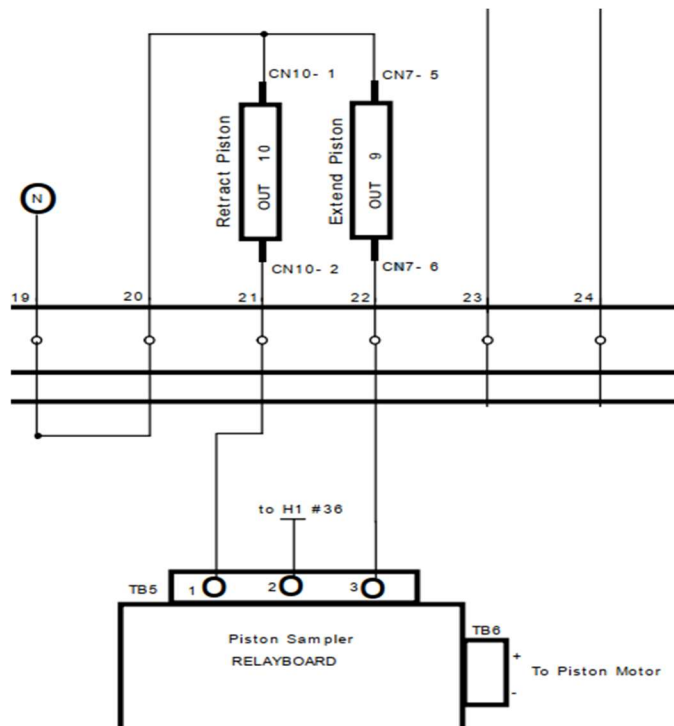




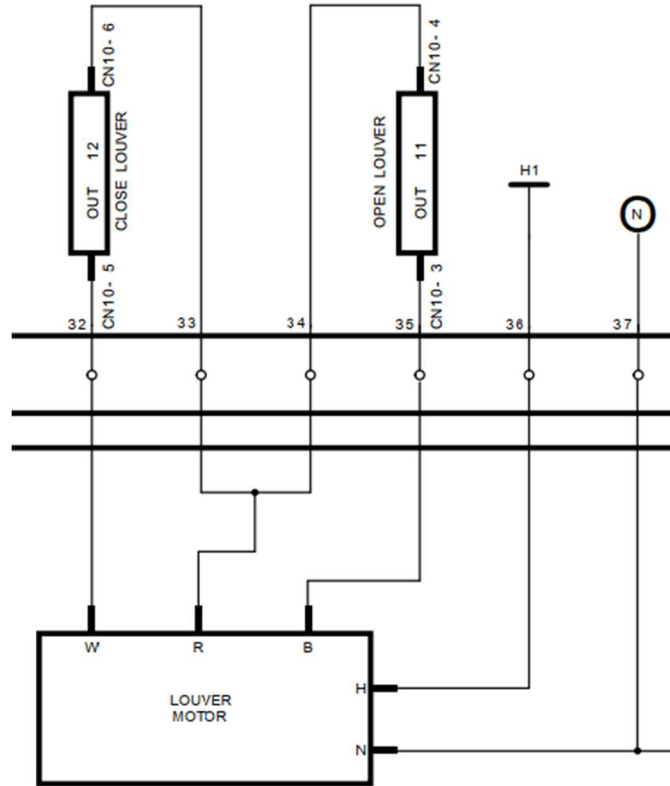
## Hardware Setup / Installation Instructions

### Red Board Installation

- 1) **SHUT OFF, LOCKOUT and TAGOUT all electrical power to the Dryer Control Panel.** Once this is done, open the Dryer Control panel and locate the green Slave Board. It is found in the lower left hand corner of the back plate.
- 2) Disconnect (unplug) the terminal block connectors at the bottom of the Slave Board (TB-A, TB-B and TB-C).
- 3) Disconnect (unplug) the 50 conductor ribbon cable (CN2) located on the right hand side of the Slave Board.
- 4) Disconnect the power connector (CN1) located in the upper left hand side of the Slave Board.
- 5) Remove all screws securing the Slave Board to the back plate, and remove the board from the panel.
- 6) Obtain the Red Board from the retrofit kit and install it in place of the Slave Board, using the removed screws. (Note: There will be one screw left over that will not be reused. Be careful not to slip with your screw driver and gouge the printed circuit board. The traces on the board are very small and can be easily damaged.)
- 7) Reconnect (Plug In) all of the terminal blocks, the ribbon cable and the power supply cable that were removed from the Slave Board.
- 8) Install Power Supply Load PCB assembly as per the Installation Instructions provided in the kit.
- 9) For Dryers that have a Piston Sampler assembly, the wiring for the Piston Sampler **MUST** be rewired to the I/O Carrier board as per the drawing below. **If this is not followed, damage to the Piston Sampler and/or the I/O Carrier Board may occur.**



10) For Dryers with an automatic Louver control, the Mod Motor connections for this option **MUST** be wired to the I/O Carrier Board as per the drawing below.



11) After double checking all connections, you may proceed to the next step.

**Moisture Sensor Installation**

1) Remove and replace both the inlet (Wet) and Outlet (Dry) Moisture Sensors with the Moisture Sensors supplied in the retrofit kit. If replacing a Spectrum unit, run Moisture Sensor cabling and install the Moisture Sensors as if it were a Quantum system.

**Red Box Control Unit-----Replacing a Quantum Monitor**

- 1) Disconnect the AC power cord and the RS485 Communications Cable from the Quantum Monitor and remove the Quantum Monitor.
- 2) Install the new "Red Box Controller" in place of the Quantum Monitor, and connect the RS485 Communications Cable to the Red and Black banana jacks located on the side of the unit. Red is the + side of the cable connection and Black is the negative side of the cable. (Normally, the Black wire of the Comm cable is the (+) and the White wire is the (-) polarity).
- 3) Connect the power supply for the Red Box by inserting the power supply connector into the jack on the side of Red Box located on the opposite side of the box from the Banana Jacks.
- 4) Plug in the AC power cord to the power supply.
- 5) The Red LED on the Red Box should now illuminate.
- 6) The Green "Ready" LED on the Red Box will begin Blinking when the system has booted up and is ready for operation. (It usually takes about 90 seconds after power is applied).

- 7) After triple checking all connections, you may re-apply power to the Dryer Control Panel.
- 8) If all connections are correct, there will be a RED LED illuminated next to the word "Wired" on the Red Board and the I/O Carrier board will have the "Spare" LED blinking as well. When the Red Box begins communicating with the Red Board in the Dryer Control Panel, the "Close #1 Mod Valve, "Close Louvers" and "Piston Extend" (which may be labeled "Close #2 Mod Valve") will begin to cycle through their routine. If these 3 outputs on the I/O Carrier board do not come on, it is possible the RS485 wires need to be reversed on the Red Box.
- 9) Once everything checks out, you may now close the door on the Dryer Control Panel and proceed to the final step of setting up the display unit.

### **Red Box Control Unit-----Replacing a Spectrum Controller**

- 1) Open the Dryer Control panel and remove the Weather Shield located on the back side of the inner door which covers the Spectrum Printed circuit board.
- 2) Disconnect the plug-in connector located on the lower left hand corner of the Spectrum Board.
- 3) Since the Spectrum unit will no longer be used after the installation of the RED BOARD SYSTEM, complete removal of the Spectrum assembly from the inner door is optional.
- 4) The wiring associated with the connector on the Spectrum Circuit board (4 conductors) should be separated from the other wiring and completely disconnected from their termination point on the terminal blocks TB-B and TB-A located on the newly installed RED BOARD. Since these wires will no longer be used, you may discard these wires.
- 5) Locate a suitable weather resistant area inside a building or shack for installation of the Red Box Controller, that is within 1000 feet of the Dryer Control Panel. Install an approved RS485 Communications cable (2 conductor with shield --**Belden Wire #8760** or equivalent) from the Dryer panel to this weather resistant location. Terminate the cable as follows within the Dryer Control panel:

Black wire to pin16 of terminal Block TB-B  
White wire to Pin 15 of TB-B  
Shield Drain wire to Grounding lug on Control Back Plate

This communications cable should be run in conduit with **NO OTHER WIRING** in the same conduit.

- 6) Place the new "Red Box Controller" in the weather resistant location and connect the RS485 Communications Cable to the Red and Black banana jacks located on the side of the unit. The Black wire of the Communications cable is the (+) and connects to the RED banana jack and the White wire is the (-) and connects to the Black banana jack.
- 7) Connect the power supply for the Red Box by inserting the power supply connector into the jack on the side of Red Box located on the opposite side of the box from the Banana Jacks.
- 8) Plug in the AC power cord to the power supply.
- 9) The Red LED on the Red Box should now illuminate.
- 10) The Green "Ready" LED on the Red Box will begin Blinking when the system has booted up and is ready for operation. (It usually takes about 90 seconds after power is applied).
- 11) After triple checking all connections, you may re-apply power to the Dryer Control Panel.
- 12) If all connections are correct, there will be a RED LED illuminated next to the word "Wired" on the Red Board and the I/O Carrier board will have the "Spare" LED blinking as well. When the Red Box begins communicating

with the Red Board in the Dryer Control Panel, the "Close #1 Mod Valve", "Close Louvers" and "Piston Extend" (which may be labeled "Close #2 Mod Valve") will begin to cycle through their routine. If these 3 outputs on the I/O Carrier board do not come on, it is possible that the RS485 wires need to be reversed on the Red Box.

13) Once everything checks out, you may now close the door on the Dryer Control Panel and proceed to the final step of setting up the display unit.

### **Display Unit--(Handheld Wireless Control)**

1) After the Tablet has been charged (or is powered up via the power supply), follow the setup instructions that are included with it.

2) Once the Tablet (Also known as the **G**raphical **U**ser **I**nterface, or **GUI**) is connected to the Red Box via WiFi, the control system must be set up for the dryer it is controlling. To do this, one must access the "Dryer Config" menu located at the top of the screen.

3) The "Dryer Config" menu will be grayed out or inaccessible until the following procedure is performed:

Tap the red Moisture percentage readout area of the screen 5 times, within 5 seconds, and the "Dryer Config" menu will become accessible (not grayed out)

4) Now, configure all options and settings for the dryer being controlled.

5) Start and run dryer as per the manufacturer's recommendations. Time Settings for the "Extend" and "Retract" for the Piston Sampler need to be verified and adjusted in necessary. These settings are located in the "Piston Sampler" menu which is under the main "Dryer Config" menu.

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