on the display with the corresponding number of bars (see pos. 1 in Fig. 5).

- With a **short** press on the button UP of the remote (see Fig. 6) you increase the assist mode.
- With a **short** press on the button DOWN of the remote (see Fig. 6) you decrease the assist mode.
- With a **long** press (>3 s) on the DOWN button of the remote (see Fig. 6), you switch off the assist from the drive system.

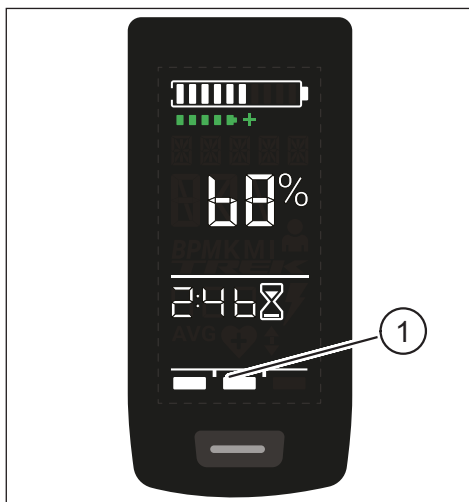


Fig. 5: Visualization of the selected assist mode



Fig. 6: Select assist mode on the remote

## 8 Set connections

### 8.1 Connection e-bike to smartphone

#### NOTE

— You can download the Trek Connect app from the Appstore for IOS and the Google Play Store for Android.

- Download the Trek Connect app.
- Select your bike (you only need to pair your smartphone the first time).
- Enter the numbers shown on the display in your phone and confirm the connection.

Artwork courtesy of Trek Bicycle Company



Fig. 7: Verbindung E-Bike zum Smartphone

# 8.2 Connection e-bike to bicycle computers

## NOTE

— To make a connection with the bicycle computer, the e-bike and bicycle computer must be within radio range (maximum distance approx. 10 meters).

- Pair your bicycle computer (Bluetooth or ANT+).
- Select at least the three shown sensors (see Fig. 8).
- Your e-bike is now connected.

Artwork courtesy of Trek Bicycle Company

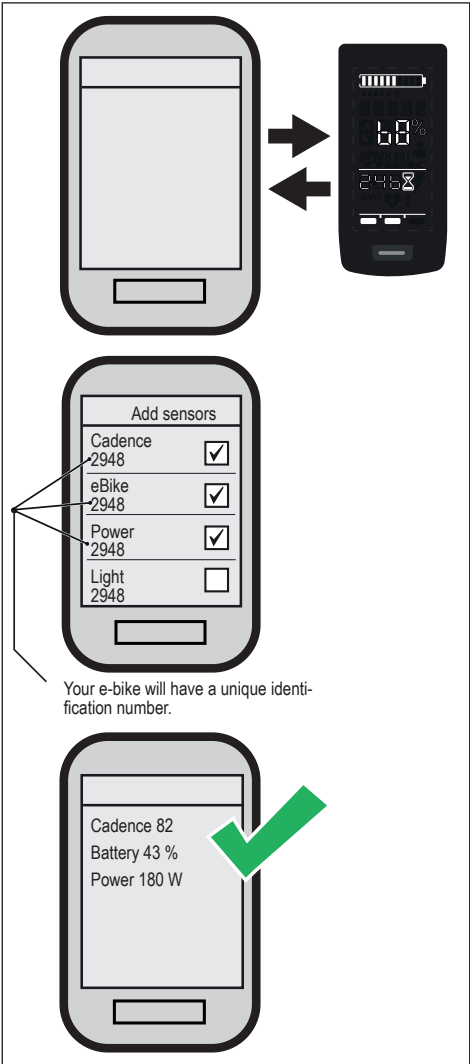


Fig. 8: Connection e-bike to bicycle computer

## 9 Walk assist

The walk assist makes it easier to push the e-bike, e.g. off-road.

### NOTE

- The availability and characteristics of the walk assist are subject to country-specific laws and regulations. For example, the assistance provided by the push assist is limited to a speed of max. 6 km/h in Europe.
- If you have locked the use of the walk assist in setup mode (see section "5.2 Settings"), the next screen with riding information is displayed instead of activating the walk assist (see chapter "6 Riding information").

### Activate walk assist

#### CAUTION

##### Risk of injury

- ▶ Make sure that both wheels of the e-bike are in contact with the ground.
  - ▶ When the walk assist is activated, make sure that your legs are a sufficient safety distance from the pedals.
- 
- ▶ When the e-bike is at standstill, press the UP button on the remote for longer than 3 s (see Fig. 9) to activate the walk assist.
  - ▶ Press the UP button again and keep it pressed to move the e-bike with the walk assist.

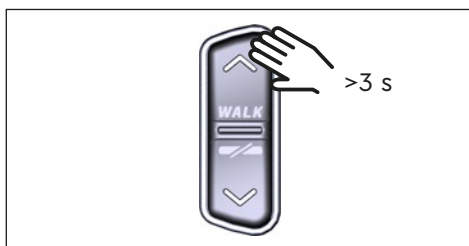


Fig. 9: Activate walk assist

### Deactivate walk assist

The walk assist is deactivated in the following situations:

- Press the DOWN button on the remote control (pos. 2 in Fig. 2).
- Press the button on the display (pos. 5 in Fig. 1).
- After 30 s without actuation of the walk assist.
- By pedaling.



## 10 Reset to factory settings

- ▶ Switch **on** the drive system.
- ▶ Press and hold the button on the display and the DOWN button on the remote for at least 5 s (see Fig. 10).
- ▶ Make your choice with the buttons on the remote and confirm it by pressing the button on the display.

When resetting to factory settings, the following parameters are reset to the factory settings:

- Motor tuning
- Walk assist
- Bluetooth
- Acoustic acknowledge sounds

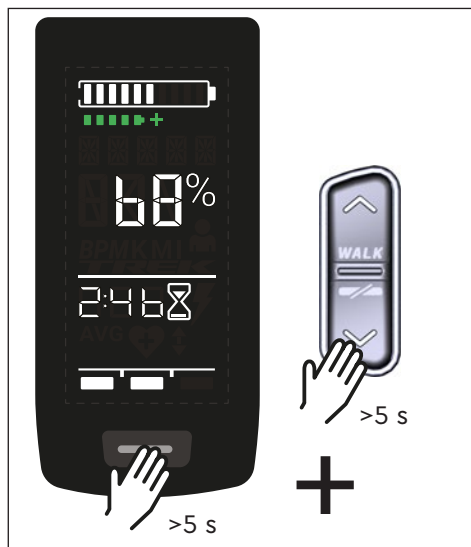


Fig. 10: Rücksetzen auf Werkseinstellungen

# 11 General riding notes

## 11.1 Functionality of the drive system

The drive system supports you when riding up to a speed limit permitted by law which may vary depending on your country. The precondition for motor assistance is that the rider pedals. At speeds above the permitted speed limit, the drive system turns off the assistance until the speed is back within the permitted range.

The assistance provided by the drive system depends firstly on the selected assistance mode and secondly on the force exerted by the rider on the pedals. The higher the force applied to the pedals the greater the motor assistance.

You can also ride the e-bike without motor assistance, e.g. when the drive system is switched off or the battery is empty.

## 11.2 Gear shift

The same specifications and recommendations apply for shifting gears on an e-bike as for shifting gears on a bicycle without motor assistance.

## 11.3 Riding range

The possible range with one battery charge is influenced by various factors, for example:

- Weight of e-bike, rider and baggage
- Selected assist mode
- Speed
- Route profile
- Selected gear
- Age and state of charge of the battery
- Tire pressure
- Wind
- Outside temperature

The range of the e-bike can be extended with the optional range extender.

## 12 Cleaning

- The components of the drive system must not be cleaned with a high-pressure cleaner.
- Clean the display and the remote only with a soft, damp cloth.

## 13 Maintenance and Service

All service, repair or maintenance work performed by a TQ authorized bicycle dealer. Your bicycle dealer can also help you with questions about bicycle use, service, repair or maintenance.

## 14 Environmentally friendly disposal

The components of the drive system and the batteries must not be disposed of in the residual waste garbage can.



- Dispose of metal and plastic components in accordance with country-specific regulations.
  - Dispose of electrical components in accordance with country-specific regulations. In EU countries, for example, observe the national implementations of the Waste Electrical and Electronic Equipment Directive 2012/19/EU (WEEE).
  - Dispose of batteries and rechargeable batteries in accordance with the country-specific regulations. In EU countries, for example, observe the national implementations of the Waste Battery Directive 2006/66/EC in conjunction with Directives 2008/68/EC and (EU) 2020/1833.
  - Observe additionally the regulations and laws of your country for disposal.
- In addition you can return components of the drive system that are no longer required to a bicycle dealer authorized by TQ.

# 15 Error codes

The drive system is continuously monitored. In the event of an error, a corresponding error code is shown on the display.

Error code	Cause	Corrective measures
ERR 401 DRV SW	General software error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 403 DRV COMM	Peripheral communication error	
ERR 405 DISP COMM	Walk assist communication error	
ERR 407 DRV SW	Motor electronic error	Restart the system and avoid unintended use. Contact your TQ dealer if the error still occurs.
ERR 408 DRV HW	Motor overcurrent error	
ERR 40B DRV SW	General software error	
ERR 40C DRV SW		
ERR 40D DRV SW		
ERR 40E DRV SW		
ERR 40F DRV SW		
ERR 415 DRV SW	Configuration error	Contact your TQ dealer.
ERR 416 BATT COMM	General software error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 418 DISP COMM	Display initialization error	
ERR 41D DRV HW	Motor memory error	
ERR 41D DRV SW		
ERR 42B DRV SW	General software error	
ERR 42E DRV SW		
ERR 440 DRV HW	Motor electronic error	Restart the system and avoid unintended use. Contact your TQ dealer if the error still occurs.
ERR 445 DRV HW	Motor overcurrent error	
ERR 451 DRV HOT	Motor over temperature error	
ERR 452 DRV HOT		

Error code	Cause	Corrective measures
ERR 453 DRV SW	Motor initialization error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 457 BATT CONN	Motor voltage error	
ERR 458 BATT CONN	Motor overvoltage error	Replace the charger and use only original charger. Contact your TQ dealer if the error still occurs.
ERR 45D BATT GEN	General battery error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 465 BATT COMM	Battery communication error timeout	
ERR 469 BATT GEN	Critical battery error	
ERR 475 BATT COMM	Battery initialization error	
ERR 479 DRV SW	General software error	
ERR 47A DRV SW		
ERR 47B DRV SW		
ERR 47D DRV HW	Motor overcurrent error	Restart the system and avoid unintended use. Contact your TQ dealer if the error still occurs.
ERR 47F DRV HOT	Motor overtemperature error	Permissible operating temperature exceeded or fall below. Switch off the drive unit to allow it to cool down if necessary. Start the system again. Contact your TQ dealer if the error still occurs.
ERR 480 DRV SENS	Motor assist error	Restart the system and avoid unintended use. Contact your TQ dealer if the error still occurs.

Error code	Cause	Corrective measures
ERR 481 BATT COMM	Battery communication error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 482 DRV SW	Motor configuration error	
ERR 483 DRV SW	Software runtime error	
ERR 484 DRV SW		
ERR 485 DRV SW		
ERR 486 DRV SW		
ERR 487 DRV SW		
ERR 488 DRV SW		
ERR 489 DRV SW		
ERR 48A DRV SW		
ERR 48B DRV SW		
ERR 48C DRV SW		
ERR 48D DRV SW		
ERR 48E DRV SW		
ERR 48F DRV SW		
ERR 490 DRV SW	Motor voltage error	
ERR 491 DRV SW		
ERR 492 DRV SW		
ERR 493 DRV HW		
ERR 494 DRV HW	Supply voltage problem	
ERR 495 DRV HW	Motor voltage error	
ERR 496 DRV HW	Motor phase breakage	
ERR 497 DRV HW	Motor calibration error	
ERR 4C8 DRV SW	General software error	
ERR 498 DRV COMM	Peripheral communication error	
ERR 499 DRV COMM		
ERR 49A DRV COMM		
ERR 49B DRV SENS	Cadence-sensor error	

Error code	Cause	Corrective measures
ERR 49C DRV SENS	Torquesensor error	Restart the system and avoid unintended use. Contact your TQ dealer if the error still occurs.
ERR 49D DRV SENS		
ERR 49E DRV SENS		
ERR 49F DRV SENS		
ERR 4A0 DRV COMM	CAN-Bus communication error	Check the charging port for dirt. Restart the system. Contact your TQ dealer if the error still occurs.
ERR 4A1 DRV COMM		
ERR 4A2 DRV COMM	Microcontroller electronics error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 4A3 DRV SW	Cadence-sensor error	
ERR 4A4 DRV HW		
ERR 4A5 DRV SW	Torquesensor error	
ERR 4A6 BATT COMM	Battery communication error	
ERR 4A7 DRV SW	General software error	
ERR 4A8 SPD SENS	Speedsensor error	Check the distance between magnet and speedsensor or check for tampering.
ERR 4A9 DRV SW	General software error	
ERR 4AA DRV SW		
WRN 4AB DRV SENS	Cadence-sensor error	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 4AD DRV SW	Motor control error	
ERR 4AE DRV SW	Cadence-sensor error	
ERR 4AF DRV SW		
ERR 4B0 DRV HW	Motor mechanical error	Check if anything is stuck or wedged in the chainring. Contact your TQ dealer if the error still occurs.
ERR 4C8 DRV SW	General software error	
ERR 4C9 DRV SW		
ERR 4CA DRV SW		
ERR 4CB DRV SW		

Error code	Cause	Corrective measures
WRN 601 SPD SENS	Speedsensor problem	Check the distance between magnet and speedsensor. Restart the system. Contact your TQ dealer if the error still occurs.
WRN 602 DRV HOT	Motor overtemperature	Permissible operating temperature exceeded. Switch off the drive unit to allow it to cool down. Start the system again. Contact your TQ dealer if the error still occurs.
WRN 603 DRV COMM	CAN-Bus communication problem	Check the charging port for dirt. Restart the system. Contact your TQ dealer if the error still occurs.
ERR 5401 DRV CONN	Communication error between motor and display	Restart the system. Contact your TQ dealer if the error still occurs.
ERR 5402 DISP BTN	Remote button pressed when switching on	Don't press the remote button during start-up. Check whether buttons are stuck due to dirt and clean them if necessary. .
ERR 5403 DISP BTN		
WRN 5404 DISP BTN	Walk assist user error	Activate walk assist by pressing the UP button (Walk) on the remote until Walk appears on the display. Release the button directly and press it again to use the walk assist. Contact your TQ dealer if the error still occurs.

Tab. 5: Error codes







## NOTE

For more information and TQ product manuals in various language, please visit **[www.tq-group.com/ebike/downloads](http://www.tq-group.com/ebike/downloads)** or scan this QR-Code.



We have checked the contents of this publication for conformity with the product described. However, deviations cannot be ruled out so that we cannot accept any liability for complete conformity and correctness.

The information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

All trademarks mentioned in this manual are the property of their respective owners.

Copyright © TQ-Systems GmbH