SW102 Display technical specifications

Product Name：Intelligent OLED display

Part Number：SW102

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A. Product introduce

1Product name and model

Intelligent OLED display, model：SW102

2Product Introduction

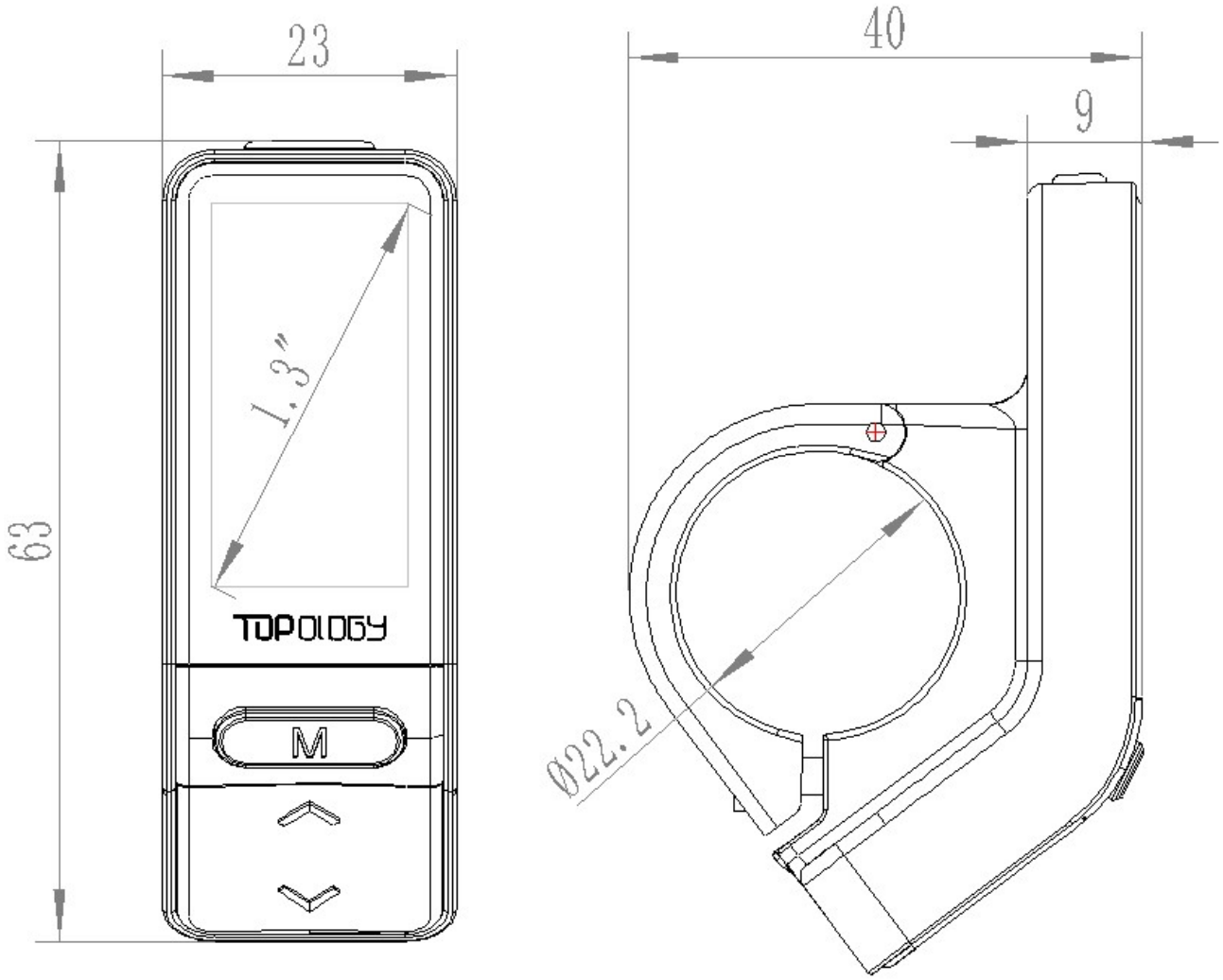
- ✧ Minimalist design, process without screw assembly
- ✧ Super contrast 1.3 -inch monochromatic OLED screen
- ✧ Excellent outdoor design with IP65 waterproof
- ✧ Micro USB serial communication port, convenient for maintenance services
- ✧ Bluetooth function is optional, which adapt for mobile phone APP

3Range of application

Suitable for electric power assist bicycle in accordance with the standard of EN15194

4 Appearance and size

The material of product shell is ABS + PC. And the material of the window is 2.5D tempered glass.



5Display coding rules

As shown as above picture, C1 is the manufacture factory code
1701 is the manufacture year and week number;
A means the hardware version;
001 is the firmware version number
0001 is the product serial number

B. Product manual

1 Specifications

①Power supply：DC 24V/36V/48V

②Rated current：12mA

③Shutdown leakage current：<1uA

④Screen specification：1.3”OLED（64*128 dots）

⑤communication method：UART（default）

⑥Operating temperature：-20° C ~ 60° C

⑦Storage temperature：-30° C ~ 80° C

⑧Waterproof level：IP65

2Functional overview

①Four buttons, easy to operate

② Use password to turn on

③Km / miles

④Speed display: Real-time speed（SPEED）、maximum speed（MAX）、average speed（AVG）

⑤Five stalls of power assist control：0-4level (OFF-ECO-TOUR-SPORT-TURBO）

⑥Six levels of electricity instructions：1-5level power，and under voltage prompts, and provide battery BMS information.

⑦Headlight indicator: Headlight on/off status indication (need information from controller)

⑧Mileage display: Subtotal mileage (TRIP), total mileage (ODO)

⑨Riding time （TRIP TIME）display

⑩UART communication port（Micro USB），convenient for system maintenance and parameter setting

⑪6km/h walk assist function

⑫ * Bluetooth communication function, setting parameter and update firmware and information mapping by mobile phone connected to the display.

⑬Error code indication

3Installation

① Open the display lock clip, set the display in the left handlebar (standard handlebar size:Φ22.2).Adjust to a position easy to operate tighten and fix the screw by M3 hexagon. Tightening torque: 0.8N.m.*__Note:__ **Damage caused by excessive torque is not covered by the warranty.**

② display connected with controller by 5 pin connector as required drawings.

4 Interface

4.1 **Boot interface**（Can be customized as required）

①Boot interface, 2seconds show when turn on the display

4.2 Basic interface

① power assist level and walk mode: 0-4 files assist level, power from low to high are: OFF、ECO、TOUR、SPORT、TURBO，and WALK mode.；

② current speed and unit show the current riding speed.

③ Subtotal mileage and unit: accurate to one after the decimal point, maximum is 999.9；

④ power indicator show 1-5 level power and under voltage. Then icon blinks when under voltage.

⑤ Headlight show when the headlight is on.

⑥ Bluetooth indicate show when the mobile phone is connected.

4.2 Function interface（I）

① riding time show ride duration. The rest information is the same as basic interface.

4.3 Function interface（II）

① average speed（AVG） show the average speed of the riding；

②maximum speed（MAX） show the maximum speed of the riding；

③ total mileage ODO show the mileage of the whole riding, maximum is 9999km.

The rest information is the same as basic interface.

4.4 setting interface

① setting interface prompt current interface is for setting

② exit item and select bar: select short press the function to exit the setting interface to return to the

basic interface; [ ] select menu；

③Unit Settings: unit settings of speed and mileage

④ wheel diameter information: wheel diameter information adapt for the display

⑤This password Settings: users can change the password or shut down (turn offthe defaulted password function)

⑥Automatic shutdown, after 5 minutes(the default) no operation on the display, it will shutdown automatically.

⑦ speed limitation information: The allowed maximum speed information of the bike

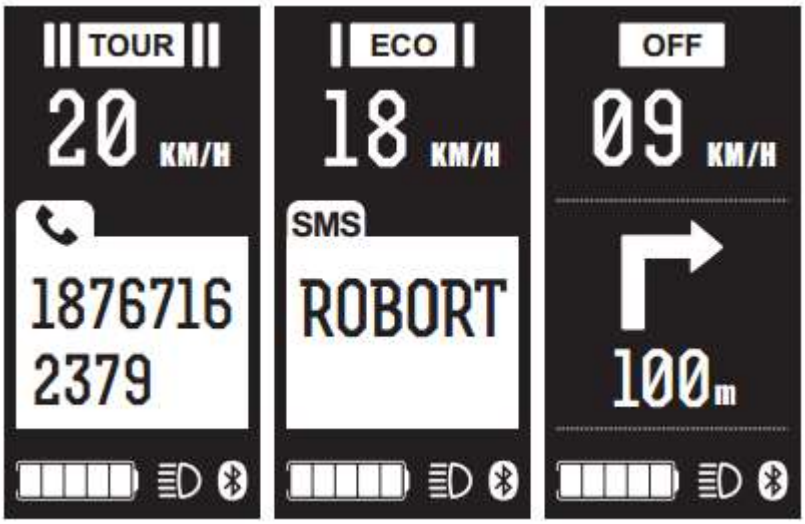
⑧ battery information: The information about the battery

⑨ hardware information: The information about the hardware

⑩ reset: Reset to factory settings

4.5 *mapping the mobile phone(connect to the mobile phone APP)

The Bluetooth icon of the display is shown. The mobile phone is connected with the APP.
① setting the parameter of the display through mobile phone APP.
②Call or SMS mapping to display（only show the caller number）
③Navigation icon mapping display function



5 Definition of buttons

Turn on/off：⏻，Function button：M，Adjust button+：^，Adjust button−：v

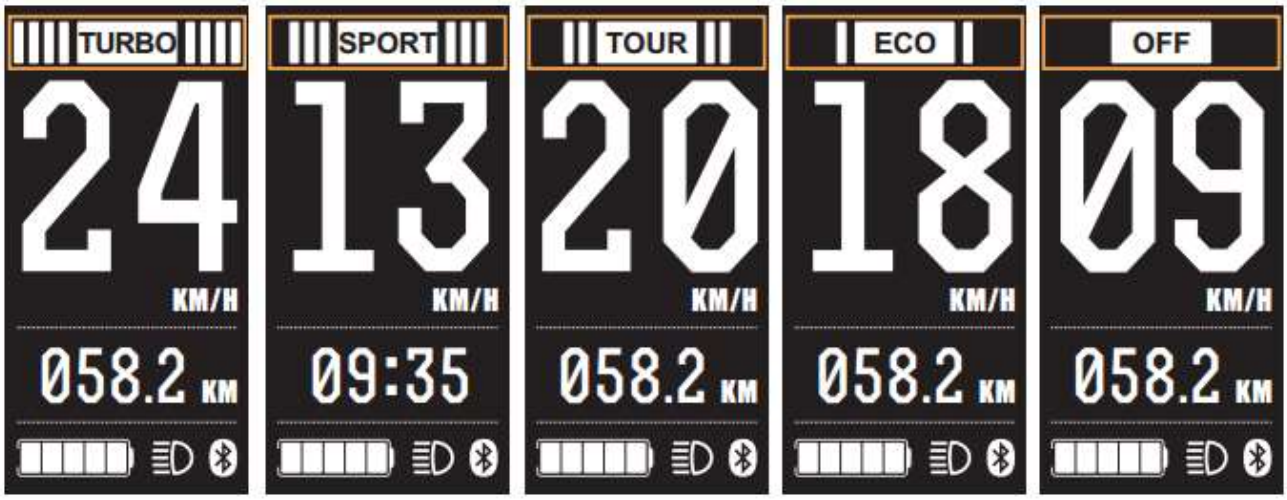
6 Operation

6.1Turn on/off

Maintain the normal connection of the display and the controller. Long press (2 seconds)⏻ button when is display is off. Display shows the boot interface and enters the basic interface to start work. Long press (2 seconds)⏻ button when the display is on. Display closed. If no operation to the display and the speed is 0 for 5 minutes,display will turn off automatically.

6.2Assist mode select

Press^or⌄ to select the assist mode and change the assist power mode. There are 5 modes:OFF/ECO/TOUR/SPORT/TURBO. Default ECO mode when display turned on. OFF means no assist power.（assist mode select as below picture）



TURBO Mode SPORT ModeTOUR Mode ECO ModeOFF Mode

6.3 Display information switch

Information switches from trip miles, riding time, average speed, max speed, total mileage by short press M when the display is on. It shows loop from trip miles (TRIP) ->riding time (TRIP TIME)−> average speed (AVG), maximum speed (MAX), total mileage (ODO).

Mode switch as below pictures:

6.4 Walk assist mode

Long press button for 2 seconds, bike entered walk assist mode. When is shown, loose button to exit walk assist mode .Walk assist mode switch as below pictures (only in the walk assist status)：

6.5 Headlight on/off

Long press button for 1 second，the headlight is turned on（need support of controller）.Headlight icon shows on the interface. Long press button for 1 second again, the headlight is turned off. The icon of headlight is off.

6.6Power indicator

When the battery works normal, the battery power shows 5 levels according to the battery capacity.When the battery power reaches the under voltage warning value, only frame of the battery icon is displayed and flash to remind the user to charge immediately. The battery power is shown as below:

Percentage of battery power（C）and power level table

No.	Percentage on the display(SOC)	Level on the display	Voltage (24V)	Voltage (36V)	Voltage (48V)
1	C≤5%	outer border flashes	U≤23.1	U≤33	U≤42.9
2	5%<C<15%	1 level power	23.1<U<24.5	33<U<34.7	42.9<U<45.1
3	15%≤C<35%	2 level power	24.5≤U<25.1	34.7≤U<35.8	45.1≤U<46.5
4	35%≤C<55%	3 level power	25.1≤U<25.6	35.8≤U<36.7	46.5≤U<47.5
5	55%≤C<75%	4 level power	25.6≤U<27	36.7≤U<38.5	47.5≤U<50.1
6	C≥75%	5 level power	U≥27	U≥38.5	U≥50.1

7User settings

Setting items: unit, turn on password, *wheel diameter, *speed limitation information, *battery information, time period of automatically shut down, *system information, reset to factory setting.
(* means fixed items, do not provide user settings options)

7.1enter setting status

✧ 10 seconds within display turned on, long press M（3seconds）, system enter the data setting interface. On this status users can set and view the parameters of the display.

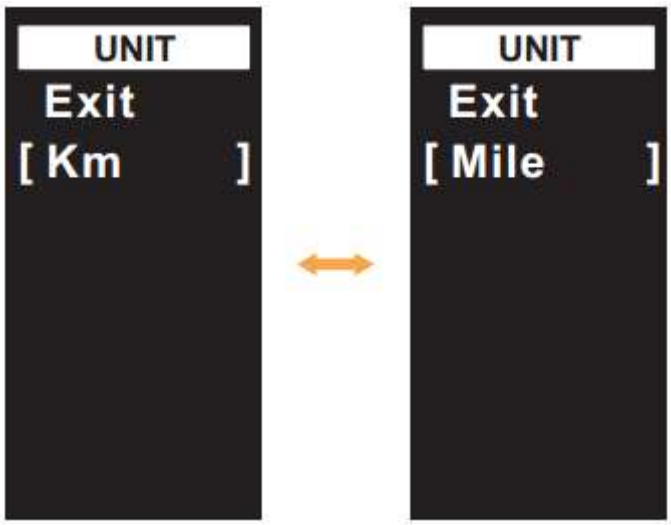
- ✧ Long press M(3 seconds） to exit and save the setting status. Select [Exit] on the setting interface, short press M to exit and save the setting status.
- ✧ User settings interface state, if 10 seconds without the operation, display returns to normal riding state, do not save the parameter settings.
- ✧ On data setting state, short press ^/v to switch setting items
- ✧ Short press M to switch setting items circularly.

7.2unit setting

Press^/v to select setting item in unit setting interface. Press（short）M in exit file to return setting interface. Short press M in KM/Mile file to switch KM,Mile unit.

Km：The unit of trip mileage and total mileage is Km. The unit of current speed, average speed; maximum speed is KM/H.

Mile：The unit of trip mileage and total mileage is Mile. The unit of current speed, average speed, and maximum speed is MPH.



7.3On/off password setting

Enter on/off password setting, press^/v to select setting item. Switch to OFF/ON item, short press M to select OFF/ON, to turn on or turn off the password on/off function; Choose ON to turn on the on/off password function and set the password; short press M to switch password bit from

left to right, short press^/v to adjust the code value. Choose Exit (after save) to return to previous level after setting.

Interface show as below：

Boot again, you need to use a new password to boot, or display will automatically shut down after 25s.

7.4 Wheel diameter information

In wheel information interface,26 inches means current display is setting for the bike of 26inch wheel diameter. Return to the setting interface by short pressM.

Wheel diameter value can be set:16inch、18inch、20inch、22inch、24inch、26inch、700C、28inch、29inch

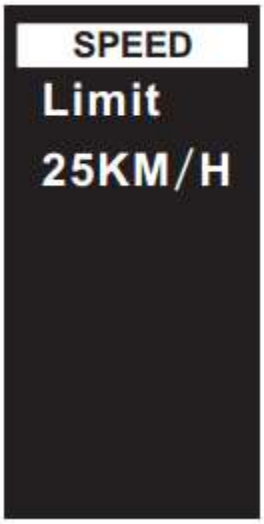
The interface is shown as below：

7.5Speed limitation information

Speed limitation information indicates the maximum speed allowed in the current system (only show the changes through the serial port)

Default allowed maximum speed: 25KM/H

Interface shown as below：



7.6 Battery information

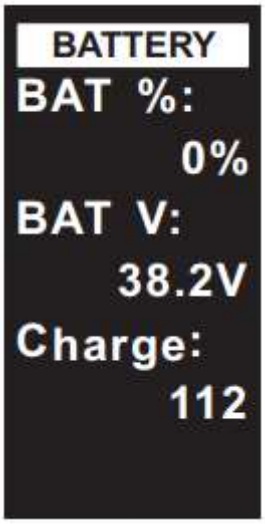
Return setting interface in battery information interface by short press M.

BAT %：battery power；

BAT V：battery voltage；

Charge：numbers of charge cycles.

Interface shown as below:



7.7Automatic shutdown time

Press^/v to choose automatic shutdown time（default 5 minutes），in auto off interface. PressM to save and return the setting interface.

Interface shown as below:

7.8 System information

Press Mto return to setting interface in system information interface.

S/N：device ID；
FW Ver：Firmware version number；
HW Ver：Hardware version number；

Interface shown as below：

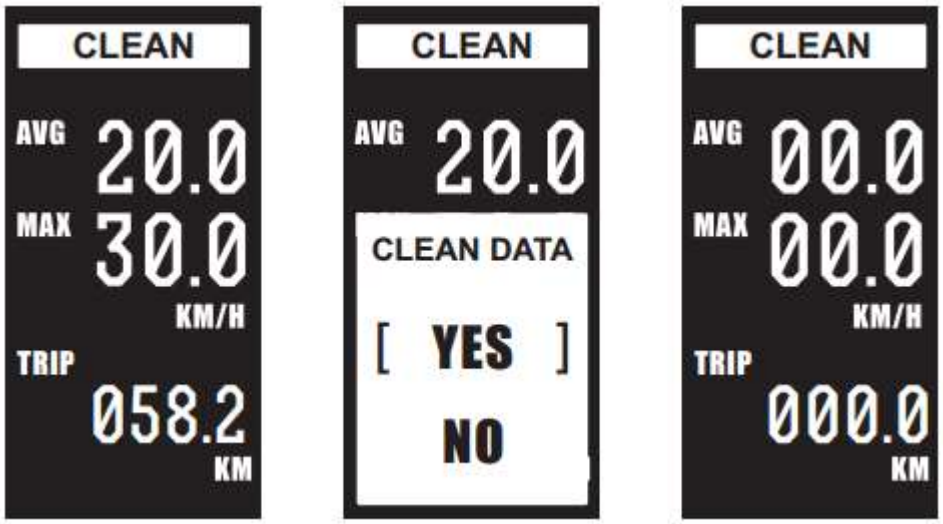
7.9 Reset

Reset, press^/v to choose setting, switch to YES item， short pressM to restart the display. The parameter reset to the factory state. Press Exit to exit the page and return to previous level. Interface shown as below:

8 Data clearance

10 seconds after display turned on, long press M（3 seconds），enter the data clearance interface, short press M pop up the confirmation window, press^/v to choose item, short press M again to clearance trip mileage(TRIP), riding time(TRIP TIME), average speed(AVG) and maximum speed(MAX), and return to operation interface. Display will return to riding interface without data clearance if no operation in 5 seconds.

Normal shutdown and power-down will not make the above data clear.



9Error information

The display can alert the bike failure, if failure detected, the display interface will show the error code. Interface shown as below:

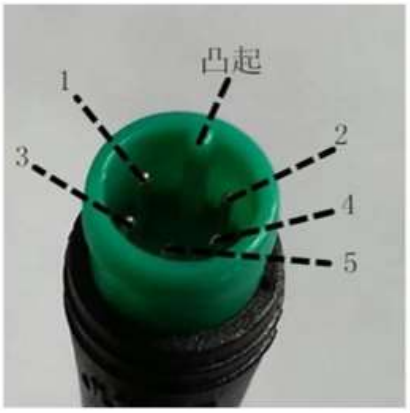
Error code definition

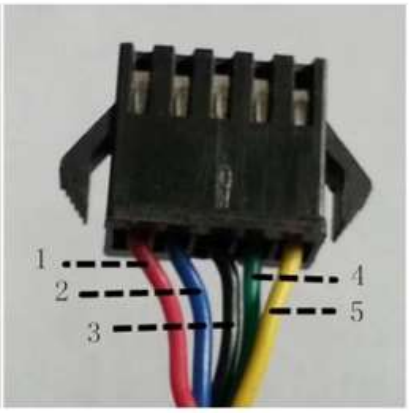
Error code table:

Error code	Fault description	Checking methord
"04" shown at speed	throttle doesn't turn back to zero position	Check if the throttle return to zero position
"05" shown at speed	throttle failure	check throttle
"07" shown at speed	overvoltage protection	check the voltage of the battery
"08" shown at speed	failure of motor's hall signal wire	check the motor
"09" shown at speed	failure of motor's phase wire	check the motor
"11" shown at speed	failure of the controller's temperature sensor	check the controller
"12" shown at speed	failure of the current sensor	check the controller

"13" shown at speed	failure of the temperature of the battery	check the battery
"14" shown at speed	failure of the temperature of the motor	check the motor
"21" shown at speed	failure of the speed sensor	check the position of the speed sensor
"22" shown at speed	failure of the BMS communication	check the battery
"30" shown at speed	communication failure	check the connector of the controller

10 Wire definition





Wires out of the display wires connect to the display connector to controller

Table 1 wires definition

No.	Color	Function
1	Red(VCC)	VCC
2	Blue(Kp)	Power control wire of the controller
3	Black (GND)	GND of display
4	Green(RX)	Data receive of the display
5	Yellow(TX)	Data transmit of the display

C. Note

- ✧ In the use of the display, pay attention to the security, do not plug the display in and out the when the power is on.
- ✧ Try to avoid use exposure in harsh environments like heavy rain, heavy snow, and strong sunlight.
- ✧ When the display can’t be used normally, it should be send to repair as soon as possible.