OMNI-Select troubleshooting

Start here

Review the Communication Center

The Communication Center provides an overview of the status of your system.

A This button displays a window that lists system, site, and software information.

B This area lists your devices and their status. To see a list of messages for a specific device, click the device.

- ◆ A green check mark on a device icon means there are no problems with the device.

- ◆ A yellow exclamation mark means there are non-critical warnings or messages.

- ◆ A red × means there are alarm conditions and messages that need your immediate attention.

C This button opens a window that displays messages for all devices.

Review the devices that have alarm conditions

Click each device that has a red × and then determine the types of alarms.

- ◆ If there is an "alarm cleared" message, the alarm no longer exists. Click **Acknowledge** to clear the messages and reset the alarm indicator.

- ◆ If there is *not* an "alarm cleared" message, the alarm still exists.

◆ For *fault alarms*—alarms caused by an out-of-range condition—check what is causing the alarm; for example, a jammed sorter, power failure, high temperature, or other condition. Fix the problem that is causing the condition.

◆ For *communication alarms*, continue reading the next section. If the devices are connected wirelessly, also read **Troubleshooting Wireless Adapters (PWAs)** on page 12.

◆ For all other problems, read **General troubleshooting** on page 12.

Basic troubleshooting guidelines

◆ Remove termination resistors from any device that is *NOT* at the end of the communication cable.

◆ Because communication wires can become corroded or cracked at the green connector, cut and then re-strip the wires at each device you access even if the wires do not look broken.

◆ When checking wiring, make sure the color sequence is the same at each device and has not been mixed up between devices.

◆ When replacing a circuit board, use new replacement boards. Using a circuit board that has been sitting on a shelf without an anti-static bag can cause more problems.

◆ Because electrical interference from AC power cables can cause communication problems, make sure communication cable does not run beside or in the same conduit as AC power cables.

◆ Because poor grounds or different ground planes between buildings can cause communication problems, use a spare wire in the communication cable as a common reference connection (at position E) between each device. For more information, read the **RS485 installation guide**.

Creating a site map

Before you start troubleshooting you need to know the sequence of devices on the communication cable. If you do not have this information, create a "site map" by following the steps below.

1. Create a Site Structure Report.

    a) Log in to OMNI-Select.

    b) In the main window, click **Reports**, and then **Site**.

    c) Below Reports, select Site structure.

    d) Click **Create report**.

    e) In the report find the *Buildings and devices* section. Each device has information similar to the following example. The important information to note is the device *name*, *type*, and *address*.
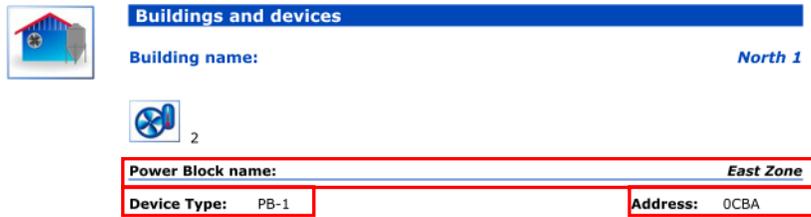
2. Enter the information in the site map template at the end of this troubleshooting guide. Determine the order of devices by following the cable between devices.

Troubleshooting communication problems

If there are communication alarms for all devices...

The problem is most likely between the computer and the RS485 Converter. Use Test Bench Select after each step to test communications until the problem is solved.

1. On the RS485 Converter, make sure the power light is on. Repair any loose or broken wires.

2. Perform loopback tests on the following devices, in the following order. This will help determine which device is causing the problem. If your setup does not have one of the devices, move to the next device. For more information about loopback tests, read **Performing a loopback test** on page 11.

   a) Serial port

   b) USB-to-serial converter (USC)

   c) RS485 Converter (RS485A or RS485-FD)

3. Replace the faulty device or devices. For a faulty serial port, install a USB-to-serial converter.

4. If devices are still not communicating, proceed to **Scenario 2** on page 4.

If there are communication alarms for specific devices...

Scenario 1: a single device or multiple non-consecutive devices are not communicating

Use Test Bench Select after each step to test communications until the problem is solved.

1. Make sure the device has power and the incoming voltage (12 VDC, 120 VAC, or 230 VAC) is correct.

> **NOTE** For Power Blocks, if the incoming voltage is correct, but the *WORKING OK* light is not on solid, go to **General troubleshooting** on page 12.

2. Cut and then re-strip the communication wires at the device that is not communicating, even if the wires do not look broken. If the device is the last one, re-strip the cable at the previous device as well.

3. If the device is a Power Block, switch off the power to the device. Remove and then re-insert the microboard into the socket. This helps ensure a good connection between the microboard and the bottom circuit board. When finished, restore power to the Power Block.

4. If the device *is* the last one on the communication cable, perform a loopback test at the end of the cable.

    ◆ If the test passes, you have continuity to the end of the cable.

    ◆ If the test fails, there is a problem with the cable between the last and second last device.

    If the device *is not* the last device on the communication cable, you can assume the cable is OK up to the last working device.

5. If the device is still not communicating:

    ◆ For *Power Blocks*, determine if the problem is with the microboard or the bottom circuit board by replacing one at a time, starting with the microboard.

    ◆ For *PS-1 Scale Heads*, determine if the problem is with the display or bottom circuit board by replacing one at a time, starting with the display.

    ◆ For *all other devices*, replace the circuit board.

6. Repeat this section for any other non-consecutive devices that are not communicating.

Scenario 2: consecutive devices are not communicating

If *all* devices on a cable are *not* communicating, complete the section **If there are communication alarms for all devices...** on page 3 before continuing this section.

Use Test Bench Select after each step to test communications until the problem is solved.

1. Make sure the device has power and the incoming voltage (12 VDC, 120 VAC, or 230 VAC) is correct.

> **NOTE** For Power Blocks, if the incoming voltage is correct, but the *WORKING OK* light is not on solid, go to **General troubleshooting** on page 12.

2. Cut and then re-strip the communication wires at the last device that *is communicating* and the first device that *is not communicating*.

3. If the first device that is not communicating is a Power Block, switch off the power to the device. Remove and then re-insert the microboard into the socket. When finished, restore power to the Power Block.

4. Perform a loopback test at the device that is not communicating to verify continuity to that point. If the test passes, continue to the next step. If the test fails, fix the break in the cable.

5. If the device is a Power Block, replace the microboard. Most times, this fixes the problem. If the problem still exists, it might be caused by devices down the cable, or by the bottom circuit board. Reinstall the original microboard and then go to the next step.

6. Disconnect the communication connectors at each device that is not communicating. Cut and then re-strip the communication wires at each device. Leave the connectors disconnected. Make sure only the last device has termination resistors installed.

7. Perform a loopback test at the last device on the cable. If the test fails, repeat the test at the next closest device until you identify the break in the cable.

8. Reconnect the last device on the cable (this provides proper termination) and then try to locate the device using **Test Bench**.

   The devices that are plugged in should be the working ones and the last one on the cable.

9. If the device is still not communicating:

   ◆ For *Power Blocks*, determine if the problem is with the microboard or the bottom circuit board by replacing one at a time, starting with the microboard.

   ◆ For *PS-1 Scale Heads*, determine if the problem is with the display or bottom circuit board by replacing one at a time, starting with the display.

   ◆ For *all other devices*, replace the circuit board.

10. Reconnect the non-working device closest to the computer and then try to locate it using **Test Bench**.

    ◆ If the problem still exists, repeat step 9 for that device.

    ◆ If the problem does not occur at that device, repeat step 10 until you reach the end of the cable.

Scenario 3: Complete communication overhaul for multiple problems

Scenario 1 often works for multiple, non-consecutive devices. However, when there are multiple problems with a system, it is often best to do a complete communication overhaul.

1. Make sure all devices have power and the incoming voltage (12 VDC, 120 VAC, or 230 VAC) is correct.

> **NOTE** For Power Blocks, if the incoming voltage is correct, but the *WORKING OK* light is not on solid, go to **General troubleshooting** on page 12.

2. Cut and then re-strip the communication wires at all devices, even if the wires do not look broken. Leave the communication cables disconnected.

3. Perform a loopback test at the termination end of the cable to ensure continuity to the computer. If the test fails, repeat the test at the next closest device until you identify the break in the cable.

4. Reconnect the last device (this provides proper termination) and then try to locate it using **Test Bench**.

If the device is not communicating:

   ◆ For *Power Blocks*, switch off the power to the Power Block. Remove and then re-insert the microboard into the socket and then retest. If the problem still exists, replace the microboard and then, if necessary, the bottom circuit board.

   ◆ For *PS-1 Scale Heads*, determine if the problem is with the display or bottom circuit board by replacing one at a time, starting with the display.

   ◆ For *all other devices*, replace the circuit board.

5. Reconnect the next device and then try to locate it using **Test Bench**.

   ◆ If the problem still exists, repeat step 4 for the device.

   ◆ If the problem does not occur at that device, repeat step 5 for the next device.

Using Test Bench Select

Test Bench Select is a communication and troubleshooting tool included with OMNI-Select. Use Test Bench Select to confirm devices are communicating and help track down where communication problems are occurring.

Overview

Devices tab
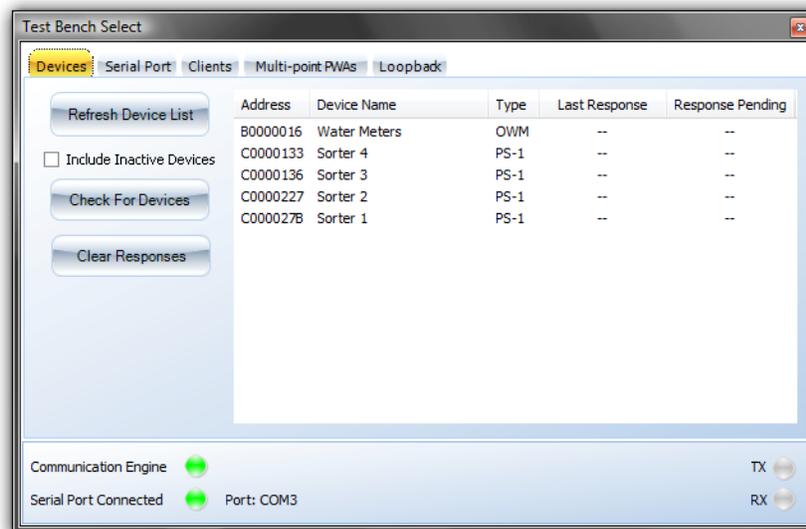
◆ *Communication Engine* – the indicator must be on to send and receive data from the devices. If the indicator is not on, restart the computer. If it remains off, there might be something wrong with the OMNI-Select installation. Reinstall OMNI-Select using the installation CD.

◆ *Serial Port Connected* – indicates the serial port OMNI-Select is using. If the indicator is off, another program or device is using the serial port and you need to select a different port.

◆ *TX/RX* - the indicators flash briefly when there is communication to devices.

◆ **Refresh device list** – clicking the button reloads the device list from the database. Click the button if you have recently added a device and it is not in the list.

◆ *Include Inactive Devices* – when selected, this will include inactive devices on the list.

◆ **Check for Devices** – clicking the button starts a search for devices in the list.

◆ **Clear Responses** – clicking the button clears the time stamps from the *Last Response* column.

Serial port tab
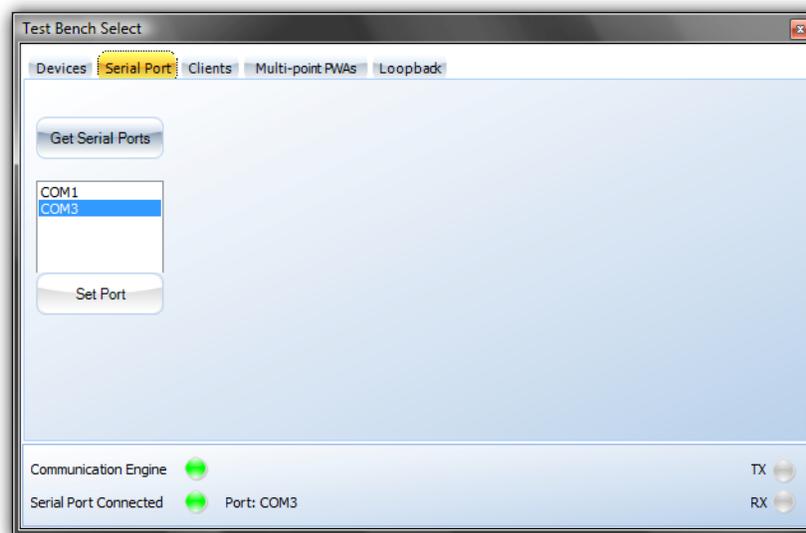
◆ **Get Serial Ports** – clicking the button refreshes the serial port list with all ports recognized by the computer. Click the button if you add a USB serial port to make the port display in the list.

◆ **Set Port** – clicking the button sets the selected serial port as the active port.

Clients tab

Clients are parts of OMNI-Select that control communication to their associated devices. The clients should be running at all times.

If OMNI-Select stops receiving data from devices of a particular client (for example, all Water Monitors), restarting the client might resume communication.
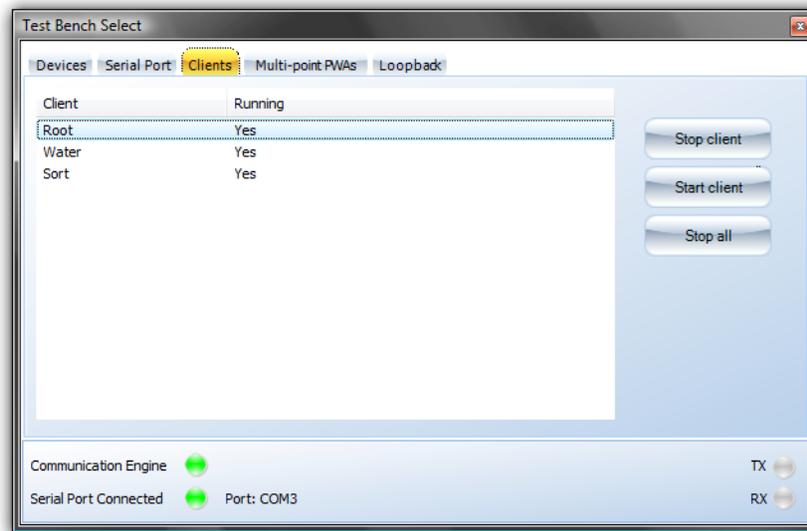
- ◆ **Stop Client** – clicking the button stops the selected client.
- ◆ **Start Client** – clicking the button starts the selected client.
- ◆ **Stop All** – clicking the button stops all clients.

Multi-point PWAs tab

If you are using Phason Wireless Adapters, you will find this section useful. If you are *not* using wireless adapters, you can continue to the next section.
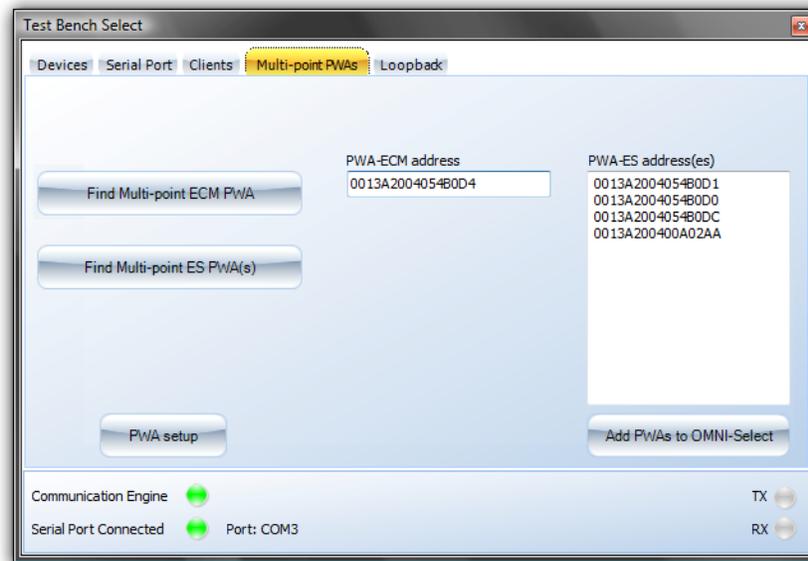
◆ **Find Multi-point ECM PWA** - clicking the button searches and then displays the address of the PWA-ECM wireless adapter connected to the system.

◆ **Find Multi-point ES PWA** - clicking the button searches and then displays the addresses of all PWA-ES wireless adapters connected to the system.

◆ **Add PWAs to OMNI-Select** - clicking the button adds all new PWA-ES addresses to OMNI-Select. You can also add the addresses manually in the *Configuration > Site > Wireless Adapters* window of OMNI-Select.

◆ **PWA setup** – clicking the button allows you to set up PWAs. This is not required for troubleshooting.

Loopback tab
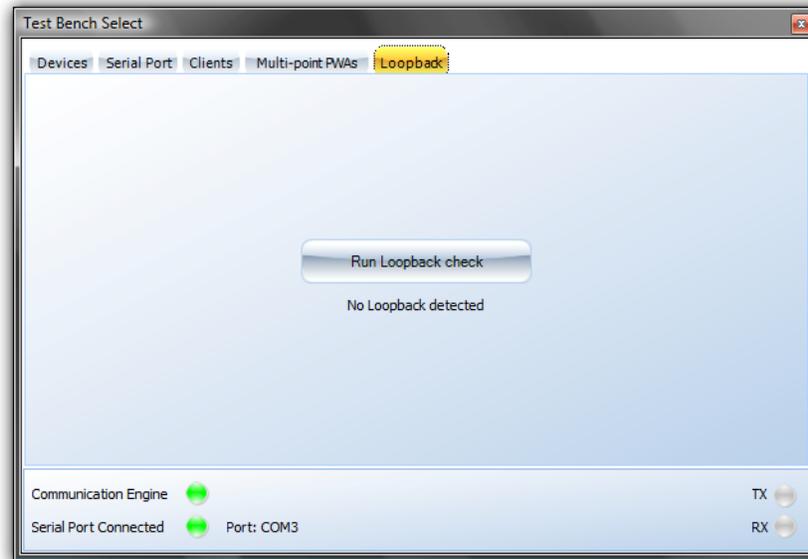
◆ **Run Loopback Check** – clicking the button performs a loopback test.

Searching for devices

On the **Devices** tab, click **Check For Devices**.
Test Bench searches for all devices in the list and displays the time each device responds. When the TX and RX indicators stop flashing, the search is complete.

Performing a loopback test

A loopback test verifies the continuity of the communication cable.

During the test, the computer sends information on the communication cable. The information "bounces back" when it gets to the loopback connector. The computer then compares the information it received to the information it sent; if the information is the same, the test passes. When a loopback test passes, it means both the send (TX) and receive (RX) lines are intact.

Loopback connectors

To perform a loopback test, you need loopback connectors to connect to the cable. A loopback connector package is available from your dealer or Phason and includes connectors for different locations/connector types on the communication cable.

If a loopback connector is not available, you can create a temporary loopback for most situations by inserting wires into the connectors as shown to the right. However, this type of loopback connector will not work for a serial port or USB-to-serial port loopback test.
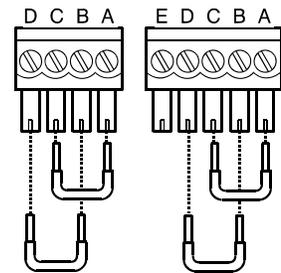
To perform a loopback test with Test Bench Select

1. Connect the appropriate loopback connector to the test location.

2. In Test Bench Select, click **Loopback**.

3. Click **Run Loopback check**.
    Test Bench select performs a loopback test and displays one of the following responses.

    ◆ *No Loopback detected* – this means there is a break in the cable, or a damaged serial port, RS485 Converter, or USB-serial converter.

    ◆ *Detected: Hardwired loopback* – this means the cable is intact *up to* the loopback connector.

    ◆ *Detected: Loopback on PWA-ES address: <##ADDRESS ##>* – this means the cable is intact between the computer and the PWA-ECM, and from the PWA-ES up to the loopback connector.

4. If a loopback is detected, remove the connector and then retest. This will make sure the cable is not shorted somewhere else.

> The loopback test does not identify crossed wires or corroded connections. You will need to inspect the cable and connectors to identify these problems.

General troubleshooting

PROBLEM: A Power Block's *WORKING OK* light is not on solid

1. Measure and make sure the incoming voltage (120 VAC or 230 VAC) matches the selection switch on the circuit board.

2. Switch off the power to the Power Block. Remove and then re-insert the microboard into the socket. When finished, restore power to the Power Block.

3. Replace the microboard with a new one.

4. Replace the bottom circuit board. If the Power Block functions properly, retest the original microboard to see if it functions.

PROBLEM: A Power Block's output (fan, heater, and so on) is not operating

1. Review the communication center and fix any communication problems to the Power Block.

2. Review the settings for the Power Block and make sure they are set to operate the load at the current temperature.

3. Test the Power Block using the Power Block test card to determine if the relay or variable stage works. For more information, read the *Testing Power Blocks* section of the **Power Block installation guide**. If the test passes, replace the microboard because it is likely damaged.

Troubleshooting Wireless Adapters (PWAs)

PWA indicator light descriptions

◆ **Radio**:   The light is on when the wireless transmitter (radio) is on.

◆ **Joined**:   The light flashes continuously when the radio is connected to a wireless network.

◆ **Transmit**:   The light flashes when data is sent.

◆ **Receive**:   The light flashes when data is received.

◆ **Power**:   The light is on when the PWA has power.

◆ **Signal**:   This light will flashes when data is sent or received.

When operating properly and connected to a wireless network, the *Power* and *Radio* lights are on and the *Joined* light flashes.

PROBLEM: The *Radio* or *Power* lights are off

1. Make sure the PWA has sufficient power (9 to 14 VDC).

2. If the PWA is still not functioning, replace it because it is damaged.

PROBLEM: The *Joined* light is off

1. Make sure the PWAs are not too far apart or the signal is not being blocked by obstacles like buildings or trees. The typical range through objects is 300 feet (91 meters); line of sight range is 1 mile (1.6 kilometers).

2. Make sure the other PWA has sufficient power (9 to 14 VDC).

PROBLEM: The *Receive* or *Transmit* lights are not flashing when searching with Test Bench

1. Cut and then re-strip the wiring at the PWA and previous device.

2. Perform a loopback test at the PWA to test the cable back to the computer. Fix any cable problems.

Site map templates

Position on channel → **1**	**1**	**2**
Building *North 1* Device type *OWM* Address *12345678* Name *North 1R1*		
3	**4**	**5**
6	**7**	**8**
9	**10**	**11**
12	**13**	**14**

Position on channel ⟶ ① **Building** *North 1* **Device type** *OWM* **Address** *12,345,678* **Name** *North 1R1*	①	②
③	④	⑤
⑥	⑦	⑧
⑨	⑩	⑪
⑫	⑬	⑭