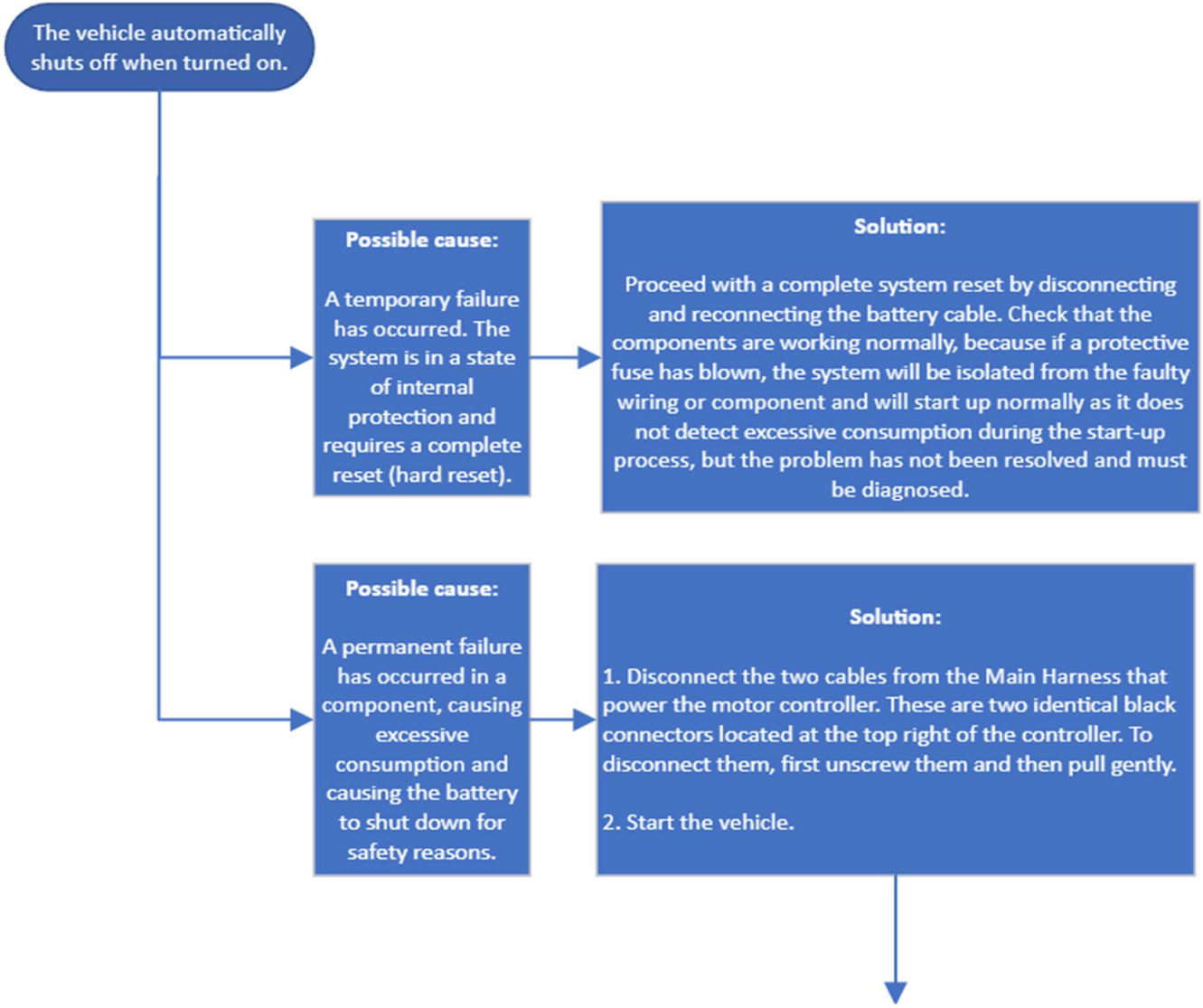
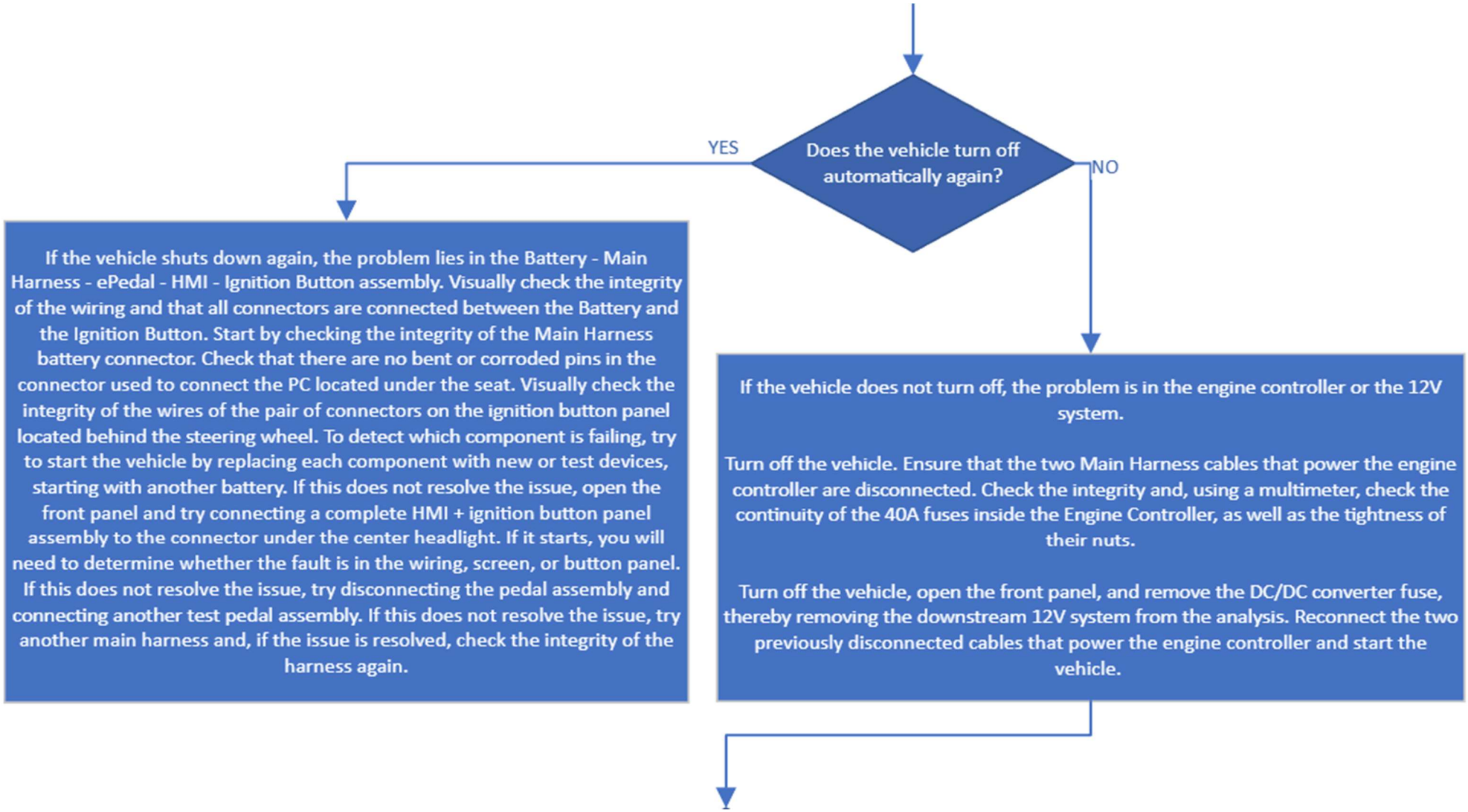
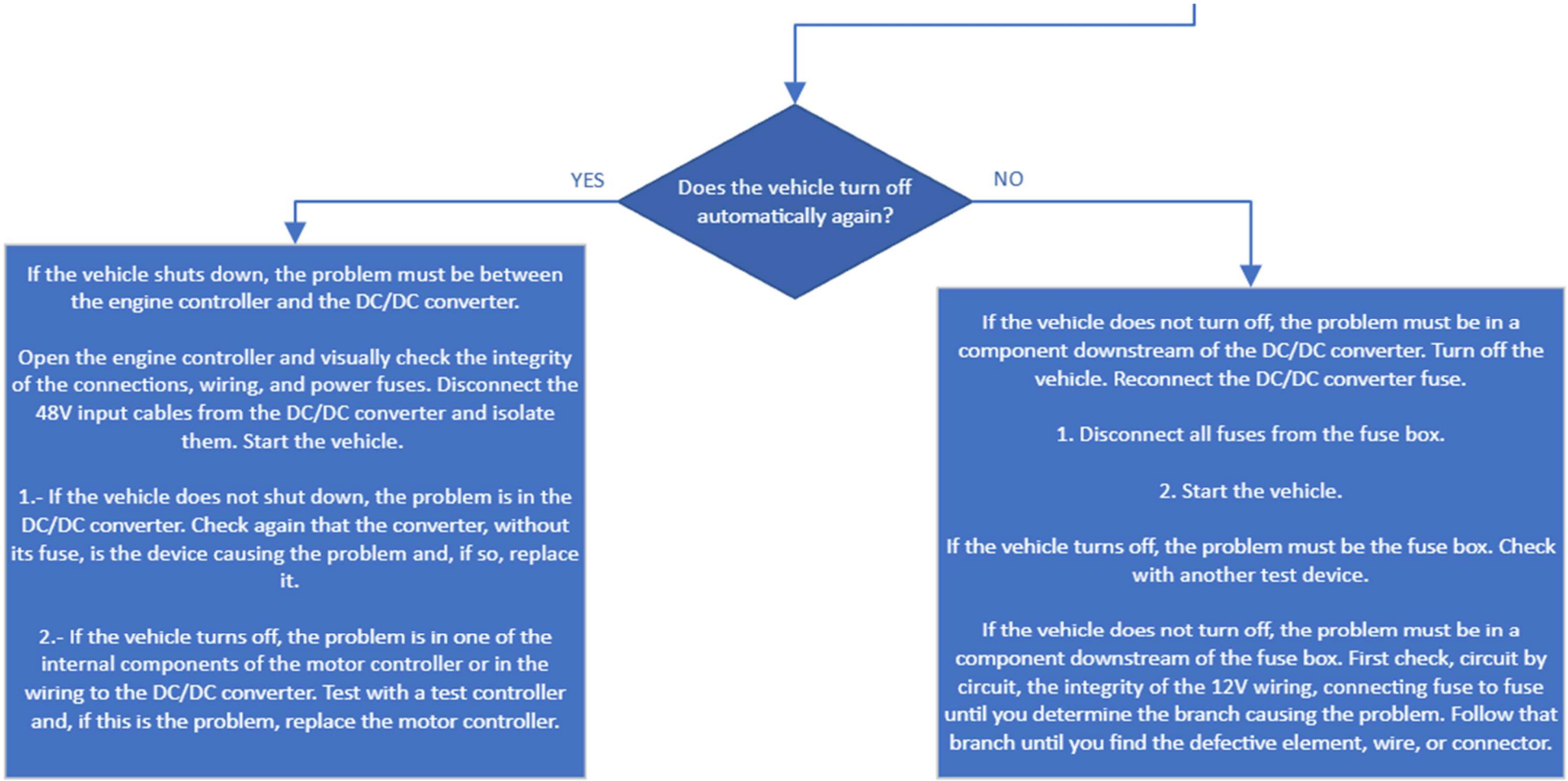
Scoobic BioCargo XL - Troubleshooting Guide

Ver 1.0

Schematic guide




Does the vehicle turn off automatically again?
YES
NO
If the vehicle shuts down again, the problem lies in the Battery - Main Harness - ePedal - HMI - Ignition Button assembly. Visually check the integrity of the wiring and that all connectors are connected between the Battery and the Ignition Button. Start by checking the integrity of the Main Harness battery connector. Check that there are no bent or corroded pins in the connector used to connect the PC located under the seat. Visually check the integrity of the wires of the pair of connectors on the ignition button panel located behind the steering wheel. To detect which component is failing, try to start the vehicle by replacing each component with new or test devices, starting with another battery. If this does not resolve the issue, open the front panel and try connecting a complete HMI + ignition button panel assembly to the connector under the center headlight. If it starts, you will need to determine whether the fault is in the wiring, screen, or button panel. If this does not resolve the issue, try disconnecting the pedal assembly and connecting another test pedal assembly. If this does not resolve the issue, try another main harness and, if the issue is resolved, check the integrity of the harness again.
If the vehicle does not turn off, the problem is in the engine controller or the 12V system.
Turn off the vehicle. Ensure that the two Main Harness cables that power the engine controller are disconnected. Check the integrity and, using a multimeter, check the continuity of the 40A fuses inside the Engine Controller, as well as the tightness of their nuts.
Turn off the vehicle, open the front panel, and remove the DC/DC converter fuse, thereby removing the downstream 12V system from the analysis. Reconnect the two previously disconnected cables that power the engine controller and start the vehicle.


Does the vehicle turn off automatically again?
YES
NO
If the vehicle shuts down, the problem must be between the engine controller and the DC/DC converter.
Open the engine controller and visually check the integrity of the connections, wiring, and power fuses. Disconnect the 48V input cables from the DC/DC converter and isolate them. Start the vehicle.
1.- If the vehicle does not shut down, the problem is in the DC/DC converter. Check again that the converter, without its fuse, is the device causing the problem and, if so, replace it.
2.- If the vehicle turns off, the problem is in one of the internal components of the motor controller or in the wiring to the DC/DC converter. Test with a test controller and, if this is the problem, replace the motor controller.
If the vehicle does not turn off, the problem must be in a component downstream of the DC/DC converter. Turn off the vehicle. Reconnect the DC/DC converter fuse.
1. Disconnect all fuses from the fuse box.
2. Start the vehicle.
If the vehicle turns off, the problem must be the fuse box. Check with another test device.
If the vehicle does not turn off, the problem must be in a component downstream of the fuse box. First check, circuit by circuit, the integrity of the 12V wiring, connecting fuse to fuse until you determine the branch causing the problem. Follow that branch until you find the defective element, wire, or connector.

Definition of the problem.	Possible cause	Proposed solution
Power button not working properly. When starting the vehicle, one or more buttons do not work.	The connector linking the keypad to the display has been pulled several times and a cable/terminal has broken or come loose inside the connector.	The vehicle starts but the “up” and “down” buttons do not work. The problem is probably with the connectors that link the display to the button panel. 1.- Check that the ignition button connector behind the steering wheel is properly connected. Visually check the integrity of the cables entering and exiting the pair of connectors that connect the ignition button to the wiring located behind the steering wheel. If you do not detect any problems in this regard, try connecting a new or test button panel to that point.2.- Try a completely new Display-Button Panel assembly. Open the front of the vehicle and try connecting a complete HMI + Ignition Button Panel assembly to the connector under the center headlight. If it turns on, you will need to determine whether the fault is in the wiring or the HMI display. Test only the new display-button panel connection cable with the original devices, testing all the buttons on the button panel. If the cable is not the problem, it must be the HMI screen. Check with a new screen and original wiring and button panel.
CAN ERROR. When starting the vehicle, the display shows a CAN error.	Problem inside the engine controller. - Controller or gateway not working and not sending CAN messages. - 40A power fuses blown or loose. - A cable or terminal related to CAN is damaged inside the controller.	Open the motor controller. - Check that both internal devices (Controller and Gateway) are working when the vehicle is turned on by checking that their LEDs are lit. - Check the integrity of the 40A internal fuses and use a multimeter to check their continuity. To do this, you must first disconnect the two cables from the main harness that power the controller and are connected externally to the engine controller box in the upper right corner (two identical black connectors). To disconnect them, first unscrew the threaded lock and then pull gently. - Check the integrity of the wiring and terminals of the CAN communication lines. - With all the wiring reconnected, measure the resistance of the vehicle's CAN line at the pins of the CAN connection plug (expected value 40-60 Ohms). - Check that there is no continuity between CANH and the aluminum plate, or between CANL and the aluminum plate.
	The connector or wiring connecting the light switch panel to the CAN harness has been damaged, or one of the wires/terminals has broken or come loose inside the connector.	1.- Check that it is properly connected. 1.2.- If it is disconnected, reconnect it and check that it is working and whether the CAN fault persists. 1.3- If it is connected, remove the front panel if necessary and replace the entire assembly with a new one. 2.- With the new light button panel connected to the vehicle, start the vehicle and check whether the display shows a CAN fault and whether the device lights up and responds to the functions.

	The connector or wiring connecting GeoTab to the CAN harness has been damaged, or one of the wires/terminals has broken or come loose inside the connector.	Visually check the integrity of the wiring and connectors. Disconnect GeoTab from the center beam harness and check if the problem disappears.
	Relay box not working, not installed properly, or connector loose.	Check that the lights, indicators, and horn are working. If not, open the front of the vehicle and check the continuity of the "position" power fuse, as this is the one that powers the relay box. Check the wiring and connections associated with this component.
The vehicle shuts down while on the road. The vehicle has not had any problems when stationary. The shutdowns only occur in the middle of the route, with different batteries.	Faulty connections on the CAN communications bus. It is possible that a screw or nut has become loose due to improper tightening and vibrations, causing intermittent contacts and loss of information or unwanted contact between the communication line and the chassis.	First, we check that all connections are secure, starting with those that are accessible. 1.- We check that the connector and cable of the main harness that connects to the battery are in optimal condition. If the connector is broken, we must replace the entire main harness. 2.- We check the controller connections. The controller is powered by two cables from the MANDO main harness. The connectors on these cables are connected and screwed in place as a safety measure. We make sure they are completely screwed in. We check that the hall-temp cable is properly connected, as well as the connectors for the three phases of the motor (orange, red, and black). 3.- Open the motor controller and visually check the integrity of the CAN cables and their terminal connections. On the CAN interconnection board, check that there is no continuity between CANH and the aluminum plate, or between CANL and the aluminum plate. If continuity exists, disconnect each cable one by one until you find the branch and component causing the continuity, or if it is the CAN interconnection bridge itself that is making contact. Measure the resistance of the CAN line at the interconnection tab with the vehicle turned off (the value should be 40-60 Ohms with the battery connected/disconnected).
	Faulty connections in the 48V line. It is possible that one of the nuts on the 40A power fuses inside the controller has become loose due to improper tightening. Vibrations cause intermittent contacts and system shutdown or reset.	Open the motor controller and check: - The tightness of the nuts securing the fuses to the fuse holders. - The tightness of the nuts on the 48V connection bridge.

Parking lights not working	Blown position fuse	We removed the front panel of the vehicle and verified that the position fuse was blown. After replacing the fuse with a new one, we verified that all the position lights + USB + FAN were working correctly. It is likely that a faulty cable/device was connected to the USB charging port, causing a short circuit.

ePedal DTC List.

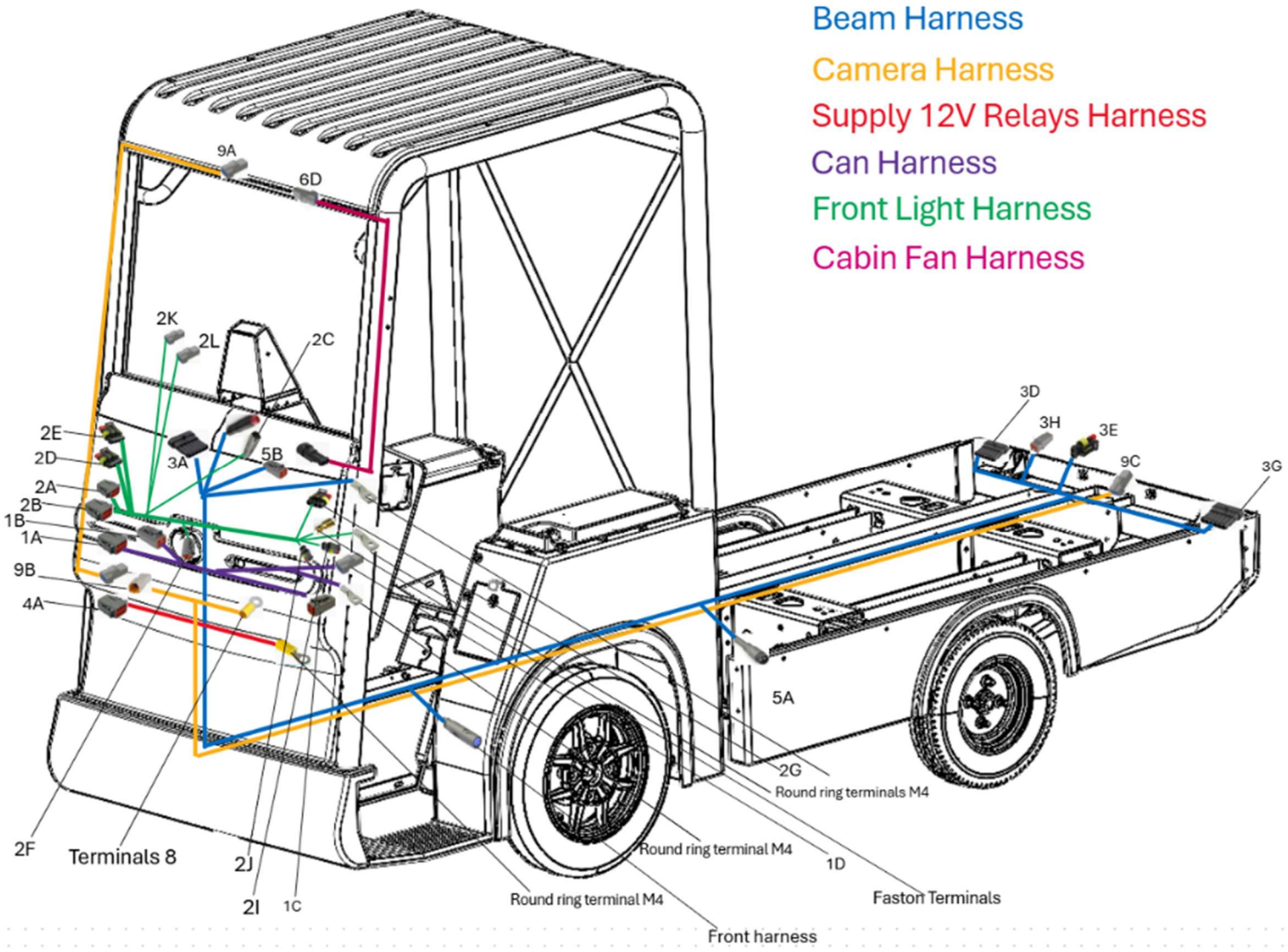
No	Error Name	DTC	Description	Fail Action	HMI Lamp	Recovery Conditi	Repair Action
1	Error_Motor1_CAN_Open	6030h	Motor1 is not sending CAN	System Stop	CAN	System Reset	1. Harness Connection Check 2. Battery State Check, Motor State Check 3. Measure CAN Line Termination Resistance (60 ohm) 4. System Reset
2	Error_Motor2_CAN_Open	6031h	Motor2 is not sending CAN	System Stop	CAN	System Reset	1. Harness Connection Check 2. Battery State Check, Motor State Check 3. Measure CAN Line Termination Resistance (60 ohm) 4. System Reset
3	Error_Battery1_CAN_Open	6032h	Battery1 is not sending CAN	System Stop	CAN	System Reset	1. Harness Connection Check 2. Battery State Check 3. Measure CAN Line Termination Resistance (60 ohm) 4. System Reset
4	Error_Battery2_CAN_Open	6033h	Battery2 is not sending CAN	System Stop	CAN	System Reset	1. Harness Connection Check 2. Battery State Check 3. Measure CAN Line Termination Resistance (60 ohm) 4. System Reset
5	Error_HMI_CAN_Open	6034h	HMI is not sending CAN	System Stop	CAN	System Reset	1. Harness Connection Check 2. System Reset
6	Error_BigStoneHMI_CAN_Transfer	6035h	Bigstone CAN data not transferring properly	System Stop	CAN	System Reset	1. Check external noise factors 2. SW Version Check 3. System Reset
7	Error_OpenHMI_CAN_Transfer	6037h	OpenHMI CAN data not transferring properly	System Stop	CAN	System Reset	1. Check external noise factors 2. SW Version Check 3. System Reset
8	Error_OpenHMI_CAN_Period	603Ch	OpenHMI CAN Period is abnormal	System Stop	CAN	System Reset	1. Check external noise factors 2. SW Version Check 3. OpenHMI CAN Period Check 4. System Reset
9	Error_48V_Over_Voltage	1030h	Overvoltage on the ePedal 48V port	System Stop	Alternator	System Reset	1. Check for Battery / Power Source High Voltage 2. Check for Battery Failure 3. System Reset
10	Error_DClink_Over_Voltage	1031h	Overvoltage on the ePedal Dclink	System Stop	Alternator	System Reset	1. Check for Battery / Power Source High Voltage 2. Check for Battery Failure 3. System Reset
11	Error_DClink_Under_Voltage	1032h	Undervoltage on the ePedal Dclink	System Stop	Alternator	System Reset	1. Harness Connection Check 2. Check for Battery / Power Source Low Voltage 3. Check for Battery Failure 4. System Reset
12	Error_12V_Over/Under_Voltage	1033h	Over/Undervoltage on the ePedal 12V port	System Stop	Alternator	System Reset	1. Harness Connection Check 2. Check for Battery / Power Source Low Voltage 3. Check for Battery Failure 4. System Reset
13	Error_Phase_Over_Current	1330h	Overcurrent on the ePedal winding	System Stop	Alternator	System Reset	1. Check Circuit Short 2. System Reset 3. if it occurs continuously after System Reset, HW Check required

14	Error_DC_Over_Current	1331h	Overcurrent on the ePedal DC(48V)	System Stop	Alternator	System Reset	1. Check Circuit Short 2. System Reset 3. if it occurs continuously after System Reset, HW Check required
15	Warning_ECU_HighTemp	1310h, 1311h	Normal Condition, but performance degraded due to ECU high temperature	Less torque output	Thermometer sign	Cooling	1. Cooling
16	Error_ECU_HighTemp	1332h	ECU Severe HighTemp Occurred. Immediate Cooling Required	System Stop	Alternator TEMP Thermometer sign	Cooling & System Reset	1. Cooling 2. System Reset
17	Error_Position_Sensor	1230h	Position sensor measurements abnormal	System Stop	Alternator	System Reset	1. System Reset 2. Continuous occurrence, HW check required
18	Error_Phase_Current_Sensor	1231h	Phase Current Sensor measurements abnormal	System Stop	Alternator	System Reset	1. System Reset 2. Continuous occurrence, HW check required
19	Error_DC_Current_Sensor	1232h	DC Current Sensor measurements abnormal	System Stop	Alternator	System Reset	1. System Reset 2. Continuous occurrence, HW check required
20	Error_ECU_Temp_Sensor	1233h	ECU Temp Sensor measurements abnormal	System Stop	Alternator	System Reset	1. System Reset 2. Continuous occurrence, HW check required
21	Warning_Abnormal_Off	1610h	Abnormally turned off on last system shutdown	-	-	System Reset	1. Only DTCs remain (No Action, No lamp) 2. Continuous occurrence, SW Version Check
22	Error_ePedal_Flash	1530h ~ 1536h	CAN occur on first run or after an update	System Stop	Alternator	System Reset	1. System Reset 2. Some parameters might have been changed to default values. Reapply the configuration file after a reboot. 3. Continuous occurrence, HW check required
23	Warning_PAS_CAN_Open	6010h	'Parking Assistance System' is not sending CAN	-	-	-	-
24	Error_PIN_CAN_Open	603Dh	'Personal Identification Number' is not sending CAN	System Stop	CAN	System Reset	1. System Reset 2. Continuous occurrence, HW check required
25	Error_Battery1_HighTemp_Charge	3030h	Battery1 charged at high temperature	System Stop	Battery TEMP Thermometer sign	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Battery check required
26	Error_Battery1_LowTemp_Charge	3031h	Battery1 charged at low temperature	System Stop	Battery TEMP Thermometer sign	Heating & System Reset	1. Heating 2. System Reset 3. Contiuous occurrence, Battery check required
27	Error_Battery1_HighTemp_Discharge	3032h	Battery1 discharged at high temperature	System Stop	Battery TEMP Thermometer sign	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Battery check required
28	Error_Battery1_LowTemp_Discharge	3033h	Battery1 discharged at low temperature	System Stop	Battery TEMP Thermometer sign	Heating & System Reset	1. Heating 2. System Reset 3. Contiuous occurrence, Battery check required
29	Error_Battery1_OverCurrent_Charge	3034h	Over current on Battery1 charging FET	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
30	Error_Battery1_OverCurrent_Discharge	3035h	Over current on Battery1 discharging FET	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
31	Error_Battery1_OverVolt_Charge	3036h	Over voltage on Battery1 charging FET	System Stop	Battery Full SOC	Discharging & System Reset	1. Discharging 2. System Reset 3. Contiuous occurrence, Battery check required

32	Error_Battery1_UnderVolt_Discharge	3037h	Under voltage on Battery1 discharging FET	System Stop	Battery Empty SOC Please Charge	Charging & System Reset	1. Charging 2. System Reset 3. Contiuous occurrence, Battery check required
33	Error_Battery1_Sensor	3038h	Battery1 sensor measurements abnormal	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
34	Warning_Battery1_HighTemp_Discharge	3010h	Battery1 charged at high temperature	-	Thermometer sign	Cooling	1. Cooling
35	Warning_Battery1_LowTemp_Discharge	3011h	Battery1 charged at low temperature	-	Thermometer sign	Heating	1. Heating
36	Warning_Battery1_OverVolt_Charge	3012h	Over voltage on Battery1 charging FET	-	-	Discharging	1. Discharging
37	Warning_Battery1_UnderVolt_Discharge	3013h	Under voltage on Battery1 discharging FET	-	Almost empty SOC Low Battery / Please Charge	Charging	1. Charging
38	Error_Battery2_HighTemp_Charge	3130h	Battery2 charged at high temperature	System Stop	Battery TEMP Thermometer sign	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Battery check required
39	Error_Battery2_LowTemp_Charge	3131h	Battery2 charged at low temperature	System Stop	Battery TEMP Thermometer sign	Heating & System Reset	1. Heating 2. System Reset 3. Contiuous occurrence, Battery check required
40	Error_Battery2_HighTemp_Discharge	3132h	Battery2 discharged at high temperature	System Stop	Battery TEMP Thermometer sign	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Battery check required
41	Error_Battery2_LowTemp_Discharge	3133h	Battery2 discharged at low temperature	System Stop	Battery TEMP Thermometer sign	Heating & System Reset	1. Heating 2. System Reset 3. Contiuous occurrence, Battery check required
42	Error_Battery2_OverCurrent_Charge	3134h	Over current on Battery2 charging FET	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
43	Error_Battery2_OverCurrent_Discharge	3135h	Over current on Battery2 discharging FET	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
44	Error_Battery2_OverVolt_Charge	3136h	Over voltage on Battery2 charging FET	System Stop	Battery Full SOC	Discharging & System Reset	1. Discharging 2. System Reset 3. Contiuous occurrence, Battery check required
45	Error_Battery2_UnderVolt_Discharge	3137h	Under voltage on Battery2 discharging FET	System Stop	Battery Empty SOC Please Charge	Charging & System Reset	1. Charging 2. System Reset 3. Contiuous occurrence, Battery check required
46	Error_Battery2_Sensor	3138h	Battery2 sensor measurements abnormal	System Stop	Battery	System Reset	1. System Reset 2. Contiuous occurrence, Battery check required
47	Warning_Battery2_HighTemp_Discharge	3110h	Battery2 charged at high temperature	-	Thermometer sign	Cooling	1. Cooling
48	Warning_Battery2_LowTemp_Discharge	3111h	Battery2 charged at low temperature	-	Thermometer sign	Heating	1. Heating
49	Warning_Battery2_OverVolt_Charge	3112h	Over voltage on Battery2 charging FET	-	-	Discharging	1. Discharging
50	Warning_Battery2_UnderVolt_Discharge	3113h	Under voltage on Battery2 discharging FET	-	Almost empty SOC Low Battery / Please Charge	Charging	1. Charging

51	Warning_Motor1_High_Temperature	2001h	Normal Condition, but performance degraded due to ECU high temperature	Derating	-	Cooling	1. Cooling
52	Warning_Motor1_Motor	2002h	Normal Condition, but performance degraded due to motor status. (To get detailed information, need to connect motor.)	Derating	-	-	1. HW check required
53	Warning_Motor2_High_Temperature	2101h	Normal Condition, but performance degraded due to ECU high temperature	Derating	-	Cooling	1. Cooling
54	Warning_Motor2_Motor	2102h	Normal Condition, but performance degraded due to motor status. (To get detailed information, need to connect motor.)	Derating	-	-	1. HW check required
55	Fail_Motor1_High_Temperature	2011h	Motor temperature is too high to operate.	System Stop	-	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Motor check required
56	Fail_Motor1_Motor	2012h	Motor is in failure mode. (To get detailed information, need to connect motor.)	System Stop	-	System Reset	1. System Reset 2. Continuous occurrence, HW check required
57	Fail_Motor1_CAN	2013h	CAN messages for motor are missing.	System Stop	-	System Reset	1. System Reset 2. Continuous occurrence, HW check required
58	Fail_Motor2_High_Temperature	2111h	Motor temperature is too high to operate.	System Stop	-	Cooling & System Reset	1. Cooling 2. System Reset 3. Contiuous occurrence, Motor check required
59	Fail_Motor2_Motor	2112h	Motor is in failure mode. (To get detailed information, need to connect motor.)	System Stop	-	System Reset	1. System Reset 2. Continuous occurrence, HW check required
60	Fail_Motor2_CAN	2113h	CAN messages for motor are missing.	System Stop	-	System Reset	1. System Reset 2. Continuous occurrence, HW check required

Harness distribution.



Electrical scheme.