

# CMT03P Technical Instruction (English Version)



**Product Name: Mid Motor Drive Unit**

**Product Model: CMT03P (Standard Configuration)**

## Important Notice

- Please read this manual and the attached installation manual carefully. If you are not clear about any part of the information in this manual, please do not install it. Please consult the sales office.
- Please contact the dealer for product information not described in this manual.
- Do not disassemble or modify the product except the information stated in this user manual.
- Distributors must abide by the relevant laws and regulations of their countries and regions.
- Please follow the instructions given in the manual to install this product and use it correctly.
- Loose, damaged and improper adjustment of bolts and nuts may lead to sudden fall and serious injury.
- Be sure to let users know the following:  
Before riding, please check whether the wheels are fixed. When riding, don't be distracted by the instrument and fall off.
- Please be fully familiar with how to start the electric bicycle before riding it. Otherwise, it may accidentally start the electric bicycle and cause an accident. When riding at night, please make sure to turn on the headlights.
- Please unplug the battery before wiring or installing parts of the bicycle to prevent possible electric shock.
- Please use this product according to the instructions. Do not let people and children who have no operating experience, physical, sensory or mental diseases use this product, and do not let children play around this product.
- Please consult the dealer for information about product installation and adjustment software update (do not modify the software system without permission, which may easily lead to system failure). If there is any malfunction or problem, please consult the nearest dealer.
- This product is designed to be waterproof and can be driven in rainy days, but do not soak it in water, and do not use high-pressure water gun to clean it. As a result, the water immersion will lead to failure or rust.
- Please use this product with care, and do not apply strong impact.
- If you have any questions about the maintenance and use of the product, please consult the dealer at the place of purchase.
- Normal use of this product will cause natural wear and aging.



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# Catalogue

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## 1. Mid motor drive unit



- ★ It can meet the needs of bicycle installation and is convenient to install;
- ★ The central drive unit has a high degree of modular design, which is convenient for motor maintenance;
- ★ The middle drive unit adopts half-package design, which is convenient for customers to customize;
- ★ The center drive unit has double clutches;
- ★ The center drive unit is controlled by torque and has a built-in controller;
- ★ Large starting torque is more conducive to climbing;
- ★ High efficiency, low power consumption and long cruising range.

### 1.1 Material and waterproof grade

Shell materials and surface treatment

Internal aluminum shell: die-cast aluminum surface is coated by electrophoresis with matt black;

Outer plastic shell: the surface of the plastic shell is sprayed with matt black and silver paint.

Protection grade: IP65; ;

Environment: temperature: -20℃ ~ 55℃ atmospheric pressure: altitude ≤ 1000 m.

Relative humidity: ≤90% at 25℃

## 1.2 Main technical parameters

Model	CMT03P36	CMT03P48
Rated power	350W@105RPM	450W@105RPM
Maximum input power	500W(T<7min); max: 640W	650W(T<7min); max: 860W
Rated voltage	36V	48V
Maximum current limit	18A	18A
Maximum torque	120Nm@25RPM	120Nm@25RPM
Maximum speed	115RPM	115RPM
Maximum efficiency	≥80%	≥80%

## 2. Attachment

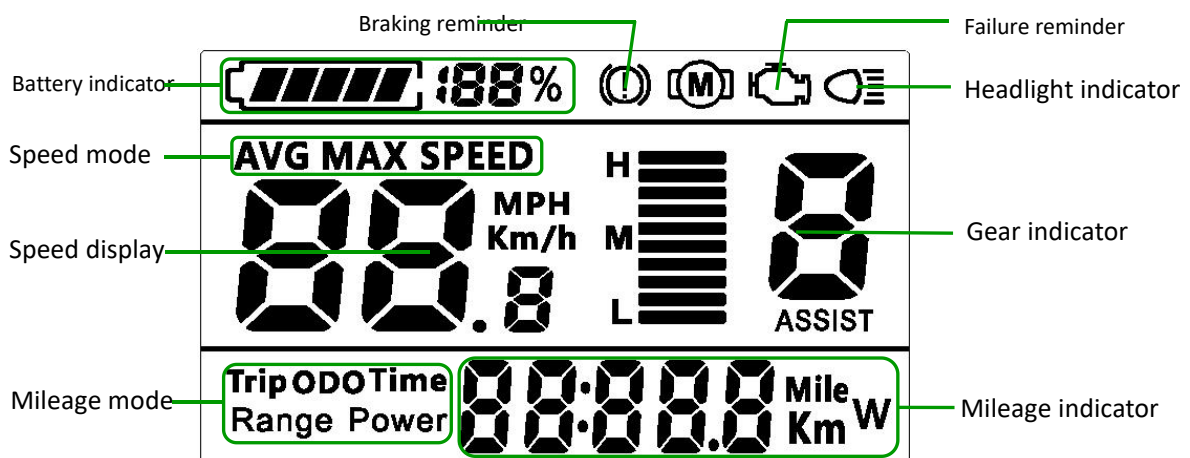
### 2.1 Instrument

#### 2.1.1 Instrument name

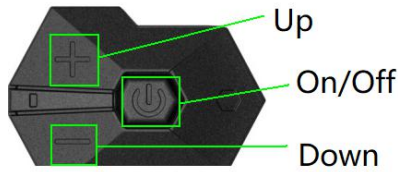
Medium color TFT LCD instrument, model: APT 850C

### LCD display description and key function description

Liquid crystal full display diagram:



Key function:



## 2.1.2 Parameter setting

See 850C-ENS product specification -J-202106 billion.

## 2.2 Speed sensor

### 2.2.1 Product model

Model: SPL-10

### 2.2.2 Appearance



( speed sensor )



( M5 PH screw )

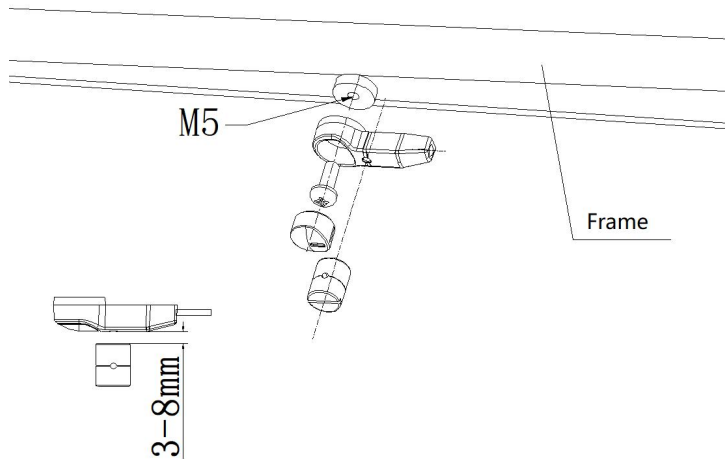


( cover )



( Induction magnet )

### 2.2.3 Product installation drawing



**Locking Torque (<1Nm)**

## 2.2.4 Specific specifications

Parameter	Numerical value
Rated voltage	DC5V
Rated current	5mA
Pulse/cycle	one
Installation distance	3-10mm
Working temperature	-30~70°C
Waterproof grade	IPX7
Authentication	CE ROHS

## 2.3 Dental tray

### 2.3.1 Appearance of dental tray: (as shown in the figure)



### 2.3.2 Tooth plate model: 42T unilateral chain cover

### 2.3.3 Basic parameters of dental tray

Number of teeth: 42 teeth

Shape: concave, with circular pattern

Color: black



## 2.4 Crank

### 2.4.1 Appearance of crank: (as shown in the figure)



### 2.4.2 Crank model: TS1-170AA

### 2.4.3 Basic parameters of crank:

Length: 170mm

Material: 6061

Color: black

**\* Note: The left and right cranks have different thread directions, and the left crank is marked with "L"**

**The right crank is marked with "R"**

## 2.5 Other accessories



Connection Plate



Hex Torx sunk socket M6X65



Hex Torx sunk screw M6X18



Plastic shell (a set of 4)



hexagon socket pattern pan head screws M4X8





Chain Wheel nut M26 (reverse tooth)



Crank screw M8X20



External speed sensor connection cable



Front light connection cable



Display connection cable



Rear light connection cable

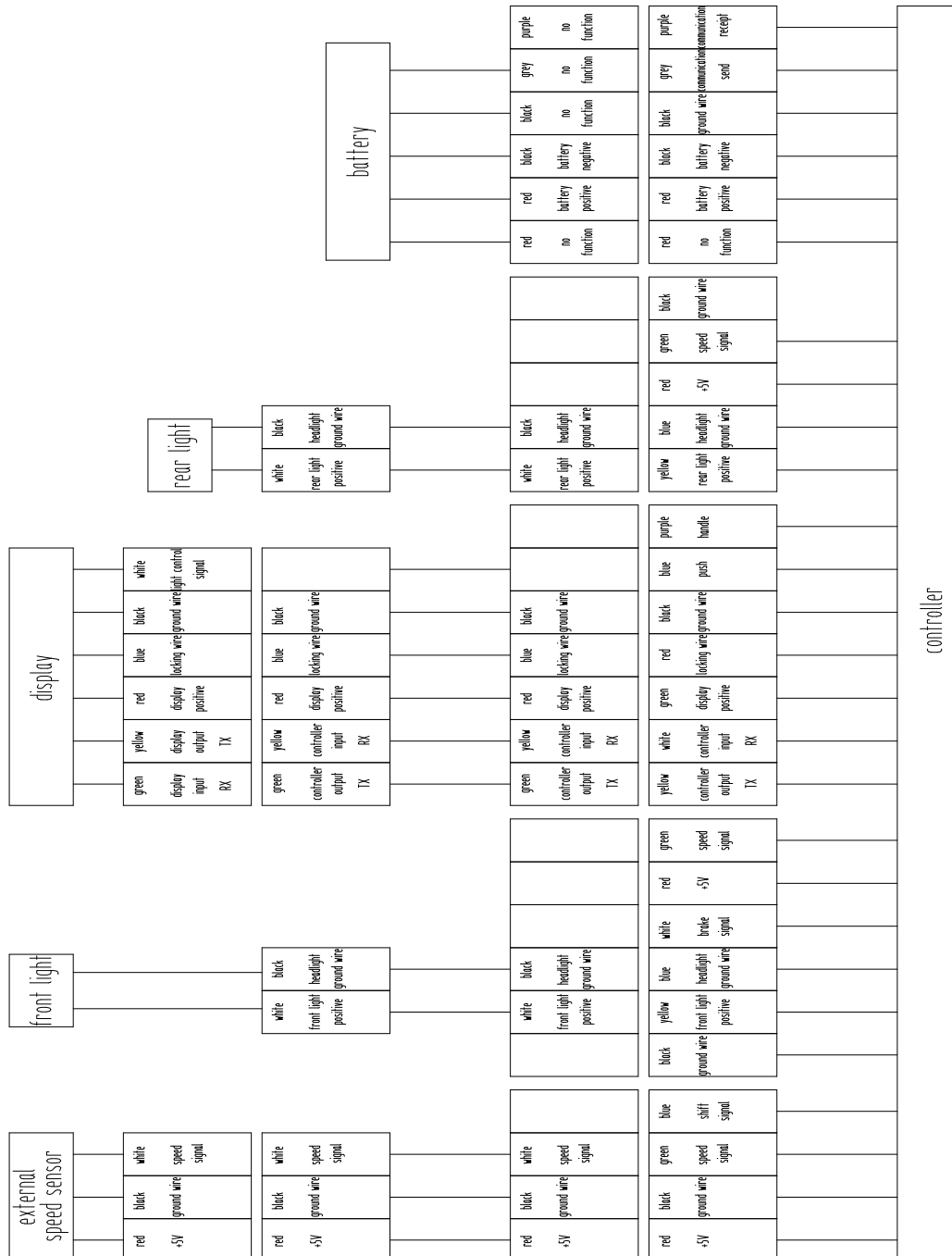


Power connection cable

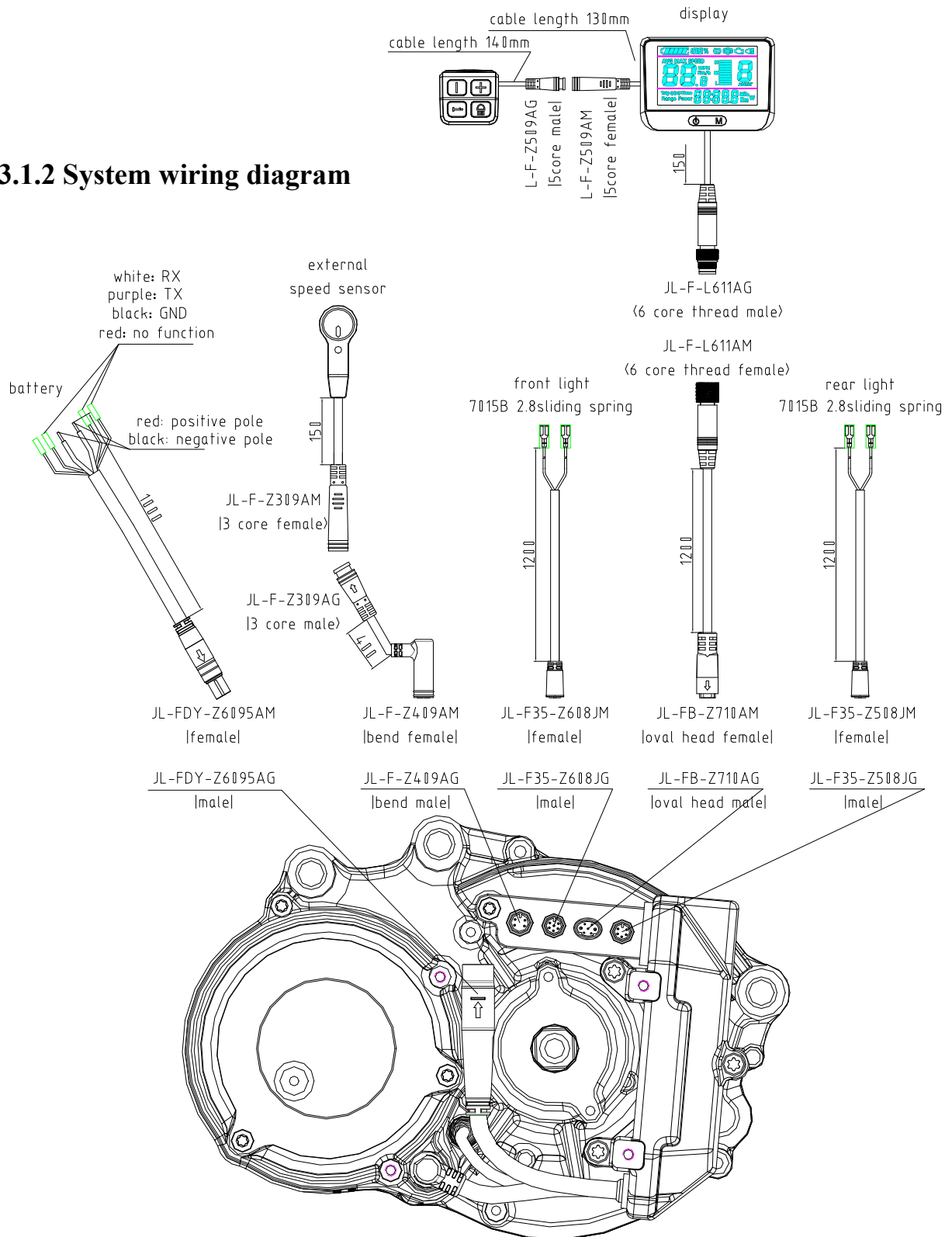
### 3. Assembly method

#### 3.1 System schematic diagram and wiring diagram

### 3.1.1 System schematic diagram



### 3.1.2 System wiring diagram



## 3.2 Schematic diagram of loading

### 3.2.1 Threading

Penetrating the external speed sensing adapter, headlight adapter, instrument adapter, rear light adapter and power adapter into the whole vehicle according to the requirements of the whole vehicle;

Insert the above wires into the motor according to 3.1.2 System Wiring Diagram;

Arrange the line length and position;



### 3.2.2 Install the motor

Insert three hexagon socket countersunk screws M6X65 and three hexagon socket countersunk screws M6\*18 into the three holes of the frame connecting plate as shown in the figure and lock them(locking torque: 8-10Nm);



### 3.2.3 Install the plastic housing.

Fix the plastic shell to the motor;

Lock six M4X8 hexagon socket head screws as shown in the figure(locking torque: <1Nm);



①



②



③

### 3.2.4 Install the tooth plate and lock the screw of the tooth plate.

Install the tooth disk assembly on the motor according to the spline groove direction;

Tighten the nut (anti-tooth) of the tooth plate in the reverse direction(locking torque: 20-24Nm);





### 3.2.5 Install left and right cranks and lock crank screws.

Sleeve the crank on the central shaft (the included angle between the left and right cranks is 180°)(locking torque 30-35Nm);

Lock the crank screw as shown in the figure;



### 3.2.6 Install external speed sensor and magnetic steel.

See 2.2.3 Product Installation Diagram for installation requirements.



## 4. Matters needing attention and fault analysis

### 4.1 Matters needing attention

It should be parked in a ventilated and dry warehouse. It should not be parked in a damp, acid and alkali place, nor should it coexist with magnetic articles.

Each connector is plugged into place according to the arrow;

Liquid crystal avoids the impact of sharp objects;

It is recommended that the product should not be overloaded for a long time.

Products should avoid wading or soaking in water.

### 4.2 General fault analysis

serial number	Fault phenomenon	Possible causes of failure	debugging
one	The motor cannot be mounted on the frame.	Welding deformation of frame connecting plate	Reduce welding deformation of frame.
2	Meter no display	Plug-in is not connected properly.	Check all plug-ins and connect
		Use non-standard instruments.	Use our standard instrument.
		The battery runs out.	Charge as required
three	Meter kilometers are not displayed.	The external speed sensor plug-in is not connected properly.	Check plug-in and connect
		Magnetic steel is not installed in place.	Check the position of magnetic steel and install it.
four	Meter kilometer display is abnormal.	Unreasonable magnetic steel position distance	Adjust the position distance of magnetic steel.
		There is strong environmental interference	Change the environment
five	The front/rear lights are off.	The light control module is not installed.	Install the light control module
		Plug-in is not connected properly.	Check all plug-ins and connect
		The rated voltage of front/rear lamps does not match.	Replace the front/rear lights with the correct voltage.
six	No response when the brake is cut off.	Plug-in is not connected properly.	Check all plug-ins and connect



Note: When the motor works without external force, it is normal for the crank to follow.

### 4.3 Other fault analysis and error codes

NO	error code	Wrong definition	LED flashing		describe
1	0x00	normal	Flash once per second		--
2	0x10	overtension	Flash once		restorability
3	0x11	undervoltage	Flash twice		restorability
4	0x12	Motor speed feedback failure (such as motor stalling)	Flash 4 times		restorability
5	0x13	Overtemperature	Flash 9 times		restorability
6	0x14	Voltage fault	Flash 10 times		beyond retrieve
7	0x15	Abnormal output	Flash 11 times		beyond retrieve
8	0x16	MCU fault	Flash 12 times		beyond retrieve
9	0x17	Flying car protection	Flash 13 times		beyond retrieve
10	0x18	Pedal sensor failure	Flash 14 times		beyond retrieve
11	0x19	Speed sensor failure	Flash 15 times		beyond retrieve
12	0x30	Communication failure			The controller can't communicate with the instrument, and the instrument sends a fault code.
13	0x21	overflowing	overflowing	Flash 3 times	restorability
			MOS tube failure	Flash 6 times	beyond retrieve
14	0x22	Turn the voltage too high	Flash 8 times		restorability

NO	error code	Wrong definition	LED flashing	describe
15	0x23	Phase line fault	Flash 7 times	beyond retrieve
16	0x24	Hall fault	Flash 5 times	restorability
17	0x25	Brake failure		restorability
note:  Recoverable-after the alarm, the EPAC drive system will detect it in real time. After the fault disappears, the alarm will be relieved and normal operation will be achieved.  Unrecoverable-epac drive system can't work normally. Turn off the power and troubleshoot.  The display instrument can display error codes or error messages.				

## 5. Packing list

1. 1 central drive unit
2. 1 instrument
3. 1 set of speed sensor (including magnetic steel)
4. 1 set of dental tray assembly
5. Left crank 1PCS
6. Right crank 1PCS
7. 1 set of plastic shell
8. Tooth disk nut M26 (anti-tooth) 1PCS
9. Crank screw M8X20 (used to install crank) 2PCS
10. Hexagon socket pattern pan head screw M4X8 (used to install plastic shell) 6PCS
1. Hexagon socket type countersunk head screw M6X65 (used to connect the motor and the frame connecting plate) 3PCS
12. Hexagon socket countersunk head screw M6X18 (used to connect motor and frame connecting plate) 3PCS
13. One external speed sensing adapter.
14. 1 headlamp adapter
15. 1 instrument adapter cable
16. 1 connector for rear light

## 17. 1 power adapter cable

### 6. Packaging method

Wrap the motors in plastic film bags, and put 3 sets in one box;

Accessories are packaged separately from the motor; (Pay attention to counting quantity);

\* In addition, the connecting frame is shipped separately in advance, which is convenient for welding the frame in advance and facilitating production arrangement.