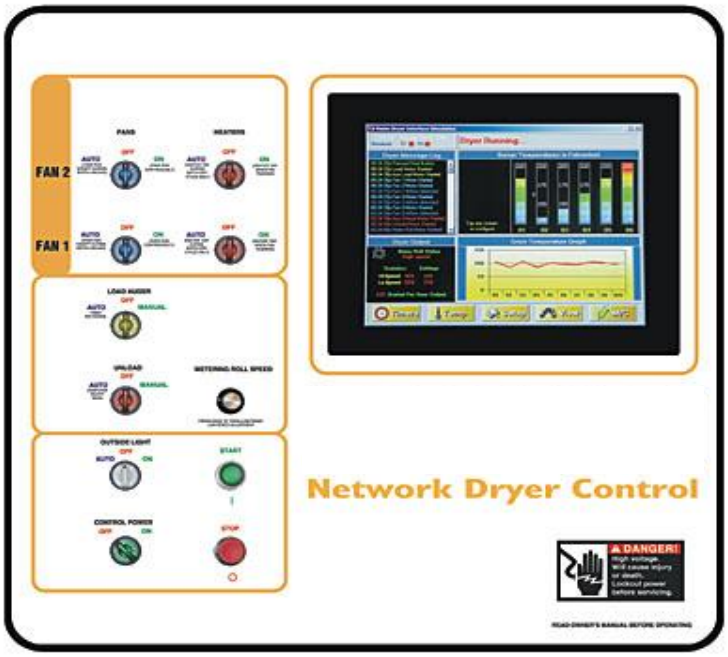
Portable Dryer Touch Screen Controls



Troubleshooting and Reference Manual

2006 Edition
PNEG-1509

a division of
THE GSI GROUP

PNEG-1509
Date: 3-31-2006

PNEG-1509

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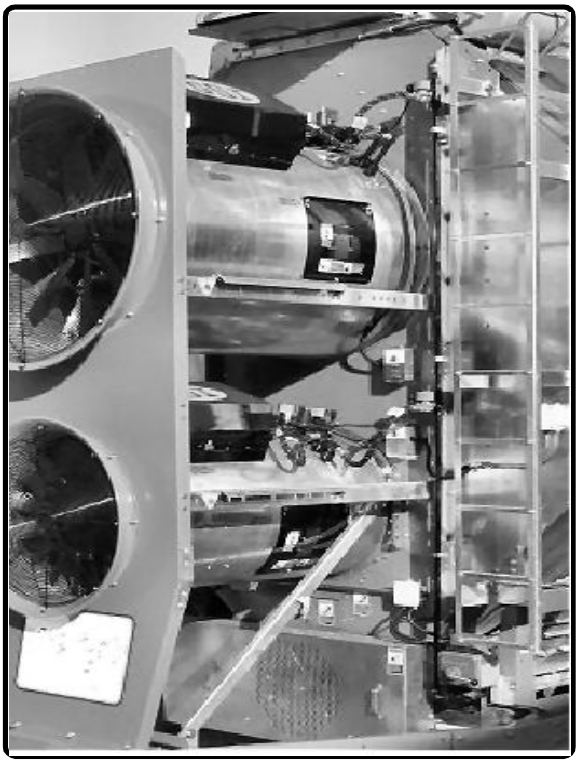
DRYER SAFETY & DRYER INFORMATION

Thank you for choosing a Touch Screen Network Grain Dryer. It is designed to provide excellent performance and service for many years.

This manual refers to the troubleshooting of the Touch Screen Network Dryer models. Different models are available for liquid propane or natural gas fuel supply, with either single phase 230 volt, or three phase 230, 460, 575 volt electrical power. (Also 380 volt 50Hz).

The GSI Group, Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with your system and adequate power is supplied.



The principal concern of the GSI Group, Inc. is your safety and the safety of others associated with grain drying equipment. This manual is written to help you recognize safe operating, troubleshooting procedures and some of the problems that maybe encountered by the operator or other personnel. This manual is not a subsitute for your owners manual. Please read your owners manual in detail to help you better understand the operation of your dryer.

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 who are in the dryer area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

WARNING! BE ALERT!
Personnel operating, working or servicing portable dryers should read the owners manual. Failure to read the manual and its safety instructions is a misuse of the equipment.

Safety Alert Symbol

The symbol shown is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions. It means **"ATTENTION"**, **"WARNING"**, **"CAUTION"**, and **"DANGER"**. Read the message and be cautious to the possibility of personal injury or death.

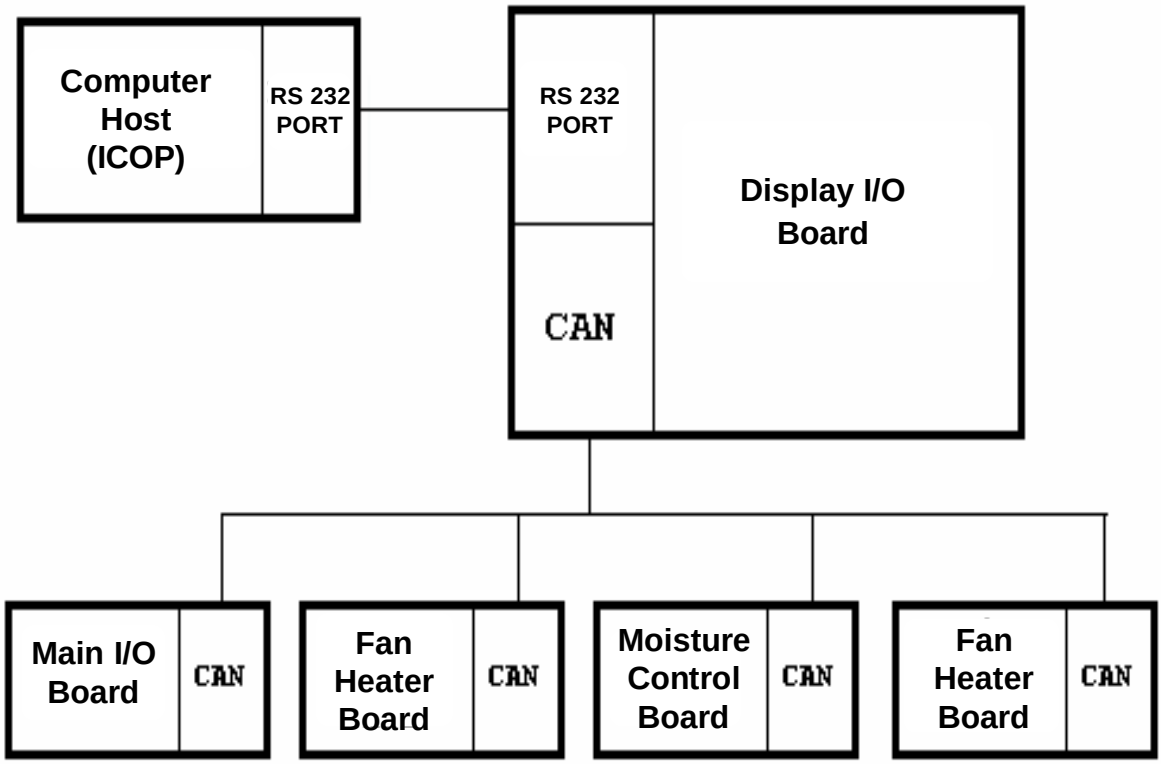
SPECIAL TOUCH SCREEN SETUP SCREENS

Accessing various screens will enable you to make changes on how the dryer operates. Some of the features rarely need to be changed once the dryer has been setup. Most of the special screens are under the setup button on the main touch screen. By touching the setup button, a screen will appear with more buttons. As you read this manual you will see that there are more places to access more features and information by using the touch screen. Here are some examples below:

Burner Mode..... On/Off or Hi/Low
Burner Differential.....Adjustable from 1 Degree to 5 Degrees
Set Time & Date.....Time & Date
Adjustable Grain Hi-Limit....Low Temp Grain Applications
Dryer Model.....Must Setup Correctly for the Dryer to Run Properly
Dryer Mode.....Continuous Flow or Batch
Temperature Scale.....Fahrenheit or Celsius
Meter Roll Reverse.....55 Minutes & 5 Minutes Reverse
Diagnostics..... Air Switch (Enable or Disable for Testing Dryer)
Check Display I/O Switch Outputs
Check Display I/O Switch Light Outputs
Data Logger Setup..... Ability to Log Shutdown History
Grain Moisture & Temp

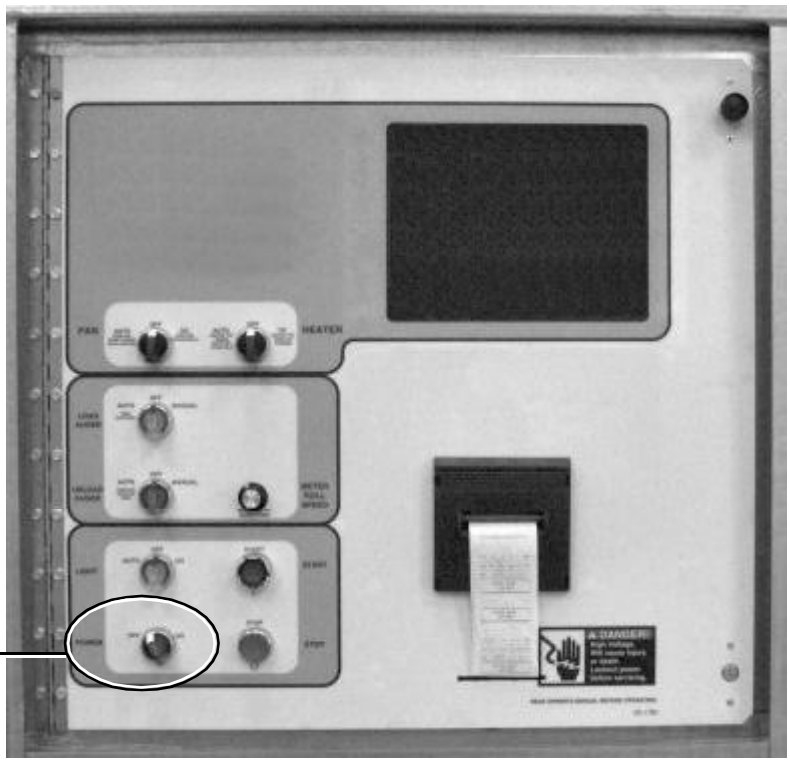
DRYER NETWORK LAYOUT

The bootloader master node (Display I/O) connects to a CPU host (ICOP) via an RS232 serial connection to receive instructions and flash program data. The master node (Display I/O) then consumes these commands and data itself, or passes them on to the pertinent slave nodes. A typical layout of the Dryer network is presented below. The network may be maximally expanded to include 1 Host (ICOP), 1 Display I/O, 1 Main I/O, 1 Moisture Control and up to 6 Fan / Heaters interfaces. Each one of these nodes will require updates to be delivered by Dryer bootloader.



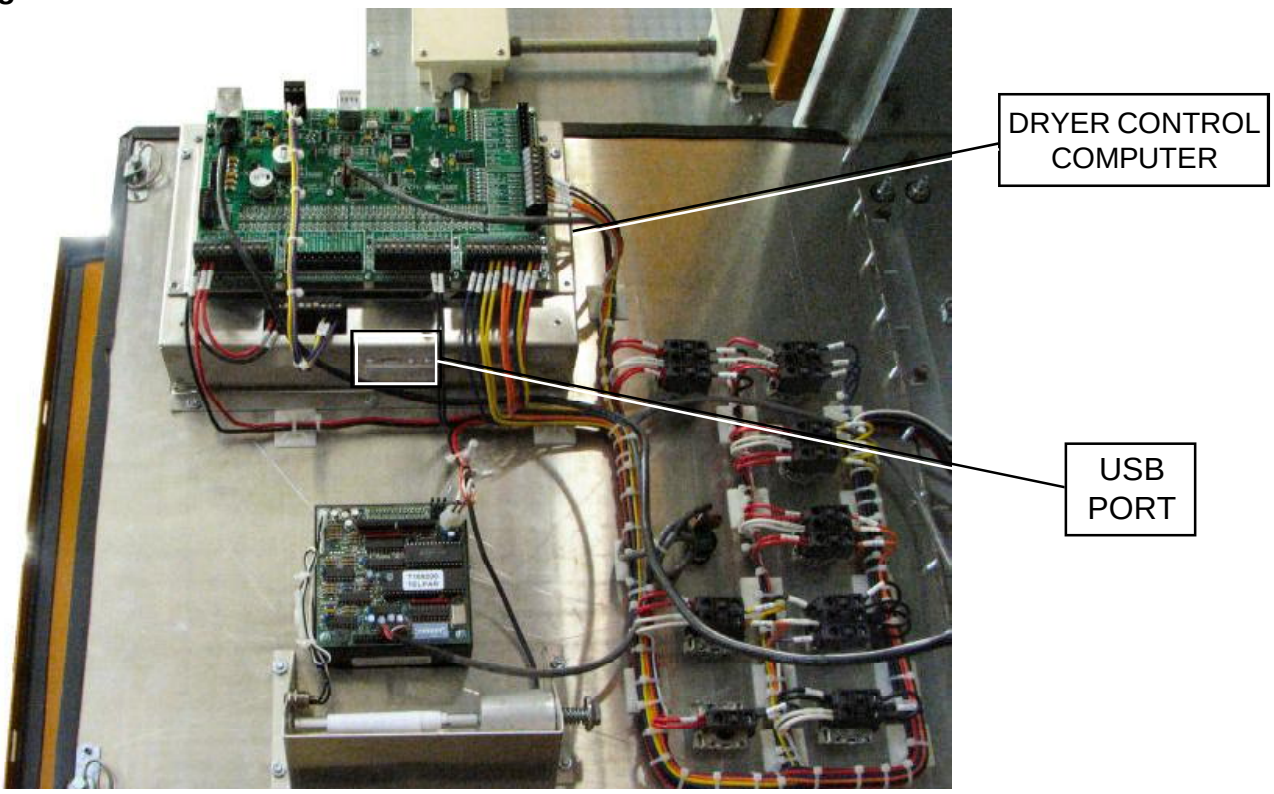
PROGRAMMING INSTRUCTIONS

Figure 1: Control Panel



1.) Turn off the control power. (see figure 1).

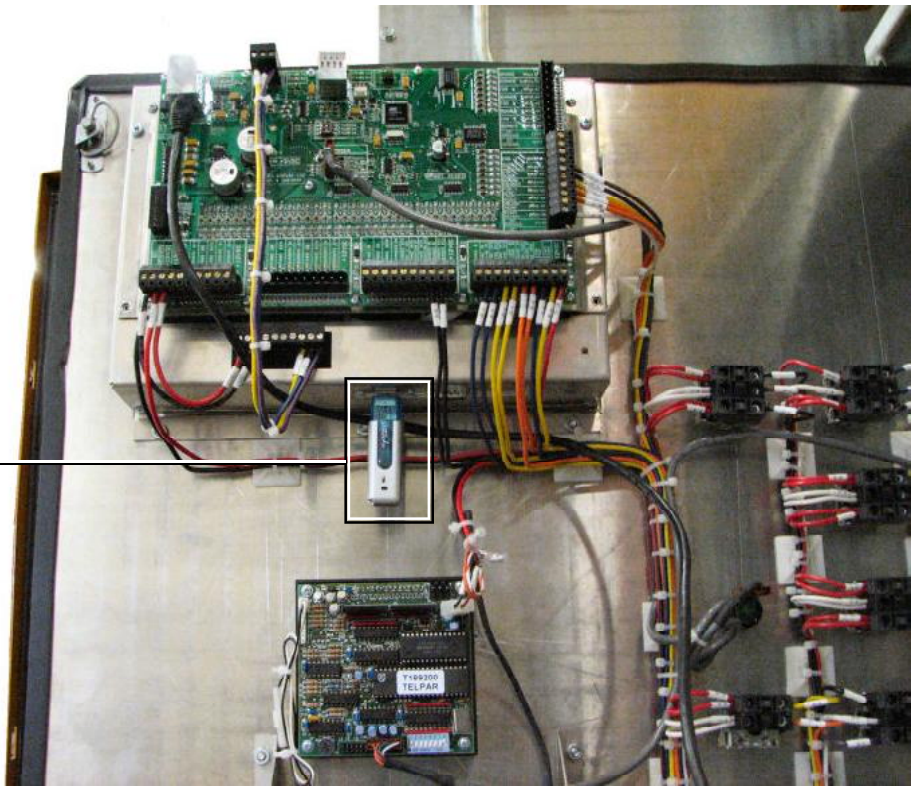
Figure 2: USB Port Location



2.) Locate the USB port on the bottom of the Dryer Control Computer (see figure 2). The Dryer Control Computer is on the back side of the dryer control panel.

PROGRAMMING INSTRUCTIONS

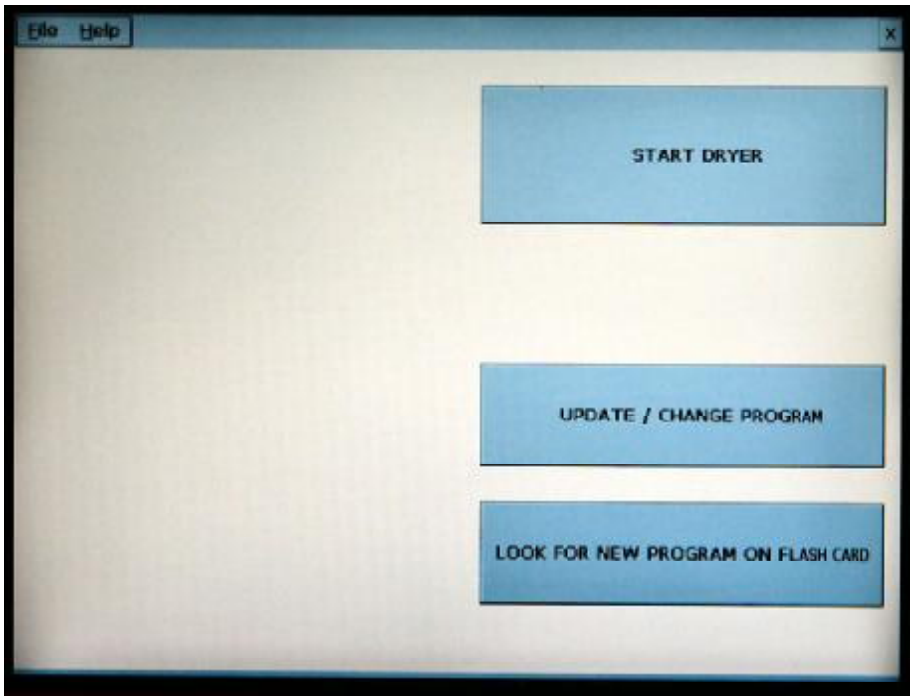
Figure 3: USB Flash Drive inserted in USB port



3.) Insert USB flash drive into USB (see figure 3).

4.) Turn on the dryer control power. (see figure 1). The dryer control computer will start.

Figure 4: Boot Screen



5.) When the boot screen appears touch the **Look For New Program on Flash Card** button.
NOTE: Touching the **Update / Change Program** button will allow you to change to a different program that is already on the computer hard drive.

PROGRAMMING INSTRUCTIONS

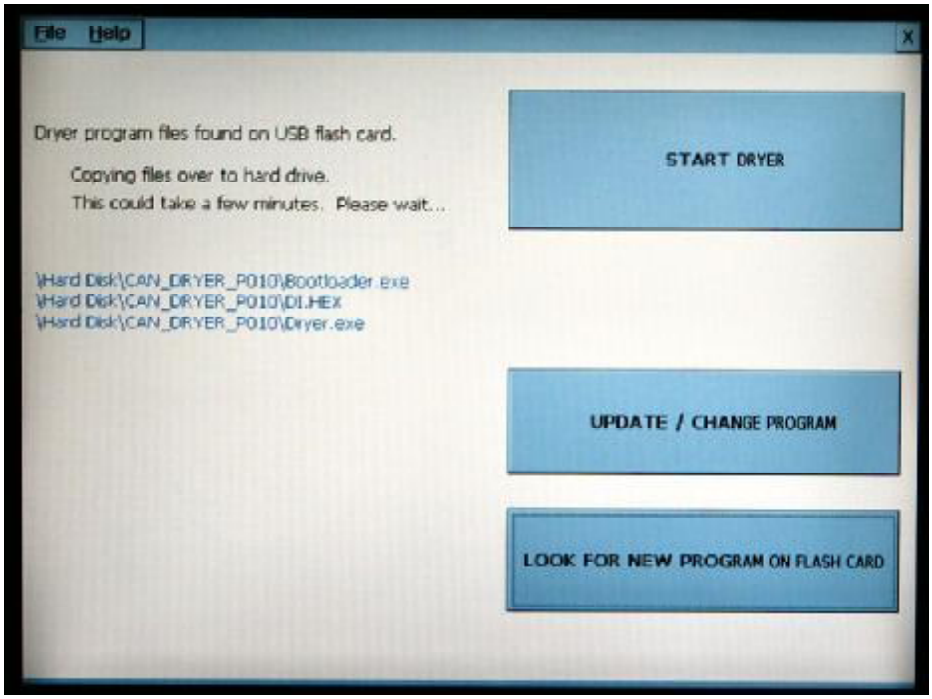
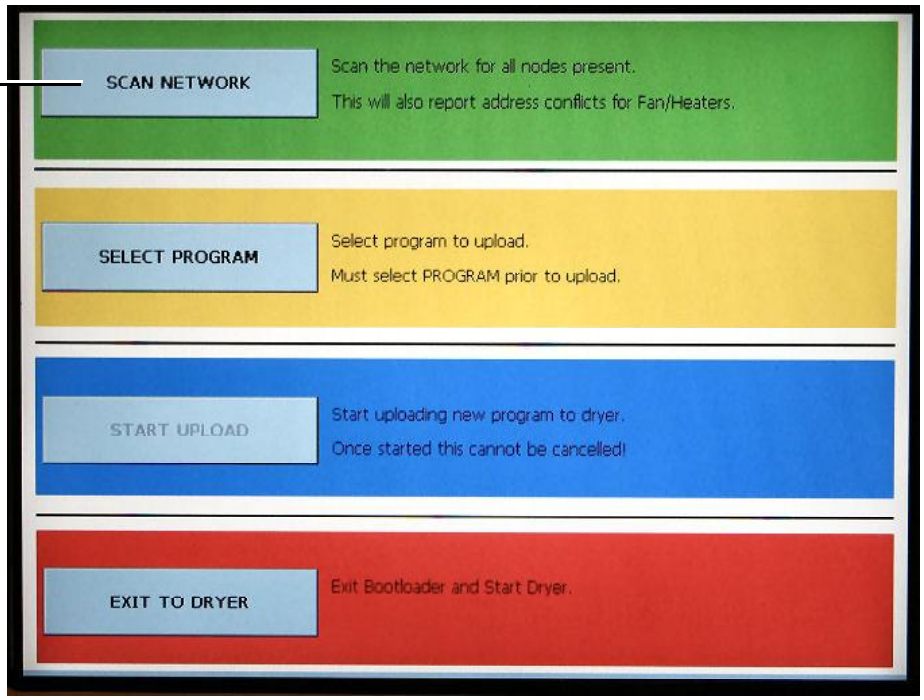


Figure 5: Copying files from USB flash drive to dryer control computer

6.) The display will now confirm that proram files were found on USB flash drive and that they are being copied to the dryer control computer hard drive.

Fig. 6: Scan Network

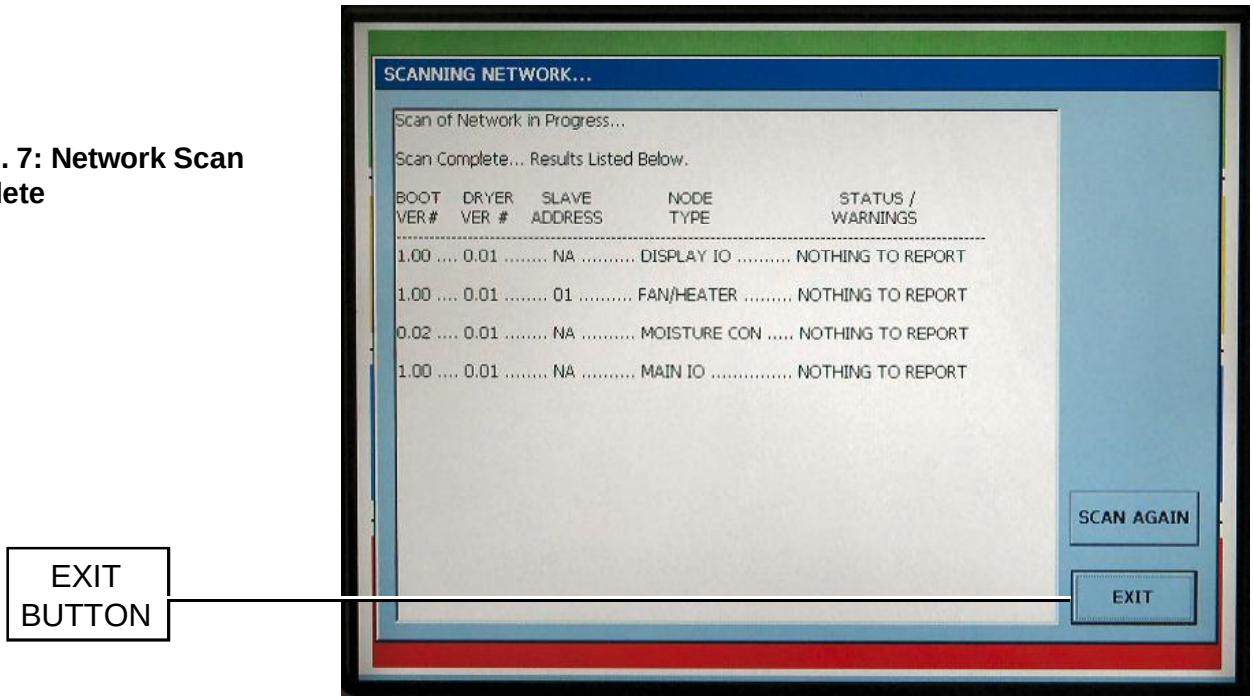
SCAN NETWORK BUTTON



7.) After the program files are transfered, the Boot loader screen will appear. Begin by touching the **Scan Network** button. This scan will check your dryer to make sure all parts of the control system are communicating correctly.

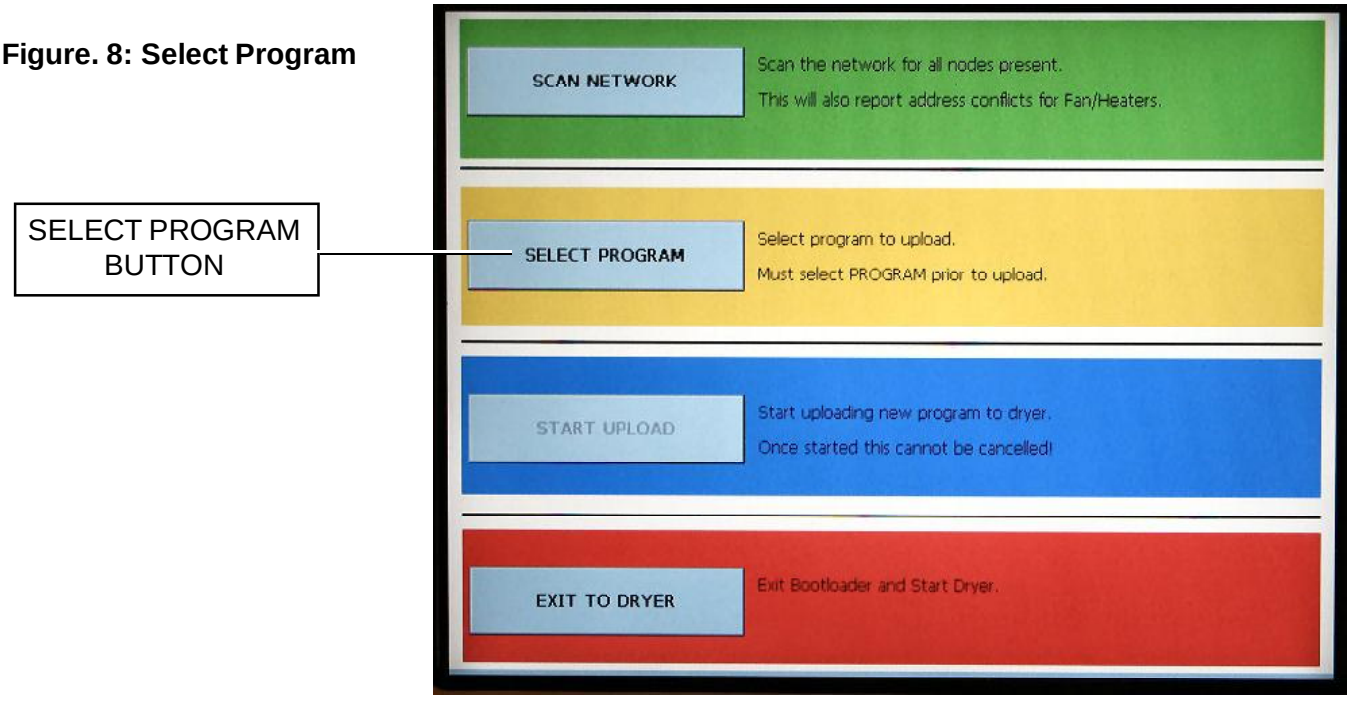
PROGRAMMING INSTRUCTIONS

Figure. 7: Network Scan Complete



8.) After the scan is complete the Display I/O, Main I/O, Moisture Control, and the Fan/Heater(s) should be shown as Nothing To Report (see figure 7). Touch the **Exit** button.

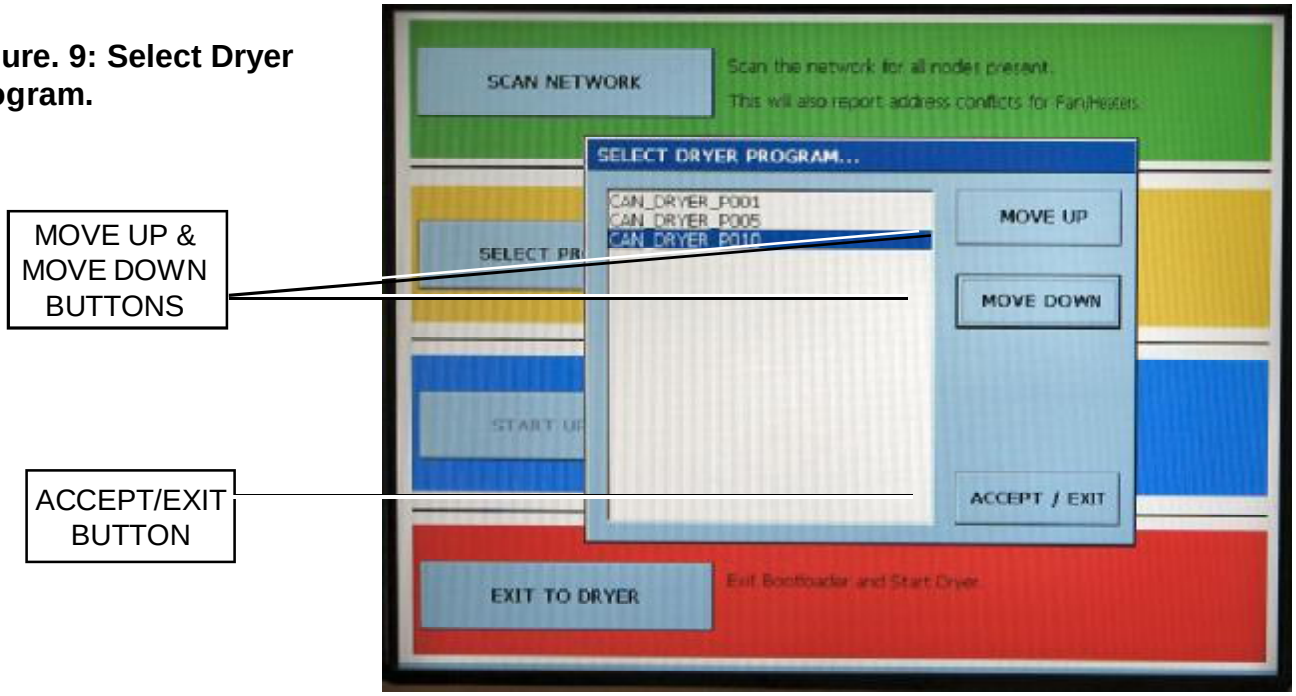
Figure. 8: Select Program



9.) Touch the **Select Program** button.

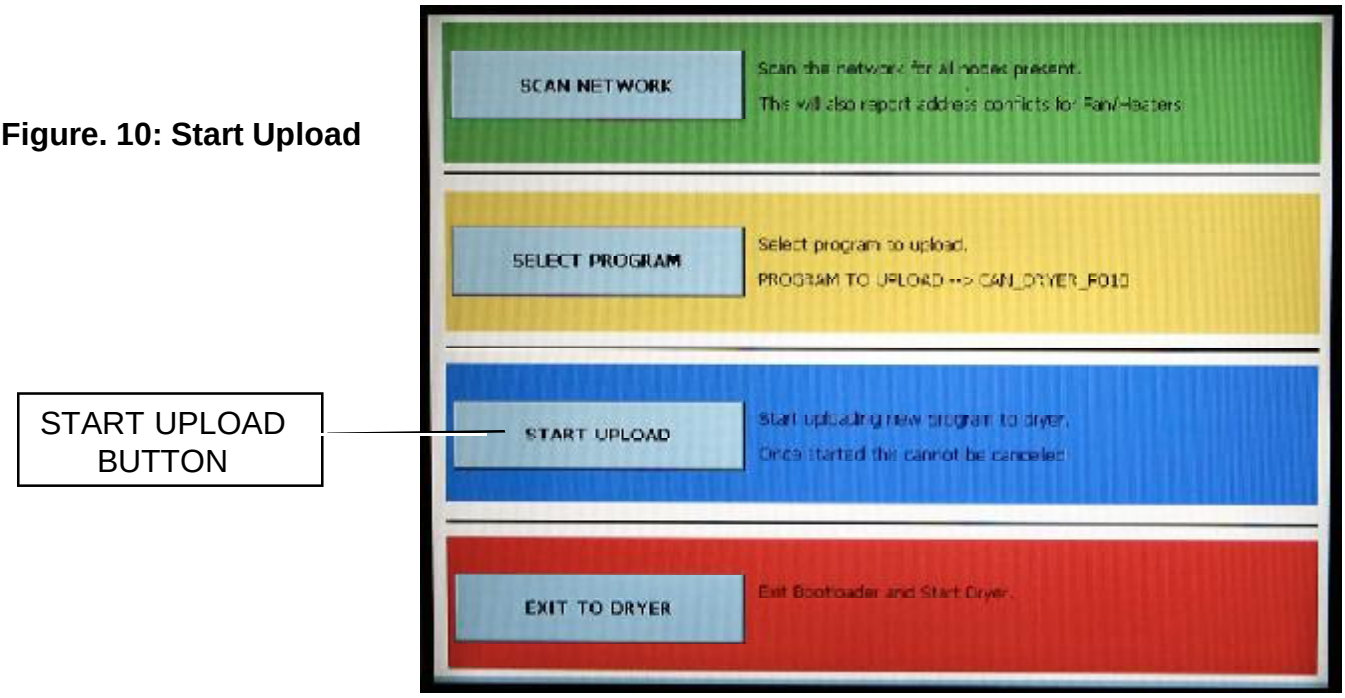
PROGRAMMING INSTRUCTIONS

Figure. 9: Select Dryer Program.



10.) Select the program file you want to upload by touching the **Move Up** and **Move Down** buttons until the desired program file is highlighted. Touch the **Accept / Exit** button.

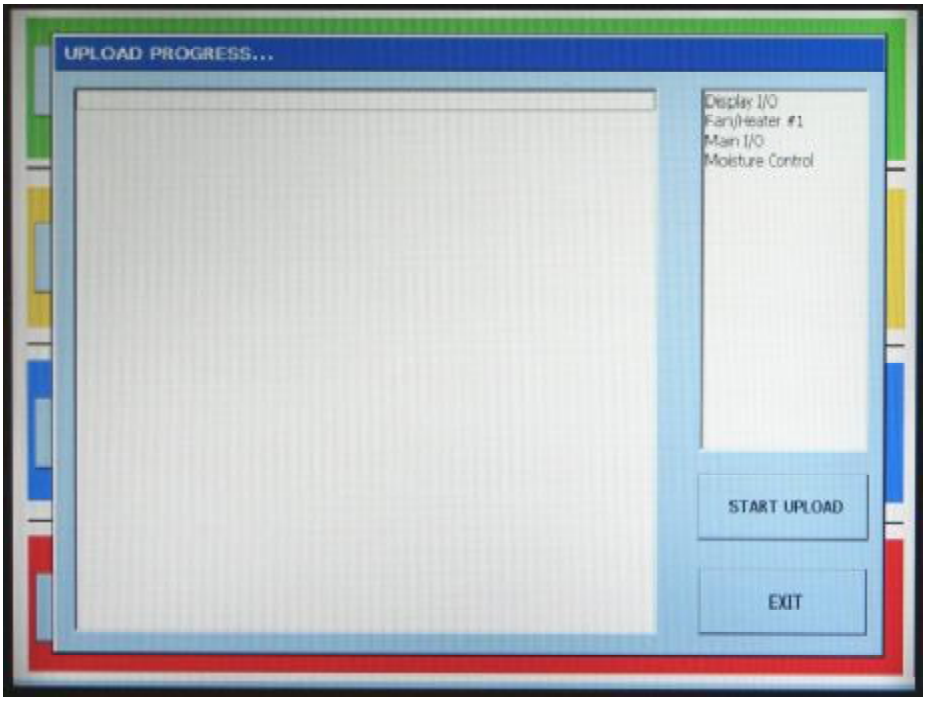
Figure. 10: Start Upload



11.) Touch the **Start Upload** button.

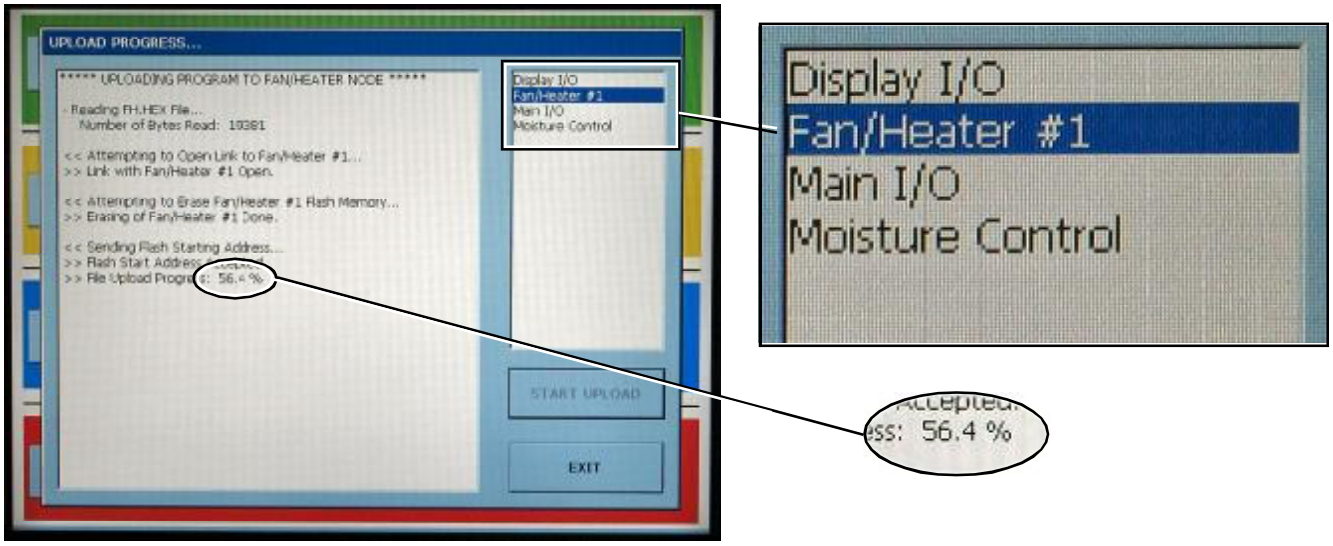
PROGRAMMING INSTRUCTIONS

Figure. 11: Start Upload



12.) When the Upload Progress screen appears touch the **Start Upload** button.

Figure. 12: Upload Progress

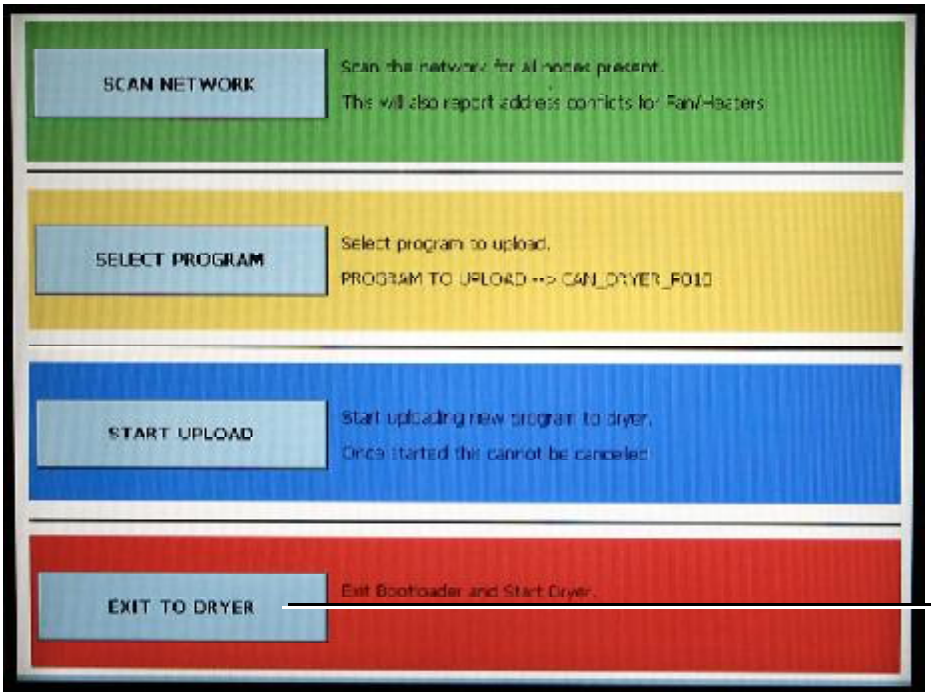


13.) The computer will now begin programming each of the network circuit boards on the dryer. The box on the right of the screens lists the network circuit boards detected in the scan. Each circuit board listed will have to be reprogrammed, so this may take a few minutes. File upload progress for circuit board that is highlighted is displayed in the box above (see figure 12).

When this step is complete the bootloader screen will reappear.

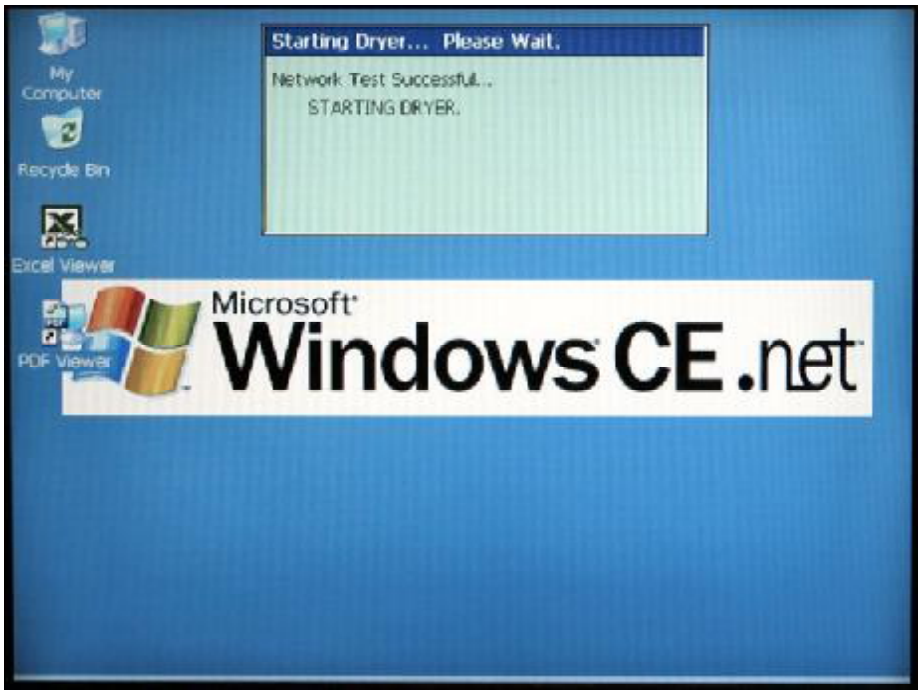
PROGRAMMING INSTRUCTIONS

Figure. 13: Exit to Dryer



14.) The program upload procedure was successful. Touch the **Exit To Dryer** button to exit bootloader and start the dryer.

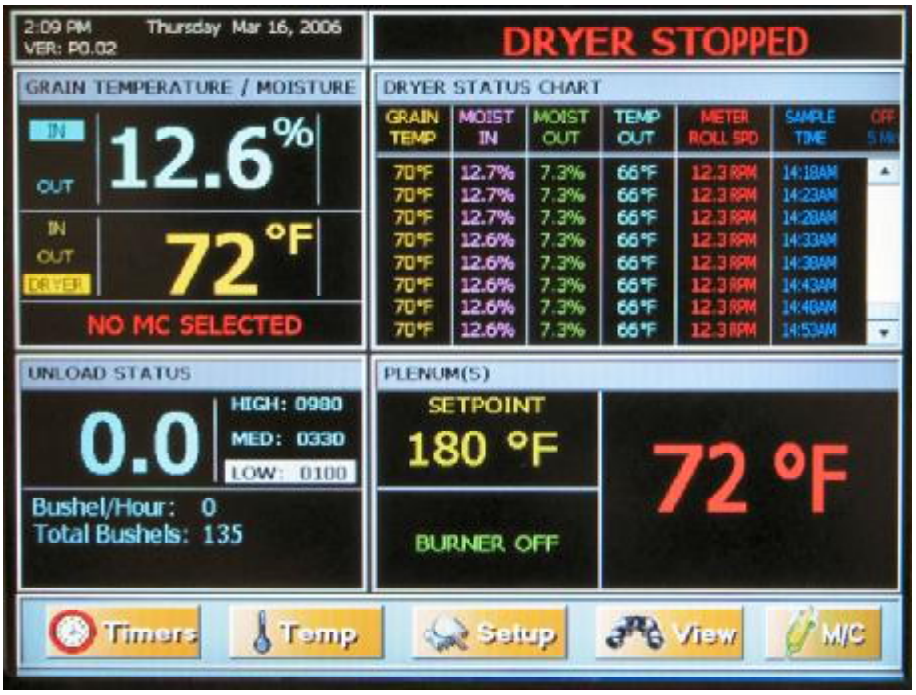
Figure. 13: Starting Dryer



15.) The dryer will begin running the program that was just installed.

PROGRAMMING INSTRUCTIONS

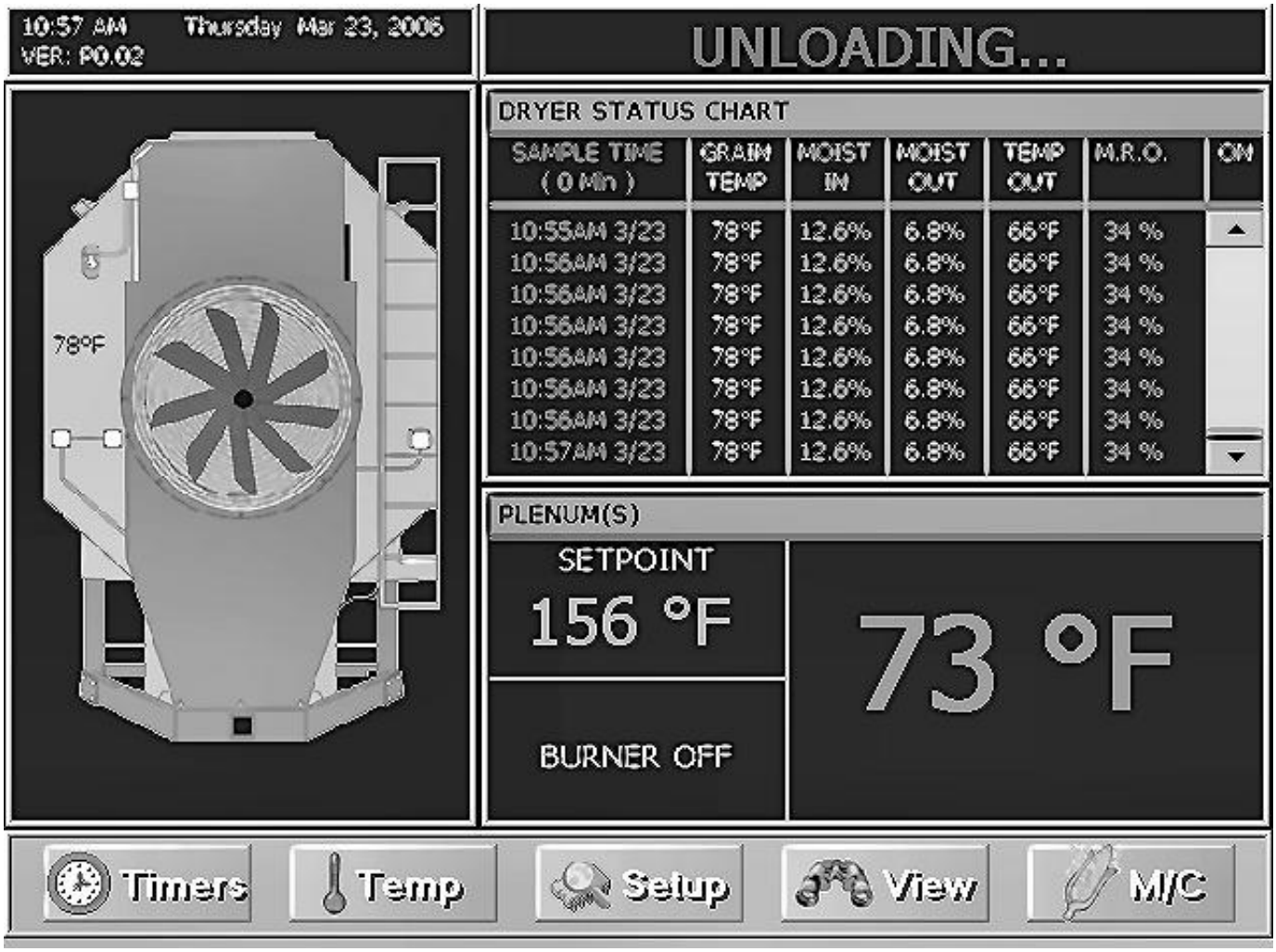
Figure. 14: Program Upload Complete



16.) The dryer control is now ready to operate the dryer.

FRONT TOUCH SCREEN DISPLAY

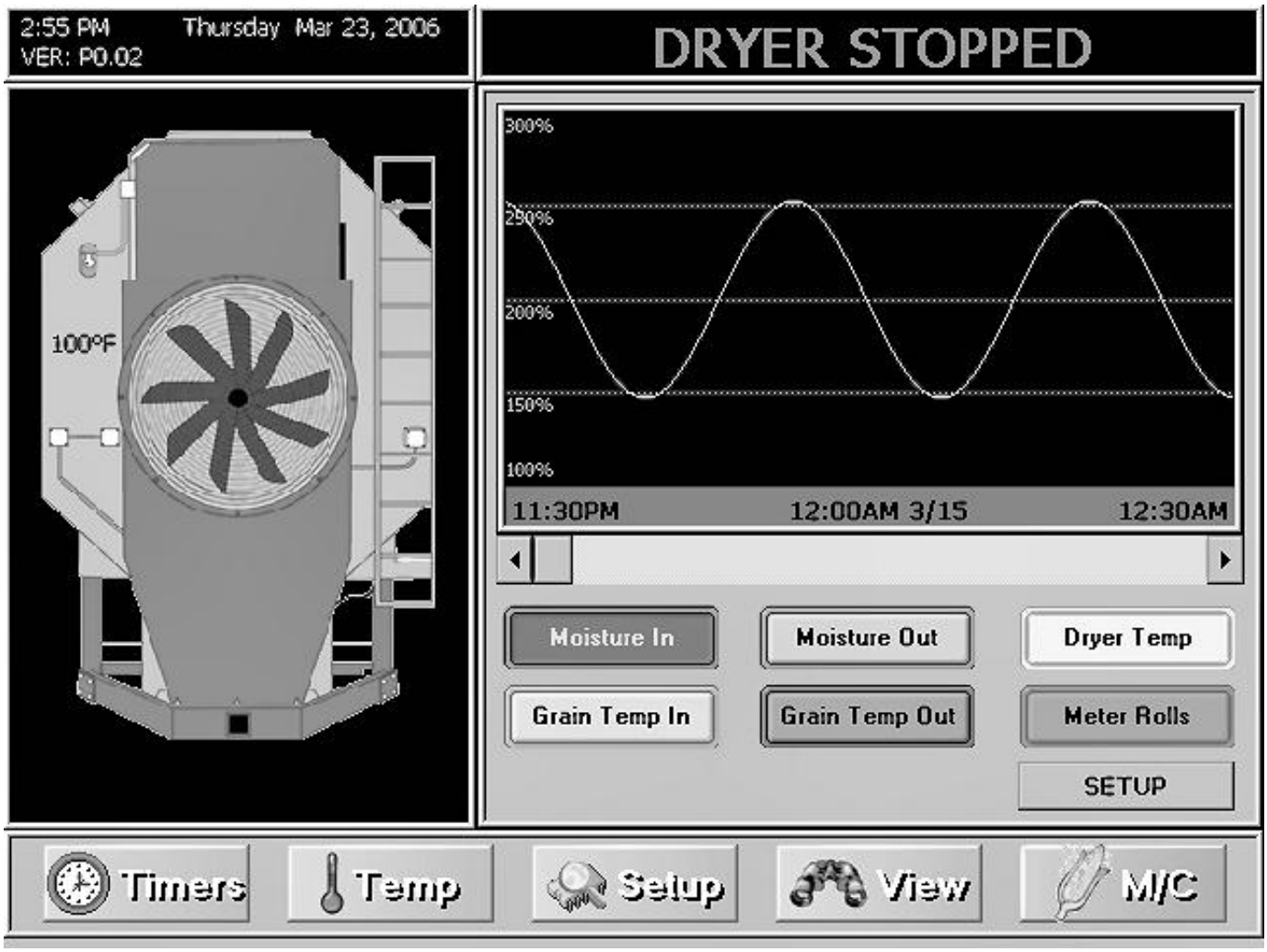
- **SHOWING DATA COLUMN MODE**
- **CHOOSE FREQUENCY OF SAMPLING TIME**
- **VIEW THE FOLLOWING:**
  - Ö **SAMPLE TIME & DATE**
  - Ö **GRAIN TEMP IN & OUT**
  - Ö **GRAIN MOISTURE IN & OUT**
  - Ö **METER ROLL OUTPUT %**
  - Ö **BACKWARD VIEWING AVAILABLE**



FRONT TOUCH SCREEN DISPLAY

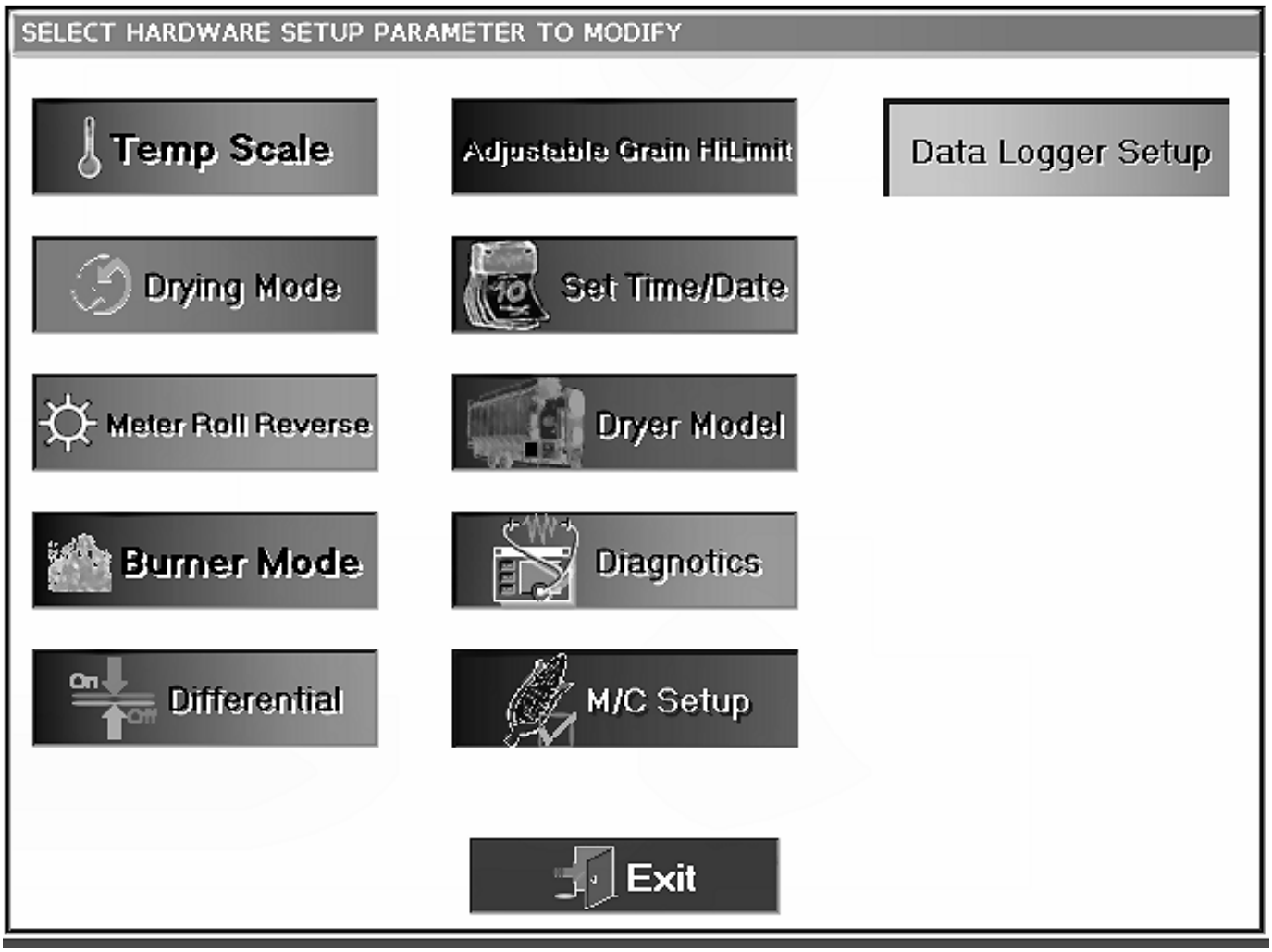
- **SHOWING DATA GRAPH MODE**
- **CHOOSE FREQUENCY OF SAMPLING TIME**
- **CHOICE OF WHICH TO VIEW:**

  - Ö **SAMPLING TIME & DATE**
  - Ö **GRAIN TEMP IN & OUT**
  - Ö **GRAIN MOISTURE IN & OUT**
  - Ö **DRYER PLENUM TEMP**
  - Ö **METER ROLL OUTPUT %**
  - Ö **BACKWARD VIEWING AVAILABLE**



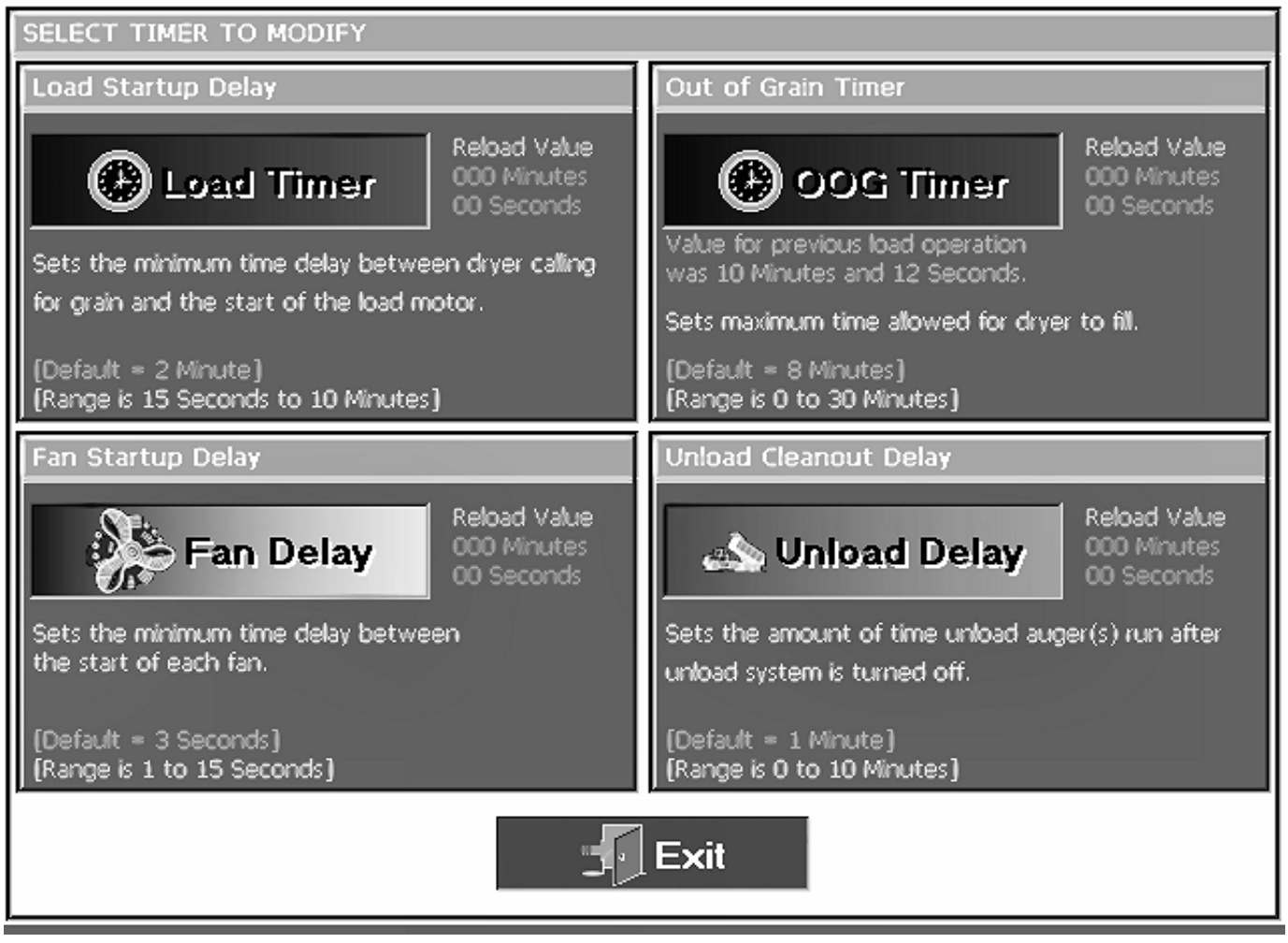
SETUP PARAMETERS

- **THIS SCREEN COMES AFTER SELECTING SETUP ON TOUCH SCREEN**
- **SELECT WHICH YOU WANT TO MODIFY**



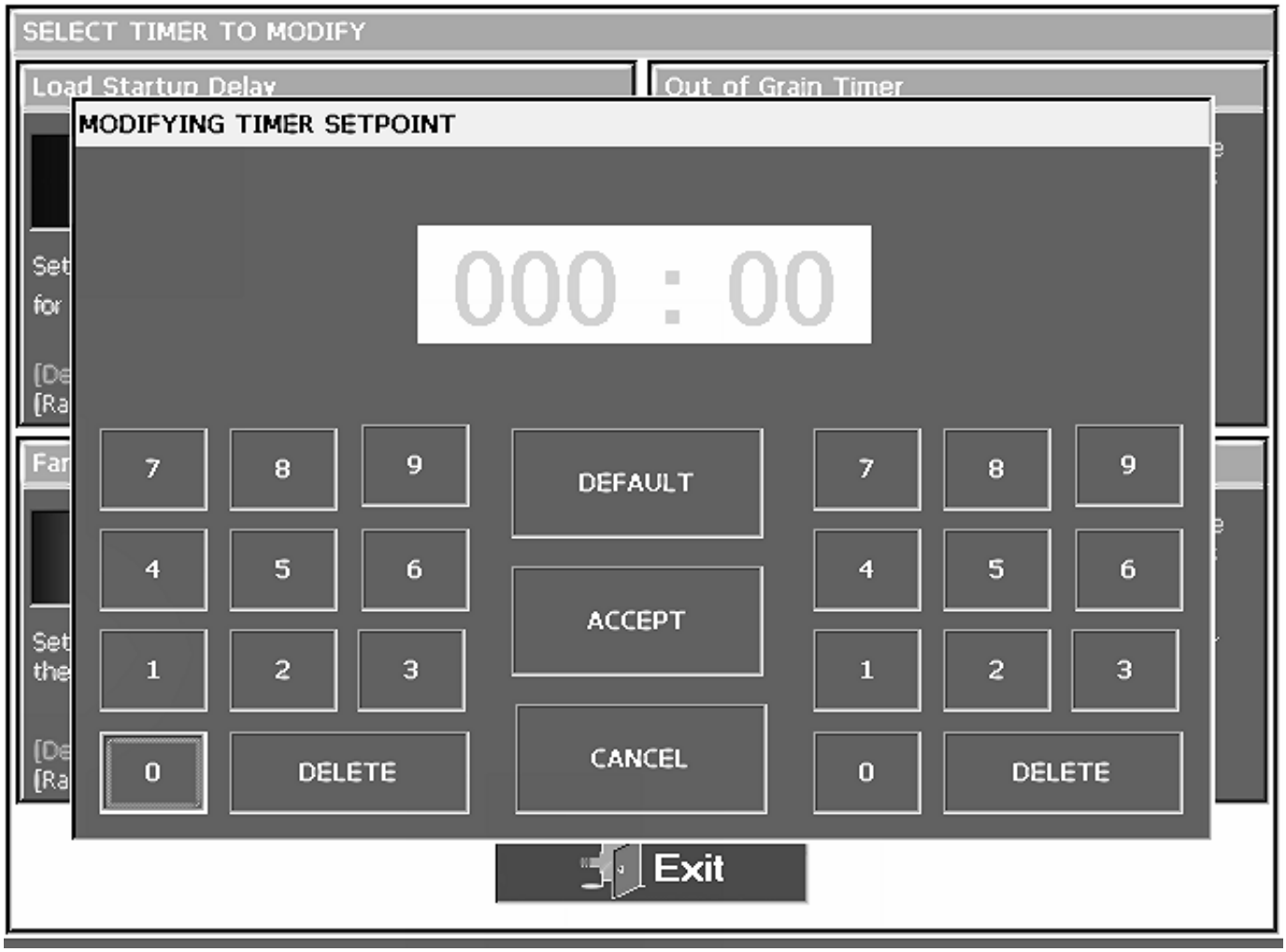
SELECT TIMER SCREEN

- **TOUCH TIMERS BUTTON ON THE MAIN TOUCH SCREEN**
- **SELECT WHICH TIMER TO MODIFY**
- **MODIFY TIMER SCREEN COMES UP (NEXT PAGE)**



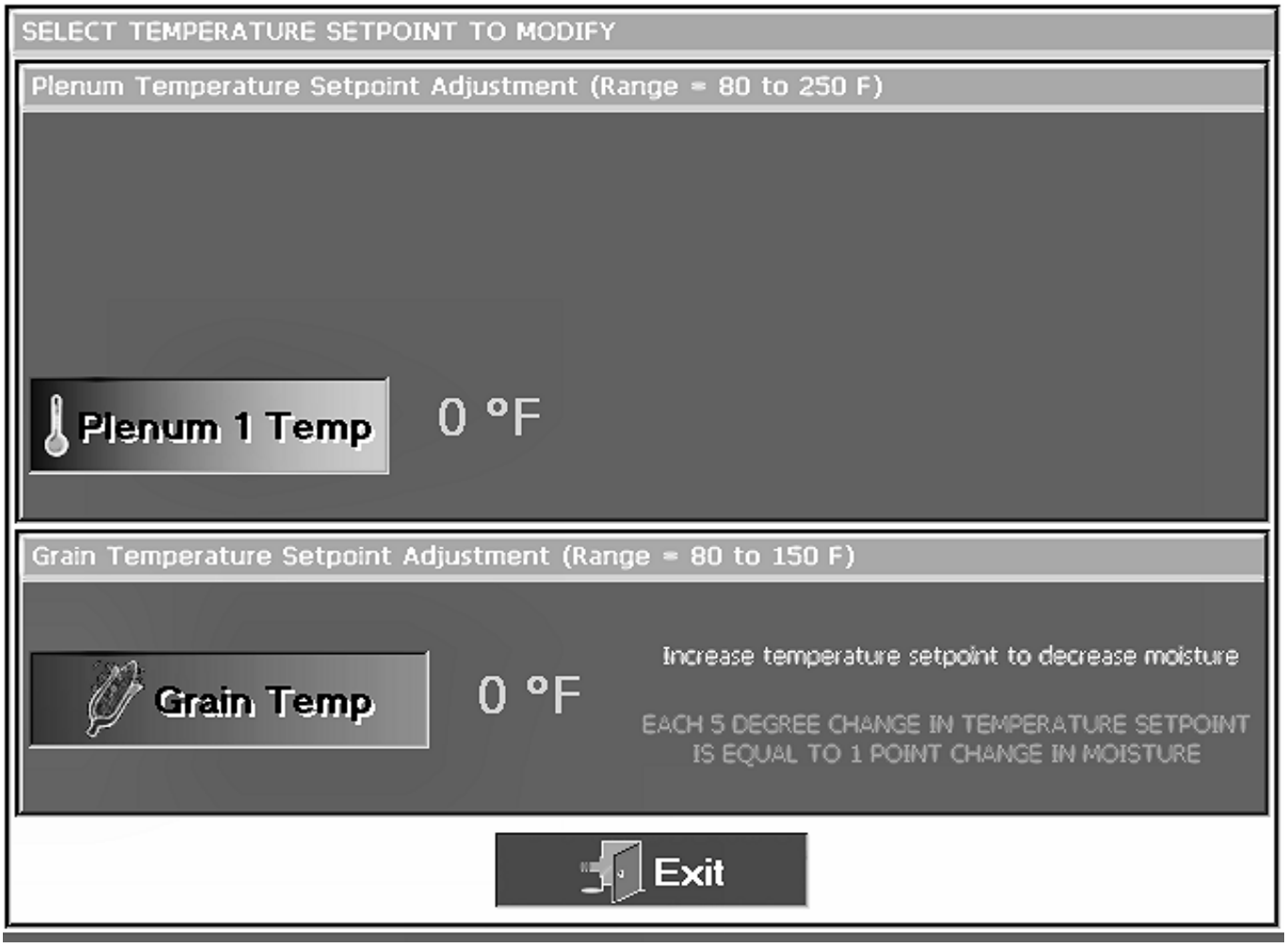
MODIFY TIMER SCREEN

- AFTER SELECTING WHICH TIMER TO MODIFY
- SELECT DESIRED TIME
- TOUCH ACCEPT



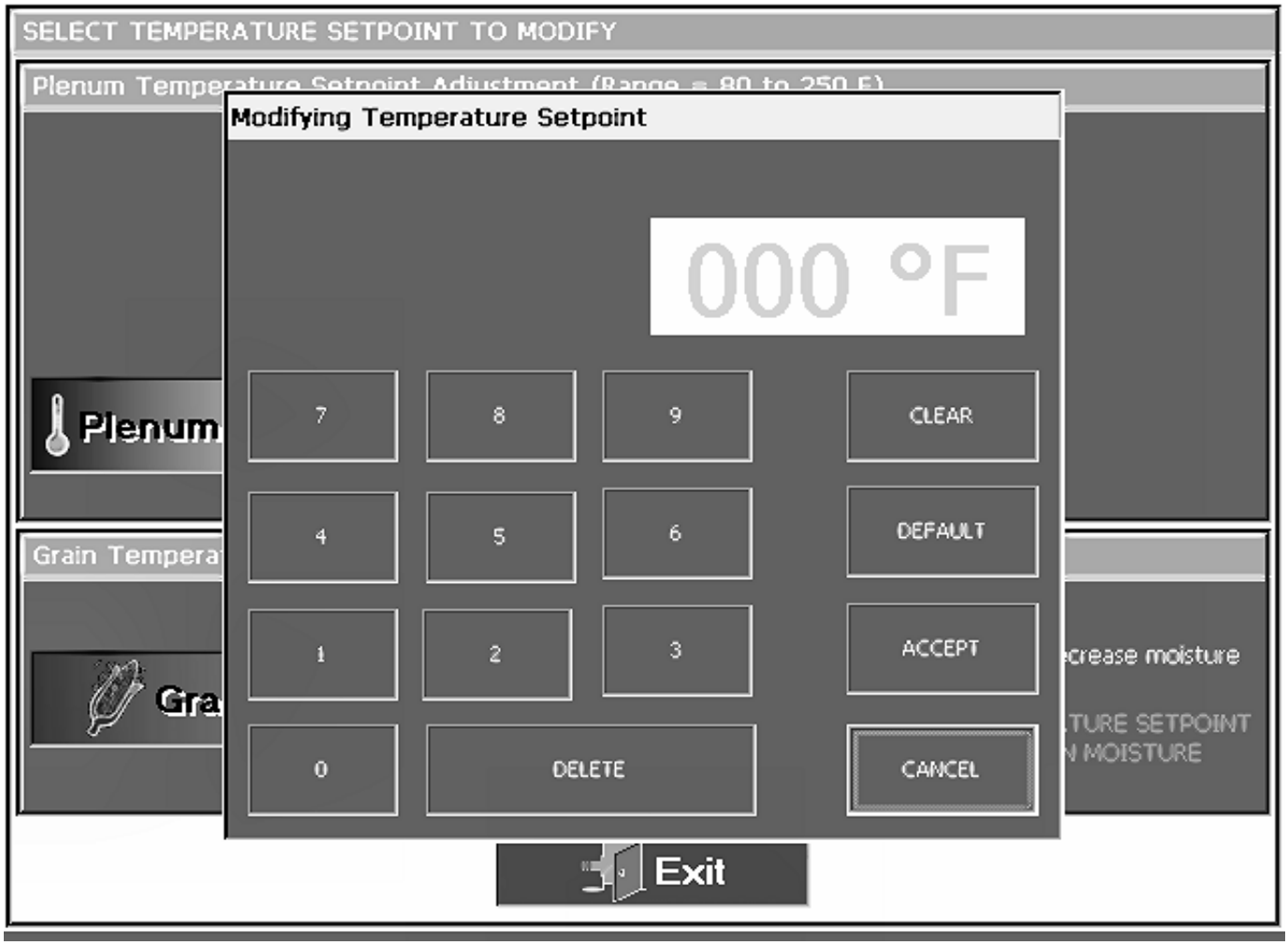
MODIFY TEMP SCREEN

- **SELECT WHICH TEMP TO MODIFY**
- **MODIFY TEMP SCREEN COMES UP (NEXT PAGE)**



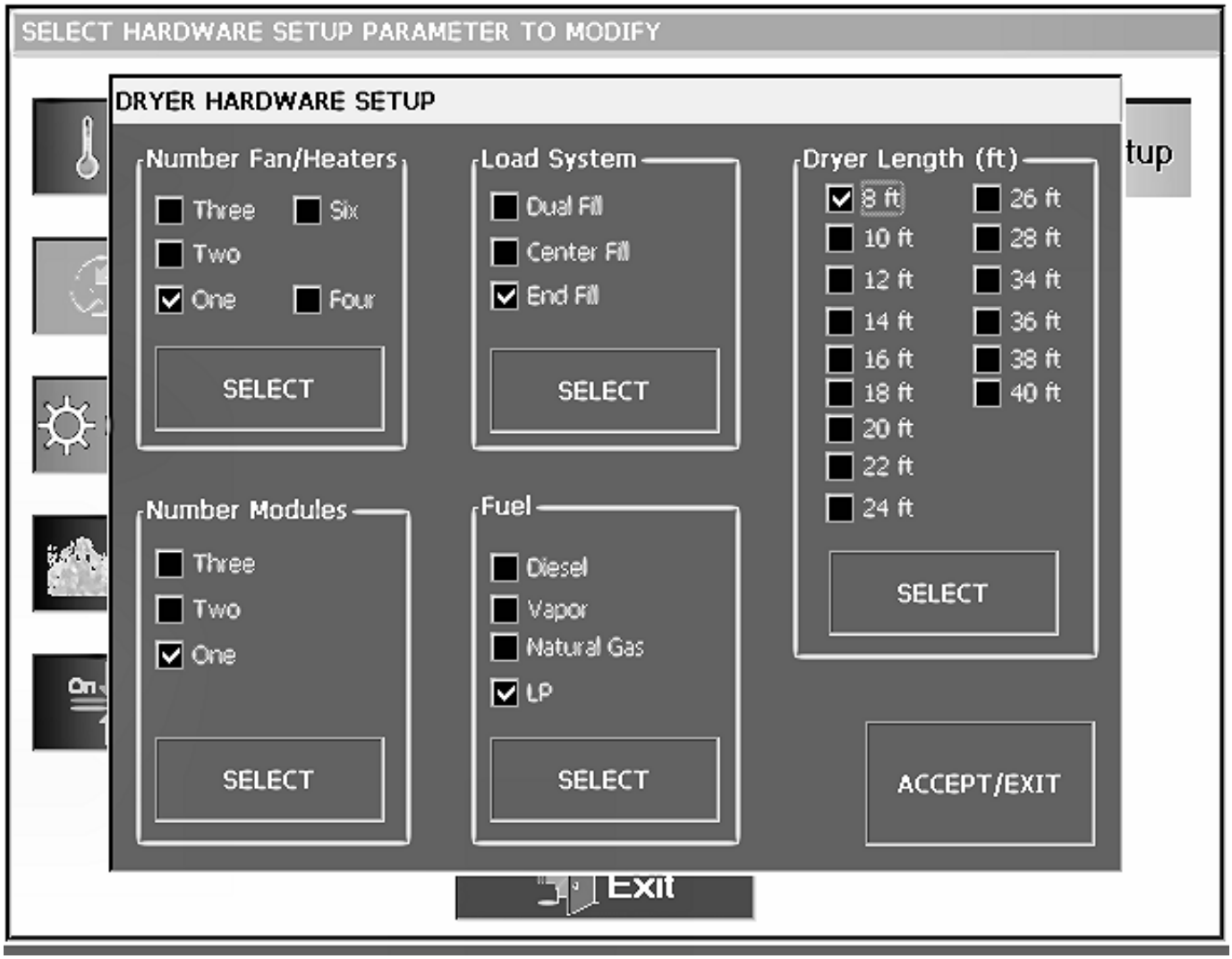
MODIFYING PLENUM OR GRAIN SETPOINT

- **SELECT DISIRED SETPOINT**
- **TOUCH ACCEPT**



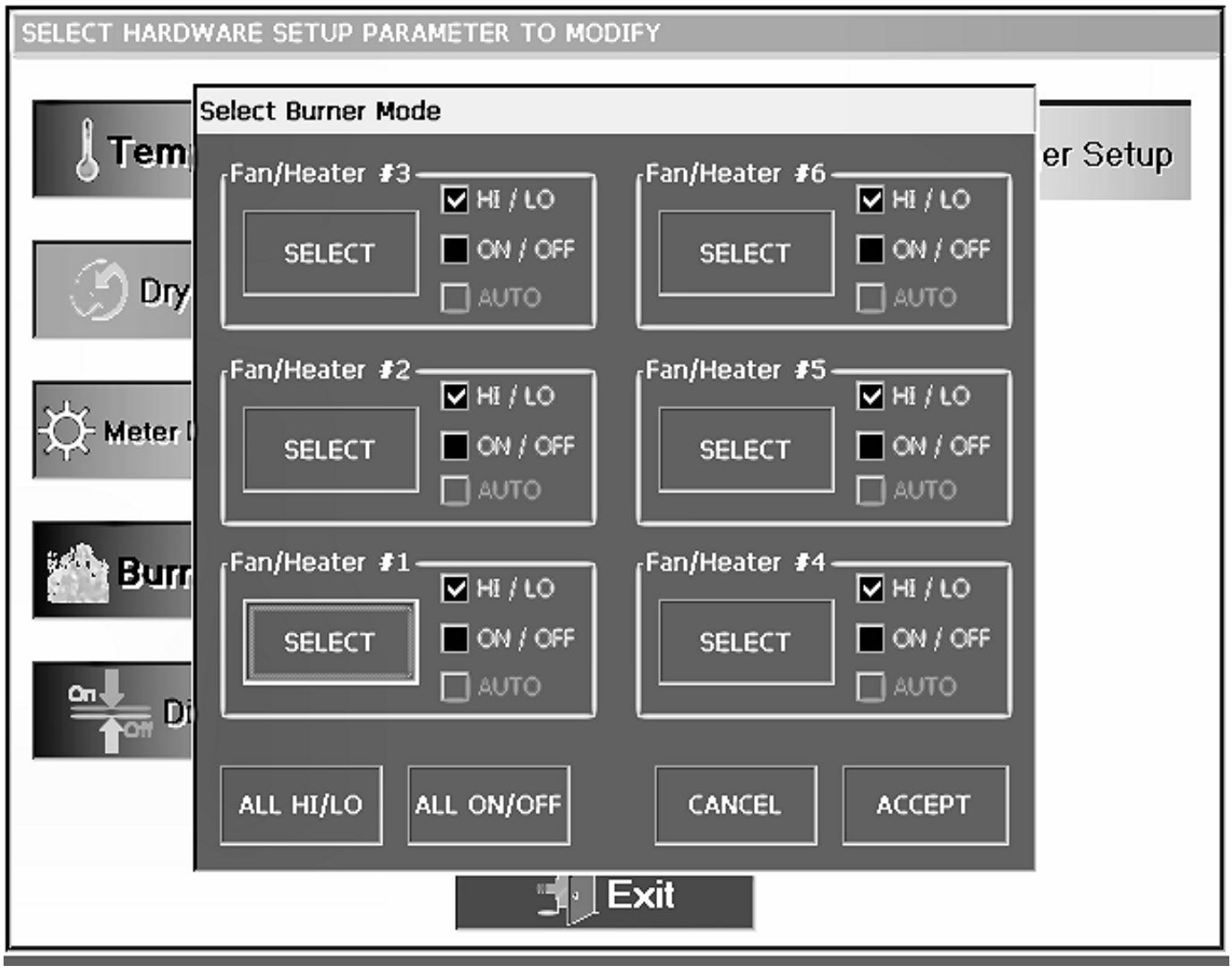
SELECT DRYER MODEL

- THIS SHOULD BE ALREADY SET AT FACTORY
- DRYER SETUP MUST BE DONE CORRECTLY FOR DRYER TO RUN PROPERLY
- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- SELECT DRYER MODEL BUTTON
- DRYER HARDWARE SCREEN COMES UP
- SELECT WHICH YOU WANT TO MODIFY-TOUCH ACCEPT/EXIT



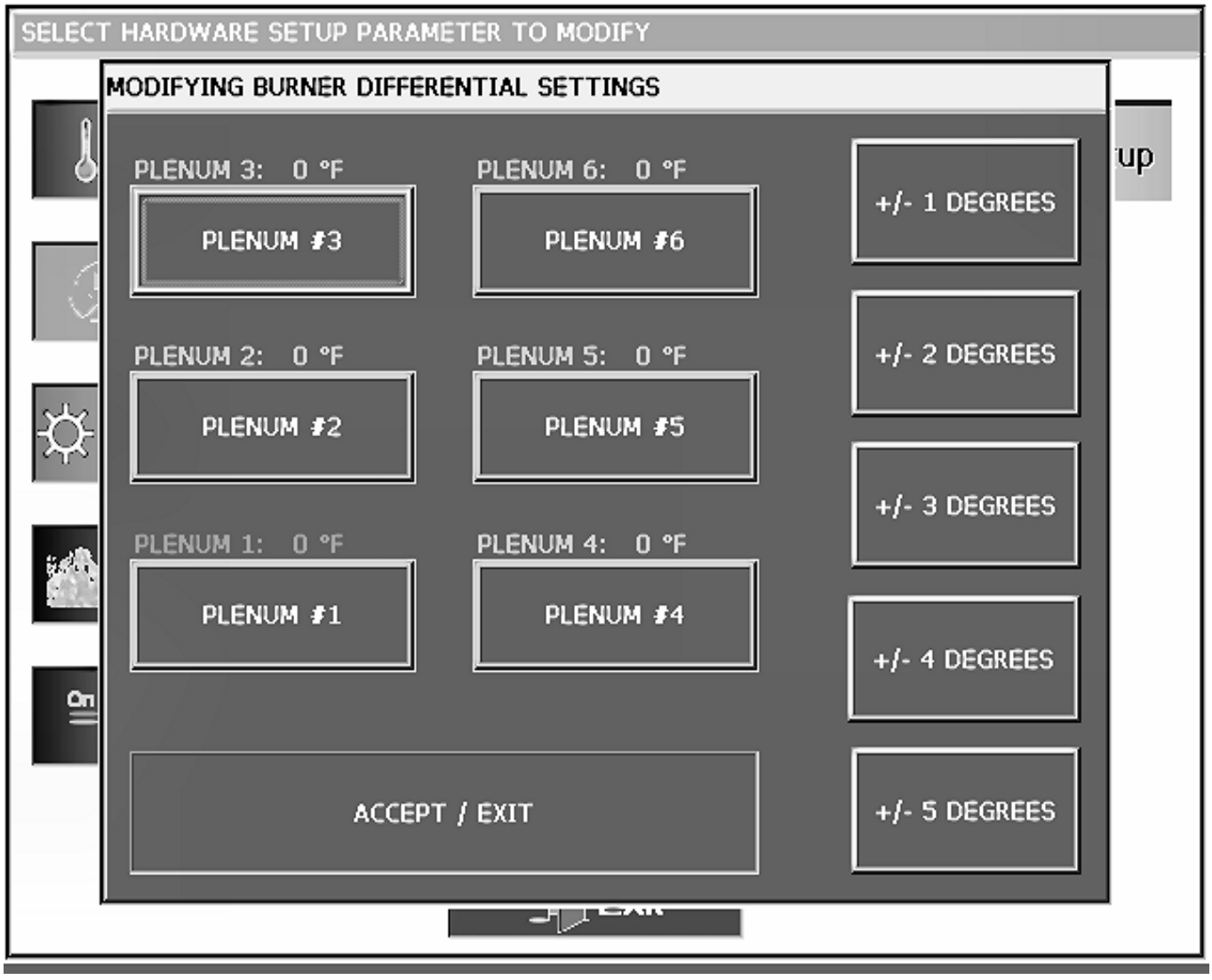
SELECT BURNER MODE

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH BURNER MODE BUTTON
- SELECT HI/LOW OR ON/OFF MODE
- TOUCH ACCEPT



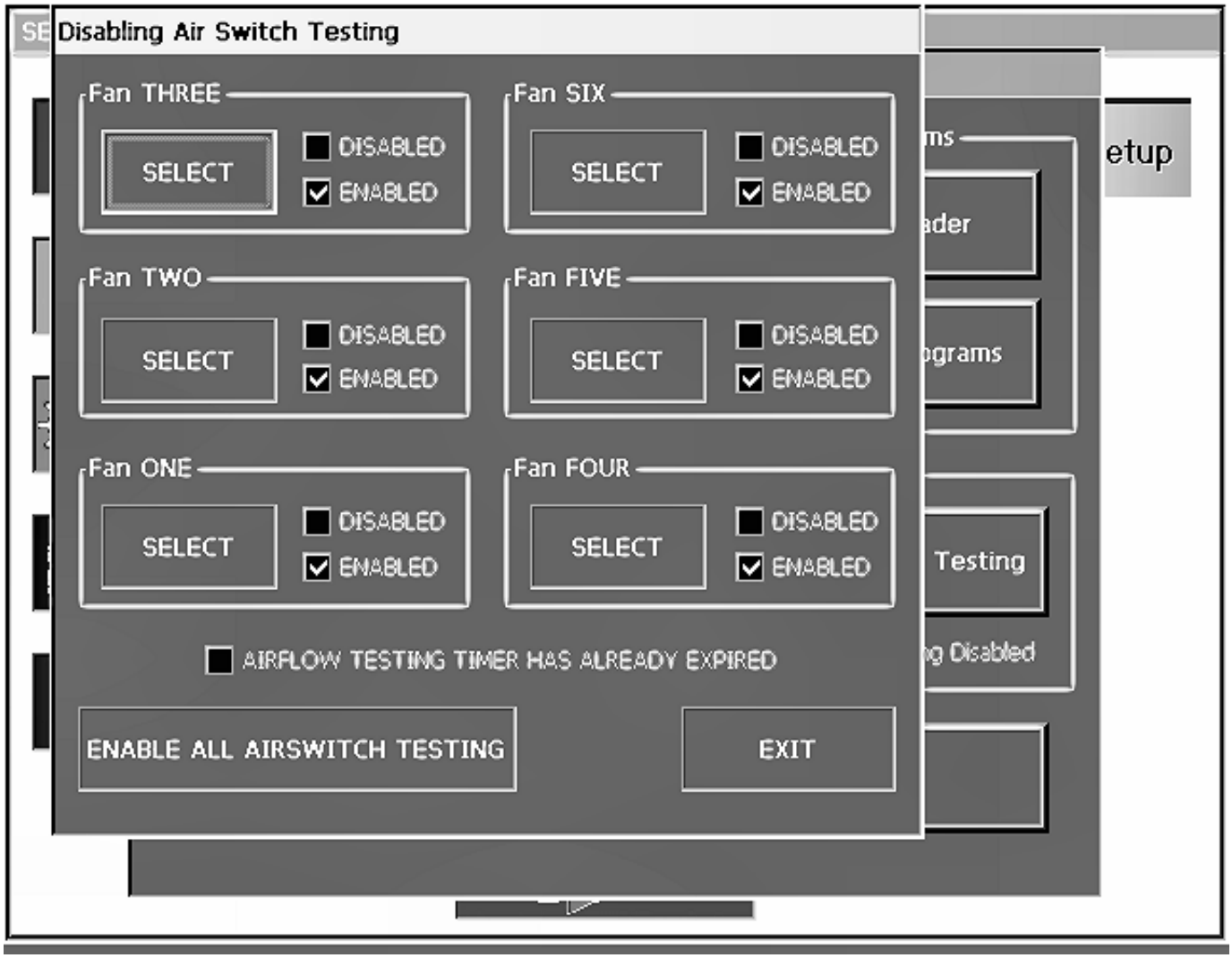
MODIFY BURNER DIFFERENTIAL

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH ON/OFF DIFFERENTIAL BUTTON
- SELECT WHICH BURNER TO MODIFY
- SELECT DIFFERENTIAL 1 TO 5 DEGREES
- TOUCH ACCEPT



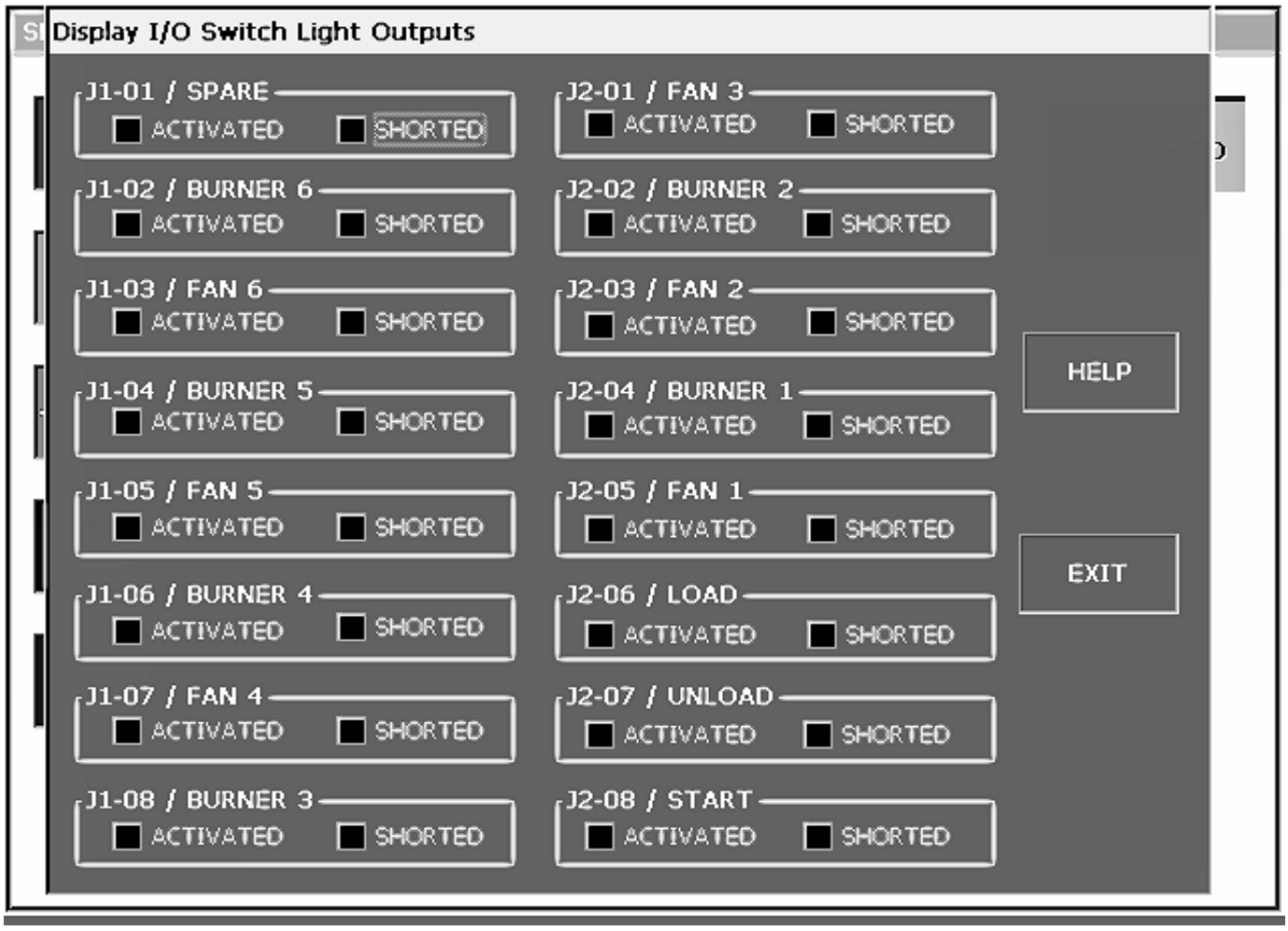
AIR SWITCH TESTING

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH DIAGNOSTIC BUTTON
- SELECT WHICH FAN
- SELECT ENABLE OR DISABLE
- TOUCH EXIT



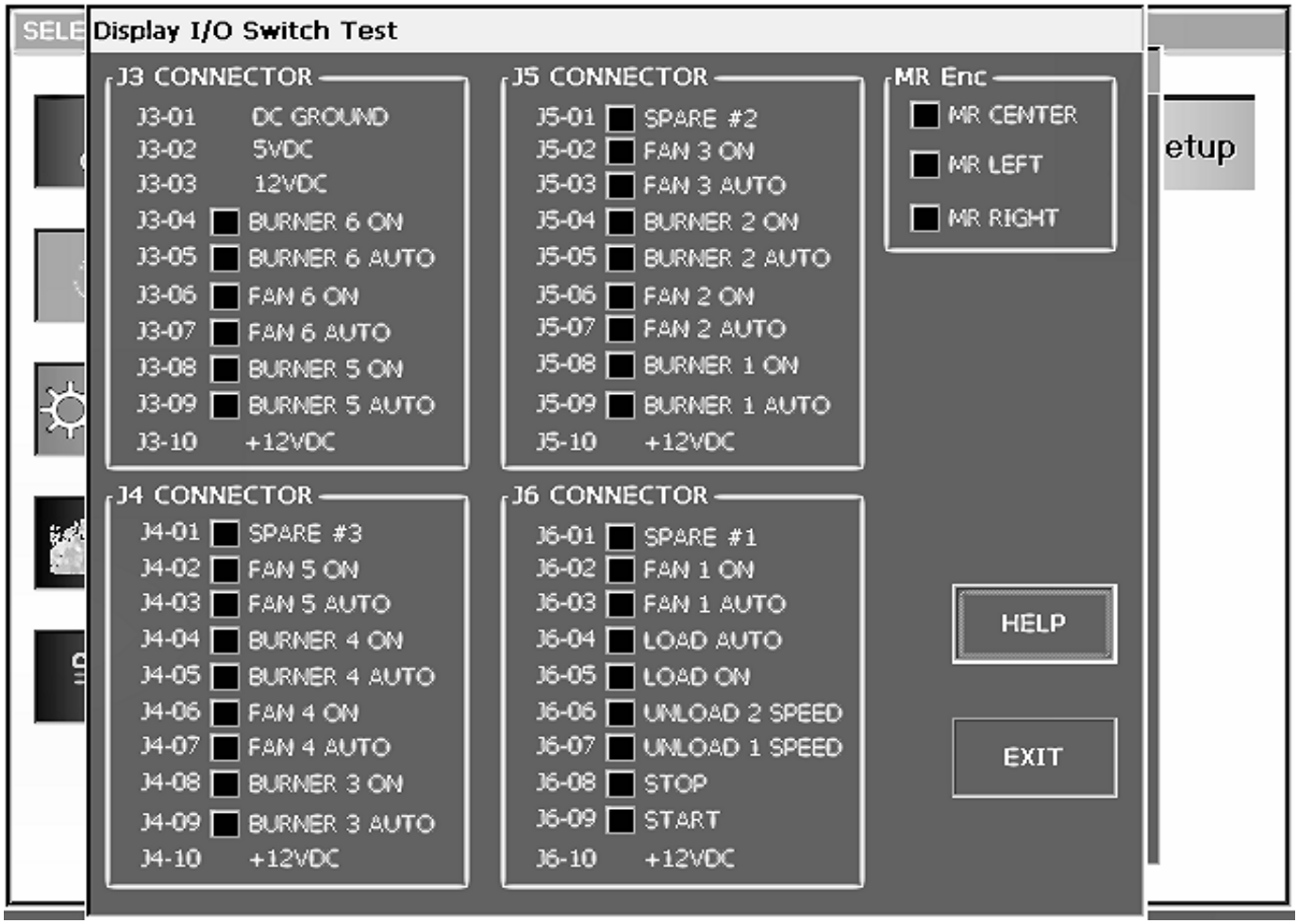
CHECK DISPLAY I/O SWITCH LITE OUTPUTS

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH DIAGNOSTIC BUTTON
- SELECT DISPLAY I/O TESTING BUTTON
- CHECK LIGHT OUTPUT BY CHANGING SWITCH POSITION
- EXIT AFTER TESTING



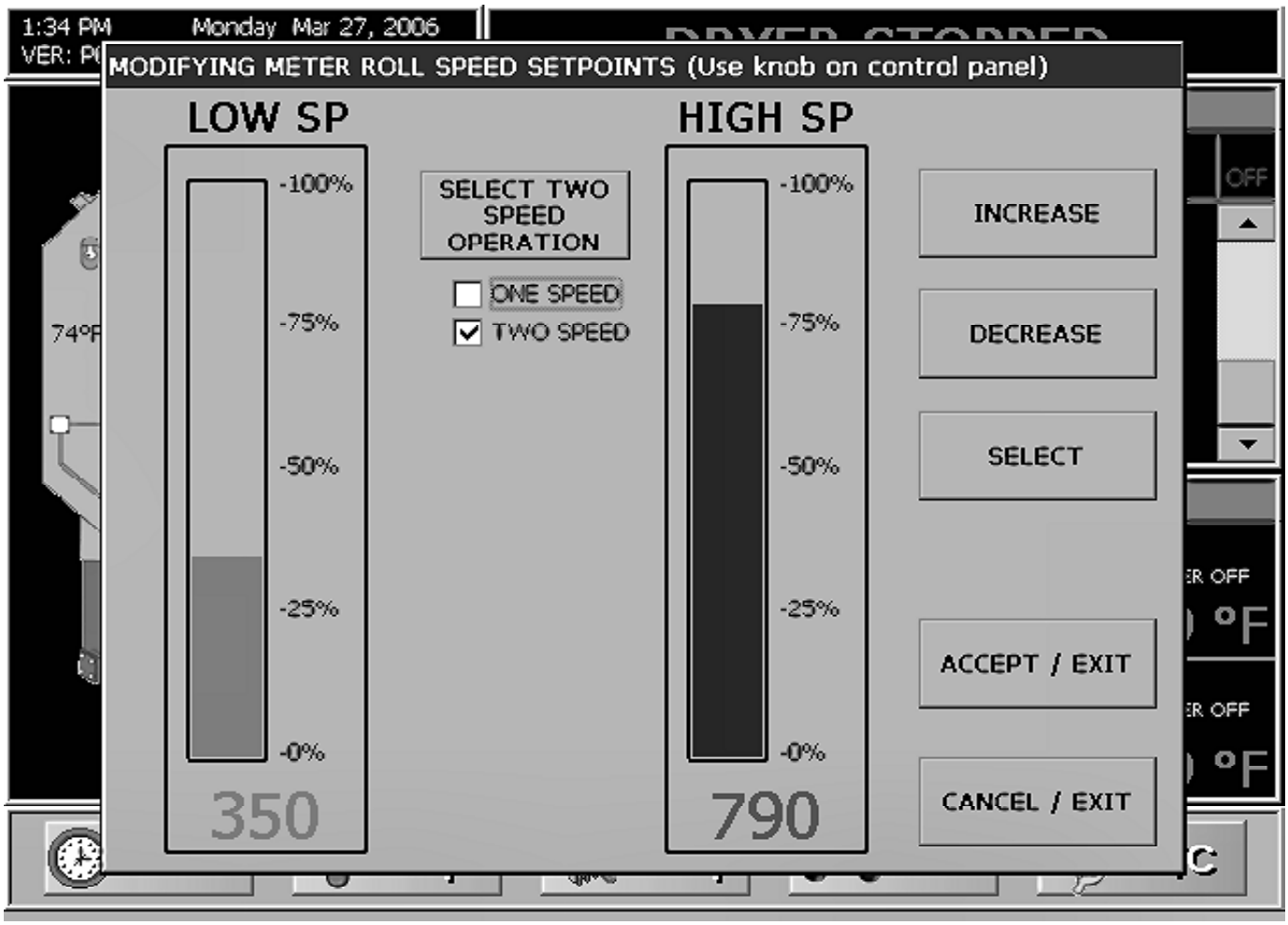
CHECK DISPLAY I/O SWITCH INPUTS

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH DIAGNOSTIC BUTTON
- SELECT DISPLAY I/O TESTING BUTTON
- CHECK SWITCH INPUT BY CHANGING SWITCH POSITION
- EXIT AFTER TESTING



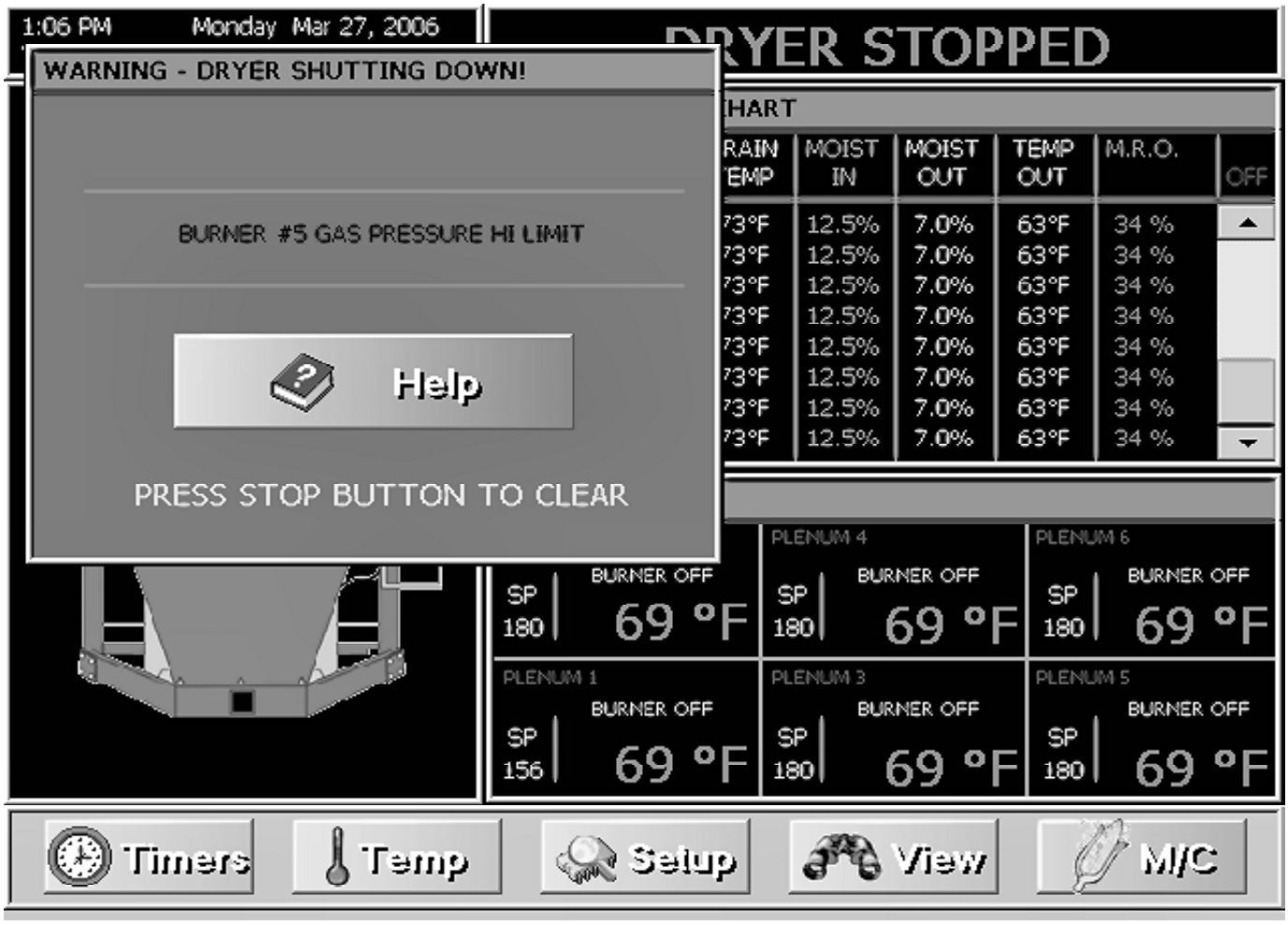
MODIFY METER ROLL SPEED SETPOINT

- PRESS THE METER ROLL SPEED KNOB
- THIS SCREEN WILL APPEAR
- THE ONE HIGHLIGHTED IS THE ONE YOU WILL BE ADJUSTING
- PUSH THE KNOB AGAIN WILL CHANGE WHICH ONE IS HIGHLIGHTED
- SET DESIRED METER ROLL SPEEDS
- TOUCH ACCEPT/EXIT



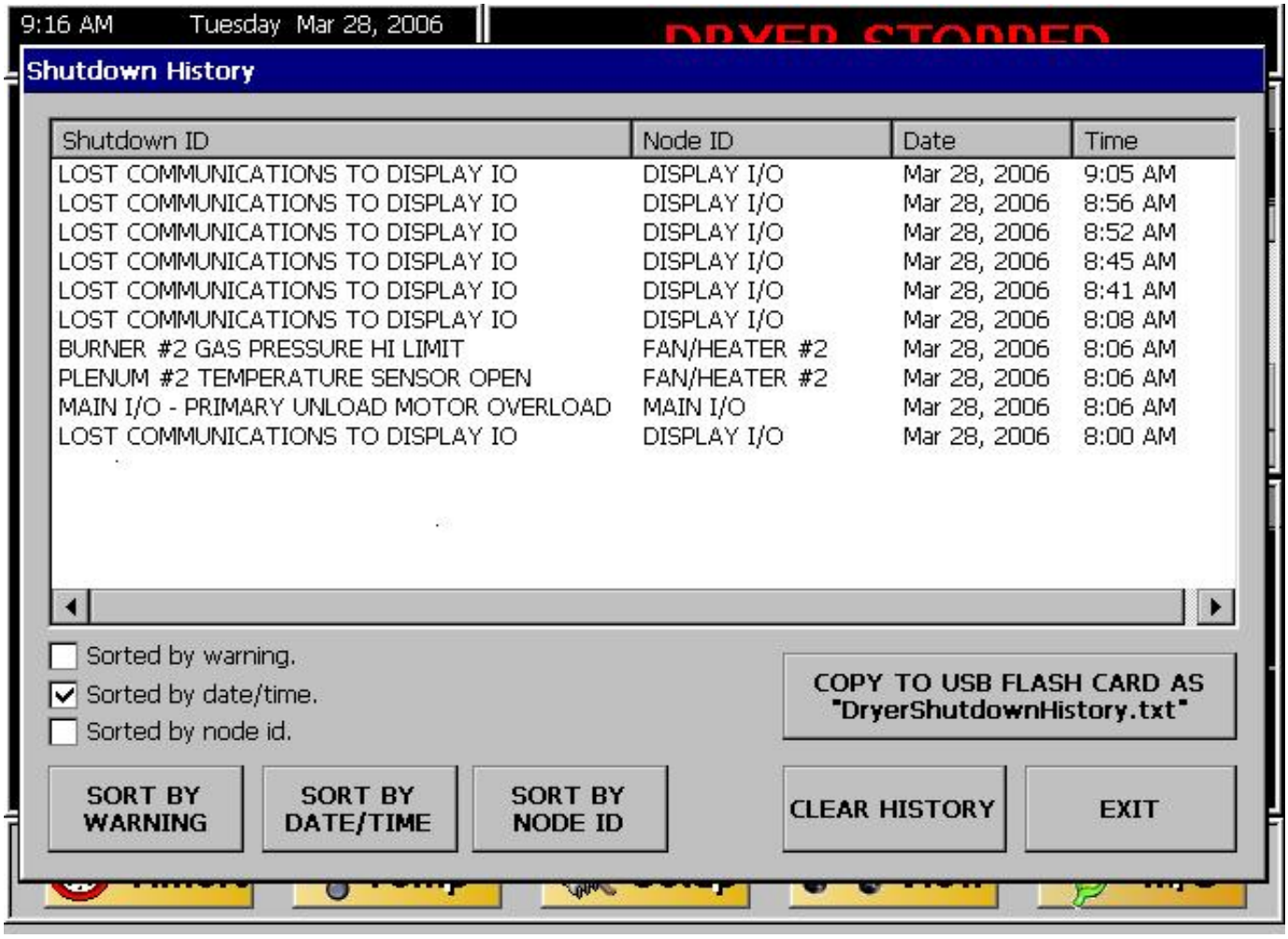
SHUTDOWN ERROR SCREEN

- **SHOWS WHERE & WHAT ERROR OCCURRED**
- **CHECK ERROR**
- **CORRECT ERROR**
- **PRESS STOP BUTTON TO CLEAR**



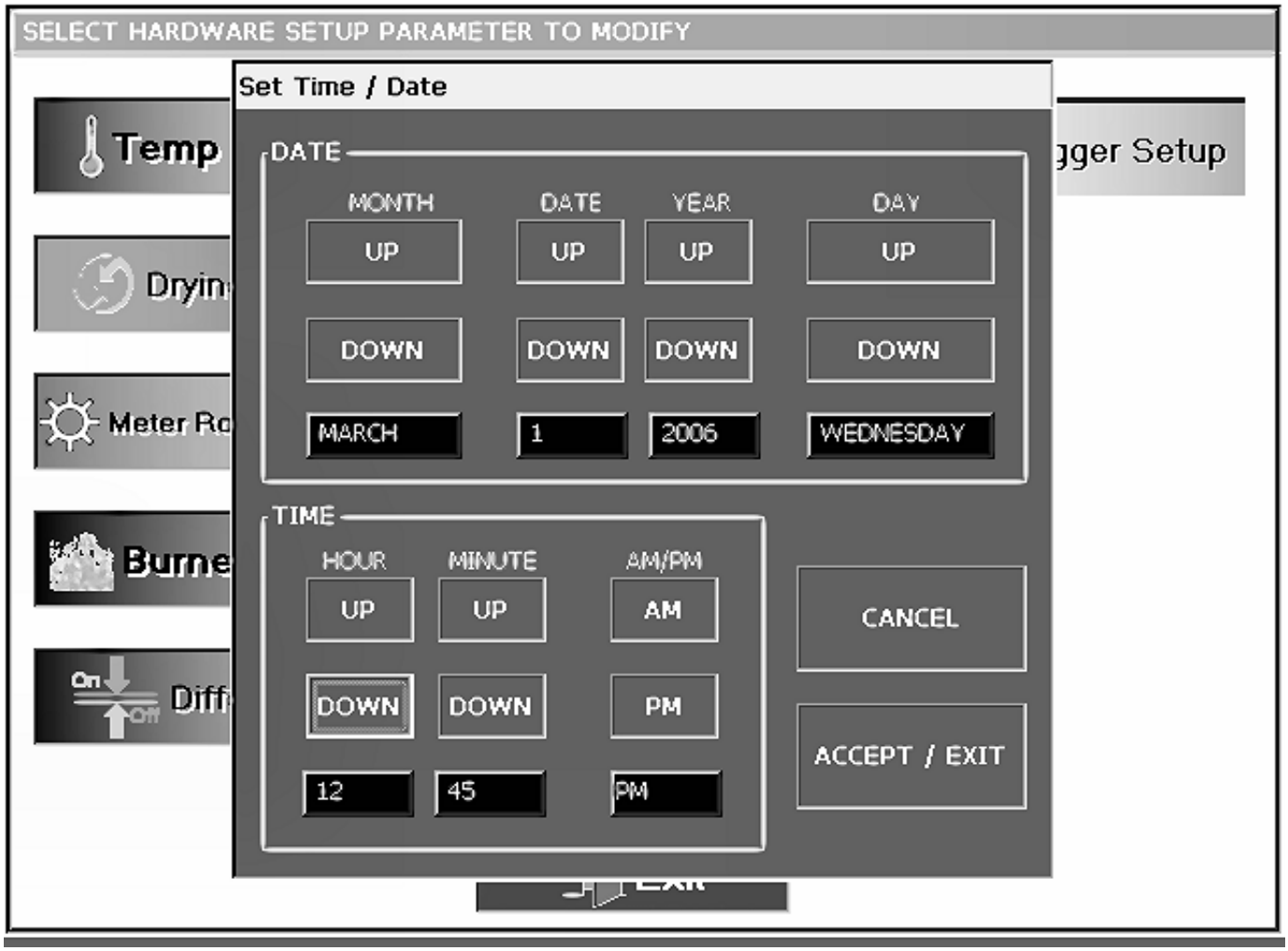
SHUTDOWN HISTORY SCREEN

- TOUCH THE VIEW BUTTON ON MAIN TOUCH SCREEN
- SELECT SHUTDOWN HISTORY BUTTON
  - SORT BY WARNING, DATE & TIME OR BY BOARD
  - FOLLOWING CHOICES:
    - KEEP A RUNNING HISTORY
    - COPY HISTORY TO A USB FLASH CARD
    - DELETE HISTORY
- EXIT OUT



SET TIME & DATE

- TOUCH SETUP BUTTON MAIN TOUCH SCREEN
- TOUCH SET TIME/DATE BUTTON
- SET TIME & DATE
- EXIT OUT



DISPLAY INPUT OUTPUT BOARD ERRORS (BOARD LOCATED ON THE BACK OF THE LOWER DOOR)

Viewing the Shutdown History

The shutdown history can store over 256 shutdown warnings, if the dryer exceeds this amount, your oldest shutdown will be replaced with the current shutdown warning. You will be able to access the shutdown history by pressing the view button on the touch screen. Select the shutdown history button. You will be able to sort the errors by warning, date & time or by the board that generated the error. Also will be able to keep the running history and also copy the history to a USB flash card or delete the history.

Shutdown Message Listing

The following is a list of possible shutdown messages that your network dryer can display. They are broken down with their associated controller where the error will be generating from. The message on the screen will show **WARNING** at the top followed by what error has occurred, with a **HELP** button to press on. The **HELP** button may not be active at first but will be as we do more updating. After the error has been corrected, press the stop button to clear it. The screen should go back to the normal run screen, if not the error has not been corrected.

Display I/O Network Connection Failed

This error occurs when communication between the Display Board **(Lower Panel Door)** and the Main I/O Board **(Upper Main Panel)**. Check the cat 5 cable to make sure you have a good connection on both boards. Check the cat 5 cable to make sure it is not damaged. There are two LED lights next to the network connection. Check to see if the two LED lights are flashing randomly back and forth, this indicates network activity.

Display Network Cable Failed

This happens when the communication between the computer and the Display Board **(both located on the lower panel door)** is lost. Check the cable between the two.

POSSIBLE MAIN INPUT OUTPUT BOARD ERRORS (BOARD LOCATED IN THE UPPER PANEL)

The following is a list of possible errors that are generated with the input/output board. This board is located in the upper main panel. This board has a LED light beside each input and output on the board. These LED's are a great tool in troubleshooting the board. Remember the upper left side is 12 VDC input/output and the lower right is 120 VAC input/output.

? Motor Overload

The following are messages that may show up under this shutdown. These overloads are located in the upper panel. This means that the thermal overload has opened on that motor indicated on the display. After pressing the red reset you should have a LED on beside the Motor Overload terminal that was opened. This may indicate that this motor might be operating under a abnormal work load. This condition causes the motor to pull more current (amperage) over its rated full load amps. You made need to get an electrician to check the motors operating amperage. The name tag on the motor will indicate the full load amps (FLA) in relationship the incoming voltage. The overload has a normally closed set of contacts. To these contacts from the I/O board is sent 12 VDC, when the overload opens so do these contacts. Below will indicate which terminals to check for that particular overload shutdown. Simply check the to see if you have a LED lit up for that particular overload. If you want to use a meter put the red lead on the terminal associated with that shutdown and the black lead on the DC negative. The DC negative is located on the I/O board on the upper left side labeled J2-10.

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Primary Unload Motor Overload

This error indicates that the unload motor overload on the dryer has opened.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-02) 12 Volt DC when closed (Dryer Unload Motor Overload) LED should be on.

Auxiliary Unload Motor Overload

This error indicates that the auxiliary unload motor overload on the dryer has opened.
Example: This might be a take away auger wired to the dryer.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-04) 12 Volt DC when closed (Aux. Unload Motor Overload) LED should be on.

Primary Load Motor Overload

This error indicates that the load motor overload on the dryer has opened.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-03) 12 Volt DC when closed (Primary Load Motor Overload) LED should be on.

POSSIBLE MAIN INPUT OUTPUT BOARD ERRORS (BOARD LOCATED IN THE UPPER PANEL)

Auxiliary Load Motor Overload

This error indicates that the auxiliary load motor overload on the dryer has opened. Example: This might be a fill auger wired to the dryer.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-05) 12 Volt DC when closed (Aux. Load Motor Overload) LED should be on.

Air System Failure

This error indicates that the air system control circuit is open.
Example: Assuming the air system is wired correctly thru the dryer safety circuit. This error should come up prior to starting the dryer indicating the air system is not running or after the dryer has started indicating a shutdown of the air system.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-10) 12 Volt DC when closed (Air System Failure) LED should be on.

Rear Discharge Door Open

This indicates that the lid on the discharge box has opened due to grain pushing it up. This could be caused by grain not being taken away fast enough or not at all.
(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-08) 12 Volt DC when closed (Rear Discharge Door Open) LED should be on.

Hardware Safety System Failed

This indicates that the hardware safety on the board has lost 12 vdc. This must have 12 vdc at all times for safety circuit to work properly. Check the jumper on the board from J2-01 to J2-03 and that the LED is lit up.
(J2-10) DC Negative
(J2-01) 12 Volt DC output LED should be on.
(J2-03) 12 Volt DC when closed (Hardware Safety System Failed) LED should be on.

Out of Grain Timer Expired

The out of grain timer has timed out according to the time set on the out of grain timer. The timer is reset by the mercury switch located on top of the dryer in a white plastic box. This is connected to a paddle which is moved by grain as the dryer fills up. The shutdown usually occurs when the loading equipment is having trouble keeping up with the output of the dryer or the wet supply has run out of grain. You may lengthen the amount of time, but remember the top hopper of the dryer should always have grain in it. If any of the side screens are opening up at anytime, then you are losing heat along with efficiency of the dryer. So it is necessary for the fill equipment to be large enough to handle the capacity of the dryer. Something to remember is that the out of grain timer is only in operation when the load switch is in the auto position.

POSSIBLE MAIN INPUT OUTPUT BOARD ERRORS (BOARD LOCATED IN THE UPPER PANEL)

Out of Grain Timer Expired (continued)

(J2-10) DC Negative
(J1-01) 12 Volt DC output LED should be on.
(J1-06) 12 Volt DC when dryer is calling for grain (Grain Level Switch) LED should be on.
(J1-06) 0 Volt DC when dryer is full (Grain Level Switch) LED should be off

USER SAFETY #

A shutdown has occurred do to user installed safety switch that has opened. The connections to this are on the terminal strip located in the upper panel. Again there is 12 VDC sent out and must return or this error will appear. This input is normally jumped out when it leaves the factory on the terminal strip. The screen will show which user safety has opened. This can be User Safety #1 to User Safety #4 depending how many are being used. If in use this has normally been installed by a electrician.

(J2-10) DC Negative
(J2-01) 12 Volt DC output LED should be on.
(J2-02) 12 Volt DC when closed (User Safety #1) LED should on.
(J2-04) 12 Volt DC when closed (User Safety #2) LED should on.
(J2-05) 12 Volt DC when closed (User Safety #3) LED should on.
(J2-06) 12 Volt DC when closed (User Safety #4) LED should on.

METER ROLLS FAILED

This is usually caused by one of following:

- **Defective Meter Roll Sensor**
- **Broken Drive Chain**
- **Jammed Meter Roll**
- **Bad Motor or Gear Case**

The meter roll sensor is located in a white plastic box on the rear or front depending on the model of the dryer. The box is mounted on the end of the meter roll drive shaft. The 12 VDC is sent out to the meter roll sensor, which in turn sends a pulse signal back to the main I/O board in the upper panel. (The meter rolls must be turning in order for the pulse signal to return). After verifying the meter rolls are turning, the following may need to be checked. The following connections are located on the lower left side of the board. Also can be checked on the upper terminal strip. **The voltage going to the meter roll sensor is totally isolated internally in the main I/O board and must stay isolated. Don't use this 12VDC for any other purpose!! Don't use frame ground when checking this!! Only use designated 12vdc ground.**

Refer to the Dryer Meter Roll Sensor diagram in your owners manual.

(J4-05) Meter Roll DC Negative
(J4-03) Meter Roll 12 Volt DC
(J4-04) Meter Roll Input (Pulsed) LED (MR Sensor) should be rapidly flash according to rpm of the meter rolls.

Main I/O Network Connection Failed

This occurs when communication link between Main I/O board (upper panel) and the Master Display Board (lower control panel) has failed. Check the cat 5 cable to both boards and make sure the connections are ok. Check the end of the cat 5 cable to make sure it is not damaged. There are two LED lights next to the network connection. Check to see if the two LED lights are flashing randomly back and forth, this indicates network activity.

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Fan (#) No Airflow

The air pressure switch failed to close do to insufficient air pressure in the plenum. This is usually caused by a pressure switch out of adjustment, if the dryer is full of grain. The message will distinguish between which plenum caused the shutdown. **Example: Fan #1 No Airflow on up to a Fan #6 No Airflow depending on the size of dryer.**

Fan (#) Lost Airflow

The contacts in the air pressure switch have opened due a loss of pressure in the plenum. The message will distinguish between which plenum caused the shutdown. **Example: Fan #1 Lost Airflow on up to a Fan #6 Lost Airflow depending on the size of dryer.**

Fan (#) Had Airflow Before Fan Power

The contacts in the air pressure switch have closed before the fan getting power. This is usually caused by a pressure switch being set to sensitive to airflow. The message will distinguish between which plenum caused the shutdown. **Example: Fan #1 Had Airflow Before Fan Power on up to Fan #6 Had Airflow Before Fan Power depending on the size of dryer.**

Hints

Verify that the fan is running and the dryer is completely full of grain.
The easiest way to tell if the air pressure switch is sensing air pressure, is to watch the blue light in the fan switch. This light should come on when the fan has reached about have speed, if not you made need to adjust the air switch. To adjust it you will need a straight blade screwdriver and turn the adjusting screw counterclockwise. This will make it more sensitive to air pressure therefore the light will come on sooner. If this does not solve the problem you will have to refer to a wiring diagram of the air pressure switch. Each air pressure switch is wired to the Network Fan/Heater interface located on each individual fan can box. **Each fan/heater board has a row of LED lights that indicate that a safety is OK.** The air switch LED will come on when it is confirmed that the air pressure switch has closed. Using a voltmeter, with one probe on J4-04 and the other on J5-03 (DC negative) you should have 12 volts DC (only when the air pressure switch is closed) and the LED should be on at this time.
If after checking the wiring circuit and it seems to be OK. Then you might want to check the air pressure switch itself. Remove the wires from the air switch and the switch from the dryer. Blow into the air tube this will simulate air pressure in the plenum. The switch should have a open circuit until you blow into the switch, then it should be closed. If it fails to close try adjusting it or replace it.

Remember

1. Dryer must be completely full of grain. (Make sure fill is keeping up with the unload.)
2. Check to see if light comes when fan is running.
3. Make sure the bulb is good. It is 12 VDC.
4. Make adjustments on air pressure switch one quarter turn at a time.
5. Clean air pressure switch tube make sure it is not plugged.
6. **More on how to adjust air switch on next page.**

HOW TO ADJUST AIR SWITCH

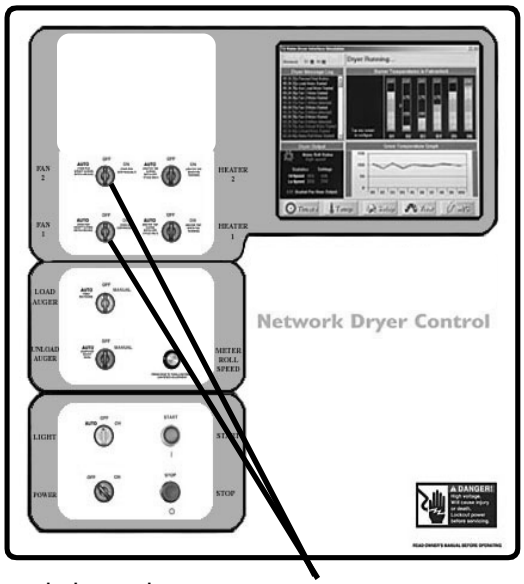
Air Switch locations.

Upper Air Switch.

Lower Air Switch.

***IMPORTANT:** To adjust the air switch the grain columns need to be full of grain so that the plenum can build up air pressure and close the air switch.*

1. With the Load Auger, Fan, Heater, and Unload switches in the off position turn on the Control power then push the Dryer Power Start switch.
2. With power now applied to the dryer flip one of the fan switches to the on position and watch for the light to illuminate the fan switch knob. If the light illuminates when the fan reaches half its full speed, then no adjustment is required. However, if the light does not illuminate until the fan is running at full speed or the light does not illuminate at all and the dryer shuts down, then the air switch is adjusted too high (skip to step 3a). If the light illuminates before the fan reaches half its full speed the air switch is adjusted too low (skip to step 3b).



3a. If the light illuminates after the fan reaches full speed or did not illuminate at all and the dryer shut down then the air switch needs to be made more sensitive. Turn adjustment screw in the more sensitive direction (counter clockwise). Make this adjustment on the air switch 1/4 turn at a time and each time restart the fan and watch to see when the light illuminates.

3b. If the light illuminates before the fan reaches half its full speed then the air switch needs to be less sensitive. Turn adjustment screw in the less sensitive direction (clockwise). Make this adjustment on the air switch 1/4 turn at a time and each time restart the fan and watch to see when the light illuminates.

4. Flip the fan switch to the off position and watch the light. Now it should go out when the fan is about half its full speed. Adjust the air switch if necessary. Remember that *less sensitive* (clockwise adjustment) will require a higher fan speed to close the air switch, and *more sensitive* (counter clockwise adjustment), the switch can close at a slower fan speed.

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Fan (#) Motor Overload

This indicates that one of the fan motor thermal overloads has opened. This overload is located in the fan/heater box associated with which fan motor overload has opened. The message will display in which fan the overload occurred. **Example: Fan #1 Motor Overload on up to Fan #6 Motor Overload depending on the size of the dryer.** The overload must be manually reset by pressing the red reset button on the overload. After pressing the reset you should have a LED on beside the Fan Motor Overload terminal J4-10. This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-10) 12 Volt DC when closed (Fan Motor Overload) LED should be on.

Housing (#) Temp Hi Limit

This occurs when there is an overheat in the fan housing of 200 F degrees. The fixed temperature thermo disc has opened. It is located directly on top of the individual fan housing and will have to be manually reset. The high limit is wired directly to the fan/heater interface board where the high limit occurred. **Example: Housing #1 Hi Limit on up to Housing #6 Hi Limit depending on the size of the dryer.** After pressing the reset for housing hi limit you should have a LED on beside the Housing Hi Limit terminal J4-09. This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-09) 12 Volt DC when closed (Housing Hi Limit) LED should be on.

Burner (#) Gas Pressure Hi Limit

This occurs when gas pressure rises above or falls below preset limits on the Mercoid gas pressure switch. This Mercoid switch is required only in Canada. The message will show on which burner the error occurred. **Example: Burner #1 Gas Pressure Limit on up to Burner #6 Gas Pressure Limit depending on the size of the dryer.** The Gas Pressure Limit is wired directly to the fan/heater interface board where the shutdown occurred. If both limits are satisfied there should be a LED on beside the Gas Pressure terminal (J4-05). This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-05) 12 Volt DC when closed (Gas Pressure) LED should be on.

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Fan (#) Contactor Did Not Close

This occurs when the fan contactor has failed to close on start up or opens after start up. We monitor an auxiliary set of contacts on the fan contactor as an extra safety. The Fan Aux. is wired directly to the fan/heater interface board where the shutdown occurred. **Example: Fan #1 Did Not Close on up to Fan #6 Did Not Close depending on the size of the dryer**. If the contacts are closed there should be a LED on beside the Fan Aux. terminal (J4-03). This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-03) 12 Volt DC when closed (Fan Aux.) LED should be on.

Burner (#) Ignition Failure

This happens when the burner fails to light. Make sure the fuel source has been turned on, all valves are on and especially the maxon valve (if equipped). The maxon valve has to be reset after every time an error has occurred or there has been a loss of power. Check the wiring, igniter gap (which needs to be about 1/8" or wider gap) and make sure you are getting a spark. The igniter is located inside the fan/heater housing and the wiring from it goes directly to the Fenwal board located inside the fan can box, which is attached to the fan/heater housing. You can gain access to the igniter by removing the cover off the side of the fan/heater housing or by entering through the rear door of the dryer.
CAUTION Make sure power is off while making the above adjustment !!!!
Assuming you have established airflow.
The following has to take place:
Burner switch on.
Power from fan/heater interface board to L1 on the Fenwal board.
Power goes out to the gas solenoids on V1
Ignition takes place
Flame sensing
All this has to happen within approximately four seconds or you will get the above error. The error will show which burner has caused the shutdown. **Example: Burner #1 Ignition Failure on up to Burner #6 Ignition Failure depending on the size of dryer.**
More on Fenwal board wiring on pages 53 & 54.

Burner (#) Lost Flame Detection

This error occurs when the flame probe has failed to detect a flame. This may have been caused by the flame probe not directly in the flame path, loss of fuel or a problem with the burner circuit. Sometimes the loss of flame occurs when the burner has cycled to low fire. All you may have to do is adjust the gas pressure or flame probe so it is in the flame at all times. Another good way to see if the burner is sensing flame correctly is to watch the light in the burner switch. If the light starts to flicker an adjustment may need to be made on the flame probe. Also check the wiring connections from the fenwal board out to the flame probe and at the flame probe. The error will show which burner has caused the shutdown. (next page)

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Burner (#) Lost Flame Detection (continued)

Example: Flame Loss #1 on up to Flame Loss #6 depending on the size of the dryer.
CAUTION Make sure power is off while making the above adjustment !!!!
Assuming you have established airflow.
The following has to take place:
Burner switch on.
Power from fan/heater interface board to L1 on the Fenwal board.
Power goes out to the gas solenoids on V1
Ignition takes place
Flame sensing
All this has to happen within approximately four seconds or you will get the above error.

Vapor (#) Temp Hi Limit

The LP gas vapor temperature sensor located in the gas pipe train downstream from the vaporizer, has opened indicating that the vaporizer is running too hot and must be adjusted. This sensor is set at 200 F degrees and will automatically reset itself when cool. Try adjusting the vaporizer coil away from the burner flame. Make sure the LP tank has fuel in it. You may also try switching to on/off cycle rather than hi/low, especially on warmer days. The message will show on which fan/heater the error occurred. **Example: Vapor #1 Temp Hi Limit on up to Vapor #6 Temp Hi Limit depending on the size of the drying.** The vapor hi limit is wired directly to the fan/heater interface where the shutdown occurred. After the hi limit closes again there should be a LED on beside the Vapor Hi Limit terminal J4-08. This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-08) 12 Volt DC when closed (Vapor Hi Limit) LED should be on.

Burner (#) Plenum Overheat

This occurs when the plenum temperature inside has reached 300 F degrees. The fixed temperature thermo disc has opened. This will automatically reset when it cools down. The message will show on which fan/heater the error occurred. **Example: Burner #1 Plenum Overheat on up to Burner #6 Plenum Overheat depending on the size of the dryer.** The plenum overheat is wired directly to the fan/heater interface board where the shutdown occurred. After the overheat closes again there should be a LED on beside the Plenum Hi Limit terminal J4-07. This is on the fan/heater interface board where the row LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-07) 12 Volt DC when closed (Plenum Hi Limit) LED should be on.

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Burner (#) Plenum Overheat (Thermistor Sensor)

This occurs when the plenum temperature inside has reached a set overheat limit by the computer. You can activate the emergency cool mode by pressing the start switch. The fan and only the fan will run until the plenum temperature falls below its set hi-limit. **Example: Burner #1 Plenum Overheat (Thermistor) on up to Burner #6 Plenum Overheat (Thermistor) depending on the size of the dryer.** Thermistor bolt sensor is located at the end of the conduit inside the plenum just inside the plenum door.

Plenum (#) Temperature Sensor Shorted

This occurs when the plenum temperature sensor leads have shorted together. The sensor is located at the end of the conduit inside the plenum associated with the error. The sensor is wired directly to the fan/heater interface, which one depends on the number of plenums the dryer has. The error message will show in which plenum the short occurred.
Plenum Temp Sensor Ground - (J3-02)
Plenum Temp Sensor - (J3-01)

Plenum (#) Temperature Sensor Open

This occurs when the plenum temperature sensor or the wires to the sensor have opened. The sensor is wired directly to the fan/heater interface, which one depends on the number of plenums the dryer has. The error message will show in which plenum the open occurred.
Plenum Temp Sensor Ground - (J3-02)
Plenum Temp Sensor - (J3-01)

Burner (#) Grain Overheat

This occurs when the grain temperature in one of the grain columns has reached 210 F degrees. The fixed temperature thermo disc has opened. This will automatically reset when it cools down. You will have to check each grain column and make sure the grain is moving down the column screen. The message will show on which fan/heater the error occurred. **Example: Burner #1 Grain Overheat on up to Burner #6 Grain Overheat depending on the size of the dryer.** The grain overheat is wired directly to the fan/heater interface board where the shutdown occurred. After the overheat closes again there should be a LED on beside the Grain Hi Limit terminal J4-06. This is on the fan/heater interface board where the row of LED's are located. If you are using a voltmeter you should have 12 volts DC on the following: (Remember when checking for 12 volts DC always put one probe of meter on the DC negative.)
(J5-03) DC Negative
(J4-01) 12 Volt DC output LED should be on.
(J4-06) 12 Volt DC when closed (Grain Hi Limit) LED should be on.

Burner (#) Grain Overheat (Thermistor Sensor)

This occurs when the grain temperature in one of the grain columns has reached a set overheat limit by the computer. You can activate the emergency cool mode by pressing the start switch. The fan and only the fan will run until the grain temperature falls below its set hi-limit.

POSSIBLE FAN HEATER BOARD ERRORS (BOARD LOCATED IN THE FAN HEATER BOX)

Burner (#) Grain Overheat (Thermistor Sensor)(continued)

Example: Burner #1 Grain Overheat (Thermistor) on up to Burner #6 Grain Overheat (Thermistor) depending on the size of the dryer. The grain thermistor sensors are located in the conduit running inside the grain column.

Grain (#) Temperature Sensor Shorted

This occurs when the grain temperature sensor leads have shorted together. The sensors are located in the conduit inside the grain column. The sensors are wired directly to the fan/heater interface, which one depends on the size of the dryer.
The error message will show in which fan/heater the short occurred.
Grain Temp Sensor Ground - (J3-04)
Grain Temp Sensor - (J3-03)

Grain (#) Temperature Sensor Open

This occurs when the grain temperature sensor or the wires to the sensor are open . The sensors are located in the conduit inside the grain column. The sensors are wired directly to the fan/heater interface, which one depends on the size of the dryer.
The error message will show in which fan/heater the open occurred.
Grain Temp Sensor Ground - (J3-04)
Grain Temp Sensor - (J3-03)

If you think you might have either a bad plenum or grain sensor check the location and testing procedures drawing.
There is also a Resistance / Temperature chart to compare the resistance of the sensor with a known temperature when checking the sensor. (Page 44)

Fan (#) Network Connection Failed

This occurs when communication link between fan & heaters has failed. Check the cat 5 cable to make sure the connection is ok on the fan/heater board. Check the end of the cat 5 cable to make sure it is not damaged. Check the row of dip switches next to the network connection and make sure the proper switch is in the on position. There can be up to six fans & heaters depending on the size of the dryer. If Fan #1 Network Connection Failed comes up that means it has lost communication between Main I/O Board and Fan #1. All others will be between Fan/Heaters.

Example: Fan/Heater #1 - Switch #1 on - all others off
Fan/Heater #2 - Switch #2 on - all others off
Fan/Heater #3 - Switch #3 on - all others off
Fan/Heater #4 - Switch #4 on - all others off
Fan/Heater #5 - Switch #5 on - all others off
Fan/Heater #6 - Switch #6 on - all others off
Switch #7 on - If this is the last Fan/Heater

(Example - 2 Fan Dryer has two Fan/Heaters the #2 Fan/Heater board will have #2 Switch & #7 Switch both will be on.)

PROCEDURE FOR LOCATING, TESTING & REPLACING A DEFECTIVE PLENUM TEMPERATURE SENSOR

Symptoms of a bad sensor may include:
Temperature readings that are not consistent with the ambient outside temperature or with a verified plenum temperature that has been taken with a thermometer.
Erratic plenum display readings.
Plenum temp open or plenum temp short.

Troubleshooting:

1. The process of checking the sensor is similar to that of the grain sensors, but you only have one sensor to check for each plenum.
2. The actual plenum sensor is located in the plenum just inside the rear access door to the left. (Facing the rear of the dryer)
3. Start at the heater board that is associated with the plenum sensor you want to check. (Each plenum has it's own plenum sensor.)
4. The wires from the sensor (which are butt connected at the sensor) go through a conduit in the plenum section of the dryer. That conduit terminates at a white plastic 4"x4" junction box. This box is located on the front of the dryer to the right of the fan/ heater. (Facing the front of the dryer.) From that point to the heater board.
5. The wires are connected to terminals J3-01 (yellow wire) and J3-02 (white/black wire) on heater board.(see wiring diagram of heater board on page 53)
6. Unhook those wires
7. What you will be checking is resistance in relationship to a known temperature. (See resistance/temperature chart on next page.)
8. With a ohm meter, set your scale to 20k (if it's not a autorange model).
9. Place one probe of your meter on one wire going out to the sensor and the other probe to the other wire.
10. The meter should read close to the resistance/temperature chart on page 44.
11. Assuming you have checked the wiring from the heater board to the sensor and it is OK. But the resistance is not close to what is on the chart. You probably have a bad plenum bolt sensor.

PLENUM SENSOR
HF-7236

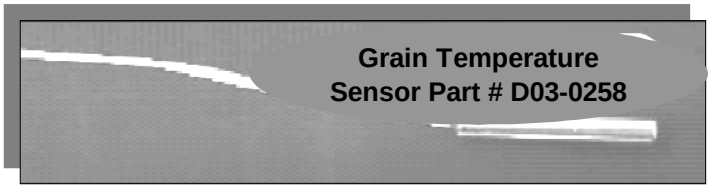
TEMPERATURE / RESISTANCE CHART

°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms	°F	Ohms
28	36,601	62	14,546	96	6,382	130	3,047	164	1,565	198	855.7	232	494.3
29	35,565	63	14,179	97	6,238	131	2,985	165	1,536	199	841.4	233	86.8
30	34,562	64	13,822	98	6,097	132	2,925	166	1,508	200	827.3	234	479.4
31	33,591	65	13,475	99	5,960	133	2,865	167	1,480	201	813.6	235	472.1
32	32,650	66	13,139	100	5,826	134	2,807	168	1,453	202	800.1	236	464.9
33	31,739	67	12,811	101	5,696	135	2,751	169	1,427	203	786.8	237	457.9
34	30,856	68	12,493	102	5,569	136	2,696	170	1,401	204	773.8	238	451
35	30,000	69	12,184	103	5,446	137	2,642	171	1,375	205	761.1	239	444.2
36	29,171	70	11,884	104	5,325	138	2,589	172	1,350	206	748.6	240	437.6
37	28,368	71	11,591	105	5,208	139	2,537	173	1,326	207	736.3	241	431
38	27,590	72	11,307	106	5,093	140	2,487	174	1,302	208	724.3	242	424.6
39	26,835	73	11,031	107	4,981	141	2,438	175	1,279	209	712.5	243	418.3
40	26,104	74	10,762	108	4,872	142	2,390	176	1,256	210	700.9	244	412.1
41	25,394	75	10,501	109	4,766	143	2,343	177	1,234	211	689.6	245	406
42	24,707	76	10,247	110	4,663	144	2,297	178	1,212	212	678.4	246	400
43	24,040	77	10,000	111	4,562	145	2,252	179	1,190	213	667.5	247	394.1
44	23,394	78	9,760	112	4,463	146	2,208	180	1,169	214	656.8	248	388.3
45	22,767	79	9,526	113	4,367	147	2,165	181	1,149	215	646.2	249	382.7
46	22,159	80	9,298	114	4,273	148	2,123	182	1,129	216	635.9	250	377.1
47	21,569	81	9,077	115	4,182	149	2,082	183	1,109	217	625.8		
48	20,997	82	8,862	116	4,093	150	2,042	184	1,089	218	615.8		
49	20,442	83	8,652	117	4,006	151	2,003	185	1,070	219	606.1		
50	19,903	84	8,448	118	3,921	152	1,965	186	1,052	220	596.5		
51	19,380	85	8,249	119	3,838	153	1,927	187	1,034	221	587.1		
52	18,873	86	8,056	120	3,757	154	1,890	188	1,016	222	577.9		
53	18,380	87	7,868	121	3,678	155	1,855	189	998.3	223	568.8		
54	17,902	88	7,685	122	3,601	156	1,820	190	981.2	224	559.9		
55	17,438	89	7,506	123	3,526	157	1,785	191	964.4	225	551.2		
56	16,988	90	7,333	124	3,453	158	1,752	192	947.9	226	542.6		
57	16,551	91	7,164	125	3,381	159	1,719	193	931.8	227	534.2		
58	16,126	92	6,999	126	3,311	160	1,687	194	915.9	228	525.9		
59	15,714	93	6,839	127	3,243	161	1,655	195	900.4	229	517.8		
60	15,313	94	6,682	128	3,176	162	1,624	196	885.2	230	509.8		
61	14,924	95	6,530	129	3,111	163	1,594	197	870.3	231	502		

PROCEDURE FOR LOCATING, TESTING & REPLACING A DEFECTIVE GRAIN TEMPERATURE SENSOR

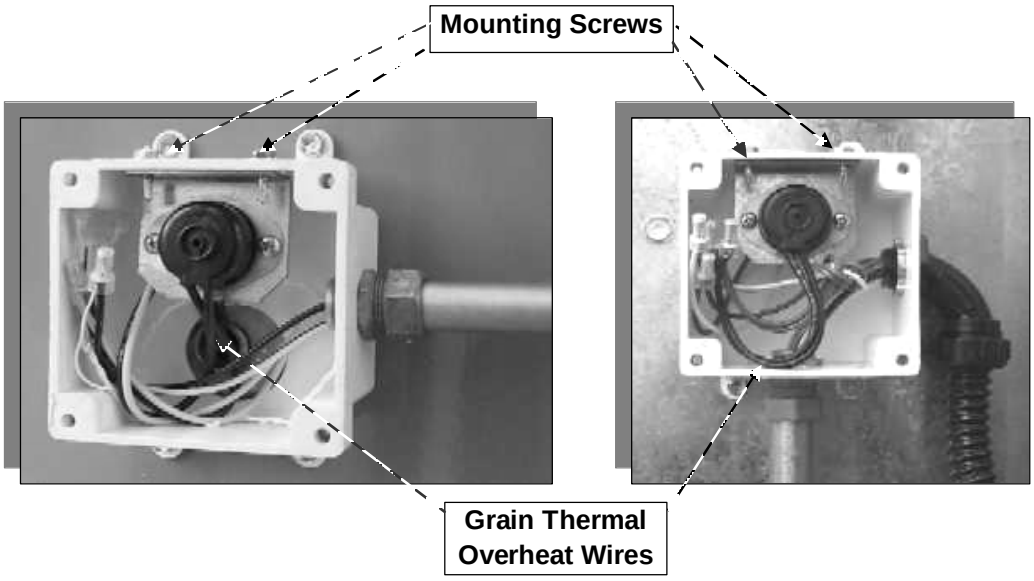
Symptoms of a bad sensor may include:

Temperature readings that are not consistent with the ambient outside temperature or with any known verified grain temperatures entering the dryer.
Display readings of 255 degrees or -127 degrees.



Troubleshooting:

1. Locate the left and right grain sensor electrical boxes on the dryer (see drawing below).
2. Open each box by removing the lid. They are held in place by 4 phillips head bolts and nuts.
3. Once inside the box, determine which wires you need to test by identifying the wire routing.



4. The grain sensor wires are the small white (26 ga.) and are connected to a 18 ga. wh/blk and a 18 ga. black wire with 2 of the smaller (26ga.) grain sensor wires butt connected together.
5. The grain thermal overheat switch is a black disk mounted on a silver bracket with 2 self drilling screws. The 2 black 18 ga. wires from the disk are connected to 2 colored wires.
6. Disconnect the wh/blk and black wires from the smaller white grain sensor wires.
7. Strip back about 1/4 inch from the end of each 26 ga. Sensor wires.
8. With a ohm meter, set your scale to 20k (if its not a autorange model).
9. Place the black lead in the still butt connected wire connection with the 2 - 26 ga. wires.

(next page)

PROCEDURE FOR LOCATING, TESTING & REPLACING A DEFECTIVE GRAIN TEMPERATURE SENSOR

10. Connect the red lead to either of the disconnected 26 ga. wires and make note of the reading.
11. Now move the red lead to the other disconnected 26 ga. wire and make note of this reading.
12. Go to the other side of the dryer and repeat steps 6 through 11.
13. You will notice that 3 readings will be very close to the same, but one reading will be different. This is your defective sensor. **(Compare readings to Temperature/ Resistance chart on page44)**
14. If you don't have a replacement sensor, jump to ***How to Bypass the Grain Temperature Sensor.***

Sensor Replacement:

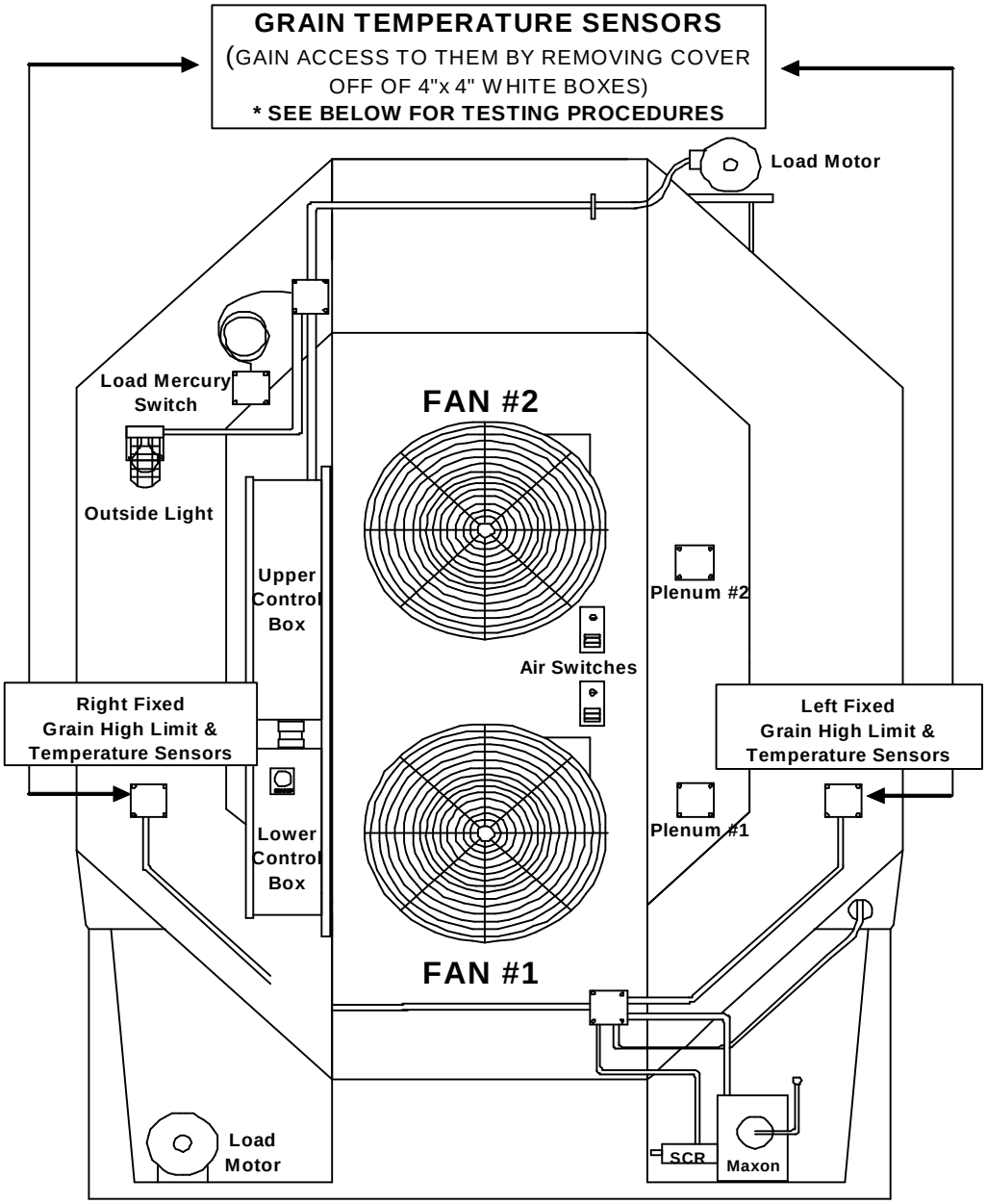
15. The grain sensors are mounted to the grain overheat capillary and need to be removed together.
16. To remove the overheat switch disconnect the grain thermal overheat wires.
17. Then remove the 2 self tapping screws and slide the bracket, overheat switch and sensors out of the conduit.
18. Remove the tape surrounding the defective grain sensor then remove it.
19. Place your new sensor upon the capillary then apply tape and secure the sensor.
20. Slide the overheat switch and sensors back into the conduit until the bracket for the overheat switch is in the same mounting position as before.
21. Replace both mounting screws back into the overheat switch mounting bracket.
22. Butt connect together one wire from each of the grain sensors.
23. Connect one of the remaining grain sensor wires to the black 18 ga. wire.
24. Connect the other remaining grain sensor to the white 18 ga. wire.
25. Connect one of the grain overheat switch wires to each one of the colored wires.
26. Reconnect the other side of the dryer following steps 22 through 24.
27. Double check the wire connections then replace the covers on the boxes.

How to Bypass the Grain Temperature Sensor:

The following instructions are for situations where you don't have an extra grain sensor to replace the defective one. So now, we are going to rewire the sensors so that instead of using 4 sensors to monitor the grain temperature with, we are going to use one. The dryer will operate fine with only one sensor with one exception of only being able to monitor one small section of the grain columns.

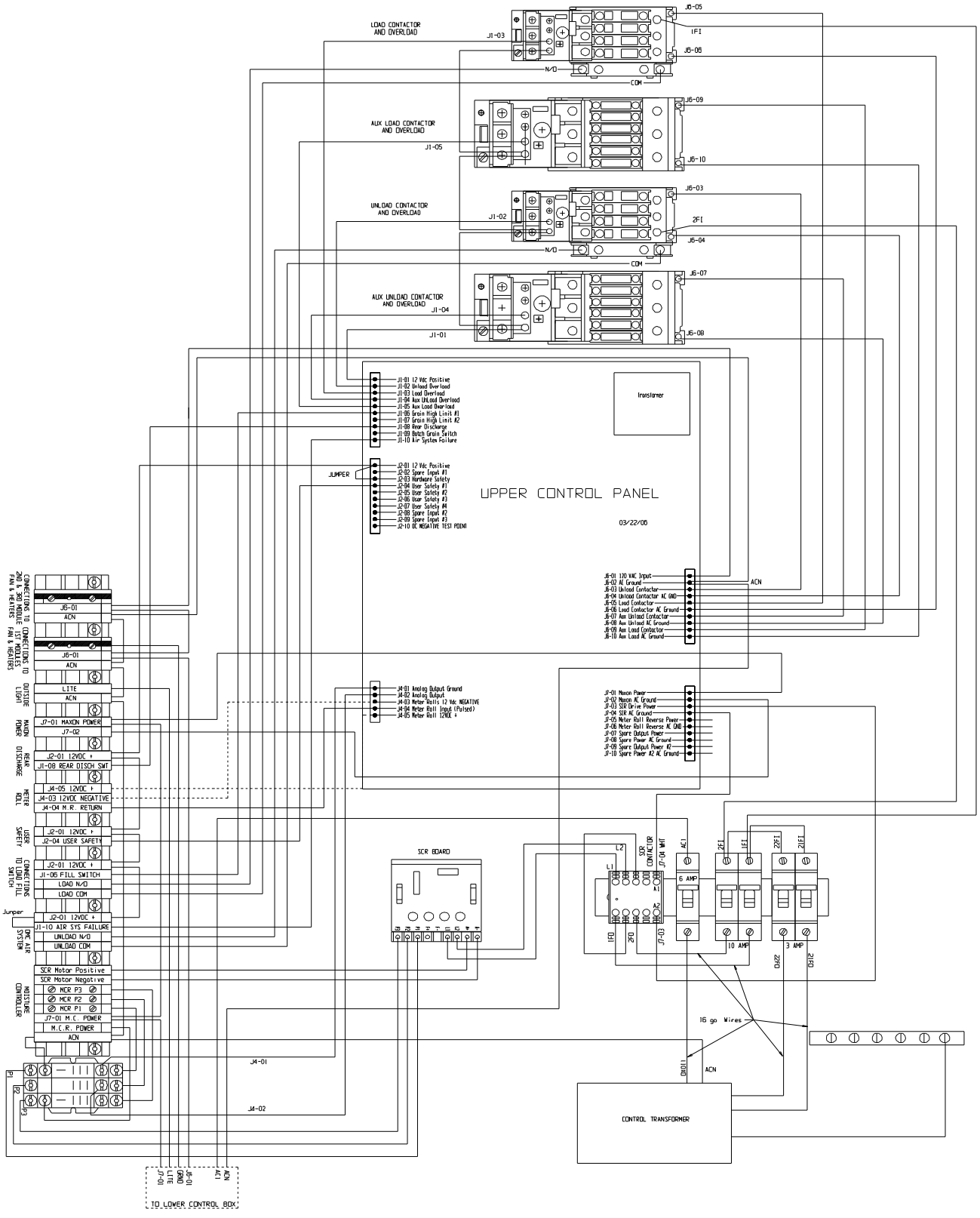
1. On the side of the dryer in which has defective sensor, leave this sensor and the joining sensor disconnected from the white and black 18 ga. wires. Be sure to cap these 18 ga. wires off.
2. On the other side of the dryer, take one of the small grain sensor wires and connect it to the white 18 ga. wire.
3. From the same sensor that you connected to the white 18 ga. wire, connect the other small white grain sensor wire to the black 18 ga. wire.
4. Double check the wire connections then replace the covers on the boxes.

TESTING PROCEDURES AND LOCATION OF GRAIN SENSORS

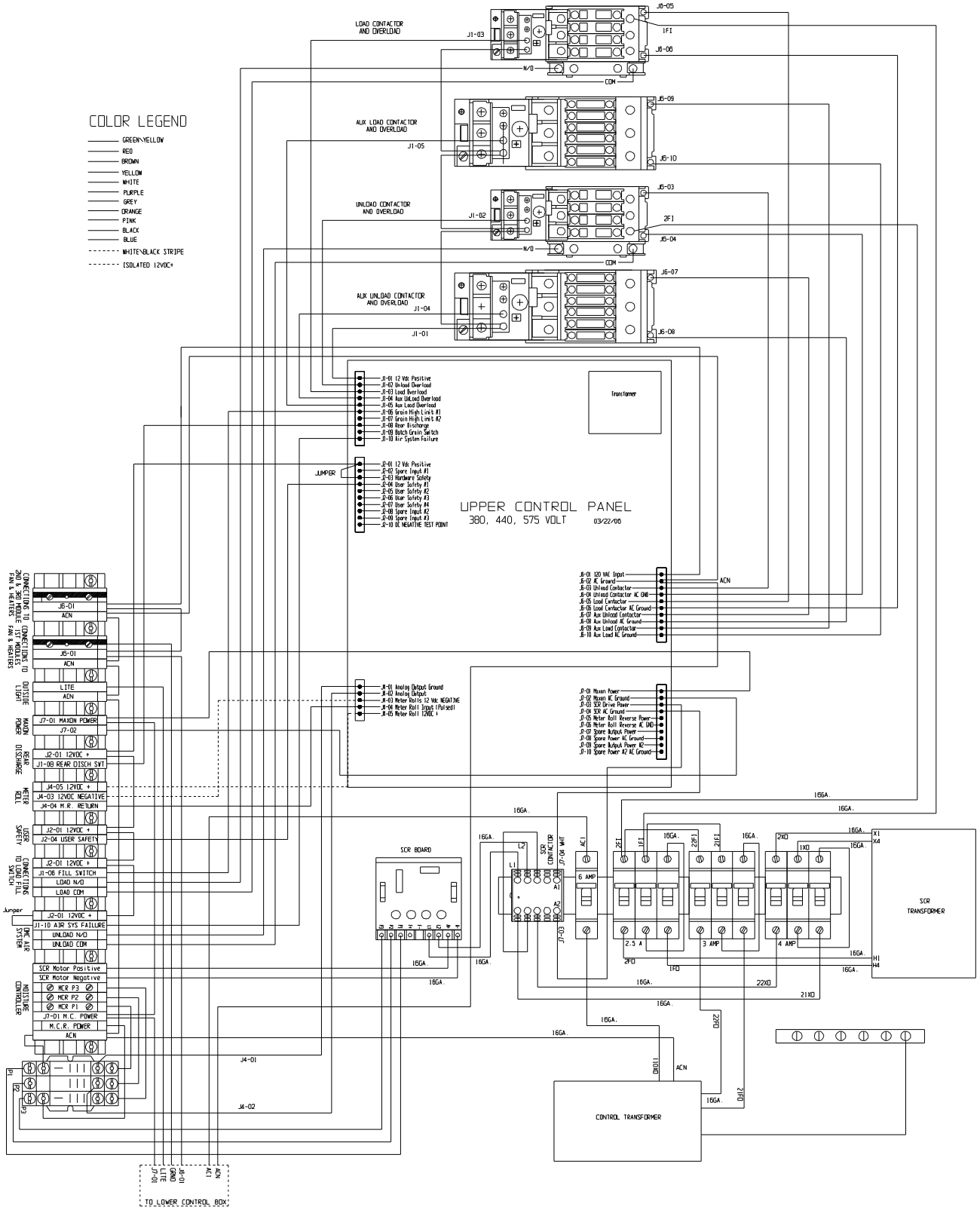


The grain sensors are finally terminated at the heater board located in the fan heater box. Single module with two fans, grain sensors are wired to bottom heater board. On a stack dryer with multiple fan/heaters the sensors will be terminated on the bottom heater board of the second module. It does not matter if the second module has one fan/ heater or two fan/heaters. If you suspect a bad sensor always check at the heater board first. You will have two white/black wires connected to J3-04 and two orange wires connected to J3-03. What you are checking is the resistance of the (thermistor) sensor according to the temperature in the grain column. Disconnect the two sets of wires and with your ohm meter, set your scale to 20K. Put one meter probe on the white/black set of wires and the other probe to the orange set. It should read somewhere close to the chart on page . Example: Temperature 70 degrees Fahrenheit - should read about 12K on your meter, If this doesn't = 12K go back to the white junction boxes as indicated above.

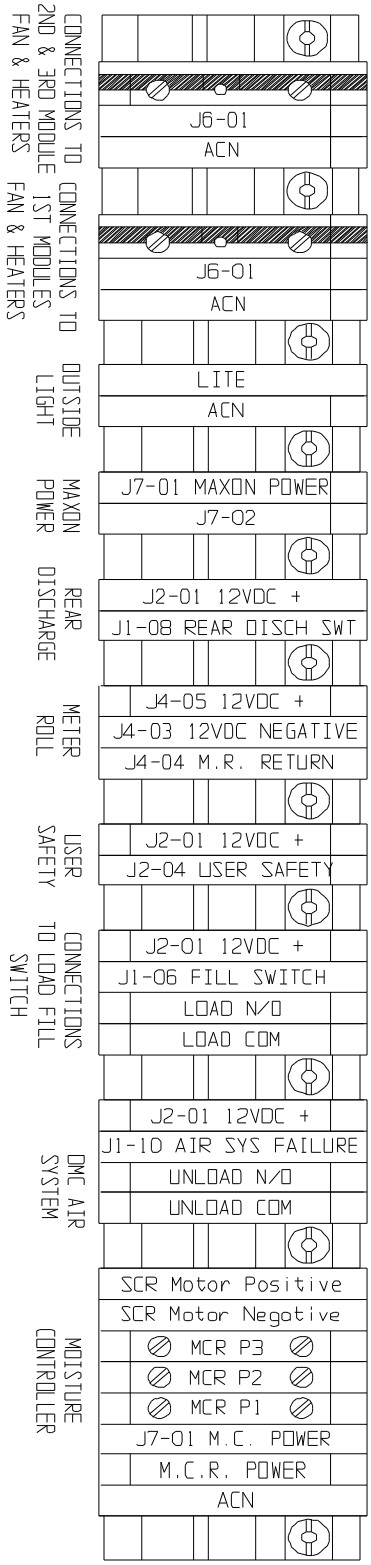
UPPER PANEL CONTROL WIRING (230 VOLTS)



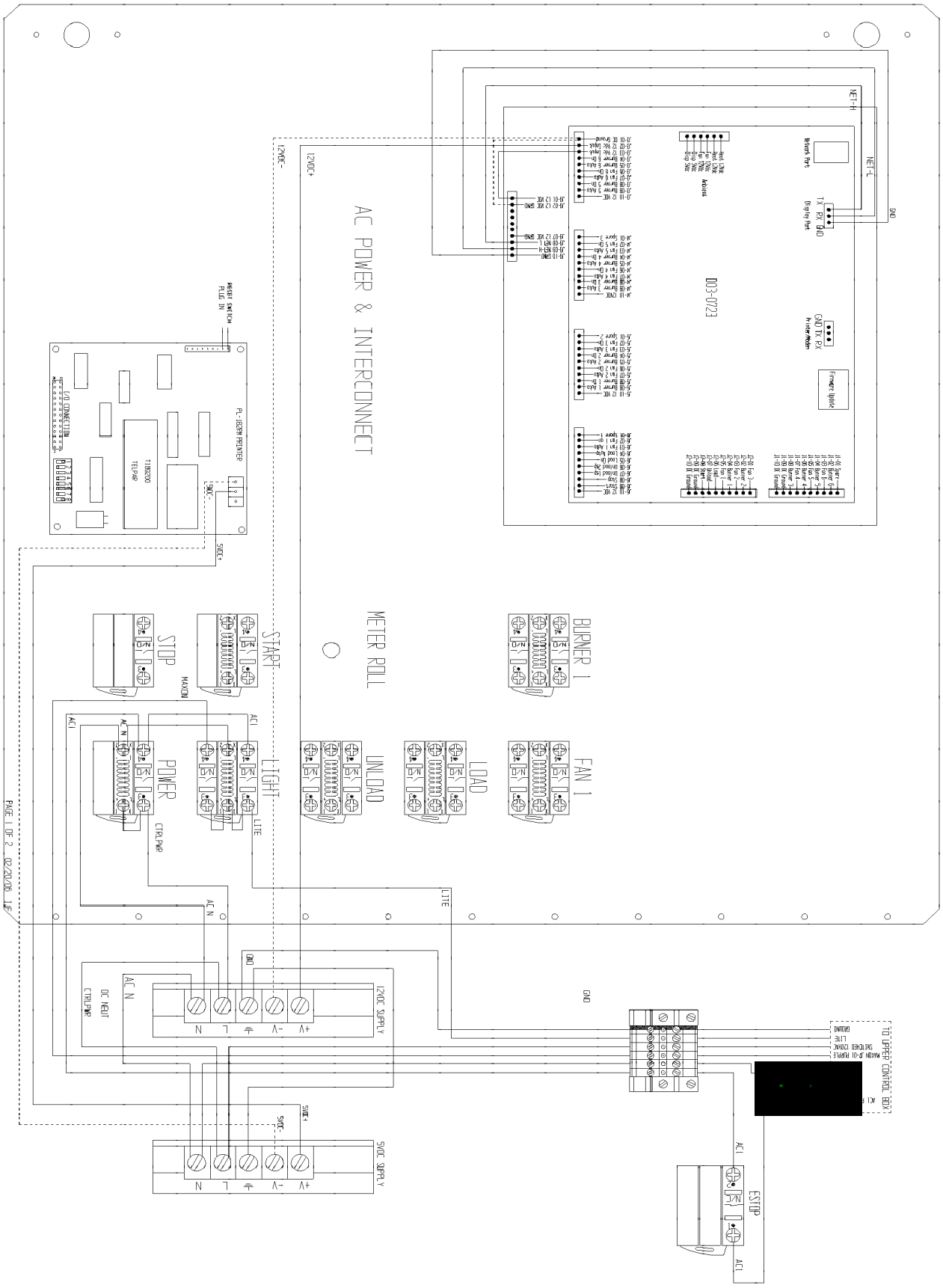
UPPER PANEL CONTROL WIRING
(380, 440 & 575 VOLTS)



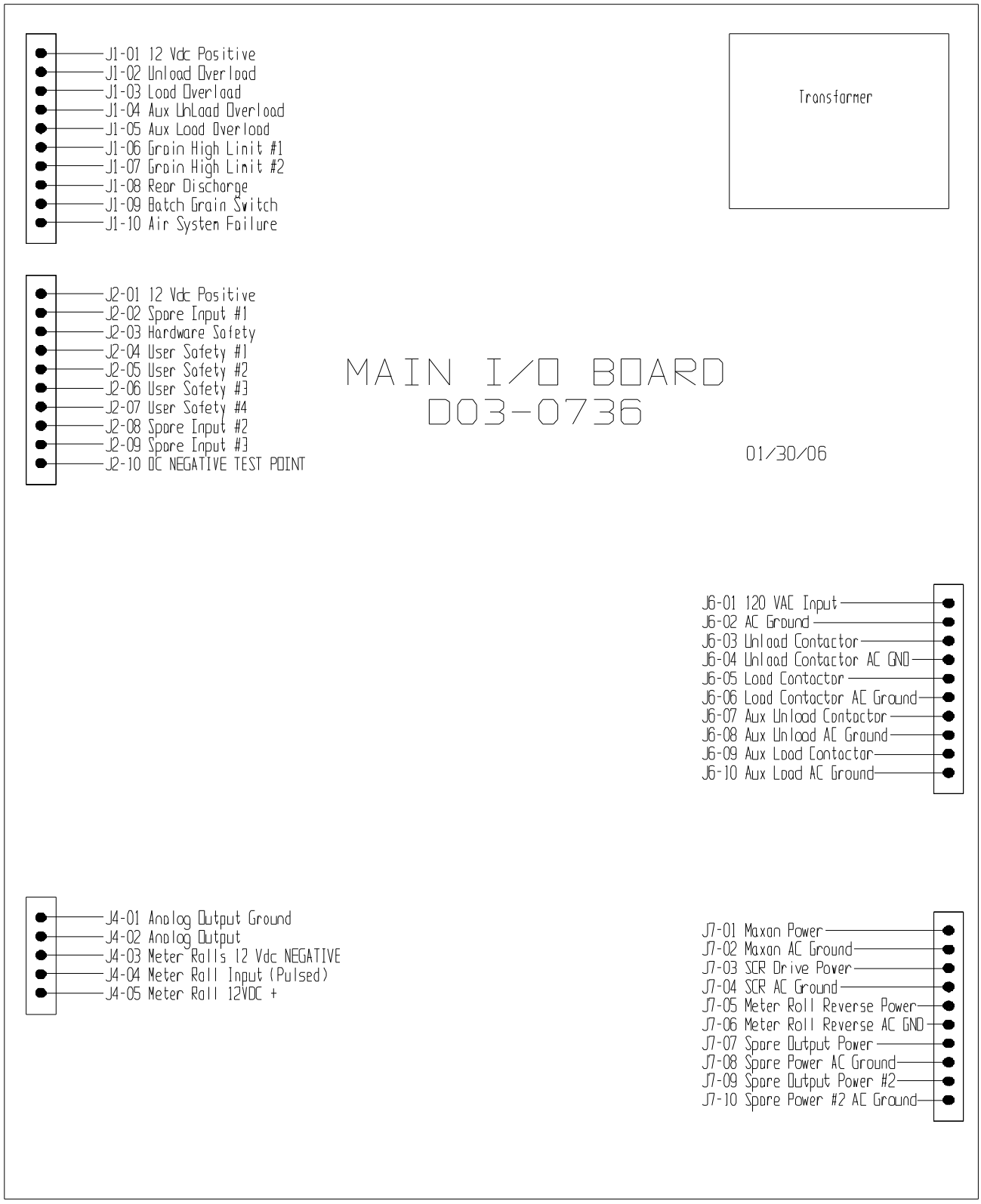
UPPER TERMINAL STRIP
(LOCATED IN THE UPPER PANEL)



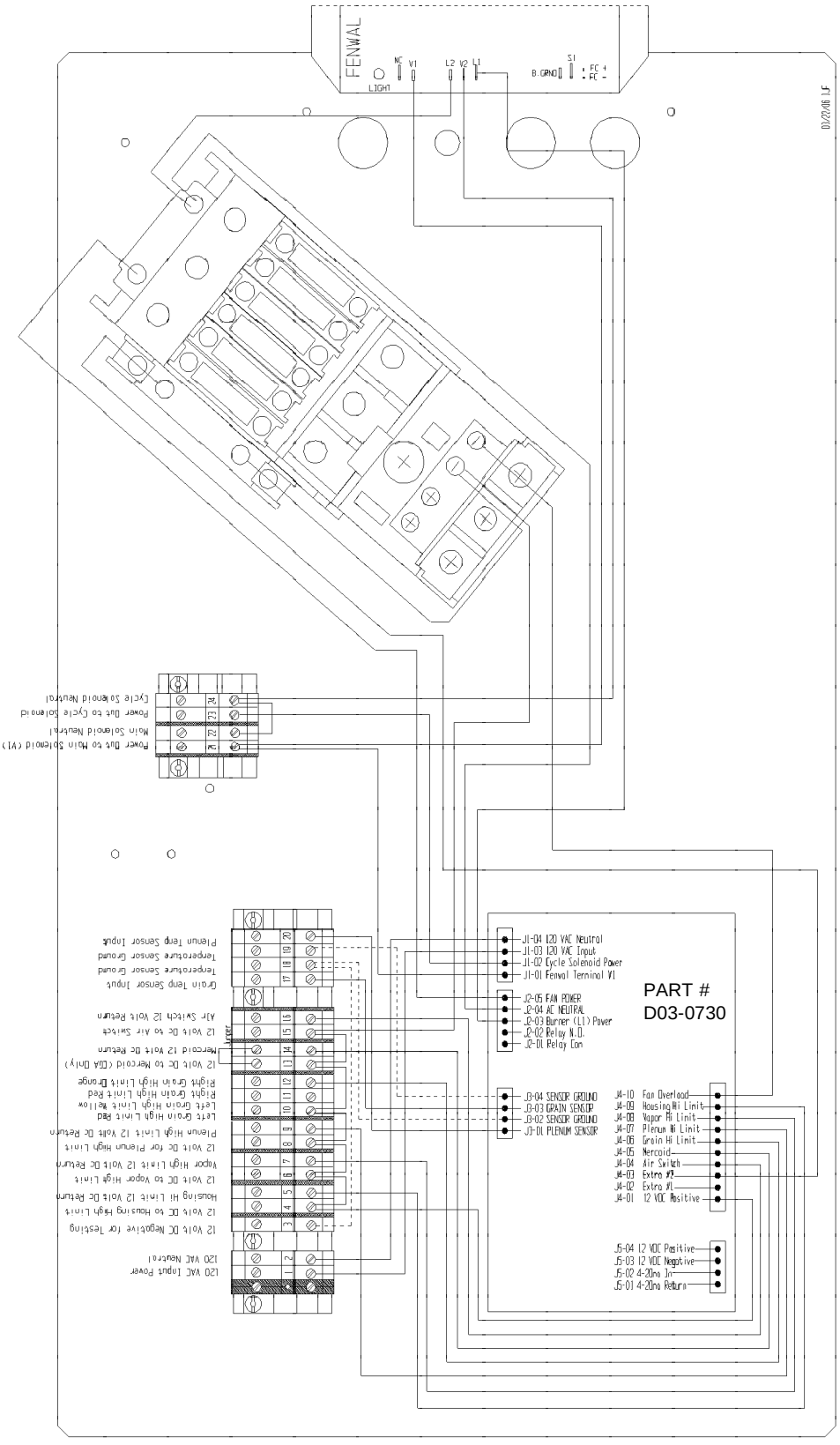
AC INPUT WIRING



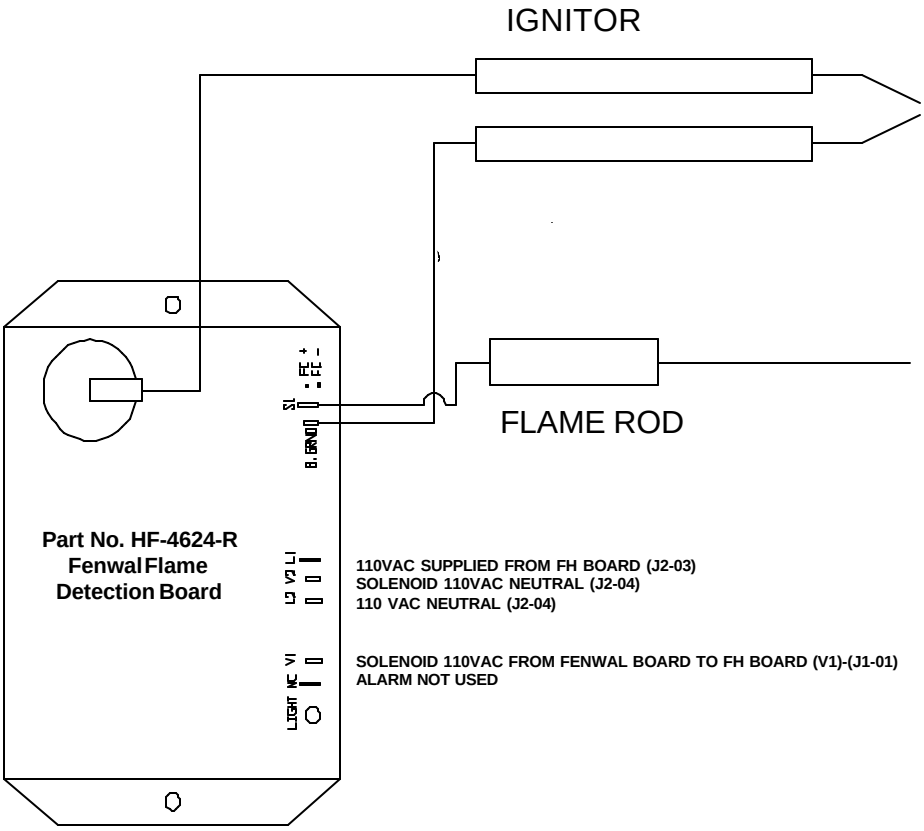
MAIN I/O BOARD IDENTIFICATION (LOCATED IN THE UPPER PANEL)



FAN / HEATER BOX WIRING

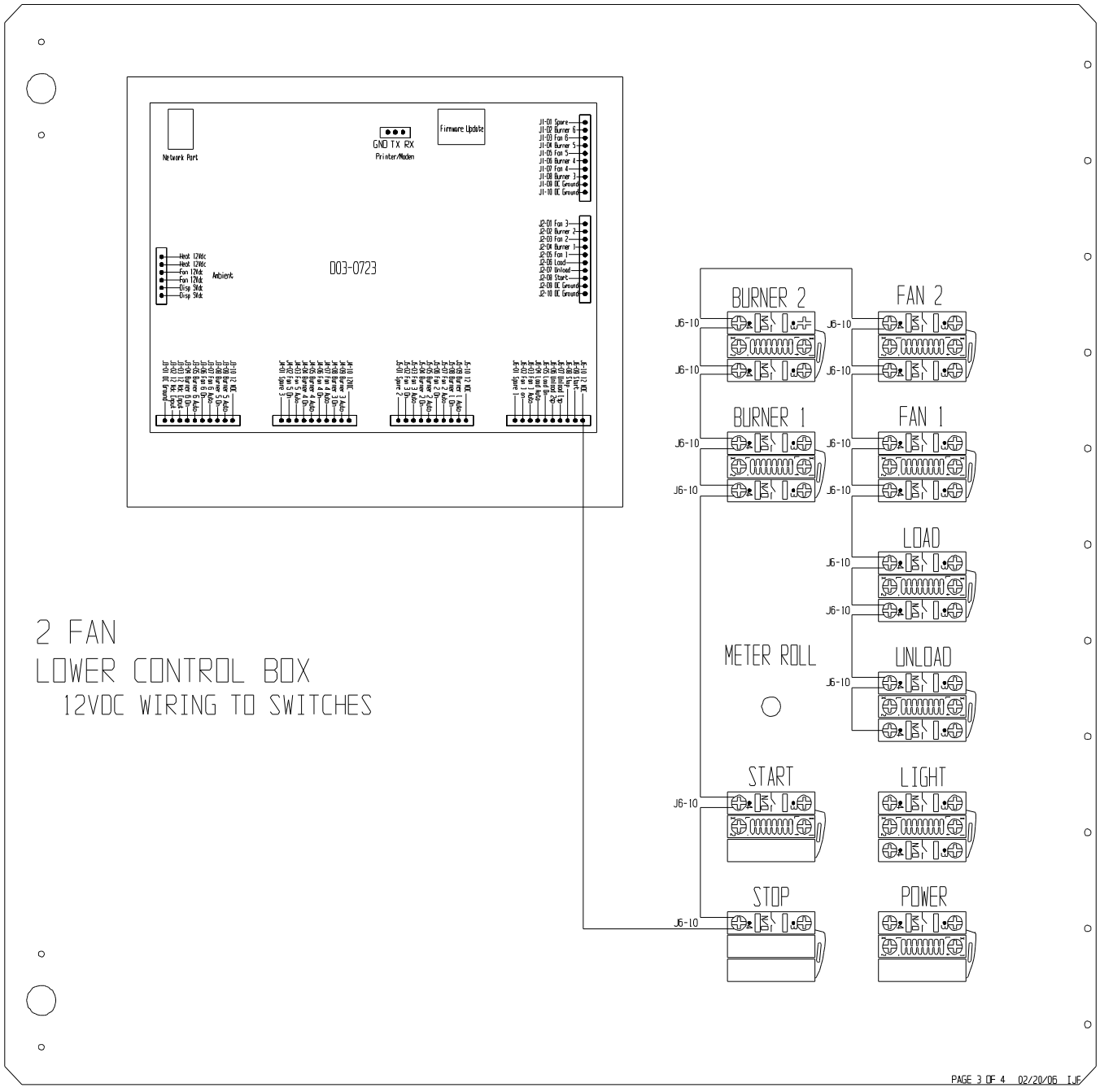


FEWAL BOARD WIRING

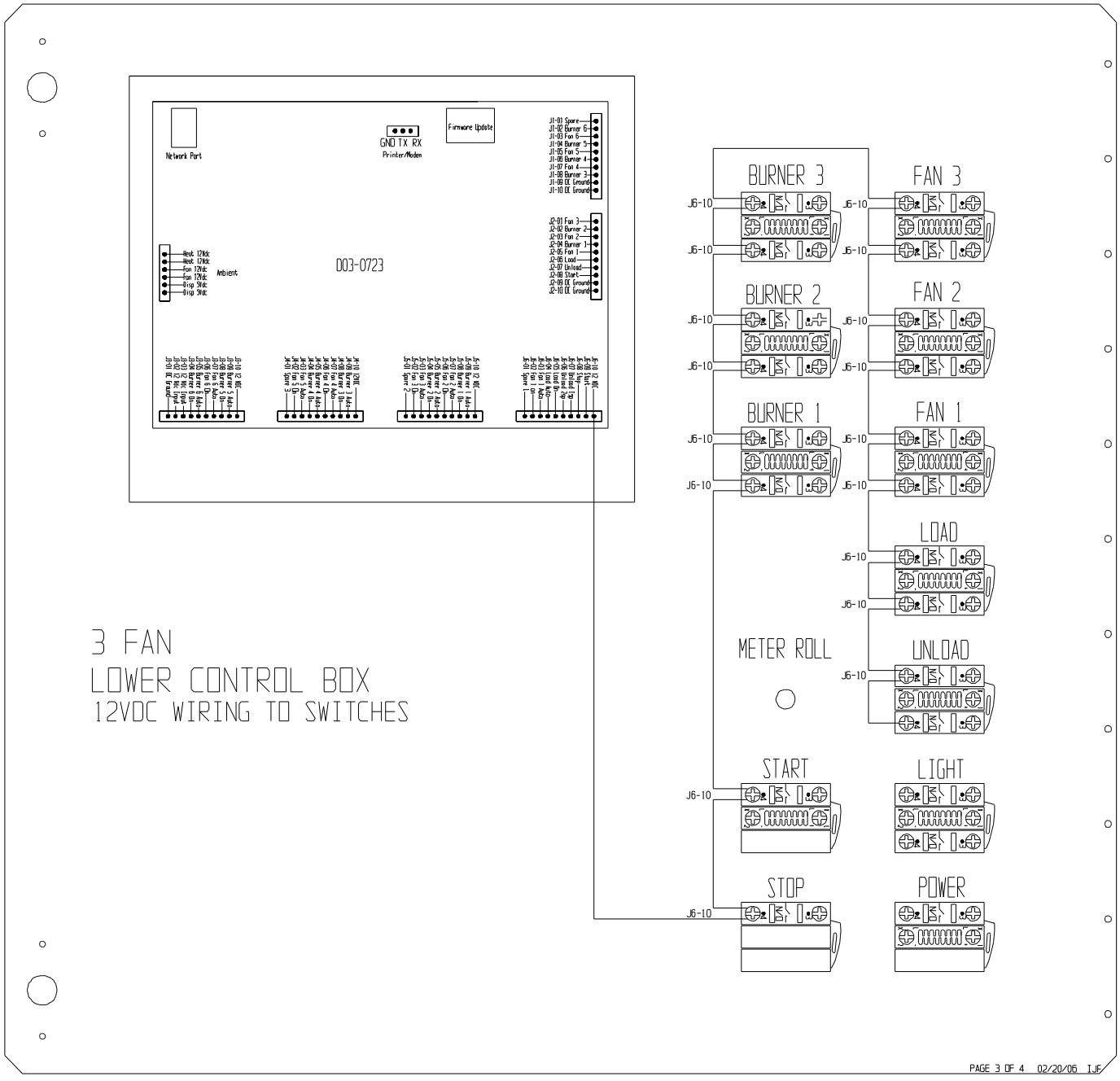


ALSO REFER TO THE FAN & HEATER BOARD WIRING DIAGRAM ON PREVIOUS PAGE

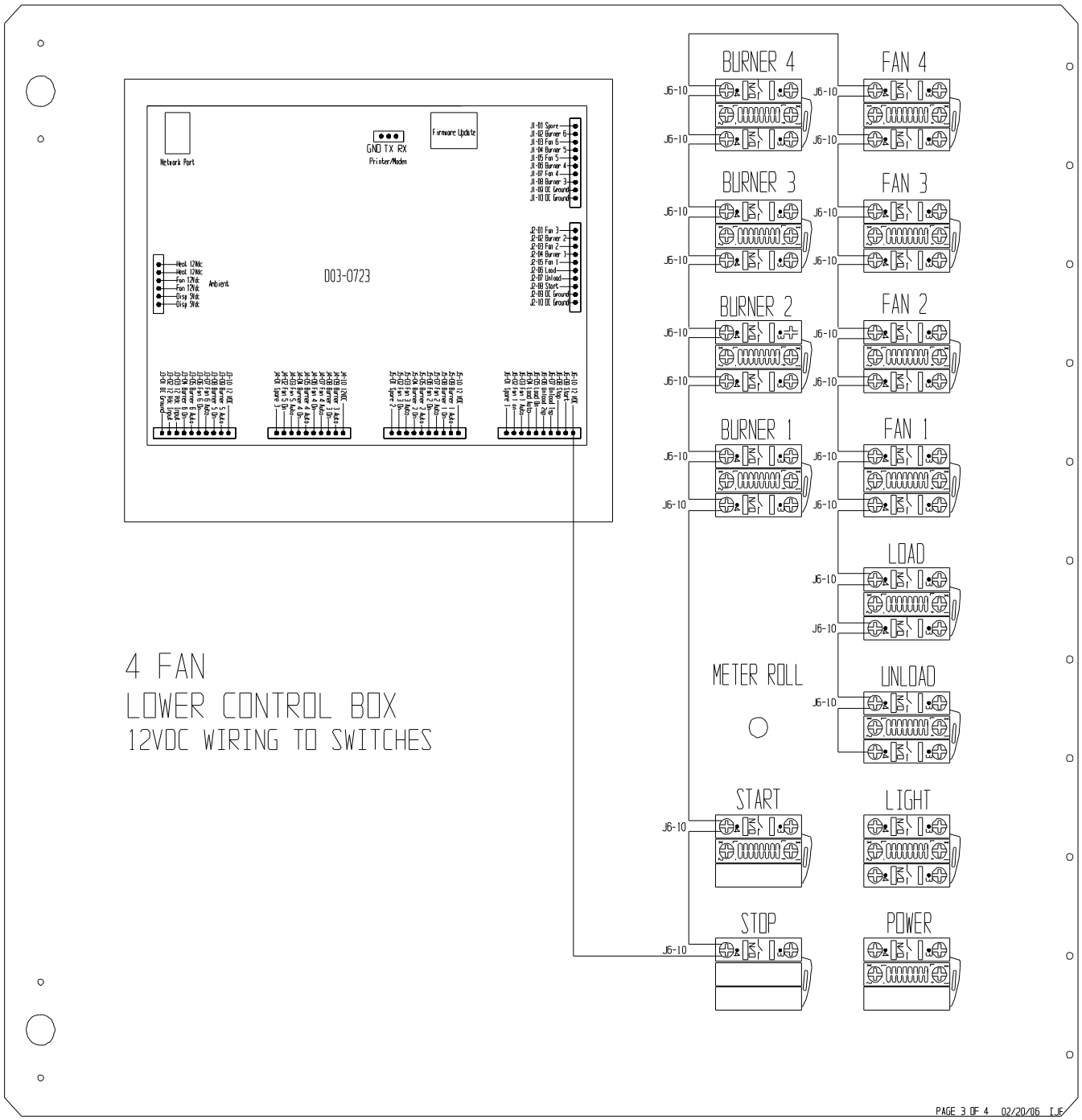
12 VDC WIRING TO SWITCHES
(EXAMPLE 2 FAN)



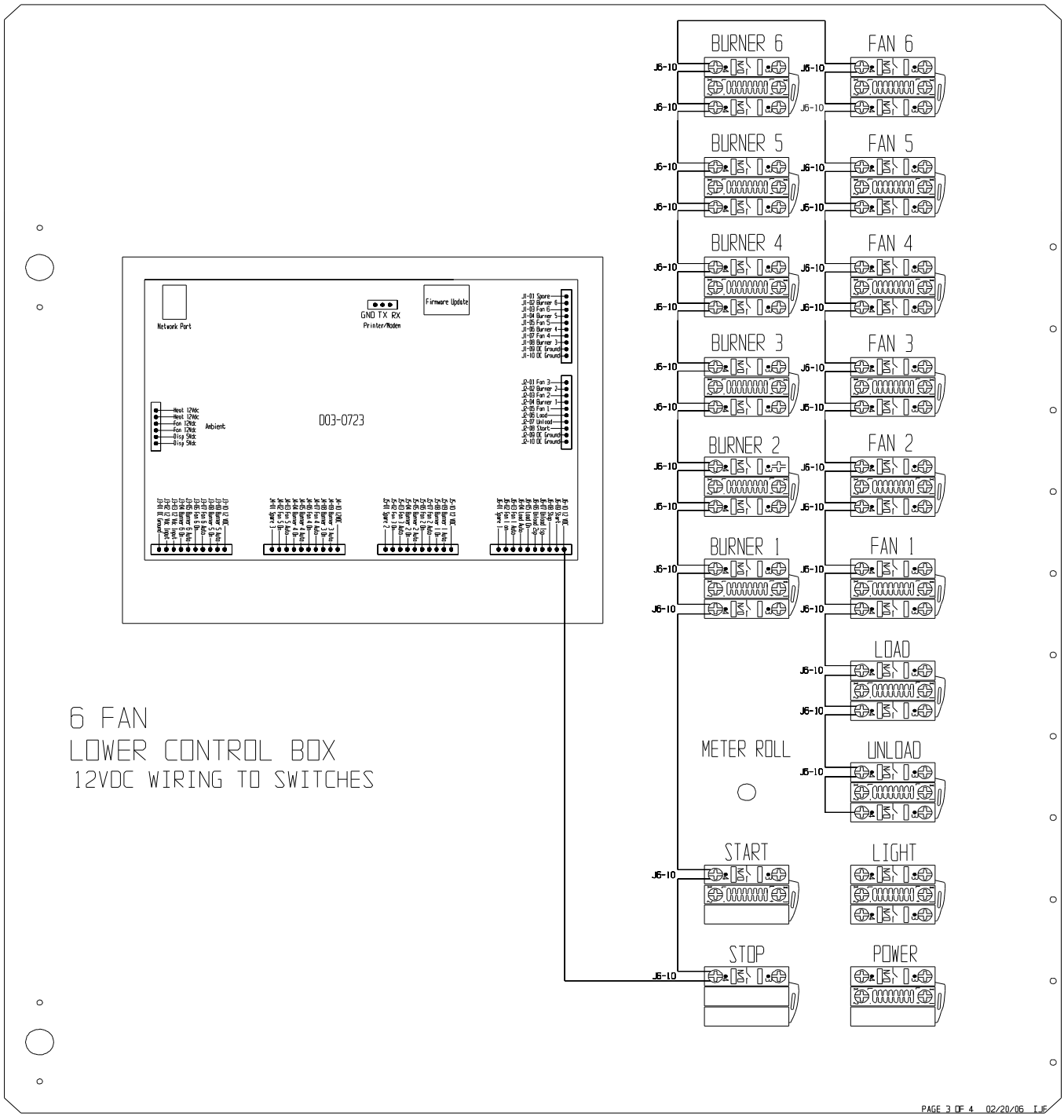
12 VDC WIRING TO SWITCHES
(EXAMPLE 3 FAN)



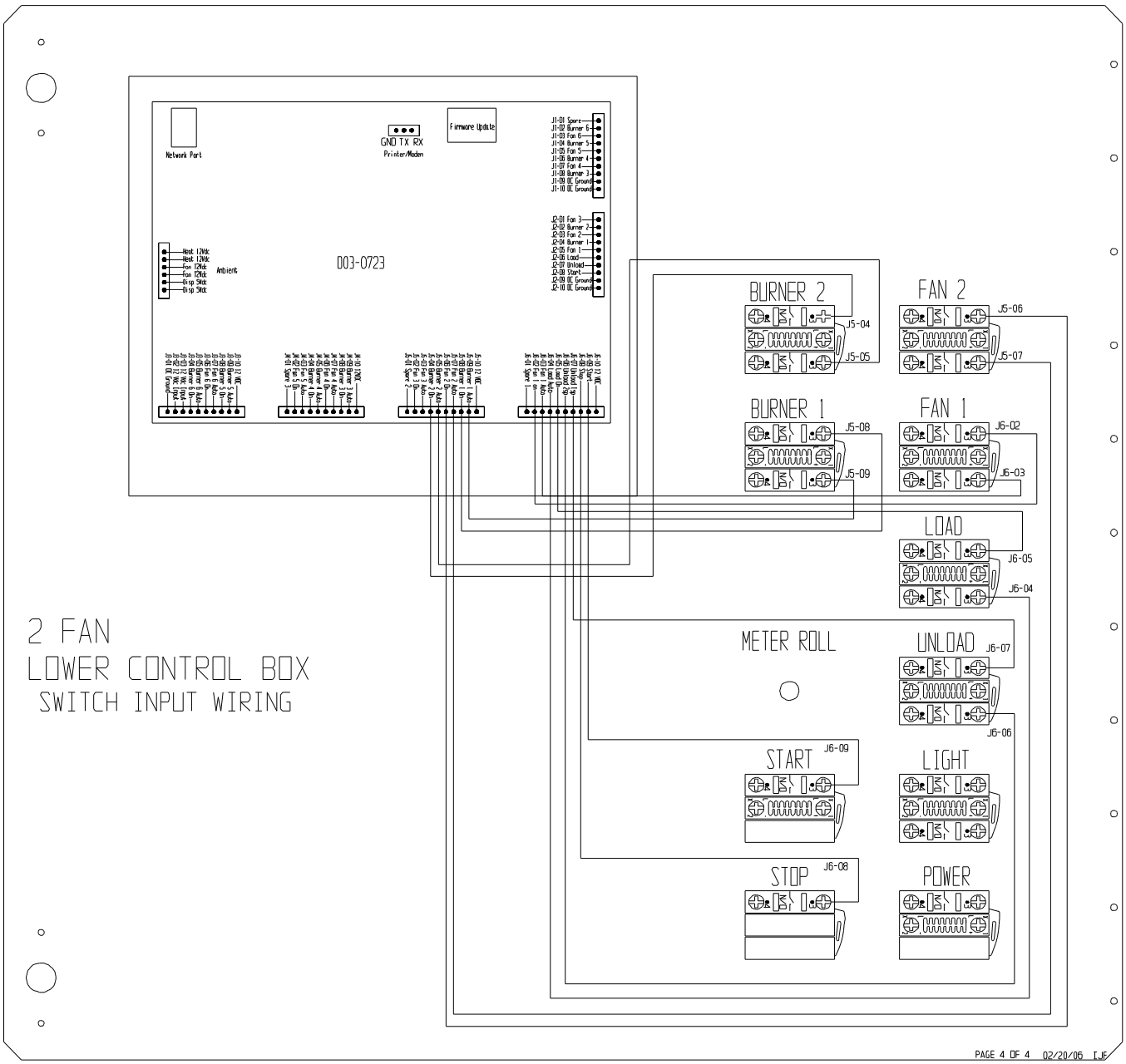
12 VDC WIRING TO SWITCHES
(EXAMPLE 4 FAN)



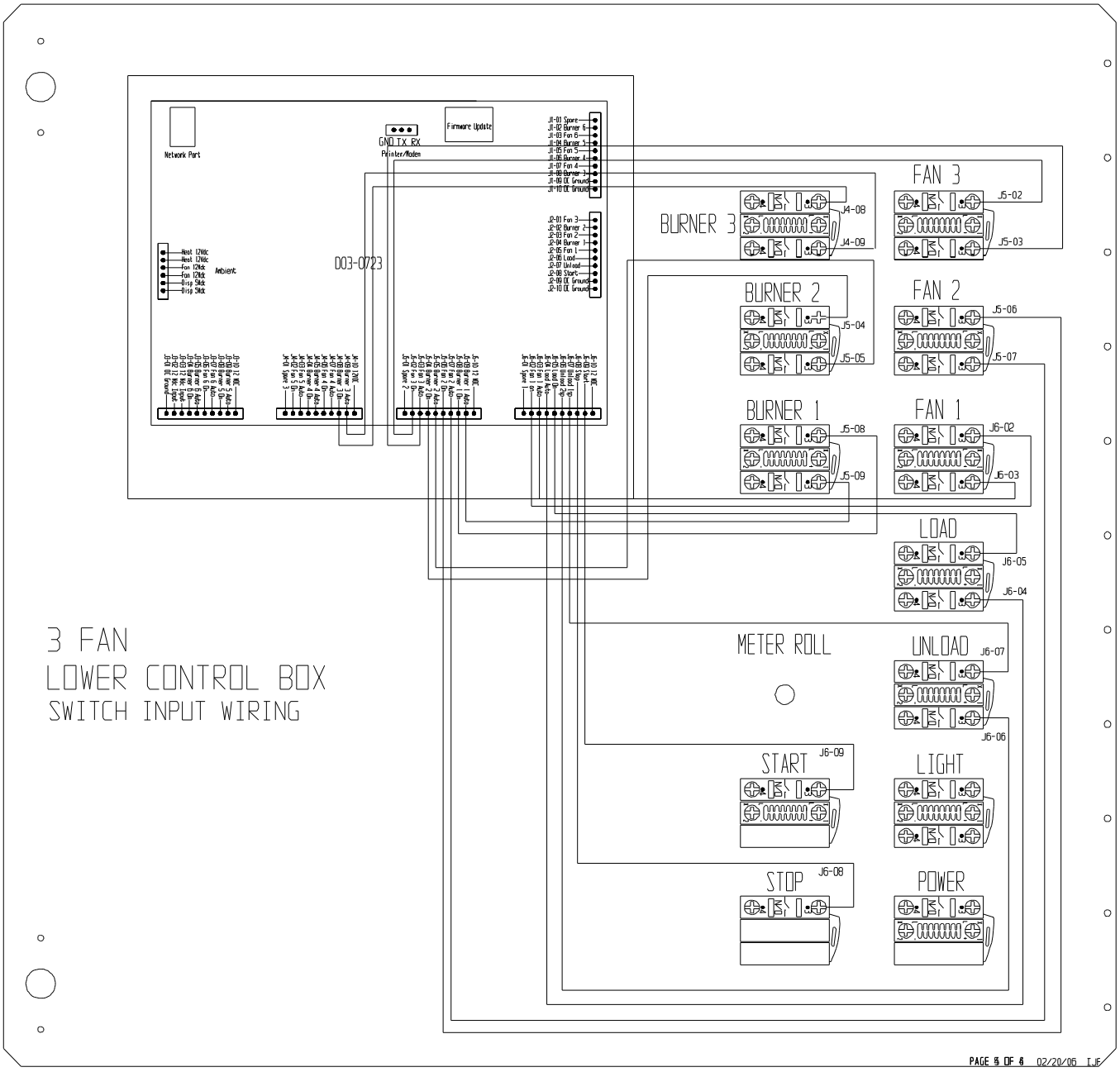
12 VDC WIRING TO SWITCHES (EXAMPLE 6 FAN)



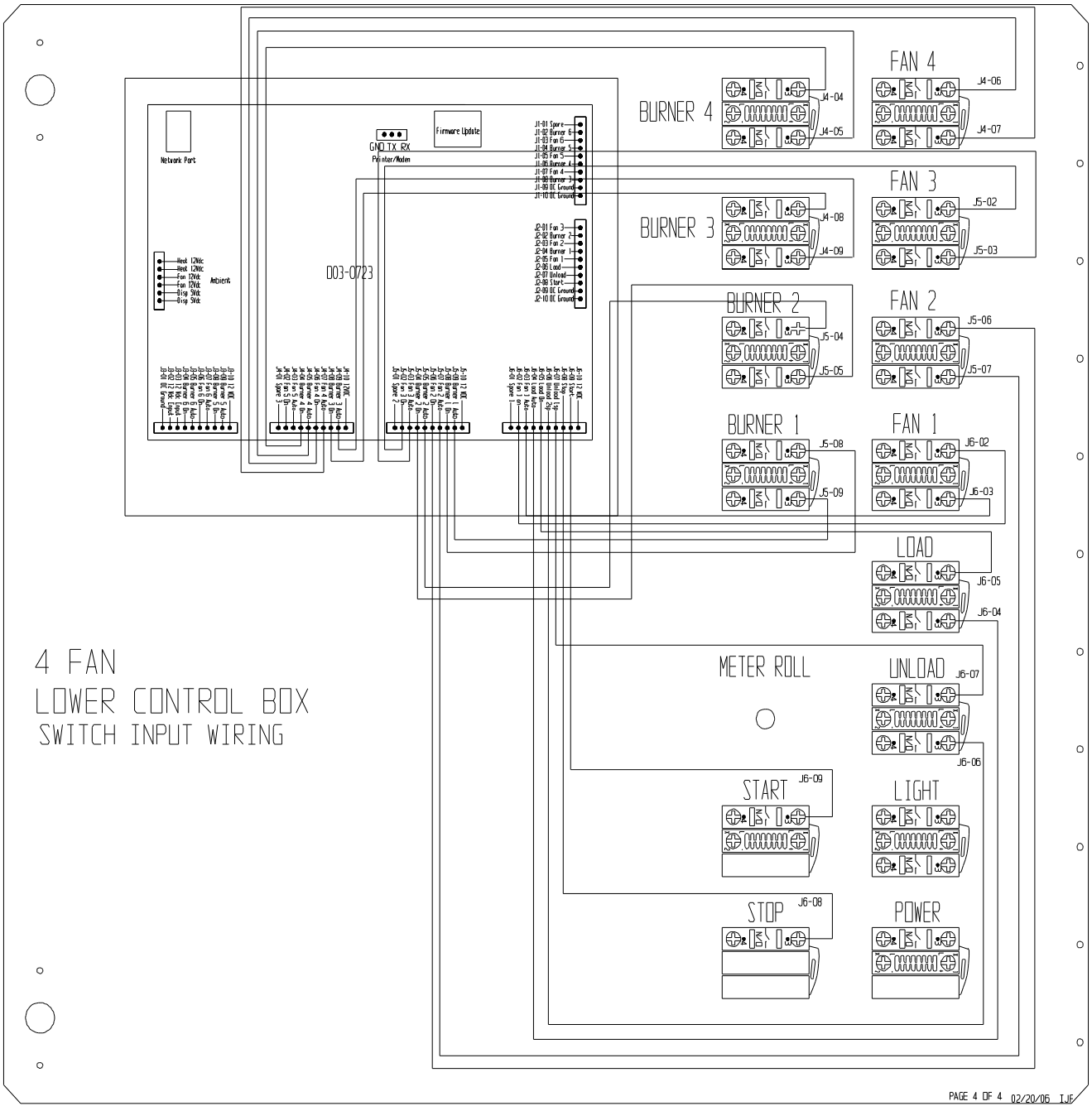
SWITCH INPUT TO BOARD WIRING
(EXAMPLE 2 FAN)



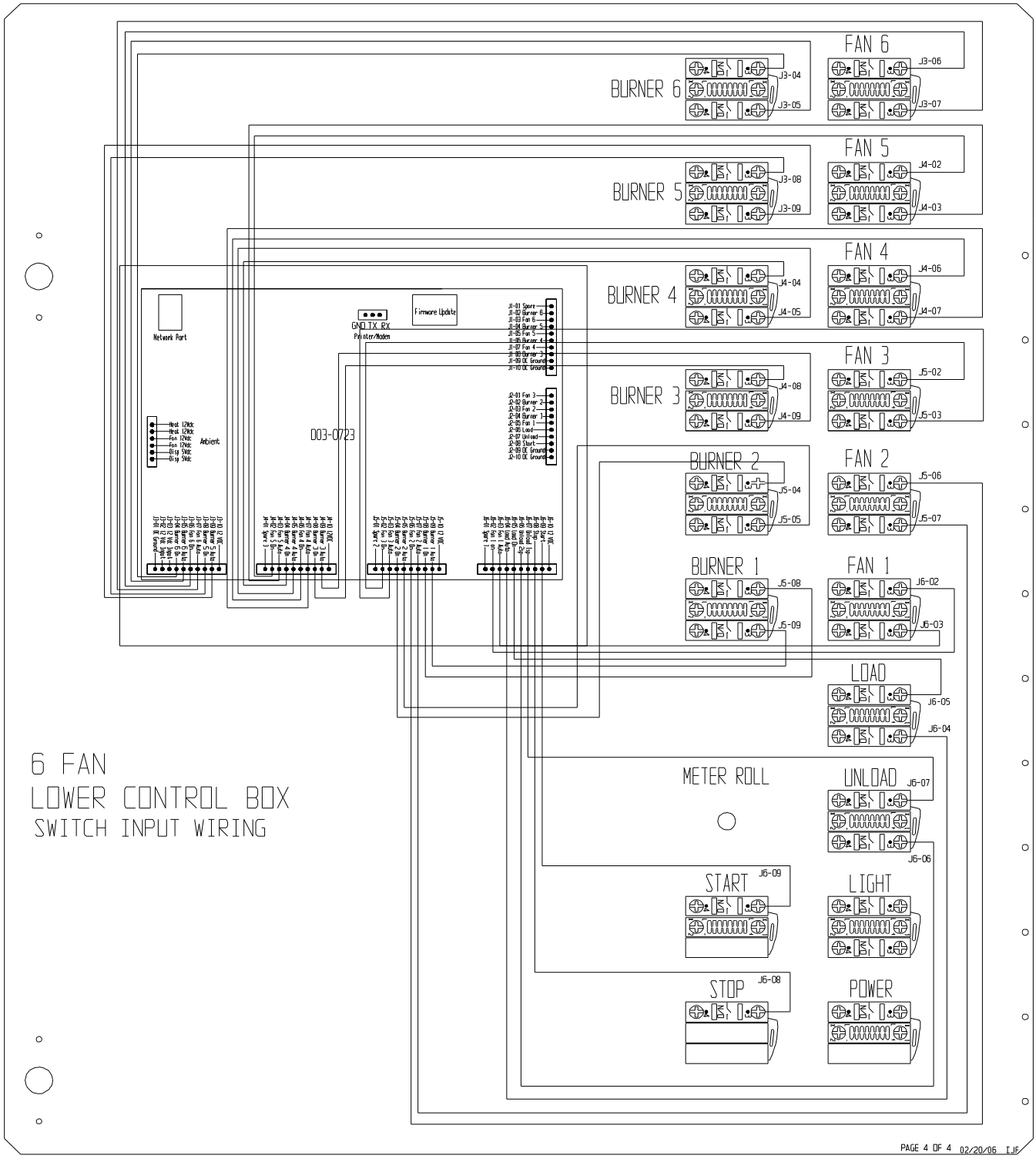
SWITCH INPUT TO BOARD WIRING
(EXAMPLE 3 FAN)



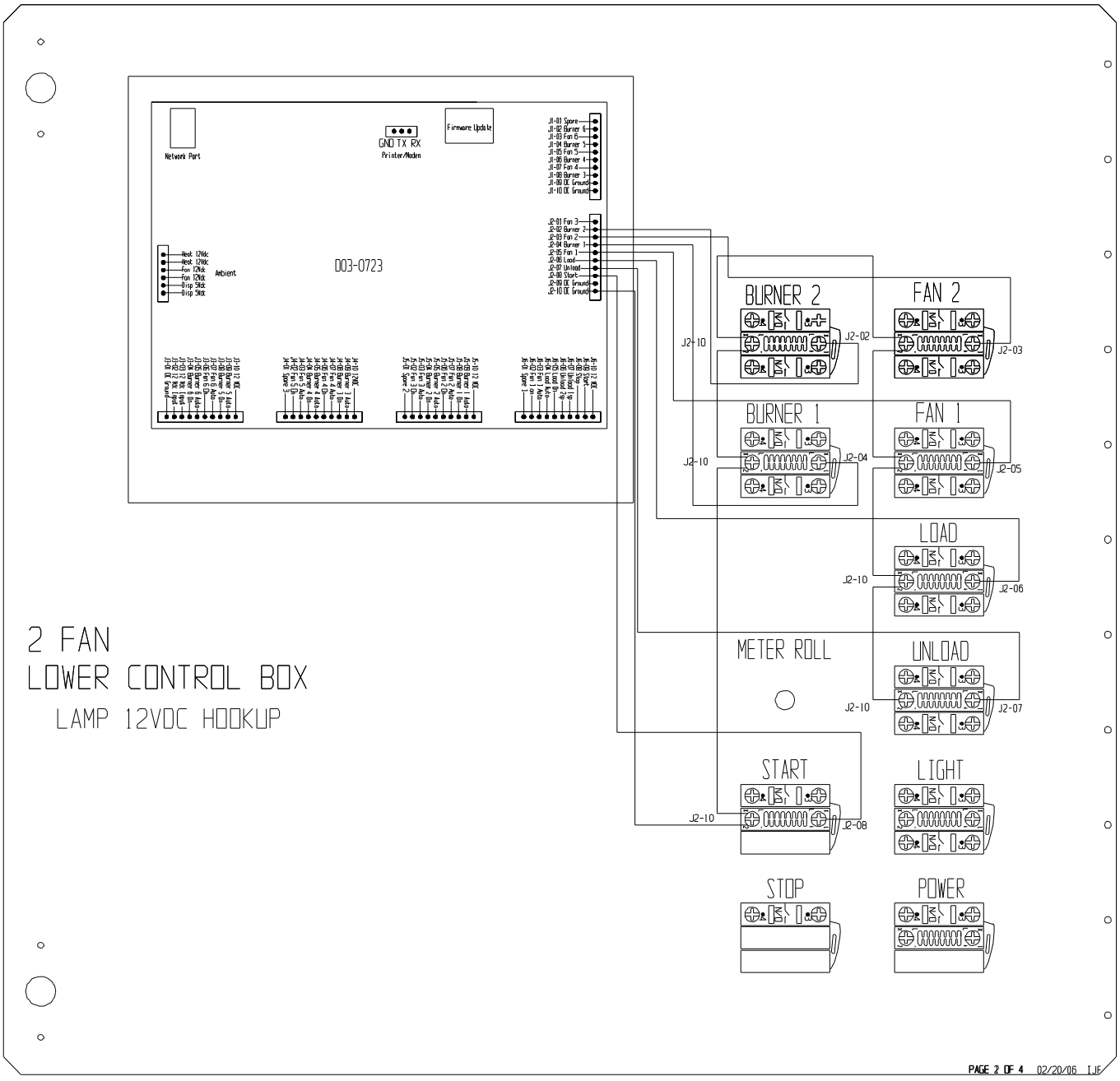
SWITCH INPUT TO BOARD WIRING
(EXAMPLE 4 FAN)



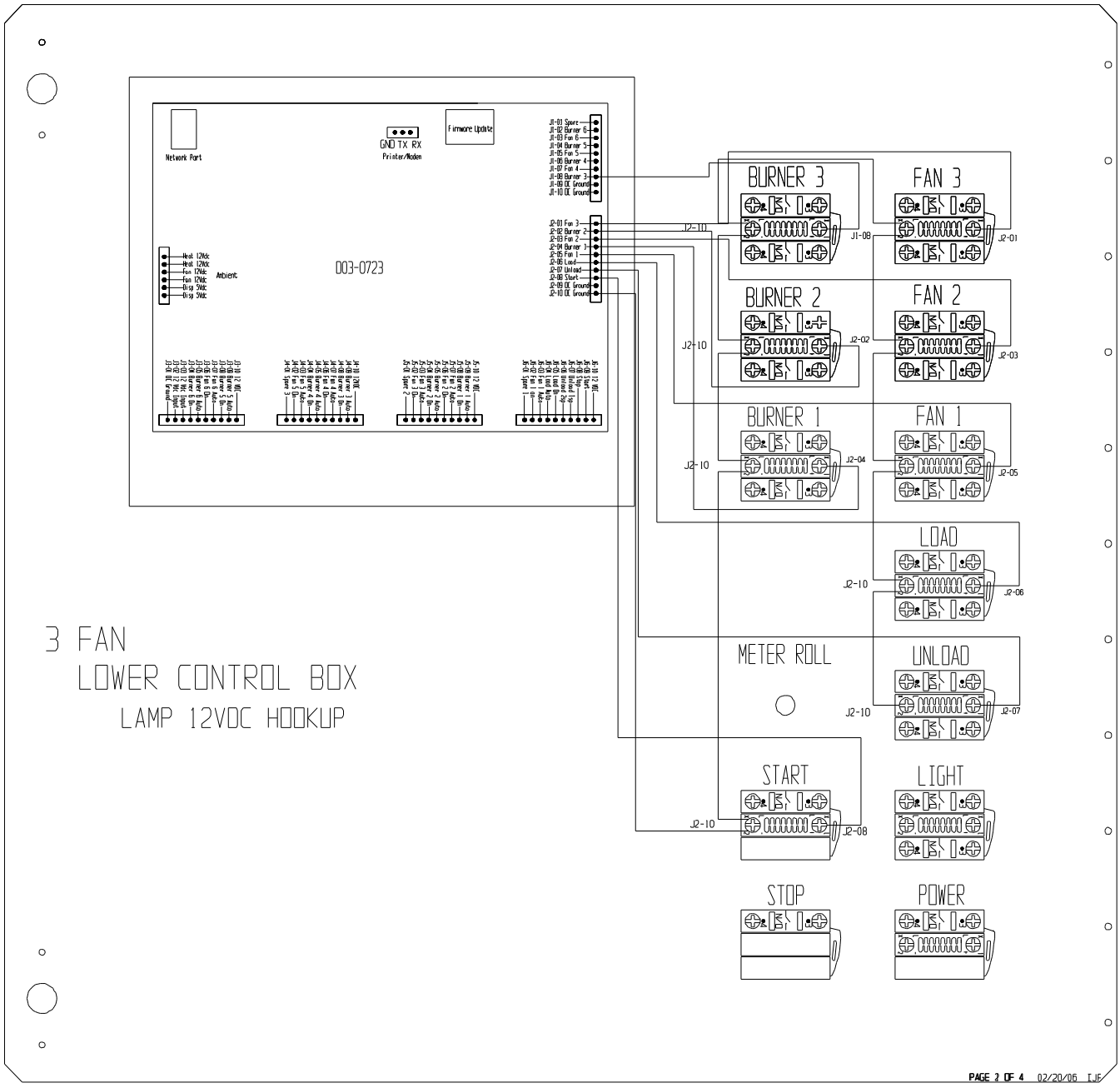
SWITCH INPUT TO BOARD WIRING
(EXAMPLE 6 FAN)



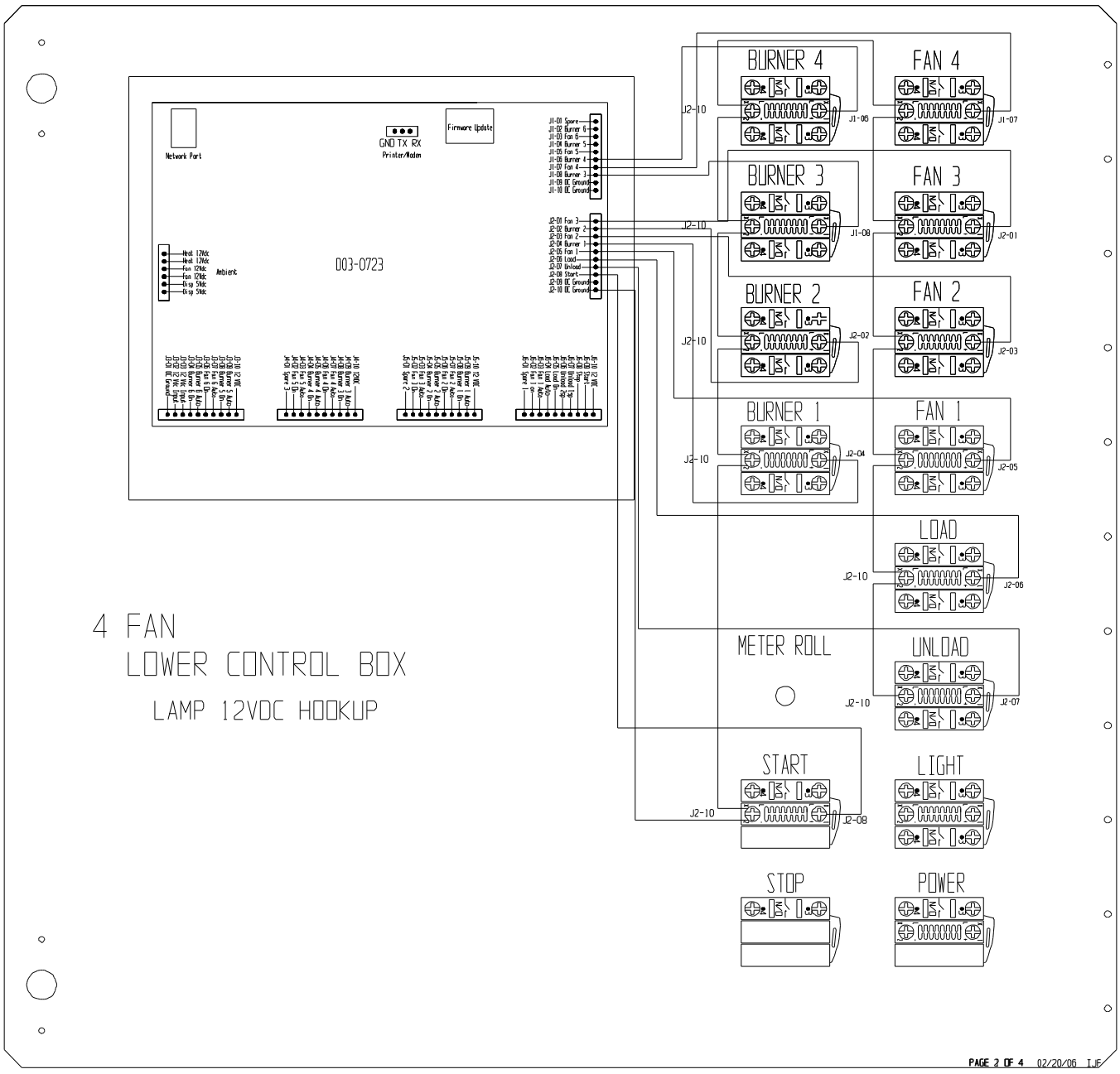
LAMP INPUT WIRING
(EXAMPLE 2 FAN)



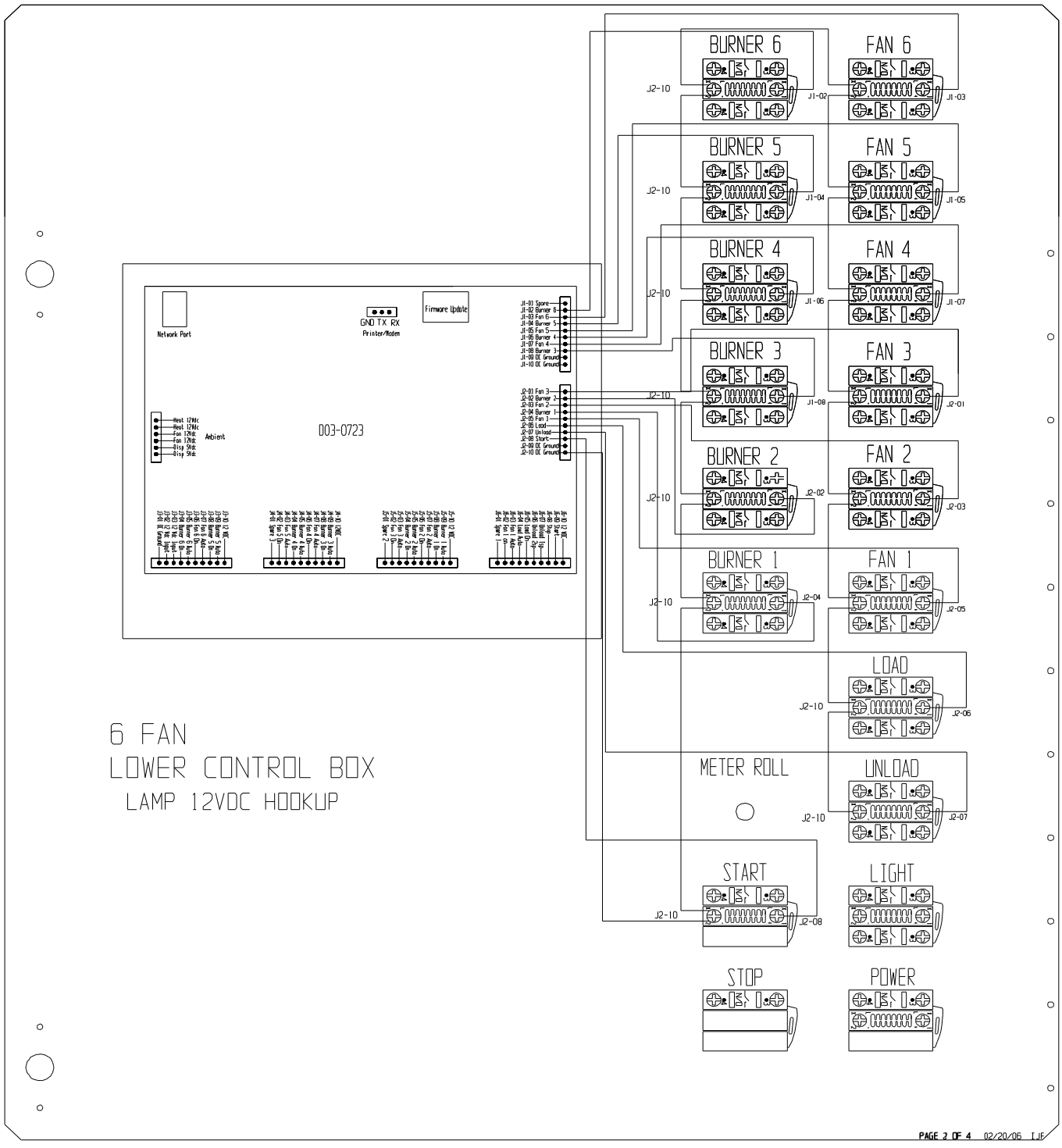
LAMP INPUT WIRING
(EXAMPLE 3 FAN)



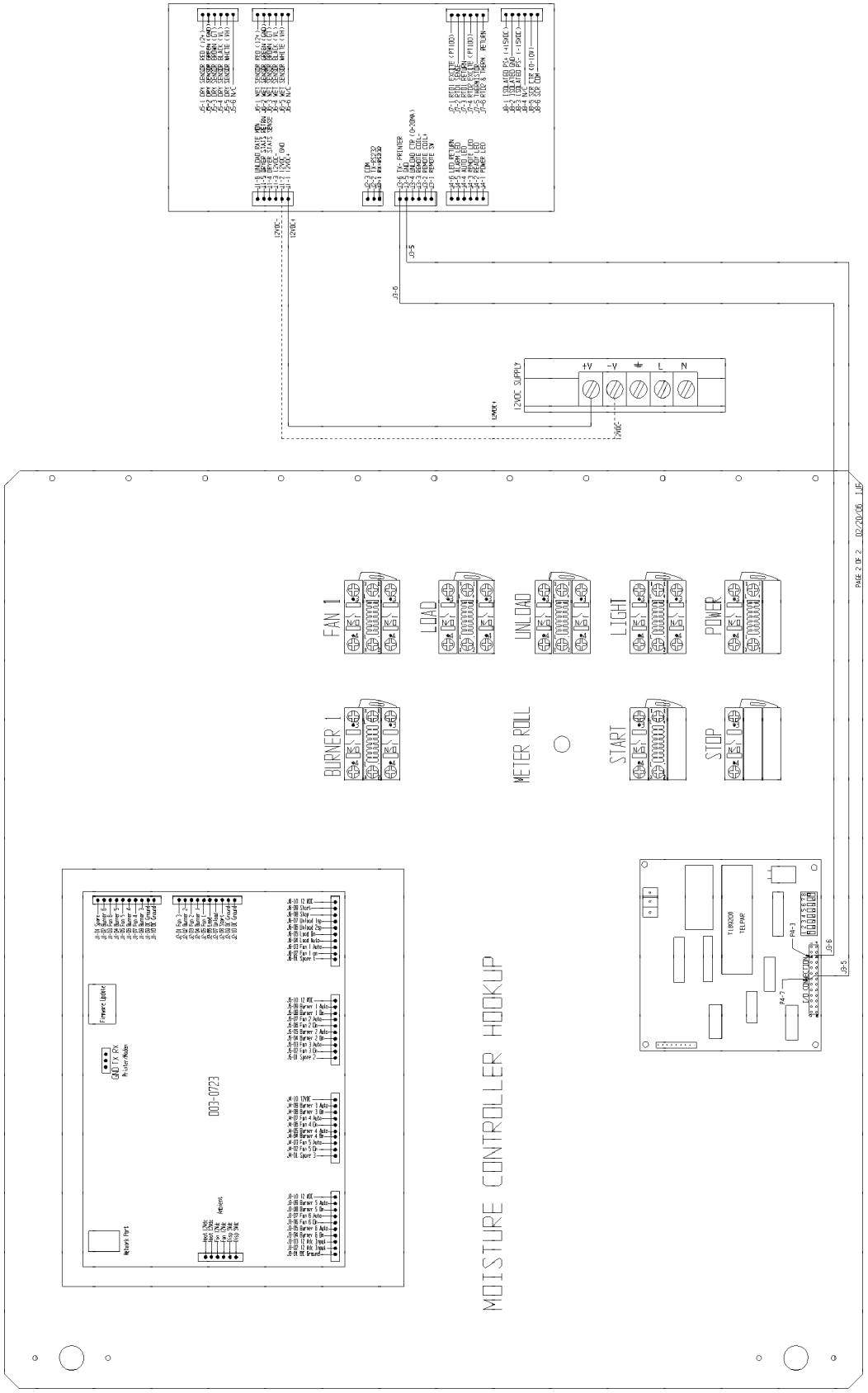
LAMP INPUT WIRING
(EXAMPLE 4 FAN)



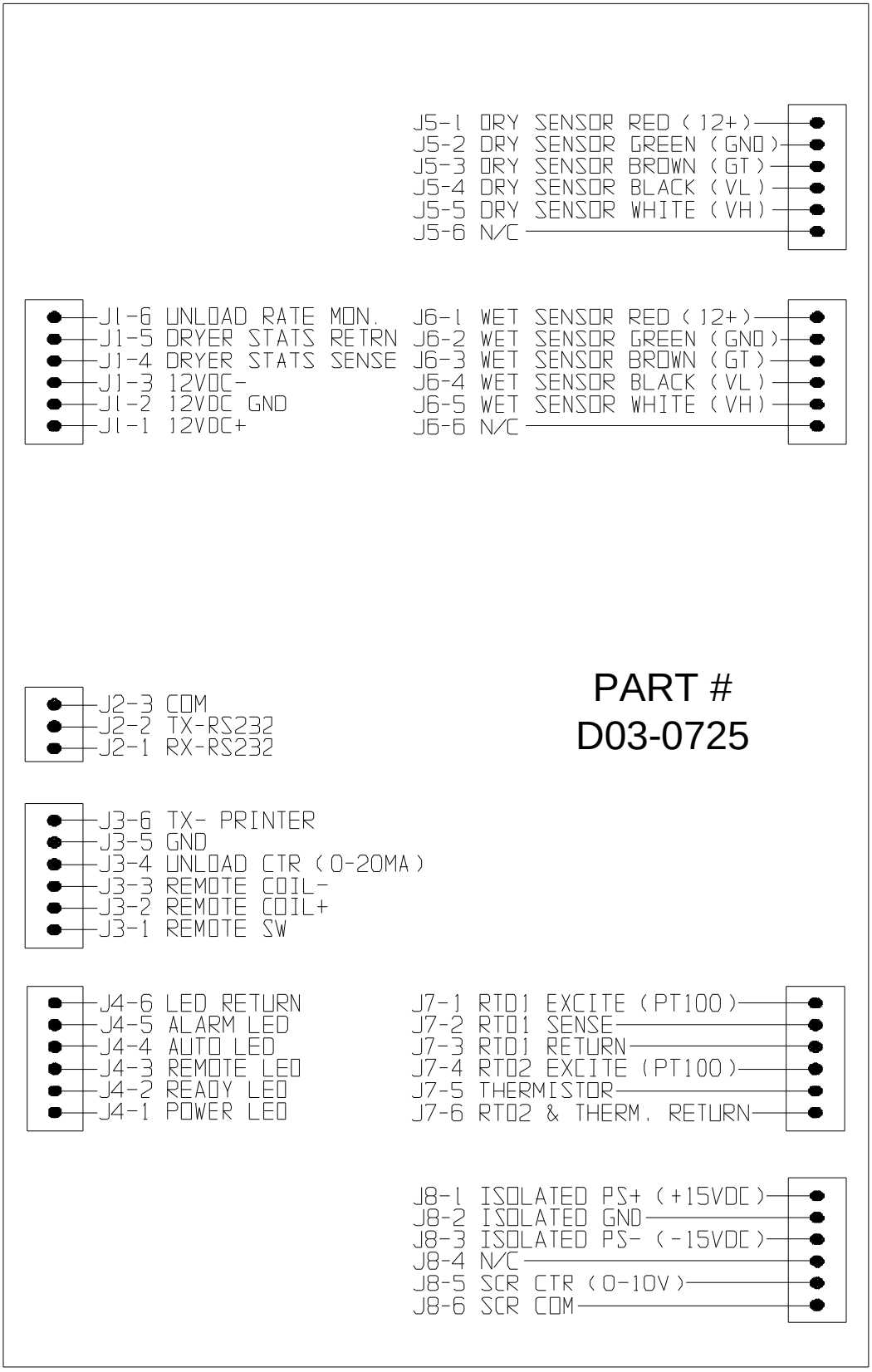
LAMP INPUT WIRING
(EXAMPLE 6 FAN)



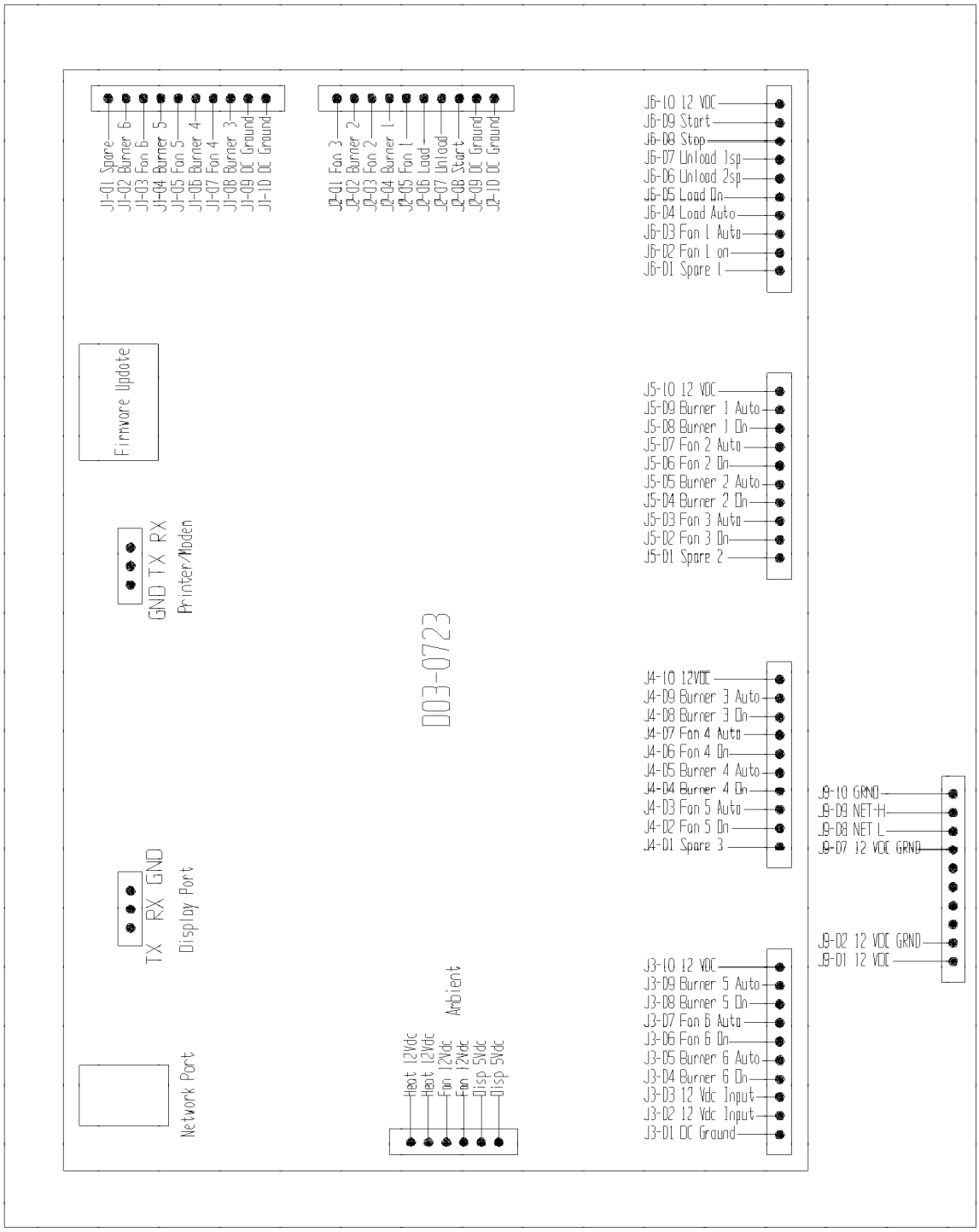
MOISTURE CONTROL HOOKUP



MOISTURE CONTROL BOARD IDENTIFICATION (LOCATED IN THE LOWER PANEL)



SWITCH I/O BOARD IDENTIFICATION (LOCATED ON BACK OF LOWER PANEL DOOR)



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 installation occurs.

a division of

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