1.Fault code and corresponding icon description

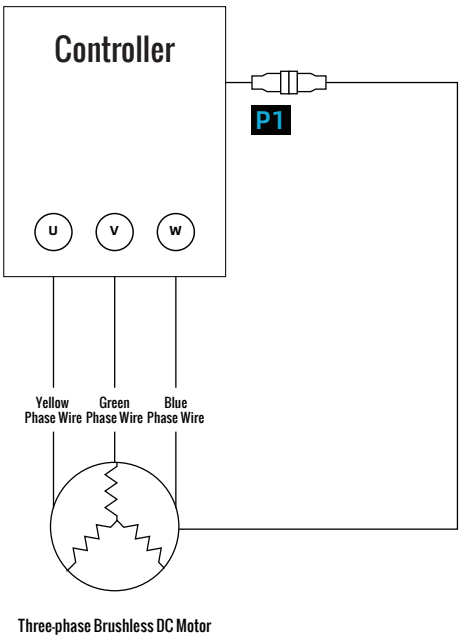
NO.	Fault Name	Icon File Name	Fault Definition
1	Motor overheating	**MOTOR OVERHEAT**	Excessive motor temperature. Power is cut off to protect the motor from overheating damage
2	Controller overheating	**FOC OVERHEAT**	Excessive controller temperature. Power is cut off to protect the controller from overheating damage
3	Short circuit protection	**SHORT CIRCUIT FAULT**	Phase current short circuit. Protection activated.
4	Overcurrent protection	**PHASE OCP**	Excessive phase current. Protection activated
5	Overvoltage protection	**BUS OVP**	Protection activated: bus voltage exceeded the battery's fully-charged voltage threshold
6	Low voltage protection	**BUS UVP**	Protection activated: bus voltage below the battery's cut-off threshold
7	Hall anomaly	**MOTOR HALL FAULT**	Motor Hall sensor malfunction
8	Encoder abnormality	**ENCODER FAULT**	The encoder works abnormally, affecting the detection of motor position and speed detection
9	System error	**SYSTEM ERROR**	Unknown error occurred in the system
10	Motor saturation	**MOTOR SATURATION**	The motor reaches saturation state, performance degraded
11	Abnormal throttle lever	**THROTTLE FAULT**	Abnormal throttle signal output
12	Motor overheating and power reduction	**MOTOR OH REDUCE**	Motor overheating, system automatically reduces power
13	Low voltage and power reduction	**LOW SOC REDUCE**	Voltage too low, system automatically reduces power
14	Controller overheating and power reduction	**FOC OH REDUCE**	Controller overheating, system automatically reduces power
15	Weak magnetic activation	**FIELD WEAKENING**	Motor field weakening activation
16	Bus communication failure	**BUS COMMUNICATION FAILURE**	Loss of communication data from the controller, indicating a potential issue with the bus network
17	Brake cutoff	**BRAKE CUTOFF**	System power-off protection during braking
18	Stand cutoff	**KICKSTAND CUTOFF**	System power-off protection when kickstand is lowered
19	Tilt cutoff	**TILT CUTOFF**	System power-off protection when the vehicle tilts

II.Common troubleshooting and solutions

1.Encoder abnormality

- Fault phenomenon: The controller shows that the encoder is abnormal.
- Troubleshooting steps and solutions:

1.Upgrade the controller firmware version to the latest version in the APP, which provides more comprehensive fault detection. After the update, perform motor self-learning again.
2.Check the motor serial number version at the position of the motor encoder cover, and also check whether the plug connected to the motor and controller is damaged or has water ingress. If it is damaged, replace the plug. If it has water ingress, dry it and do waterproof treatment.

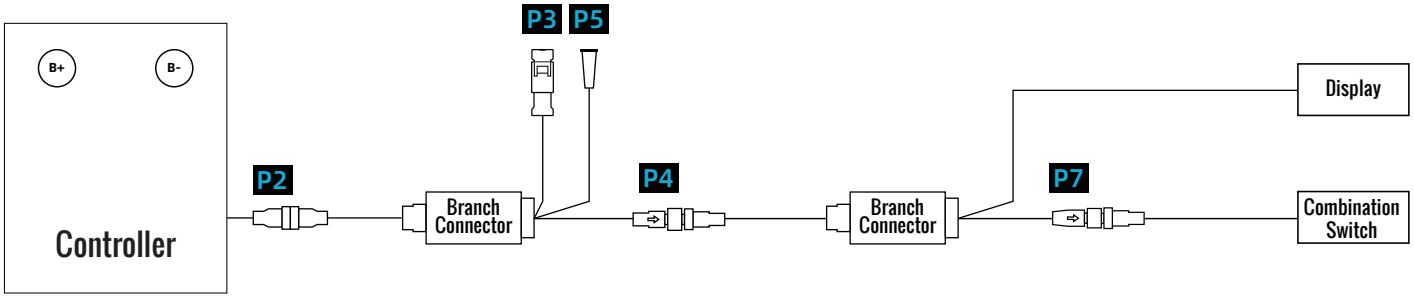


3.Remove the motor encoder cover and check if there is water ingress on the encoder circuit board and if the internal plug is corroded. If the circuit board gets wet, it needs to be dried and checked for any component damage; If the plug is corroded, it can be sanded to remove rust, and if it is severe, the encoder can be replaced.

2.Bus communication failure

- Fault phenomenon: The controller prompts a bus communication fault, which may cause abnormal data transmission between the instrument and the controller.
- Troubleshooting steps and solutions:

1.Check if the plug from the instrument to the controller wiring harness for water ingress or damage. If water is present, dry it with compressed air and clean with anhydrous alcohol; If the plug breaks, replace the wiring harness.
2.Check if the middle section of the wiring harness for damage or misaligned pins. If the harness is damaged: Repair it with insulating tape or replace the entire harness; If the pins are misaligned, carefully correct them and reconnect the plug.



3.Overvoltage protection

- Fault phenomenon:The controller displays overvoltage protection.
- Troubleshooting steps and solutions

1.Under what circumstances does over-voltage protection occur (e.g., low-speed driving, aggressive driving)? After overvoltage protection occurs, restart the vehicle first and observe whether normal operation resumes.
2.Check if the "Battery Parameters" section in the APP advanced settings has a full-charge voltage lower than the battery's actual voltage. If it is lower, adjust it to the correct value.
3.Check if the battery has protection information and verify if it can stay in the ON position normally. If the battery cannot be turned on normally, check if the battery connection is loose or if it's potential battery faults.
4.Check whether the two sides of the circuit breaker are loose, whether there is obvious water or mud ingress. If it is loose, tighten the screws; If water or mud ingress, clean thoroughly and apply waterproofing measures. If it is aged / water-damaged breaker, replace it immediately.

4.Low voltage protection

- Fault phenomenon: The controller displays low voltage protection.
- Troubleshooting steps and solutions:

1.Under what circumstances does low voltage protection occur (low-speed driving, violent driving)? After low voltage protection occurs, restart the vehicle and observe whether normal operation resumes.
2.Check if the low voltage protection voltage of the battery in the "Battery Parameters" section in the APP advanced settings is set correctly. If it is incorrect, adjust it to the appropriate value.
3.Check both sides of the circuit breaker and the controller's busbar terminals for loose connections, stripped threads, or water or mud ingress. Apply the same corrective procedure as used for over-voltage protection. This issue is most commonly caused by a faulty connection. Ensure all connections to the circuit breaker are proper and secure.

5.Display power tube failure

- Fault phenomenon: The controller displays a power tube fault.
- Troubleshooting steps and solutions:

1.The display power tube fault may not always means blown power tube, it could be a misjudgment caused by water stains. You can eliminate the misjudgment by pushing the vehicle manually to feel the resistance.
2.Judging whether the power tube has blown: If the vehicle is powered off and there is a significant resistance, it is high probability of blown power tube.
3.Avoid blown power tube: Check the circuit breaker main harness to ensure that the terminal screws are tightened. If it is aged / water-damaged breaker, replace it immediately.

6.Abnormal throttle lever

- Fault phenomenon: The controller displays abnormal throttle lever.
- Troubleshooting steps and solutions:

1.Press the ↓ (Down) button on the left side of the display twice and then rotate the throttle. The throttle voltage can also be verified in the 'Real-time Status' menu within the app. The expected normal range is between 0.8V to 4.2V.1
2.Check the throttle lever plug for misalignment, water ingress, and corrosion.
3.Check if the vehicle has suffered impact damage to the throttle lever. Check the wiring harness for visible breaks/cuts and excessive tension.
4.Restart the vehicle after troubleshooting to clear the abnormal fault.

7.The instrument displays overcurrent protection and short circuit protection

- Fault phenomenon: The instrument displays over-current protection or short circuit protection.
- Troubleshooting steps and solutions

1. Check if the motor encoder has water ingress and if the plug connection is in place. If water ingress in encoder, dry it and check the plug connection; If the plug is not in place, plug it back in tightly.
2. Check for phase-to-phase shorts by measuring resistance between motor phase wires using a multimeter. If resistance reads zero or near-zero, a short circuit exists. Locate and eliminate the short point.

III. Maintenance precautions

1.Before maintenance, be sure to turn off ignition switch and disconnect the battery connection to ensure safety.
2.Before performing any operation on the controller, it is necessary to first study the structure and wiring to avoid misoperation.
3.When replacing parts, it is necessary to use OEM components or certified accessories that meet specifications to ensure quality and compatibility.
4.When handling plugs and wiring harnesses, pay attention to waterproofing and dustproofing to avoid new faults caused by poor contact.
5.If encountering issues beyond your expertise during repairs, cease work immediately and contact qualified technicians or after-sales service.
6.After the repair is completed, reconnect the battery, turn ignition ON, check if the fault has been resolved, and test all functions for normal operation.