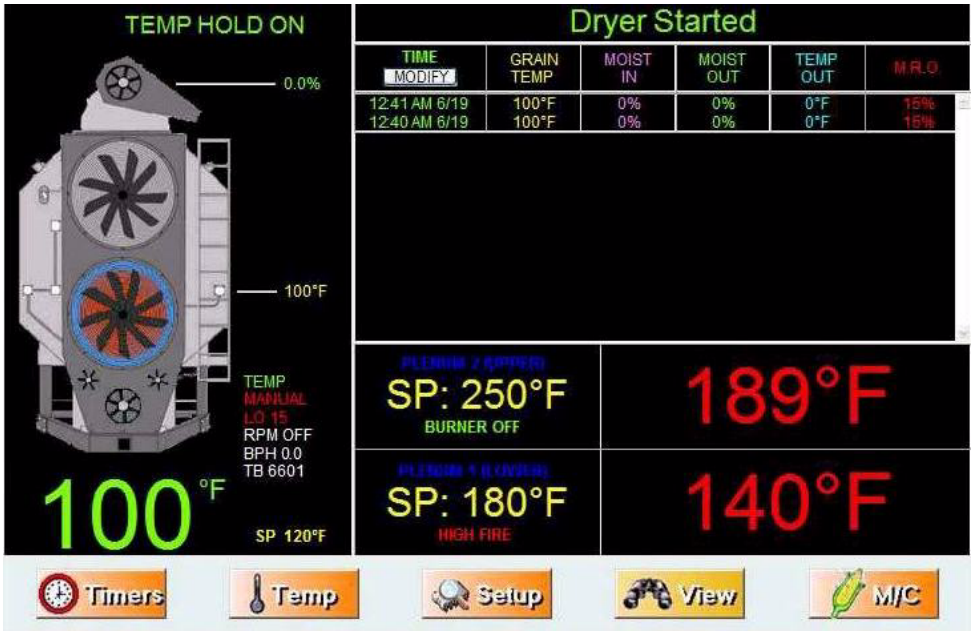

Vision Internet Based WatchDog

Installation and Operation Manual

PNEG-1706

Version: 2.**1**

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PNEG-1706

All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.

DANGER — This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**

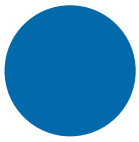
WARNING — This symbol indicates a potentially hazardous situation which, if not avoided, **may result in serious injury or death.**

CAUTION — This symbol indicates a potentially hazardous situation which, if not avoided, **may result in minor or moderate injury.**

NOTICE — This symbol is used to address practices not related to personal injury.

This symbol indicates a general hazard.

This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

Dryer Operation

Thank you for choosing a GSI Vision Series grain dryer. These units are among the finest grain dryers ever built; designed to give you excellent operating performance and reliable service for many years.

This manual describes the installation and operation for all standard production model dryers. These dryers are available with liquid propane or natural gas fuel supply, 1 phase 230 volt, 3 phase 230 volt or 460 volt (60 Hz) electrical power.

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems that may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards, and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where SERIOUS INJURY or DEATH may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

Emergency Stop Switch

The Emergency Stop switch is located on the upper control box door. Pushing the Emergency Stop switch will interrupt the control power and stop all dryer functions. *(See Figure 1A.)*

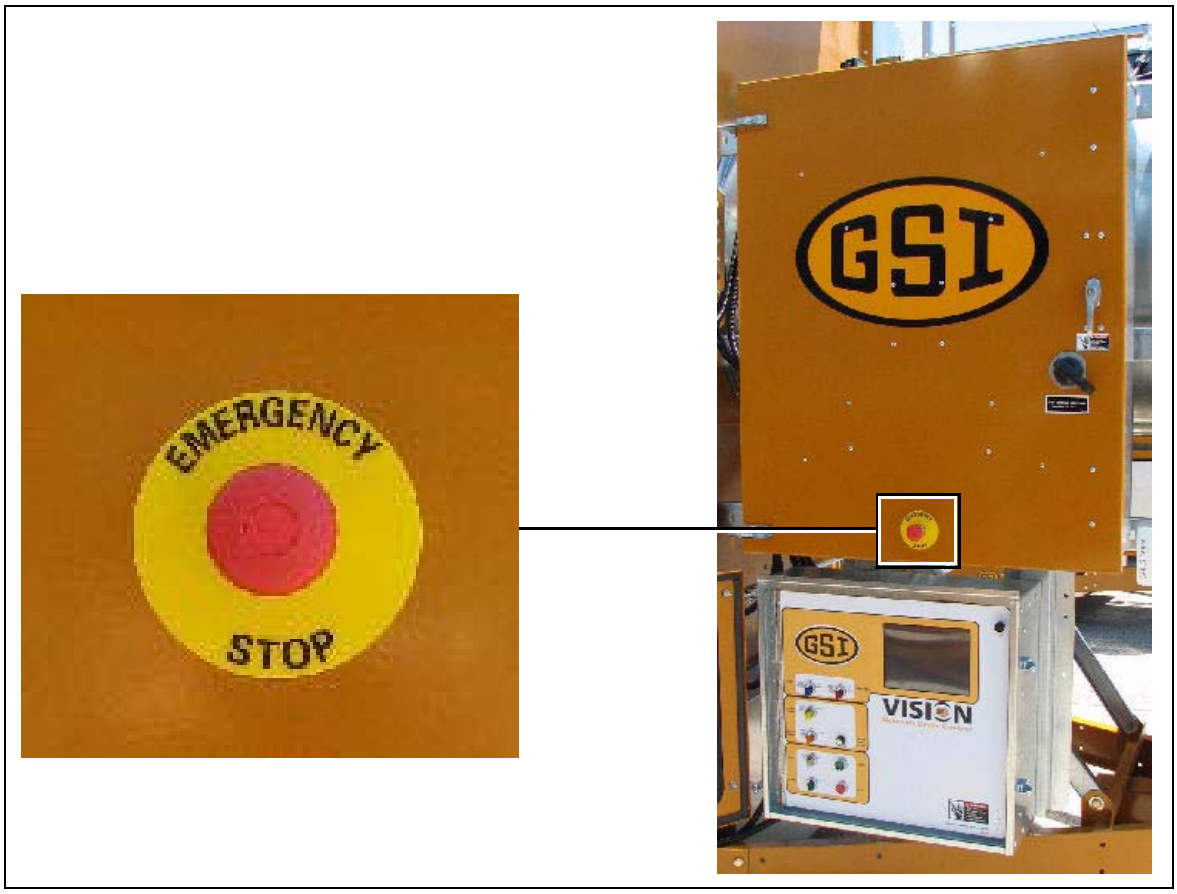


Figure 1A

Safety Precautions

READ THESE INSTRUCTIONS BEFORE INSTALLATION AND OPERATION
SAVE FOR FUTURE REFERENCE

1. Read and understand the operating manual before attempting to operate the dryer.
2. **NEVER** operate the dryer while the guards are removed.
3. Power supply should be OFF for service of electrical components. Use **CAUTION** in checking voltage or other procedures requiring the power to be ON.
4. Check for gas leaks at all gas pipe connections. If any leaks are detected, **DO NOT** operate dryer. Shutdown and repair before further operation.
5. **NEVER** attempt to operate the dryer by jumping or otherwise bypassing any safety devices on the unit.
6. Set pressure regulator to avoid excessive gas pressure being applied to the burner during ignition and when the burner is in operation. **DO NOT** exceed maximum recommended drying temperature.
7. Keep the dryer clean. **DO NOT** allow fine material to accumulate in the plenum chamber. Clean grain is easier to dry. Fine material increases resistance to airflow and requires removal of extra moisture.
8. Keep auger drive belts tight enough to prevent slippage.
9. Use **CAUTION** in working around high speed fans, gas burners, augers and auxiliary conveyors which can **START AUTOMATICALLY**.
10. Keep area around air inlet to the fan clear of any obstacles and combustible materials.
11. **BEFORE** attempting to remove and reinstall any propeller, make sure to read the recommended procedure.
12. Make sure that capacities of auxiliary conveyors are matched to dryer auger capacities.
13. **DO NOT** operate in an area where combustible material will be drawn into the fan.
14. The operating and safety recommendations in this manual pertain to the common cereal grains as indicated. When drying any other grain or products, consult the factory for additional recommendations.
15. Routinely check for any developing gas plumbing leaks. Check LP vaporizer for contact with burner vanes.

Use Caution in the Operation of this Equipment

This dryer is designed and manufactured with operator safety in mind. However, the very nature of a grain dryer having a gas burner, high voltage electrical equipment and high speed rotating parts, presents hazards to personnel which cannot be completely safeguarded against without interfering with the efficient operation of the dryer and reasonable access to its components.

Use extreme caution in working around high speed fans, gas-fired heaters, augers and auxiliary conveyors, which may start without warning when the dryer is operating on automatic control.

Continued safe, dependable operation of automatic equipment depends, to a great degree, upon the owner. For a safe and dependable drying system, follow the recommendations within the Owner's Manual and make it a practice to regularly inspect the unit for any developing problems or unsafe conditions.

Take special note of the *Safety Precautions on Page 7* before attempting to operate the dryer.

Keep the dryer clean. Do not allow fine material to accumulate in the plenum chamber. A careful operator is the best insurance against an accident.

This manual describes the use of the Internet Based WatchDog System used with Vision style dryers.

WatchDog Description

The WatchDog system allows monitoring of a Vision style dryer remotely, either through an Internet connection or by connecting wires directly between the customer's Personal Computer (PC) and their dryer.

The first option requires the customer to supply an Internet connection at the dryer's location. This requirement can be met by providing a hardwired Ethernet connection or by placing a cellular MODEM at the dryer. This type of connection should be handled by the customer's Internet Service Provider (ISP) and although GSI Technical Support can help with suggestions, Internet connection and setup is not considered to be GSI's responsibility. If a cellular MODEM (See Appendix C *on Page 42*) is to be used, possibly due to the remote location of a dryer, it shall be procured by the customer and setup by their ISP.

The second option allows the user to connect four (4) wires between the dryer and their PC without going through the Internet. This option is termed a direct connect. The use of two (2) short haul MODEMs allow this connection to be as long as 1500'.

These options will be described in more detail below.

Features

1. Remote monitoring of drying equipment.
2. Remote shut down of drying equipment.
3. Remote drying parameter adjustment (plenum and grain temperature setpoints, timer setpoints, etc.).
4. A web browser is the only needed software (Internet Explorer and Mozilla).
5. A cellular MODEM can be used for connection to the Internet for remote locations.
6. The WatchDog can be directly connected to an available Local Area Network (LAN).
7. For short distances, the WatchDog can be directly wired to a PC using short haul MODEMs.
8. Text messages and/or e-mail can be sent to alert customer to shut downs. (Not available on direct connect type.)
9. WatchDog software can be updated via SD card.

3. System Requirements

The system requirements have purposely been kept at a minimum to reduce cost and to raise compatibility. Basically the only requirement to use the WatchDog is a properly connected WatchDog System and a computer that can connect to the Internet using Internet Explorer or Mozilla Firefox. (These are the only two (2) browsers that have been tested.)

This section instructs the user on unpacking the system and acquiring any additional elements for a successful installation. Three (3) different options for installation are given, but only two (2) distinct part numbers are required.

The three (3) basic options for connection are given as follow:

1. Direct Connect (Part # VIS-WATCH-DC) - This option allows the user to connect their dryer directly to their PC using two (2) short haul MODEMs and four (4) wires (Ethernet Cable). The contents of this option are pictured in *Figure 4A*.
2. Internet Connection via Cellular MODEM (Part # VIS-WATCH-IC) - This option allows the user to connect their dryer to the Internet using a cell MODEM. *(See Figure 4B on Page 12.)* This type of MODEM can be purchased from a variety of suppliers and for a variety of network providers. See Appendix C *on Page 42* for more information. It is the customer's responsibility to acquire a MODEM and configure/provision it for operation.
3. Customer LAN Connection (Part # VIS-WATCH-IC) - This option is can be used by a customer who already has a Local Area Network. *(See Figure 4B on Page 12.)* A hardwired connection from their network to the WatchDog board is required to "see" the WatchDog System on their network. Proper setup will also allow the WatchDog System to be viewed from anywhere that has access to the Internet. It is the customer's responsibility to provide a proper connection to their network. This option is the most difficult to configure and will probably require outside assistance from an entity with considerable networking experience. While GSI's Technical Support group can offer suggestions, GSI is not responsible for the required connection.

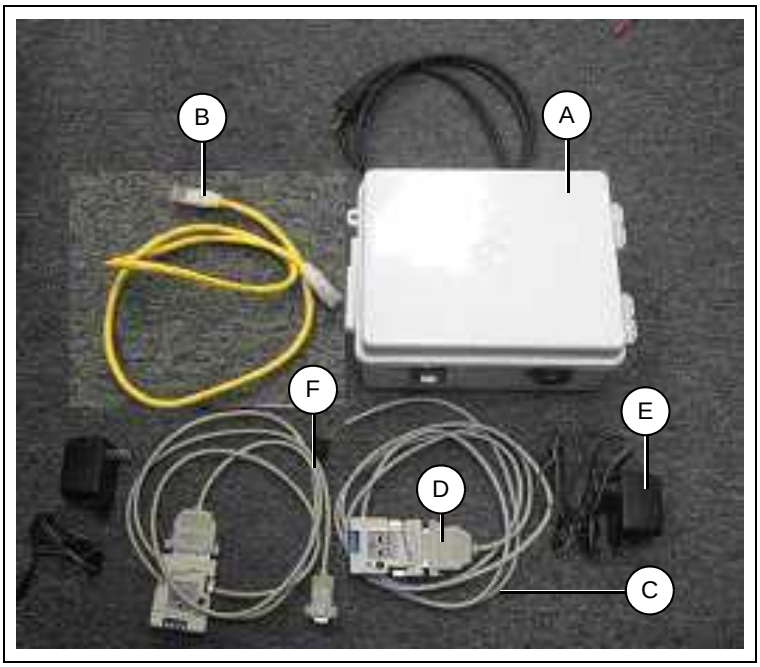


Figure 4A *WatchDog System Components for Direct Connected Type (Part # VIS-WATCH-DC)*

Ref #	Description
A	WatchDog Enclosure
B	Ethernet Cable
C	Modified Serial Cable

Ref #	Description
D	Short Haul MODEM
E	Short Haul MODEM Power Supply
F	Serial Cable

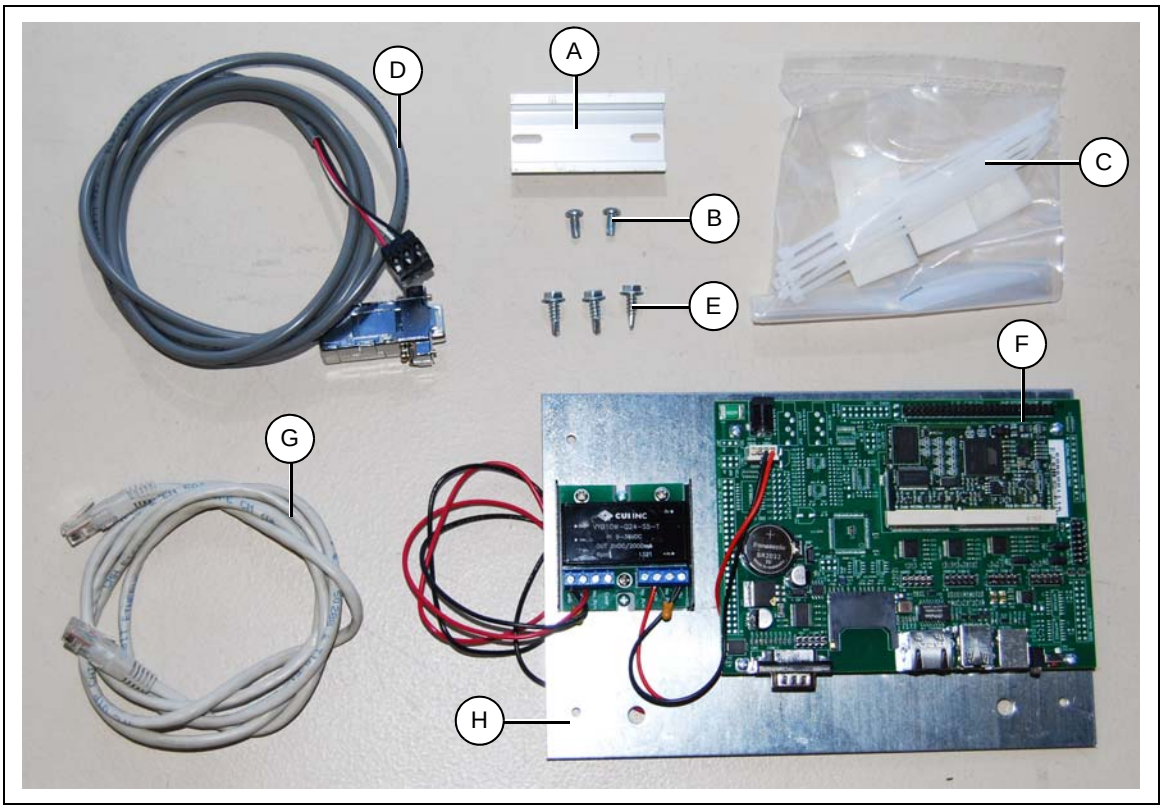


Figure 4B *WatchDog System for Customer LAN/WAN Connection (Part # VIS-WATCH-IC)*

Ref #	Description
A	3" DIN Rail
B	Screws (S-2786)
C	Wire Ties
D	Serial Cable
E	Screws (S-280)
F	WatchDog Board (D03-0831-P3)
G	Ethernet Cable
H	Mounting Plate

Unpacking the System

The components within the shipped WatchDog System vary depending upon the particular system ordered. The WatchDog System can be ordered via two (2) separate part numbers. These two (2) part numbers represent different styles of installation: 1. Direct Connect 2. Cellular MODEM or LAN Connection. The following sections describe the components contained in each setup.

Direct Connect Components

The direct connection style setup (GSI Part # VIS-WATCH-DC) allows the user to connect his PC to the WatchDog System using two (2) short haul MODEMs. One MODEM will reside at the dryer, while another is located at the PC. *Figure 4A on Page 11* shows the components included in this setup. The components are listed as follows:

1. WatchDog System (Enclosure).
2. Two (2) Short Haul MODEMs.
3. Cable to connect short haul MODEM to dryer port.
4. Cable to connect short haul MODEM to WatchDog Port.
5. 3' Ethernet cable to connect WatchDog system to PC.
6. Ten (10) cable ties for routing wires.

Internet Connection Components

The user can use this setup (GSI Part # VIS-WATCH-IC) to make their Vision Dryer visible on the Internet by providing a connection to the Internet. This connection can be provided using a Cellular MODEM or by providing a hardwired Ethernet connection to the user's LAN. The cellular MODEM style setup allows the customer's dryer to connect to the Internet via a cell MODEM, located at the dryer. The customer's dryer is then accessed over the Internet via a static IP address. *Figure 4B on Page 12* shows the components included in this setup. The components are listed as follows:

1. WatchDog PCB/mounting plate assembly.
2. 3' Ethernet cable to connect WatchDog PCB to Internet.
3. Cable to connect WatchDog PCB to 12 VDC power supply.
4. Two (2) nuts for securing WatchDog assembly to dryer.
5. Ten (10) cable ties for routing wires.
6. 3" Piece of din rail for mounting cellular MODEM.
7. Serial cable to connect WatchDog board to vision display I/O board.

NOTE: *For information on acquiring a Cell MODEM, See Appendix C on Page 42*.

The WatchDog System has three (3) basic types of installation. These will be described in the following sections.

1. Direct Connection
2. Cellular MODEM
3. LAN Connection/WAN

Direct Connection

This type of connection (GSI Part # VIS-WATCH-DC) uses two (2) short haul MODEMS to connect the dryer to the user's PC. The WatchDog equipment is located at the user's PC, one short haul MODEM is connected to the WatchDog equipment and the other short haul MODEM is connected to the Display I/O on Vision Dryer. Four (4) wires run between the short haul MODEMs. *(See Figure 5B on Page 16.)*

The following list of steps should be followed to connect the WatchDog equipment to the dryer using a direct connection. Refer to *Figure 5A on Page 15* while performing the following steps.

1. Turn OFF power to dryer and control panel.
2. Connect a short haul MODEM at the dryer. The cable (Modified Serial, *Figure 4A on Page 11*, Ref # C) supplied with the WatchDog shown in *Figure 4A on Page 11* should be plugged into the AUX port on the Display I/O Board (printed circuit board behind 10.4" color display) and the other end to a short haul MODEM. The short haul MODEMs power supply should be plugged into a 120 VAC receptacle (not provided) and the barrel connector into the short haul MODEM.
3. Connect the WatchDog to the Customer's PC via Ethernet cable (*See Figure 4A on Page 11*, Ref # B). The cable plugs into the RJ-45 connector on the side of the WatchDog enclosure *(See Figure 5A on Page 15)* and connects to an Ethernet connector on the customer's PC.
4. Connect the WatchDog Enclosure to the other short haul MODEM via the 9 pin to 25 pin serial cable (Ref # F in *Figure 4A on Page 11*). *Figure 5A on Page 15* shows this connection made.
5. Connect the two (2) short haul MODEMs together using four (4) conductors. (Preferably CAT5 Ethernet cable.) *(See Figure 5B on Page 16.)* The maximum length should be less than 1/4 mile (400 meters).
6. The short haul MODEMs should arrive configured appropriately, but the setup should still be verified. Both MODEMs should be configured as shown in *Figure 5B on Page 16*.
7. Plug all AC adapters and cords into 120 VAC wall receptacles. A red light on each short haul MODEM should come on immediately.
8. The WatchDog system will start in approximately 3 minutes.
9. Attempt to connect using the PC with the Ethernet connection to the WatchDog System by using address 10.0.0.1 in the web browser's address line. *See Chapter 6 on Page 23* for more information.

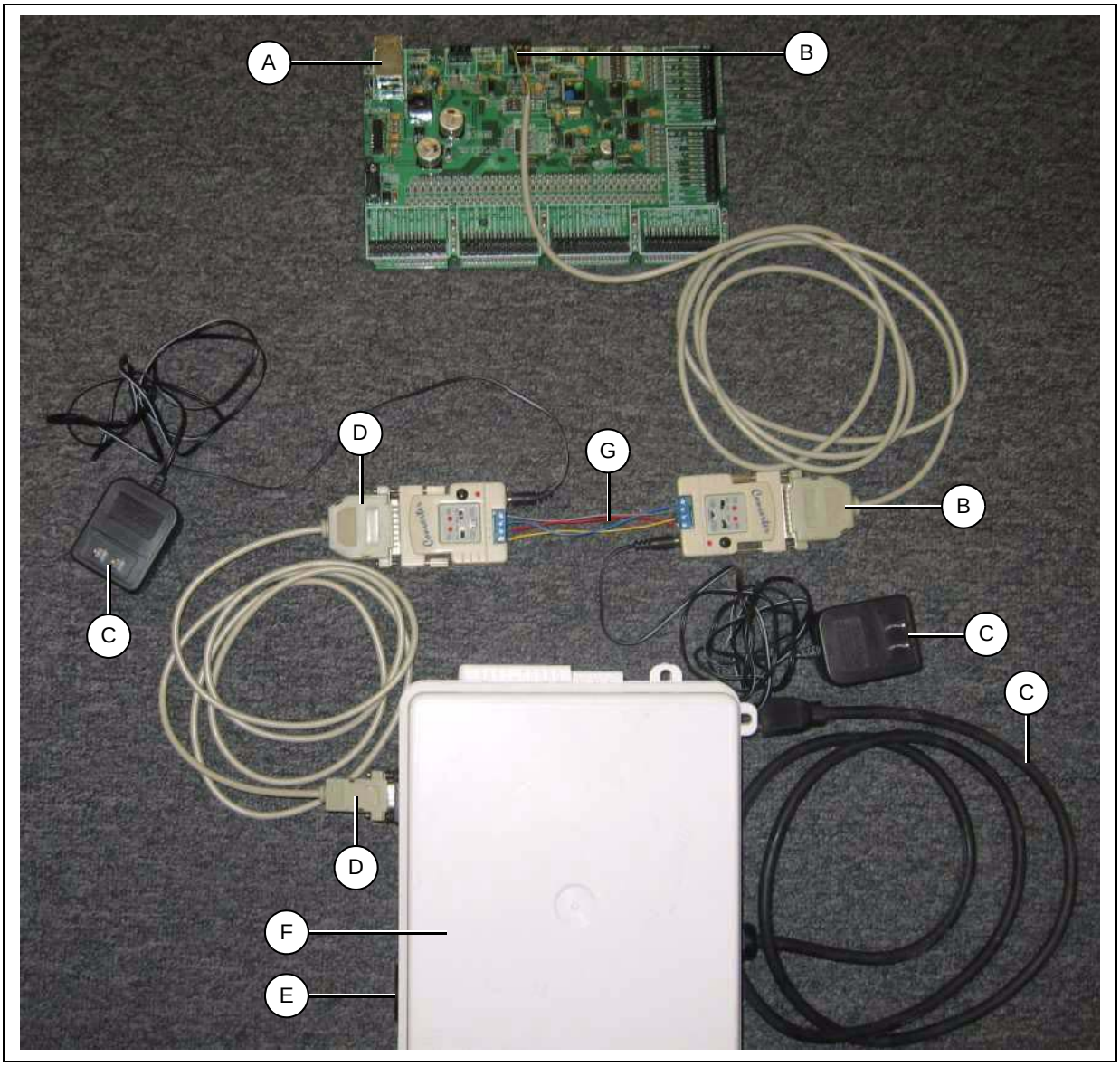


Figure 5A *Wiring for Direct Connection*

Ref #	Description
A	Display I/O - Located on Dryer
B	Connect Serial Cable between Display I/O Board and Short Haul MODEM #1 (at Dryer)
C	Plug All Power Supplies into 120 VAC Supply
D	Connect Serial Cable between WatchDog Enclosure and Short Haul MODEM #2 (at Home/Office)
E	Ethernet Connector - This connects to user's PC using Ethernet (CAT5) cable.
F	WatchDog Enclosure
G	CAT5 Ethernet Cable

Vision WatchDog Short Haul MODEM Hook-Up

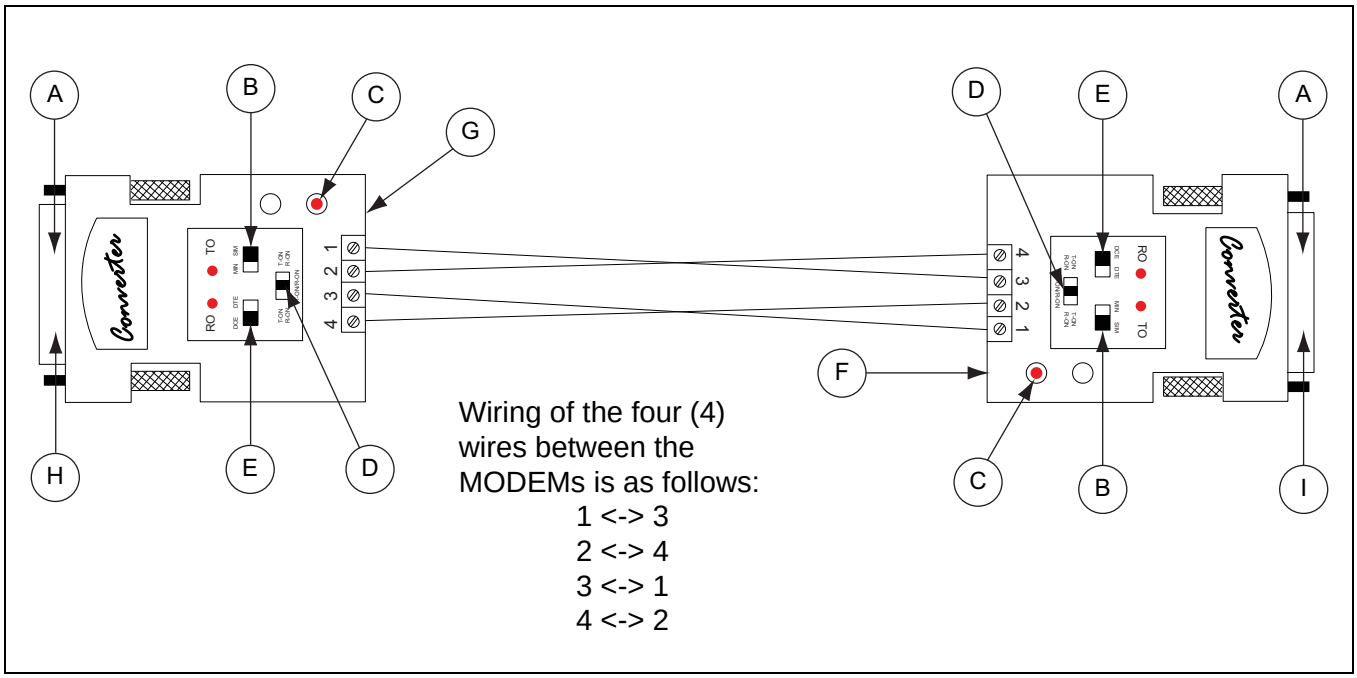


Figure 5B *Short Haul MODEM wiring*

Ref #	Description
A	25 Pin Female
B	MIN/SIM should be Set to SIM
C	Power Light
D	Should be Set to Center Position
E	DCE/DTE should be Set to DCE
F	Power Supply Connection
G	Ethernet (CAT5E) cable should be run between the two (2) MODEMs. One twisted pair on 1 and 3. One twisted pair on 2 and 4.
H	Use modified serial cable (*Figure 4A on Page 11*, Ref # C) to connect this short haul MODEM to Display I/O port on Vision Dryer. *(See Figure 5A on Page 15.)*
I	Use serial cable (*Figure 4A on Page 11*, Ref # F) to connect this short haul MODEM to the WatchDog Enclosure's serial port. *(See Figure 5A on Page 15.)*

Cellular Modem

This type of connection (GSI Part # VIS-WATCH-IC) allows the dryer to connect directly to the Internet using a hardwired CAT5 Ethernet connection to a Cellular MODEM. The steps for installing this type of WatchDog System are listed below:

1. Turn OFF power to dryer and control panel.
2. Mount WatchDog hardware inside dryer's lower control box. The metal mounting plate (*Figure 4B on Page 12*, Ref # H), which the WatchDog Board is affixed to, mounts on the right hand wall of the control box, looking into the box, using the 1/4" nuts supplied (*Figure 4B on Page 12*, Ref # E). *(See Figure 5J on Page 21.)*
3. Mount the Cellular MODEM in the lower control box near the moisture control board, using the 3" piece of DIN Rail (*Figure 4B on Page 12*, Ref # A) and the two (2) self-tapping 1/4" screws. *(See Figure 5C.)*

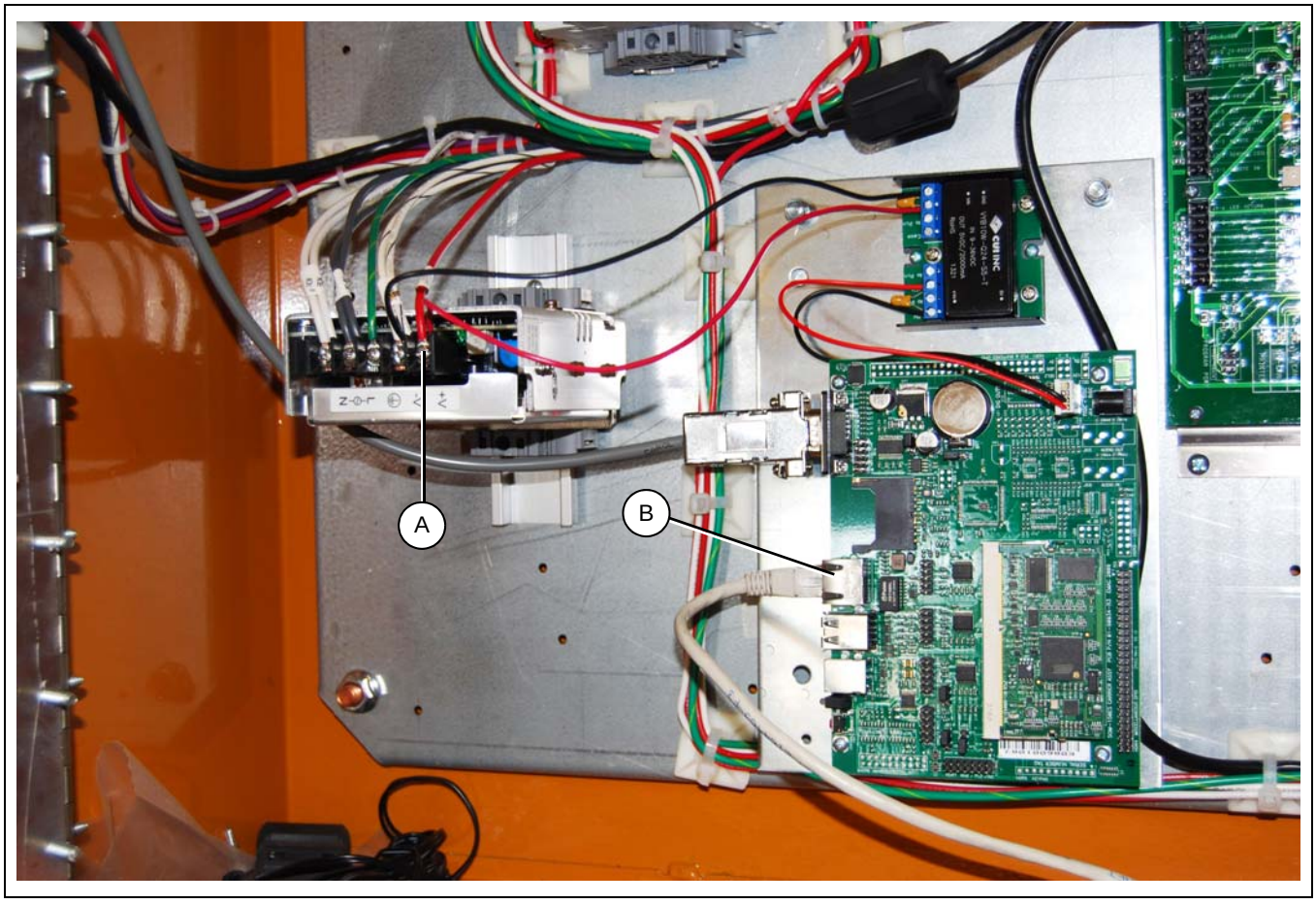


Figure 5C *Mounting of Cellular MODEM*

Ref #	Description
A	Connect Power between 12 VDC Power Supply and Cell MODEM
B	Ethernet Connection to MODEM from WatchDog Board Ethernet Port

4. Connect an Ethernet cable between the cell MODEM and the Ethernet port on the WatchDog Board. *(See Figure 5D.)* Each port is labeled on the circuit board.

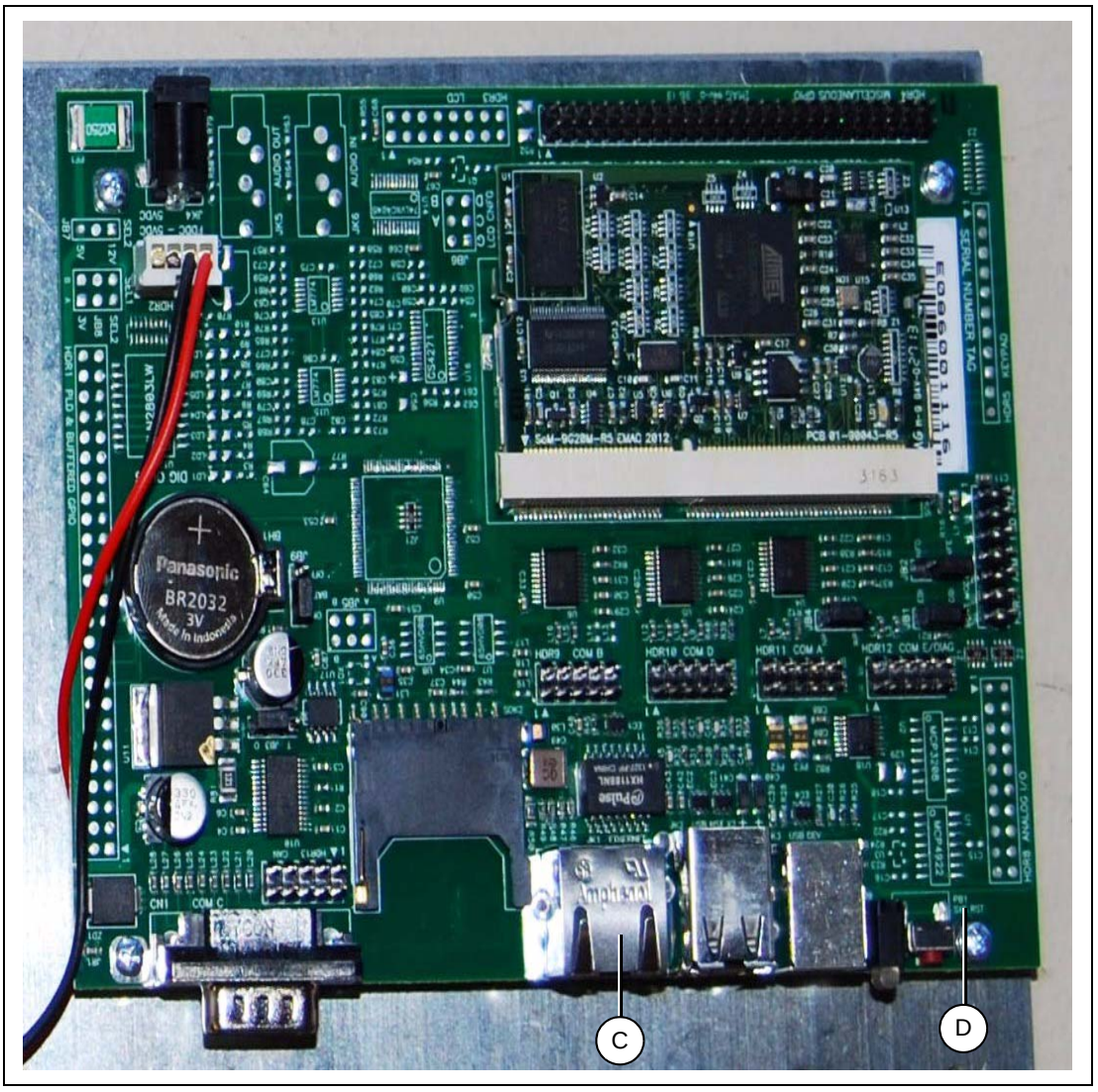


Figure 5D *WatchDog Board*

Ref #	Description
C	Ethernet Port High Speed Internet Connection
D	WatchDog Board

5. Connect WatchDog Board to the Vision Dryer's Display I/O board using the provided modified serial cable (*Figure 4B on Page 12*, Ref # F). Care should be taken that the cable is plugged into the Display I/O board correctly - Inspection will reveal it is designed to be inserted (polarized) in only one direction. *(See Figure 5E on Page 19.)*

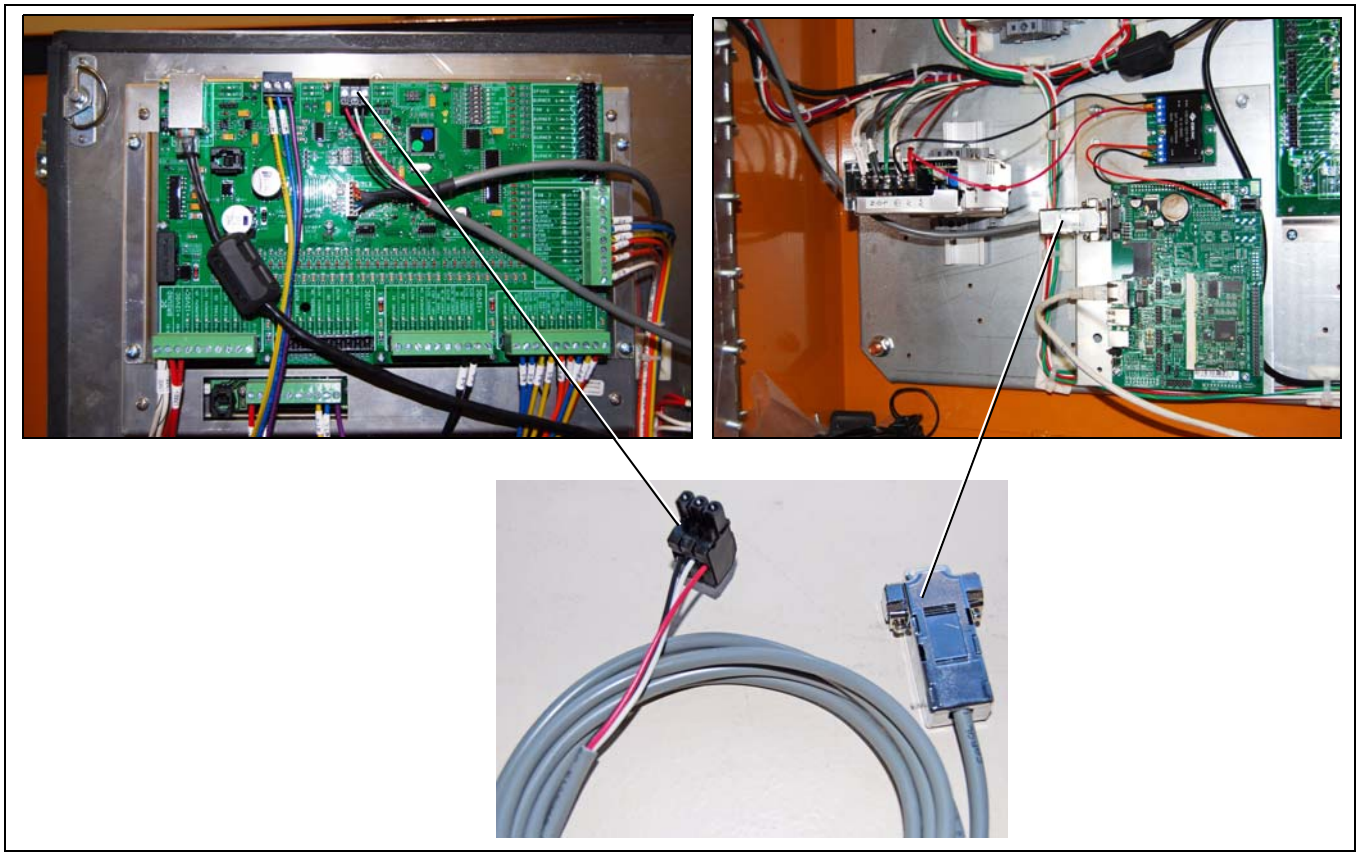
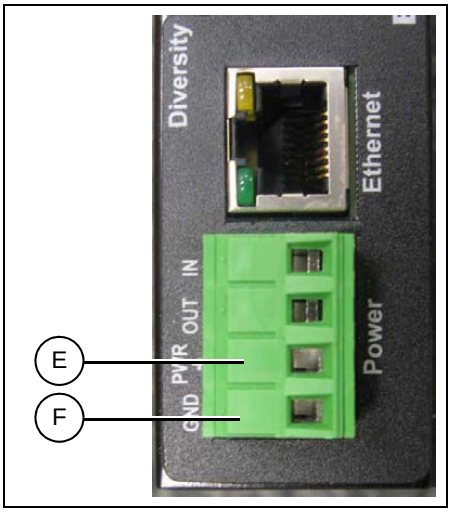


Figure 5E *Modified Serial Cable between Display I/O and WatchDog Board*

6. Connect power supply wire between WatchDog Board and Cellular MODEM power connections. The cable (*Figure 4B on Page 12*, Ref # D) has a barrel style connector at the end that plugs into the WatchDog board *(See Figure 5J on Page 21)* and two (2) bare wires at the other end to place into the Cellular MODEM power terminals. The order of the wire connections makes no difference.

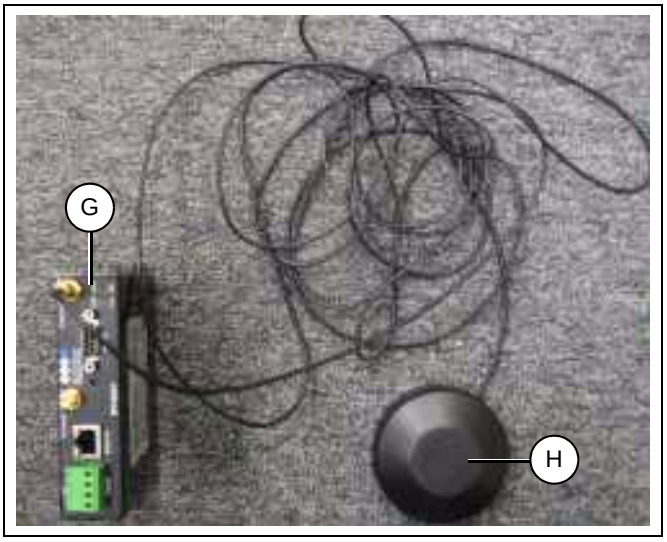
7. Connect cellular MODEM power terminal (positive, pwr +) to J1-01 on the moisture control board. Connect cellular MODEM ground terminal (GND) to J1-02 on the moisture control board. *See Figure 5F* for MODEM connections and *Figure 5C on Page 17* for moisture control board connections.



Ref #	Description
E	+12VDC - Connects to on Moisture Control Board
F	GND - Connects to Moisture Control Board

Figure 5F *Cellular MODEM Power Connections*

8. Run the antenna wire for the Cellular MODEM through a knockout in the bottom of the control box and connect the BNC connector to the MODEM. *(See Figure 5G.)*



Ref #	Description
G	Antenna Connection to Cellular MODEM
H	Cellular MODEM Antenna (Mounts to any metal using internal magnet.)

Figure 5G *Cellular MODEM and Antenna*

9. Turn power back onto dryer and observe status lights on cellular MODEM. The power light should be ON and in a few seconds the signal light should flash indicating connection to the cellular network. *(See Figure 5H.)* If the signal light does not light, try moving the antenna to another location, preferably where there is no metal between it and an adjacent cell tower.

Figure 5H *Indicator Lights on Cell MODEM*

Ref #	Description
I	Signal Light - Should Blink Rapidly with Signal
J	Power Light - Stays on Steady with Power

10. The green power light ON the WatchDog board should illuminate upon application of power. If not re-check power supply connections. After 3 minutes, the red system light should illuminate, indicating the WatchDog System is ready. *(See Figure 5I.)*

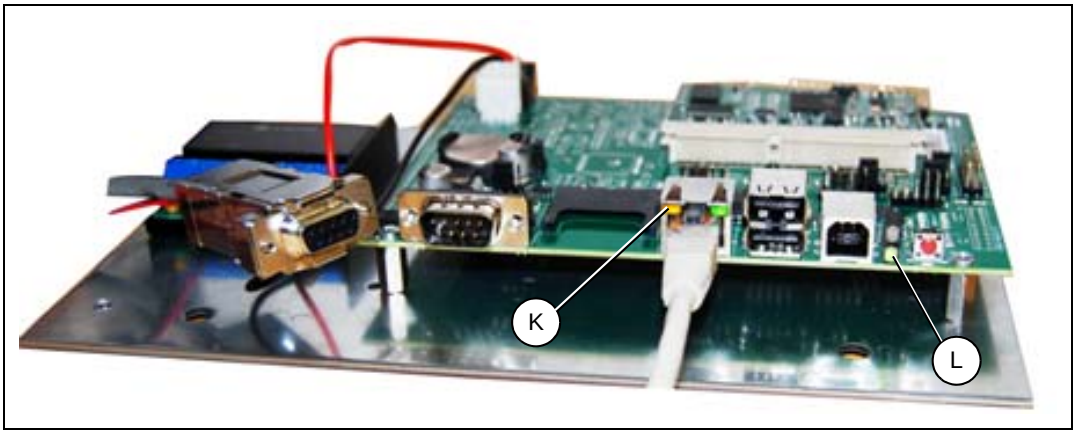


Figure 5I *Power and Status Lights for WatchDog System*

Ref #	Description
K	Orange Status Light - Lit when WatchDog Ready
L	Green Power Light

11. Now use an Internet connection to attempt to connect to the dryer. In the web browser's address bar type in the static IP address given to you when purchasing the cellular MODEM. *See Chapter 6 on Page 23* for more information.

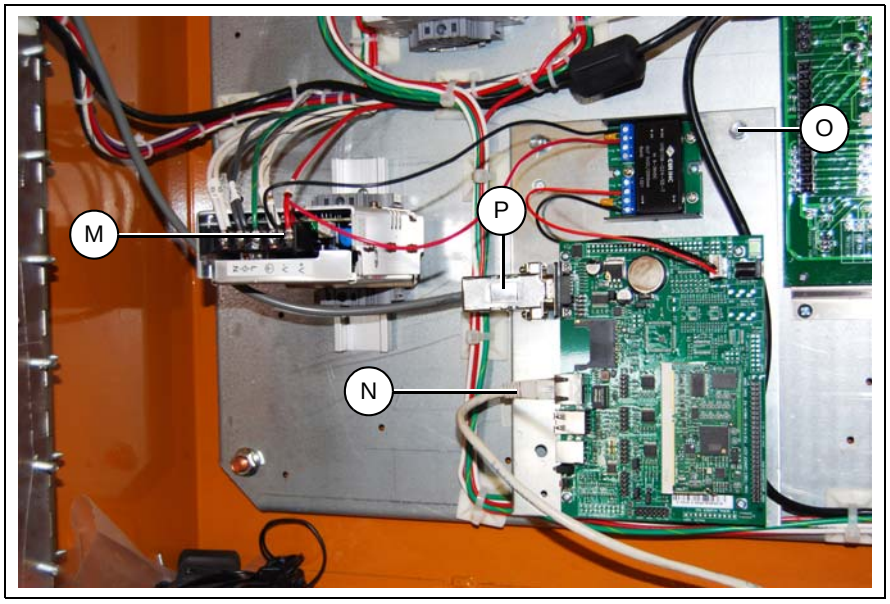


Figure 5J *Looking Inside Lower Control Box (Ethernet Cable Connects to Cell MODEM)*

Ref #	Description
M	Power Supply Connection to WatchDog Board
N	Ethernet Cable Connecting to Cell MODEM

Ref #	Description
O	WatchDog Mounting Plate Bolts to Dryer here
P	Serial Cable Connection - Connects to Display I/O Board AUX Port

LAN Connection

This type of connection (GSI Part # VIS-WATCH-IC) allows the dryer to connect directly to the Internet using a hardwired CAT5 Ethernet connection. The customer's LAN or simply a DSL connection dedicated to the dryer will suffice. **NOTE:** *Installing behind a customer's router will require the assistance of an experienced ISP (Internet Service Provider) or other individual skilled in networking. This is the sole responsibility of the customer.* The steps for installing this type of WatchDog System are listed below:

1. Turn OFF power to dryer and control panel.
2. Mount WatchDog hardware inside dryer's lower control box. The metal mounting plate (*Figure 4B on Page 12*, Ref # H), which the WatchDog Board is affixed to, mounts on the right hand wall of the control box, looking into the box, using the 1/4" nuts supplied (*Figure 4B on Page 12*, Ref # E). *(See Figure 5J on Page 21.)*
3. Connect hardwired Ethernet connection provided by the customer to the WatchDog's Ethernet port. *(See Figure 5D on Page 18.)*
4. Connect WatchDog Board to the Vision Dryer's Display I/O board using the provided modified serial cable (*Figure 4B on Page 12*, Ref # D). Care should be taken that the cable is plugged into the Display I/O board correctly - Inspection will reveal it is designed to be inserted (polarized) in only one direction. *(See Figure 5E on Page 19.)*
5. Connect power supply wire between WatchDog Board and the 12 VDC power supply using the red and black wires coming from the power supply as shown in *Figure 5C on Page 17*. The black wire connects to 12 VDC- on the 12 VDC power supply and the red wire connects to 12 VDC+ on the 12 VDC power supply. The 12 VDC power supply is located in the back of the lower control box and is pictured in *Figure 5C on Page 17*.
6. Turn power back ON to dryer and control panel.
7. The WatchDog system will start in approximately 3 minutes. A power indicator on the WatchDog Board should come on immediately with the application of power.
8. Attempt to connect using an Internet enabled web browser using the IP address provided by the ISP or network expert who installed the system. *See Chapter 6 on Page 23* for more information.

The WatchDog System can be used to view the current state of a Vision Dryer remotely and some parameters can be modified. The dryer can also be shut down remotely. This section will cover the user's interface to the WatchDog System.

Once the hardware installation described in *Chapter 5 on Page 14* has been completed, connecting to the Vision Dryer is as simple as typing in the dryer's IP address into the address bar of the preferred web browser. For example, if the dryer's IP address is 10.2.5.8, type it into the browser's address bar and press Enter. *(See Figure 6A.)* Once a connection is established, the password screen should appear. It is described fully in *Login Screen on Page 24*.

Sources of IP addresses for the various types of installations:

Direct Connect: Use IP address 10.0.0.1

Internet Connection using Cellular MODEM: Use IP address given to you at time of purchase of MODEM.

Connection to customer's LAN: Use IP address given to you by the installing entity.

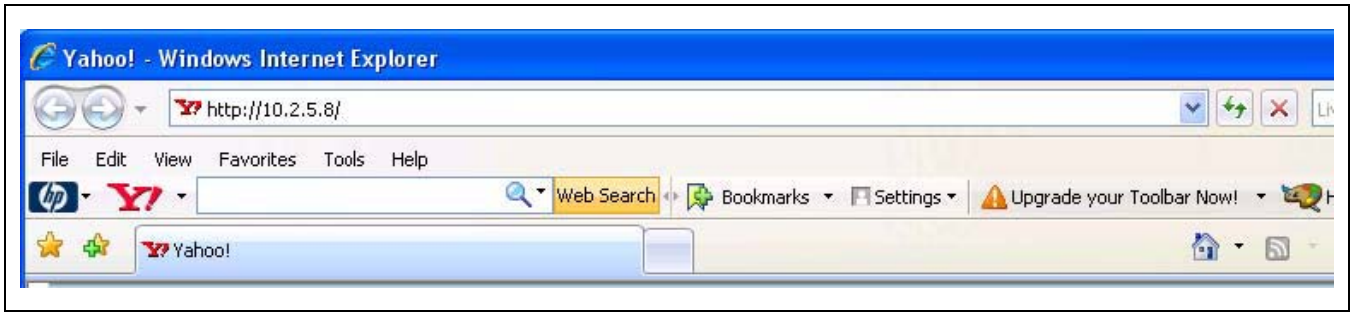


Figure 6A *Typing in Dryer's IP Address*

Login Screen

When the web browser initially makes contact with the WatchDog System, you will be presented with a screen requesting a password. *(See Figure 6B.)* Once the password has been entered you must press the LOG IN button to accept the password. PRESSING ENTER WILL NOT WORK.

If you have forgotten the password press the Forgot Password button shown in *Figure 6B*. This will bring up the screen shown in *Figure 6C*. This screen will ask for the WatchDog Board's "MAC Address". This sequence of numbers and letters (all capitals) can be found by on a sticker located on the top of the WatchDog Board.

Once the password has been reset, you may log in with the default password, which is simply default (all lower case), but immediately go to the setup menu and change the default to something else. Please record and place into safe keeping, the new password information.

Figure 6B *Password Login Screen*

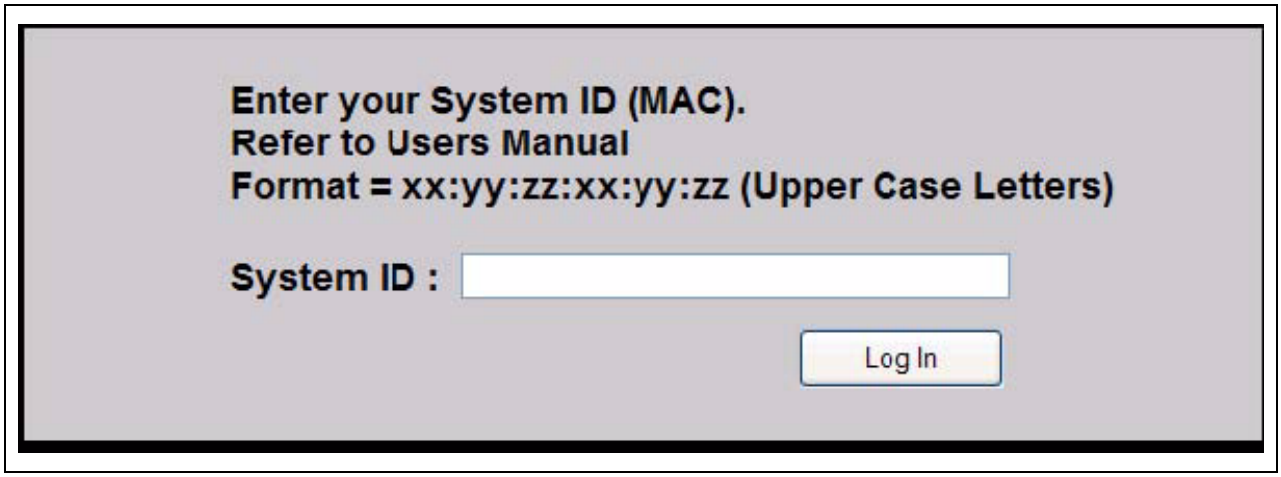


Figure 6C *Using MAC Address for Password*

Default Dryer Screen

The screen in *Figure 6D* will be displayed, unless the dryer is shut down, upon connection to the dryer if it is a portable dryer. This very closely resembles how the screen would appear at the dryer. All the buttons function exactly as they would if pressed on the dryer screen, except for the Setup and View buttons. These buttons on this screen allow changes to be made to the setup of the WatchDog System and to view information related to that system. The menus/information below each button will be described more fully in the following sections.

All information displayed around the dryer picture, is exactly as it would appear on the dryer screen. The lower right 1/4 of the screen shows the state of each burner, once again, as it would be displayed at the dryer. The log of temperatures and moistures on the right hand side of the screen functions exactly as it does at the dryer, but the data displayed may be different (it is not downloaded from the dryer.) Finally, the status bar displayed in the upper right hand corner gives the current status of the dryer and shows the same information that is presented at the dryer.

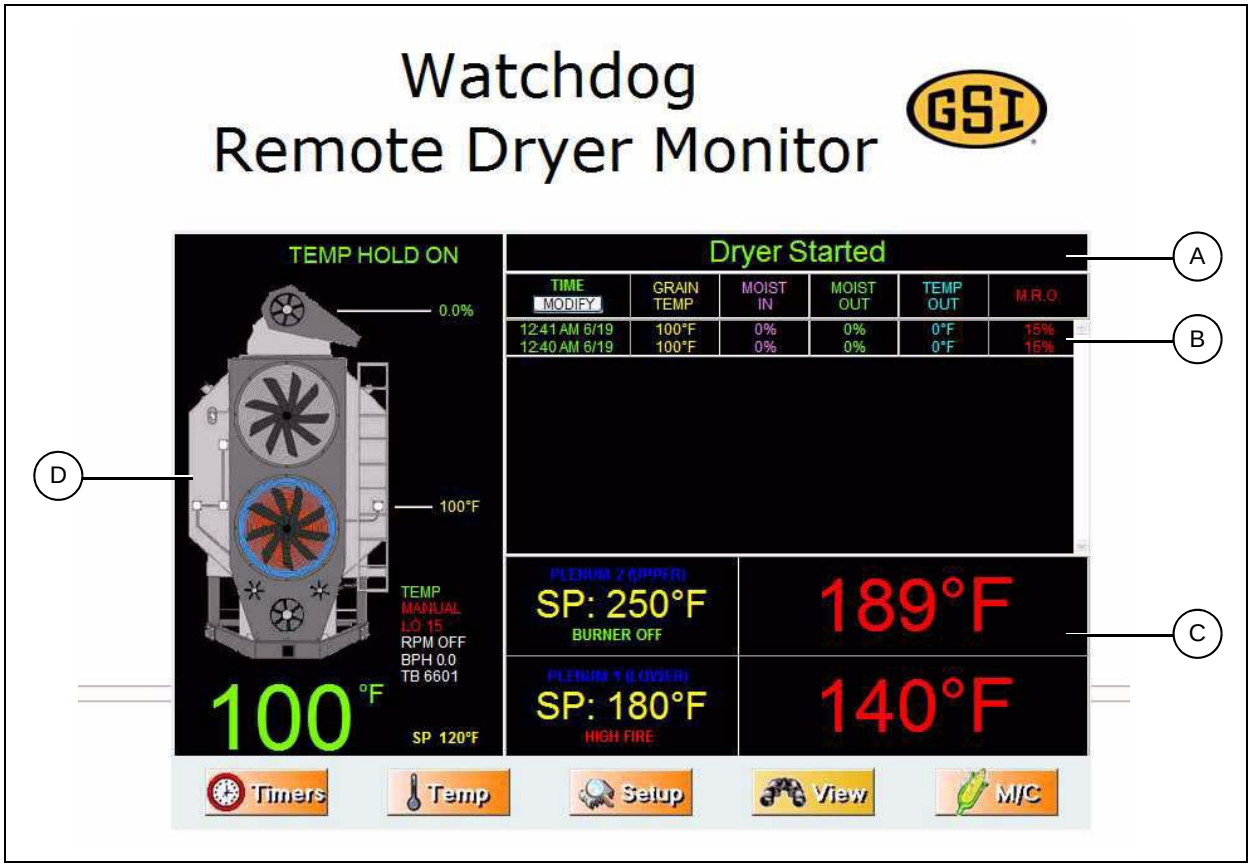


Figure 6D *Default Portable Dryer Screens*

Ref #	Description
A	Status Bar
B	Data Log
C	Plenum Setpoints and Temperature
D	Dryer Status

Timer Setpoints

Pressing the Timers button will display a screen similar to that in *Figure 6E*. The actual layout will vary depending on the type of dryer and its particular setup. Pressing any of these timer buttons will allow modification of that timer's setpoint value.

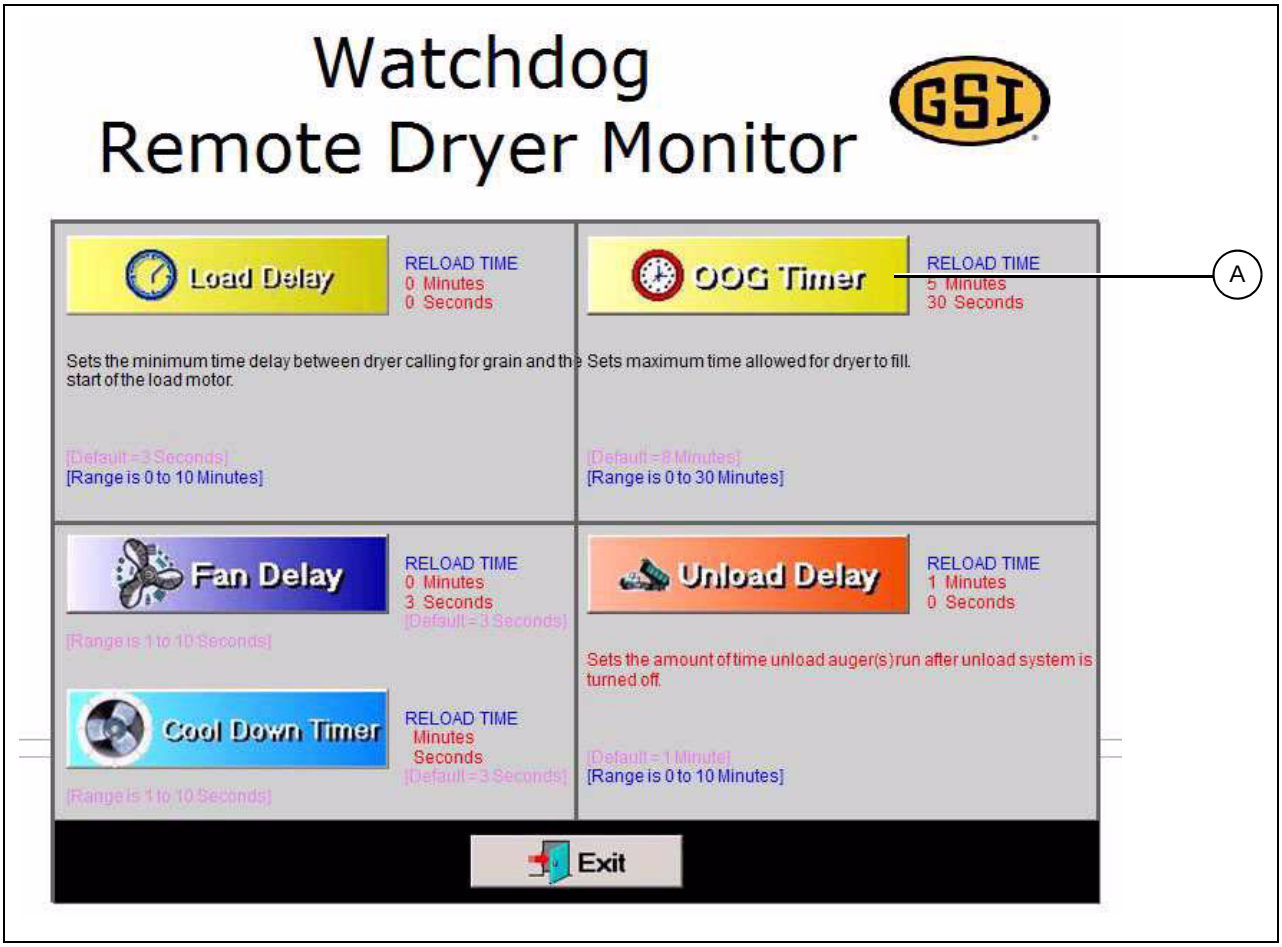


Figure 6E *Select Timer to Modify Screen*

Ref #	Description
A	Out of Grain Timer Button

For example, pressing the OOG Timer button will bring up the timer minutes modification dialog box shown in *Figure 6F on Page 27*. Enter the number of minutes and press OK. Another dialog box will then appear prompting the second's setpoint to be entered as shown in *Figure 6G on Page 27*. Depending on the security settings of the particular browser you may have to temporally allow scripted windows. This is shown in *Figure 6H on Page 27*. Simply right click and select OK and press timer button again. All other timer setpoints are set similarly.

Timer Setpoints (Continued)

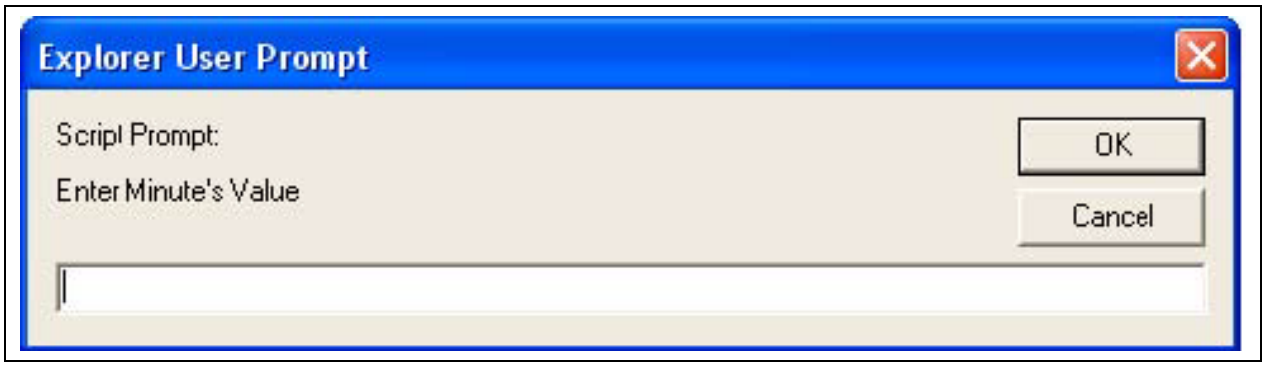


Figure 6F *Modify Timer's Minutes Setpoint*

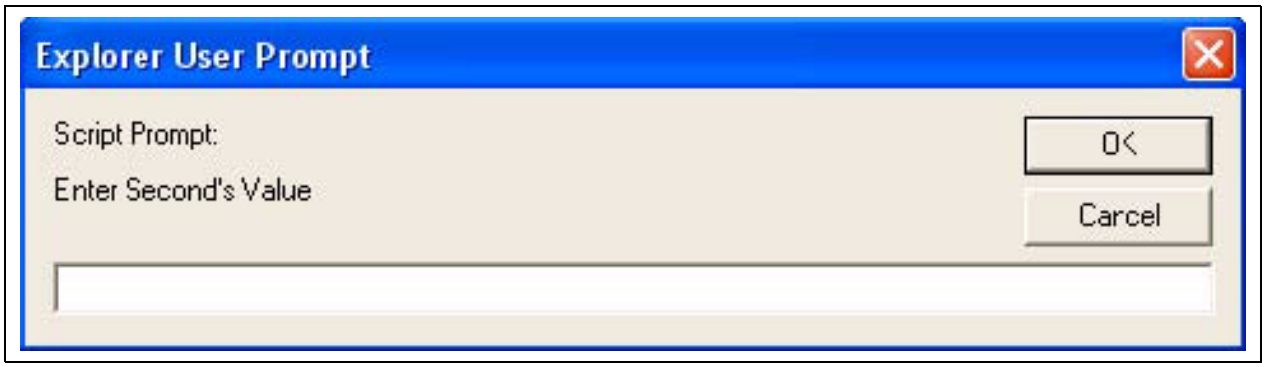


Figure 6G *Modify Timer's Seconds Setpoint*

Figure 6H *Allow Scripted Windows*

Temperature Setpoints

Pressing the 

button will bring up a screen very similar to that shown in *Figure 6I*. It may vary slightly depending on the dryer's setup. The current setpoint of each plenum and grain column temperature is shown to the right of each setpoint button.

Pressing the 

button will bring up a dialog requesting a new setpoint value to be entered. *(See Figure 6J.)* Once the new value has been entered, press the OK button to accept or CANCEL to keep the old value. All other temperature setpoints are set similarly.

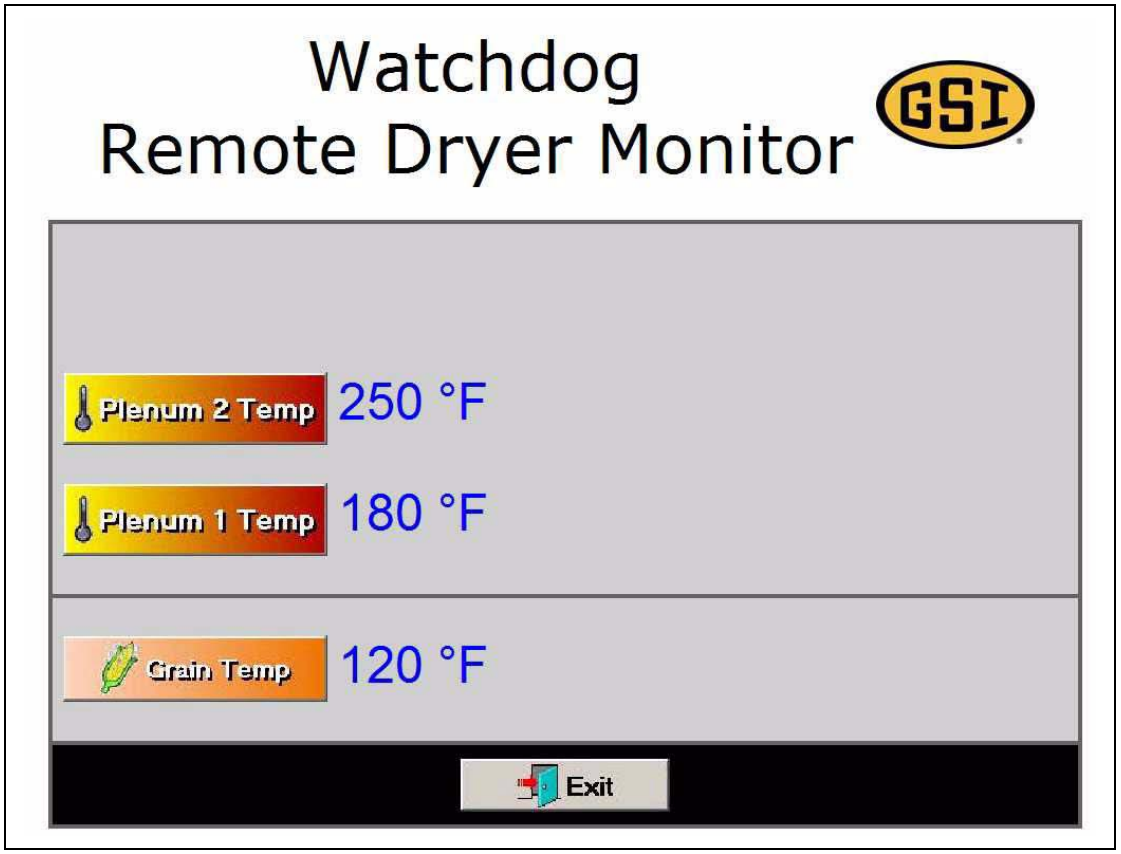


Figure 6I *Temperature Setpoint Selection Screen*

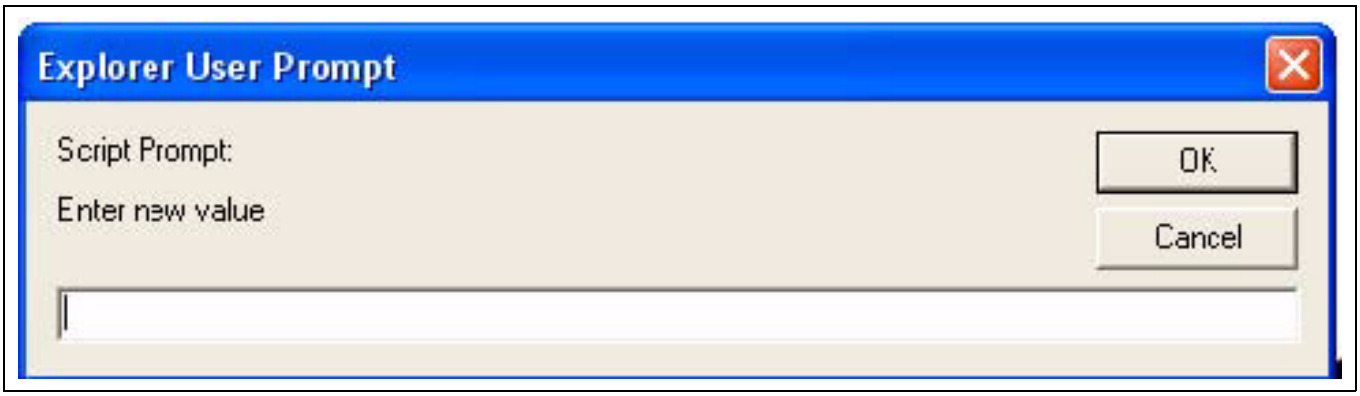


Figure 6J *Dialog Requesting New Temperature Setpoint*

Setup

Pressing the 

button will bring up the screen shown in *Figure 6K*. The setup screen is not used to setup the dryer as it would at the dryer control, but it is used to further setup the WatchDog System. The Setup screen has been broken into five (5) distinct functions and these will be addressed in the following sections.

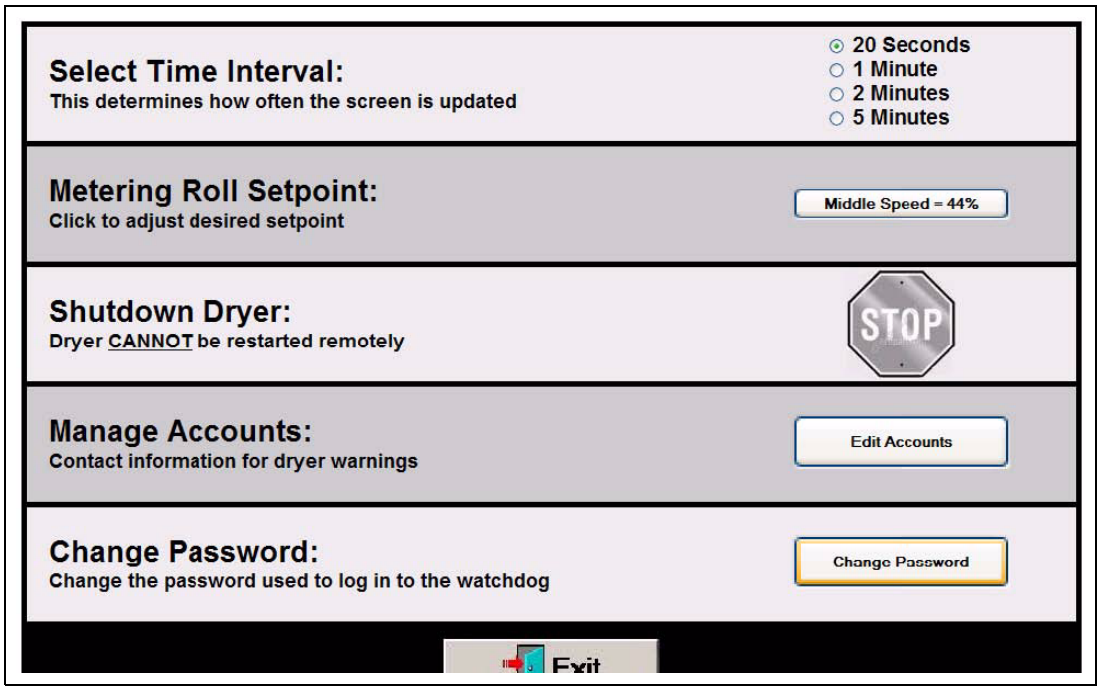


Figure 6K *Screen Displayed After Pressing Setup Button*

Select Time Interval

This set of radio buttons allows the user to select how often the WatchDog System contacts the dryer for information. For example, if 20 Seconds is chosen, as shown in *Figure 6L*, the WatchDog screen will be updated once every 20 seconds. If you have limited Internet bandwidth (TBD) its best to choose the longest interval that is acceptable.

Figure 6L *Selection of WatchDog Update Time (Under Setup)*

Metering Roll Speed Setpoints

This portion of the setup screen allows the user to adjust the metering roll speed setpoints. Only the setpoints required by the current setup are shown, so the screen may vary from the one shown in *Figure 6M*. Do not enter a percent (%) symbol, e.g. to enter 50% simply enter 50 and press OK.

Figure 6M *Metering Roll Speed Setpoints*

Shut Down Dryer

Pressing the stop sign displayed on the setup screen will shut the dryer down. You will be asked if you are sure via a small dialog box before the dryer will be shut down. *(See Figure 6N and Figure 6O.)*

Figure 6N *Stop Sign used to Shut Down Dryer*

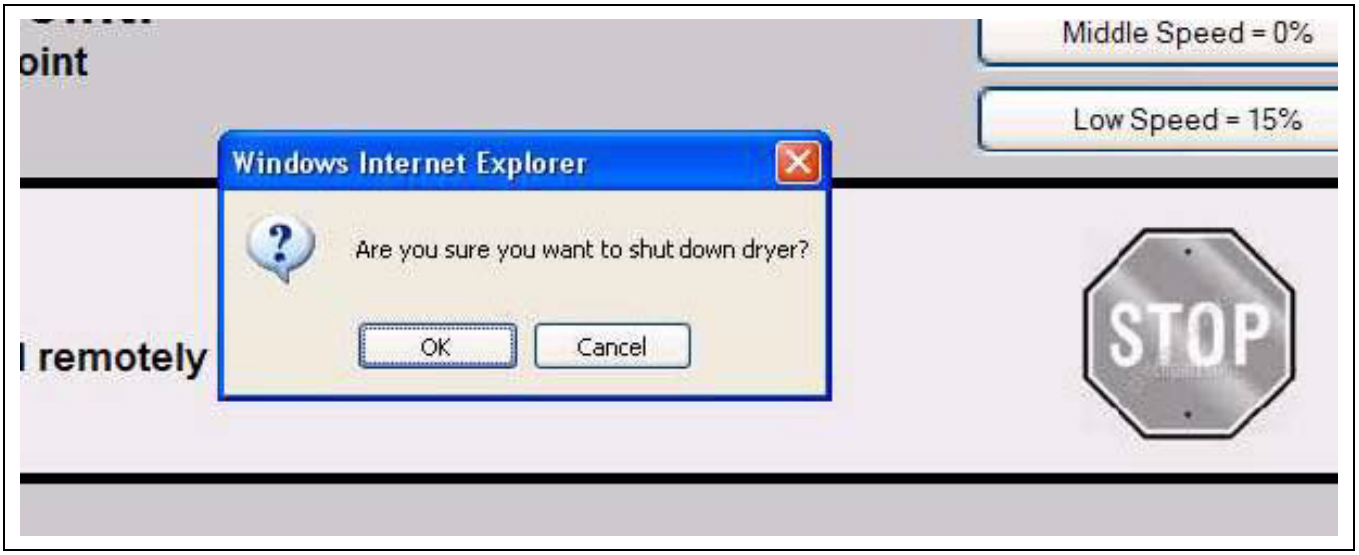


Figure 6O *Dialog box asking user if they are sure.*

Manage Accounts

This section of the setup screen is used to add or delete e-mail and text messaging accounts to be notified when the dryer experiences a shut down. Clicking “Edit Accounts” will open a new window, allowing entry of e-mail account or text message information. Please use the help (shown after pressing the Edit Accounts button) button for more information.

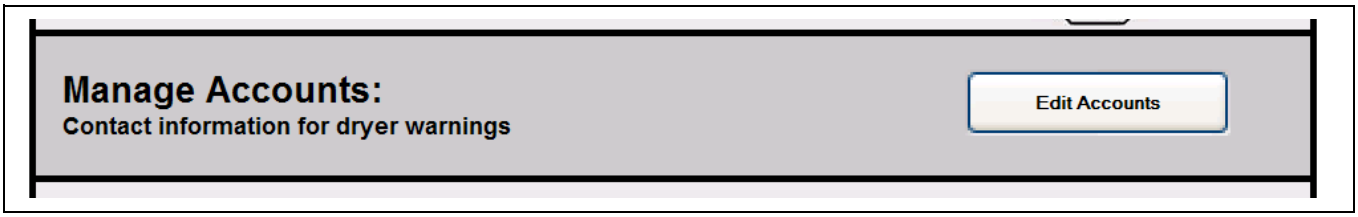


Figure 6P *Setup E-mail/Text Message Accounts*

Change Password Menu

Click the “Change Password”, under the setup menu *(See Figure 6K on Page 29)*, to change the current password. *(See Figure 6Q.)* If you have used the method described in *Login Screen on Page 24* to reset the password to the default value, please change the password, for security reasons, immediately. Pressing the Change Password button will bring up the screen shown in *Figure 6R*. Follow the instructions for changing the password.

Figure 6Q *Change Password*

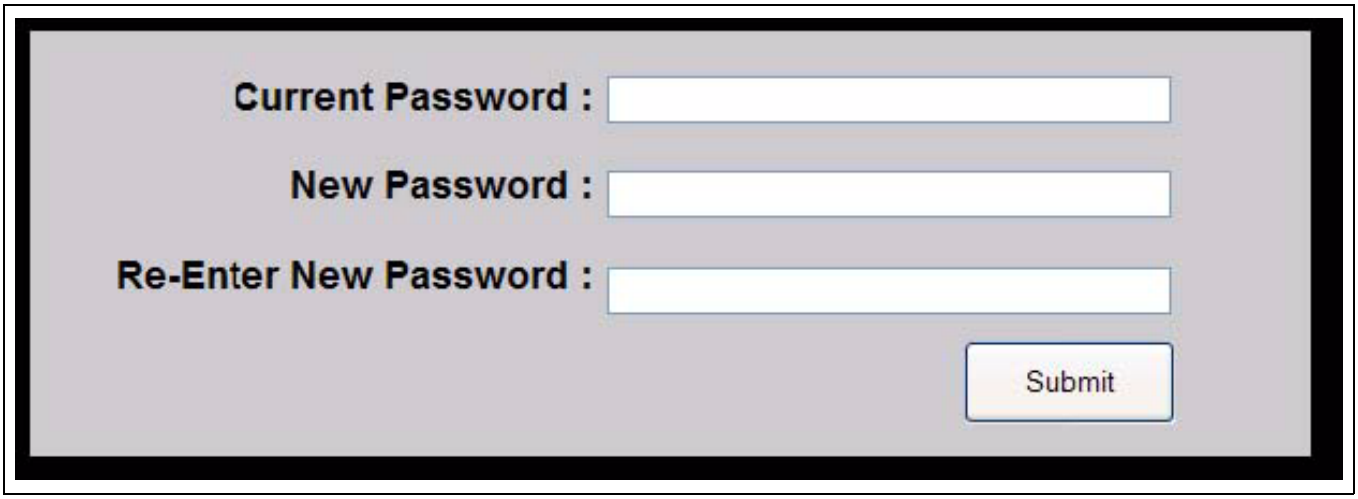


Figure 6R *Change Password Screen*

View Button

Pressing the 

button will bring up a screen giving information about the WatchDog System. The version number is currently displayed with other information being added as needed. *(See Figure 6S.)*

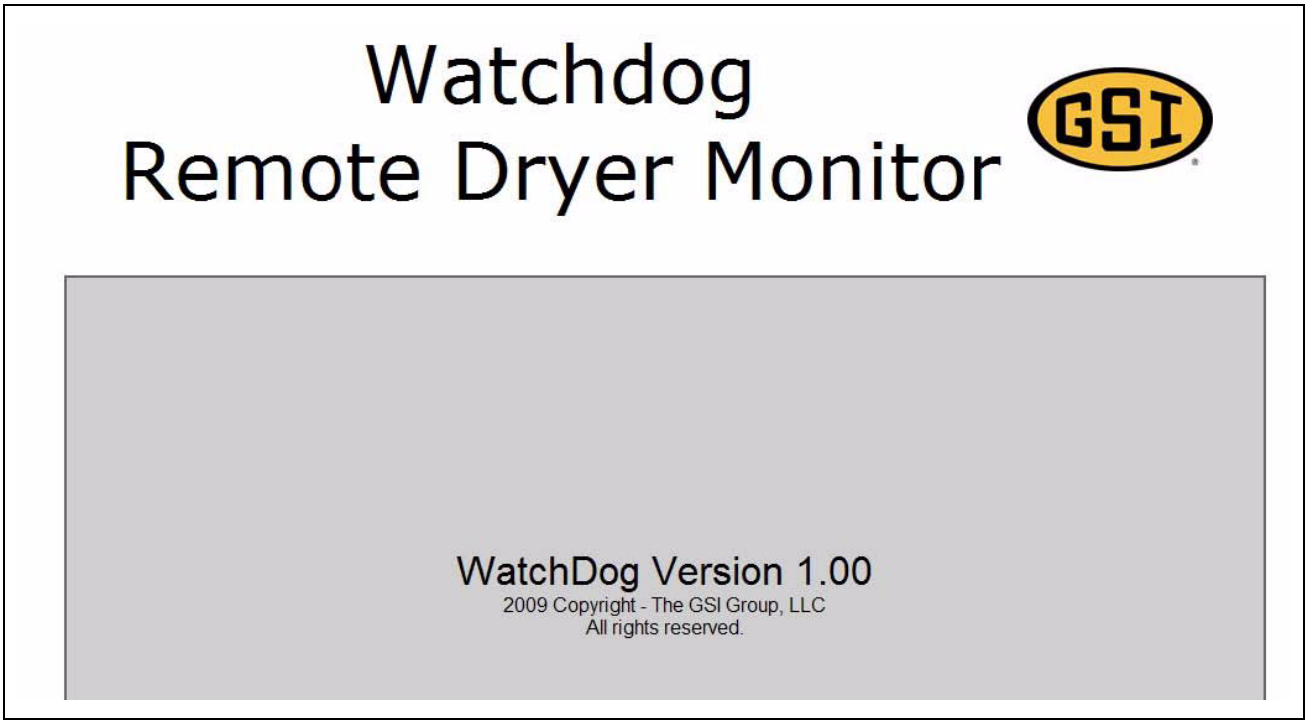


Figure 6S *Screen Displayed by View Button*

Moisture Control Button

Pressing the 

button will bring up a dialog box requesting to modify the current grain temperature setpoint or the moisture setpoint depending upon the setup of the dryer. For example, *Figure 6T* shows the dialog box that is presented when using temperature to control the moisture output of the dryer.

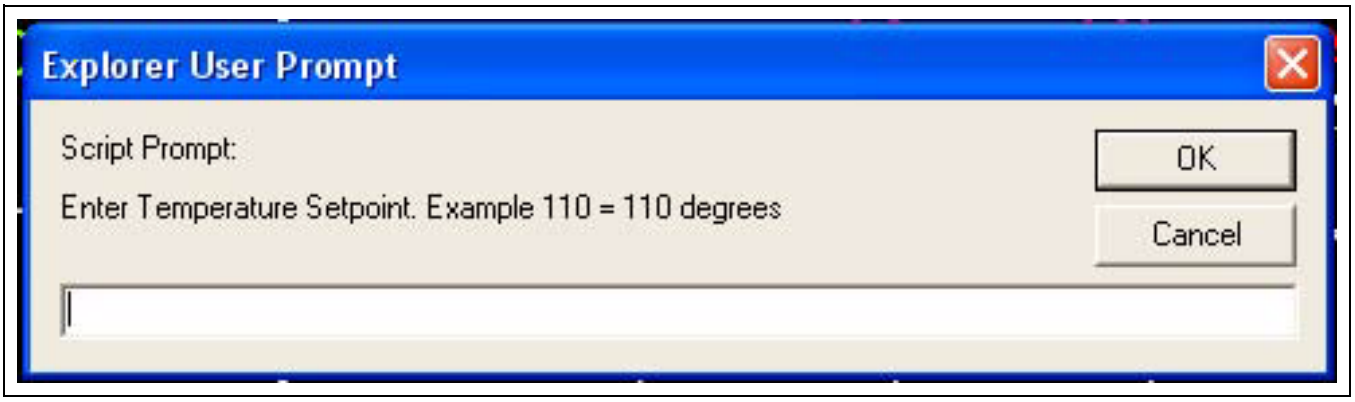


Figure 6T *Dialog Requesting a Change to the Grain Temperature Setpoint*

Set Table Sample Time Button (Continuous Flow Only)

Pressing the 

button in the upper left hand of the table view will bring up the screen shown in *Figure 6U*. This sets the number of minutes for each sample that is entered into the data log table.
NOTE: *If the sample time (See Figure 6L on Page 29) for the WatchDog System is set longer than the history time interval, shown in Figure 6S on Page 32, the table will miss samples.*

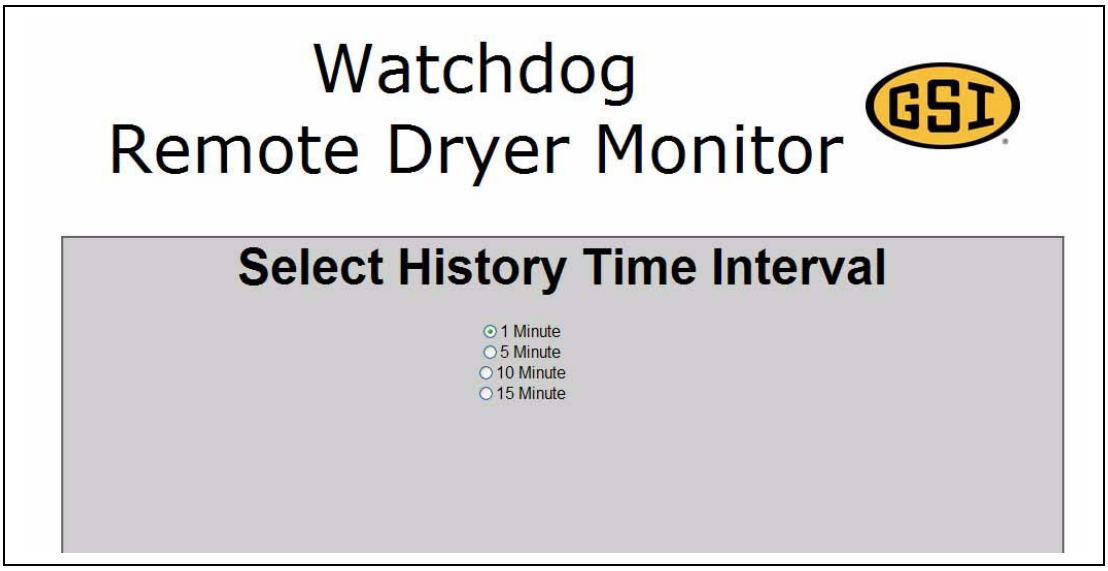


Figure 6U *Menu to Select Sample Time for Table View*

Shut Down Screen

If the drying equipment experiences a shut down, the screen in *Figure 6V* will be displayed by the WatchDog System and an audio file will be played (dogs barking). It indicates that the dryer shut down and gives the reason why the dryer shut down. The shut down can only be cleared by pressing the STOP button at the dryer.

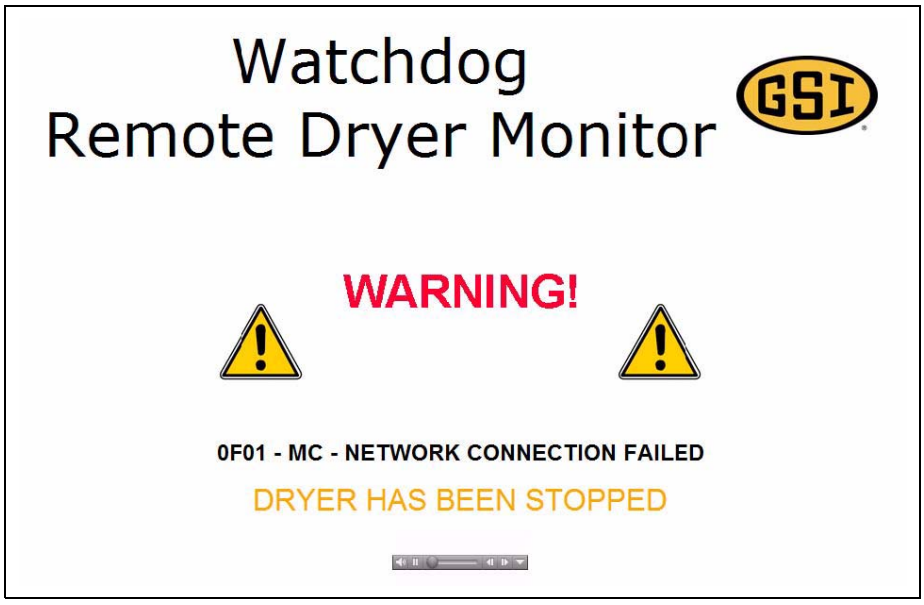


Figure 6V *Shut Down Screen*

Problem	Solution
"Check connection between WatchDog and Dryer" message is displayed by WatchDog System.	1. The cable connecting the dryer to the WatchDog circuit board may be unplugged or loose. Check all connections.
	2. The short haul MODEM connections between the dryer and the WatchDog System could be broken or loose. Check all connections.
"Check Vision Software Version" message is displayed by the WatchDog System.	This error is reported by the WatchDog System if the version of software on the dryer is not up to date. Install new software and retry.
"Internet connection to dryer has been lost" message is displayed by the WatchDog System.	Check Ethernet connections to WatchDog System. Use a PC to check to see if the internet connection is still "live". (Try to visit www.yahoo.com over the Internet.) If you cannot access the Internet at all, you must contact the internet provider, not GSI.
Login Password does not work.	Follow instructions in *Login Screen on Page 24* for resetting password to default.
Direct connection gives **"Check connection between WatchDog and Dryer"**.	Are the red lights on each short haul MODEM on? If not, is the power supply for each short haul inserted into the short haul and plugged into a wall receptacle? Are the wires between the short haul MODEMS correct. *(See Figure 5B on Page 16.)*
	Open the WatchDog Enclosure and check to see that the green power light is on and that the red system light comes on within 3 minutes of applied power. *(See Figure 5A on Page 15.)*

This section lists the pertinent contact information to be used in the event the WatchDog Systems fails to operate properly. There are three (3) possible options for help.

Internet Provider

If the WatchDog system is not accessible via the Internet, please make sure the Internet Connection being used is viable. This can be done in a number of ways, but contacting the Internet Provide for assistance would probably be the best way to attack this problem.

Dealer

If you have an Internet based WatchDog and cannot connect to the WatchDog System over the Internet and you have already checked the connection with the Internet Provide, please contact your dealer for the next steps.

If you have a Direct Connected WatchDog System and you cannot access the system, once again contact your dealer for advice.

The following items need to be checked by the dealer, in addition to anything they might have already tested,

1. Make sure all connections from the Vision System, through the WatchDog System and even the connections made at the PC, if you have a Direct Connect System, are good.
2. If you have a Direct connect system, make sure the TX and RX lights are blinking on the short haul MODEMs. If not check the connections and possibly replace the MODEMs.
3. Make sure the software version of the Vision System matches that of the WatchDog System. The version numbers of both systems can be found by pressing the VIEW button and then the SYSTEM INFORMATION.

GSI Contact Information

If the Internet Provider and dealer have been unsuccessful in resolving the problem, then contact GSI at the following number,

217-226-5500

Example Cellular MODEM Setup

If you have received a Blue-Tree BT-6601 cellular MODEM and for whatever reason it is not setup properly the following steps should be followed to configure the MODEM for operation with the WatchDog System.

1. Supply power to the MODEM via the 4 pin connector. Connect a serial connection between the MODEM and the PC. You must have Blue-Tree software installed. This can be acquired at the following address: http://www.bluetreewireless.com/products/software/.
2. After performing *Step 1*, run the Blue-Tree software and the following screen should appear. *(See Figure 9A.)* Wait for the MODEM to be detected. This could take several minutes.

Figure 9A *Initial Blue-Tree Screen*

Once the MODEM is detected, the following screen shall be presented. The information may vary somewhat, depending upon configuration.

3. You must now allow the MODEM to be automatically provisioned for operation. Click on the ACT button and the following screen should appear. *(See Figure 9B.)* Click Carrier Provisioning. A dialog box will appear asking you to choose OTASP or mobile IP. Select OTASP and wait until provisioning is complete.

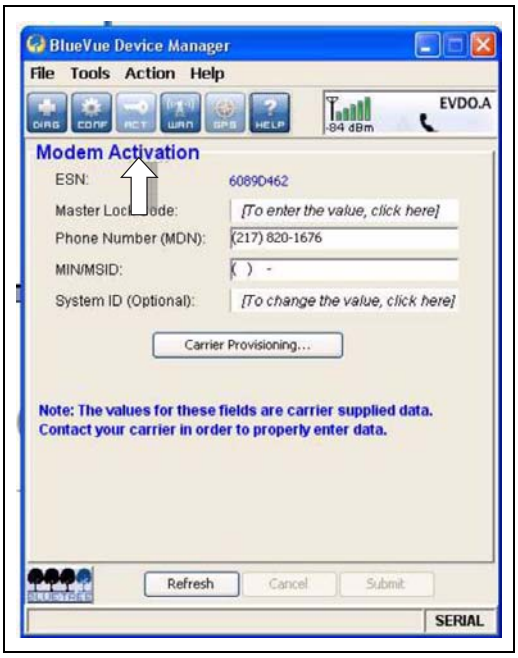


Figure 9B *Account Management*

4. Once the MODEM is provisioned, click on the CONF button, which should bring up the following screen. *(See Figure 9C.)* Make sure the screen is setup exactly like the one displayed below.

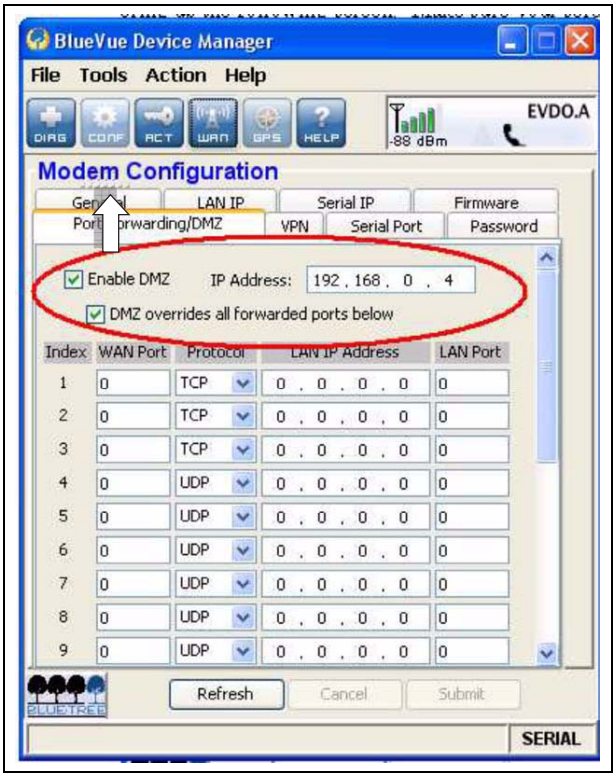


Figure 9C *Configuration Screen*

5. Click on the LAN IP tab and the following screen should appear. *(See Figure 9D.)* Make sure the checkbox for DHCP is checked and the Start IP and End IP addresses are as shown below.

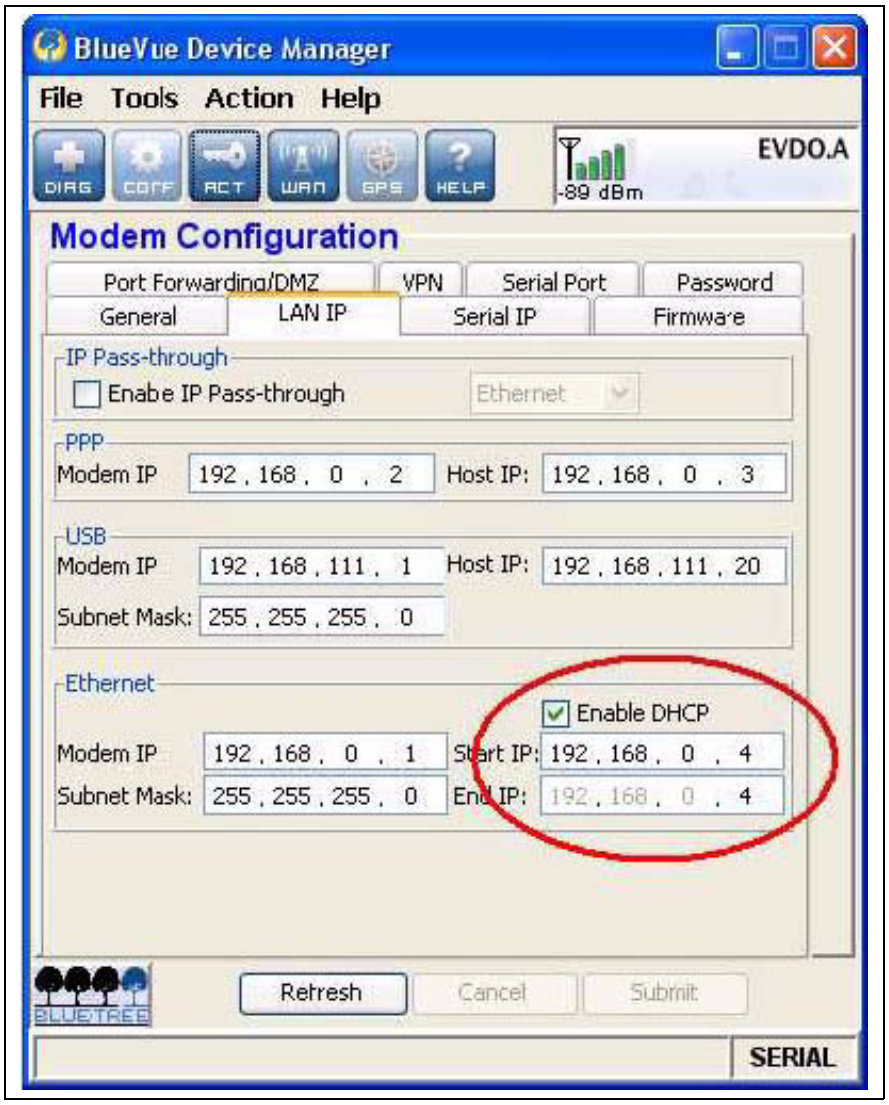


Figure 9D *Enter DHCP Address Range*

6. Now click DIAG button and the following screen should come up. If the WAN IP address is not shown or is not the static IP you received from the Cellular MODEM vendor, try cycling power. If this does not work, provision the MODEM once again. If it still does not work, contact the Cellular MODEM vendor.

   Before trying to operate the WatchDog System make sure you have signal strength as shown in *Figure 9E* (green bars). Try positioning the antenna to maximize the signal.

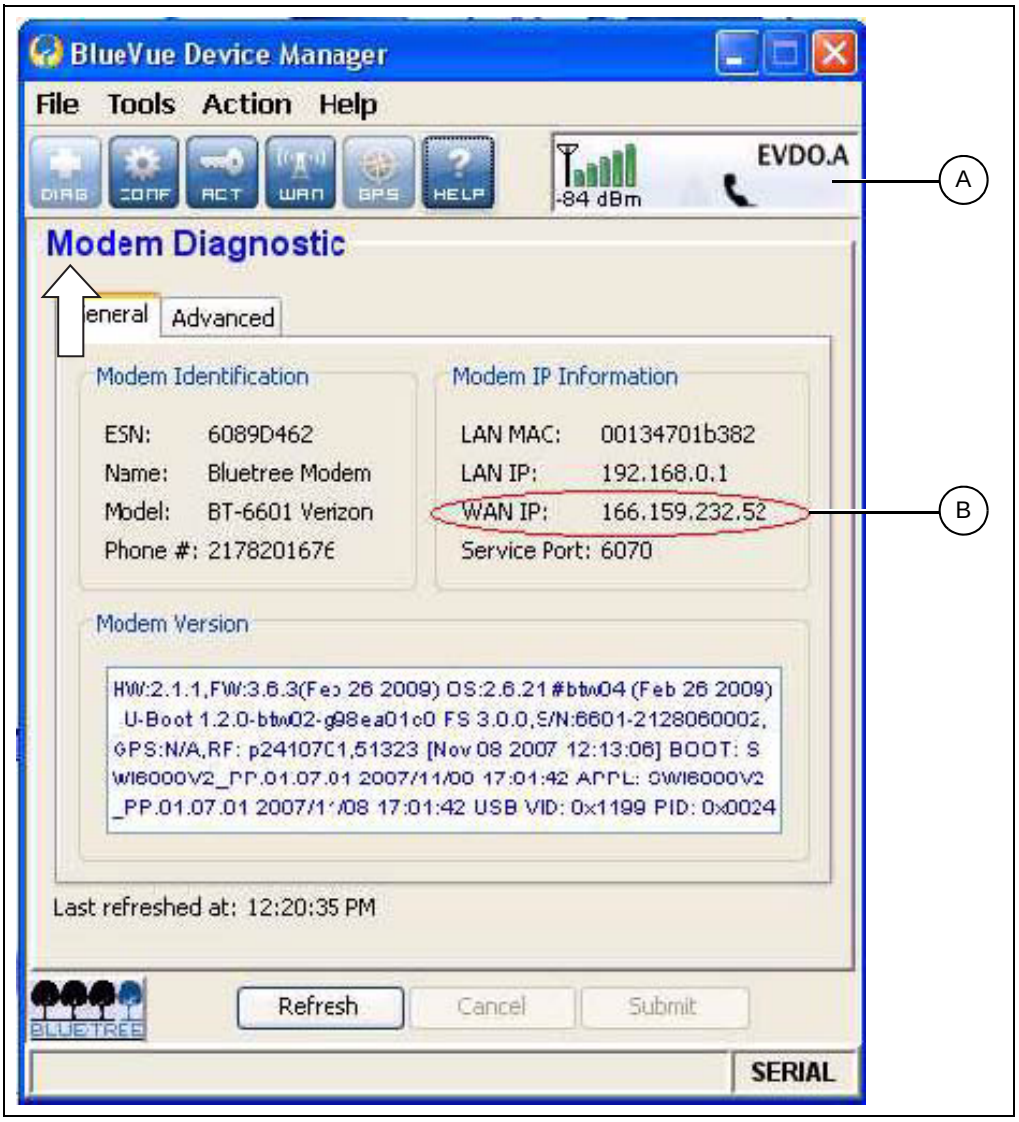


Figure 9E *Blue-Tree Device Manager Screen*

Ref #	Description
A	Signal Strength Meter
B	The static IP address should be listed here.

7. Once all cables are connected and the WatchDog installation is complete and power has been cycled, the system should be ready for use.

Connecting WatchDog Behind a Router

Introduction

This appendix briefly explains the process of putting the WatchDog board behind a router.

Locating the MAC address of the WatchDog

1. Turn the WatchDog board to where the components of the board are facing the ground and the rubber feet are facing the sky. There should be a white sticker on the board with the serial number on it, refer to *Figure 10A and Figure 10B*.

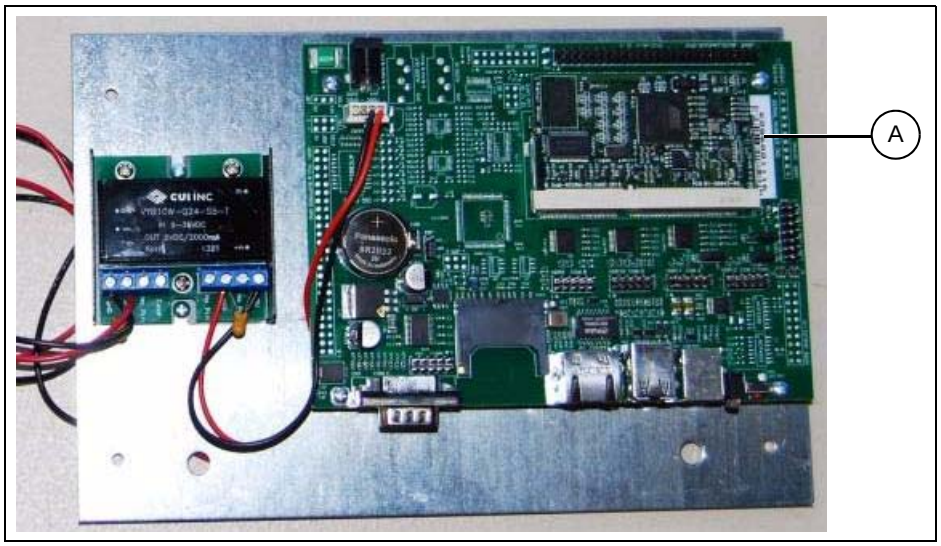


Figure 10A

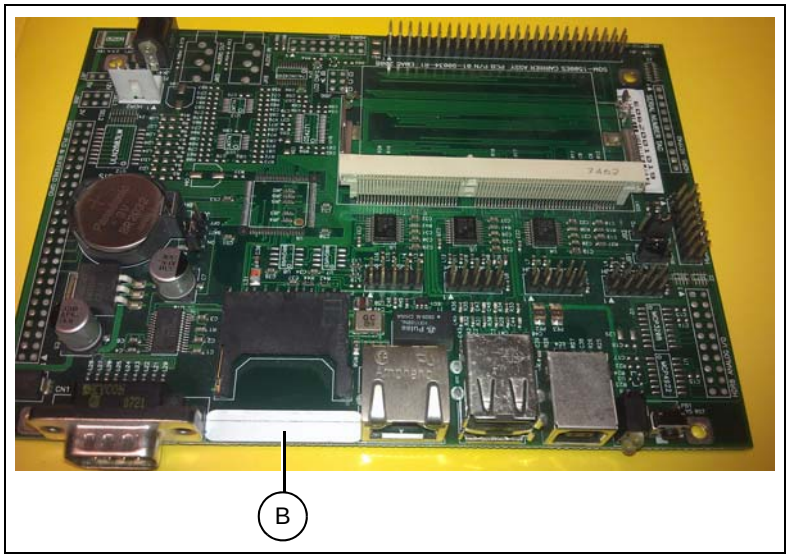


Figure 10B

Ref #	Description
A	Serial Number Tag
B	MAC address located - It is located in front of the SD card socket, between the serial DB9 port and Ethernet jack.

Reserving Addresses on the Router

Since the WatchDog board has DHCP Client capabilities, the easiest way to setup the board on the network is by setting reservations on the router. Setting a reservation on the router simply allocates a certain IP address to a specific MAC address when the device is introduced to the system.

A certain IP address should be reserved for the MAC address assigned for the board in the previous section. One thing to be cautious about when selecting the IP address is to make sure it is not in the range of IP addresses that the DHCP Server is allowed to serve. This could cause conflict if the DHCP Server has issued the selected IP before the WatchDog board is put in to the system.

Port Forwarding

Once a reservation has been setup on the router, we can now forward incoming request to the selected IP address. The router setup will have a screen for port forwarding and will generally have the following requirements to forward certain request.

1. Name of connection.
2. “Start” and “End” port. A range of ports can be covered.
3. It should be TCP, not UDP.
4. IP address to forward these request to.

The following ports should be ported:

Name	Start	End	TCP/UDP	IP Address
HTTP	80	80	TCP	NGW_IP
SSH	22	22	TCP	NGW_IP

NGW_IP should be replaced with the IP address that was selected in the reservation process.

Acquiring a Cellular MODEM/Static IP

The user will be responsible for contacting USAT Sales Organization to acquire a Cellular MODEM. Below is the contact information for acquiring a Blue-True cellular MODEM:

USAT Corp.
www.usatcorp.com
sales@usatcorp.com
Account Manager for GSI Clients: Paula Dessner
919-942-4214, Ext. 258

MODEM Part #: BT-6601

An antenna needs to be purchased also and one can be suggested by USAT, which will work with the MODEM.

The MODEM from USAT comes pre-configured to work with the WatchDog System. A static IP address will be provided along with the MODEM and this is the address that will be typed into the web browser's address bar to access the dryer connected to that particular MODEM. Power must be supplied to the MODEM and the Antenna connected before you can communicate with the Dryer.

If problems connecting are experienced, please contact Blue-Tree.

See Figure 11A for wiring connections.

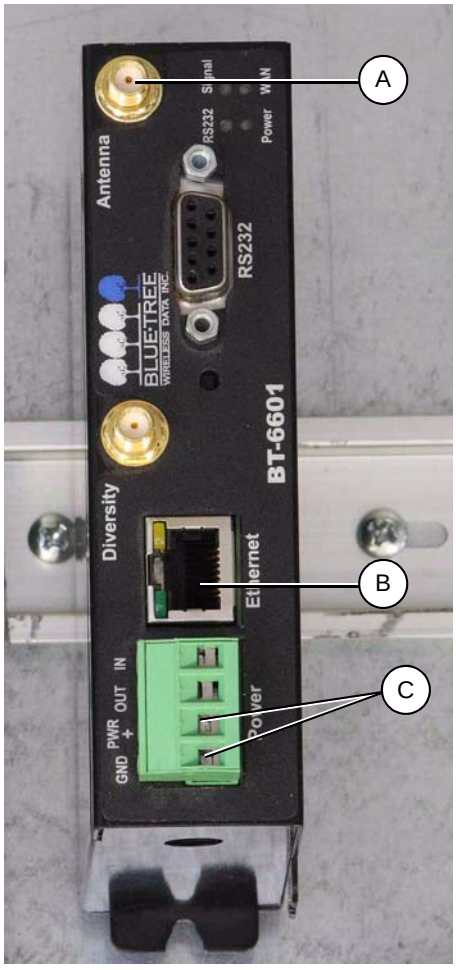


Figure 11A *Picture of Cellular MODEM*

Ref #	Description
A	Antenna Connection
B	Ethernet port that connects to WAN/LAN port on the WatchDog board.
C	12 VDC/0.5 Amp Power Input

DHCP Configuration (Factory Default)

Use this setup to allow a DHCP IP address to be assigned to the WatchDog. This is especially useful for setting up the WatchDog for the first time or for use with modems or routers that will not have any other devices attached.

Most routers have DHCP capability that will assign an IP address to any network devices that are attached to the router. While this may simplify configuration it may be prone to address conflicts with other devices or the IP address may change. *(See Figure 12A.)*

***NOTE:** *Having a jumper on the 6th set of pins for DHCP will give you the LED diagnostics feature whereas a jumper on the 8th set of pins does not.*

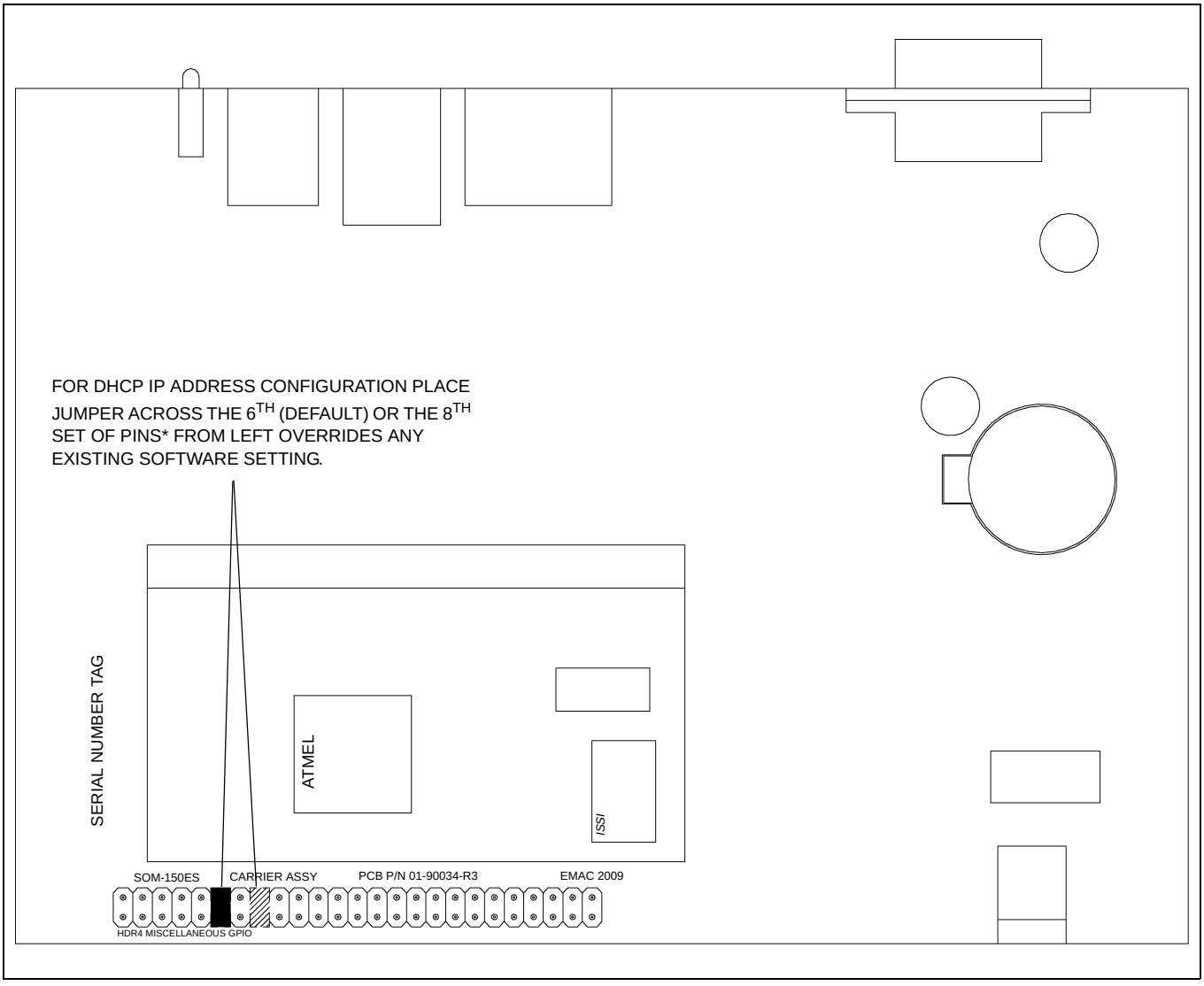


Figure 12A

Static IP Configuration

Use this setup to assign a static IP address in the software. This is useful for modems and routers that may have other devices and do not have MAC reservation capabilities.

You must assign an IP address in the WatchDog software that is compatible with the router or modem that is attached to the WatchDog board. For instance, if the router or modem has a default gateway address of 192.168.1.1 and a subnet mask of 255.255.255.0 then setup the static IP that begins with 192.168.1.x where x is between 2 and 255. Just be sure the IP address you assign does not conflict with another device that may be attached to the router or modem. *(See Figure 12B.)*

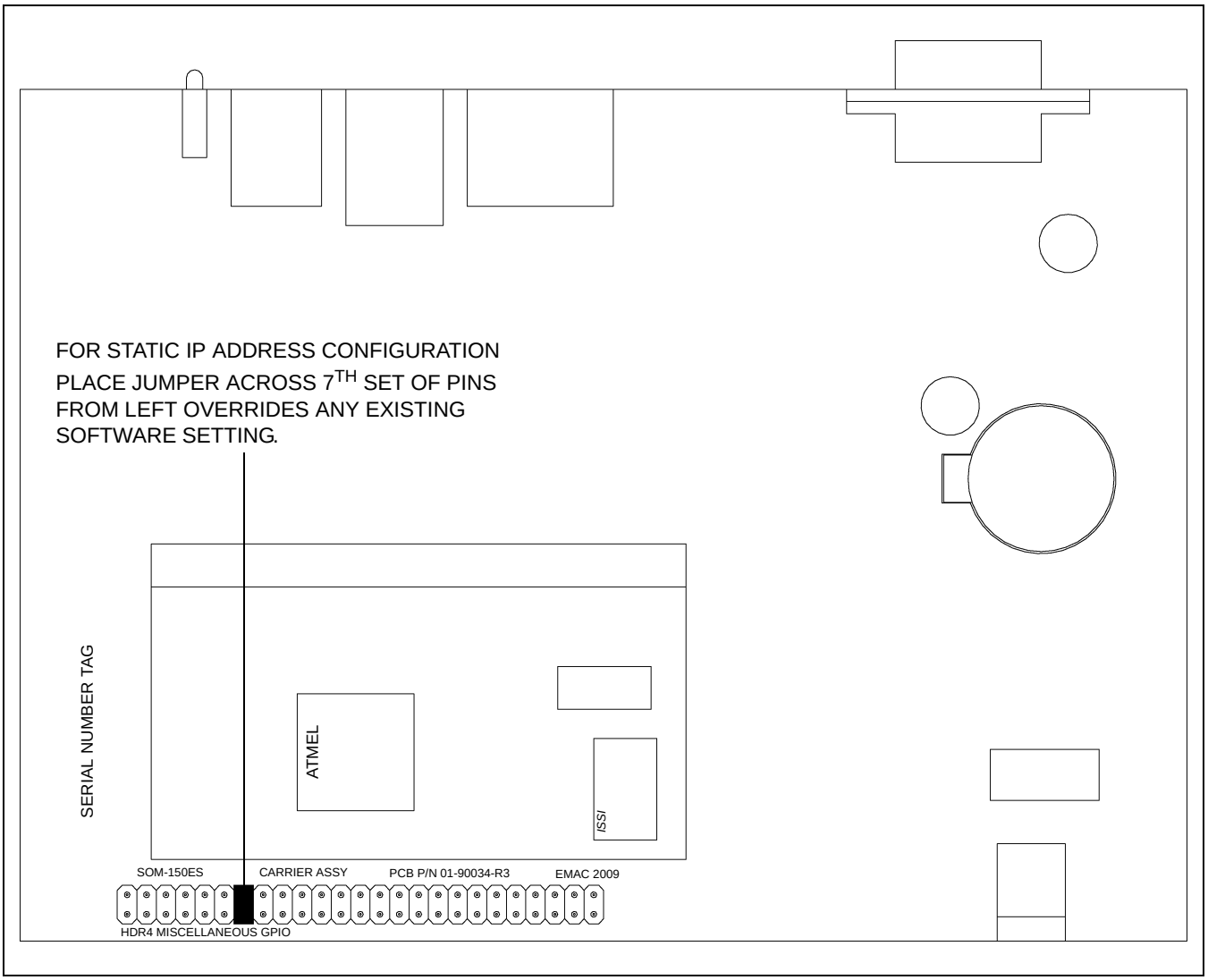


Figure 12B

Software Configuration

Use this setup to allow the WatchDog software to choose between using either STATIC or DHCP address configuration.

1. To setup as software configurable you will need to place the jumper to the static position. This will force WatchDog to have a static IP of 192.168.1.200.
2. Go to the setup page in WatchDog at http://192.168.1.200/setup/. For more information refer to pages 4 through 6 in the WatchDog manual PNEG-1720 for details.
3. After the software has been configured remove the jumper to a neutral location as shown in *Figure 12C*.
4. Cycle power ON the WatchDog.

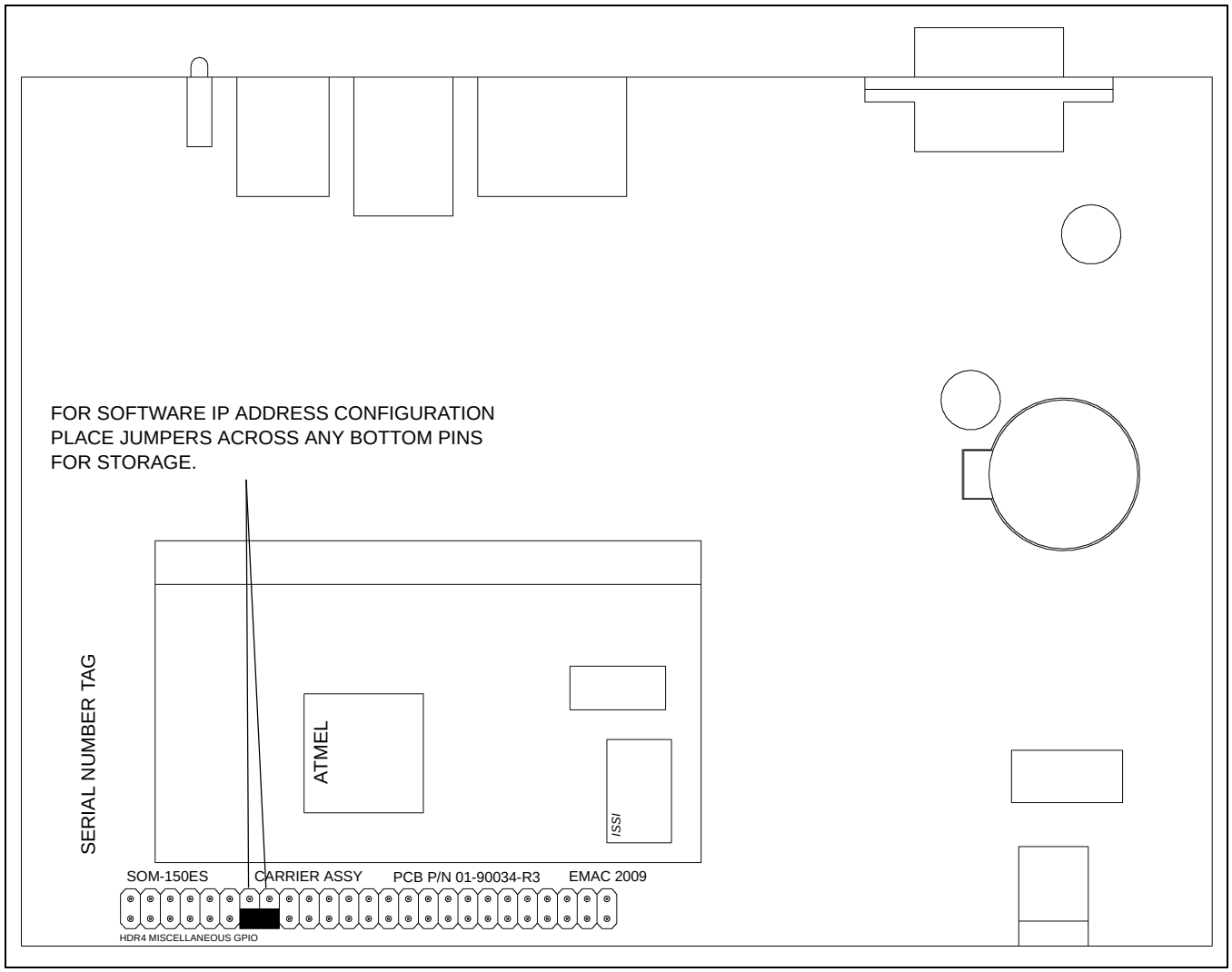


Figure 12C

Software License Agreement

This is a special version of WatchDog that can only be used and distributed for use with GSI grain drying equipment with touch screen controls. It cannot be re-distributed or posted online. This version is subject to the terms of the software license agreement between the manufacturer of the hardware and GSI Group.

Read the terms and conditions of this license agreement carefully before using or distributing WatchDogs software's documentation, software and additional materials (the "product"). The product is copy righted and licensed (not sold) to you and by installing, using or distributing the product, you are accepting and agreeing to the terms of this license agreement. If you are not willing to be bound 2by the terms of this license agreement, you should not install, use or distribute this product. This license agreement represents the entire agreement concerning the product between you and GSI Group and it supersedes any prior proposal, representation or understanding between the parties.

1. **USE OF THE PRODUCT**. You must not (a) defeat or try to defeat, messages displayed by the product; (b) modify or prepare derivative works of the product; (c) or reverse engineer, decompile or disassemble the product; (d) use any means that would cause this software to be used contrary to the license agreement between the manufacturer of the product it was bundled with.
2. **BACK-UP COPIES**. You may make copies of the product which are necessary for normal backup purposes only. You agree not to make any other copies of the software, the manual(s) or any part of them or sell or give any copies to others.
3. **LEGAL DISCLAIMER**. This software is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the quality and performance of the product is with you. Should the product prove defective, you assume the cost of all necessary servicing, repair or correction. In no event will GSI or any other party who may have distributed the product as permitted above, be liable to you for damages, including any general, special, incidental or consequential damages arising out of the use or inability to use the product (including but not limited to loss of data or data being rendered inaccurate or losses sustained by you or third parties or a failure of the product to operate with any other programs), even if such holder or other party has been advised of the possibility of such damages.
4. **GOVERNING LAW**. This License Agreement shall be construed and governed in accordance with the laws of the State of Illinois, USA.
5. **COSTS OF LITIGATION**. If any action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to any other relief granted, reasonable attorney fees and expenses of litigation.
6. **SEVERABLILITY**. Should any term of this License Agreement be declared void or un-enforceable by any court of competent jurisdiction, such declaration shall have no effect on the remaining terms hereof.

Limited Warranty — N.A. Grain Products

The GSI Group, LLC. (“GSI”) warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI’s sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

Warranty Enhancements: The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
Storage	Grain Bin Structural Design ▪ Sidewall, roof, doors, platforms and walkarounds ▪ Flooring (when installed using GSI specified floor support system for that floor) ▪ Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
Conditioning	Dryer Structural Design – (Tower, Portable and TopDry) ▪ Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: ▪ Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
Material Handling	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

Notice Procedure:
In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

Service Parts:
GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - N.A. Grain Products_ revised 01 October 2020)

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

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