| **MATRIX** | Troubleshooting Guide: Master Error Code List | |
|---|---|---|
| Prepared by: Regina Templeton & Brian Nelson | Date Prepared: 3/15/16 | |

<u>**DESCRIPTION**</u>

The following tables include all of the possible Matrix console error codes. Troubleshooting is provided where known. If you have verified troubleshooting steps to add, please email contentmanagement@johnsonfit.com.

## Speed Errors

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0040 | No speed response of roller | B | TBD |
| 0041 | After setting speed on console, speed cannot reach the target in 60 seconds (Speed too low) | B | TBD |
| 0042 | After setting speed on console, speed cannot reach the target in 60 seconds (Speed too high) | B | TBD |
| 0043 | RPM read from RS232 does not match RPM measured from the speed/RPM line – only used for AC motors (DCI) | B | Go into ENG mode. Find RPM parameter on the display. Press Enter, display should show the parameter value to get the unit to 1mph and the belt should start. If the parameter value is 0, replace the console. If the belt doesn't start, replace the MCB with a Delta MCB. |
| 0044 | Actual speed is higher than commanded speed by limit and is accelerating (DCI) | B | Press and hold INCLINE DOWN and SPEED DOWN at the same time for 3-5 seconds. The display should now read Manager Mode. Press any UP arrow key to go to Engineering Mode and press ENTER. Press any UP or DOWN arrow key until RPM Parameter is showing on the display. Press the ENTER key, the display should now show the Parameter number to get the unit to 1.0 MPH / 1.6 KPH and the belt should start. If the belt does not start, replace the MCB. If the Parameter does not show a value, replace the console. |
| 0045 | Automation speed up and speed down mode fail | B | TBD |
| 00A0 | Failure to rectify speeds | C | TBD |
| 00A1 | No response of motor speed sensor (keep time for LCB default) | C | TBD |

## Motor Errors

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0140 | Incline motor failure (FTM501 – Delta board, TREADMILL)<br><br>Incline motor failure (ASCENT) | B | Check the connection of the incline motor cable at the MCB. Run auto-calibration. If okay, you are done. If error, replace incline motor. |
| 0141 | Main motor over temperature | B | Check the connection of the motor cable at the MCB. Using a multimeter set to ohms, place both terminals on the blue wires of the motor cable. There should be a reading of 0. If there is a reading above 0, replace the motor. If the reading is below 0, replace the MCB. |
| 0142 | The potentiometer is reversed - Incline up moves down the incline motor down (FTM501 – Delta board, TREADMILL) | B | Run auto-calibration. If it fails, check to see if there is a number displayed for elevation minimum in engineering mode. Check MCB LEDs. If LED down has no light, check the connections. Replace console or cable as needed. If LED down is lit, replace the incline motor. If new incline motor still fails, replace MCB. |
| 0143 | Driver disconnect | B | TBD |
| 0144 | Motor overloading | B | Check the condition of the running deck and belt. Replace the belt and flip or replace the running deck as needed. Replace the MCB. |
| 0145 | In the self-powered system, the incline stops when LCB battery is too low and RPM is not high enough (under 70 RPMs) | B | Replace LCB. |
| 0146 | TREADMILL: Motor the current exception<br>BIKE: The second incline motor operation fails | B | TBD |
| 0147 | Incline motor disconnected (FTM501 – Delta board, TREADMILL) | B | Run auto calibration. Check incline motor connection at LCB. Check to see if incline value changes on display when up/down keys are pressed. If they don't change, replace incline motor. If they do change, replace LCB. |
| 0148 | Incline motor over current | B | Run auto calibration. Disconnect the incline tube from the frame. Turn on power. If console still shows error, replace incline motor. If no error, reattach incline motor and replace LCB. |
| 0149 | Resistance is over 3.7 amps | B | Check resistance amperage through generator cable. If resistance is under 10 ohms, replace generator. If over 10 ohms, replace LCB. |
| 014A | LCB charge current is abnormal | B | Replace LCB. |
| 014B | The second incline motor is disconnected or no VR signal | B | TBD |
| 014C | The second incline motor over current | B | TBD |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 014D | The operation fails and the current is none for the incline motor (ASCENT) | B | Run auto calibration. If ok, you are done. If error, replace incline motor. |
| 014E | The operation fails and the current is none for the second incline motor | B | TBD |
| 01A0 | See Error 0147 | - | See Error 0147 |
| 01A1 | Incline calibration error | C | Run auto calibration. Disconnect the incline tube from the frame. Turn on power. If console still shows error, replace incline motor. If no error, reattach incline motor and replace LCB. |
| 01A2 | See Error 0142 | - | See Error 0142 |
| 01A3 | Main motor disconnected. (FTM501 – Delta board, TREADMILL) | C | Check the connection of the motor cable at the MCB. MCB LED DSP1 should be slowly blinking in a normal state. If blinking fast or it is solid, replace motor. If not lit, replace MCB. |
| 01A4 | Main motor U phase disconnection | C | Check the connection between motor cable and MCB. Replace the motor necessary. Replace the MCB. |
| 01A5 | Main motor V phase disconnection | C | Check the connection between motor cable and MCB. Replace the motor necessary. Replace the MCB. |
| 01A6 | Main motor W phase disconnection | C | Check the connection between motor cable and MCB. Replace the motor necessary. Replace the MCB. |
| 01A7 | See Error 0148 | - | See Error 0148 |
| 01A8 | Motor over current (FTM501 – Delta board, TREADMILL) | C | Visually inspect the running belt and deck for signs of wear. Perform amp draw test. Replace belt or flip deck as needed. If error persists, replace MCB. |
| 01A9 | Calibration on the RPM/belt motor fails – only used for DC motors (DCI) | - | TBD |
| 01AA | Calibrations on the RPM/belt motor and the incline motor fail – only used for DC motors (DCI) | - | TBD |
| 01AB | Inverter Error | C | When display is showing the error, the MCB fault LED should be lit. If LED is not lit, replace console. If lit, replace MCB. |
| 01AC | ECB is over current (CLIMBMILL) | - | Check the connection of the ECB extension cable from the LCB to the ECB (Green, white and red wire). After checking connections, check pins 1 and 3 on ECB1 and pins 2 and 4 on ECB 2; should be between 12.8 and 14.2 ohms. If out of range, replace ECB. If within range, replace LCB. Check the gap between the ECB and the |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| | | | flywheel. The gap should be .5 mm; adjust as needed. |
| 01AD | Inner electron (motor) over temperature: motor over loading (TREADMILL) | C | Visually inspect the running belt and deck for signs of wear. Perform amp draw test. Replace belt or flip deck as needed. If the error persists, replace MCB. |
| 01AE | See Error 014A | - | See Error 014A |
| 01AF | Power resistor is disconnected | C | Check the connection of the resistor at LCB. Replace LCB. |
| | ECB is disconnected (CLIMBMILL) | - | Check the connection of the ECB extension cable from the LCB to the ECB (Green, white and red wire). Check to see if LED8 and LED10 on the LCB have a brief light for 3 seconds when you power on machine. If LED 8 and 10 do not have brief light, replace LCB. If LED 8 and 10 do have a brief light, check the ECB extension cable at the LCB (pins 1 and 3 for ECB 1; pins 2 and 4 for ECB 2. The reading should be between 12.8 and 14.2 ohms.) If resistance is out of range, replace ECB. If it's within range, replace LCB. Check the gap between the ECB and the flywheel. The gap should be .5 mm; adjust as needed. |
| 01B0 | See Error 014B | - | See Error 014B |
| 01B1 | See Error 014C | - | See Error 014C |
| 01B2 | See Error 014D | - | See Error 014D |
| 01B3 | See Error 014E | - | See Error 014E |
| 01B4 | Battery connection reversed | C | Check wire connections on battery terminals. Should be black to black, red to red. Replace the LCB. |

## LCB Errors

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0201 | LCB battery low voltage | A | Plug in the machine to charge battery for 24 hours. |
| 0240 | Low AC power input voltage | B | TBD |
| 0241 | Low DC bus voltage of drive motor | B | TBD |
| 0242 | LCB over temperature | B | Make sure that the base frame fan is running. Replace the LCB. |
| 0243 | Soft start circuit of DC bus fail | B | TBD |
| 0244 | ECB sensor fail | B | TBD |
| 0245 | ECB calibration fail | B | TBD |
| 0246 | ECB over current | B | TBD |
| 0247 | LCB fail | B | Replace LCB. |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0248 | Battery disconnection or fail (LCB battery voltage is less than 6 volts) | B | Check battery wire connection to LCB. Check battery voltage; if less than 6 volts, replace battery. If not less than 6 volts, replace LCB. |
| 0249 | LCB fan failure | B | Check the connection of the fan cable at both ends and perform continuity test. Replace fan. |
| 024A | Safety switch error (Cannot receive any data for over 5 seconds) | B | Check the safety switch communications wire. |
| 024B | Location sensor does not respond; RPM is not 0. | B | Check the device connection. User metal to touch the sensor and check LCB board LED (D8) is turn off. |
| 024C | Temperature sensor abnormal | B | TBD |
| 024D | Control zone is touched for over 60 seconds (Frame IR Sensor Error for new small board) | B | Check for object in the control zone. Check the power of transmitter board (LED should be solid green). Check whether the control zone is no thing. |
| 024E | Frame IR sensor is touched for over 60 seconds (E-Stop Control Zone Error for 3 IR Sensor Control Zone) | B | Check for object in the control zone. Check the power of transmitter board (LED should be solid green). Check whether the control zone is no thing. |
| 029F | An error created by DCI motor controller (AC motors only) | B | Recycle power. Manually move the running belt. As it moves, MCB speed LED should flash. If not, replace speed sensor. If LED flashes with belt movement, replace console cable. |
| 02A0 | Main motor failure. Belt doesn't move when it's supposed to move. | C | Check the motor wire connection between the motor and MCB. Press the start key and check the MCB PWM LED. If LED does not flash, replace console. If it flashes, use a multimeter and check the 3 points (U/V/W) and see if there's a resistance reading. If yes, replace MCB. If no, replace motor. |
|  | Encoder error. Unit is in pause mode at all times. (CLIMBMILL) | - | Check the connection of the speed sensor cable from LCB to speed sensor. Check to see if LED D35 on the LCB is on when the brake is turned to the release position. If D35 is off, move the stairs and check to see if LED D35 is flashing. If not flashing, replace speed sensor. If flashing, clean and adjust speed sensor as needed and retest. |
|  | Speed commanded but no belt movement detected (DCI only) | - | Check the connection of the speed sensor cable to the MCB. Move the running belt with your hand. As it moves, the MCB Speed LED should flash. If it doesn't, replace speed sensor. If LED is flashing with belt movement, replace console cable. |
| 02A1 | Over AC power input voltage | C | Using multimeter, check that the input power matches |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| | | | the local power specs at MCB. Change to a different outlet if necessary. If power input is okay, replace MCB. |
| 02A2 | Over DC bus voltage | C | Using multimeter, check that the input power matches the local power specs at MCB. Change to a different outlet if necessary. If power input is okay, replace MCB. |
| 02A3 | Low AC power input voltage when motor running | C | Check if the input power is normal (110V : low 76V / 220V: low 186V). Replace the MCB. |
| 02A4 | U phase current sensor and circuit fail | C | Replace the drive motor. |
| 02A5 | V phase current sensor and circuit fail | C | Replace the drive motor. |
| 02A6 | W phase current sensor and circuit fail | C | TBD |
| 02A7 | Motor over current | C | Check the motor wire connection between the Motor and MCB. Use a multimeter to check the 3 points (U / V / W) and see if there's data of inside impedance. If yes, replace MCB. If no, replace motor. |
| 02A8 | Inverter circuit of motor failed; motor resistance is closed | C | Check the motor wire connection between the motor and MCB. Press the start key and check the MCB PWM LED. If LED does not flash, replace console. If it flashes, use a multimeter to check the 3 points (U/V/W) and see if there's a resistance reading. If yes, replace MCB. If no, replace motor. |
| 02AA | Main motor over limited current | C | TBD |
| 02AB | Machine type error | C | Change the machine type on the console to match the correct frame. |
| 02AC | Main motor out of control (speed too high ) | C | TBD |
| 02AD | LCB/MCB over temperature | C | Check MCB fan/frame fan for proper function. If fans are running, replace LCB/MCB. Check the motor wire connection between motor and MCB. Using the multimeter set to ohms, check the two blue wires for a resistance reading. If there is a reading, replace MCB. If there's no reading, replace motor. |
| 02AE | Critical failure (DCI only MCB) | - | Recycle power. If error code persists, replace DCI MCB with Delta MCB. |
| 02AF | Critical failure (DCI only MCB) | - | Recycle power. If error code persists, replace DCI MCB with Delta MCB. |
| 02B1 | Safety key action response when safety key is in place | C | Check the connection of the safety key switch. If switch is open or shorted out, replace the switch. If replacement doesn't work, replace the console. |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 02B2 | Safety key action response when safety key is in place | C | Check the connection of the safety key switch. If switch is open or shorted out, replace the switch. If replacement doesn't work, replace the console. |
| 02B3 | Machine Type Error | C | Change the machine type in console to match frame. |
| 02B4 | Resistance Type Error | C | Make sure machine type is set for the correct frame in console. If yes, replace LCB, if no, change to correct type. If error persists, replace the console. |
| 02B5 | Inverter sensor (motor wire) is reading current over 10.5 amps for 60 seconds | C | Use a multimeter to check 3 points (U, V, W) to see if resistance is over 4 ohms. If yes, replace motor. If no, flip deck and or replace running belt. If error persists, replace MCB. |
| 02B6 | Speed UP over current | C | Visually inspect the running belt and deck for signs of wear. Perform amp draw test. Replace belt or flip deck as needed. If error persists, replace MCB. |
| 02B7 | Speed DOWN over current | C | Visually inspect the running belt and deck for signs of wear. Perform amp draw test. Replace belt or flip deck as needed. If error persists, replace MCB. |
| 02B8 | Running status over current | C | Visually inspect the running belt and deck for signs of wear. Perform amp draw test. Replace belt or flip deck as needed. If error persists, replace MCB. |
| 02B9 | The inner memory IC data write error (Delta) | C | Check LED DSP1 on MCB. If LED is blinking, replace console. If LED is lit solid, replace MCB. If LED is not lit, check power to MCB. In a normal state the DSP1 LED should be slowly blinking. |
| 02BA | The inner memory IC data read error (Delta) | C | Check LED DSP1 on MCB. If LED is blinking, replace console. If LED is lit solid, replace MCB. If LED is not lit, check power to MCB. In a normal state the DSP1 LED should be slowly blinking. |
| 02BB | Inverter hardware interrupt error | C | Reboot power, if error show again, replace the MCB. |
| 02BC | Ground connection or fuse error (Delta) | C | Check LED DSP1 on MCB. If LED is blinking, replace console. If LED is lit solid, replace MCB. If LED is not lit, check power to MCB. In a normal state the DSP1 LED should be slowly blinking. |
| 02BD | Inverter hardware interrupt error (Delta) | C | Check LED DSP1 on MCB. If LED is blinking fast, replace console. If LED is lit solid, replace MCB. If LED is not lit, check power to MCB. In a normal state the DSP1 LED should be slowly blinking. |
| 02BE | DC brake error | C | Check the power extended wire connection between the brake and the LCB for damage. Replace if |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| | | | necessary. Manually try to move the stairs. If the stairs move, replace brake. |
| 02BF | DC brake over current | C | Check the power extended wire connection between the brake and the LCB for damage. Replace if necessary. Manually try to move the stairs. If the stairs move, replace brake. |
| 02C0 | DC brake in manual mode | C | Push lever on DC brake up to engage the brake. Recycle power. If error persists, replace brake. |
| 02C1 | Speed tracking error; the speed tracking is off by at least 10 RPMs for at least 20 continuous seconds | C | Adjust speed sensor position and clean free of debris. Check the ECB extension cable connection at the LCB. Check the resistance (Pins 1 and 3 for ECB1, Pins 2 and 4 for ECB2.) There should be between 12.8 and 14.2 ohms. If resistance is out of range, replace ECB. If it's within range, replace LCB. |
| 02C2 | CZ 3IR sensors have no communication or disconnected over 3 seconds | C | Check if there is something blocking CZ IR sensors. Check the connection of the CZ extension cable from LCB. If LED1 on receiver board is flashing, perform continuity test on the extension cable (white wire, pin 2) from the LCB to the receiver board. If not good, replace cable. If okay, check if LED D12 on the LCB is lit. If not lit, replace LCB. If lit, check LED1 status on the receiver board. If that LED is lit, replace the transmission board. If that LED is not lit, replace the receiver board. |
| 02C3 | Frame IR sensor error | C | Check if there is something blocking the frame IR sensors. Check the connection from frame IR cable to the LCB. Check LED1 on the daughter board. If it is not flashing, replace daughter board. If flashing, replace frame IR cables. |
| 02C4 | The frequency error for climbmill control zone (The signal is abnormal over ten seconds) | C | Replace the control zone transmitter board or receiver board. |
| 02C5 | The frequency error for climbmill frame IR sensor (The signal is abnormal over ten seconds) | C | Replace LCB. |
| 02C6 | The receiver is disconnected for climbmill control zone (Connector is disconnected over 3 seconds) | C | Check the connection of the control zone extension cable from the LCB to the control zone. Replace the receiver board or control zone extension cable or LCB. |
| 02C7 | The receiver is disconnected for climbmill | C | Check the connection of the frame IR receiver cable |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| | frame IR sensor | | from the LCB to the frame IR receiver sensor. Replace the LCB set or the frame IR receiver cable. |

## UCB Errors

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0301 | Memory block fail | A | Recycle power. If not resolved, check Feature Access Code document for memory clear function. If none or does not fix, replace console. |
| 0302 | UCB low battery voltage | A | TBD |
| 0303 | UCB low supply voltage | A | TBD |
| 0304 | Earphone Board Need Replace | A | Replace earphone board. Recycle power to the unit. |
| 0305 | USB Hardware OT or OC | A | TBD |
| 0306 | Keypad press keep 60 seconds | A | TBD |
| 0340 | Key pad in extraordinary operation | B | TBD |
| 0341 | Fan over current | B | TBD |
| 0343 | UCB Over supply voltage | B | TBD |
| 0344 | Timeout receive packet (Not recommended for re-use, make use of 04B0 code) | B | TBD |
| 0345 | Correct packet but LCB without the function | B | TBD |
| 0346 | UCB detect the error of LCB incline position error | B | TBD |
| 0347 | VA Load program fail | B | Check to see if SD card is mounted correctly. Reload SD card from known good card. Check VA software (should be 2.91 version). If not, replace VA board. |
| 0348 | Motor not to run | B | TBD |
| 03A5 | Failed to load program (programs exist in the file system, this error could mean the file system is corrupt) | C | Try upgrading software. Replace console if needed. |
| 03A6 | Failed to run program (the program read from the file system is invalid or has an invalid format, therefore it cannot be executed) | C | Try upgrading software. Replace console if needed. |
| 03A7 | See Error 0347 | - | See Error 0347 |
| 03A8 | Machine type error | C | Change the machine type in the console. |
| 03A9 | See Error 0348 | C | See Error 0348 |

## Communication Errors

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| 0440 | Timeout received packet (BIKE) | B | Check status of LCB LED10.<br>- If LED10 is blinking, recycle power. If there is still an error, update UCB software. If error persists, replace the console.<br>- If LED 10 is not lit, check console cable connection at both ends. If it is securely plugged in, replace console cable. If still error, replace console. Then replace LCB if necessary. |
| 0441 | Correct packet but LCB/MCB without function | B | Check the console cable connections. Update LCB software if possible. Replace LCB or console as necessary. |
|  | Command is received from the console with correct packet, but the daughter board has no function to support it (TREADMILL DCI) | - | Recycle power on unit. If the issue is not fixed, replace daughter board. |
| 0442 | Command is received from the console with correct packet, but the daughter board has no function to support it (TREADMILL DCI) | - | Recycle power on unit. If the issue is not fixed, replace daughter board. |
| 0443 | LCB read or write wrong | B | TBD |
| 04A0 | LCB/MCB no communication received (TREADMILL) | C | Delta only: If the display is showing 04A0 error, LED DSP2 should be off. If light is on, replace the console.<br><br>Check the connection of the console cable at both ends and perform continuity test. Replace console cable. Replace MCB/LCB. |
|  | Console communication is lost (TREADMILL DCI) | - | Check connection of console cable. If no signal is present through console cable, LED 1 on the daughter board should not be lit. Replace console cable. Replace daughter board. |
|  | UCB communication disconnect (BIKE - Chopper) | - | Check status of LCB LED10. If blinking, recycle power. If there is still an error, update UCB software. If the error persists, replace the console. If LED 10 is OFF, check console cable connection at both ends. If securely connected, replace console cable. If error persists, replace console. Replace LCB if necessary. |
|  | Console has no communication or is disconnected (CLIMBMILL) | - | Check console cable connections, perform continuity test on cable. Ensure console is getting 12 volts by touching pin 1 and pin 8 at console end. If not, replace console |

| Error Code | Description | Class Level | Troubleshooting |
|---|---|---|---|
| | | | cable. If it is, replace the console. |
| 04A1 | MCB communication is lost (TREADMILL DCI ) | - | Check connection of MCB signal wire (wire goes from daughter board to MCB). If no signal is present through MCB signal wire, LED 2 on the daughter board should be unlit. Replace signal wire. Replace daughter board. |
| 04B0 | Console/LCB no communication received (TREADMILL or ASCENT) | C | Check the console cable at both ends. Replace console cable if damaged. Swap console with known good if connections are good. Replace the console. Replace MCB/LCB. |
| | Console/LCB no communication received (BIKE - Chopper) | - | Check status of LCB LED10. If blinking, recycle power. If there is still an error, update UCB software. If that doesn't fix it, replace the console. If LED 10 is OFF, check console cable connection at both ends. If it is securely plugged in, replace console cable. If If still error, replace console. Then replace LCB if necessary. If LED 7, 8, 9 and 10 are blinking together, this indicates LCB software problem. Reinstall software or replace LCB. |
| | No response from LCB (CLIMBMILL) | - | Check console cable connections. Perform continuity test on cable. Ensure console is getting 12 volts by touching pin 1 and pin 8 at console end. If not, replace console cable. If it is, replace the LCB. |
| 04B1 | IO board does not have communication response for 5 seconds | C | TBD |