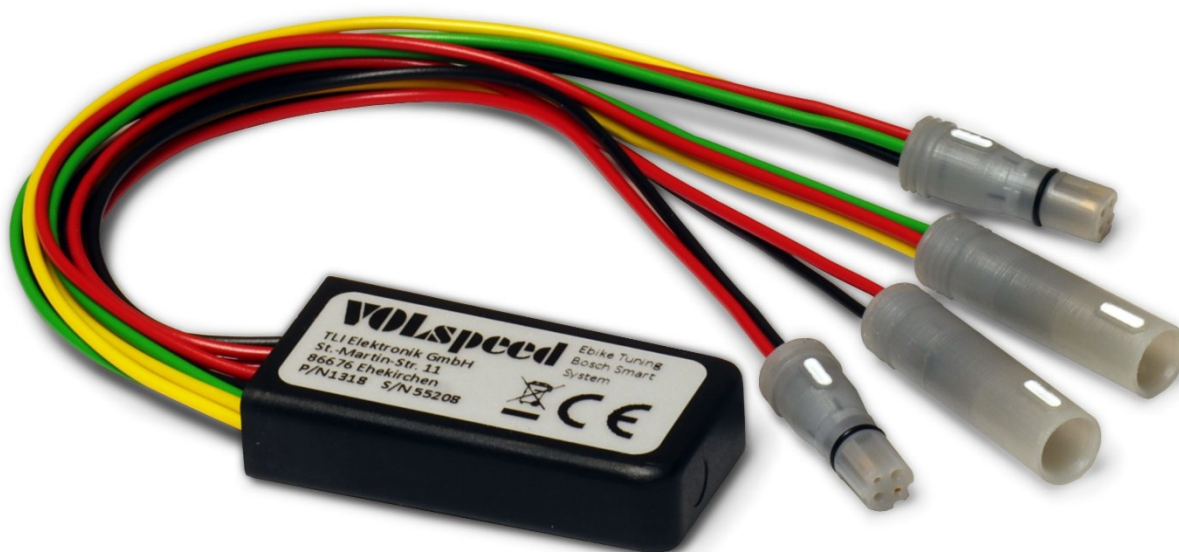


# **VOLspeed** Ebike Tuning

## Bosch Smart System

### Operating instructions

as original operating instructions in English language



1	General information .....	3
1.1	Safety instructions .....	3
2	Requirements for safe use .....	4
2.1	Intended use.....	4
2.2	Restrictions on use .....	4
2.3	Know and comply with installation requirements .....	5
2.4	Obligation of the owner .....	8
2.5	Obligation of each user .....	8
3	Warranty and liability.....	8
3.1	Warranty and liability of the tuning module manufacturer.....	8
3.2	Warranty, guarantee and liability by the manufacturer of the e-bike.....	9
3.3	Property damage and personal injury - Further exclusions of liability to be considered .....	9
4	Functional description.....	10
5	Technical data .....	10
6	Installation.....	11
6.1	Required tools .....	11
6.2	Note the part number and serial number .....	11
6.3	Remove covers .....	11
6.4	Plug in cable.....	13
6.5	Check function.....	14
6.6	Finalize installation.....	14
7	Speed mode.....	15
7.1	Switch on .....	15
7.2	Switch off.....	15
8	Individual activation code .....	16
8.1	Preparation.....	16
8.2	Set code .....	16
8.3	Delete code .....	17
9	Dynamic mode.....	18
10	Restore factory settings .....	19
11	FAQ.....	19

## 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**

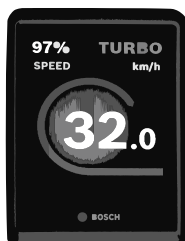
The tuning module is adapted to specific drive systems and display types.

- 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 panel:
Bosch Performance Line Bosch Performance Line CX Bosch Performance Line CX Race Bosch Cargo Line	Kiox 300 Kiox 500 Intuvia 100	LED-Remote Purion 200 System-Controller + Mini-Remote



Kiox 300



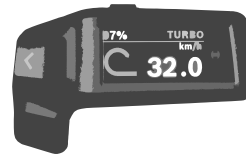
Kiox 500



Intuvia 100



LED-Remote



Purion 200



System Controller  
+Mini-Remote



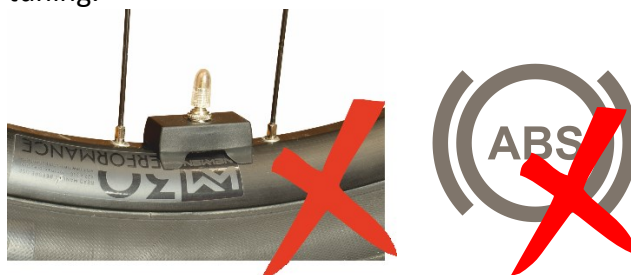
### Not compatible with Bosch BES2

The tuning is only compatible with the "Smart System". Bikes with the displays Purion, Kiox, Intuvia, Nyon, Smartphone Hub are not part of the Smart System and therefore not compatible with the tuning.



### Not compatible with Bosch rim magnet and ABS

The tuning is not compatible with bikes that do not have a speed sensor. Such bikes can be identified by a large magnet on the valve on the rear rim, see the following illustration. Bikes with the Bosch ABS system are also not supported by the tuning.



### Use without display

To be able to use all the functions of the tuning, a speed display is required. If your e-bike does not have a display, you can also use the Flow app for this purpose, see also FAQ. We recommend that you do not use the Flow app while riding with tuning activated.

**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 offers the following functions after installation in E-bike with Bosch drive system (25 km/h):

- Adjustable speed limit via control panel on the e-bike up to 45km/h
- Personal activation code adjustable
- Adjustable dynamic mode with reduced "wall effect"
- Attention: no correct display of speed and distance travelled

**Setting options**

All settings are done via the control unit on the e-bike.

**Protected electronics**

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

**Safety and protective devices**

Safety and protective devices of the e-bike remain unaffected 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. 180mm (7.1")
Weight:	0.017kg (0.6oz)
Power consumption:	0.2W
Supply voltage:	12VDC

## 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 refer to the installation example: Cube Stereo Hybrid 140 HPC TM 750 Model Year 2022**



#### Other e-bike models

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

### 6.1 Required tools

- Allen key 3mm



#### Further tools may be necessary

The motor cover may also be fastened with other screws depending on the e-bike model. Further tools may be required for this.

### 6.2 Note the part number and serial number



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 any support requests.**

### 6.3 Remove covers



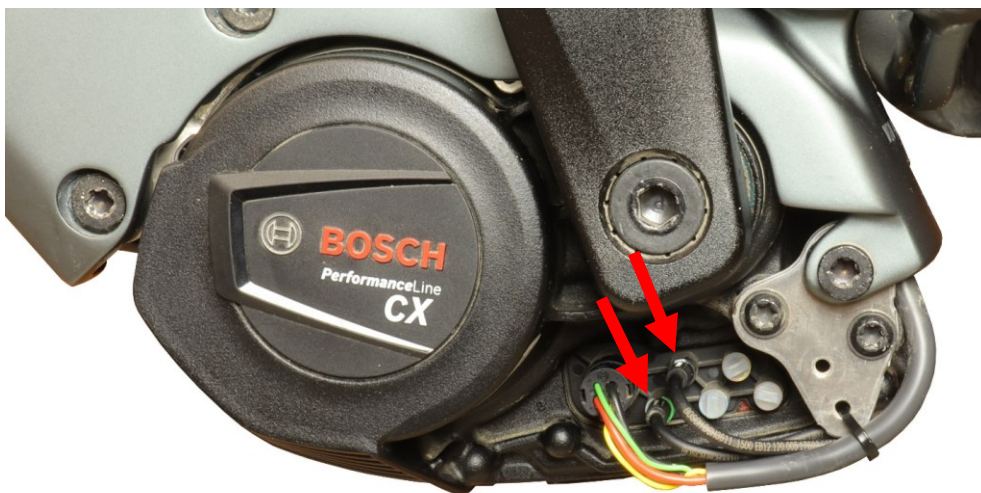
#### **WARNING** Preventing an unexpected start-up

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 electromotive movement.

- Ensure that your e-bike stands firmly and securely.



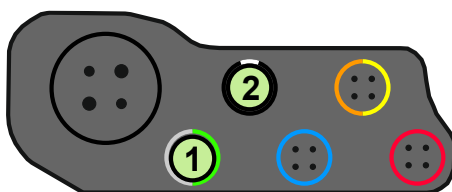
- Remove the cover of the battery.
- Remove the screws (1) and take off the lower motor cover.



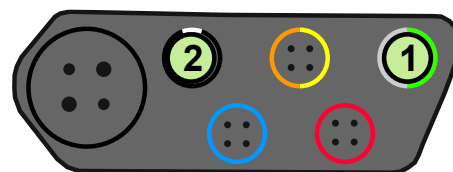
- Unplug the cables from the marked two sockets on the motor.

#### ATTENTION Reduce the risk of confusion

The position of the sockets differs between the various motor types. Depending on the motor type, remove the plugs labelled with 1 and 2 in the following illustration.

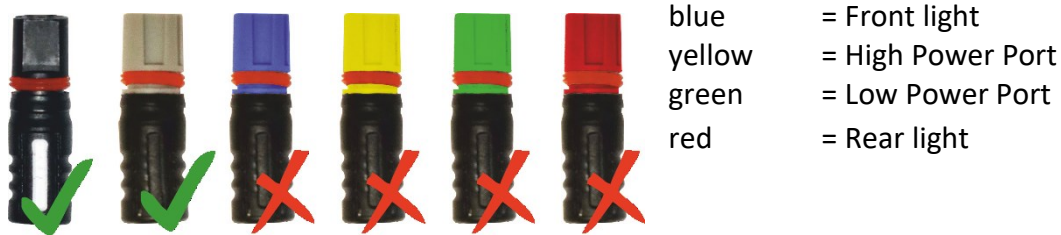


Performance Line CX (Race)



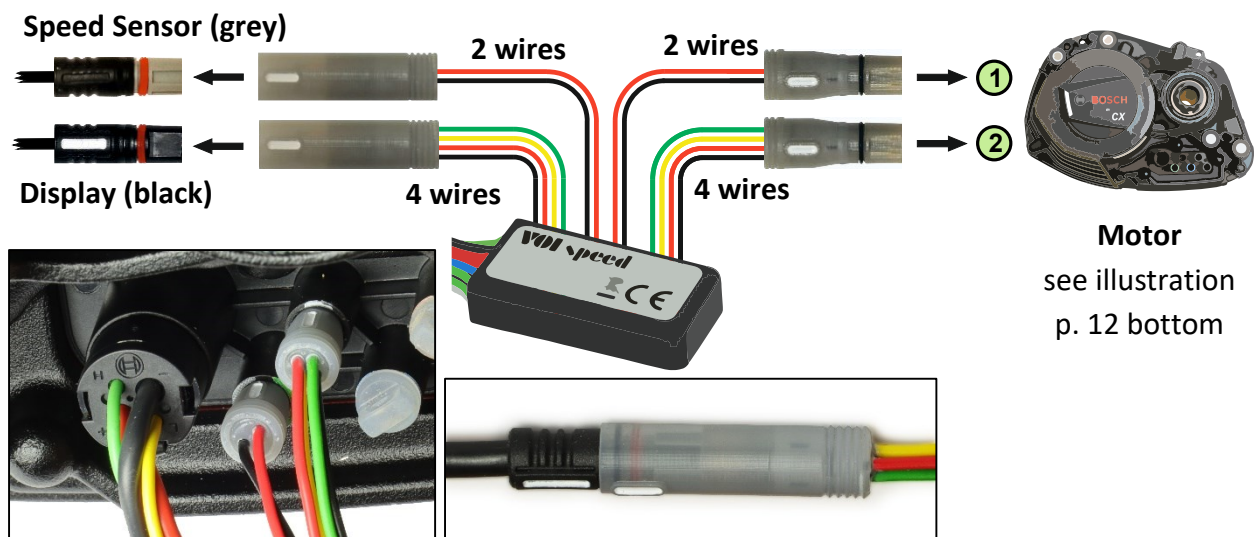
Performance Line

In addition, pay attention to the colour of the disconnected plugs. Only disconnect the **grey** plug for the speed sensor and the **black** plug for the display.



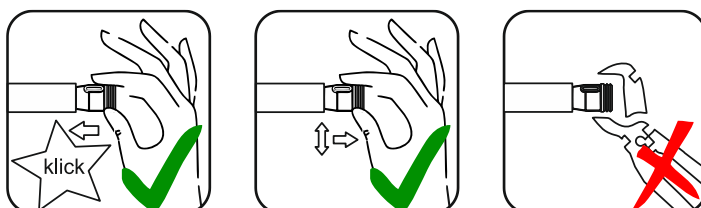
#### 6.4 Plug in cable

- Plug the tuning module into the two free sockets on the motor and connect the two previously unplugged cables to the tuning module. Use the colour of the connectors and the number of wires as a guide when assigning the connectors.



#### ATTENTION Avoid damage

Press the connectors in until they noticeably snap into place. This ensures good contact and tightness. To disconnect the connectors, move them slightly back and forth while pulling them out. Do not use any tools for this. This can damage the connectors.





## 6.5 Check function

- Insert the battery and switch on the e-bike. An automatic calibration of the module may now be carried out. A speed of about 25km/h is displayed for 10 seconds. If no speed is displayed, calibration is not necessary.
- Then check whether you can switch on the speed mode as described in chapter 7. If this is not possible, check the electrical connections again carefully.
- Turn the rear wheel and check whether the display shows a speed. If not, check the electrical connections again carefully.



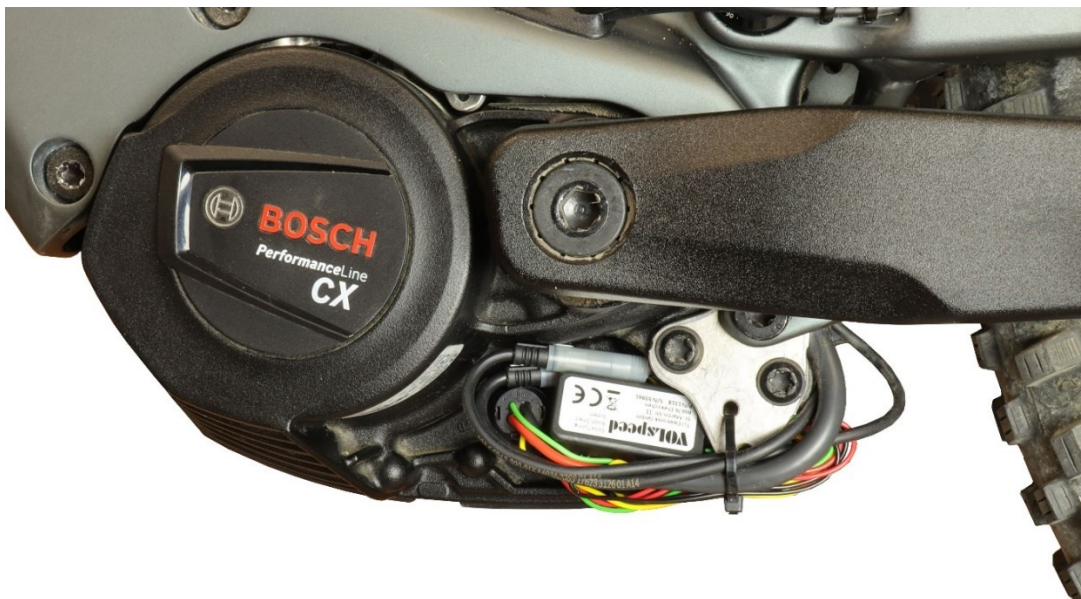
### Set activation code

If an individual activation code is to be set to protect the Tuning from unauthorised use:

- Set the activation code according to the instructions in chapter 8 Activation code now.
  - Then check whether you can activate the tuning using 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 illustration, directly in the connection area of the motor.



- Lay the cables in such a way that they are not crushed when mounting the covers.
- Reattach the motor covers with the screws (1).
- Refit the battery cover.

## 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. 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. Please note that when Speed mode is activated, the speed displayed is too low from about 21km/h.



### Note displays / control units

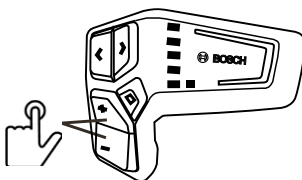
The following illustrations show an example of the LED Remote control unit and the Kiox 300 display. For other control units, press the corresponding buttons to change the support levels. The Flow App can also be used as a display.



### Switching on / off while riding

You can also switch the speed mode on and off while driving. However, you will then not get a display whether the dynamic mode has been activated or deactivated.

### 7.1 Switch on



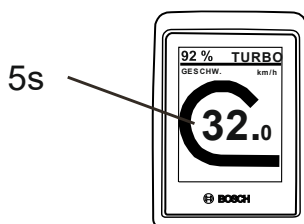
Switch on the e-bike and, if necessary, the display and enter the following sequence quickly using the buttons for changing the assistance levels:

**- + - +**



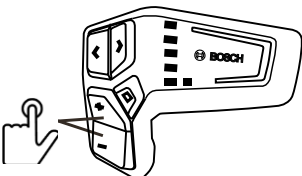
### Individual activation code

If you have an individual activation code according to the instructions in chapter 8 enter this instead.



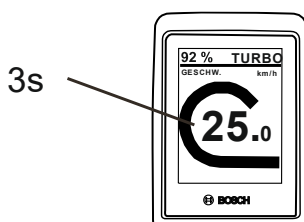
The speed limit is displayed for 5 seconds. If desired, the limit can be changed with the "Plus" and "Minus" keys. Possible values: 25 to 45km/h (15.5 to 28mph). Default value 32km/h (20.5mph). The set value is saved. The speed mode is now activated.

### 7.2 Switch off



Enter the following sequence:

**- + - +**



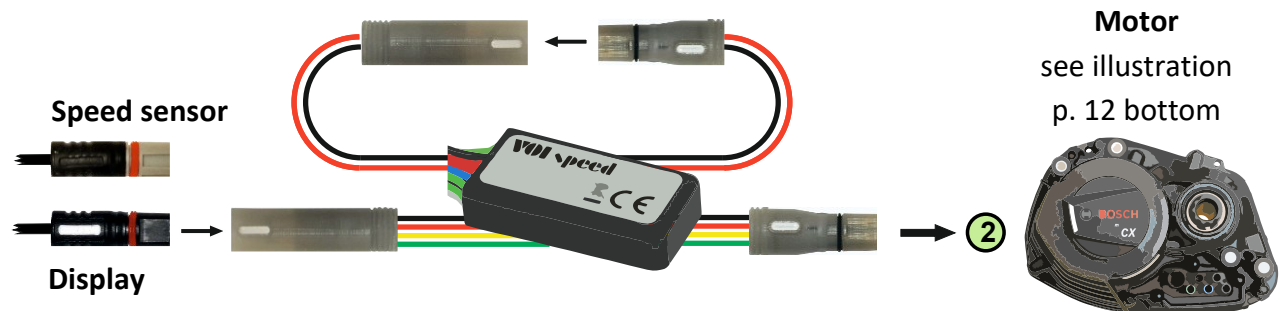
The display shows 25km/h (15.5mph) for 3 seconds. Speed mode is now deactivated.

## 8 Individual activation code

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

### 8.1 Preparation

- Disconnect the two two-pin connectors of the tuning module from the motor and the speed sensor and plug them together as shown in the following figure.



- Switch on the e-bike briefly and switch it off again after about 10 seconds. This activates the code setting mode at the next system start.
- **Put the connectors back to their original position.**

### 8.2 Set code



Switch on the e-bike. The speed displayed is 20km/h (12.4mph).

- Now set your own code by pressing the desired buttons.
- After pressing the first button, the default code is deleted and the currently pressed button is adopted as the code instead. The display changes to 21km/h (13.0mph).
- With each additional keystroke, the speed is now increased by one km/h (~0.6mph) and the keystroke is added to your code.
- If more than 5 keystrokes are entered, further keystrokes are ignored.
- The code can consist of a minimum of one keystroke and a maximum of 5 keystrokes.
- You can use all the buttons on the control unit except the power button.



Input example:

Step	Key	Speed (kph/mpg)	Note
1		20 / 12.4	Code: -   +   -   +
2	+	21 / 13.0	Code: +
3	<	22 / 13.6	Code: +   <
4	>	23 / 14.2	Code: +   <   >
5	+	24 / 14.9	Code: +   <   >   +
6	-	25 / 15.5	Code: +   <   >   +   -
7	-	25 / 15.5	Code: +   <   >   +   - , keystroke is ignored

- Make a note of the set code. Then switch off the e-bike. This saves the code. If you want to adjust the code again, simply activate the code setting mode again (chapter 8.1) and enter the code again.



#### Check code entry

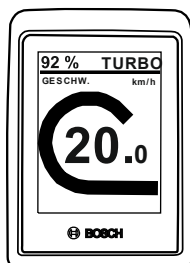
Before assembling your e-bike, be sure to check whether you can activate the speed mode with the set code.



#### Code entry mode exits automatically

If you do not press any button for 20 seconds, the code entry mode ends automatically. The set code is nevertheless saved.

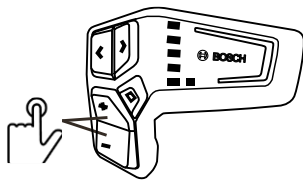
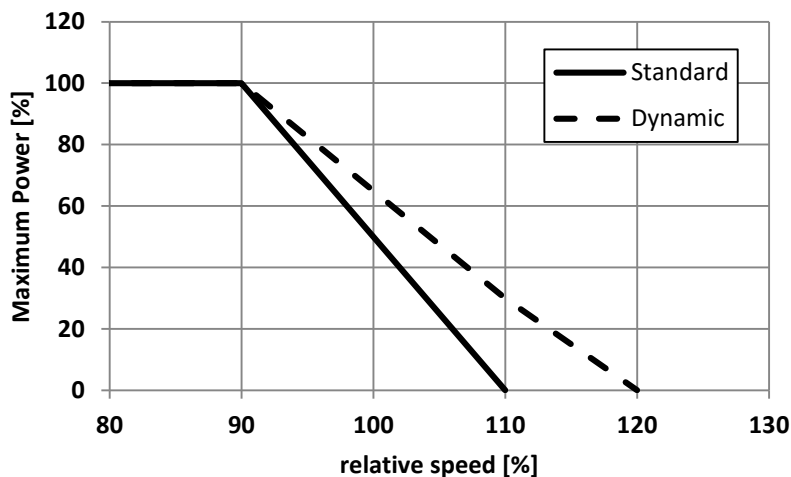
### 8.3 Delete code



Activate code entry mode as described in chapter 8.1. Switch on the e-bike. The speed displayed is 20km/h (12.4mph). Switch the e-bike off again. This deletes the individual code.

## 9 Dynamic mode

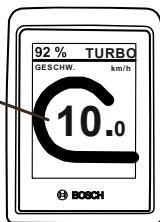
If the speed limit is exceeded, the motor power is reduced very strongly by default. A higher pedal force then initially no longer results in a higher speed, but in a lower motor support. For a more natural riding experience, the dynamic mode spreads the downshift over a wider speed range, the so-called "wall effect" is significantly reduced and it is possible to ride with much more constant pedal force.



With Speed mode activated, enter the following sequence:

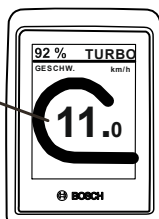
-- ++ --

3s



Dynamic mode off: 10 km/h (6.2mph) is displayed for 3 seconds. The set value is saved.

3s



Dynamic mode on: 11 km/h (6.8mph) is displayed for 3 seconds. The set value is saved.



### Switching on / off while riding

You can also switch the dynamic mode on and off while driving. However, you will then not get a display whether the dynamic mode has been activated or deactivated.

## 10 Restore factory settings

The tuning module sets itself up automatically. A conversion to another e-bike or another display is also recognised automatically. Nevertheless, it is possible to reset the Tuning Module to the factory settings. This resets the following values:

- The limit is set at 32km/h.
- Any existing individual activation code will be deleted.



### Forgotten activation code

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 buttons:  
 - □ □ □ - - (□ : Menu key)
- An automatic calibration of the module may now be carried out. A speed of about 25km/h is displayed for 10 seconds. If no speed is displayed, calibration is not necessary.
- The module is now reset to factory settings.

## 11 FAQ

### The speed mode cannot be activated.

The tuning may not be able to evaluate the keystrokes correctly. This could be due to a software version not supported by the Tuning module. Instead, try to operate the tuning by specifically changing the support levels:

Speed mode on / off:	Turbo -> Sport/eMTB -> Turbo -> Sport/eMTB
Increase limit:	Sport/eMTB <-> Turbo (switch back and forth between levels)
Decrease limit:	Sport/eMTB <-> Tour (switch back and forth between levels)
Dynamic mode on / off:	Tour -> Eco -> Tour -> Eco
Factory settings:	Sport/eMTB -> Turbo -> Sport/eMTB -> Tour -> Eco -> Tour -> Eco

### Why is the speed display not correct when tuning is activated?

The tuning simulates a lower speed for the motor from about 21km/h so that the motor does not cut out. Due to a secure data communication from the motor to the display, it is unfortunately not possible to correct the display values as is possible with older Bosch drive systems.

### Is the total mileage correct even after removing the module?

No. Due to the principle of the tuning, the motor is led to believe that the speed is too low while riding. As a result, the odometer measures a shorter distance when the tuning is used. The missing distance is not corrected by the tuning.

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

Yes, you can also use the free Bosch Flow app to display the settings. To do this, open the Ride Screen in the app. Disable automatic updates. We recommend that you do not use the Flow app while riding with tuning activated.

### The Flow app reports an available update. Can I install this without hesitation?

In general, we do not recommend updates when using our tuning modules. It is possible that the tuning will be detected by the drive system after the update due to tamper detection or that the tuning can no longer be operated due to changes in communication. Disable automatic updates in the Flow App. We regularly publish tested software versions in our blog: [blog.volspeed.de](https://blog.volspeed.de)

### Technical support

If you have any questions or problems, please contact us by e-mail or telephone:

TLI Elektronik GmbH

St.-Martin-Str. 11

D-86676 Ehekirchen

[info@volspeed.de](mailto: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 manufacture
- Display type (e.g. Kiox 300)
- Control unit type (e.g. LED remote)
- Motor type (e.g. Performance Line CX)

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

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.

