



OEM BrainOS Error Code Reference Document

Error Code Table

This document provides information on what resolution steps to take when running into these error codes below. In order to effectively troubleshoot any error or assist, please perform the recommended actions appropriate for each error code. If you have performed the resolution steps and are still receiving an error please go ahead and elevate to the next level of support for assistance.

Note: Error codes highlighted in red are deprecated and are from software versions prior to 3.X

Error code	Error type	Title	Resolution steps
0	Error	Unknown Error	1) Please refer to HARD RESET-100 2) Try running a route and monitor the scrubber usage and assists 3) If you are still receiving this error code, please take a picture of the error code and elevate to the next level of support for assistance.
1	Error	Unknown Error	1) Restart the machine. 2) If the issue continues and elevate to the next level of support for assistance
4	Startup	Unknown Error	1) Please refer to HARD RESET-100 2) Try running a route and monitor the scrubber usage and assists 3) If you are still receiving this error code, please take a picture of the error code and elevate to the next level of support for assistance.
100	Assist	Steering Error	1) Please review the U-joint and steering amplifier section on the <u>Steering Troubleshooting Guide</u> 2) If failure is found in either the u-joint or steering amplifier, replace as needed and then run a steering recalibration. 3) If no failure point is found, please refer to STEERING-100 .
101	Assist	Steering Error	1) Please refer to HARD RESET-100 2) Try running a route and inspect the wheel and movement of the scrubber to ensure it is moving smoothly. 3) Run the traction encoder tests (found in the <u>Steering Troubleshooting Guide</u>) to confirm it is not an issue with a different component, and take pictures.

			4) If you have access, review a few assists. If watching the video of an assist playback and you see the entire surround “slide” or shift then the traction encoder and/or traction cable needs replacing.
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Error code	Error type	Title	Resolution steps
102	Assist	Steering Error (usually MAM or U-joint)	1) Please review the U-joint and steering amplifier section on the <u>Steering Troubleshooting Guide</u> 2) If failure is found in either the u-joint or steering amplifier, replace as needed and then run a steering recalibration. 3) If no failure point is found, please refer to <u>STEERING-100</u> .
103	Assist	Path is Blocked	1) Please refer to <u>BLOCK-100</u>
104	Assist	Path is Blocked	1) Please refer to <u>BLOCK-100</u>
105	Assist	Machine is Off Path	1) Please refer to <u>OFFPATH-100</u>
106	Assist	Machine is Off Path	1) Please refer to <u>OFFPATH-100</u>
200	Alert/Assist	Recovery Tank Full	1) Drain the recovery tank. 2) Drive the machine back to the route. 3) To resume, press the Start/Pause button.
201	Alert/Assist	Water Tank Empty	1) Inspect and fill the water tank. 2) Drive the machine back to the route. 3) To resume, press the Start/Pause button.
202	Alert/Assist	Battery Low	1) Inspect batteries for any bulging, cracks, or leaking acid. 2) Drive the machine to the charging station. 3) Turn off the machine. 4) Charge the batteries.
203	Alert/Assist	Traction Motor Error	1) Please refer to <u>HARD RESET-100</u> 2) Try running a route and inspect the wheel and movement of the scrubber to ensure it is moving smoothly. 3) Run the traction encoder tests (found in the <u>Steering Troubleshooting Guide</u>) to confirm it is not an issue with a different component, and take pictures.

204	Alert/Assist	Brush Error	1) Inspect the brushes and pads for damage or debris. 2) Adjust or replace as needed. 3) If no issues are found, press the Start/Pause button to resume.
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Error code	Error type	Title	Resolution steps
205	Alert/Assist	Vacuum Error	1) Inspect the vacuum and hose for damage or debris. 2) If the hose is clear, press the Start/Pause button to resume. 3) If the hose is broken, please go ahead and replace the damaged hose
206	Alert/Assist	Squeegee Error	1) Inspect the squeegee for damage or debris. 2) Adjust or replace as needed. 3) If no issues are found, press the Start/Pause button to resume.
207	Alert/Assist	Scrub Deck Error	1) Turn off the machine. 2) Inspect the scrub deck for damage. 3) Turn on the machine. 4) If no issues are found, press the Start/Pause button to resume.
208	Alert/Assist	No Brush Detected	1) Make sure the brushes and pads are properly installed. 2) If no issues are found, press the Start/Pause button to resume.
209	Alert/Assist	Seat Sensor Triggered	1) Make sure the seat is empty. 2) To resume, press the Start/Pause button.
210	Alert	Processor Error	1) Please refer to HARD RESET-100
210	Assist	Unknown Error	1) Please refer to HARD RESET-100
211	Assist	Throttle Error	1) Please refer to SENSOR-100
212	Assist	Brake Pedal Error	1) Inspect the brake pedal. 2) If no issues are found, press the Start/Pause button to resume. 3) If the issue continues, contact your supervisor.
215	Assist	Sensor Check in Progress	1) Please refer to SENSOR-100 2) Drive the machine Manually in open space for 5min

			3) Restart route.
216	Alert	Emergency Stop Engaged	1) Please refer to ESTOP-100
216	Assist	Path is Blocked	1) Please refer to BLOCK-100
217	Alert	Sensor Check in Progress	1) Drive the machine 10-15 feet along the route. 2) To resume, press the Start/Pause button.

Error code	Error type	Title	Resolution steps
217	Assist	Potential Hazard Detected	1) Inspect the machine and surroundings. 2) Make sure the path of the machine is clear or drive past any obstacles. 3) If the path is clear, press the Start/Pause button to resume. 4) If you are still receiving this error, please refer to HARD RESET-100 and rerun the route.
218	Assist	Steering Error	1) Please refer to STEERING-100
219	Assist	Path is Blocked	1) Please refer to BLOCK-100
222	Assist	Pedal Pressed	1) Make sure the pedal is clear. 2) To resume, press the Start/Pause button.
223	Assist	Planar Lidar Error	1) Please refer to SENSOR-100
224	Assist	Slanted Lidar Error	1) Please refer to SENSOR-100
225	Assist	Both Lidar Error	1) Please refer to SENSOR-100

226	Assist	Left Sensor Not Responding	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <i><u>IFM Troubleshooting Guide</u></i>
227	Assist	Right Sensor Not Responding	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <i><u>IFM Troubleshooting Guide</u></i>
228	Assist	Left Sensor Not Responding	1) Please refer to SENSOR-100
229	Assist	Right Sensor Not Responding	1) Please refer to SENSOR-100
230	Assist	Left Side Obstacle Detected	1) Inspect the machine and the surrounding area, if any contact was made please take pictures and videos to send to Brain Corp Tech Support. 2) Please refer to OFFPATH-100
231	Assist	Right Side Obstacle Detected	1) Inspect the machine and the surrounding area, if any contact was made please take pictures and videos to send to Brain Corp Tech Support. 2) Please refer to OFFPATH-100
232	Assist	Potential Hazard Detected	1) Please refer to SENSOR-100 2) Inspect the area for ramps, escalators, or potential drops. 3) Drive the machine further along the path. 4) To resume, press the Start/Pause button. 5) If you receive this assist multiple times and the area does not have any ramps, escalators, or potential drops please contact Brain Corp Tech Support to have the escalator detection turned on.
233	Assist	Cliff Detected	1) Please refer to SENSOR-100 2) Inspect the area for ramps, escalators, or potential drops. 3) Drive the machine further along the path. 4) To resume, press the Start/Pause button.

			5) If you receive this assist multiple times and the area does not have any ramps, escalators, or potential drops please contact Brain Corp Tech Support to have the escalator detection turned on.
234	Assist	Machine Error - Planar Lidar Marker Missing	1) Please refer to HARD RESET-100
235	Assist	Machine Error - Slanted Lidar Marker Missing	1) Please refer to HARD RESET-100
236	Assist	Machine Error	1) Please refer to HARD RESET-100
237	Assist	Machine Error	1) Please refer to HARD RESET-100
300	Assist	Machine is Off Path	1) Please refer to OFFPATH-100
301	Assist	Machine is Off Path	1) Please refer to OFFPATH-100
302	Assist	Path is Blocked	1) Please refer to BLOCK-100
303	Assist	Path is Blocked	1) Please refer to BLOCK-100
304	Assist	Path is Blocked	1) Please refer to BLOCK-100
305	Assist	Path is Blocked	1) Please refer to BLOCK-100
306	Assist	Path is Blocked	1) Please refer to BLOCK-100
307	Assist	Path is Blocked	1) Please refer to BLOCK-100

Error code	Error type	Title	Resolution steps
308	Assist	Path is Blocked	1) Please refer to BLOCK-100
309	Assist	Path is Blocked	1) Please refer to BLOCK-100
401	Error	Unknown Error (Homing Timeout)	1) Please drive back to the home marker to scan it. 2) If scanning the home marker doesn't work refer to HARD RESET-100
411	Error	Unknown Error (Homing Timeout)	1) Please drive back to the home marker to scan it. 2) If scanning the home marker doesn't work refer to HARD RESET-100
500	Assist	Emergency Stop Engaged	1) Please refer to ESTOP-100
501	Error	Gyro Error	1) Please refer to the Gyro Noise Test (found in <i>Steering Troubleshooting Guide</i>) if that succeeds refer to HARD RESET-100
502	Error	Home Marker Scan Error	1) Return to the Home Marker, which should stay in a fixed place. 2) Scan the Home Marker again. 3) Do not move the machine until the scan is complete. 4) If scanning the home marker doesn't work refer to HARD RESET-100
503	Error	Home Marker Scan Error	1) Return to the Home Marker, which should stay in a fixed place. 2) Scan the Home Marker again. 3) Do not move the machine until the scan is complete. 4) If scanning the home marker doesn't work refer to HARD RESET-100
504	Error	Gyro Error	1) Please refer to the Gyro Noise Test (found in <i>Steering Troubleshooting Guide</i>) 2) If that succeeds please refer to HARD RESET-100
507	Assist	Path is Blocked	1) Please refer to BLOCK-100

508	Assist	Path is Blocked	1) Please refer to BLOCK-100
509	Error	Flash Firmware Error	1)Restart the machine 2)If the issue continues, contact your supervisor.
510	Assist	Path Following Error	1)Restart the machine 2)If the issue continues, contact your supervisor.
511	Assist	Path Following Error	1)Restart the machine 2)If the issue continues, contact your supervisor.
512	Assist	Path Following Error	1)Restart the machine 2)If the issue continues, contact your supervisor.
513	Assist	Path Following Error	1)Restart the machine 2)If the issue continues, contact your supervisor.
514	Assist	Path Following Error	1)Restart the machine 2)If the issue continues, contact your supervisor.

Error code	Error type	Title	Resolution steps
700	Error	Unknown Error	1) Please refer to HARD RESET-100
800	Error	Unknown Error	1) Please refer to HARD RESET-100
5001	Startup	Uncalibrated Sensor	1) Please refer to SENSOR-100

5012	Startup	Sensor Not Responding (depth camera)	1) Please refer to SENSOR-100
5013	Startup	Upper Sensor Not Responding (Front depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Guide</u>
5014	Startup	Left Sensor Not Responding (Left depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Guide</u>
5015	Startup	Right Sensor Not Responding (Right depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Document</u>
5016	Startup	Upper Sensor Not Responding (Slanted Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Document</u>

Error code	Error type	Title	Resolution steps
5017	Startup	Lower Sensor Not Responding (Planar Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Document</u>
5019	Startup	Sensor Not Responding (Right RGB camera)	1) Please restart the machine
5020	Startup	Odometer Not Responding	1) Please refer to HARD RESET-100

5021	Startup	Upper Sensor Not Responding (Front depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Guide</u>
5022	Startup	Upper Sensor Not Responding (Front depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Guide</u>
5023	Startup	Upper Sensor Not Responding (Front depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Replacement Guide</u>
5028	Startup	Right Sensor Not Responding (Right depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Troubleshooting Guide</u>

Error code	Error type	Title	Resolution steps
5029	Startup	Right Sensor Not Responding (Right depth camera)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Depth Camera Replacement Guide</u>
5030	Startup	Upper Sensor Not Responding (Slanted Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Guide</u>
5031	Startup	Upper Sensor Not Responding (Slanted Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100

			3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Guide</u>
5032	Startup	Upper Sensor Responding (Slanted Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-100 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Replacement Guide</u>
5033	Startup	Lower Sensor Not Responding (Planar Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Document</u>
5034	Startup	Lower Sensor Not Responding (Planar Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Document</u>
5035	Startup	Lower Sensor Not Responding (Planar Lidar)	1) Please refer to SENSOR-100 2) Please refer to RESEAT-101 3) If you have reviewed step 1 & 2 please refer to the <u>Lidar Troubleshooting Document</u>
5036	Startup	Sensor Update Error	1) Please refer to SENSOR-100
6000	Assist	Sensor Error (Dirty Planar Lidar)	1) Please refer to SENSOR-100
6001	Assist	Sensor Error (Dirty Slanted Lidar)	1) Please refer to SENSOR-100
6002	Assist	Front Camera Dirty	1) Please refer to SENSOR-100

8100	Assist	Sensor Error	1) Please refer to SENSOR-100 2) Inspect and reseal all BCM connections (Please reference the <u>BCM Reseat Guide</u>)
8200	Assist	Sensor Error	1) Please refer to SENSOR-100 2) Inspect and reseal all BCM connections (Please reference the <u>BCM Reseat Guide</u>)

Error code	Error type	Title	Resolution steps
8300	Assist	Sensor Error	1) Please refer to SENSOR-100 2) Inspect and reseal all BCM connections (Please reference the <u>BCM Reseat Guide</u>)
8400	Assist	Sensor Error	1) Please refer to SENSOR-100 2) Inspect and reseal all BCM connections (Please reference the <u>BCM Reseat Guide</u>)
8600	Assist	Sensor Error	1) Please refer to SENSOR-100 2) Inspect and reseal all BCM connections (Please reference the <u>BCM Reseat Guide</u>)
8610	Assist	Unknown Error	1) Please refer to HARD RESET-100
8800	Assist	Path is Blocked	1) Please refer to BLOCK-100
9001	Assist	Impact Detected	1) Inspect the machine and the surrounding area, if any contact was made please take pictures and videos to send to Brain Corp Tech Support. 2) Please refer to OFFPATH-100
9010	Assist	Left Side Obstacle Detected	1) Inspect the machine and the surrounding area, if any contact was made please take pictures and videos to send to Brain Corp Tech Support. 2) Please refer to OFFPATH-100

9011	Assist	Right Side Obstacle Detected	1) Inspect the machine and the surrounding area, if any contact was made please take pictures and videos to send to Brain Corp Tech Support. 2) Please refer to OFFPATH-100
10000	Assist	Route Lost	1) Drive the machine to the Home Marker. 2) Restart the route.
10001	Assist	Machine is Off Path	1) Please refer to OFFPATH-100
10001	Error	Internal BCM Error	1) Please refer to BCM-100
20000	Error	Route Error	1)Retrain the route, starting and ending at the same Home Marker.
20001	Error	Route Error	1) Retrain the route, starting and ending at the same Home Marker.

Error code	Error type	Title	Resolution steps
20000	Error	Route Error	1) Retrain the route, starting and ending at the same Home Marker.
20001	Error	Route Error	1) Retrain the route, starting and ending at the same Home Marker.
20002	Error	Route Error	1) Retrain the route to be at least two minutes long.
20003	Error	Gyro Error	1) Please refer to the Gyro Noise Test (found in Steering Troubleshooting Guide) if that succeeds refer to HARD RESET-100 , if that fails elevate to the next level of support for assistance.
20004	Error	Route Error	1) Retrain the route. 2) Do not drive backwards while training the route.
20005	Error	Sensor Error	1) Please refer to SENSOR-100 2) Inspect both lidars and make sure they are not dirty, damaged, or obstructed

			3) Perform HARD RESET-100 4) If the problem continues, elevate to the next level of support for assistance.
20006	Error	Route Error	1) Retrain the route, starting and ending at the same Home Marker.
20007	Error	Route Error	1) Route failed to save. Retrain the route.
20008	Error	Route Error	1) Retrain the route, starting and ending at the same Home Marker.
20009	Error	Gyro Error	1) Please refer to the Gyro Noise Test (found in Steering Troubleshooting Guide) if that succeeds refer to HARD RESET-100 , if that fails elevate to the next level of support for assistance.
29999	Error	Route Failed to Save	1) Please refer to HARD RESET-100 2) Ensure that there are static landmarks near the home marker (no large open spaces) and that there is no one in front of the machine moving near the home marker at the start or end of mapping.

Error code	Error type	Title	Resolution steps
30000	Error	Unknown Error	1) Please refer to HARD RESET-100 2) If the problem continues,
30001	Error	Unknown Error	1) Failed to load route data. Please refer to HARD RESET-100 2) If the problem continues,
40002	Assist	Steering Error	1) Please refer to STEERING-100
40003	Error	USB Connection Error	1) Turn off and inspect the machine. 2) Restart the machine. 3) If the issue continues, contact customer service.

40004	Assist	Steering Error	1) Please refer to BCM-100 2) Please refer to the Gyro section of the <u><i>Steering Troubleshooting Guide</i></u> .
40005	Error	Vehicle Controller Error	1) Turn off and inspect the machine. 2) Restart the machine. 3) If the issue continues, contact customer service.
40006	Assist	Steering Error	1) Please refer to STEERING-100
40007	Error	Steering Error	1) Turn off and inspect the machine. 2) Restart the machine. 3) If the issue continues, contact customer service.
50001	Assist	Potential Hazard Detected	1) Please refer to SENSOR-100 2) Inspect the area for ramps, escalators, or potential drops. 3) Drive the machine further along the path. 4) To resume, press the Start/Pause button. 5) If you receive this assist multiple times and the area does not have any ramps, escalators, or potential drops please contact Brain Corp Tech Support to have the escalator detection turned on.

Firmware Estop Codes

Error Code	Error Type	Title	Resolution Steps
60010	Assist	Internal BCM Error	1) Please refer to BCM-100
60011	Assist	Internal BCM Error	1) Please refer to BCM-100
60012	Assist	Internal BCM Error	1) Please refer to BCM-100

60013	Assist	Internal BCM Error	1) Please refer to BCM-100
60014	Assist	Internal BCM Error	1) Please refer to BCM-100
60015	Assist	Internal BCM Error	1) Please refer to BCM-100
60016	Assist	Internal BCM Error	1) Please refer to BCM-100
60017	Assist	Internal BCM Error	1) Please refer to BCM-100
60018	Assist	Internal BCM Error	1) Please refer to BCM-100
60019	Assist	Internal BCM Error	1) Please refer to BCM-100
60020	Assist	Internal BCM Error	1) Please refer to BCM-100
60021	Assist	Internal BCM Error	1) Please refer to BCM-100
60022	Assist	Internal BCM Error	1) Please refer to BCM-100
60023	Assist	Internal BCM Error	1) Please refer to BCM-100
60024	Assist	Internal BCM Error	1) Please refer to BCM-100

Error Code	Error Type	Title	Resolution Steps
60025	Assist	Internal BCM Error	1) Please refer to BCM-100
60026	Assist	Internal BCM Error	1) Please refer to BCM-100
60027	Assist	Internal BCM Error	1) Please refer to BCM-100

60028	Assist	Internal BCM Error	1) Please refer to BCM-100
60029	Assist	Internal BCM Error	1) Please refer to BCM-100
60040	Assist	Internal BCM Error	1) Please refer to BCM-100
60050	Assist	Internal BCM Error	1) Please refer to BCM-100
60051	Assist	Internal BCM Error	1) Please refer to BCM-100
60060	Assist	Internal BCM Error	1) Please refer to BCM-100
60070	Assist	Internal BCM Error	1) Please refer to BCM-100
60072	Assist	Internal BCM Error	1) Please refer to BCM-100
60081	Assist	Steering Angle is Beyond Limit	1) Please refer to STEERING-100
60090	Assist	Estop Button Pressed	1) Please refer to ESTOP-100
60120	Assist	Internal BCM Error	1) Please refer to BCM-100
60121	Assist	Motor Consumes too much Current	1) Please refer to STEERING-100
60160	Assist	Internal BCM Error	1) Please refer to BCM-100
60161	Assist	Internal BCM Error	1) Please refer to BCM-100

Error Code	Error Type	Title	Resolution Steps
60170	Assist	CAN Setup Failure	1) Inspect VIB 2) Check wiring up trunk and wiring to kinetek

			3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance
60171	Assist	Internal BCM Error	1) Please refer to BCM-100
60172	Assist	Internal BCM Error	1) Please refer to BCM-100
60173	Assist	Unknown Error (CAN Send Failure)	1) Inspect VIB 2) Check wiring up trunk and wiring to kinetek 3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60174	Assist	Internal BCM Error	1) Please refer to BCM-100
60175	Assist	Internal BCM Error	1) Please refer to BCM-100
60176	Assist	Kinetek STU file	1) Refer to HARD RESET-100 2) If you are still receiving this error code, please go ahead and elevate to the next level of support for assistance.
60177	Assist	CAN Receive Failure	1) Inspect VIB 2) Check wiring up trunk and wiring to kinetek 3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60180	Assist	Internal BCM Error	1) Please refer to BCM-100

Error Code	Error Type	Title	Resolution Steps
60181	Assist	Internal BCM Error	1) Please refer to BCM-100

60182	Assist	Internal BCM Error	1) Please refer to BCM-100
60183	Assist	Internal BCM Error	1) Please refer to BCM-100
60184	Assist	Internal BCM Error	1) Please refer to BCM-100
60210	Assist	Internal BCM Error	1) Please refer to BCM-100
60211	Assist	Internal BCM Error	1) Please refer to BCM-100
60220	Assist	Internal BCM Error	1) Please refer to BCM-100
60221	Assist	Internal BCM Error	1) Please refer to BCM-100
60222	Assist	Internal BCM Error	1) Please refer to BCM-100
60223	Assist	Internal BCM Error	1) Please refer to BCM-100
60230	Assist	Internal BCM Error	1) Please refer to BCM-100
60231	Assist	Internal BCM Error	1) Please refer to BCM-100
60232	Assist	Internal BCM Error	1) Please refer to BCM-100
60240	Assist	Internal BCM Error	1) Please refer to BCM-100
60241	Assist	Internal BCM Error	1) Please refer to BCM-100
60242	Assist	Internal BCM Error	1) Please refer to BCM-100
60250	Assist	Internal BCM Error	1) Please refer to BCM-100

60251	Assist	Internal BCM Error	1) Please refer to BCM-100
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Error Code	Error Type	Title	Resolution Steps
60252	Assist	Internal BCM Error	1) Please refer to BCM-100
60253	Assist	Internal BCM Error	1) Please refer to BCM-100
60280	Assist	Internal BCM Error	1) Please refer to BCM-100
60281	Assist	Internal BCM Error	1) Please refer to BCM-100
60282	Assist	Internal BCM Error	1) Please refer to BCM-100
60283	Assist	Internal BCM Error	1) Please refer to BCM-100
60284	Assist	Internal BCM Error	1) Please refer to BCM-100
60285	Assist	Internal BCM Error	1) Please refer to BCM-100
60286	Assist	Internal BCM Error	1) Please refer to BCM-100
60287	Assist	Internal BCM Error	1) Please refer to BCM-100
60288	Assist	Internal BCM Error	1) Please refer to BCM-100
60290	Assist	Internal BCM Error	1) Please refer to BCM-100
60291	Assist	Internal BCM Error	1) Please refer to BCM-100
60292	Assist	Internal BCM Error	1) Please refer to BCM-100

60293	Assist	Internal BCM Error	1) Please refer to BCM-100
60294	Assist	Internal BCM Error	1) Please refer to BCM-100
60320	Assist	Internal BCM Error	1) Please refer to BCM-100

Error Code	Error Type	Title	Resolution Steps
60330	Assist	Internal BCM Error	1) Please refer to BCM-100
60363	Assist	Internal BCM Error	1) Please refer to BCM-100
60370	Assist	Kinetek Parameters Error	1) Inspect kinetek wiring and check for error codes 2) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60371	Assist	Kinetek Error	1) Inspect kinetek wiring and check for error codes 2) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60372	Assist	Kinetek firmware version is not compatible	1) Inspect kinetek wiring and check for error codes 2) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60390	Assist	Internal BCM Error	1) Please refer to BCM-100
60400	Assist	Gyro + steering cross-check failed	1) Please refer to STEERING-100
60410	Assist	Internal BCM Error	1) Please refer to BCM-100
60420	Assist	Going too fast for too long	1) Inspect kinetek wiring and check for error codes 2) Run the traction encoder tests (found in the <i>Steering Troubleshooting Guide</i>)

			3) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60421	Assist	Moving backwards in autonomous mode	1) Inspect VIB 2) Check wiring up trunk and wiring to kinetek 3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance.

Error Code	Error Type	Title	Resolution Steps
60422	Assist	Moving While Stopped in Autonomous Mode	1) Inspect VIB 2) Ensure there is no ramps Check wiring up trunk and wiring to kinetek 3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60423	Assist	Significant Movement in Manual with No One in the Seat	1) Inspect VIB 2) Check wiring up trunk and wiring to kinetek 3) Check kinetek for error codes 4) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60424	Assist	Broken Traction Encoder	1) Please refer to STEERING-100
60431	Assist	Internal BCM Error	1) Please refer to BCM-100
60432	Assist	Internal BCM Error	1) Please refer to BCM-100
60441	Assist	Internal BCM Error	1) Please refer to BCM-100
60442	Assist	Internal BCM Error	1) Please refer to BCM-100

60443	Assist	Internal BCM Error	1) Please refer to BCM-100
60444	Assist	Internal BCM Error	1) Please refer to BCM-100
60450	Assist	Kinetek Parameters Error	1) Inspect kinetek wiring and check for error codes 2) Run the traction encoder tests (found in the <i>Steering Troubleshooting Guide</i>) 3) If the problem continues, please go ahead and elevate to the next level of support for assistance.

Error Code	Error Type	Title	Resolution Steps
60451	Assist	Kinetek Error	1) Inspect kinetek wiring and check for error codes 2) Run the traction encoder tests (found in the <i>Steering Troubleshooting Guide</i>) 3) If the problem continues, please go ahead and elevate to the next level of support for assistance..
60452	Assist	Kinetek Error	1) Inspect kinetek wiring and check for error codes 2) Run the traction encoder tests (found in the <i>Steering Troubleshooting Guide</i>) 3) If the problem continues, please go ahead and elevate to the next level of support for assistance.
60461	Assist	Unknown Error	1) Please refer to STEERING-100 2) (If steering offset has been set then it is an error to be out of range)
60500	Assist	Lithium Battery System Fault	1) Restart the machine. 2) If the issue continues, contact your supervisor
60501	Assist	Lithium Battery System Fault	1) Restart the machine. 2) If the issue continues, contact your supervisor
60502	Error	Lithium Battery System Fault	1) Restart the machine. 2) If the issue continues, contact your supervisor

60503	Assist	Lithium Battery System Fault	1) Restart the machine. 2) If the issue continues, contact your supervisor
10001	Assist	Internal BCM Error	1) Please refer to BCM-100

Solution Tables

RESEAT

Solution code	Recommended actions
RESEAT-100	1) Inspect and re-seat up trunk. Check if up trunk is visibly damaged (cut, torn or burnt wire and bent pins). 2) Inspect and re-seat power trunk. Check if power trunk is visibly damaged (cut, torn or burnt wire and bent pins). 3) Check voltage on power trunk and up trunk. Refer to <i>Sensor Power Check Document</i> for more information. 4) If any harness is damaged or not supplying the correct voltage please replace the correct harness.
RESEAT-101	1) Inspect and re-seat down trunk. Check if down trunk is visibly damaged (cut, torn or burnt wire and bent pins). 2) Inspect and re-seat power trunk. Check if power trunk is visibly damaged (cut, torn or burnt wire and bent pins). 3) Check voltage on down trunk and power trunk. Refer to <i>Sensor Power Check Document</i> for more information. 4) If any harness is damaged or not supplying the correct voltage please replace the correct harness.

BCM

Solution code	Recommended actions
BCM-100	1) Refer to HARD RESET-100 2) Turn the key to power on the scrubber, please follow our BCM Power Check Procedure Document 3) If you are still receiving this error code, please take a picture/video of the code displayed in the UI screen in initial boot up and elevate to the next level of support for assistance.

HARD RESET

Solution code	Recommended actions
HARD RESET-100	1) Turn the key to power off the scrubber. Raise the seat and decouple the Anderson connector. 2) Wait about 5 mins, then plug in the Anderson connector 3) Turn the key to power on the scrubber, please wait about 2-3 minutes for the machine to fully boot up to the PIN screen 4) Try running a route and monitor the scrubber usage and assists

STEERING

Solution code	Recommended actions
STEERING-100	1) Refer to HARD RESET-100 2) Try running a route and monitor the scrubber usage and assists 3) If you are still receiving this error code, please go ahead and review the steering troubleshooting guide 4) Once you have gone through the <i>Steering Troubleshooting Guide</i>, if you are still receiving the error code feel free to contact Brain Corp Tech Support, providing the completed troubleshooting checklist and any pictures requested.

E-STOP

Solution code	Recommended actions
ESTOP-100	1) Inspect the E-stop button and ensure its not pressed 2) If the E-stop button is not pressed and you're still receiving this type of code, please go ahead and review the document on <i>How to Verify the E-stop Hardware</i>.

PATH IS BLOCKED

Solution code	Recommended actions
BLOCK-100	1) Fully inspect both LIDARs and all three depth cameras, clean all sensors, and take clear pictures of any scratches (Refer to SENSOR-100) 2) Try running a route and monitor the scrubber usage and assists 3) If you are still receiving this error code, please take a picture of the error code and elevate to the next level of support for assistance.

SENSOR

Solution code	Recommended actions
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SENSOR-100	1) Refer to HARD RESET-100 2) Clean both RGB cameras, all three depth cameras, and/or both Lidars with a clean microfiber cloth (review <i>How to Clean Sensors</i> document if needed). Note: If cameras are really dirty feel free to use eye cleaning solution along with a microfiber cloth to clean them properly. 3) Inspect cameras and lidars. Take pictures of any damage or obstructions 4) If a camera/lidar is found to be damaged, please go ahead and replace it. Please remember that you will need to perform a calibration after replacing a depth camera camera. For more information on the calibration refer to 5) If no damage is found, evaluate assists and ensure that the sensors are not picking up something 6) If sensors are picking something up, please ensure that there is nothing hanging or blocking the field of view. If the issue still persists, please go ahead and clean the cameras one more time. 7) If you are still receiving the sensor error please go ahead and reseal cabling, check for power and voltage. For more information please refer to the <i>Sensor Power Check Doc</i>
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OFF PATH

Solution code	Recommended actions
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OFFPATH-100	1) Refer to SENSOR-100 2) Ensure that the robot has no object on the way 3) Evaluate assists and ensure that the sensors are not picking up something 4) Check to make sure that the green route does not go through any objects 5) Make sure the path is clear 6) Follow the arrow and drive the machine to the highlighted path 7) When correct, the path turns white 8) To resume, press the Start/Pause button. 9) If you are still receiving this error code, please take a picture of the error code and elevate to the next level of support for assistance.
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Diagnostic App Errors

Error Code	Name	Description
1	NO_ERROR	

2	UNKNOWN	An unknown error occurred.
3	SYSTEM_ERROR	An unexpected error occurred.
4	MACHINE_ERROR	
5	TIMEOUT	The test failed to complete within the allotted time.
6	VCU_CONNECTION_ERROR	
7	TRACTION_ENCODER_ERROR	Unable to get necessary information from the traction encoder.
8	STEERING_ENCODER_ERROR	Unable to get necessary information from the steering encoder.
9	VEHICLE_CONTROLLER_ERROR	Unable to determine drive state.
10	IMU_ERROR	The IMU failed to detect the expected maneuvers.
11	ESTOP_NOT_DETECTED	Software e-stop failed to activate.
12	START_BUTTON_NOT_DETECTED	Failed to detect the Start/Pause button.
13	PRESENCE_SENSOR_NOT_DETECTED	Failed to detect the user standing on or off the platform.
14	FLASH_FIRMWARE_ERROR	Flash firmware failed to upload due to no USB connection to STM.
15	MISSING_DEPENDENCY	An internal error occurred in the Factory App.
16	BOOTH_MARKER_NOT_FOUND	Failed to read the Home Marker.
17	CALIBRATION_DATA_DOES_NOT_EXIST	Unable to find required data on the machine.
18	BATTERY_FAILURE	Failed to collect any voltage data from the battery.
19	VOLTAGE_TOO_LOW	The voltage on the battery is too low.

20	VOLTAGE_TOO_HIGH	The voltage on the battery is too high.
21	NETWORK_UNREACHABLE	Failed to ping google.com.
22	CANNOT_ENTER_AUTONOMY	Failed to enter autonomy.
23	UPPER_LIDAR_CONFIG_MISSING	
24	UPPER_LIDAR_CONNECTION_ERROR	Failed to connect to upper LIDAR.
25	UPPER_LIDAR_BRACKET_MISSING	Failed to detect upper LIDAR mounting bracket.
26	UPPER_LIDAR_OUT_OF_TOLERANCE	Upper LIDAR position or orientation is out of tolerance.
27	LOWER_LIDAR_CONFIG_MISSING	
28	LOWER_LIDAR_CONNECTION_ERROR	Failed to connect to or read from lower LIDAR.
29	LOWER_LIDAR_BRACKET_MISSING	Failed to detect lower LIDAR mounting bracket
30	LOWER_LIDAR_OUT_OF_TOLERANCE	Lower LIDAR position or orientation is out of tolerance.
31	LIDAR_CONVERGENCE_FAILURE	LIDARs failed to converge.
32	LEFT_3D_CAMERA_ERROR	
33	LEFT_3D_CONNECTION_ERROR	Failed to connect to left 3D camera.
34	LEFT_3D_CALIBRATION_FAILED	An unknown exception occurred while calibrating.
35	LEFT_3D_CAMERA_BAD_READING	Invalid readings collected from 3D camera.
36	LEFT_3D_OUT_OF_TOLERANCE	The physical placement of the left 3D camera is out of the maximum allowed tolerance.

37	LEFT_3D_CONFIG_UPDATE_FAILED	Unable to write configuration to left 3D camera.
38	FRONT_3D_CAMERA_ERROR	
39	FRONT_3D_CONNECTION_ERROR	Failed to connect to front 3D camera.
40	FRONT_3D_CAMERA_BAD_READING	Invalid readings collected from 3D camera.
41	FRONT_3D_CALIBRATION_FAILED	An unknown exception occurred while calibrating.
42	FRONT_3D_OUT_OF_TOLERANCE	The physical placement of the front 3D camera is out of the maximum allowed tolerance.
43	FRONT_3D_CONFIG_UPDATE_FAILED	Unable to write configuration to front 3D camera.
44	RIGHT_3D_CAMERA_ERROR	
45	RIGHT_3D_CONNECTION_ERROR	Failed to connect to right 3D camera.
46	RIGHT_3D_CAMERA_BAD_READING	Invalid readings collected from 3D camera.
47	RIGHT_3D_CALIBRATION_FAILED	An unknown exception occurred while calibrating.
48	RIGHT_3D_OUT_OF_TOLERANCE	The physical placement of the right 3D camera is out of the maximum allowed tolerance.
49	RIGHT_3D_CONFIG_UPDATE_FAILED	Unable to write configuration to right 3D camera.
50	LEFT_2D_CONNECTION_ERROR	Failed to connect to Left 2D Camera.
51	LEFT_2D_CAMERA_ERROR	
52	FRONT_2D_CONNECTION_ERROR	Failed to connect to Front 2D Camera.

53	FRONT_2D_CAMERA_ERROR	
54	RIGHT_2D_CONNECTION_ERROR	Failed to connect to Right 2D Camera.
55	RIGHT_2D_CAMERA_ERROR	
56	USER_ERROR	
57	STEERING_LIMITS_TOO_CLOSE	
58	OBJECT_DETECTED_DURING_CALIBRATION	Area surrounding the machine is not empty.
59	UNIDENTIFIED_BOOTH	Booth identification has not been completed.
60	NO_CALIBRATION_FILES_FOUND	
61	INCORRECT_NUMBER_OF_GYRO_READINGS	
62	INCORRECT_NUMBER_OF_HEADING_READINGS	
63	LOWER_LIDAR_PROTECTOR_ERROR	
64	MISCONFIGURED_BOOTH	Invalid calibration algorithm selected.
65	MISSING_EOL_ROUTE	Unable to locate EOL route.
66	PRESENCE_SENSOR_TRIGGERED_DURING_AUTONOMY	The presence sensor was triggered during autonomy.
67	SIDE_LIDAR_TRIGGERED_DURING_AUTONOMY	The side LIDAR safety curtain was interrupted during autonomy.
68	MACHINE_IN_ESTOP	Test cannot continue while machine is in e-stop.

69	UNEXPECTED_STAGE	The machine has entered an unexpected state.
70	UNABLE_TO_DETERMINE_LEFT_LIMIT	
71	UNABLE_TO_DETERMINE_CENTER	Unable to determine center steering angle.
72	UNABLE_TO_DETERMINE_RIGHT_LIMIT	
73	DELTA_THROTTLE_ACCELERATION_MISMATCH	Sign of the change of throttle does not match the sign of the change of the change of encoder steps.

74	THROTTLE_SPEED_MISMATCH	Sign of the throttle does not match the sign of the change of encoder steps.
75	ENCODER_STD_DEV_TOO_HIGH	The standard deviation of the change of encoder steps is above a threshold.
76	UNEXPECTED_HEADING_CHANGE	Expected machine to move straight, but machine turned.
77	RIGHT_WHEEL_LIMIT_LEFT_OF_CENTER	Expected traction encoder to register right limit to the right of center.
78	LEFT_WHEEL_LIMIT_RIGHT_OF_CENTER	Expected traction encoder to register left limit to the left of center.
79	WHEEL_FAILED_TO_TURN_IN_AUTONOMY	User unable to confirm autonomous wheel control.
80	UNABLE_TO_DETERMINE_MINIMUM_THROTTLE	Machine did not move after trying all throttle values.
81	LOWER_LIDAR_PROTECTOR_BLOCKING_RAYS	
82	LOWER_LIDAR_RAYS_INSIDE_FOOTPRINT	
83	LOWER_LIDAR_RAYS_TOO_CLOSE	
84	UNABLE_TO_GET_UNIT_VECTORS	Unable to get unit vectors for 3D Camera.

85	UNKNOWN_CAMERA_ERROR	User rejected live camera feed.
86	UNEXPECTED_FRAME_RATE	Frame rate from the camera is too low.
87	BATTERY_CHARGE_TOO_LOW	The charge on the battery below 75%.
88	LEFT_2D_CAMERA_NO_DATA	No data collected from Left 2D Camera.
89	FRONT_2D_CAMERA_NO_DATA	No data collected from Front 2D Camera.
90	RIGHT_2D_CAMERA_NO_DATA	No data collected from Right 2D Camera.
91	LOWER_LIDAR_NO_DATA	No data collected from Lower LIDAR.
92	UPPER_LIDAR_NO_DATA	No data collected from Upper LIDAR.
93	MODEM_NOT_CONNECTED	LTE Modem is not connected.
94	TOUCH_SCREEN_NOT_CONNECTED	Touch Screen is not connected.
95	MODEM_NOT_COMMUNICATING	Unable to communicate with Modem.
96	LEFT_BLINKER_ERROR	
97	RIGHT_BLINKER_ERROR	
98	IMU_DATA_TOO_NOISY	The machine's movement was above the allowed threshold.
99	KIT_NOT_RUNNING	The kit is not running.
100	MODEM_NOT_REGISTERED	Unable to find LTE Modem network interface.
101	MODEM_NETWORK_NOT_CONNECTED	Unable to determine machine IP address.
102	MODEM_PING_REQUEST_FAILURE	Unable to ping the internet.

103	MODEM_DNS_FAILURE	Unable to perform DNS lookup.
104	UNEXPECTED_IMAGE_FORMAT	Unexpected image format received from camera.
105	UNKNOWN_SIDE_LIDAR_ERROR	Something is wrong with the side LIDAR.
106	UNKNOWN_CALIBRATION_BOOTH	An unknown Home Marker was detected.
107	MISSING_MACHINE_FILE	The machine file is missing.
108	MISSING_FIRMWARE_UPDATED_FILE	The firmware must be updated.
109	MISSING_BASELINE_FILES	The baseline 3D camera tests must be run.
110	MISSING_UNIT_VECTOR_FILES	The 3D camera unit vector files are missing.

111	MISSING_DEPTH_DUMPS	The 3D camera data dumps are missing.
112	MISSING_IFM_CALIBRATIONS	The 3D camera calibrations must be run.
113	MISSING_LIDAR_CALIBRATIONS	The LIDAR calibrations must be run.
114	INVALID_CALIBRATION_FILES	Calibration files were found but are invalid.
115	STEERING_LONGEVITY_INVALID_LIMITS	Invalid limits set for the Steering Longevity tool.
116	UNKNOWN_ROC_CONNECTION_ERROR	Unable to communicate with the ROC.
117	UNKNOWN_CARRIER_CONNECTION_ERROR	Unable to acquire an LTE signal.
118	CONTROLLER_FW_MISMATCH	Incorrect Controller FW Version
119	MISSING_STEERING_CALIBRATION	Missing steering offset calibration.
120	LOWER_LIDAR_PING_ERROR	Lower LIDAR not responding to ping requests.

121	UPPER_LIDAR_PING_ERROR	Upper LIDAR not responding to ping requests.
122	LEFT_3D_CAMERA_PING_ERROR	Left 3D Camera not responding to ping requests.
123	RIGHT_3D_CAMERA_PING_ERROR	Right 3D Camera not responding to ping requests.
124	FRONT_3D_CAMERA_PING_ERROR	Front 3D Camera not responding to ping requests.
125	LEFT_3D_CONFIG_TIMEOUT_ERROR	Took too long to verify the configuration of the Left 3D Camera.
126	LEFT_3D_CONFIG_READ_ERROR	Unable to read the configuration of the Front 3D Camera.
127	LEFT_3D_CONFIG_COMPARE_ERROR	Unexpected configuration on the Front 3D Camera.
128	RIGHT_3D_CONFIG_TIMEOUT_ERROR	Took too long to verify the configuration of the Right 3D Camera.
129	RIGHT_3D_CONFIG_READ_ERROR	Unable to read the configuration of the Right 3D Camera.
130	RIGHT_3D_CONFIG_COMPARE_ERROR	Unexpected configuration on the Right 3D Camera.
131	FRONT_3D_CONFIG_TIMEOUT_ERROR	Took too long to verify the configuration of the Front 3D Camera.
132	FRONT_3D_CONFIG_READ_ERROR	Unable to read the configuration of the Front 3D Camera.
133	FRONT_3D_CONFIG_COMPARE_ERROR	Unexpected configuration on the Front 3D Camera.
134	ROCD_NOT_RUNNING	The ROCD service is not running.
135	NOT_CONNECTED_TO_ROC	Unable to get connection to the ROC.
136	NOT_PROVISIONED	Machine is not provisioned.
137	ROC_PENDING_UPLOADS_ERROR	Unable to determine the number of pending uploads.
138	UNABLE_TO_EXIT_ESTOP_STATE	Test cannot continue while machine is in E-stop.

139	MINIMUM_THROTTLE_TOO_HIGH	The minimum throttle required to move the robot is too high.
140	INVALID_BOOTH_ID_ERROR	Booth ID not found in database.
141	INVALID_BOOTH_LIDAR_CONFIGURATION	LiDAR configuration not found for selected booth.
142	INVALID_BOOTH_3D_CAMERA_CONFIGURATION	3D camera configuration not found for selected booth.
143	KINETEK_PARAM_MISMATCH	Kinetek Parameter Mismatch
144	INSUFFICIENT_VISIBLE_MARKERS	Insufficient visible markers.
145	INCORRECT_MARKER_PATTERN_DETECTED	Incorrect marker pattern detected.
146	MARKERS_OUT_OF_FIELD_OF_VIEW	Markers were detected outside of the field of view.
147	MARKER_LOCALIZATION_ERROR	Markers were detected outside of the field of view.