BLUEPED
TUNING CHIP FOR YAMAHA E-BIKES
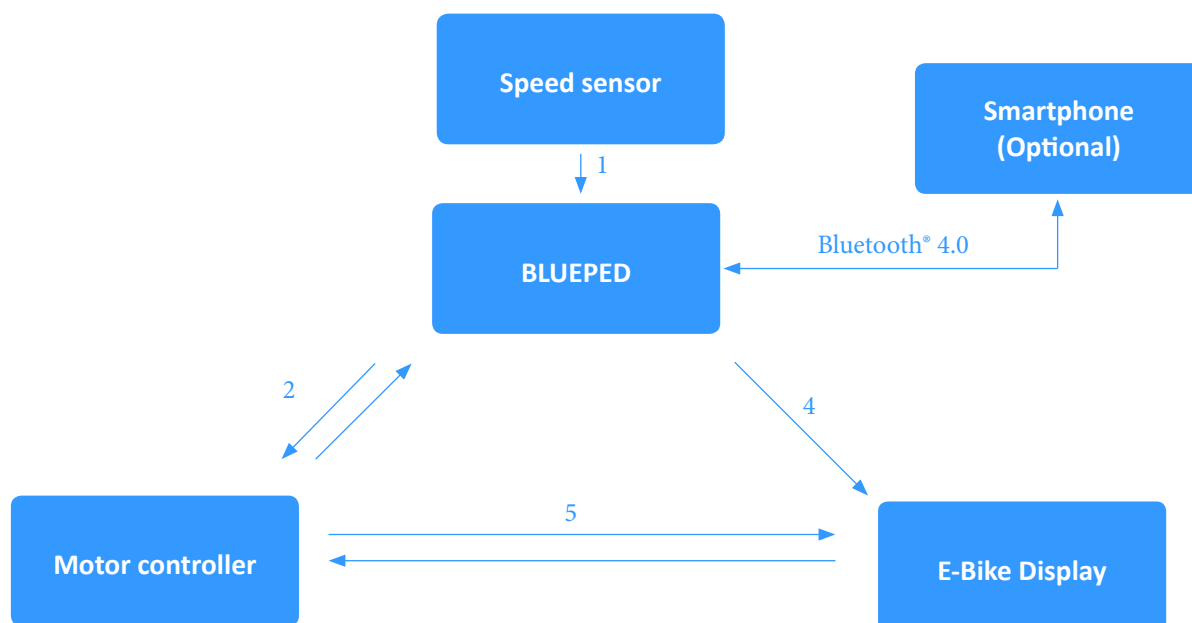
MANUAL / VERSION 1 / JULY 2016

IMPORTANT HINTS

The use of the BLUEPED module is only allowed in private, gated areas, for example for sports or marketing purposes. It manipulates the maximum speed settings of your Pedelec or S-Pedelec, set by the manufacturer, which is prohibited by the road/streets' laws. The BLUEPED module manipulates the speed sensor signal and therefore the total distance display your E-Bike. The use of the BLUEPED module falls under own risk. No liability is assumed for any present and future damage caused to property and / or persons by the installation / removal and / or use. The guarantee of the E-Bike is completely extinguished by the use or application of the BLUEPED, because the installation or use represents a modification or manipulation of the E-Bikes (Pedelec or S-pedelec). If your E-Bike has an operating license, it will extinguish. Always drive carefully, use protective clothing such as helmets or protectors and do not bring yourself and others in danger. Talk beforehand with your insurance company, so that all areas of your actions are protected. Please note further that other statutory provisions apply in other countries. This is especially true when you are driving with the E-Bike in your holidays. Please inform yourself beforehand about possible restricitons and keep principles in mind.

CONTENT

1. MODE OF OPERATION

```
                    ┌─────────────────┐
                    │  Speed sensor   │                ┌──────────────────┐
                    └─────────────────┘                │   Smartphone     │
                             │ 1                        │   (Optional)     │
                             ▼                          └──────────────────┘
                    ┌─────────────────┐        Bluetooth® 4.0      ▲
                    │    BLUEPED      │ ◄───────────────────────────┘
                    └─────────────────┘
                      ╱          ╲
                   2 ╱            ╲ 4
                    ╱              ╲
       ┌──────────────────┐        ┌──────────────────┐
       │ Motor controller │ ──5──► │  E-Bike Display  │
       │                  │ ◄───── │                  │
       └──────────────────┘        └──────────────────┘
```

The BLUEPED module is interposed between display/speedsensor and the motor. It measures the actual speed (1) and generates a fake speed signal (2) for the motor controller. After launching the E-Bike the BLUEPED module, it cuts the communication between motor and E-Bike display (5) to send its own data to the display (4).

The manufacturers motor support limitation at 20 km/h or 45 km/h is removed by generating a lower fake speed (2). Therefore the distance, total distance, speed, maximum speed and average speed values, calculated by the motor controller, are wrong. The BLUEPED calculates the actual data and sends it to the E-Bikes display (4).

2. BLUEPED module
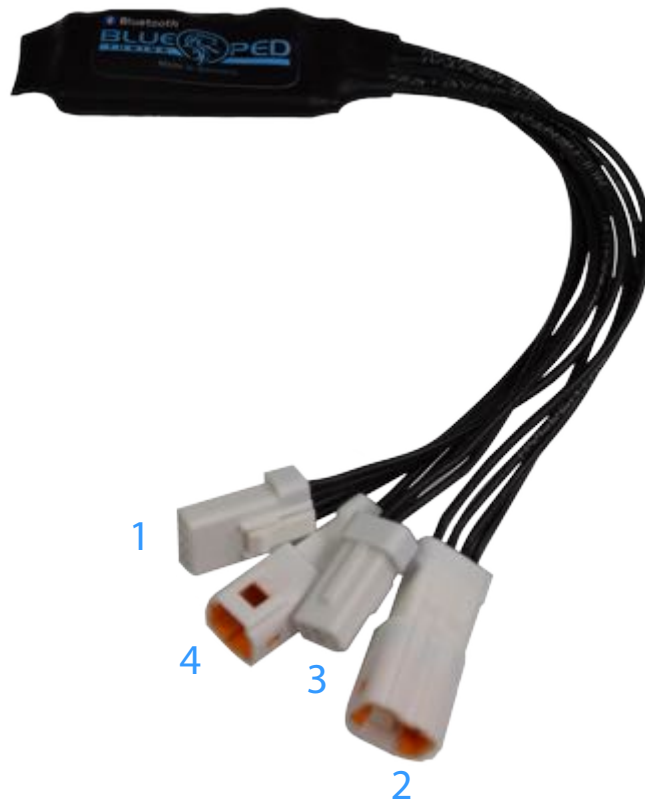
Technical specifications	
Dimensions	4,5x2,5x0,8cm
Cable length	11cm
Power dissipation	50mW
Radio range	10m
Radiocommunication	Bluetooth® 4.0
Splashproof	Ja

| Connector connected with...	
1	the display
2	the motor display jack
3	the speed sensor
4	the speed sensor motor jack

3. BLUEPED APP FOR ANDROID

The application requires Android version 5.1 or higher.

3.1 Home screen - SEARCH

The app will search for BLUEPEDs right after its launch. If a module is found, name, unique ID and signal strength are shown on the display. Furthermore, the application shows, if module and smartphone are paired. If there is no signal over 3 seconds, the module are „greyed out" and can no longer be selected.

If a smartphone connects to a module the first time, a PIN code has to be entered. The default PIN is „000000".
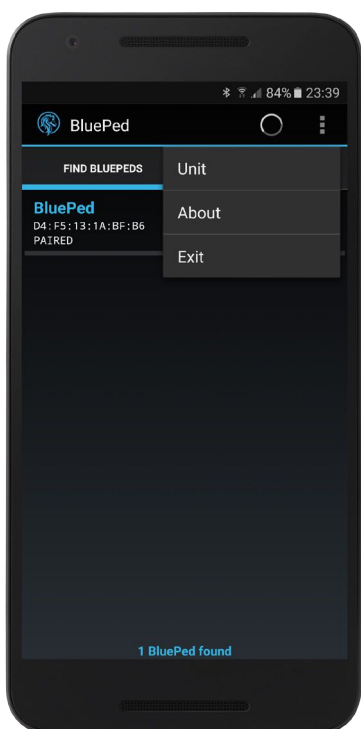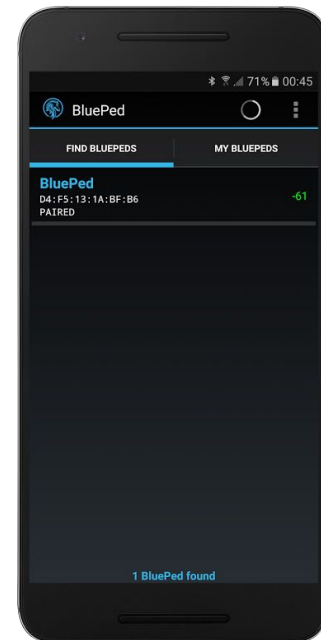
Home screen – OPTIONS

A tap on "Unit" opens a menu where the speed measurement unit can be selected from km/h and mph. A tap on "About" shows the current version of the app.
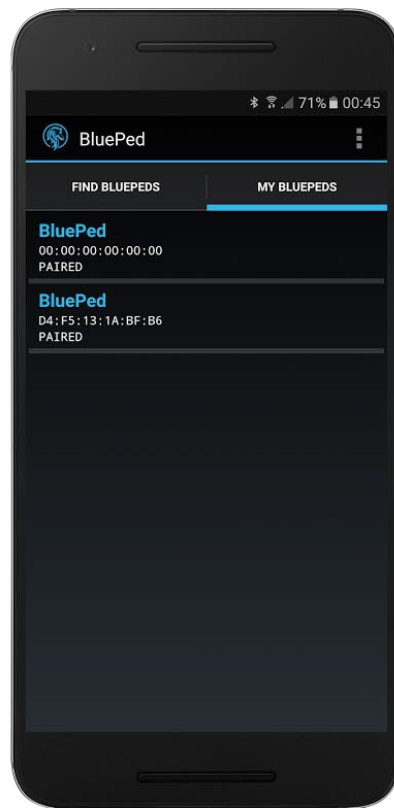
Home screen - MY BLUEPEDS

The database saves all data of the BLUEPEDs that were connected to the app, so the data can be viewed without beeing connected to a specific BLUEPED. The data the can not be changed by the user. The list in this view shows all BLUEPEDs in the database. The app adds BLUEPEDs that were never connected to the app and updates the data of BLUEPEDs that were already connected before. A tap on a BLUEPED opens the main screen, that shows the saved data. If the app starts the first time, a demo BLUEPED with the address „00:00:00:00:00:00" is added to the database. With a long tap a BLUEPED can be removed from the list.

3.2 MAIN SCREEN - SPEEDOMETER

As soon as the app is connected to the BLUEPED, the BLUEPED data is read by the app. After all the data is read, the controls are activated and settings can be changed.

Important
After installing the BLUEPED, the E-Bike total distance has to be set to the module. That can be done with a **long** tap on the total distance label. To repeat that process, for example, if the module is installed in another E-Bike, the label has to be **long** tapped several times.

The color of the the speed label changes from blue to red, when the E-Bike light is turned on.

Controls
Max speed: The actual speed calculated with user set wheel size.
Average speed: The actual average speed
Duration: Riding time in hours and minutes.
Distance: Actual distance.
Total distance: Actual total distance.

Reset
Max speed, average speed, duration and distance can be reset by a **long** tap on the specific label. A **long** tap on the speed label resets max speed, average speed, duration, distance, max RPM, average RPM, max PWR and average PWR.

STD: Current motor support mode of the E-Bike
Always ON/OFF: Shows if the tuning is activated automatically after turning on the E-Bike.
Temporary ON/OFF: Shows if the tuning is currently activated. Can only be activated in the app, if tuning activation with "Light:On" or "Mode:HIGH" is not on.
RPM: Current revolutions per minute
ØRPM: Average revolutions per minute
MRPM: Maximum revolutions per minute
Battery: Battery level in %
PWR: Current motor power in %
ØPWR: Average motor power in %
MPWR: Maximum motor power in %
Range: E-Bike calculated range
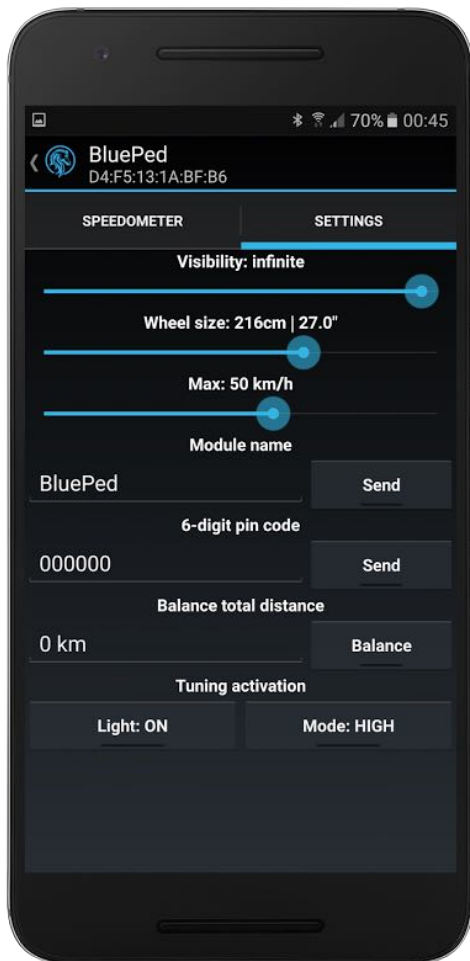**%perKM:** Battery level loss in % per km
Ø%perKM: Average battery level loss in % per km (average of last 5 km)
B-Range: BLUEPED calculated range (Ø%perKM **/** battery level**)**

3.3 MAIN SCREEN - SETTINGS

Visibility: Can be set to values between 0 and 240 seconds or „infinite". If visibility is set to 0, the app will no longer be able to find the module after disconnecting or restarting the E-Bike.

Wheel size: Speedometer calculation is based on this value.

Max: Sets the maximum motor supported E-Bike speed.

Module name: Advertising name with maximum 9 characters.

PIN: : Consists of exactly 6 digits. If too few digits are entered, the value will be fillled with zeros. (1 = 000001; 345 = 000345)

Tuning activation

Light:ON - Tuning is activated if E-Bike headlight is turned on.

Mode: HIGH - Tuning is activated if the motor support mode is HIGH.

If one of the buttons is active, tuning activation with the "Temporary" button in the app is not possible.

## Balance total distance

See chapter 5.

4. BLUEPED APP FOR IPHONE/IPAD

The iPhone/iPad app requires ios 9.2 or higher.

4.1 Home screen

The app will search for BLUEPEDs right after its launch. If a module is found, name, unique ID and signal strength are shown on the display. If there is no signal over 3 seconds, the module is deleted from the list.

A tap on the BLUEPED connects the app. If the device connects the first time the PIN has to be entered in a prompt.
The default PIN is "000000".
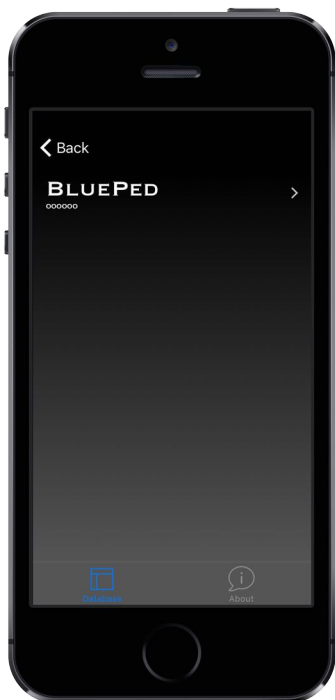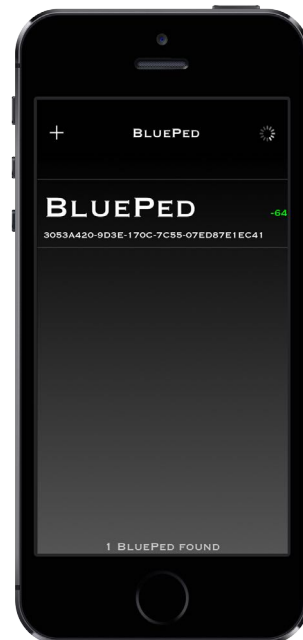
4.2 Info screen

A tap on the + symbol in the top left corner opens the Info screen. A list with all already connected BLUE PEDs is shown. With a tap on the arrow the speedometer screen is opened and the last received data of the specific BLUEPED is shown. A demo BLUEPED is generated if the app starts the first time. You can delete any BLUEPED by swiping from left to right on the cell and tapping "delete".
The „About" option shows the current app version.

4.3 SPEEDOMETER - SCREEN

As soon as app and BLUEPED are connected, the application will read out the data of the module. After all the data is read, the controls are being activated and you can change the settings.

Important
After installing the BLUEPED, the E-Bike total distance has to be set to the module. That can be done with a **long** tap on the total distance label. To repeat that process, for example if the module is installed in another E-Bike, the label has to be **long** tapped several times.

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The color of the the speedometer changes from blue to red, when the light is turned on.

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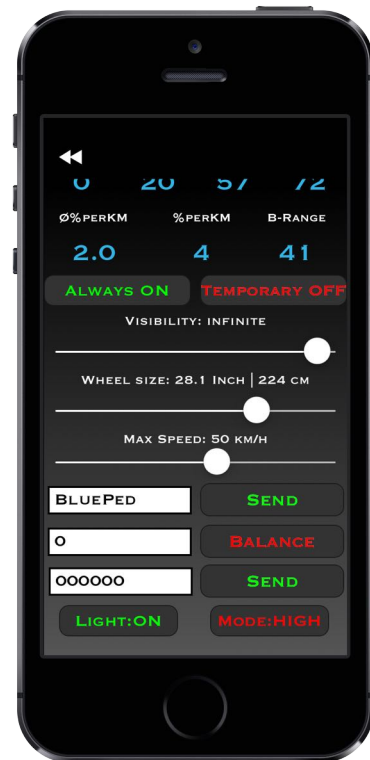
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Balance total distance
See chapter 5.

5. TIPS AND TRICKS

- The app will automatically connect to the last connected module. By taping on „Back" you can deactivate the automatic connecting.
- If the connection fails, the app will automatically try o reconnect to the module. The screen will show „Reconnect..."
- The BLUEPED can be reset to factory settings by pressing the E-Bike light button 10 times with in 8 seconds.
- The visibility can be set to infinite by taping the E-Bike light button 5 times within 8 second (if, for example, the visibility was set to 0 seconds before)
- The speedometer data is only saved permanently, if the E-Bike speed is lower than 15 km/h. If the E-Bike is turned off at a speed, that is higher than 15 km/h, the current speedometer data is not saved permanently.
- The iOS app disconnects, if the app is running in the background. The Android app remains connected.
- Data is send from BLUEPED to app 3 times a second.
- The total distance must not be balanced.
- The BLUEPED can be named after a smartphone, for example "Samsung"
- The BLUEPED can not be found, if visibility is set to 0 seconds.
- Data, that is reset in the smartphone app, will also be reset in the E-Bike display and vice versa.
- The maximum speed can only be reset by the E-Bike hand control if the E-Bike speed is 0 km/h.
- The same BLUEPED can have different UUIDs on different Apple devices. Also the Android and iOS UUIDs are not the same.

Balance total distance
The E-Bike motor controller receives the fake speed signal from the BLUEPED, that's why its calculated speedometer data, including total distance, is wrong. To be exact, the controller calculated is lower than the actual total distance. The difference between fake and actual total distance is shown in the corresponding label. By pressing the "Balance" button, the BLUEPED generates a speed signal, while the E-Bike is not moving. This process can be stopped by moving the E-Bike or pressing the "Balance" button again. If the difference is 0 the process stops also. The lower the "Max" value, the lower the distance that has to be balanced.

6. ANHANG

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