

DM01 Display Specifications



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A. Product introduction

1. Product name and model

LCD display for electric power assist bikes

Model: DM01

2. Product Introduction

- ✧ IMD craft, 2.5D chamfer, 4H extra hard glass screen
- ✧ B/W contrast, 1.3-inch VA segment LCD
- ✧ Integrated one-piece button, perfect hand feeling
- ✧ Excellent outdoor design, IP65 waterproof level

- **Following functions are optional, NOT available on our e-bike's models**

- ✧ Standard USB (Type B) charger port
- ✧ Bluetooth function

3. Range of application

Suitable for pedal assisted electric bicycles in accordance to EN15194:2017 standard



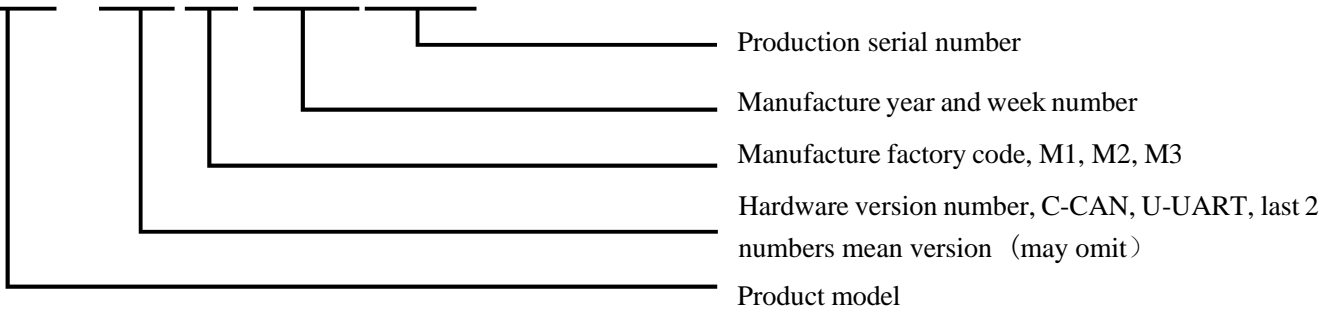
4. Display coding rules



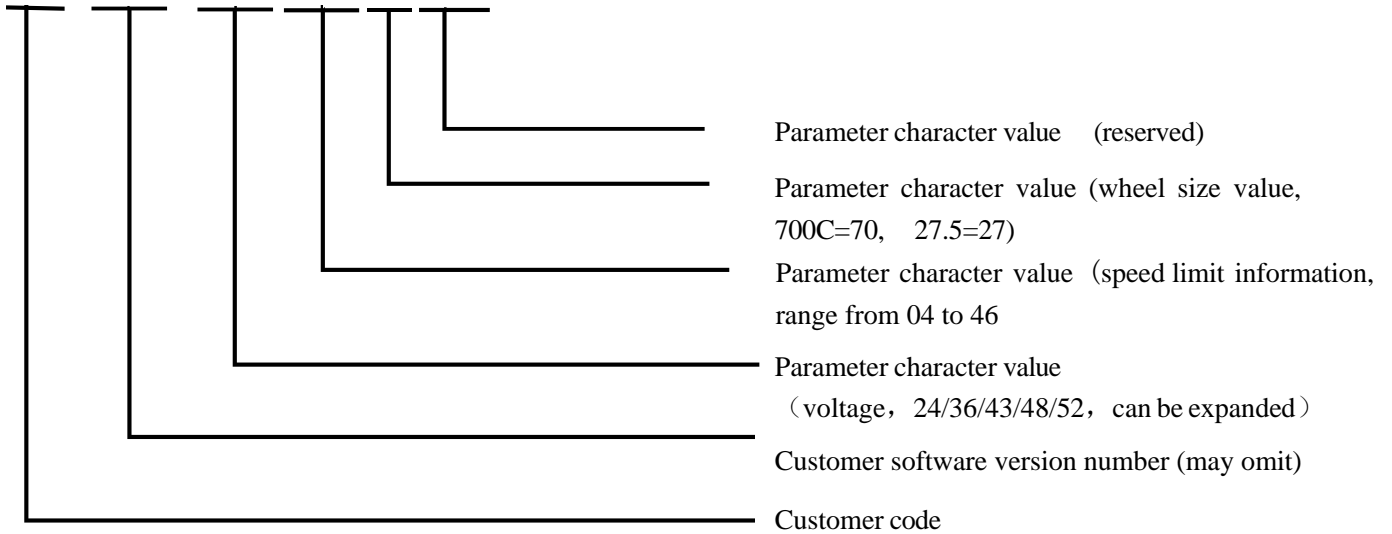
DM01-C01M020340001
A08.01-36V2570XX

As shown as above picture,

DM01-C01M020340001



A08.01-36V2570XX



B. Product manual

1. Specifications

- ① Power supply: DC 24V/36V/48V
- ② Rated current: 12mA
- ③ Shutdown leakage current: <1uA
- ④ Screen specification: 1.3" VA segment screen
- ⑤ Communication method: UART/ CAN-BUS 2 modes
- ⑥ Operating temperature: -20° C ~ 60° C
- ⑦ Storage temperature: -30° C ~ 80° C
- ⑧ Waterproof level: IP65

2. Function overview

- ① Five buttons, separated walk assist button, good hand feeling
- ② 6 power assist level
- ③ Km / miles
- ④ Speed display: Real-time speed, maximum speed, average speed

- ⑤ Battery power indicate in percentage and levels.
- ⑥ Headlight on/off status indication and control
- ⑦ Mileage indicate: Subtotal mileage (TRIP), total mileage (ODO)
- ⑧ 6km/h walk assist function
- ⑨ Parameter setting function
- ⑩ Error code indicate

3. Installation

① Open the display lock clip, set the display in the left handlebar (standard handlebar size: $\Phi 22.2$). Adjust to a position easy to operate, then tight 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 connect display at the controller with the 6-pin connector.

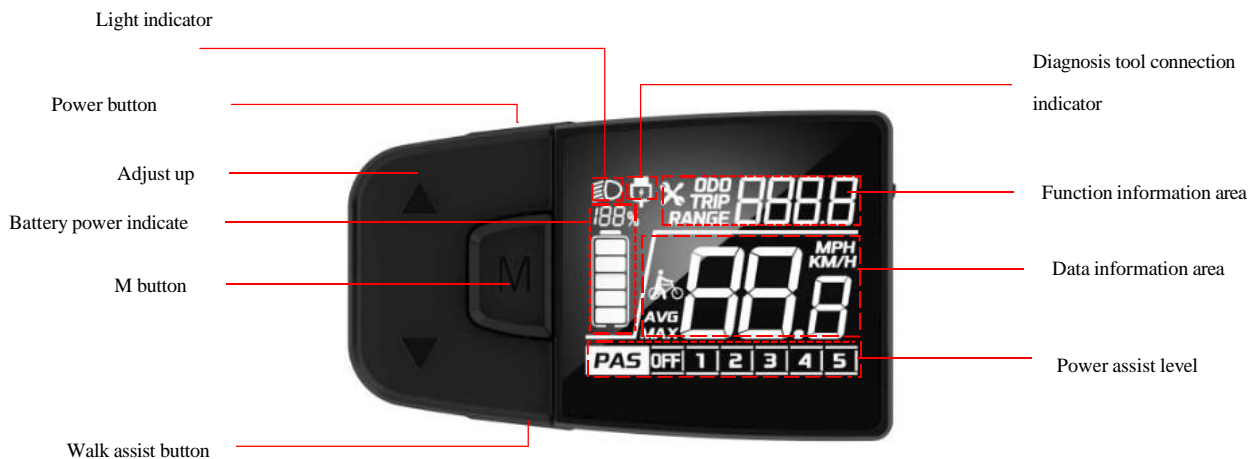
4. Interface

4.1 Boot interface



After turning on the display, for 2 seconds all information of the display are visible. After 2 seconds, display shows the real-time information from controller.

4.2 Basic interface and operation



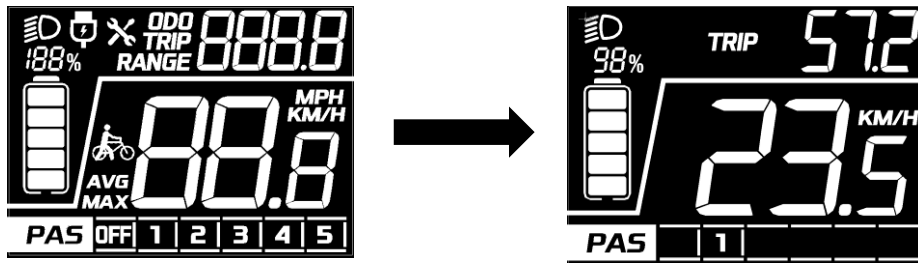
- ① Power indicator: display communicates with BMS to get the battery power information and show the information as protocol. Information includes percentage and levels.
- ② Current speed and unit: show the current riding speed, default unit is KM/H
- ③ Trip and ODO: default unit is KM, maximum Trip value is 9999, maximum ODO value is 9999;
- ④ Error information: with error icon ✖, error code pops out.
- ⑤ 6 power assist levels, including OFF level (no assist power).



- ⑥ light indicator: when there is light on the bike and the status is on.

4.3 Function interface introduction

Boot interface and basic function interface

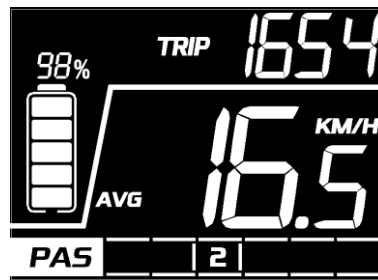


After display turns on, functions will all turn on for 2 seconds (Boot interface), then the display will enter the basic function interface.

Functions

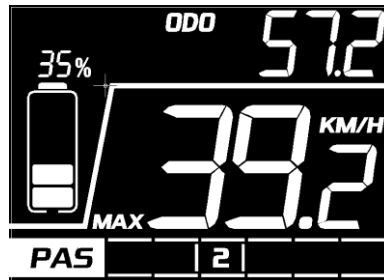
TRIP icon on the top middle area as below picture, 4 digits to show the trip value, accurate to one after the decimal point. When trip value exceeds 999.9, show without decimal point. Maximum value is 9999KM. When the value exceeds 9999KM, it keeps the last 4 numbers.

Trip miles doesn't show unit. The unit mode is the same as the speed, and can be set in the system unit setting.



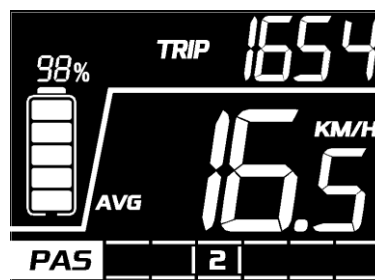
ODO icon on the top middle area as below picture, 4 digits to show the ODO value, accurate to one after the decimal point. When trip value exceeds 999.9, show without decimal point.

Maximum value is 9999KM. When the value exceeds 9999KM, it keeps the last 4 numbers. ODO value will need service tool to do the clearance. ODO miles don't show unit. The unit mode is the same as the speed and can be set in the system unit setting.



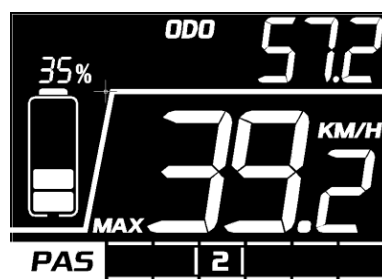
Average speed indicator

Shows the average speed in current trip, maximum 99.9KM/H



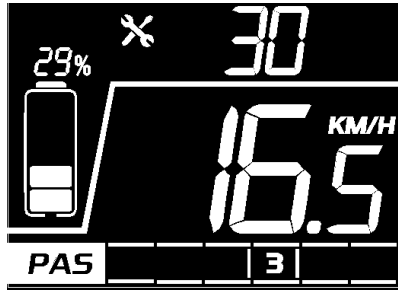
Max speed indicator

Shows the max speed in current trip, maximum 99.9KM/H



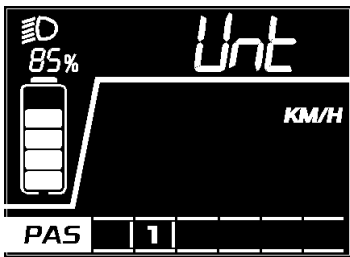
Error code indicator

Display shows the ✖ icon according to the information get from the system. Next to it there is detailed error code. When the error code is indicated, display will not show ODO, TRIP, RANGE icons. Motor will act according to the error information.

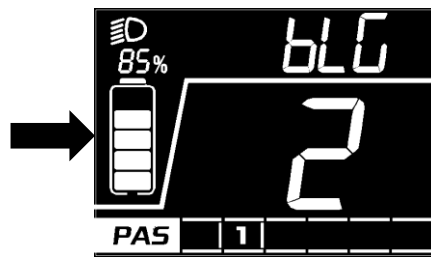


Setting interface

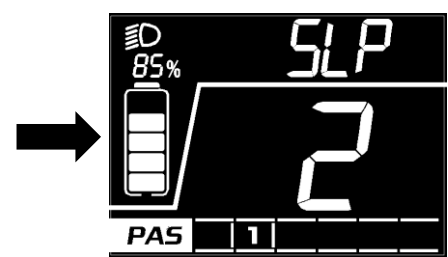
Within 10 seconds after display is turned on, long press M button to enter setting interface. Short press \checkmark/\wedge to switch settings. Short press M button to confirm the chosen selection. In the settings interface, short press \checkmark/\wedge to choose the parameter to set, long press M button to confirm the parameter. Long press M button to save the parameter.



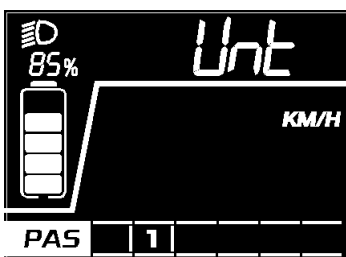
Unit setting interface



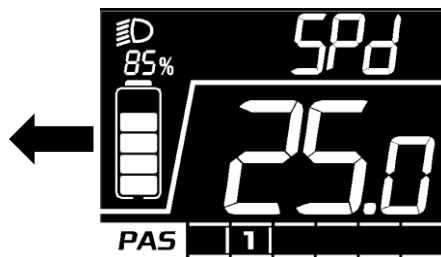
Backlight level setting interface



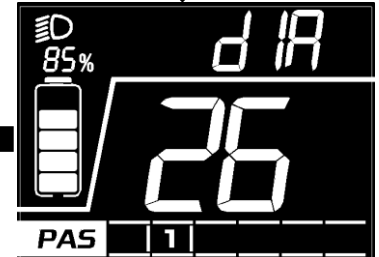
Sleep time setting interface



Unit setting interface



Speed limit setting interface



Wheel size setting interface

5. Button definition

5.1 Button name:



Power button: Turn on/off the display

Adjust button: adjust the assist power level while riding and decide function in the settings interface.

Mode button: function interface switch and enter to settings interface.



Walk mode button: activate the walk assist function

5.2 Definition of button operation:




Operation type	Description
Short press	Function activates accordingly to the button.
Long press	Long press button (generally more than 2 seconds), the function activates accordingly.

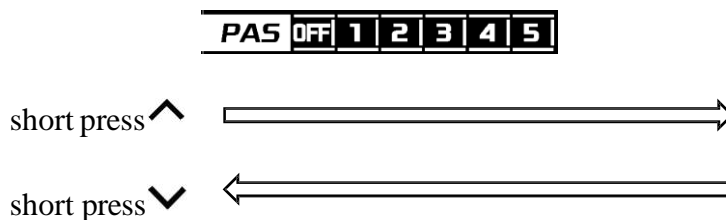
6. Basic function operation


6.1 Turn on/off the display

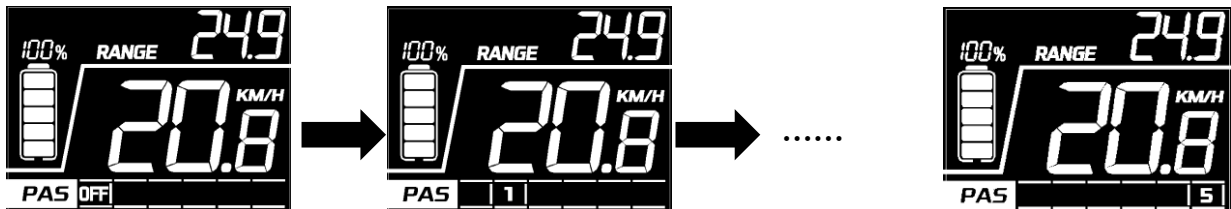
When the display and controller are connected well, long press  button when display is off, display will show boot interface then enter the basic interface. Long press  button when display is on, then display will be turned off. If no operation are made on the display, after the sleep time period inserted (while display speed on 0) display will be turned off automatically.

6.2 Assist level switch

Short press   button to switch assist level, and change assist mode, there are 6  levels. 1-5 levels, and off level.



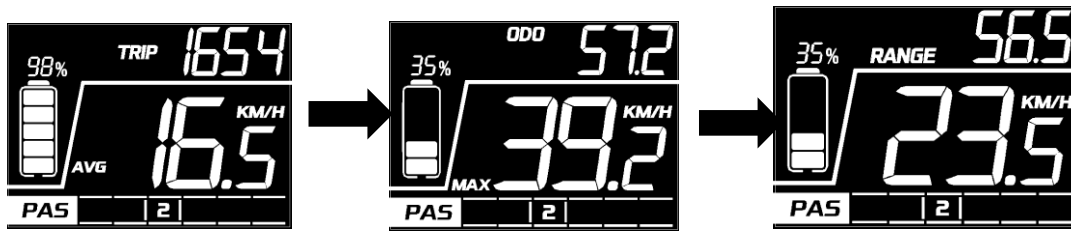
the assist level will not loop. That means when the level gets to level 5, it will need to press  button to get to OFF level. It's the same when adjust up.





6.3 Information switch

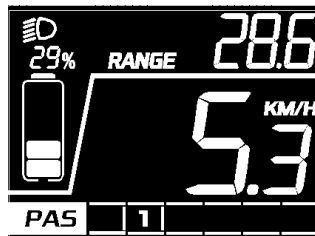
Short press M button when display is on, information will switch from TRIP,ODO,RANGE, information switch loop. TRIP/AVG->ODO/MAX->RANGE. When speed is not 0, the data area have not show the speed, no operation on M button for 5 seconds, display gets back to the speed interface. Interface switch as below when press M button:

***if the system does not get RANGE information from BMS, display will not put the RANGE icon on the screen.**



6.4 Light control function




When the ebike is on, long press  button to turn on the front light, at the same time, the light icon shows on the display. Long press  button to turn the lights off.



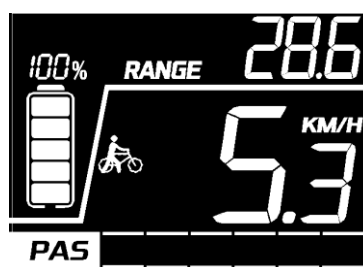
6.5 Speed information switch

In basic function interface, display show the real-time speed, average speed, max speed and mileage information switch. Check 6.3 for the information switches.

6.6 Walk assist function

When speed is 0, long press  button to enter walk assist mode, display shows the walk assist icon and the real-time speed. PAS level show as follow . Release  button to exit walk assist mode.

The interface show as below:





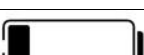
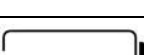
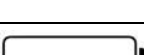


6.7 Battery power indicator and assist power output

Battery power information shows the battery level and percentage. Battery power is indicated by 5 levels according to the battery capacity.

When the battery capacity is lower than 5% or the voltage is lower than undervoltage, display will enter undervoltage mode. In this mode battery level shows level 0. No power output from the motor. Assist level switch disabled, adjust button disabled. Power assist level show **OFF** . Display will get out of low-voltage mode after reset, when the voltage is above undervoltage value and battery capacity is above 5%.

Percentage of battery power (C) and power level table (need BMS or controller to provide the percentage of the battery)

SOC	Battery level	Description
$80\% \leq \text{SOC}$		Full battery level 5
$60\% \leq \text{SOC} < 80\%$		Level 4
$40\% \leq \text{SOC} < 60\%$		Level 3
$20\% \leq \text{SOC} < 40\%$		Level 2
$10\% \leq \text{SOC} < 20\%$		Level 1
$5\% \leq \text{SOC} < 10\%$		Level 0
$0\% \leq \text{SOC} < 5\%$		Level 0 and icon blink at 1Hz

● Remark about battery indicate:

When there is a battery communication error:

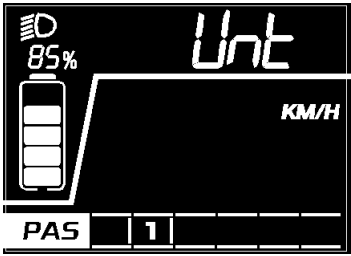
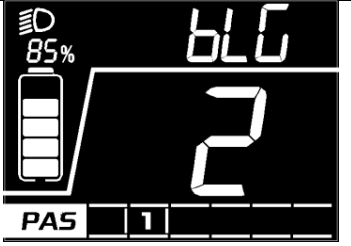
1. Display will estimate the power according to the voltage.
2. No battery percentage information shown.
3. Range information shown like this: - - - -

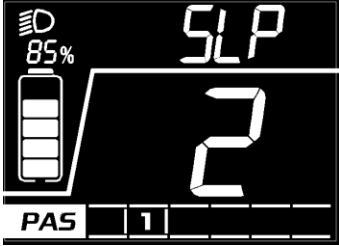
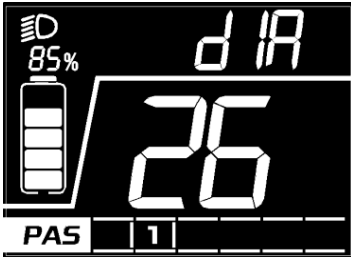
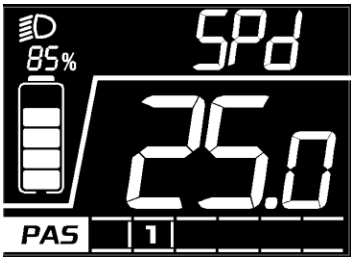
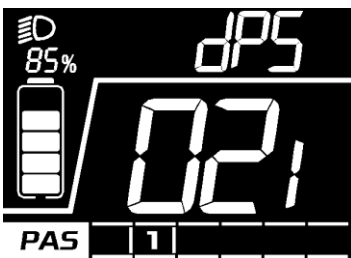
7. Setting functions

Display provides specific parameter setting function. The optional items of setting function will be deleted according to different market and product standards. The following is the complete parameter setting, information reading function description under the default state of display. Please contact our sales and technical support team for confirmation in case of any discrepancy.

10 seconds within display turned on, long press M button, display enter the settings interface. Short press M to confirm chosen parameter. When the parameter is picked, the current selected parameter blinks at 1Hz. In any interface of the setting mode, short press \wedge \vee to select the parameter, short press M to confirm the parameter. In any interface of the setting mode, long press M to save the parameter and get back to the up level interface.

The first settings interface is the system unit parameter setting.

Setting item	Interface	Description	Setting data	Remark
Unit setting		UNT=Unit	Value=KM/H MPH	Default Value=KM/H KM/H—Metric MPH—Imperial
Backlight level setting		BLG=Back light	Value= 1, back light level 60% Value= 2 back light level 80%	Default Value= 1

			Value= 3 back light level 100%	
Auto shutdown time		SLP= Auto sleep	Value=0-30 min	Step=5 min 0 means display will not auto shutdown
Wheel size setting		dIA=Wheel diameter	Value= 12, 14, 16, 20, 24, 26, 27, 27.5, 28, 700C, 29, CCF (Default unit, inch)	Default value=26; *when value=CCF, customer can enter wheel circumference value (mm). Check detail information below.
Speed limitation setting		SPd=Speed limitation	Value=5-46, step value is 1, unit is km/h .	Default: 25
Display Software version		DPS=display software version	Value= fixed value	Read only

8. Data clearance

When display is on and shows TRIP interface, long press M button to clear the TRIP

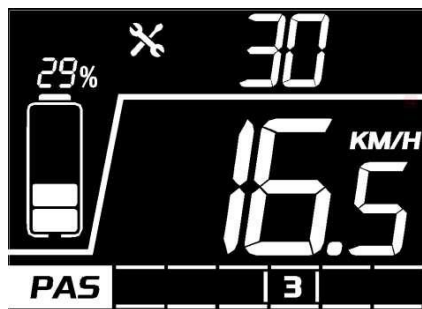
information: after long-press M the icon  blinks at 1Hz, if you short press M during 30s, the data be cleaned.

Without any operation, it will go back to normal. After clearance, the trip value is 0, average speed and max speed is 0. ODO information can't be clearance on the display manually, it needs to be cleared by service tools.

9. Error information

Display can warn the bike faults and show error codes on the interface when faults are detected. Detailed error code shows on the function area and blink at 1Hz. When error code shown, display will not show ODO, TRIP, RANGE icon, other functions show normally. User press M button in error status, display can show ODO, TRIP, RANGE icon and data. After 5 seconds, interface gets back to error interface.

Interface as below:



Bafang protocol's error code information table:

Error code	Error description	Suggest operation
"04" shown at speed	throttle doesn't turn back to zero position (stay on the high position)	Check if the throttle turned back
"05" shown at speed	throttle failure	Check throttle
"07" shown at speed	overvoltage protection	Check battery voltage
"08" shown at speed	failure of motor's hall signal wire	Check motor
"09" shown at speed	failure of motor's phase wire	Check motor
"11" shown at speed	failure of the motor's temperature sensor	Check controller
"12" shown at speed	failure of the current sensor	Check controller
"13" shown at speed	failure of the temperature of the battery	Check battery
"14" shown at speed	Controller temperature is too high, and reaches the protection point	Check motor

"21" shown at speed	failure of the speed sensor	Check the install position of the speed sensor
"22" shown at speed	Failure of BMS communication	Change battery
"30" shown at speed	communication failure	Check connector to controller

(*Please note different protocol has different error code system. If an error code appears, please communicate with our sales and technical support team to verify and confirm!)

10. Wire definition

10.1 Standard wires definition:

The standard outlet of the display DM05 is in the form of a designated waterproof connector. The standard outlet needs to match the corresponding conversion wire. Velofox has set a corresponding standard for conversion wire length and interface standards. If the standard setting cannot be met, specially customized conversion wires are required.

*All displays products are open to harness and connector customization.

Standard outlet in a sample is shown in the figure below:

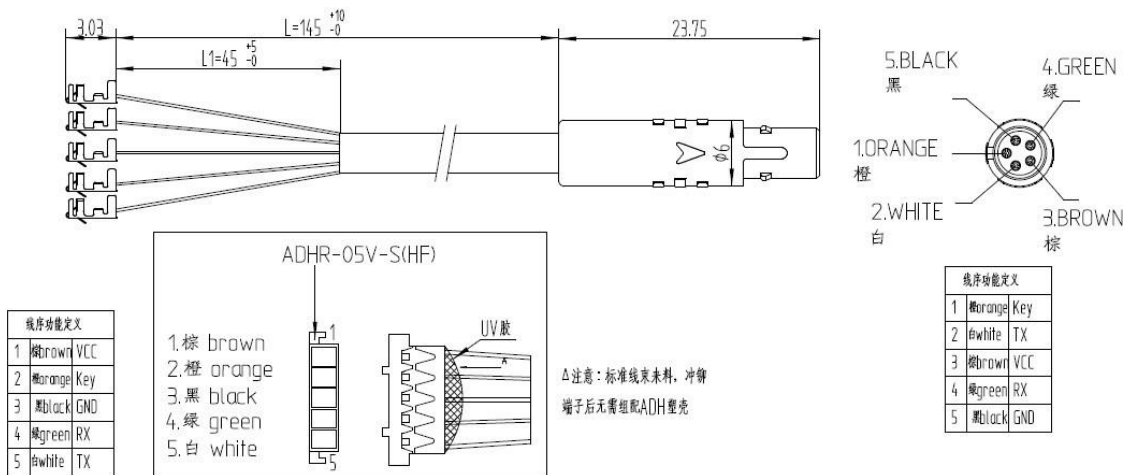
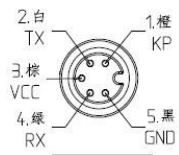


Table 1 Standard wire definition

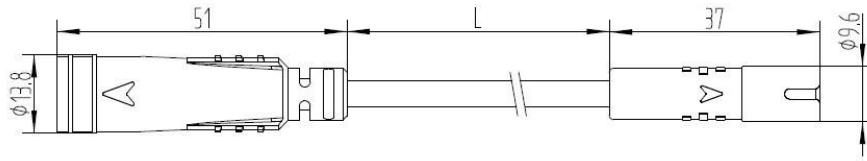
No.	Color	Function
1	Orange(KP)	Power lock control wire
2	White(TX)	Data transmission wire of display
3	Brown(VCC)	Power wire of display
4	Green(RX)	Data receiving wire of display
5	Black(GND)	GND of display
6	reserve	reserve

10.2 Standard conversion wire specifications:

Adaptor-C2H:

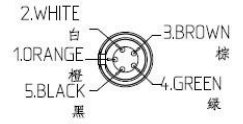


线序功能定义	
1	Orange Key
2	White TX
3	Brown VCC
4	Green RX
5	Black GND



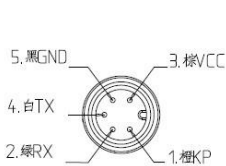
线长L允许根据客户订单调整，优先选用推荐线长尺寸，推荐规格如下：

L<mm>	50	100	150	350	550	650	850
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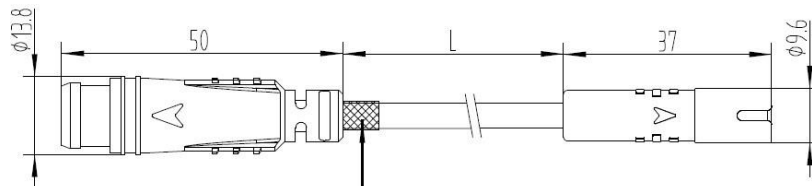


线序功能定义	
1	Orange Key
2	White TX
3	Brown VCC
4	Green RX
5	Black GND

Adaptor-C2J:



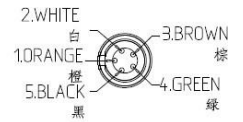
线序功能定义	
1	Orange Key
2	Green RX
3	Brown VCC
4	White TX
5	Black GND



Δ10mm白色热缩套管标记
Adaptor C2J

线长L允许根据客户订单调整，优先选用推荐线长尺寸，推荐规格如下：

L<mm>	50	100	150	350	550	650	850
-------	----	-----	-----	-----	-----	-----	-----



线序功能定义	
1	Orange Key
2	White TX
3	Brown VCC
4	Green RX
5	Black GND

✧ Needs to be sent to be repaired as soon as possible