

MAGUIRE

**TROUBLESHOOTING
Communications
G2 Server and the MLAN
Network of Blenders**

**Maguire Products Inc.
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This document is written to help the customer troubleshoot a G2 problem in a systematic way and provide an understanding of what problems may occur when running the G2 software. Most problems with G2 communications to the Maguire Weigh Scale Blender are due to only a few reasons. They are:

1. **Understanding G2** - A lack of understanding of how to configure the G2 Server to establish communications. For example, the G2 Server must be running and from the G2 Client, your Blender ID number must be entered into the Edit Blender screen and the Add/Update button clicked. There are four states that a blender can be in as viewed in the Blender Edit Screen. Selecting a blender from the list will display the state above. These states are: Online, Offline, Not Initialized and Locked Offline. Online indicates that G2 has established communications with the blender. Offline indicates that a blender *was* online at some point, but G2 has lost communication with the blender. Not Initialized indicates that a blender was added to the Blender Edit screen but communications was never established with the blender. Locked offline indicates that a blender *was* online but was manually locked offline by checking the “Lock Off Line” checkbox in the Blender Edit screen.

For additional information on how to get started using G2 with your Maguire Weigh Scale Blenders, read the *Quick Start Guide* contained within the Gravimetric Gateway Manual.

2. **Wrong COM Port** – most PCs have two COM ports. Your MLAN network uses one of these two COM Ports, either COM1 or COM2. Verify the correct COM port that the MLAN network is plugged into on the G2 Server. Then select that COM port from the dropdown menu in the G2 Server interface. Note: Selecting the COM port can only be done if the G2 Server is stopped. Symptoms of G2 running on the wrong COM port are:

G2 Server started in “Lite Mode”,
The G2-SA Serial number indicates “0”,
The number of Blenders indicated in the G2 Server information window is “1”
(unless you only licensed for one blender).

3. **G2-SA is not licensed for all your WSBs** – Your G2-SA (the black box) is set to communicate to a specific number of weigh scale blender. It is either pre-set from the factory or by you through entering a certificate number. When starting the G2 Server, the number of Blenders will be indicated as well as your G2-SA’s Serial number. If you are not registered for all of your weigh scale blenders, contact

Maguire Products Inc at 610-459-4300 to request additional licenses.

4. **Incorrect wiring of the MLAN network** - See the MLAN Protocol Manual for details on how to correctly configure the MLAN wiring. Also you may refer to the MLAN Interface Wiring Example at the end of this manual.
5. **Line Noise** – Interference due to the low voltage MLAN communications wire running in close proximity to high voltage lines, material conveying lines or other conduit containing high voltage or high amperage electrical lines. Be sure that these lines are not bundled to any high voltage lines. Keep all communication lines away from all vacuum loader conveying lines. A symptom of line noise would be if the G2 Server repeatedly displays for one or more blenders that have previously established communications “The following machine is OFF LINE:[ID#]”, then possibly followed shortly after by “The following machine is ON LINE:[ID#]”. Or you may experience a loss of communications after large machines are power up.

6. **WSB I.D. number is not set** – G2 requires that all WSBs on the MLAN network have a unique ID number between 1 and 254. By default, each WSB controller is assigned an ID number of 000. To assign an ID number to your WSB, do the following on each blender controller:

- press * 22222
- press * 66
- enter an ID number between 1 and 254 (example: “001” for ID “1”)
- press exit twice.

Examine the above reasons. If you understand how to use G2, you are communicating on the correct COM port, you can see your G2-SA’s serial number, your wiring appears to be correct, line noise does not appear to be a problem and your WSB ID numbers have been set and yet you can not communicate to one or more Weigh Scale Blenders, then it is possible that you have a wiring problem. This manual addresses wiring issues through a series of tests. Each test is designed to narrow down where the trouble is.

MLAN Wire Testing

This first test is designed to determine if communication wires are crossed or shorted to ground.

1. Disconnect all WSBs from their communication lines.
2. Disconnect the G2-SA (black box signal amplifier) from the communication line that runs out to the blenders.

The communication lines should not be connected to the WSB controllers, should not be connected to the G2 computer and should not be connected to the G2-SA signal amplifier.

The following tests require the use of a continuity tester or use of a serial cable test tool. These tools are available at any electronic parts store or home supply store. A continuity tester basically checks for a completed circuit from point A to point B. Most continuity testers will give an audible sound or illuminate a light when a circuit is complete. Due to the varied nature of serial test tools, this example will use a basic continuity test tool. An ohms meter can also be used to check continuity although you must know what the display is telling you in order to know the difference between an open circuit and a complete circuit. Also be aware that there should be no resistance in a line that is being tested. Resistance will degrade the communicate signal between the G2 Server and the blenders and also cause a failure to communicate.

Test One:

This test is to examine the wires to determine if any wires are crossed with other wires or shorted to ground. All wires in the MLAN wiring layout should NOT be crossed with any other wire. Typically the type of wire used will have 4 insulated color-coded wires, red, and green, black and white. Additionally a 5th bare wire may be present which is a ground/shield wire.

At the Signal amplifier end of the MLAN wire, use the test tool and connect the following pairs of wires. You should NOT have continuity between these pairs of wires.

Red to ground (bare wire)
Red to green
Red to black
Red to white
Green to ground (bare wire)
Green to black
Green to white
Black to ground (bare wire)
Black to white
White to ground

If you determine that there are no shorts between these wires, proceed to test two. If you find that any wire is grounded to another wire, trace down where the crossed wires are and correct the problem. Reconnect your WSBs and the G2 Server then re-attempt communications to the WSBs.

Test Two:

This second test is to determine if any of the wires have a break in the cable. To do this test it will be necessary to cross pairs of wires at the G2 Server side of the MLAN network. This can be done by inserting a paper clip into the MLAN cable's end and looping it from one wire to the other. The wires that will be crossed one pair at a time using the paper clip or some other method are as follows:

Red to green
Black to white
White to ground

When each pair is crossed, go to the WSB where communication is a problem. Using your continuity tester, test for continuity of the same pair of wires that are crossed back at

the G2 Server end of the wire. You should get a completed circuit when testing that pair of wires indicated by an audible sound or light depending on your test tool. Test each run of the MLAN cable at each WSB location having communication trouble using the same pair of crossed wired back at the G2 Server.

Duplicate this test on the each set of wires. If you do not get a complete circuit at one or more locations while testing the loop through a pair of wires, double-check your looped connection back at the G2 Server side just to be safe that you are looping the pair, then re-test. If you do not get a completed circuit, one of those two wires are not connected somewhere between the G2 Server and this location. You may further narrow down which of the two wires have a break by used a different wire with each of the two wires in question. Once you determine which of the two wires have a problem, analyze the connections running to that WSB location. Trace down where the break in the wire is and correct the problem. Reconnect your WSBs and the G2 Server then re-attempt communications to the WSBs.

Further Considerations:

Resistance – There should be no resistance in a communicate line. Resistance will degrade a signal between the G2 Server and the blenders. Faulty solder joints can cause resistance.

Check your solder joints. Solder joints may appear to be complete but may not have an electrical connection or only a partial electrical connection. This can be caused by not applying enough heat to the solder and wire when joining the connection.

Check the WSB – Verify that a controller is working can be done by relocating a working controller unit to the location where a non-working controller is having trouble. Attempt to communicate to the relocated controller unit. If communications is possible, check the non-working controller for problems.

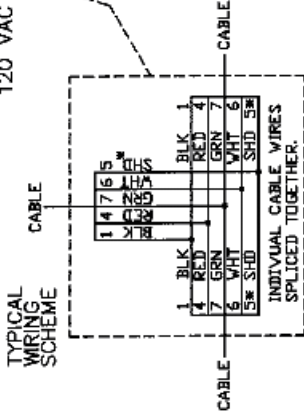
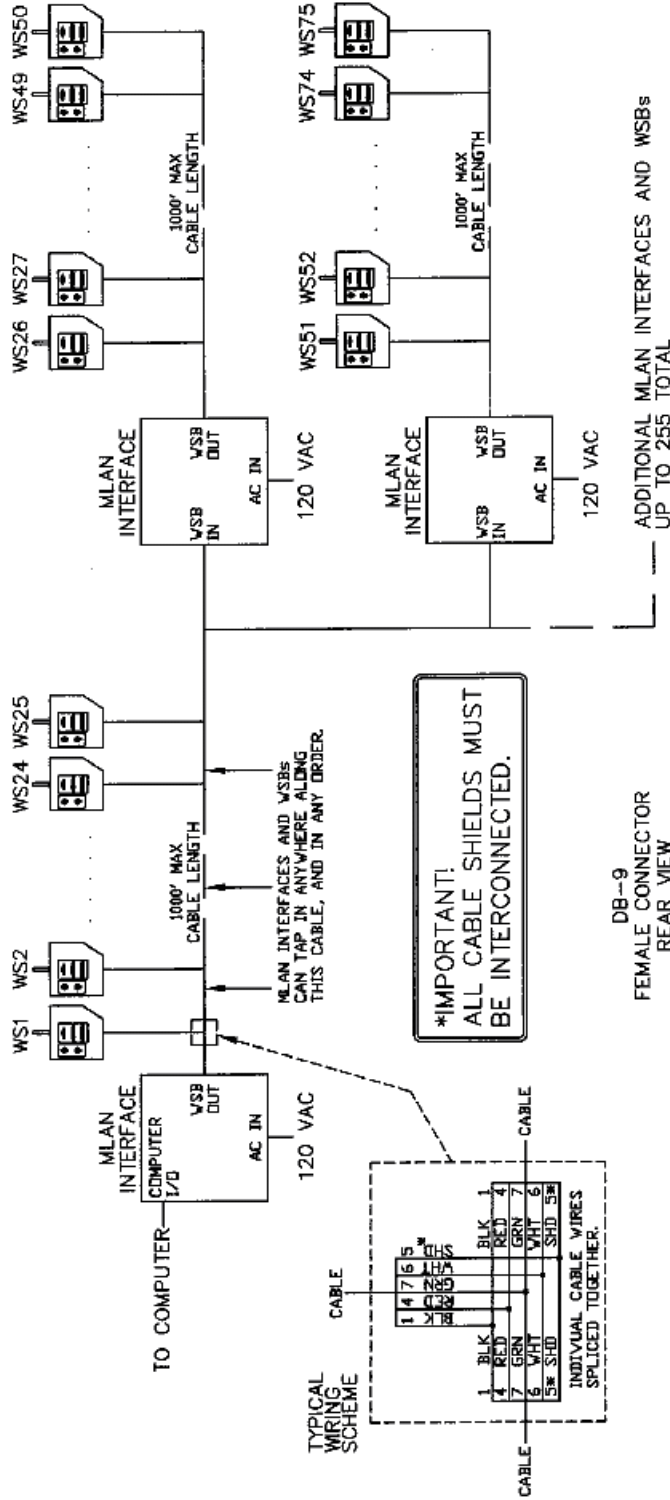
Check for electrical interference - Communication lines are low voltage lines. Be sure that these lines are not bundled to any high voltage lines. Do not wire tie these lines to material conveying lines or other conduit containing high voltage or high amperage electrical lines. Keep all communication lines away from all vacuum loader conveying lines. Electrical interference can cause sporadic loss of communications to the blenders. Most noticeable in the G2 Server's output window as the occasional appearance of the following:

The following machine is OFF LINE : [I.D. #] Possibly followed soon after by the following:

The following machine is ON LINE : [I.D. #].

This indicated sporadic loss of communications to the blenders usually caused by interference. Also check the Serverlog file located in the c:\g2\g2data directory for occurrences of blenders going offline/online. This file can be opened in a text editor such as Notepad.

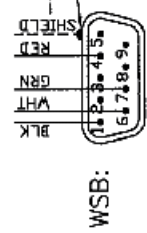
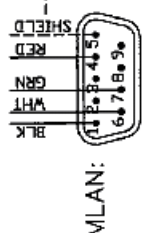
MLAN INTERFACE WIRING EXAMPLE



NOTE:
 ALL BULKHEAD CONNECTORS ARE MALE DB-9 ON BOTH MLAN INTERFACE UNITS & WSBs.
 ALL CABLE ENDS ARE FEMALE DB-9 CONNECTORS.

MLAN: CABLE SHIELDS CONNECTED TO PIN 5.

WSB: CABLE SHIELDS CONNECTED TO HOUSING (NOT PIN 5).



DB-9 PIN#	CARD WIRE #C 2555	BELDEN WIRE #9402
1	BLACK	BLACK
4	RED	RED
7	GREEN	GREEN
6	NATURAL (WHITE) SHIELD	WHITE
5*		SHIELD

IBM DB-25	IBM DB-9	MLAN DB-9	FUNCTION
3	2	2	MLAN OUT TO IBM
2	3	3	MLAN IN FROM IBM
1,7	5	5	GROUND

ADDITIONAL MLAN INTERFACES AND WSBs UP TO 255 TOTAL

MLAN INTERFACE WIRING EXAMPLE

DRAWN BY: JSH DATE DRAWN: 5/17/95

SHEET: 1 OF 1 DATE CHANGED: 9/25/96

MAGUIRE PRODUCTS INC.
 11 Crozerville Road
 Aston PA, 19014
 Tel: 610-469-4300
 Fax: 610-469-2700

Contacting Technical Support:

If troubleshoot a G2 problem is necessary, it is recommended that you first review and troubleshoot a problem using this document. If further assistance is needed to help troubleshoot a G2 problem, the following information is provided to contact the developers of the G2 Software.

When requesting help with a G2 problem, have the following information when contacting G2 Support.

A complete description of the problem you are having with G2.

Know the version of the G2 software. This information can be found in the about box of the G2 Client or in the output window when the G2 Server starts.

If an error message is displayed when starting or running the G2 Server or Client software, write down the error message. Or you can open with Notepad, the Serverlog file located in the c:\g2\g2data directory. This file will have most likely logged any error message.

Contact Information:

Email:	g2@maguire.com
Phone:	1-610-358-9800
Fax:	1-610-358-9896 Attn: G2 Development Group
Postal Mail:	Maguire Products, Inc. G2 Development Group 4 Crozerville Road Aston, PA 19014 USA