OEM

BrainOS Error Code Reference

(Release 2.6.0)

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Responding to notifications

The BrainOS software includes a comprehensive set of notifications that provide the following:

- Information on the current state of the machine
- Conditions that prevent the machine from operating properly
- Required maintenance

These messages display on the screen and can be used by operators, supervisors, and technicians to troubleshoot, resume normal operations, and service the machine. Some notifications can also be sent by text message to a registered mobile device.

Notifications on the screen are detailed in the following subsections. This document also includes a complete listing of all error codes.

Messages

Messages are for information purposes only and have no immediate impact on machine operations. Messages can be addressed at a later time.

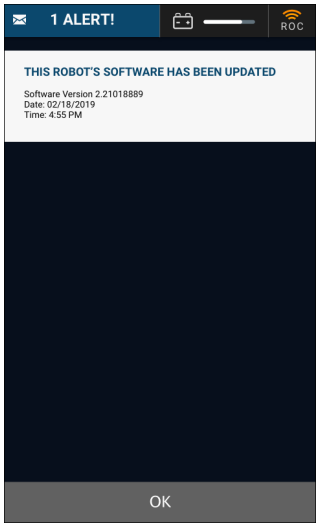

Figure 1: Message example

Perform the following steps to respond to a message:

1. On the screen, read the details of the message.
2. Clear the message and continue operation.

Startup Errors

Startup errors can occur while the BrainOS system within the machine is first starting up. If a startup error occurs, the machine cannot run in manual or autonomous mode until the issue is resolved.

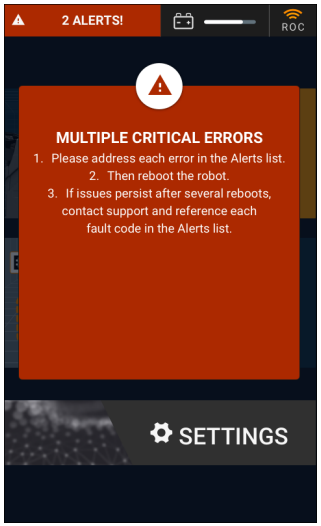

Figure 2: Startup error example

Perform the following steps to respond to a startup error:

1. On the screen, read the details of the error and follow the steps to resolve the issue.
2. Restart the machine.
3. If the issue continues, contact customer service and provide the error message number.

Home marker errors

Home marker errors can occur if the machine cannot successfully scan the home marker. If this error occurs, no routes can be trained or run.

Figure 3: Home marker error example

Perform the following steps to respond to a home marker error:

1. Return to the home marker and make sure the machine is not moving.
2. Allow the machine to scan the home marker again. Do not move the machine until the scan is complete.
3. If the issue continues, contact customer service and provide the error message number.

Alerts

Certain operations in manual mode could trigger an alert:

- Critical alerts require the operator to stop running the machine.
- Routine alerts allow the operator to continue running the machine.

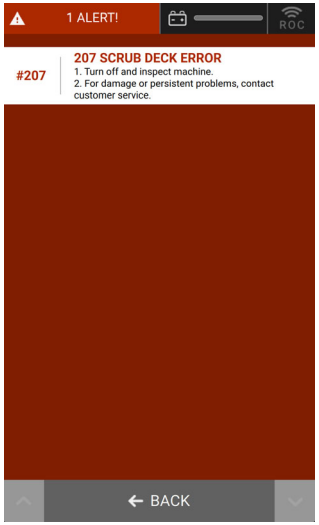

Figure 4: Alert example

Perform the following steps to respond to an alert:

1. On the screen, read the details of the alert and follow the steps to resolve the issue.
2. If required, restart the machine.
3. Resume manual operation.

Assists

When the machine is in autonomous route, it pauses if an assist is triggered. Operator intervention is required for assists before the machine can resume the route.

Figure 5: Assist message example

To respond to an assist, perform the following:

1. Find the machine using the location indicators (pictures and text) sent to the registered mobile device.
2. On the screen, read the details of the assist and follow the steps to resolve the issue:
   a If there is an obstruction in the middle of the route, move it or manually drive around it.
   b If the machine has strayed so far away from the route that it is lost, manually drive the machine back to the route.
   c If applicable, address the machine-specific issue, such as refilling the water tank.

NOTE: All operational functions (such as vacuuming and scrubbing) are disabled while manually driving the machine after an assist is triggered.

3. After driving around all obstacles and back to the correct route (as seen on the screen route display), press the start/pause button to resume autonomous operation.

NOTE: If the machine repeatedly triggers assists, the trained route could include maneuvers that cannot be replicated autonomously. In this case, the best solution is to retrain the route. If the machine repeatedly gets stuck in the same location, there might be an environmental factor such as a highly reflective surface causing the machine to erroneously sense that there is an obstruction. To help resolve the issue, contact customer service. Make

note of the route letter, the home marker number, the area of concern, and the date. Photos from the machine are also helpful. In some cases, the route could be remotely adjusted to improve performance.

Route errors

Route errors can occur during autonomous operation and prevent the machine from starting or finishing the route.

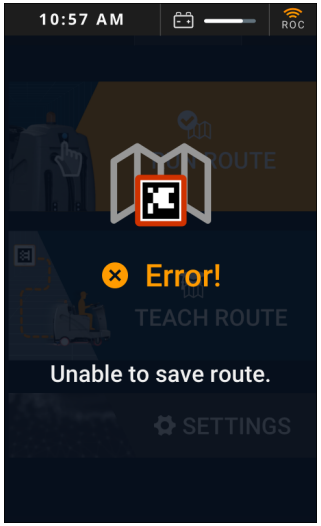

Figure 6: Route error example

Perform the following steps to respond to a route error:

1. On the screen, read the details of the route error.
2. Retrain the route as specified in the error message instructions.
3. Run the route again.

Gyro errors

Gyro errors can occur in autonomous mode after performing certain operations in manual mode.

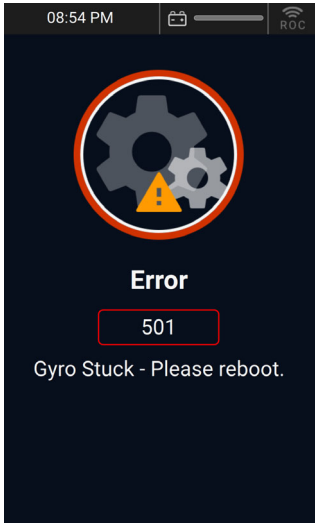

Figure 7: Gyro error example

Perform the following steps to respond to a gyro error:

1. Turn off the machine.
2. Lift the seat.
3. Disconnect the battery cable for at least 15 seconds.
4. Reconnect the cable.
5. Lower the seat.
6. Turn on the machine.
7. Allow the machine sufficient time to complete the startup process.
8. If the issue continues, contact customer service and provide the error message number.

Sensor errors

Sensor errors can occur if a sensor is dirty, damaged, or obstructed in some way.

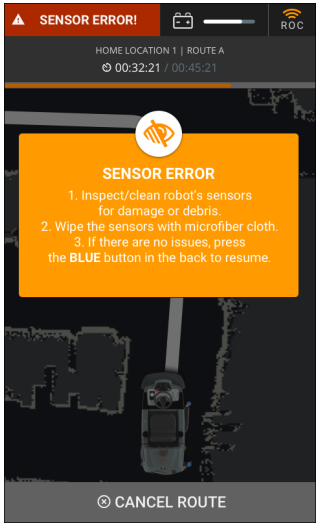

Figure 8: Sensor error example

Perform the following steps to respond to a sensor error:

1. Clean all sensors with a clean microfiber cloth.
2. Inspect for damage or obstructions.
3. If the issue continues, contact customer service and provide the error message number.

Kinetek controller errors

Kinetek controller errors could indicate faults in the physical components of the machine, such as the vacuum or a squeegee. These error codes are in hexadecimal (0x##) format.

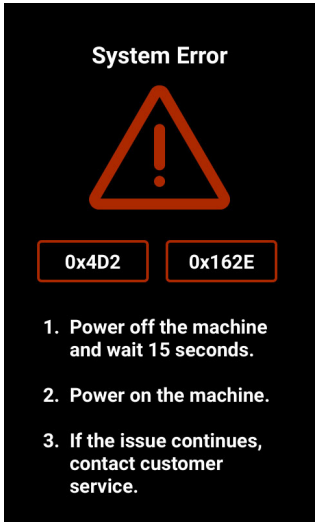

Figure 9: Kinetek controller error example

Perform the following steps to respond to a Kinetek controller error:

1. On the screen, read the details of the Kinetek controller error.
2. If the issue continues, contact customer service and provide the error message number.

Unknown errors

Unknown errors occur very rarely.

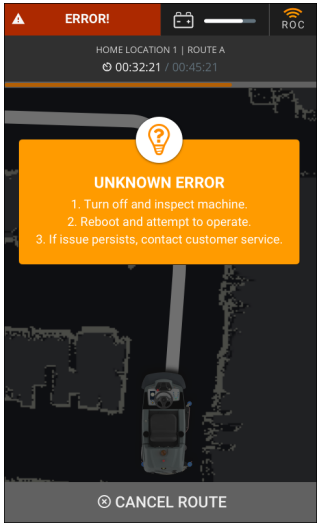

Figure 10: Unknown error example

Perform the following steps to respond to an unknown error:

1. Restart the machine.
2. If the issue continues, contact customer service.

Level of impact on running a route	Degree	Dismissible	Operator Expectation
Abandon Route - [Boot Error]	1	No	Operator cannot continue their task
Restart Route - [Critical Assist]	2	Yes/No	Operator must restart task
Pause/Resume - [Routine Assist]	3	Yes	Operator can continue task
No Impact - [Reminders]	4	Yes	Operator can address later

Error Code	Error Type	System	Title	Resolution Steps
1	Error	BrainOS	Error 1	Some error has happened
100	Assist	Drive	MACHINE ERROR	1. Make sure that the steering wheel is free and clear. 2. If there are no issues, press the BLUE button in the back to resume.
101	Assist	Drive	MACHINE ERROR	1. Make sure that the steering wheel is free and clear. 2. If there are no issues, press the BLUE button in the back to resume.
102	Assist	Drive	MACHINE ERROR	1. Make sure that the steering wheel is free and clear. 2. If there are no issues, press the BLUE button in the back to resume.
103	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
104	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
106	Assist	BrainOS	ROBOT IS OFF PATH	1. Follow the blue arrow and drive to the red path. 2. When correct, the path will turn white. 3. Press rear blue button to start.
200	Alert	Cleaning	RECOVERY TANK FULL	Drain the recovery tank.
200	Assist	Cleaning	RECOVERY TANK FULL	1. Drain recovery tank. 2. Return to cleaning path. 3. Press rear blue button to start.
201	Alert	Cleaning	WATER TANK EMPTY	Inspect and fill the water tank.
201	Assist	Cleaning	WATER TANK EMPTY	1. Fill water tank. 2. Return to cleaning path. 3. Press rear blue button to start.
202	Alert	Electrical	BATTERY IS TOO LOW	1. Drive to the charging station. 2. Inspect and charge batteries
202	Assist	Electrical	BATTERY IS TOO LOW	1. Drive to the charging station. 2. Inspect and charge batteries

Error Code	Error Type	System	Title	Resolution Steps
203	Alert	Drive	203 TRACTION MOTOR ERROR	1. Power off robot. 2. Disconnect then reconnect the battery. 3. Power the robot back on. 4. If issue persists, contact customer service.
203	Assist	Drive	203 TRACTION MOTOR ERROR	1. Power off robot. 2. Disconnect then reconnect the battery. 3. Power the robot back on. 4. If issue persists, contact customer service.
204	Alert	Cleaning	204 BRUSH ERROR	1. Inspect brushes/pads for damage or debris. Adjust or replace as needed. 2. If issue persists, contact customer service.
204	Assist	Cleaning	204 BRUSH ERROR	1. Inspect brushes/pads for damage or debris. Adjust or replace as needed. 2. If there are no issues, press the BLUE button in the back to resume. 3. If issue persists, contact customer service.
205	Alert	Cleaning	205 VACUUM ERROR	1. Inspect vacuum and hose for damage or debris. 2. If the hose is broken, call customer service.
205	Assist	Cleaning	205 VACUUM ERROR	1. Inspect vacuum and hose for damage or debris. 2. If the hose is clear, press the blue button to resume. If the hose is broken, call customer service.
206	Alert	Cleaning	206 SQUEEGEE ERROR	1. Inspect squeegee for damage or debris. Adjust or replace as needed. 2. If issue persists, contact customer service.
206	Assist	Cleaning	206 SQUEEGEE ERROR	1. Inspect squeegee for damage or debris. Adjust or replace as needed. 2. If there are no issues, press the BLUE button in the back to resume. 3. If issue persists, contact customer service.

Error Code	Error Type	System	Title	Resolution Steps
207	Alert	Cleaning	207 SCRUB DECK ERROR	1. Turn off and inspect machine. 2. For damage or persistent problems, contact customer service.
207	Assist	Cleaning	207 SCRUB DECK ERROR	1. Turn off and inspect machine. 2. If there are no issues, press the BLUE button in the back to resume. 3. For damage or persistent problems, contact customer service.
208	Alert	Cleaning	208 NO BRUSH ERROR	1. Make sure brushes or pads are properly installed. 2. If issue persists, contact customer service.
208	Assist	Cleaning	208 NO BRUSH ERROR	1. Make sure brushes or pads are properly installed. 2. If there are no issues, press the BLUE button in the back to resume. 3. If issue persists, contact customer service.
209	Alert	BrainOS	SEAT SENSOR TRIGGERED	Check that the seat is clear.
209	Assist	BrainOS	SEAT SENSOR TRIGGERED	1. Check that the seat is clear. 2. Press the BLUE button in the back to resume.
210	Alert	BrainOS	BRAIN STATE ERROR	1. Turn off and inspect machine. 2. Reboot and attempt to operate the robot. 3. If issue persists, contact customer service.
215	Assist	BrainOS	SENSOR CHECK IN PROGRESS	1. Drive the robot approximately 10 to 15 feet along the path. 2. Press the Start/Pause button to resume route.
216	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
300	Assist	BrainOS	ROBOT IS OFF PATH	1. Follow the blue arrow and drive to the red path. 2. When correct, the path will turn white. 3. Press rear blue button to start.
301	Assist	BrainOS	ROBOT IS OFF PATH	1. Follow the blue arrow and drive to the red path. 2. When correct, the path will turn white. 3. Press rear blue button to start.

Error Code	Error Type	System	Title	Resolution Steps
302	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
303	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
304	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
305	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
306	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
307	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
308	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
309	Assist	BrainOS	PATH IS BLOCKED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Press rear blue button to start.
501	Error	BrainOS	Error	Gyro Stuck - Please reboot.
502	Error	BrainOS	Error	Robot moved too much during homing - Please try again.
503	Error	BrainOS	Error	Robot moved too much during homing - Please try again.
504	Error	BrainOS	Error	IMU error - Please reboot.
5001	Boot	BrainOS	Uncalibrated	1. Please reboot the robot. 2. If this issue persists after several reboots, contact support and reference fault code 5001.

Error Code	Error Type	System	Title	Resolution Steps
5002	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5002 and report whether the LEDs on the camera are flashing.
5003	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5003 and report whether the LEDs on the camera are flashing.
5004	Boot	Sensors	Left 3D Camera Not Responding	1. Please clean the left 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5004.
5005	Boot	Sensors	Right 3D Camera Not Responding	1. Please clean the right 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5005

Error Code	Error Type	System	Title	Resolution Steps
5006	Boot	Sensors	SLANTED (upper) LIDAR Not Responding	1. Please clean the upper LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5006 and send the photos and video
5007	Boot	Sensors	PLANAR (Lower) LIDAR Not Responding	1. Please clean the lower LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5007 and send the photos and video
5008	Boot	Sensors	ROBOT STATE Not Responding	1. Please reboot the scrubber. 2. If this issue persists after several reboots contact support and reference fault code 5008
5010	Boot	BrainOS	Odometer Not Responding	1. Please reboot the robot. 2. If this issue persists after several reboots, contact support and reference fault code 5010
5011	Boot	BrainOS	TF Not Responding	1. Please reboot the scrubber 2. If this issue persists after several reboots contact support and reference fault code 5011

Error Code	Error Type	System	Title	Resolution Steps
5013	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5013 and report whether the LEDs on the camera are flashing.
5014	Boot	Sensors	Left 3D Camera Not Responding	1. Please clean the left 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5014.
5015	Boot	Sensors	Right 3D Camera Not Responding	1. Please clean the right 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5015
5016	Boot	Sensors	SLANTED (upper) LIDAR Not Responding	1. Please clean the upper LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5016 and send the photos and video

Error Code	Error Type	System	Title	Resolution Steps
5017	Boot	Sensors	PLANAR (Lower) LIDAR Not Responding	1. Please clean the lower LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5017 and send the photos and video
5019	Boot	Sensors	Right Home Locator Code Camera Not Responding	1. Please reboot the robot. 2. If this issue persists after several reboots, contact support and reference fault code 5019.
5021	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5021 and report whether the LEDs on the camera are flashing.
5022	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5022 and report whether the LEDs on the camera are flashing.

Error Code	Error Type	System	Title	Resolution Steps
5023	Boot	Sensors	Front 3D camera not responding	1. Please clean the front 3D camera with a clean microfiber cloth and inspect it for damage. 2. Note whether the LEDs on the camera are flashing. 3. Reboot the robot. 4. If this issue persists after several reboots, contact support, reference fault code 5023 and report whether the LEDs on the camera are flashing.
5024	Boot	Sensors	Left 3D Camera Not Responding	1. Please clean the left 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5024.
5025	Boot	Sensors	Left 3D Camera Not Responding	1. Please clean the left 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5025.
5026	Boot	Sensors	Left 3D Camera Not Responding	1. Please clean the left 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5026.
5027	Boot	Sensors	Right 3D Camera Not Responding	1. Please clean the right 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5027

Error Code	Error Type	System	Title	Resolution Steps
5028	Boot	Sensors	Right 3D Camera Not Responding	1. Please clean the right 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5028
5029	Boot	Sensors	Right 3D Camera Not Responding	1. Please clean the right 3D camera with a clean microfiber cloth and inspect it for damage. 2. Reboot the robot. 3. If this issue persists after several reboots, contact support and reference fault code 5029
5030	Boot	Sensors	SLANTED (upper) LIDAR Not Responding	1. Please clean the upper LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5030 and send the photos and video
5031	Boot	Sensors	SLANTED (upper) LIDAR Not Responding	1. Please clean the upper LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5031 and send the photos and video

Error Code	Error Type	System	Title	Resolution Steps
5032	Boot	Sensors	SLANTED (upper) LIDAR Not Responding	1. Please clean the upper LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5032 and send the photos and video
5033	Boot	Sensors	PLANAR (Lower) LIDAR Not Responding	1. Please clean the lower LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5033 and send the photos and video
5034	Boot	Sensors	PLANAR (Lower) LIDAR Not Responding	1. Please clean the lower LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5034 and send the photos and video
5035	Boot	Sensors	PLANAR (Lower) LIDAR Not Responding	1. Please clean the lower LIDAR with a clean microfiber cloth and inspect it for damage or obstructions. 2. Reboot the robot. 3. If this issue persists after several reboots, take photos of the LIDAR using the flash or light, and a 5 second video using your phone looking in to the LIDAR. 4. Contact support, reference fault code 5035 and send the photos and video

Error Code	Error Type	System	Title	Resolution Steps
6000	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's bottom lidar sensor for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
6001	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's top lidar sensor for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8100	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8200	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8300	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8400	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8500	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.

Error Code	Error Type	System	Title	Resolution Steps
8600	Assist	Sensors	SENSOR ERROR	1. Inspect/clean robot's sensors for damage or debris. 2. Wipe the sensors with microfiber cloth. 3. If there are no issues, press the BLUE button in the back to resume.
8800	Assist	BrainOS	MACHINE ERROR	1. Make sure that the steering wheel is free and clear. 2. If there are no issues, press the BLUE button in the back to resume.
9001	Assist	BrainOS	IMPACT DETECTED	1. Make sure the robot's path is clear or drive past any obstacles. 2. Inspect the robot. 3. If everything is clear, press rear blue button to start.
9010	Assist	BrainOS	LEFT SIDE OBSTACLE DETECTED	1. Drive the robot forward and make sure the robot's path is clear. 2. Press rear blue button to start.
9011	Assist	BrainOS	RIGHT SIDE OBSTACLE DETECTED	1. Drive the robot forward and make sure the robot's path is clear. 2. Press rear blue button to start.
10000	Assist	BrainOS	ROBOT IS LOST	1. Return the robot to the home location. 2. Restart the route.
10001	Assist	BrainOS	ROBOT IS OFF PATH	1. Follow the blue arrow and drive to the red path. 2. When correct, the path will turn white. 3. Press rear blue button to start.
20001	Error	BrainOS	Error	End of the route looks different than the start
20002	Error	BrainOS	Error	Route is too short
20003	Error	BrainOS	Error	Problem with IMU
20004	Error	BrainOS	Error	Robot was driven backwards too much
20005	Error	Sensors	Error	Problem with lidar
20006	Error	BrainOS	Error	Can not connect start and end of the route
20007	Error	BrainOS	Error	Failed to create a route
20008	Error	BrainOS	Error	Bad sensor values at start or end of the route
20009	Error	BrainOS	Error	Problem with IMU (stuck at 0)

Error Code	Error Type	System	Title	Resolution Steps
30001	Error	BrainOS	Error	Failed to load route. Please try again.
40005	Assist	Sensors	STUCK BUMPER SENSOR	1. Make sure the robot is in a state where it has space to move. 2. Make sure the robot's back is not obstructed.
50001	Assist	BrainOS	Potential Hazard Detected	1. Inspect the area for ramps, escalators, or potential drops. 2. Drive the machine further along the route. 3. To resume, press the Start/Pause button.

Error Code	Message	Detailed Description	Possible Cause(s)
0x12	EEPROM ERROR	EEPROM (Electronically Erasable Programmable Read-Only Memory) read error or parameter out of range	1. Controller parameter setting out of range 2. Controller problem (EEPROM fault)
0x1A	BATTERY LOW (ALL FUNCTION OFF)	Battery Voltage is very low (all function is disabled)	1. Battery voltage is less than 18V 2. Parameter"Battery Voltage" set to 1 but actual battery is 24V 3. Controller hardware fault
0x21	BATTERY LOW (TRACTION ONLY)	Battery Voltage is low (only traction is enabled)	1. Battery voltage is less than set parameter value (Class 0 Volt) 2. Controller Hardware fault
0x23	MCU OVER TEMPERATURE	Controller MCU (Micro Controller Unit) is over temperature	Controller is over temperature
0x26	PRECHARGE FAILURE (TRACTION)	Internal Relay1 input voltage check failure	1. Wiring problem 2. Controller hardware fault
0x29	TRACTION LEFT NULL ERROR	Traction left bridge zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x2D	BRUSH NULL ERROR	Brush zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x2E	VACUUM NULL ERROR	Vacuum zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x2F	SQUEE NULL ERROR	Squeegee zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x31	BRUSH ADJUSTMENT TIMEOUT	Brush Pressure adjustment timeout (when brush auto adjust function is enabled)	Brush Pressure adjustment parameters setting are not reasonable
0x32	SOLENOID WELDED(TRACTION)	Controller internal Relay1 is welded	Controller hardware fault
0x33	SOLENOID DIDN'T CLOSE(TRACTION)	Controller internal Relay1 is not closed	Controller hardware fault
0x37	THROTTLE FAULT	Accelerator Fault	1. Accelerator PWR wire is broken (for potentiometer accelerator) 2. Accelerator Gnd wire is broken (for potentiometer accelerator) 3. Accelerator Signal wire is broken (for potentiometer accelerator) 4. Actual accelerator resistance is mismatched with set resistance value (for potentiometer accelerator) 5. Hall Accelerator output is more than 5V
0x3A	BRAKE FAULT	Brake output (P1 Pin2) is over current	1. Brake output is over current 2. Controller hardware fault
0x3B	ALARM FAULT	Alarm output (P3 Pin17) is over current	1. Alarm output is over current 2. Controller hardware fault

Error Code	Message	Detailed Description	Possible Cause(s)
0x3C	AUX1 FAULT	Aux1 (Auxiliary1) output (P3 Pin7) is over current	1. Aux1 output is over current 2. Controller hardware fault
0x3D	AUX2 FAULT	Aux2 (Auxiliary2) output (P2 Pin9) is over current	1. Aux2 output is over current 2. Controller hardware fault
0x3F	BRUSH DECK NULL ERROR	Brush Deck zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x42	TRACTION STALLED MOTOR	Traction motor is stalled	1. Traction motor is stalled 2. Parameter "Traction I Limit" is set too low
0x44	TRACTION REVERSE SHORT CICUIT PROTECTION	Traction motor is short-circuit	Traction motor is short-circuit
0x4C	TRACTION FORWARD SHORT CICUIT PROTECTION	Traction motor is short-circuit	Traction motor is short-circuit
0x4D	BRUSH OVER CURRENT PROTECTION	Brush motor is over current	Brush motor peak current is more than 150A
0x4E	BRUSH SHORT CIRCUIT PROTECTION	Brush motor is short-circuit	Brush motor is short-circuit
0x59	TRACTION LEFT DRAIN FAULT	Traction left bridge drain fault	Controller hardware fault
0x5B	TRACTION RIGHT DRAIN FAULT	Traction right bridge drain fault	Controller hardware fault
0x5C	TRACTION REVERSE OVER CURRENT PROTECTION	Traction reverse output is over current	Traction motor peak current is more than 190A
0x5D	TRACTION FORWARD OVER CURRENT PROTECTION	Traction forward output is over current	Traction motor peak current is more than 190A
0x61	BRUSH DRAIN FAULT	NA	NA
0x62	SUPPLY OUT OF RANGE	Controller 12V check failure	Controller hardware fault
0x64	BRUSH DECK OVER CURRENT PROTECTION	Brush Deck output is over current	Brush Deck motor peak current is more than 9A
0x65	VACUUM SHORT CIRCUIT	Vacuum output is short-circuit	Vacuum motor is short-circuit
0x66	BRUSH DECK SHORT CIRCUIT PROTECTION	Brush Deck output is short-circuit	Brush Deck motor is short-circuit
0x67	SQUEEGEE OVER CURRENT PROTECTION	Squeegee output is over current	Squeegee motor peak current is more than 9A
0x68	VACUUM OVER CURRENT PROTECTION	Vacuum output is over current	Vacuum motor peak current is more than 60A
0x69	SQUEEGEE SHORT CIRCUIT PROTECTION	Squeegee output is short-circuit	Squeegee motor is short-circuit
0x6A	VALVE FAULT	Valve output (P3 Pin2) is over current	1. Valve output is over current 2. Controller hardware fault

Error Code	Message	Detailed Description	Possible Cause(s)
0x6C	TRACTION RIGHT NULL ERROR	Traction right bridge zero current check failure	1. Controller firmware fault 2. Controller hardware fault
0x71	TRIAL TIMEOUT	Controller trial use is timeout (when trial use function is enabled)	Trial use hours is more than set value (Trial time limit)
0x72	SOLENOID WELDED(OTHERS)	Controller internal Relay2 is welded	Controller hardware fault
0x73	SOLENOID DIDN'T CLOSE(OTHERS)	Controller internal Relay2 is not closed	Controller hardware fault
0x74	SQUEE STALLED MOTOR	Squeegee motor is stalled	1. Squeegee motor is stalled 2. Parameter "Squeegee Current Limit" is set too low
0x75	BRUSH DECK STALLED MOTOR	Brush Deck motor is stalled	1. Brush Deck motor is stalled 2. Parameter "Bru-D Current Limit" is set too low
0x76	PRECHARGE FAILURE (OTHERS)	Internal Relay2 input voltage check failure	1. Wiring problem 2. Controller hardware fault
0x77	BRUSH STALLED MOTOR	Brush motor is stalled	1. Brush motor is stalled 2. Parameter "Brush Current Limit" is set too low
0x78	VACUUM STALLED MOTOR	Vacuum motor is stalled	1. Vacuum motor is stalled 2. Parameter "Vacuum Current Limit" is set too low
0x83	MOSFET OVER TEMPERATURE	Controller Mosfets are over temperature	1. Output Current is too big 2. Controller heat dissipation is not so good (installation baseplate, etc.) 3. Controller hardware fault
0xA2	HIGH BATTERY PROTECTION	Battery voltage is high	1. Battery voltage is more than 45V 2. Parameter "Battery Voltage" set to 0 but actual battery is 36V 3. Controller hardware fault

Error Title (Back-End)	Current Message	Proposed Message
REGISTER_FAILURE	We’re sorry, but we were unable to register for alerts.	We’re sorry, but we could not register your mobile device to receive alerts. Please try again.
REGISTER_SUCCESS	You’ve successfully been registered for alerts for this session.	Success! Your mobile device will receive alerts for this session.
EMERGENCY_STOP_ENGAGED	Emergency Stop Engaged!	Emergency Stop Engaged
EMERGENCY_STOP_DETAIL	<Emergency Stop Detail>	<Emergency Stop Photo>
ROBOT_REQUIRES_ASSISTANCE	Robot Requires Assistance.	This machine requires assistance.
ASSISTANCE_DETAIL	<Assistance Detail>	<Assistance Photo>
ROUTE_COMPLETE	Route Complete!	Route complete!
ROUTE_SUMMARY	<Route Summary>	<Route Summary Photo>