DM01 Display
Functionality Introduction

Product Name：Intelligent LCD display

Part Number：DM 01

Content

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

Waterproof serial port, convenient maintenance

- **Following functions are optional, please consult our sales team for more details**

Standard USB（Type B）charger port, charge current 800mA

Bluetooth function

3. Range of application

Suitable for electric power assist bicycle in accordance with the standard of EN15194:2017

4. Appearance and size

The material of product shell is PC+ABS. And the material of the window is applying high hardness IMD craft, 2.5D chamfer. Adapt to assembled on φ22.2mm handlebar.

5. Display coding rules

DM01-C01M020340001
A08.01-36V2570XX

As shown as above picture,

DM01-C01M020340001

- Production serial number
- Manufacture year and week number
- Manufacture factory code, M1, M2, M3
- Hardware version number, C-CAN, U-UART, last 2 numbers means version（may omit）
- Product model

A08.01-36V2570XX

Parameter character value (reserved)

Parameter character value (wheel size value, 700C=70, 27.5=27)

Parameter character value（speed limit information, range from 04 to 46

Parameter character value (voltage , 24/36/43/48/52 , can be expanded

） Customer software version number

(may omit) Customer code

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 Endurance mileage indicate

⑦ Headlight on/off status indication and control

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

⑨ 6km/h walk assist function

⑩ Parameter setting function

⑪ Error code indicate

* Charge function and bluetooth are optional

3. Installation

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

Boot interface, after turn on the display for 2 seconds, all segments of the display are on. After communication build, display gets the assist level information, TRIP/ODO information and so on.

Show the real-time information from controller.(information can be customized).

4.2 Basic interface and operation

① Power indicate：Display communicate with BMS to get the battery power information and show

the information as protocol. Information including percentage and levels.

② Current speed and unit: show the current riding speed, default unit is KM/H, accurate to one after

the decimal point.

③ Trip and ODO: default unit is KM, accurate to one after the decimal point, maximum Trip value is 9999, maximum ODO value is 9999；

④ Error information: show error icon, and show the error code accordingly in the fnction area.

⑤ 6 power assist levels, including off level, off means no assist power.

⑥ light indicate: when there is light on the bike and the status is on, show light indicate icon

4.3 Function interface introduction

Boot interface and basic function interface

After display turn on, the segments will all turned on for 2 seconds, display communicate normally and enter the basic function interface.

Display get the assist level information from controller and get BMS information from battery.

Others are real-time information.

Other function interface

Trip indicate

Show TRIP icon on the top middle area as below picture, 4 digit show the trip value, accurate to one after the decimal point, when trip value exceed 999.9, show without decimal point.

Maximum value is 9999KM. When the value exceed 9999KM,keep 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 indicate

Show ODO icon on the top middle area as below picture, 4 data to show the ODO value, accurate to one after the decimal point, when trip value exceed 999.9, show without decimal point.

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

Endurance mileage indicate

Display reads the endurance mileage information from controller and show after the RANGE icon on the top. 4 digit to show the range value, accurate to one after the decimal point, maximum
999.9KM

Average speed indicate

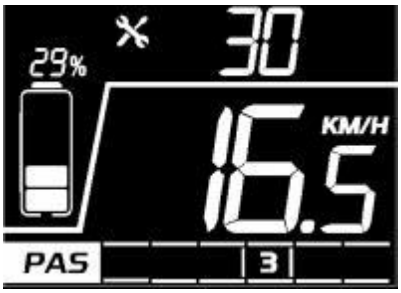
Show the average speed in current trip, maximum 99.9KM/H

Max speed indicate

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

Error code indicate

Display show the icon according to the information get from the system. And show Detailed error code in the function area and blink in 1Hz. When the error code indicated, display will not show ODO，TRIP，RANGE icon and other functions are normal. Motor will act according to the error information. Interface shown as below:

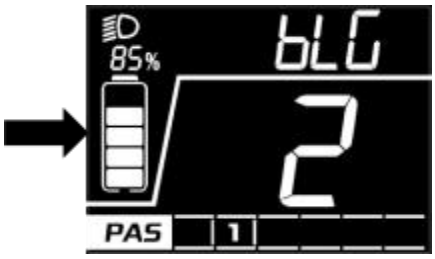


Setting interface

Within 10 seconds turned on the display, long press M button to enter setting interface. Short press 、 to switch items loop. Short press M to confirm the item be chosen. When item chooses, the icon will blink in 1Hz. In the setting interface no matter which setting item, short press 、 to choose the parameter to set, long press M to confirm the parameter. In the setting interface no matter
which setting item, long press M to save the parameter and back to up level page.

Short press button, the interface will show as below to set then to read information status,

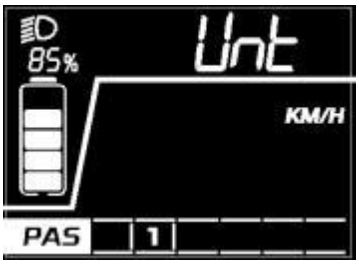
Short press can go back to previous item:

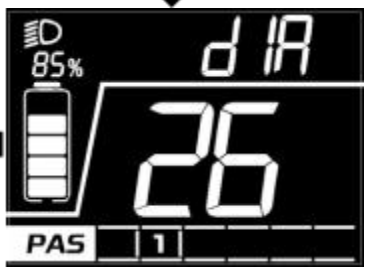


Unit setting interface

Backlight level setting interface

Sleep time setting interface





Unit setting interface interface

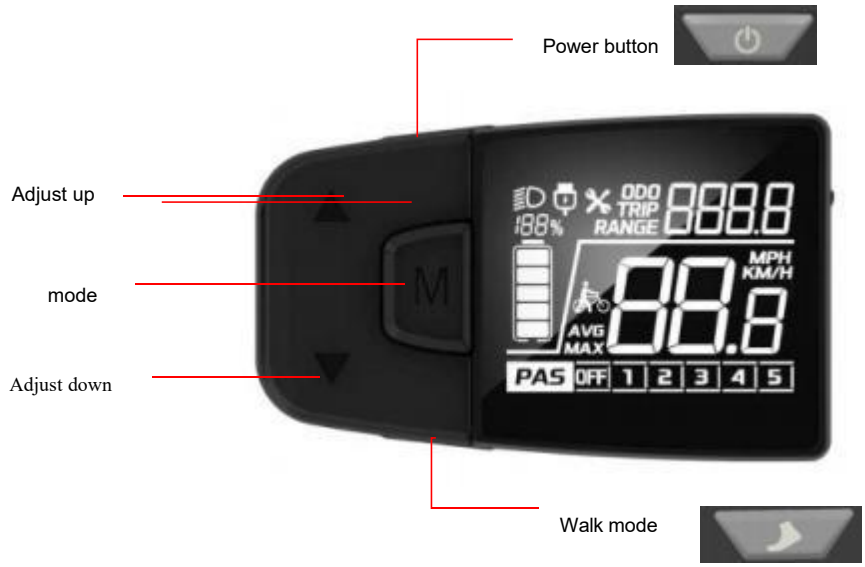
Speed limit setting interface

Wheel size setting

The interface of the settings above check part 7 for the operation for the setting function operation.

5. Button Definition

5.1 Button name：



Power button: Turn on/off the display

Adjust button: adjust the assist power level while riding and setting function when setting operation.

Mode button: function interface switch and enter to parameter setting interface.

Walk mode button: activate the walk assist function

5.2 Definition of button operation:

Operation type	Description
Short press	Press the button and soon released, while the button is released,the function activated accordingly.
Long press	Press the button and hold,when the hold time exceed the setting time(generally 2 seconds), the function activated accordingly.

6. Basic function operation

6.1 Turn on/off the display

When the display and controller connected well, long press button when display is off, display will show boot interface then enter the basic interface and work. Long press button when display is on, then display will be turned off. If no operation on the display for the time setting exceed the sleep time, display speed is 0, and current to display lower than 1A, display will be turned off automatically.

6.2 Assist level switch

Short press ^ 、 v button to switch assist level, and change assist mode, there are 6 levels. PAS icon will show still. 1-5 levels, and off level.

short press ^

short press v

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:

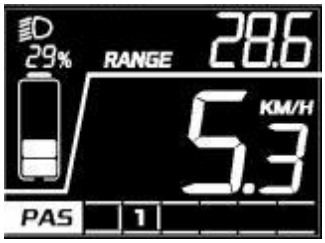
*if the system without the RANGE information from BMS, display will not put the RANGE on the screen.

6.4 Light control function

When the ebike is on with battery, long press ^ button to turn on the front light, at the same

time, the light icon show on the screen to indicate light on status. Long press ^ button to

turn the lights off.

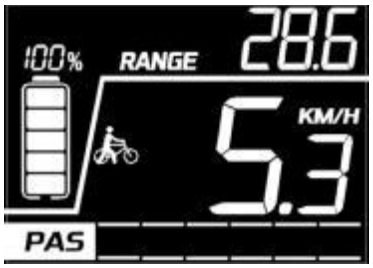


6.5 Speed information switch

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, motor output according to the setting speed, display show the walk assist icon and the real-time speed. PAS level show as follow PAS. Release button or any other button pressed system will get out of walk assist mode, motor turns off, display get back to the basic function interface. The interface show as below:



6.7 Battery power indicate and the assist power output

Battery power information show the battery level and percentage. The battery are 5 levels according to the battery capacity.

When the battery capacity is lower than 5% or the voltage is lower than under voltage, display will enter under voltage mode. In this mode battery level showed level 0 and border blink at 1Hz. 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 Under voltage 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% ≤ SOC		Full battery level 5
60% ≤ SOC < 80%		Level 4
40% ≤ SOC < 60%		Level 3
20% ≤ SOC < 40%		Level 2
10% ≤SOC < 20%		Level 1
5% ≤ SOC < 10%		Level 0
0% ≤ 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 and show the battery level accordingly;
2. No battery percentage information shown
3. Range information show hypen - - - -

4. When the voltage is lower than the under voltage（considering the current influence the voltage, change to the voltage value when the current is 0）.

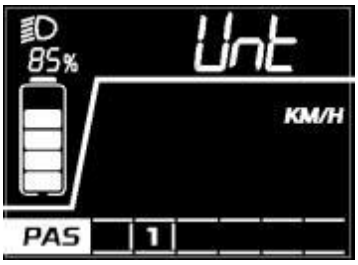
Before communicate build after turn on the display, display will not show battery percentage information. Battery bar show full level and blink at 2Hz. When the battery information read, battery bar stop blink and show the percentage information. If communication have not built successfully, battery bar will stop blink and not show the percentage information.

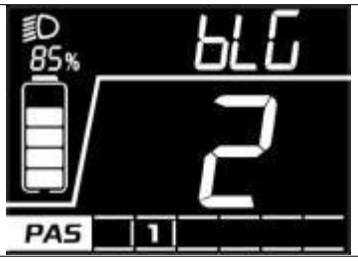
7. Setting function

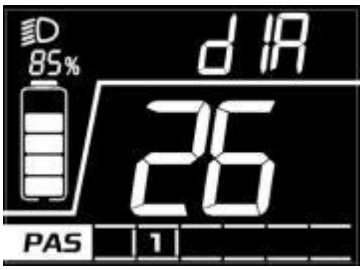
Display provides specific parameter setting function. The optional items of setting function will be deleted according to different market and product standards. The following is the complete parameter setting, information reading function description under the default state of display. Please
contact 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 setting interface. Short press M to confirm the choosing of items. When the item picked, the current selected parameter blink at 1Hz. In any interface of the setting mode, short press ^,v 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. In any grade of the setting mode, short press M button to enter
each setting interface.

The first setting 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

* Note：wheel size setting will need the support information from controller's communication protocol.

When wheel size setting choose CCF value, allow user to define the wheel's Circumference value of the system.（Four digit length value，unit mm）.

Long press M to select CCF, data area blink [[F icon,at the sametime function area 8888, The thousandths field blink, short press ^、v button to switch parameter,

short press M to switch to next data, long press M to confirm the data of each digit. During the switch, the 4 digit on the screen's right up corner  blink from the thousandths field at 2Hz. After wheel data entered and confirmed, long press M to exit the setting and back to the up level interface. The data will be recorded to the controller. If user selected CCF wheel size setting, next time enter the wheel size setting, it will show CCF interface directly.

Reference table for the corresponding circumference value of common wheel diameter:

ETRTO 16 x 1.75 x 2		kmh mph
47-305	16x1.75x2	1272
47-406	20x1.75x2	1590
37-540	24x1 3/8 A	1948
47-507	24x1.75x2	1907
23-571	26x1	1973
40-559	26x1.5	2026
44-559	26x1.6	2051
47-559	26x1.75x2	2070
50-559	26x1.9	2089
54-559	26x2.00	2114
57-559	26x2.125	2133
37-590	26x1 3/8	2105
37-584	26x1 3/8x1 1/2	2086
20-571	26x3/4	1954
	14x1.75	1046

ETRTO 16 x 1.75 x 2		kmh mph
32-630	27x1 1/4	2199
28-630	27x1 1/4 Fifty	2174
40-622	28x1.5	2224
47-622	28x1.75	2268
40-635	28x1 1/2	2265
37-622	28x1 3/8x1 5/8	2205
18-622	700x18C	2102
20-622	700x20C	2114
23-622	700x23C	2133
25-622	700x25C	2146
28-622	700x28C	2149
32-622	700x32C	2174
37-622	700x35C	2205
40-622	700x40C	2224
	12x1.75	957

8. Data clearance

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

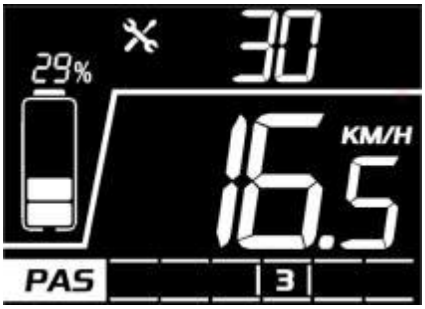
after long-press M the icon TRIP blinked in 1Hz, if you short press M during 30s, the data be cleaned.

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, need to be clear 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 show 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 show as below:



Bafang protocol's error code information table（the error codes of different system protocols are different）:

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. Eunorau 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:

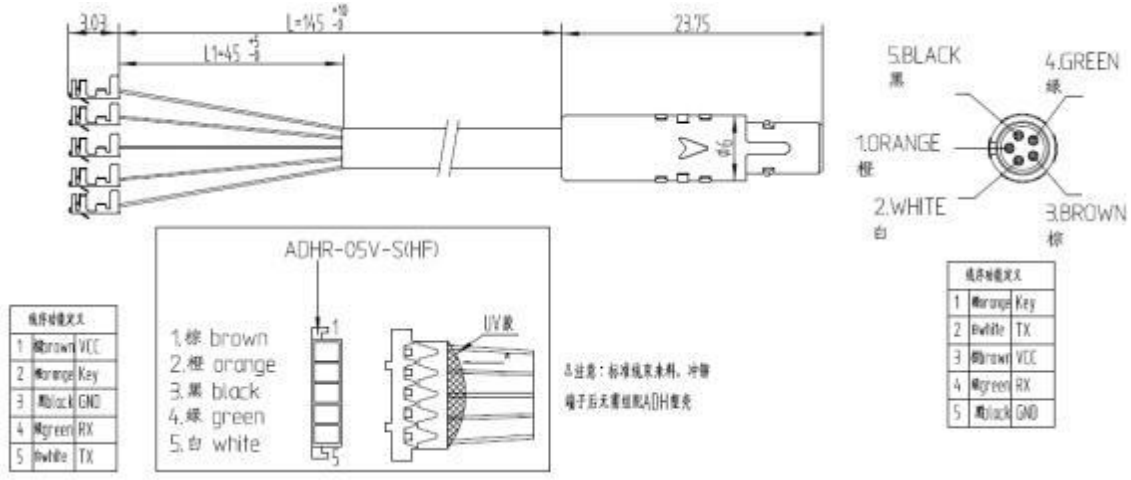
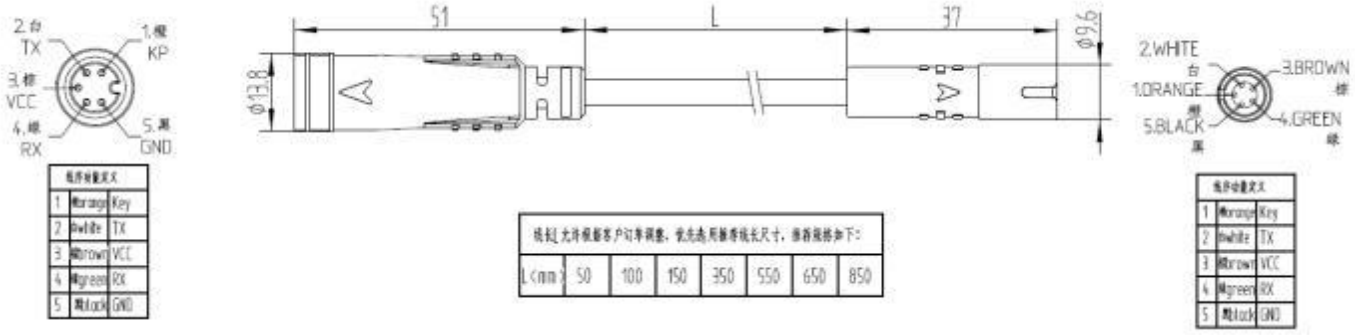


Table 1 Standard wire definition

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

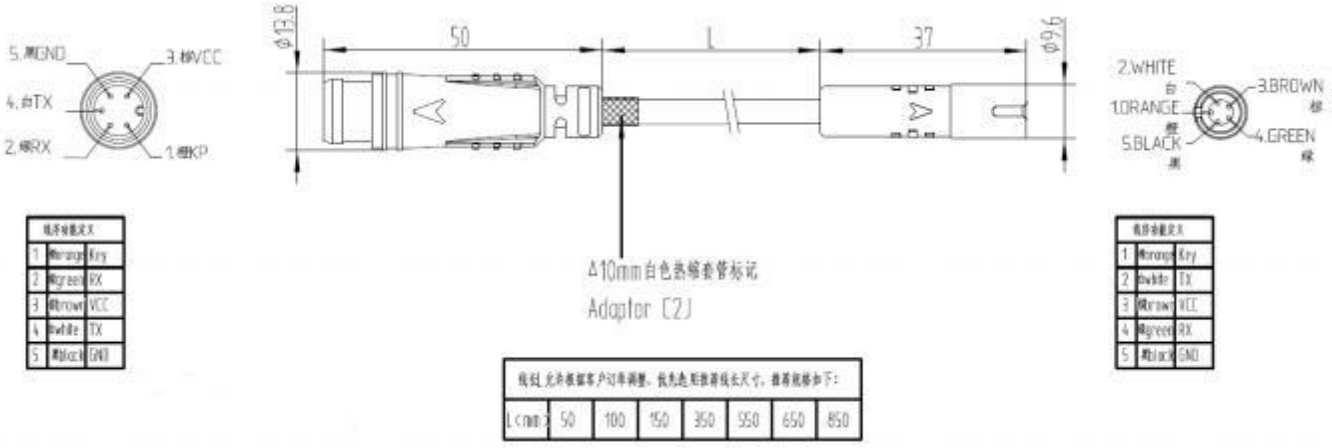
10.2 Standard conversion wire specifications：

Adaptor-C2H:



L(mm)	50	100	150	350	550	650	850

Adaptor-C2J:



L(mm)	50	100	150	350	550	650	850

D. Note

In the use of the display, pay attention to the security, do not plug the display in and out when the

power is on；

Try to avoid exposure in harsh environments like heavy rain, heavy snow, and strong sunlight

When the display can’t be used normally, it should be sent to repair as soon as possible