MDI CODE	CAN CODE	ALARM	Error code Description	Solution
0	228	TILLER OPEN	Handle disconnected	when the handle input switch is disconnected, after a period of time, about 30s, the main contactor disconnects and the warning occurs. The next time you run , the warning disappears.
0	247	DATA ACQUISITION	data acquisition	This failure is activated that it is in the data acquisition phase. Please wait for the data acquisition to complete.
0	249	CHECK UP NEEDED	servicing time	Maintenance time is up, need to be overhauled
8	8	WATCHDOG	WATCHDOG	When started, the watchdog circuit is activated before the software is started. The watchdog signal is not valid in the standby or run state (alarm state). Fault analysis: The watchdog hardware circuit or the microcontroller output is broken . The controller is replaced
8	221	FLASH CHECKSUM	Flash failure	when the key is turned on, the value of the program is positive in the flash memory, and if it is negative, the fault signal is generated. Fault analysis: the problem is on the flash memory of the microcontroller. The flash memory may have been destroyed, or the stored program has been damaged. Try to reset the logic card program. If the failure still exists,Replace the controller.
8	231	WATCHDOG#2	WATCHDOG#2	Cause: During start-up, the watchdog circuit is activated before the software is started. The watchdog signal is not valid in the standby or run state (alarm state). Fault analysis: The watchdog hardware circuit or the microcontroller output is broken. The controller is replaced
10	212	WRONG RAM	dynamic memory failure	error content was found while performing detection of the main memory: the registration address is" dirty ", and the failure will limit the operation of the vehicle. Fault analysis: turn off the key switch and turn it on again, and if the failure is still there, change the controller
11	211	STALL ROTOR	motor stalling	1. Motor shutdown. 2. Motor encoder failure. 3 wire harness damage or wiring error. 4. Encoder power supply problem.
13	208	EEPROM KO	Memory damage	The vehicle cannot walk, the storage area of the parameters has problems, and the fault causes the vehicle to stop working. If the fault still exists after repeatedly closing the electric lock, replace the logic card. If the failure disappears, the original stored parameter is replaced by the wrong parameter, which needs to be reset.
13	209	PARAM RESTORE	Parameter storage	Only the vehicle is required to walk, this fault is eliminated.
17	17	LOGIC FAILURE #3	Logic card failure 3	The logic card current protection function is faulty. The controller should be replaced
22	190	RESET A14 SENSOR	Reset 1800mm height detection switch A14	Press the down switch, turn the a14 switch off and close again, or use the magnet to pass through the a14 switch from the top to the bottom.
22	230	RESET A7 SENSOR	Reset 300mm height detection switch a7	Press the down switch, turn the a7 switch off and close again, or use the magnet to pass through the a7 switch from the top to the bottom.
28	28	PUMP VMN LOW	oil pump vmn low	reason: when starting, the low end voltage of mos tube is higher than 10% of the normal battery voltage, or the phase voltage is higher than 1 ⩽ 2 battery voltage. Possible reasons: 1, the motor wiring is wrong, or there is a problem with the motor circuit; check that the three-phase connection of the motor is correct; whether the motor has leakage to the ground, whether there is a circuit break of the motor coil. 2, replace the controller
29	29	PUMP VMN HIGH	oil pump vmn high	reason: when starting, the low end voltage of mos tube is 10% higher than the normal battery voltage, or the phase voltage is higher than 1 ⩽ 2 battery voltage. Possible reason: 1, the motor wiring is wrong, or there is something wrong with the motor circuit; check that the three-phase connection of the motor is correct; whether the motor has leakage to the ground, whether there is a circuit break of the motor coil. 2, replace the controller.

31	31	VMN HIGH	vmn high	reason: when starting, the low end voltage of mos tube is 10% higher than the normal battery voltage, or the phase voltage is higher than 1 ⩽ 2 battery voltage. Possible reason: 1, the motor wiring is wrong, or there is something wrong with the motor circuit; check that the three-phase connection of the motor is correct; whether the motor has leakage to the ground, whether there is a circuit break of the motor coil. 2, replace the controller.
32	203	PUMP VMN NOT OK	Failure of Oil pump hoisting Speed Regulation Sensor	Detection time: standby status this alarm shows that the voltage of the lifting speed regulation sensor is more than 1 v larger than the minimum value set in the accelerator signal range (program vacc). Possible reason: 1. The upper and lower limits of the voltage of the lifting speed regulation sensor are not collected, enter the program vacc menu to collect again. 2. The lifting speed regulation sensor is wrong. 3. Controller failure
40	254	AUX DRIV.SHRT.	Auxiliary drive short circuit	The drive circuit for the electromagnetic brake or auxiliary electric brake is shorted. Check if there is short circuit between A16 and -BATT. Logical card driver circuit failure, replace controller
41	251	WRONG BATTERY	Battery setting failure	At start-up, the controller detects the battery voltage and checks if it is within the nominal voltage range. 1. Check if the value of the battery voltage parameter in the Tester menu is in line with the value displayed by the voltmeter. If they do not match each other, the battery voltage is changed to the same as the measured value using the adjust battery function. 2. Replace the battery
42	246	AUX DRIV.OPEN	Auxiliary output drive fault	The auxiliary coil drive circuit cannot drive the load. The device itself or the drive wire loop is broken. Replace the controller
46	196	LIFT+TRAC	Lifting and walking are closed at the same t	Only in the case of lithium batteries.
48	240	EVP DRIVER OPEN	Proportional valve drive open circuit	Check the proportional valve if it is open-circuit.
49	241	LIFT + LOWER	The lifting and lowering signals are present at the same time	the controller will always detect and alarm when there are two request signals at the same time. Possible reasons: 1. Wire breakage. 2.Switch failure 3. Improper operation 4. If the fault cannot be eliminated, the controller needs to be replaced
50	214	EVP COIL OPEN	Proportional valve coil open circuit	Check the proportional valve coil if it is open circuit.
50	215	EVP DRIV. SHORT.	ev-coil short-circuit	Check if the low end of the ev1/ ev2/ ev3 is in contact with the b- short circuit, and if it is normal, replace the controller;
52	52	PUMP I=0 EVER	Oil pump I = 0 fault	Check whether the power wire of the oil pump motor is in good condition, and if it is in good condition, replace the controller
53	53	STBY I HIGH	High standby current	The signal output from the current sensor detected by the micro-control system exceeds the allowable range of the non-operating current. This fault does not involve peripheral components, and the controller needs to be replaced.
53	252	WRONG ZERO	Zero voltage error	the high-end voltage feedback value of vmn at startup. not around 2.5v. the controller circuit is broken. failure analysis: suggest to check the following items. motor internal connection motor power cable connection. cable between motor and vehicle housing. If the motor is well connected, the problem is inside the controller, replace the controller

54	19	LOGIC FAILURE #1	Logic card failure 1	failure in the event of low voltage or overvoltage protection. In a 24v system, the controller detects a voltage exceeding 45V or less than 9v; in a 48v system, the controller detects a voltage exceeding 65V or less than 11v. Possible reasons: 1. There is no short circuit phenomenon in the circuit system, such as dc-dc, brake coil, or whether the input power contact of the controller is good. 2。 Whether the battery voltage is too low or too high. 3. Check whether the power cable on the main connector is fastened. 4. Whether the voltage calibration parameters of the controller are consistent with the actual voltage. 5. Replace the controller for the hardware circuit failure of overvoltage protection on the logic card
55	18	LOGIC FAILURE #2	Logic card failure 2	The phase voltage feedback hardware circuit part of the logic card is faulty and the controller is replaced.
56	217	PUMP I NO ZERO	The current exceeds the limit when the pump motor is not in action.	Replace the controller
60	60	CAPACITOR CHARGE	Capacitance charging error	When the electric lock is switched on, the controller will charge the capacitor and detect whether the capacitor is sufficiently charged within the specified time. If there is not enough electricity, the capacitor voltage is still less than 20% of the battery voltage, the controller will alarm and the main contactor will not be closed. Possible cause: 1, peripheral equipment, such as dc-dc, motor or other equipment interfere with the charging process of the controller, need to eliminate the interference caused by these equipment. 2, charging resistance disconnected, charging circuit failure, power module problems, need to replace the controller
61	250	THERMIC SENS. KO	Temperature sensor failure	The output signal from the controller temperature sensor is out of range. This fault is independent of the external components and the controller is replaced.
62	62	TH. PROTECTION	controller overtemperature protection	The temperature of the controller itself is reduced to less than 85 °. If this fault still exists, it may be a temperature sensor failure or a logic board failure of the controller itself. At this time, the controller needs to be replaced.
64	238	TILLER ERROR	Interlock H&S input signal is not insistence	Replace the controller
65	65	MOTOR TEMPERAT.	High temperature of motor	1, this fault occurs if the motor temperature digital switch is turned on, or if the analog signal exceeds the cut value. 2, when the motor temperature reaches 120 ℃, the controller alarms, at this time the vehicle can still walk, but the maximum current is reduced and the performance of the vehicle is reduced. When the temperature of the motor reaches 125 ℃, the motor stops working. Efforts should be made to cool the motor at this time. 3. When the motor cools, the fault still exists, check the line. If all are good, replace the controller
66	66	BATTERY LOW	Low battery power	If the "battery check" parameter of battery detection function is not set to 0, when the battery power is less than 15%, when there is no grid on the instrument, the fault alarm and the lifting function are locked. Charging should be made in time at this time. If the battery is found to have electricity, the value of the controller's "adjust battery" parameter is detected to be consistent with the battery voltage.
67	218	SENS MOT TEMP KO	Temperature sensor failure	Phenomenon: The output signal of the motor temperature sensor is out of range. Solution: Check the value of the sensor and the connection of the wire. If there is no problem, the problem is within the controller
67	248	NO CAN MSG.	No can signal.	There is a failure of the can communication between steering and traction. Detect the settings and version information of the can wiring and software
68	222	SMARTDRIVER KO	Electromagnetic brake drive fault	Check if there is short-circuit between EM brake and B-. If it is ok, the drive module id broken.
68	224	WAITING FOR NODE	Wait for signal	In can communication, one controller receives a signal that another controller cannot communicate normally, and the controller is always in a waiting state until the can communication network is all normal. Check the wiring of those modules which cannot communicate and see if the software version or parameter settings are correct

70	205	EPS RELAY OPEN	eps internal contactor open	Check to see if there are any internal failures in traction and eps, and this failure will be eliminated after troubleshooting restarts
71	13	EEPROM KO	Memory damage	The vehicle cannot walk, the storage area of the parameters has problems, and the fault causes the vehicle to stop working. If the fault still exists after repeatedly closing the electric lock, replace the logic card. If the failure disappears, the original stored parameter is replaced by the wrong parameter, which needs to be reset.
72	30	VMN LOW	VMN low	reason: when starting, the high terminal voltage of mos tube is less than 66% of the capacitance voltage or the voltage is less than the required value during the operation of the motor. Possible reasons: 1. There is something wrong with the motor connection, or there is a problem with the motor circuit; check that the three-phase connection of the motor is correct; whether the motor has leakage to the ground, and whether there is a circuit break of the motor coil. 2。 Whether the main contact suction is firm or not. Contact is worn or not. 3. Replace the controller
74	74	DRIVER SHORTED	Drive short circuit	When the electric lock is closed, the microprocessor will detect whether the driver of the main contactor is short-circuited and will give an alarm if it is shorted;Check whether the positive electrode of main contactor coil is shorted to b6 or negative power supply. If everything is normal, replace the controller
74	213	AUX BATT. SHORT.	Auxiliary drive voltage fault	Check if b2 and drive connection is correct, if correct, replace controller;
74	234	DRV. SHOR. EV	ev-coil short-circuit	Check if the low end of the ev1/ ev2/ ev3 is in contact with the b- short circuit, and if it is normal, replace the controller;
75	37	CONTACTOR CLOSED	Contactor adhesion	before closing the main contact coil, the controller must first detect whether the main contact contact is adhered. Try to discharge the capacitance. If the capacitance voltage reduces the battery voltage by 20%, the failure may occur. 1. It is recommended to check the contactor contact for adhesion, or to replace the contactor
75	75	CONTACTOR DRIVER	Drive short circuit	When the electric lock is closed, the microprocessor will detect whether the driver of the main contactor is short-circuited and will give an alarm if it is shorted; Check whether the positive electrode of main contactor coil is shorted to b6 or negative power supply. If everything is normal, replace the controller
75	232	CONT. DRV. EV	The controller ev drive is not available	Replace the controller
76	220	KEY OFF SHORTED	Key switch short-circuit	The fault is displayed when the controller detects a low logic level signal after the key switch is turned off at the start-up stage. Fault analysis: the voltage is too low. - The key switch is based on an external load, such as the start-up of the dc-dc converter, the relay or contactor switch input signal is lower than the start-up voltage. -Check the connection between the power cable and the positive negative pole of the battery and the-batt and batt+ of the same main contactor and the controller, and the torque range shall be 13nm to 15nm. -If no voltage drop is detected on the supply line, a fault signal is generated each time the key switch is on. The fault may occur in the hardware of the controller, so it is necessary to replace the controller
76	223	COIL SHOR. MC-EB	Excessive load of main contactor or electro	1, check whether the output and load of the controller are too large, 2, replace the controller
76	235	COIL SHOR. EV.	Pev coil malfunction.	In the coil driven by pev, there is a fault if the coil driven by pev is connected to the coil itself.
77	38	CONTACTOR OPEN	Contactor does not close	the logic card has driven the main contact coil, but the contactor is not closed, which may be due to: 1. Contactor mechanical failure, stuck dead, etc. 2. Contactor point is not good. 3.If the contactor is working properly, replace the controller

78	78	VACC NOT OK	Accelerator failure	Detection time: standby status this alarm shows that the accelerator voltage is more than 1 v larger than the minimum value set in the accelerator signal range (program vacc). Possible reason: 1. The upper and lower limit values of the accelerator voltage are not collected, enter the program vacc menu to collect again. 2. Accelerator error, acceleration pedal no return position, or accelerator internal error. 3. Controller failure
79	79	INCORRECT START	Startup sequence failure	the boot sequence is not correct, reasons: 1. The direction switch has been closed before starting. 2. The operation sequence is wrong. 3. The wire connection is incorrect. 4. If the fault cannot be fixed, the controller needs to be replaced
79	242	PUMP INC START	Oil pump start-up sequence failure	The startup sequence of the oil pump is not correct. Possible cause: 1. The switches such as lifting and tilting have been closed before starting up. 2. The operation order is incorrect. 3. The wire connection is not correct. 4. If it is not possible to correct the problem, the controller needs to be replaced
80	80	FORW + BACK	The forward and backward signals are pres	the controller will always detect and alarm when there is a request to run the signal in two directions at the same time. Possible reasons: 1. Wire breakage. 2.Directional switch failure 3. Improper operation 4. If the fault cannot be eliminated, the controller needs to be replaced
82	82	ENCODER ERROR	Encoder failure	the controller detects a great difference between the two consecutive speed readings of the encoder: because the internal encoder in the system cannot change the speed greatly in a very short period of time, the encoder may fail (the line of one or two encoders is worn out or disconnected), check the mechanical and circuit functional parts of the encoder, and may alarm caused by electromagnetic interference on the sensor bearing. If none of the above is true, replace the controller. Please note that artificial operation may also cause the controller to display this failure, when power outage is required to restart the vehicle. For example, the following cases: 1, the vehicle suddenly hit an obstacle, making the vehicle unable to walk; 2, when the vehicle is driving at high speed, suddenly slam on the brakes
85	226	VACC OUT RANGE	Accelerator input ultra-range	1, the upper and lower limit values of the voltage of the accelerator are not collected correctly, and enter the PROGRAM VACC menu to collect it again. 2, check whether the accelerator connection line is connected correctly.
86	86	PEDAL WIRE KO	Accelerator positive and negative pole conn	Check whether the positive and negative electrodes of the accelerator are connected to the controller;
86	229	POS. EB. SHORTED	high-end early output of electromagnetic bra	When the interlock is not closed, the electromagnetic brake drives the high-end output high voltage. 1, see if any other high-voltage lines are connected to the high-end output of the electromagnetic brake; 2, if the high-end output of the electromagnetic brake is not connected, the high voltage still exists, and the controller has been damaged;
88	233	POWER MOS SHORT	Power mos tube short-circuit	if the change of the phase voltage value is inconsistent with the instruction, the fault signal is generated. Replace the controller.

89	245	PUMP VACC NOT OK	Failure of Oil pump hoisting Speed Regulati	Detection time: standby state this alarm shows that the voltage of the lifting speed regulation sensor is more than 1 V larger than the minimum value set in the accelerator signal range (PROGRAM VACC). Possible reasons: 1. The upper and lower limits of the voltage of the lifting speed regulation sensor are not collected and are collected again by entering the PROGRAM VACC menu. 2。 The lifting speed regulation sensor is wrong. 3. The controller is out of order.
90	243	PUMP VACC RANGE	Oil pump hoisting speed regulation sensor c	1, the voltage upper and lower limit of the hoisting speed sensor is not collected correctly, go to the PROG RAM VACC menu to collect again; 2, check whether the hoisting speed sensor connection line is connected correctly;
90	244	PROGRAM TOOTHS	Motor type error	Check that the motor is consistent with the parameters.
92	236	CURRENT GAIN	current gain fault	The maximum current gain parameter is the factory setting value. It indicates that the maximum current has not yet been enabled. Solution: the current gain parameters are programmed correctly by ZAPI technicians.
94	0	NONE	The instrument hour meter is inconsistent with the controller	In the system in use, if the instrument or traction controller is replaced, the failure will be reported. After starting, wait 5 minutes, the instrument and traction controller hours consistent, this fault is automatically eliminated.
96	237	ANALOG INPUT	Analog signal input fault	The fault signal is generated when the （A ≤ D ）input of all analog signals is converted to a fixed value, with a delay of more than 400 milliseconds. This function is used to detect A / D converter failure or analog signal conversion fault analysis: if the fault persists, replace the controller.
98	219	PEV NOT OK	Pev failure	Check if B2 is connected to B behind the contactor;
99	253	SLIP_PROFILE	slip fault	SLIP PROFILE parameter selection error. Check the settings for these values in the hardware settings parameters.