



## Display DS20 - user's guide

### Simplified Declaration of Conformity

The simplified EU declaration of conformity referred to in Article 10(9) shall be provided as follows:

Hereby, Suzhou Wanjia Electric Co., Ltd declares that the radio equipment BLE Display is in compliance with Directive 2014/53/EU.

Address: #157 West Shihu Road Suzhou China

This product does NOT contain the substances restricted by the RoHS legislation at levels over the maximum concentration values.

This product is fully CE certified, it also includes EMC certification.

This product can be used across EU member states.



## Technical information about display DS20

1. **Part No.:** DS20
2. **Type:** SIDE LCD DISPLAY
3. **Environmental regulation:** RoHS
4. **Essentials:**

ITEMS	CHARACTERISTICS	REMARKS
Nominal voltage	36.0V	
Operating temperature	-20 ~ 40 deg C	15 ~ 75% RH
Bluetooth Operation Frequency	2.4~2.48 GHz	
Bluetooth Transmit Power	1dBm Typ.	

5. **Waterproofing level** IP65

6. **Handle diameter:**

Control part  22.2mm

\* Suggested torque limit for assembly : 0.6 N.m  
(Including the bolt for preventing slip off)

7. **LCD view angle ( $Cr \geq 1.5$ ) :**

Direction of 12 o'clock, 40 degree

Direction of 6 o'clock, 55 degree

Direction of 3 o'clock, 50 degree

Direction of 9 o'clock, 50 degree

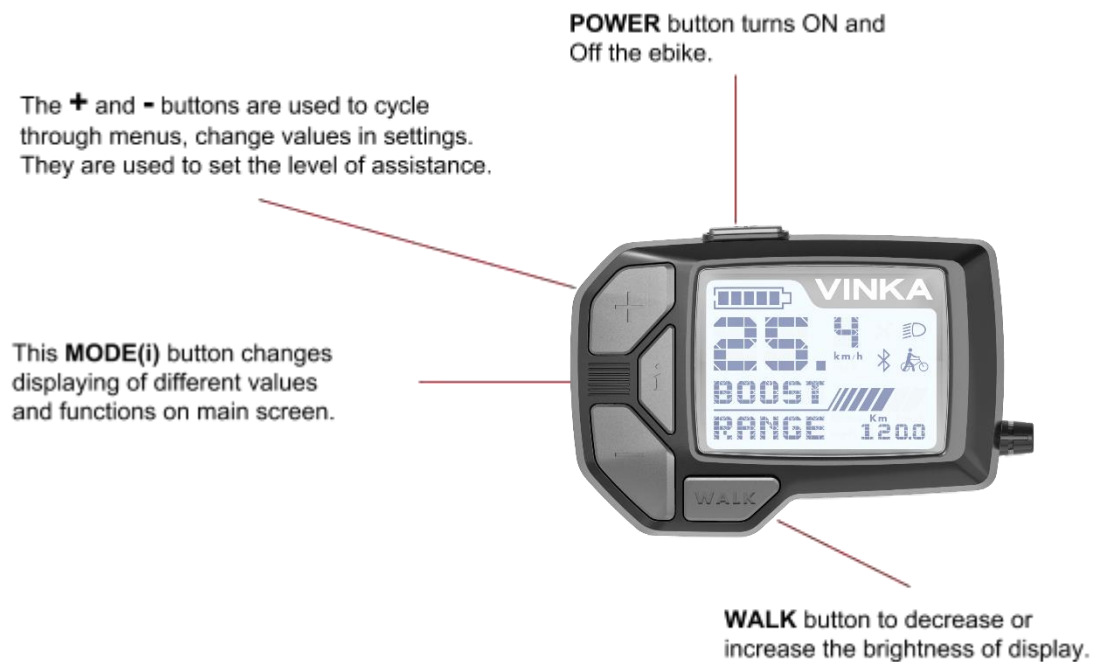
## Display DS20

DS20 is an LCD side display providing standard functions of controlling the ebike. Except this the additional functions are included such as Shifting Calibration or Shifting Parameters. This user's guide explaining both the basic and additional features.

### Main Screen overview and control buttons

- **Characteristic of the control buttons**

To operate DS20 the controller must be described first. DS20 is equipped with 5 integrated buttons. See description below:



- **Characteristic of the display**



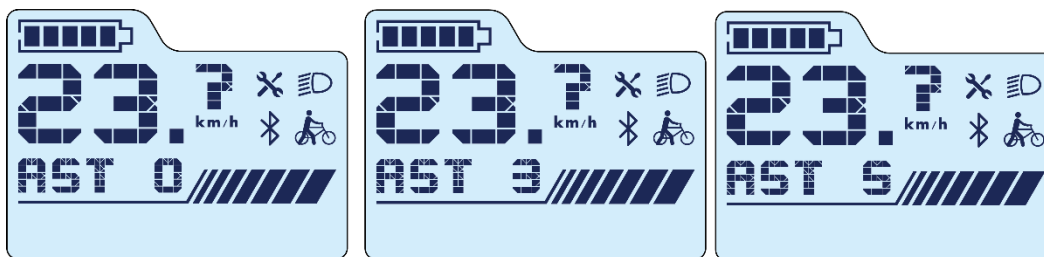
## 8.1. Operating DS20

### 8.1.1. Start UP - Turn Off

Press POWER button for a longer period of time to start the system. The display turns on and several information is shown. To turn the system Off press POWER button for a longer period of time once again. In case there is no activity longer than 5 minutes the system shuts down itself.

### 8.1.2. Support level adjustment

The support level is changed by pressing the + or - button. There are 6 assistance levels. These are 0 assistance, 1, 2, 3, 4 and 5 assistance. When there is no bar highlighted (1, 2, 3, 4, 5) the 0 assistance is selected. The 0 level means no motor support.



### 8.1.3. TRIP, ODO, AVG, MAX, CAD modes

Press **MODE(i)** button shortly to switch different modes. Press **MODE(i)** button repeatedly to cycle through different modes.

- ODO - The distance ever travelled
- AVG - average speed reached
- MAX - maximum speed reached
- CAD - pedalling cadence
- TRIP - The distance travelled during the journey

**note: once you are in a TRIP mode by pressing MODE button for a longer period of time the TRIP information is reset to zero.**

### 8.1.4. Display brightness

Press + button for a longer period of time to increase or decrease the backlight brightness of the display.

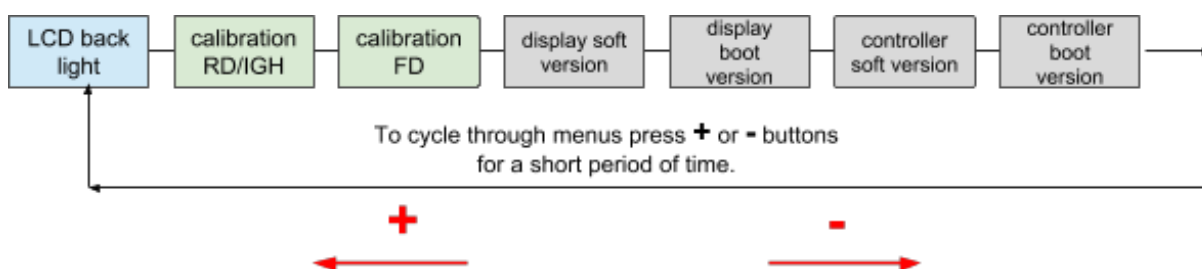
### 8.1.5. Walk support

To use WALK support press **MODE(i)** button once and shortly then immediately press and HOLD **WALK** button. While holding **WALK** button the e-bike is in the WALK support mode. This is also notified by a walker.



## 8.2. Settings

The Settings contains several submenus allowing setting up some features as described below. To enter SETTINGS press **MODE(i)** and **-** buttons together for a longer period of time. To leave SETTINGS press **MODE(i)** for a longer period of time once again.



### 8.2.1. BLG - LCD Backlight

This feature allows to set up the intensity of backlight. The value of backlight has 5 levels.



Press **MODE(i)** button shortly to activate the **Backlight** setting. Press the **+or-** button to change current value of LCD Backlight.

Press **MODE(i)** for a longer period of time to confirm the value of BLG - LCD Backlight.

### **8.2.2. Other settings**

- Display soft version
- Display boot version
- Controller soft version
- Controller boot version

## 9. Error indication on display

Error code		Advice for user	Advice for after-sales service
<b>0x90</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Torque sensor issue	- Done by user a. Pedal reverse b. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change torque sensor - Change motor controller unit - Change motor controller unit and torque sensor
<b>0x11</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Torque sensor issue	- Done by user a. Pedal reverse b. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change torque sensor - Change motor controller unit - Change motor controller unit and torque sensor
<b>0x92</b>	<b>Appearance</b> - Cadence mode appears on the display <b>Description</b> - Torque sensor issue	- Visit the nearest after-sales service	- Change torque sensor - Change motor controller unit - Change motor controller unit and torque sensor
<b>0x13</b>	<b>Appearance</b> - Report error only <b>Description</b> - Gearsensor issue	- Visit the nearest after-sales service	- Change gearsensor
<b>0x15</b>	<b>Appearance</b> - Report error only <b>Description</b> - Speedsensor issue	- Done by user a. Adjust the position of speedsensor and steel magnet - Visit the nearest after-sales service	- Check "Done by user" routine again - Change speedsensor and adjust the position of speedsensor and steel magnet
<b>0x18</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Cadence sensor issue	- Visit the nearest after-sales service	- Change cadence sensor
<b>0x20</b>	<b>Appearance</b> - Reduce motor output <b>Description</b> - High temperature of the motor	- Done by user a. Reduce assist level - Visit the nearest after-sales service	- Change motor controller unit
<b>0xA1</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor overheated	- Done by user a. Turn off the system and wait for the motor cool down - Visit the nearest after-sales service	- Check "Done by user" routine again - Change motor controller unit

Error code		Advice for user	Advice for after-sales service
0x22	<b>Appearance</b> - Reduce motor output <b>Description</b> - Temperature sensor issue	- Visit the nearest after-sales service	- Change motor controller unit
0x25	<b>Appearance</b> - Reduce motor output <b>Description</b> - High temperature of the motor	- Done by user a. Reduce assist level - Visit the nearest after-sales service	- Change motor controller unit
0x32	<b>Appearance</b> - Motor output stopped <b>Description</b> - Lora communication error	- Done by user a. Reboot the system and check connection - Visit the nearest after-sales service	1. Check the connection between lora and motor 2. Change Lora module 3. Change motor controller unit
0xA6	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor overheated	- Done by user a. Turn off the system and wait for the motor cool down - Visit the nearest after-sales service	- Change motor controller unit
0xA7	<b>Appearance</b> - Motor load default value <b>Description</b> - Motor internal flash error	- Done by user a. Reboot the system - Visit the nearest after-sales service	- Reset motor parameter to default value with dealertool. - Change motor controller unit
0x80	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor communication issue	- Done by user a. Turn e-bike OFF/ON b. Check the connection between display and motor - Visit the nearest after-sales service	- Check "Done by user" routine again - Check cables condition - Change display - Change motor controller unit - Change display and motor controller unit
0x01	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor communication issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change display - Change motor controller unit - Change display and motor controller unit
0x40	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change motor controller unit



<p><b>0x41</b></p>	<p><b>Appearance</b> - Motor output stopped <b>Description</b> - Motor issue</p>	<p>- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service</p>	<p>- Check "Done by user" routine again - Change motor controller unit</p>
<p><b>0xC2</b></p>	<p><b>Appearance</b> - Motor output stopped <b>Description</b> - Motor issue</p>	<p>- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service</p>	<p>- Check "Done by user" routine again - Change motor controller unit</p>

Error code		Advice for user	Advice for after-sales service
<b>0x43</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change motor controller unit
<b>0xD0</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Battery issue	- Done by user a. Turn e-bike OFF/ON b. Check if the battery connect well - Visit the nearest after-sales service	- Check "Done by user" routine again - Update ebike information - Check cables condition - Change display - Change motor controller unit - Change battery - Change display, motor controller unit and battery
<b>0x51</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Battery issue	- Done by user a. Turn e-bike OFF/ON b. Charge for the ebike - Visit the nearest after-sales service	- Check "Done by user" routine again - Update ebike information - Check cables condition - Change display - Change motor controller unit - Change battery - Change display, motor controller unit and battery
<b>0x52</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Motor issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Change motor controller unit
<b>0xE0</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Battery issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Update ebike information - Check cables condition - Change display - Change motor controller unit - Change battery - Change display, motor controller unit and battery
<b>0xE5</b>	<b>Appearance</b> - Motor output stopped <b>Description</b> - Display issue	- Done by user a. Turn e-bike OFF/ON - Visit the nearest after-sales service	- Check "Done by user" routine again - Update ebike information - Check cables condition - Change display - Change motor controller unit - Change display and motor controller unit