

ZE+HUS
h u m a n +



BIKE+ all in one

User manual

Safety Notes



Read all safety warnings and all instruction. Failure to follow the warnings and instructions may result in serious injury.

Save all safety warnings and instructions for future reference.

- **DO NOT** open the unit yourself. **BIKE+ all in one** is maintenance-free and must be repaired only by qualified experts and only with original spare parts. Any unauthorized attempt to open the unit will void warranty claims.
- **DO NOT** make any modification to **BIKE+ all in one** and **DO NOT** remove the anti rotational plates from your bike. This would yield to an incorrect behavior by your bike and it may result in serious injury.
- **DO NOT** use the bike without the protection covers for the charging connector (see Figure 1). Warranty is void if the bike is being used without protecting the connector.
- **Please observe all national regulations on registering and using e-bikes.**
- The term "battery pack" refers to an internal part of the **BIKE+ all in one** system. **DO NOT** try to access the battery pack.
- **BIKE+ all in one** must not be subjected to direct mechanical impacts. There is a risk that the battery pack and the electronics will be damaged.
- **Protect the BIKE+ all in one system against severe heat, fire and immersing into water.** Danger of fire and explosion.
- **Vapors can escape in case of damage or improper use of the BIKE+ all in one.** Avoid contacts with those vapors, as they can irritate the respiratory system.
- **Charge the battery pack only with original Zehus battery charger.** Damage can occur while using non original charging devices.

- **IF your BIKE+ all in one has a 6 pin connector (see Figure 1), please be careful to insert the 6 pin charger plug in the 6-pin connector in the proper way.** Otherwise short circuits can occur. Warranty is void if charger is not inserted correctly. Do not short circuit the pinout of the charging connector.
- **Keep the battery charger away from rain or moisture. Keep the battery charger clean.** Danger of electric shock
- **Before any charging operation, check the battery charger status (cable, plug, connectors).** If any damage is detected, DO NOT use the charger and contact a qualified retailer.
- **Do not operate the battery charger on flammable surfaces.**
- **Vapors can escape in case of damage or improper use of the charger.** Avoid contacts with those vapors, as they can irritate the respiratory system.
- **Keep the charger out of children reach.**
- **Please read this manual carefully**

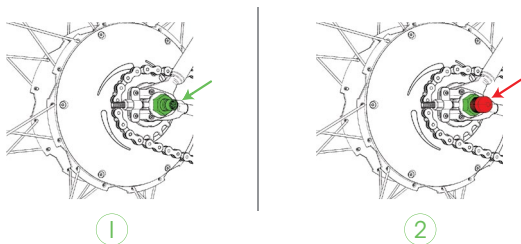


Figure 1: 6-pin charging connector (1) and protection cover (2)

1. Getting started with BIKE+ all in one

1.1 Intended use

BIKE+ all in one is intended to be used exclusively with the bike which was sold with. Any attempt to mount **BIKE+ all in one** on another bike will void warranty claims.

BIKE+ all in one is not permitted for competition and race use.

1.2 Initial operation

BIKE+ all in one can only be activated when the battery state of charge is sufficient. In order to check the battery state of charge of your **BIKE+ all in one** please refer to 4.1.

1.3 Turning on the system

BIKE+ all in one turns on automatically when the rear wheel reaches a speed higher than 5 km/h. Thus, to turn on **BIKE+ all in one** just start pedaling your bike as usual or spin the wheel while you lift the bike, as explained in Figure 2 .

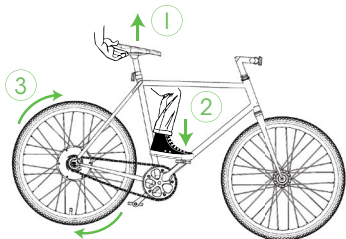


Figure 2: in order to turn on **BIKE+ all in one**, lift the bike (1), push the pedal (2) such that the rear wheel reaches at least 5 km/h (3).

1.4 Turning off the system

BIKE+ all in one automatically turns off when no activities are detected within 2 minutes, in order to reduce the idle battery use. In order to manually turn off BIKE+ all in one, lean the bike vertically or horizontally, as explained in Figure 3

▲ WHEN A SMARTPHONE IS CONNECTED: if the bike is leant, BIKE+ all in one will be de-activated (for BIKE+ all in one activation see 2.1). In any case the system will stay active for 10 minutes. If BIKE+ all in one is electronically locked, the system will stay active as long as possible (see 4.3 for details)

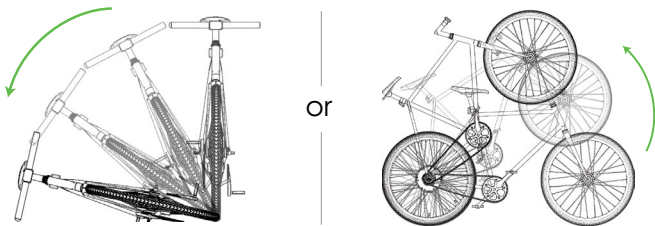


Figure 3: lean the bike to turn off BIKE+ all in one

2. Riding BIKE+ all in one

▲ *it is recommended to gather first experience with BIKE+ all in one away from roads with heavy traffic.*

BIKE+ all in one is an advanced powertrain for e-bikes that helps you in reducing your pedalling effort. The system is compliant to the EU laws on Electric Pedal Assisted biCycle (EPAC).

2.1 BIKE+ all in one activation procedure (see Figure 4)

When BIKE+ all in one is turned on, the motor assistance is not yet activated for safety reasons. In order to activate the motor assistance, you must perform all the following steps:

1. Ride the bike and reach 8 km/h
2. Pedal backwards 3 times continuously

▲ *The bike will slow down while performing the step 2, due to the regenerative braking function (see 2.2).*

2.1 Motor assistance

The motor assists the rider up to 25 km/h and with a maximum power of 250W just if you are pedalling. As soon as you stop pedalling, the motor will stop pushing.

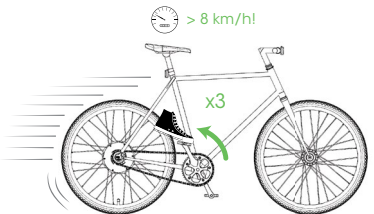


Figure 4: BIKE+ all in one activation procedure

The generated power depends on several factors including the bike speed, the pedaling speed and the road slope, depending on the selected power mode.

The default power mode of **BIKE+ all in one** is the "turbo" mode. For instruction on how to change the power mode please refer to 4.4 and 4.6.

2.2 Regenerative braking (KERS)

BIKE+ all in one features a regenerative braking function; this allows you to slow down the bicycle using the electric motor as a generator recharging the batteries thanks to the integrated Kinetic Energy Reccuperation System (KERS). In order to activate the regenerative braking you need to pedal backwards. As soon as you stop pedalling, the motor will stop braking.

▲ CAUTION: Regenerative braking DOES NOT substitute safety mechanical brakes. Please do NOT remove the mechanical brakes from your bike.

▲ CAUTION: Regenerative braking WILL NOT BE AVAILABLE when your BIKE+ all in one is fully charged.

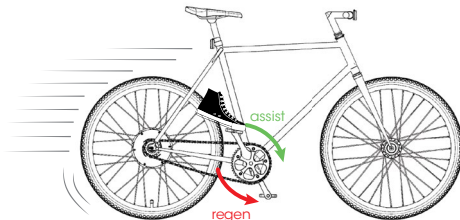


Figure 5: motor assistance and regenerative braking

2.3 Charging BIKE+ all in one (see Figure 6)

To charge **BIKE+ all in one**, simply remove the protection cap from the charging connector (1) and plug in the Zehus charger (2). Then connect the Zehus charger to a power outlet (110~240 V).

The charging time is approximately 3 hours for a complete charge. While **BIKE+ all in one** is charging the charger LED must turn RED. When **BIKE+ all in one** is completely charged, the charger LED turns GREEN (3).

▲ NOTE: when the charger get disconnected from the bike, BIKE+ all in one will turn off.

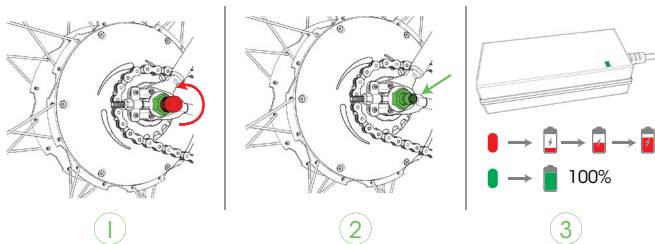


Figure 6: charging BIKE+ all in one

2.4 Change gears or tires on BIKE+ all in one

Although **BIKE+ all in one** is intended to be used as a single speed hub, you can decide to change the sprocket or the crankset. If you change one or more of these components by yourself, **BIKE+ all in one** performances could be not optimal. Please contact a retailer in order to update your bike firmware with your new gear set.

Whenever you change tire size (e.g from 700x23c to 700x35c), please contact the retailer to update your bike firmware. Otherwise the displayed speed could not be correct.

2.5 Careful handling of the bike

Please observe the operating storage temperature of **BIKE+ all in one**. Protect the charging connector from impacts that can damage it. The components can be damaged if exposed to extreme temperatures.

▲ CAUTION: ALWAYS seal the connector on BIKE+ all in one with the proper protection cap (5) before riding. Using BIKE+ all in one without the protection cap will void the warranty.

3. Using a Smartphone with your BIKE+ all in one

In order to access all the function of **BIKE+ all in one**, you would have to connect a smartphone through the **bitride** app.

3.1 What is the bitride app?

The **bitride** app helps you to act smarter during the everyday mobility; bitride also allows you to connect to a variety of devices via bluetooth, including your **BIKE+ all in one**.

3.2 Which devices does the bitride app support?

Devices with Android 4.0 or newer are supported; iPhone 4s, iPhone 5, iPhone 5s, iPhone 5c, iPhone 6, iPhone 6+ are also supported.

3.3 How do you get the bitride app?

You can download the **bitride** app from the Google Play store (for Android devices) or from the Apple store by searching for "**bitride**" or by using the links below.



<https://goo.gl/ryvMuY>



<https://goo.gl/yo1axU>

3.4 How much is the bitride app?

The **bitride** app is available for free.

3.5 How do you install the bitride app?

Depending on your mobile device, go either to the Apple Store or to Google Play and search for the **bitride** app. The detailed procedure is listed below.

On iPhone:

- Open App Store
- Tap the search icon
- Enter "**bitride**" in the search field
- Select **bitride** in the search results
- Follow the standard installation procedure
- Register with a valid e-mail address

On Android:

- Open Google Play
- Tap the search icon
- Enter "**bitride**" in the search field
- Select **bitride** in the search results
- Follow the standard installation procedure
- Register with a valid e-mail address

3.6 Connecting bitride to your BIKE+ all in one

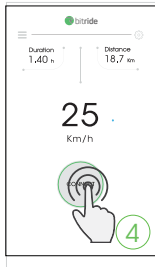
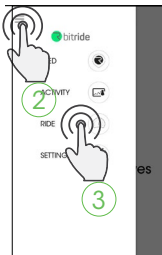
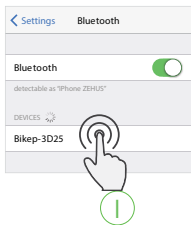
▲ NOTE: *bitride connects through bluetooth to your BIKE+ all in one. When first connecting to a factory resetted BIKE+ all in one, the name of the device will be Bikep-XXXX, where XXXX is a number.*

Once your **BIKE+ all in one** is turned on (see 1.3), you can connect **bitride** to the bike. Depending on your mobile device the procedure may change.

On iPhone:

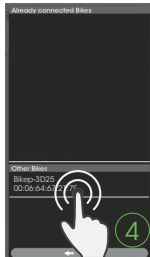
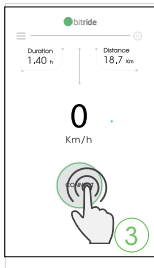
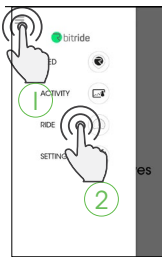
- Open the bluetooth settings screen
- Tap your **BIKE+ all in one** name
- Wait for connection
- Launch **bitride**
- Using the upper screen menu, select **RIDE**
- Press **CONNECT**

▲ **NOTE:** If you have an iPhone bitride will auto-connect to your BIKE+ all in one after the first time the device is paired.



On Android:

- Launch **bitride**
- Using the upper screen menu, select **RIDE**
- Press **CONNECT** to access the connection menu
- Tap your **BIKE+ all in one** name
- Wait for connection



3.7 BIKE+ registration (first use)

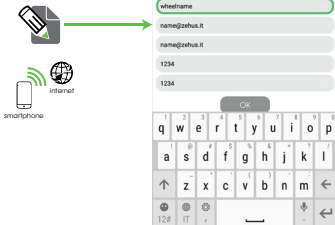
▲ NOTE: it is not mandatory to perform this action. Your BIKE+ all in one is ready to go and it is set into "turbo" power mode (for more power modes see 4.7)

In order to use your BIKE+ all in one together with bitride, you need to register it using your bitride app. By registering to bitride you will be able to:

- change your BIKE+ all in one name
- access to online fault diagnosis
- access to remote maintenance
- access to remote anti theft service: if you reported your BIKE+ all in one as "stolen" any attempt to connect to your BIKE+ all in one will be reported to our servers

To register your BIKE+ all in one please fill in the registration form in the app welcome screen by providing:

- a bike name for your BIKE+ all in one
- a valid e-mail address: a validation code will be sent to you in order to complete the registration
- a 4-digit PIN code that you set as security for your BIKE+ all in one



- ▲ **NOTE:** the bike name will change at the first reboot of the bike.
- ▲ **INTERNET CONNECTION NEEDED** to perform the registration

4.bitride HMI for BIKE+ all in one

Even if it is possible to use **BIKE+ all in one** with out the **bitride** app, you can access more features if you connect it to a smartphone.

To access the "ride" screen tap the hamburger menu on the upper left side of the screen and select RIDE. To access the online dashboard please connect to your **BIKE+ all in one** by following the instruction in 3.6.

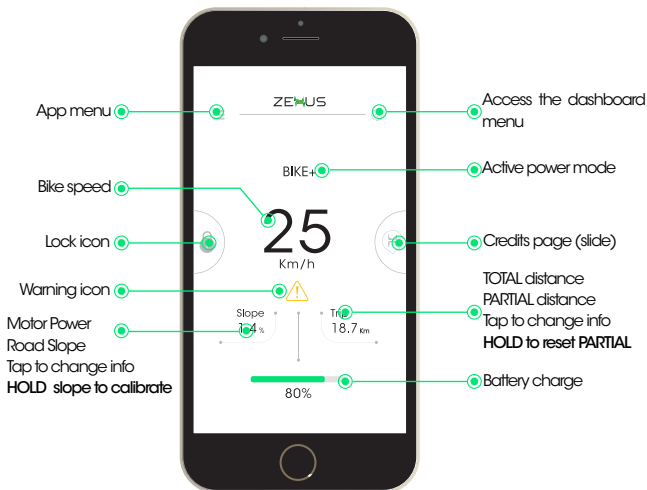


Figure 7: **bitride** dashboard for **BIKE+ all in one**

4.1 Using the dashboard (see Figure 7)

the **bitride** dashboard for **BIKE+ all in one** displays the following information:

- Bike SPEED [Km/h] or [mi/h]
- Total ODO [Km] or [mi]
- Partial ODO [km] or [mi]
- Road slope [%]
- Motor Power [W]
- State of charge of the battery [%]
- Active power mode (see 4.7)
- Warning icon (see 4.9)

4.2 Calibrate the slope sensor on your BIKE+ all in one

BIKE+ all in one features an advanced slope sensor that is very important to obtain the correct and pleasant behavior while using some of the power modes (see 4.7).

▲ NOTE: please check the calibration of the slope sensor carefully at the first connection. A wrong calibration could lead to a non correct and unpleasant behavior of your bike.

In order to calibrate the slope sensor, please place your bike on a flat surface (0% slope). Then tap and hold (3 sec.) the road slope information on the dashboard in order to start the calibration process. Please refer to Figure 8 for further information.

▲ CAUTION: please DO NOT MOVE the bike during the calibration procedure! Errors may occur if the bike is moved or inclined during the process.

4.3 Lock / Unlock your BIKE+ all in one

BIKE+ all in one features an electronic lock that can be enabled by swiping to the right the lock icon .

This function makes the rear wheel of your bike stiffer and very difficult to pedal on. This function is available when the battery charge is greater than 20% AND the bike is at 0 km/h. This function is unavailable while charging your BIKE+ all in one. Once the lock is activated this will work even if you disconnect your smartphone from the bike.

To unlock the bike, just connect your smartphone and swipe to the right the unlock icon.

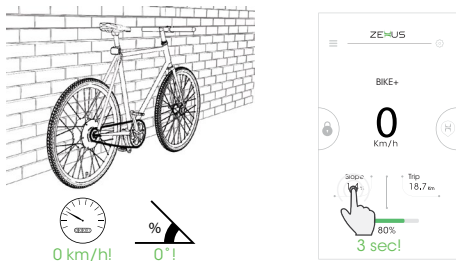


Figure 8: slope sensor calibration

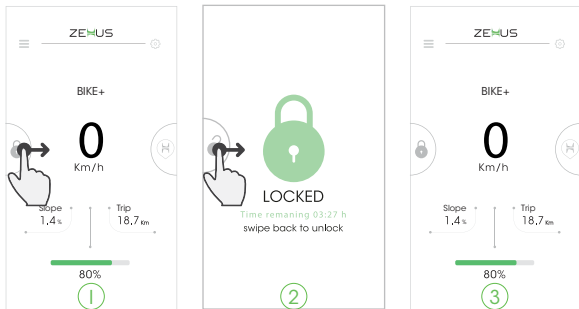


Figure 9: locking / unlocking BIKE+ all in one

▲ **NOTE:** the embedded electronic lock will not prevent thieves from stealing your bike. Please use an additional mechanic lock during prolonged stops.

▲ **NOTE:** the embedded electronic lock drains a little energy from the battery. You can check the remaining energy on the lock screen of your smartphone.

4.4 Dashboard menu (Figure 10)

In this screen you can select the desired power mode (see also 4.6, 4.7), the amount of regenerative brake (KERS) and the units you prefer to display speed and distance.

Furthermore, you can perform the factory reset of your bike by sliding the factory reset icon on the right side of your screen.

For any modification performed in this screen the bike must be still (speed must be 0 km/h).

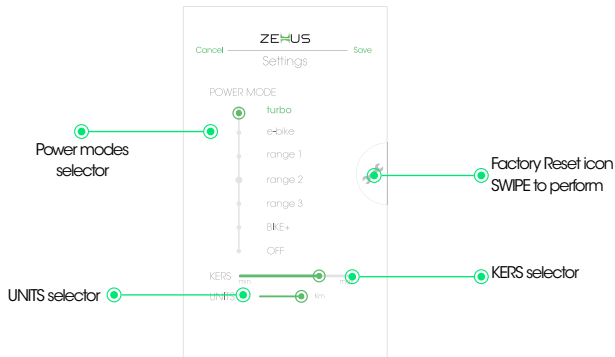


Figure 10: dashboard menu

4.5 Performing a factory reset on BIKE+ all in one

In order to perform a factory reset on your BIKE+ all in one, please swipe to the left the factory reset icon. The app will ask you to insert the pin of your bike to perform the factory reset.

This procedure will reset the bike name, the bike PIN and the e-mail associated with your BIKE+ all in one.

4.6 Change BIKE+ all in one power modes on the go

It is possible to switch between different power modes on the go by swiping up and down the power mode information box in the dashboard screen.

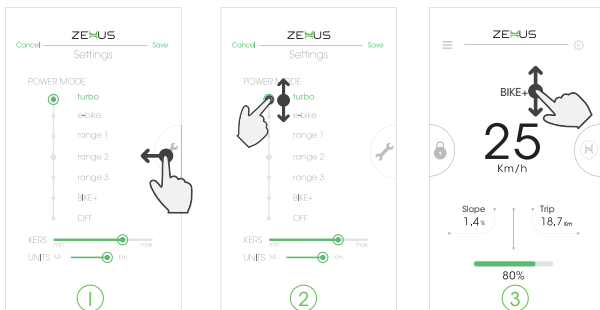


Figure 11: Factory reset (1), power mode selection (2) and switching power modes on the go (3)

4.7 BIKE+ all in one power modes

Your BIKE+ all in one let you choose among different power modes. Each power mode has a different assistance factor and a different pedalling range.

There are 7 available power modes: turbo, e-bike, range 1, range 2, range 3, BIKE+ and OFF. Here you can find a detailed description of BIKE+ all in one power modes:

- o turbo: this power mode is a regular pedelec (or Electric Pedal Assisted biCycle). The motor assists you up to 25 km/h and with a maximum power of 250 W, depending on the speed of the bike and on the effort on the pedals. With this power mode you can cover up to 35 km*.

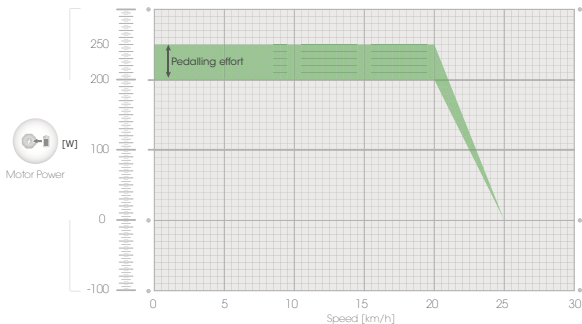


Figure 12: motor assistance in turbo power mode

- o e-bike: this power mode is a regular pedelec (or Electric Pedal Assisted biCycle). The motor assistance is softer than the turbo mode and the maximum power is slightly lower than 250W.

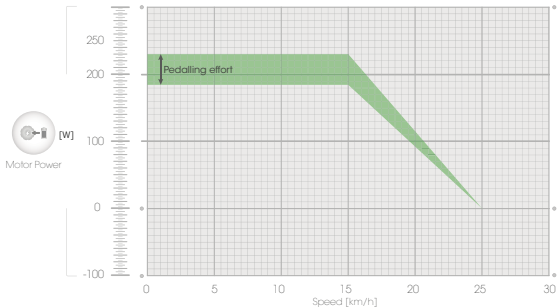


Figure 13: motor assistance in e-bike mode

- o range 1: this power mode is **Hybrid**: BIKE+ helps you when you ride at lower speed and during accelerations, while it recover energy while you are pedalling at higher constant speed. This power mode is **sensitive to the road slope**: running uphill will lead the motor to assist up to 250W, while running downhill will lead the motor to generate up to 500W automatically. This power mode allow your range to increase up to 55 km*.
- o range 2: this power mode is **Hybrid** and it is **sensitive to the road slope** (see range 1). The motor assistance is softer than range 1 and the cut off speed is a bit lower, so your range can increase up to 70 km*.

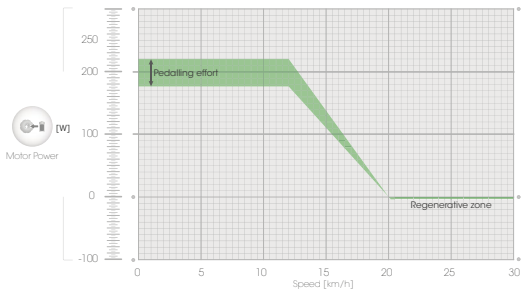


Figure 14: motor assistance / regenerative zone in range 1 mode

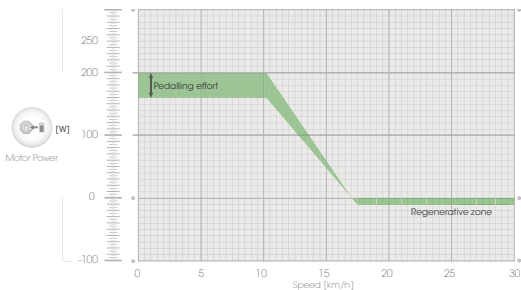


Figure 15: motor assistance / regenerative zone in range 2 mode

- range 3: this power mode is **Hybrid** and it is **sensitive to the road slope** (see range 1). The motor assistance is softer than range 2 and the cutoff speed is limited, so your range can increase up to 90 km*.

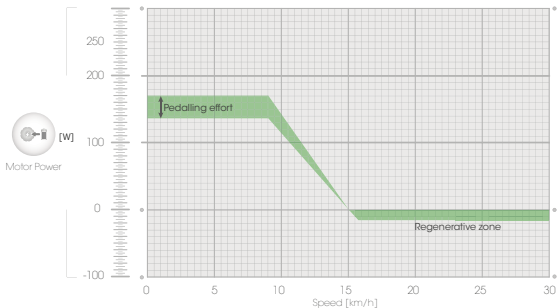


Figure 16: motor assistance / regenerative zone in range 3 mode

- BIKE+: this power mode is **Hybrid** and it is **sensitive to the road slope** (see range 1). This mode is **non plug-in**: thanks to Zehus patented technology, BIKE+ all in one changes the motor map automatically and continuously in order to keep the battery charged. The motor assistance and the cutoff speed both depends on the battery charge, the input from the pedals (speed-torque) and the road slope. In this power mode you never need to charge the batteries (see Chapter 5 for more information).
- OFF: in this power mode, the motor is completely turned OFF. The regenerative braking is turned off too. In this power mode you never need to charge the batteries (see Chapter 5 for more information).

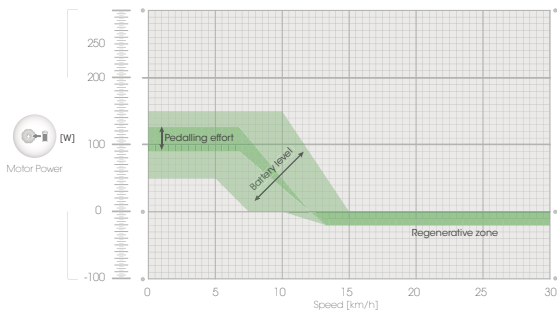


Figure 17: motor assistance / regenerative zone / battery level sensitivity in BIKE+ mode

The default power mode is "Turbo" (Figure 12).

4.8 Influences on BIKE+ all in one range

The range of BIKE+ all in one depends on many factors as:

- Chosen operational mode
- Tire pressure
- Road conditions and route profile
- Head winds and ambient temperature
- Weight of the driver and luggage
- Age and using condition of the battery pack
- Rider pedaling effort

It is very difficult to predict a range for the different operational modes indicated above.

4.9 BIKE+ all in one warning icons

Warning icons let you understand when there is something wrong with your **Bike+ all in one** functioning (see 4.1). If you experience a problem that prevent you from using your **Bike+ all in one** correctly, please contact our customer care on our website or at info@zehus.it! Icons can appear both yellow (warning) or Red (severe risk or damage). The warning icons that can appear on your **bitride** app in the dashboard are:

Temperature WARNING



This icon appears when the temperature inside the hub reaches a critical level. The system will automatically set the amount of power not to be damaged.



Connectivity WARNING

This icon appears when there is a connectivity problem with the bike. Even if the bluetooth is connecting to the bike, it could be possible to get this warning.

Mounting WARNING



This icon appears when you mounted your Bike+ all in one upside down. Please flip it by 180° horizontally. Please refer to the mounting manual for further information.



Pedaling sensor WARNING

This icon appears when there is a problem with the pedaling sensor. Please contact us to get this component fixed!



Charging WARNING

This icon appears when you are charging BIKE+ all in one.



Slope sensor WARNING

This icon appears when the slope sensor is non calibrated correctly. Please perform again a calibration for the system (see 4.2)



Battery WARNING

This icon appears when there is a problem with the battery pack. Please contact us to have your battery pack fixed!



Powertrain WARNING

This icon appears when there is a problem with the electric powertrain. Please contact us to get the powertrain fixed!



WARNING icon

Tap on this generic icon to be prompted for the problem / useful info (e.g. activation needed, scheduled maintenance, etc.)

5. Notes on the battery pack

The battery pack is protected against deep discharging, overcharging, overheating and short circuit through the Battery Management System (BMS). In case of dangerous situation an electronic protection will switch the battery pack off.

Although the battery pack is protected from deep discharging, it is recommended to fully charge the battery pack before the first use of the bike.

5.1 Charging BIKE+ all in one battery pack (see also 2.3)

The battery pack can be recharged at any time without shortening its lifespan. Interrupting the charging process does not damage the battery pack.

▲ CAUTION: DO NOT charge a damaged BIKE+ all in one. Please refer to an authorized Zehus dealer.

In order to recharge **BIKE+ all in one** connect the charger plug to the charging connector located on the right side of the **BIKE+ all in one** axle. Then connect the charger plug to an outlet (see 2.3, Figure 6).

▲ CAUTION: check the mains voltage: it must match the one indicated below the charger itself!

The charging procedure will start as soon as the charger is connected both to **BIKE+ all in one** and to the mains. While charging, the LED located on the charger is red.

▲ Note: the system is deactivated while charging the battery pack.

When the charging procedure is over, the LED located on the charger turns green. Disconnect the charger from the mains and from **BIKE+ all in one**. Be careful when touching the charger, it can heat up considerably while charging.

▲ Note: Remember to seal the connector on BIKE+ all in one with the proper protection-cap (see Figure 1). Using BIKE+ all in one without the protection cap will void the warranty.

5.2 Battery pack storage conditions

BIKE+ all in one has to be stored at the right temperature. The battery pack life can be maximized by following the rules for a correct storage and handling.

In case of malfunctioning your battery pack will have to be replaced. Please refer to a Zehus retailer to have your battery pack replaced.

▲ Note: when not using the bike for long periods it is recommended to charge the battery pack to 60% and to check the battery condition at least every 6 months. Before using the bike after a long period it is recommended to fully charge the battery.

Store BIKE+ all in one in a well-ventilated location, dry if possible. Protect the hub from moisture and water. The optimal storage temperature is +20°C and the bike must be stored between -40°C and +60°C.

It is preferred not to leave the bike under the direct sunlight during hot summer days.

6. Technical data

Drive unit		
Rated power	W	250
Maximum torque	Nm	20
Battery pack		
Rated Voltage	V	29.2
Rated Capacity	mAh	5300
Energy	Wh	154.8
HUB		
Weight (~)	Kg	3.2
Operating Temperature	°C	-20°C to +70°C
Storage Temperature	°C	-40°C to +60°C
Charging Temperature	°C	-20°C to +60°C
Degree of protection		IP54
Charger		
Voltage Input	V	100~240 V, 50/60 Hz
Output voltage	V	31.2
Charging current	A	1.5
Charging time (~)	h	3

7. Maintenance and Service

▲ CAUTION: *Every maintenance procedure (even cleaning BIKE+ all in one) must be done with the "BIKE" mode enabled. On the contrary, severe injury may occur.*

7.1 Cleaning BIKE+ all in one

Please, keep BIKE+ all in one hub clean. Clean it with a soft, damp cloth. BIKE+ all in one may not be immersed in water or cleaned with high pressure cleaner.

DO NOT use a high pressure water jet to clean BIKE+ all in one.

For service, firmware upgrades, battery substitutions and repairs on the hub, please refer to authorized Zehus dealers.

7.2 After-sales Service and Customer Care

In case of questions concerning BIKE+ all in one or one of its components please read the FAQ on the Zehus website (www.zehus.it). In case you do not find an answer, please send an e-mail to info@zehus.it.

When contacting Zehus for an issue related to BIKE+ all in one please provide **one** of the following information together with the problem description:

- Registration e-mail for your BIKE+ all in one
- Bike name
- Bike MAC address (it can be found in the bluetooth option on your smartphone)

7.3 Transport

Items with internal battery packs are subject to Dangerous Goods Legislation requirements. Private users can transport such undamaged items by road without further requirements.

When being transported by commercial users or third parties (e.g. air transport or FWD agencies), special requirements on packaging and labeling must be observed (e.g. ADR regulations). If necessary, an expert for hazardous materials can be consulted when preparing the item for shipping.

Dispatch BIKE+ all in one only when the housing is undamaged.

Tape or mask off the 6-pin connector in such a manner that the connector itself cannot be damaged or broken. Inform your parcel service that the package contains dangerous goods. Please also observe the possibility of more detailed national regulations. In case of questions concerning transport of BIKE+ all in one, please refer to an authorized Zehus dealer.

Bicycle dealers can also provide suitable transport packaging.

7.4 Disposal

BIKE+ all in one and all its components should be sorted for environmental-friendly recycling.

Only for EC countries:

According to European Guideline 2012/19/EU, electrical devices/tools that are no longer usable, and according to European Guideline 2006/66/EC, defective or used battery packs/batteries BIKE+ all in one must be collected separately and disposed of in an environmentally correct manner.

Subject to change without notice





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