# MCP110 Diagnostic Flow

## Start

- **Check Display**
  - **Display not working** – Blank or Frozen
    - See Display Problem page

- **System boots up?**
  - **Ok**
    - System won’t boot up completely or keeps rebooting
      - See Other/Misc. Problems page

- **Run All**
  - **Ok**
    - Note: a doesn’t always indicate a problem – some features/equipment are optional. For items that show an when you expect a , go to the associated section noted on the right.

## System, Comm, GPS, Performance, Diag, VDS, EventLog

<table>
<thead>
<tr>
<th>Name</th>
<th>Time last run</th>
<th>More info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellular signal strength test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>Signal strength: -73</td>
</tr>
<tr>
<td>WiFi signal strength test</td>
<td>2/15/2013 7:47:41 AM</td>
<td></td>
</tr>
<tr>
<td>SDM PPP Connection test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>SDM PPP connection is not con</td>
</tr>
<tr>
<td>CDD database sync test</td>
<td>2/15/2013 7:47:41 AM</td>
<td></td>
</tr>
<tr>
<td>GPS fix test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>Satellites: 10, Mode: 3D</td>
</tr>
<tr>
<td>J1587 packet detection test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>0 packets (J1587) over a 2 sec</td>
</tr>
<tr>
<td>J1939 packet detection test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>26 packets (J1939) over a 2 sec</td>
</tr>
<tr>
<td>Backup battery test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>Battery voltage: 4291mV</td>
</tr>
<tr>
<td>Truck battery test</td>
<td>2/15/2013 7:47:41 AM</td>
<td>Voltage: 1246mV</td>
</tr>
<tr>
<td>Ignition ON test</td>
<td>2/15/2013 7:47:41 AM</td>
<td></td>
</tr>
<tr>
<td>OS Sanity test</td>
<td>2/15/2013 8:58:06 AM</td>
<td>OS sanity test successfully 21</td>
</tr>
<tr>
<td>Core Data Items</td>
<td>2/15/2013 7:47:41 AM</td>
<td>See Details.</td>
</tr>
</tbody>
</table>

- **Send Test message**
  - **Ok**
    - No green check mark in Outbox or dispatch didn’t receive
      - See Connectivity

- **Press HOME Does Text-to-speech work?**
  - **Ok**
    - No sound
      - See Other/Misc. Problems page

- **Done**
Symptom #1- Blank Display

For solid red lower LED on MAS, see Symptom #7 of the Misc. section of this document.

Symptom #2 - Cursor/Arrow not where touched on screen

Calibrate touch screen by doing the following:

1. Press the key for at least 10 seconds.
2. Release after you hear the beep.
3. Touch and hold the targets and release when prompted. While calibrating, be careful not to touch any other portion of the screen.
4. If the touch screen is still out of calibration, try resetting the display using the steps under Symptom #3 below.

Symptom #3 - Screen locked up/frozen, touch screen not responding

Reset display by doing the following:

1. Press and hold the Speech key for at least 10 seconds.
2. Release after you hear the beep.

The screen will go black for a few moments, and then redisplay the screen you were on.

The touch screen should now respond to presses.
Symptom #1- No Cellular Signal or “No Connections”

1. No Signal Light On / No Connections shows at top of screen
2. Reseat antenna cable at both ends, wait 2 minutes for
3. Test w/known good antenna (WIB) cable
4. Test w/known WIB antenna

Symptom #2- No WiFi signal

1. Verify unit is equipped with WiFi capable WIB antenna (white serial # label)
2. Verify unit is within WiFi signal coverage and WiFi access point is working.
3. Reset MAS.

Symptom #3 - No SDM detected

For an MCP110 system, it does not support a satellite data modem. A red check is normal.

Symptom #4 - GPS showing No Fix

1. Unit shows “No Fix” for GPS, Last GPS update Date/Time is not current
2. Check/remove obstructions around WIB antenna
3. Reset MAS by removing power for 4 minutes, then reconnect
4. Test w/known good WIB antenna

Symptom #5 - Messages not sent or not received by dispatch

If the No Signal Light is out and messages remain with status of 🚫 in Outbox, call the Omnitracs Hotline at 800-541-7490

If messages show ✔ but dispatch isn’t receiving them, confirm the associated truck – MCP110 Unit Address pairing is properly assigned.
Symptom #1 - Database “Out of Sync”
1. Verify cellular signal available (if not available, go to Connectivity problem page).
2. If after 15 minutes of having cellular signal the database state remains “Out of Sync”, call the Omnitracs Hotline at 800-541-7490.

Symptom #2 - Core Data Items test fails – or Sensor Failures reported
The Core Data Items test will fail if Speed, RPMs, Distance (Odometer), or Fuel are not received from the vehicle. The HOS application will also report “Sensor Failures” if it is not receiving vehicle data when needed. Follow the steps below:

- With truck’s Ignition ON, RUN ALL tests. Check Core Data Items results
- Have the correct configuration sent to the truck using the VDC. Run ALL tests. Check Core Data Items results
- Fix the connections to the J1587 and/or J1939 data links on the truck. Should match up to the VDC configuration

VDS configurations can be done using the Vehicle Data Configurator from Omnitracs Services Portal.

Symptom #3 - Application buttons grayed out
This problem is typically due to the unit not being assigned to the correct Operational Profile on the Customer Portal. Verify with your Omnitracs Administrator that the unit is appropriately assigned. If it’s been confirmed to be in the correct profile, call the Omnitracs Hotline at 800-541-7490 for further assistance.

Symptom #4 - Text-to-Speech not working

Possible Causes:
- Volume not turned up
- MAS needs reset
- Speaker connections bad
- Speaker Bad
- Speaker Switch Cable bad

With truck’s ignition ON, RUN ALL tests. Check Core Data Items results

Fix the connections to the J1587 and/or J1939 data links on the truck. Should match up to the VDC configuration

Reseat the backup battery in the MAS, wait 2 min, re-test

Test w/known good Backup Battery

Replace the MAS

Symptom #5 - Backup Battery not detected
**Symptom #6 – Unit won’t boot up completely or keeps rebooting**

If the unit starts to boot up and gets stuck on the “Please wait, Loading...” screen for more than a few minutes, it’s likely the unit can be recovered by inserting a USB stick containing the application software. 

NOTE: the latest application software is available on the Customer Portal.

Steps to recover a unit in this condition:

1. When the “Please wait, loading...” screen first appears, insert USB stick into the DIU’s USB port.
2. Wait approximately 30 to 45 seconds. When the USB stick is detected, it will show the “Delete user and system data” prompt screen (shown above).
3. Tap No.
4. The unit will attempt to load software from the inserted USB drive and may reboot. This recovery process takes roughly 15 minutes with an 80% chance of success.

** For a unit with this condition, reloading OS and SW using a Unified OS Installer stick will increase chances of recovery even more. The OS and SW recovery process takes roughly an hour.

**Symptom #7 – Solid red MAS LED and blank screen**

After a number of failed attempts at booting up, a unit may end up with a blank screen and a solid red lower MAS LED.

Steps to recover a unit with this condition:

1. Remove power.
2. Wait 4 minutes for all the MAS LEDs to go off.
3. Disconnect the MAS backup battery.
4. Reapply power.
   - If the screen comes back on, insert a USB stick containing application software when the display shows “please wait, loading” – See Other/Misc. Symptom #6 above.
   - If the screen remains blank and solid red lower LED remains, RMA the MAS.
**MCP110 Component Testing**

Prior to RMA’ing any component, it should be connected to a test bench to verify that component is faulty.

<table>
<thead>
<tr>
<th>Component</th>
<th>Recommended testing</th>
</tr>
</thead>
</table>
| **MAS (Mobile Application Server)** | Connect known good WIB and DIU then apply power  
- If no power to the display – see Display section of this document  
- If system won’t boot up – See Other/Misc. section of this document  
- Perform a **RUN ALL** test from System/Diag screen – if errors, see appropriate section of this document  
- Send and receive test message  
- Verify text-to-speech functionality |
| **DIU (Display Interface Unit)** | Connect to known good MAS  
- Verify touch screen responsive to touches  
- Go to Settings/Display and calibrate the touch screen using targets  
- Verify touch screen arrow is calibrated to where screen is touched  
- Verify all virtual keys and 5-way navigation keys function |
| **WIB (Wireless Interface Box)** | Connect to known good MAS that is **NOT** powered up (no LEDs on)  
- Apply power to MAS (only after WIB has been connected)  
- Wait approximately 10 minutes for the applications to load and the WIB to establish communications  
- Check for cellular bar icon at top of screen  
- Perform a **RUN ALL** test from System/Diag screen  
  - Verify Cellular Signal Strength okay  
  - Verify GPS Fix okay  

If errors, see related section of the document |
## MAS LED Indicators Troubleshooting

**Normal operating environment** = lower LED should be **BLINKING BLUE** and the upper LED should be **GREEN**

<table>
<thead>
<tr>
<th>Lower LED</th>
<th>Upper LED</th>
<th>State</th>
<th>Necessary Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLINKING BLUE every second</td>
<td>SOLID GREEN</td>
<td>The mobile application server (MAS) is awake and receiving truck power. The MAS is in a normal state.</td>
<td>None</td>
</tr>
<tr>
<td>BLINKING BLUE every 12 seconds</td>
<td>SOLID GREEN</td>
<td>The MAS is asleep because ignition is OFF and it is receiving truck power. The MAS is in a normal state.</td>
<td>None</td>
</tr>
<tr>
<td>BLINKING RED</td>
<td>SOLID GREEN</td>
<td>The MAS has lost truck power. At this time the MAS is shutting down and saving data.</td>
<td>Check power connections/vehicle power after waiting approximately 5 minutes for MAS to complete shut down and save data.</td>
</tr>
<tr>
<td>OFF</td>
<td>OFF</td>
<td>If there are no LEDs present, the MAS does not have power</td>
<td>Check power connections: power cable, power cable fuse.</td>
</tr>
<tr>
<td>SOLID RED</td>
<td>SOLID GREEN or OFF</td>
<td>The MAS is either upgrading or it has detected an internal problem.</td>
<td>Occurs for a minute or two during a software upgrade. If this persists, follow instructions in Other/Misc. section.</td>
</tr>
<tr>
<td>BLINKING RED/GREEN/BLUE</td>
<td>SOLID RED</td>
<td>First part of boot-up, MAS is loading Windows</td>
<td>This should last only 10 seconds. Call if persists.</td>
</tr>
<tr>
<td>BLINKING GREEN/RED</td>
<td>SOLID GREEN</td>
<td>The MAS has booted the OS and is unable to load or boot the MAS application software.</td>
<td>If this occurs when not loading software, call Customer Support.</td>
</tr>
<tr>
<td>BLINKING BLUE/GREEN</td>
<td>SOLID GREEN</td>
<td>The MAS is rebooting and loading the applications. This should last no longer than 1 minute.</td>
<td>If this persists check the power source – it’s likely not supplying the necessary power (12 Volts – 2 amps)</td>
</tr>
</tbody>
</table>