VOLspeed Ebike Tuning

for
Giant Syncdrive Pro2 / Sport2
V4

Operating Instructions

as original operating instructions in English language

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1 General information

► Be sure to take the time to read these operating instructions carefully **before** starting to install the tuning module.

► Keep these operating instructions in a safe place, yet within easy reach, so that you always have access to the important and safety-relevant information for use, even after installation.

► Make these operating instructions available for reading to any other person who may ride your tuned e-bike.

► Ensure that every person who is allowed to ride your tuned e-bike has read and understood these operating instructions before any use.

► Instruct the user in the safe use of the tuned e-bike with the aid of these operating instructions before leaving your tuned e-bike to other persons.

► Be sure to pass this manual on to the future owner if you ever want to sell the tuning module or your tuned e-bike.

1.1 Safety instructions

The warnings used in these instructions draw your attention to possible dangers. You endanger yourself and others if you do not follow these instructions. Serious injuries or considerable damage to property may result.

Warning notices are available in the following categories:

⚠ WARNING

Warns you of hazards that could result in fatal or serious injury to persons if you do not follow these instructions.

⚠ CAUTION

Warns you of hazards that may result in minor, usually reversible injury to persons if you do not follow these instructions.

ATTENTION

Warns you of situations that can lead to property damage and malfunctions during use if you do not follow these instructions.

IMPORTANT

Identifies safety-relevant descriptions and instruction parts.

2 Requirements for safe use

2.1 Intended use

The tuning module shifts the cut-off threshold of the motor support of your e-bike. Thus, with the installation of the tuning module, speeds of up to 45km/h (28mph) can be achieved with electric motor support.

Intended use also includes compliance with all of the following without exception

- Restrictions on use and
- Installation requirements and the
- Obligations of the owner and the user.

2.2 Restrictions on use

The following restrictions of use are associated with the installation of the tuning module in your e-bike.

2.2.1 Do not use in public areas

E-bikes for use on public roads or public ways with a permitted speed of > 25 km/h are subject in the EU to Regulation 168/2013/EU, the Vehicle Regulation. Further approval requirements in non-European countries may apply. The purchase of the Tuning Module does not entail any approval for operation in public areas. Therefore, participation in public road traffic and driving on public roads is prohibited after installation of the tuning module.

IMPORTANT **Prevent misuse and abuse**

- ► Only use your tuned e-bike on private, secured property or race tracks.
- ► Never ride on public paths or areas that you have not previously been able to securely block off against entry by other persons.
- ► Also prevent another person from using your tuned e-bike in public traffic or on public roads.
- ► Always lock your tuned e-bike when you park it. This will prevent misuse and abuse, even by other people.

2.2.2 Restricting the circle of users

Reaching higher speeds can lead to the permissible group of users determined by the e-bike manufacturer having to be further restricted.
Such a restriction must be determined by the owner of the tuned e-bike on his own responsibility, taking into account the physical and mental fitness of the persons to whom the tuned e-bike is made available for use.

IMPORTANT **Prevent misuse and abuse**

- ► Clearly define the permission for use before each transfer to other persons.
- ► Also clearly define the terrain to be covered.

► Always lock your tuned e-bike when you park it. This will prevent misuse and abuse by other people.

2.2.3   Observe shortened maintenance and inspection intervals

Due to the higher speeds with electric motor assistance, higher loads and forces will act on all vehicle parts.

Reaching higher speeds increases wear on all vehicle parts, especially the brake system and all parts of the drive system, even with suitable strength and design of the vehicle.

IMPORTANT

Define shortened maintenance and inspection intervals

Shortened inspection and maintenance cycles must be determined by the owner of the tuned e-bike on his own responsibility, taking into account the conditions of use.

► Before each use of your tuned e-bike, perform a comprehensive inspection of the vehicle.
► It is imperative that you check the condition and function of the
  ■ brakes and their functional components,
  ■ vehicle frame,
  ■ steering system and its functional components,
  ■ drive system and its functional components as well as
  ■ saddle and its functional components.
► In addition, observe all inspections not mentioned here that are prescribed by the manufacturer of your e-bike before each use. This list does not replace the original operating instructions of the e-bike manufacturer.
► Establish further inspection and maintenance cycles according to the manufacturer's instructions for your e-bike.
► Shorten them according to your operating conditions.
► If necessary, coordinate this with your specialist company, which will carry out the inspection and maintenance work.

This ensures that the shortened inspection and maintenance intervals are adhered to.

2.3   Know and comply with installation requirements

For safe use of the tuning module in your e-bike, your e-bike must also meet some requirements.

2.3.1   Requirements for the strength and construction of the e-bike

Strength and construction requirements are regulated by EN 15194 and EN ISO 4210-2 and must be confirmed as applied by the manufacturer of your e-bike.

⚠ **WARNING**   **Prevent increased accident risks due to insufficient strength**

Due to the higher speeds with electric motor assistance, higher loads and forces will act on all vehicle parts. Increased accident risks due to part breakage and part failure can only be largely ruled out with e-bikes that are demonstrably designed and built in accordance with both product standards.

► Check the EC declaration of conformity of the manufacturer of your e-bike.

► Only install the tuning module in your e-bike if the manufacturer of your e-bike states the two product standards EN 15194 and EN ISO 4210-2 as applied in its EC declaration of conformity.

► Only if both standards are mentioned as applied, it can be assumed that the requirements for strength and design are fulfilled.

► Never use the tuning module in vehicles for which you cannot clearly establish these requirements and prove them by means of the EC declaration of conformity from the e-bike manufacturer.

IMPORTANT **Racing e-bikes, city e-bikes or trekking e-bikes are usually not equipable**

Racing e-bikes, city e-bikes or trekking e-bikes often do not meet the requirements for strength and construction, as lower requirements apply to these types of e-bikes. Furthermore, it cannot be assumed that these e-bikes are actually only used on private, secured properties or race tracks.

2.3.2 Check and confirm drive system and display requirements

The tuning module is adapted to specific drive systems and display types.

► Check the equipment of your e-bike.

► The tuning module only works with e-bikes that have an electric motor support of up to 25km/h ex works. Children's e-bikes with a support up to 20km/h and Speed-e-bikes with a support up to 45km/h are not supported.

► Only install the tuning module into your e-bike if you can determine that your e-bike equipment matches the drive systems and display types listed below.

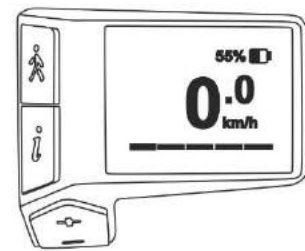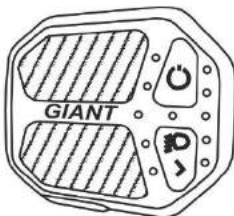| Drive system:	Display type:	Control unit:
Giant Syncdrive Pro 2	Ridedash Plus	Ridecontrol Ergo
Giant Syncdrive Sport 2	Ridedash Plus 2	Ridecontrol Ergo 2
	Ridedash Evo	Ridecontrol Ergo 3
	Ridedash 2 in 1	Ridecontrol GO+

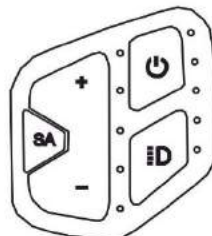Ridedash Plus — Ridedash Plus 2 — Ridedash Evo — Ridedash 2 in 1

Ridecontrol Ergo — Ridecontrol Ergo 2 — Ridecontrol Ergo 3 — Ridecontrol Go+

Compatibility

The tuning is **NOT** compatible with the following motors:
- All original Yamaha motors (PW, PW-X, PW-X2, PW-X3, PW-SE, PW-TE, PW-ST)
- Giant Syncdrive Sport and Pro motors.

Use without display

To be able to use all the functions of the tuning, the display of the total kilometers and the speed is required. If your e-bike does not have a display, you can also use the Ridecontrol app for this, see also FAQ.

IMPORTANT **Prevent damage and malfunctions**

Use in vehicles with unsuitable drive systems and/or display types will lead to malfunctions or damage to the e-bike or the tuning module.

2.4   Obligation of the owner

Any user of the tuned e-bike must be instructed accordingly by the owner of the tuned e-bike on the basis of these operating instructions, as well as being informed about the special restrictions on use and increased risks due to the increased speed.

The owner of the tuned e-bike ensures that

► all requirements for safe use
► and for the intended use are complied with, and
► these operating instructions are always available to every user.

The owner of the tuned e-bike undertakes to only make the tuned e-bike available to persons who

► have read and understood these operating instructions and
► have been instructed in the safe and proper use of the tuned e-bike.

2.5   Obligation of each user

Every user is obliged,

► to read and observe these operating instructions in full, and
► to follow all safety and warning instructions without exception,
► to use the tuned E-bike only in technically perfect condition and in accordance with its intended purpose, in a safety-conscious and hazard-conscious manner and in compliance with these operating instructions and
► to remedy immediately any damage or malfunctions detected which could impair safety, or, if necessary, to have them remedied.

3   Warranty and liability

3.1   Warranty and liability of the tuning module manufacturer

Warranty and liability claims are excluded by the manufacturer of the tuning module in the event of direct or indirect personal injury or damage to property if they are attributable to one or more of the following causes:

► Increased wear or breakage of components of the e-bike, especially parts of the brake system and/or the drive system,
► non-observance of these operating instructions,
► improper use of the tuning module or the e-bike with integrated tuning module,
► non-observance of the operating restrictions of these operating instructions,

► use or operation with operating conditions that do not comply with these operating instructions,

► improper installation, commissioning, maintenance or repair not specified in these operating instructions,

► after unauthorised structural, hardware or software modifications to the tuning module itself or to the e-bike approved for the tuning module or its equipment.

IMPORTANT   **The installation and operation of the tuning module is at your own risk.**

► The manufacturer of the tuning module does not accept any liability for damage related to the operation or installation of the tuning module.

► The technical and legal consequences mentioned may be incomplete.

► In addition to the technical and legal consequences mentioned in these operating instructions, further requirements may apply depending on the place of operation.

► Before installing the device, inform yourself about possible further technical and legal consequences and requirements that you must comply with in order to operate the tuned e-bike.

3.2 Warranty, guarantee and liability by the manufacturer of the e-bike

Due to the higher speeds with electric motor assistance, higher loads and forces will act on all bicycle parts.

Reaching higher speeds increases wear on all bicycle parts, especially the braking system and all parts of the drive system, even if the vehicle is of suitable strength and design.

For this reason, liability, warranty and guarantee claims against the dealer or manufacturer of the e-bike will expire or be severely limited with the use of the tuning module.

3.3 Property damage and personal injury - Further exclusions of liability to be considered

An e-bike can reach electric motor-assisted speeds of up to 45 km/h after the tuning module has been installed. Reaching such speeds increases the risk of a fall and resulting injury, even with suitable strength and design of the vehicle. It also increases the risk of damaging other people or property.

ATTENTION   **Reduce increased liability risks**

■ Precisely define your operating conditions and user groups to be insured.

■ Take out liability insurance appropriate to the conditions of use and the user group for the use of your tuned e-bike.

⚠ **WARNING**   **Reduce increased risk of hazards**

■ Always wear suitable protective clothing and a helmet while using your tuned e-bike to protect yourself from increased risk of accidents.

■ Insist that every user of your tuned e-bike wears appropriate protective clothing and a helmet at all times during use.

| ATTENTION | **Reduce the risk of accidents monetarily** |

■ Precisely define your operating conditions and user groups to be insured.
■ Take out an insurance policy for the use of your tuned e-bike that is appropriate to the conditions of use and the user group.

4   Functional description

The tuning module provides the following functions after installation:

► Adjustable speed limit up to 45km/h (28mph) via the control unit on the e-bike
► Personal activation code adjustable
► Adjustable dynamic mode, reduced "wall effect"
► Correct display of speed and distance travelled
► Correct total odometer reading after re-removal of the tuning module
► Wheel circumference adjustable

Setting options
All settings are made via the display on the e-bike or the RideControl App.

Protected electronics
The electronics are cast into the housing and thus safely protected from moisture.

Safety and protective devices
Safety and protection devices of the e-bike remain untouched by the installation of the tuning module.

5   Technical data

Housing dimensions:	37mm x 19mm x 9mm (1.46" x 0.75" x 0.36")
Cable length:	Approx. 140mm (5.5")
Weight:	0.025kg (0.9oz)
Power consumption:	0.1W
Supply voltage:	5VDC

6 Installation

IMPORTANT **Before you start the installation**

Confirm that you have read and understood all previous chapters of these operating instructions carefully and completely before you start the installation. This is the only way to ensure that you use the tuning module exclusively for the purpose described in these instructions and as intended. **The installation described below and all associated instructions for action refer to the installation example: Giant Reign E+ 0 2022 with Syncdrive Pro2 motor.**

Other e-bike Models
For other e-bike models, the installation may differ slightly from the installation example.

6.1 Required tools

- Allen key 2mm / 2.5mm / 8mm

Other tools may be necessary
The lower and side motor covers may also be fastened with other screws, depending on the e-bike model. Additional tools may be required for this.

6.2 Note part number and serial number

For support requests note
► Make a note of the
- Part number (P/N) and
- Serial number (S/N) of the tuning module
on the back of these operating instructions.
This way, you always have the data at hand for possible support requests.

6.3 Remove covers

⚠ WARNING **Prevent unexpected startup**

If the drive starts unexpectedly, hands and fingers may shear, crush or retract. Switch off the e-bike and remove the battery. This will prevent any movement assisted by the electric motor.

► Ensure that your e-bike stands firmly and securely.
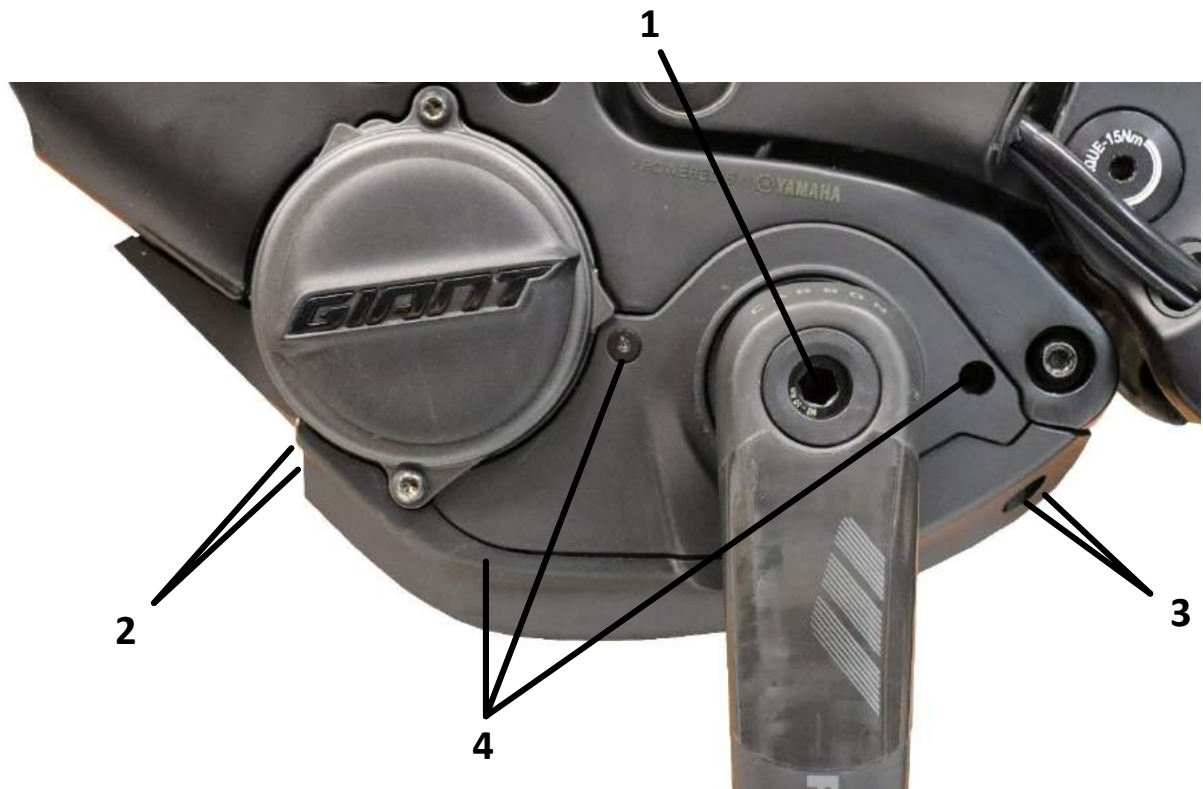
► Take off the left crank using an Allen wrench 8mm (1).
► Loosen the screws (2) and (3) and remove the lower motor cover.
► Remove the screws (4) from the left motor cover and take it off.

► Disconnect the cables from the marked two sockets on the motor.

6.4 Connect the cables

► Plug the tuning module into the two free sockets on the motor.
► Connect the two previously unplugged cables to the tuning module.
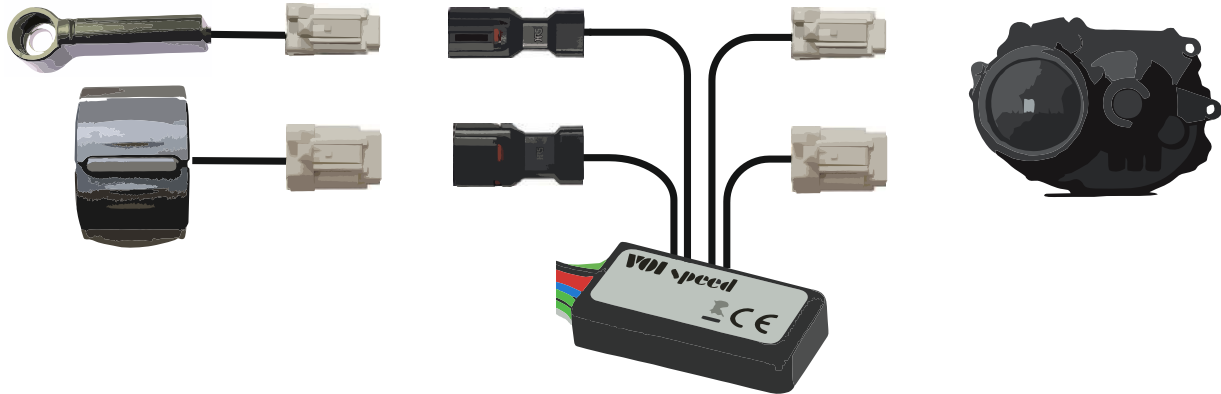
6.5 Check function

► Insert the battery into the e-bike.
► Turn on the e-bike. When the e-bike is switched on for the first time, an automatic initialization is performed. The display shows the speed 11km/h (6.8mph) for 10 seconds. Then the display shows 0km/h (0mph) again. The initialization is now complete.

> **Check display indication**
>
> If the display shows 12km/h (7.5mph) after the 10 seconds, the wiring of the module is faulty. Check the electrical connections again according to the figure in chapter 6.4.
>
> If the e-bike does not have a display, use the RideControl app for the check, see FAQ chapter 13. You can also use the wireless Ridecontrol Plus display. Since the app or the Ridecontrol Plus can only connect after the e-bike has been turned on, the value 11km/h will not be displayed because the connection process takes longer than 10 seconds. In the event of an error, however, you will see the display of 12km/h (7.5mph).

► Then check whether you can switch on the speed mode as described in the chapter 7. If this is not possible, check the electrical connections again carefully.

> **Set idividual activation code**
>
> If you want to set an individual code to protect the tuning from unauthorized use:
> ► Set the activation code according to the instructions in chapter 8 activation code now.
> ► Then check if you can activate the tuning with the set code.

► Switch the e-bike off again and remove the battery.

6.6   Finalize installation

► Place the tuning module and the connectors in a suitable location, for example as shown in the following figure. The connectors are not visibly located above the motor in the picture.

ATTENTION   **Ensure tightness of the connectors**

If possible, do not bend the cables directly behind the connector, as this could cause the seal on the connector to lose its function. This can cause moisture to enter the connector and cause damage. It is also advisable to place the connectors in an area that is as protected from moisture as possible.
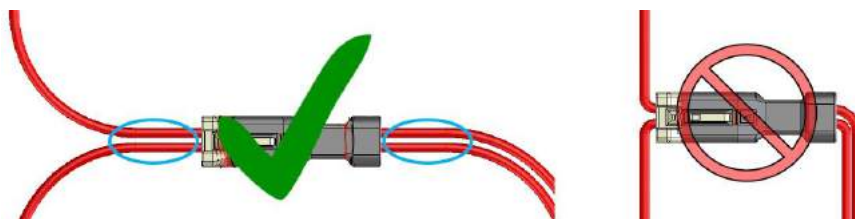
► Route the cables so that they are not crushed when mounting the covers.
► Reattach the motor covers with the screws (2), (3) and (4).
► Install the pedal crank (1).

7 Speed mode

When Speed mode is activated, the speed limit for motor assistance is raised. The limit can be freely set in the range 25 to 45km/h (15.5 to 28mph). When the e-bike is switched off, the speed mode is automatically switched off and must therefore be reactivated when the e-bike is switched on again.

Note displays / operating units

The following illustrations show examples of the Ridecontrol ERGO 3 control unit and the Ridecontrol PLUS display. For other control units, press the corresponding buttons to change the support levels. The RideControl app can also be used as a display.

7.1 Activate
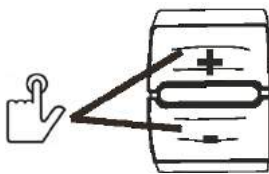
Switch on the e-bike and, if necessary, the display and enter the following sequence quickly using the keys for changing the support levels:

**- + - +**

Individual activation code

If you have set an individual activation code according to the instructions in chapter 8 enter this code instead.
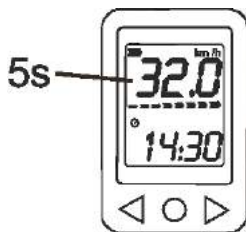
The speed limit is displayed for 5 seconds. If desired, you can change the limit with the "Plus" and "Minus" keys. Possible values: 25 to 45km/h (15.5 to 28mph). Default value 32km/h (20mph). The set value is saved.
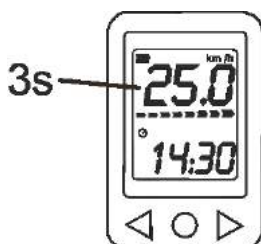The speed mode is now activated.

7.2 Deactivate
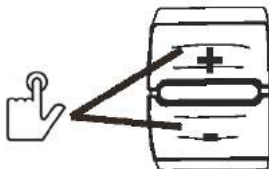
Enter the following sequence:

- + - +

The display shows 25km/h for 3 seconds. The speed mode is off.

8 Individual activation code

With an individual activation code, the speed mode can only be activated by entering this code. This prevents unauthorized activation of the tuning. The code always consists of a self-definable sequence of one to a maximum of five keystrokes that must be pressed in the set sequence.

8.1 Preparation

► Switch on the e-bike and set the display to show the odometer reading (ODO) and then switch it off again.
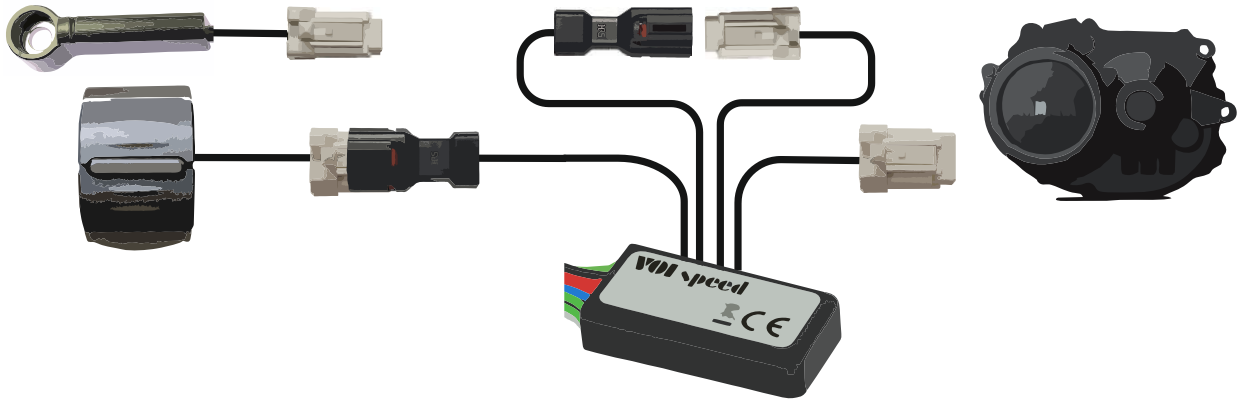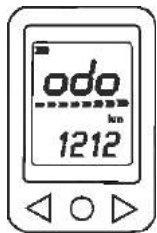
Display Unit

If the display is set to mph, temporarily change it to km/h.
Information on this can also be found in the FAQ, chapter 13.

► Disconnect the two smaller, three-pin connectors of the tuning module from the motor and the speed sensor and plug them together as shown in the following figure.
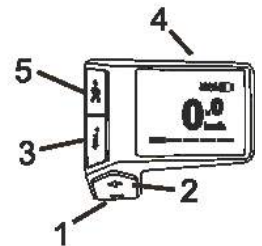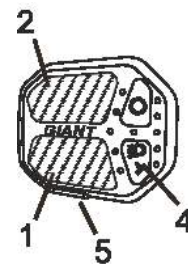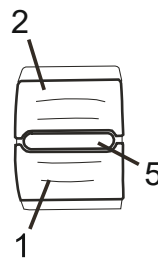
8.2 Set code

Switch on the e-bike. "1212" is displayed as the total mileage. This is the default code.
Each digit represents a key according to the following table.
"1212" corresponds to the code: Minus | Plus | Minus | Plus

Digit	Key
1	Minus
2	Plus
3	Info (not always available)
4	Light
5	Walk

Ridecontrol Plus / Plus 2

After switching on the e-bike and the display, it takes about 30 seconds until the display is connected to the e-bike and the values are shown.

Old code invisible

If a code was already set previously, it is deleted. Unauthorized reading of the code is therefore not possible.

► Now set your own code by pressing the desired keys.
► After pressing the first key, the default code is deleted and instead the currently pressed key is displayed as the total odometer reading (ODO), see input example step 2.
► With each keystroke, the digit corresponding to the current key is now appended to the right, see input example step 3 – 7.
► If more than 5 keystrokes are entered, the first digit is deleted, see step 7.
► The code can consist of a minimum of one keystroke and a maximum of 5 keystrokes.

Input example:

Step	Key	ODO	Note
1	-	1212	Code: Minus | Plus | Minus | Plus
2	Walk	5	Code: Walk
3	Walk	55	Code: Walk | Walk
4	Plus	552	Code: Walk | Walk | Plus
5	Minus	5521	Code: Walk | Walk | Plus | Minus
6	Minus	55211	Code: Walk | Plus | Minus | Minus
7	Walk	52115	Code: Walk | Plus | Minus | Walk

Note down the set code. Then switch off the e-bike. This saves the code. If you want to change the code again, simply switch the e-bike back on and enter it again. Afterwards restore the wiring to its original condition.

Check code entry

Before re-assembling your e-bike, be sure to check that you can activate the speed mode with the set code.

8.3   Delete code

Switch on the e-bike. The total mileage displayed is "1212". Then switch the e-bike off again. This deletes the individual code. Then restore the wiring to its original condition.
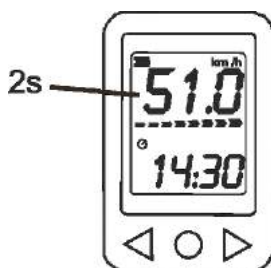
9   Dynamic mode

If the speed limit is exceeded, the motor power is reduced very strongly by default. A higher pedal force then initially no longer results in a higher speed, but in a lower motor support. For a more natural riding experience, the dynamic mode spreads the downshift over a wider speed range, the so-called "wall effect" is significantly reduced and it is possible to ride with much more constant pedal force.
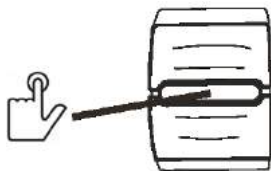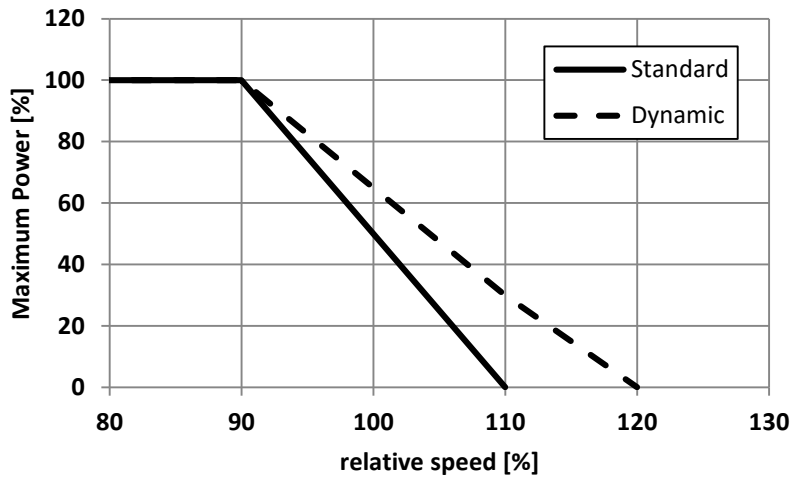
While riding (> 10km/h), press the WALK key for 3 seconds when the speed mode is activated.
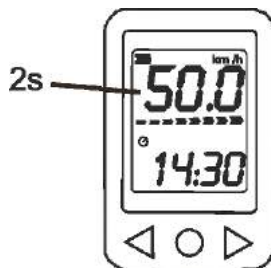
Dynamic mode off: 50 km/h (31.1mph) is displayed for 2 seconds. The set value is saved.

Dynamic mode on: 51 km/h (31.7mph) is displayed for 2 seconds. The set value is saved.

10 Change wheel circumference

The tuning module uses the wheel circumference stored in the motor as standard. Therefore, an adjustment is normally not necessary. However, if the speed display or distance measurement is inaccurate, the value can be adjusted manually by +/- 10%.
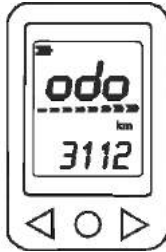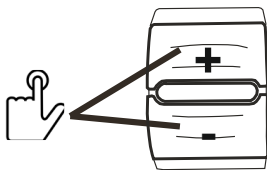
Switch on the e-bike and set the trip or odometer display and activate the speed mode as described in chapter 7.

Display Unit
If the display is set to mph, temporarily change it to km/h.
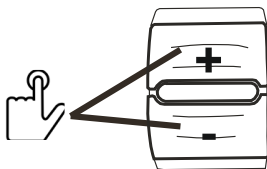Information on this can also be found in the FAQ, chapter 13.

Use the keys to change the support levels to enter the following sequence:

- - + + - -

The set wheel circumference is displayed in centimeters as total and daily mileage (1 centimeter = 1 kilometer).
Meanwhile, the speed display shows 88km/h (88mph).

The value can be changed with the plus and minus keys. Pressing the Walk key restores the default value.

If no key is pressed for 10 seconds, the odometer reading is displayed again and the set wheel circumference is saved.

Wheel circumference

Do not confuse the value with the tyre diameter, which is often 27.5", 28" or 29". The wheel circumference, on the other hand, is the distance the e-bike travels in one wheel revolution. You can either measure the value yourself or use the tyre manufacturer's specifications.

Please also note that the value must be set in centimeters. One inch corresponds to 2.54 centimeters.

11 Restore factory settings

The tuning module sets itself up automatically. A conversion to another e-bike or another display is automatically detected. Nevertheless, it is possible to reset the tuning module to the factory settings. Thereby the following values are reset:

- The limit is set to 32km/h (20mph).
- Any existing individual activation code will be deleted.
- The mileage and wheel circumference is taken from the motor.

Activation code forgotten

If you have forgotten the set activation code and therefore can no longer activate the speed mode, you must first delete the activation code.

▶ To restore the factory settings, first activate the speed mode and then enter the following sequence quickly using the keys:

+ - - - + - +

▶ The module is now reinitialized. The display shows 11.1km/h (6.8mph) for 10 seconds. As soon as 0.0km/h is displayed again, the process is completed.

12 Status display

Certain operating states are displayed by the tuning module as speed to inform the user about them.

| Speed	Meaning
11 km/h 6.8mph	Initialization in progress. The value is displayed for 10 seconds after switching on for the first time or after resetting to factory settings.
12 km/h 7.5mph	Speed sensor signal faulty. Check wiring.

13 FAQ

Speed mode cannot be activated.

Probably an individual activation code is set. If known, you must enter this for activation. If not known, delete the code as described in chapter 8 chapter.

Is the total mileage correct even after removing the module?

Yes, the total kilometers measured by the motor control unit are not changed by the tuning. This is ensured by a compensation function in the tuning module that works continuously in the background. However, before removing the module, the e-bike should be left at a standstill with Speed mode switched on until it switches off by itself. This ensures that the compensation function has adjusted the mileage correctly.

My e-bike does not have a display. Can I still use the module?

Yes. No display is required to use the module. However, it is useful for displaying the settings. You can also use the free RideControl app for this. Connect your e-bike in the app and open the Ride screen (1). Press the play button there (2). Speed and total kilometers (ODO) are displayed in the upper part of the screen (3). If this is not the case, the display can be adjusted accordingly. To do this, simply press and hold on a field until a selection list opens. Then select the corresponding value.
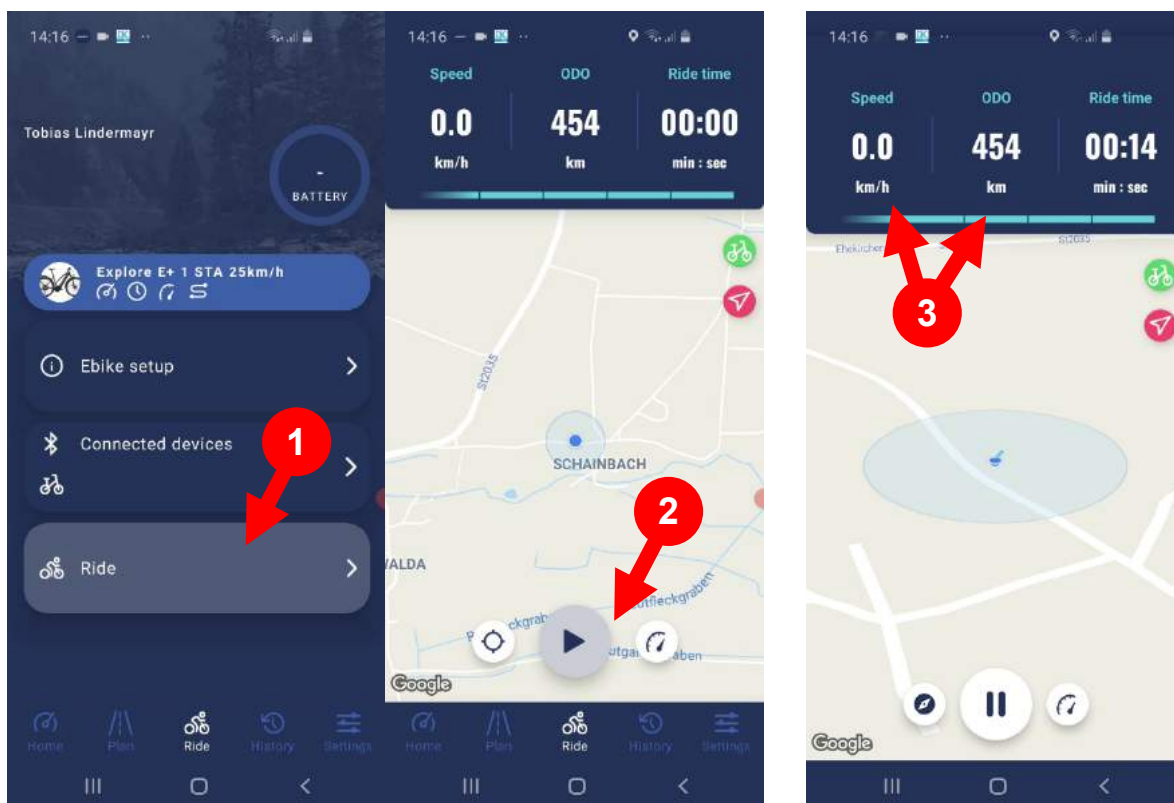
How do I change the display unit from mph to km/h?

Ride Control PLUS:

► Use the arrow keys to switch to the odometer reading display ODO.
► Press and hold the middle key until LEN is displayed at the top.
► Briefly press the middle key again. The display shows the text UNIT.
► Press and hold the middle button until SET is displayed at the top.
► Use the left arrow key to change the unit from ft to m.

Ride Control APP:

► Open the settings tab and open the personal settings
► Scroll down to the unit entry and change it from Imperial to Metric.

Technical support

If you have any questions or problems, please contact us by e-mail or telephone at:
TLI Elektronik GmbH
St.-Martin-Str. 11
D-86676 Ehekirchen
info@volspeed.de

Tel.: +49 (0) 8253 / 9279902

In addition to your request, please provide the following information:

- Article number and serial number of the unit (S/N, P/N)
- Bicycle manufacturer, type and year of construction
- Display type (e.g. Display A)
- Motor type (e.g. PW-X)

To ensure that you always have the unit data at hand, you can enter it here before installing the unit:

Part number (P/N): _____

Serial number (S/N): _____

Disposal

Electronic devices are recyclable materials and do not belong in household waste.

At the end of its service life, dispose of the product in accordance with the applicable legal requirements.

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