DC-5500
DC-5750
Operation Manual

Revised 12/14/2001

Operation

Configuration

Troubleshooting

DC-5500

DC-5750

Industrial Dryer Controls

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Table of Contents

Introduction

The Custom Control Systems DC-5500 and DC-5750 are easy-to-program, user-friendly digital controls designed for use with a variety of industrial dryers. The DC-5500 and DC-5750 totally integrate into a dryer, controlling basket motors, automatic doors, tilting functions, flame controls, modulating gas valves, and blowers. Versatility is an invaluable feature of both controls, as they can be used with variable-frequency basket drive systems, proportional valve flame controls, ambient and outlet humidity sensors, inlet, outlet, and ambient temperature sensors, and one- and two-way tilting dryers.

Hardware

The hardware options include essential components such as nonvolatile memory, analog input channels, timers, counters, optically isolated DC I/O lines. An RS-485 communications port is provided to facilitate remote programming and data collection between controls or a Personal Computer. The display and control panel consists of a 31 key membrane panel, a 2 - 40 character alphanumeric vacuum fluorescent display, and 40 (28 custom-labeled) LED indicators that continuously indicate the status of inputs and outputs.

Software

The software was designed with flexibility in mind. Nearly all control functions are programmable or assignable, allowing one control - with one set of software - control a wide variety of dryers. User convenience has always been a major driving force behind Custom Control Systems software design, and that tradition continues with the DC-5500 and DC-5750.

Hardware Specifications

Control/Display Unit

Microcontroller:	Siemens SAB 80C535 (DC-5500) Intel 80386ex (DC-5750)
RAM:	128k (DC-5500) 512k + 128k battery-backed (DC-5750)
ROM:	64k (DC-5500) 512k (DC-5750)
Serial Port:	RS-485, supports data rates up to 28,800 bps (DC-5500) RS-485/RS-232, supports data rates up 115,200 bps (DC-5750)
Character Display:	Two 2x20 character vacuum fluorescent displays
Status LEDs:	40
Keypad:	Sealed membrane, 31 keys

Input/Output Unit

Relay Outputs:	Contacts rated at 5A 250VAC (Normally open contacts) 24 relays standard, expandable to 48
Inputs:	16 contact-closure inputs standard, expandable to 32
Analog Outputs:	Two 12-bit D/A channels, can be configured as 0-5V, 0-10V, 4-20mA, -10 to +10V
Analog Inputs:	Seven 12-bit analog input channels, can be configured for 0-2.5V or 0-5V; two channels with thermocouple conditioning capability

Software Features

Formulas

96 dry formulas
7 operations per formula
Formulas may be configured to:
-dry at an outlet temperature for a programmed time
-dry at an inlet temperature for a programmed time
-dry until the inlet and outlet temperatures reach a programmed differential
-dry until an outlet humidity is reached
-dry until an outlet humidity is reached, then run for a programmed time

Warranty

All products manufactured by Custom Control Systems Inc. (CCS), are warranted against defects in material and workmanship for two years from the date of purchase. Warranty is extended to the original purchaser only.

If a defect occurs, the product will be repaired, provided that inspection proves the claim, and that the purchaser give CCS written notice, or returns such defect within 30 days. Defective product shall be returned to the factory, freight prepaid, in original shipping package.

Custom Control Systems Inc. extends this warranty in lieu of any other warranties expressed or implied, and CCS neither assumes, nor authorizes any other person to assume for it, any other liability in connection with its equipment. Remedies provided in this warranty shall constitute the exclusive remedies available to the original purchaser, and all other warranties and damages, statutory or otherwise, are hereby expressly waived by the original purchaser.

Exclusions

1. This warranty is void if the equipment is not properly installed, operated, and serviced as specified by the factory or if the equipment is not operated under normal conditions and with competent help.

2. Parts subject to normal wear or damaged by corrosion or exposure to weather, are not covered under this warranty.

3. This warranty does not cover labor to replace defective parts.

4. Expenses for removal and replacement of defective parts are not assumed by CCS.

5. Any modification made to CCS equipment after shipment from the factory or replacement of parts with types or makes other than originally furnished with the equipment, voids this warranty, unless such change or replacement has been approved in writing by CCS.

6. This warranty does not include any liability for consequential or incidental damage attributable to failure of any part of the equipment.

7. Although sold by CCS, equipment manufactured by others which is not an integral part of a CCS control, is excluded from this warranty, but may be covered by a warranty of the other manufactures.

Replacement of Parts Under Warranty

Ordering Replacement Parts

When ordering replacement parts, furnish the following information:

1. Model number and serial number.
2. Part number, description and quantity.
3. Shipping instructions.

Returning Parts Under Warranty

All parts furnished under warranty will be invoiced by CCS. If we do not want the part to be returned for inspection, the invoice will show that the replacement part was furnished at no charge. If however, the part is to be returned for inspection and possible credit, the invoice will show the cost of the part, and credit will be issued upon receipt of the defective part provided:

1. The replaced parts must be returned to the factory, freight prepaid, within 30 days from the date of invoice.

2. Each part to be returned for credit and inspection must be tagged, showing name of customer, invoice number of replacement part, and a brief explanation of difficulty. *(Be more explicit than stating "N.G. or Defective".)* Pack parts carefully, to avoid damage in shipment.

3. The inspection must prove that the part was defective and had to be replaced.

4. Replacement parts will be shipped freight prepaid and the amount will be added to the invoice. If the returned part proves to be defective, the credit issued for the part will include minimum shipping charges incurred. No allowance will be made for air freight or express shipments.

5. Replacement parts which are returned unused are subject to a 25% restocking charge. Special made parts that are not normally stocked by CCS are not returnable for credit.

1. Run Mode/Idle

1.1 Active Keys

[0]-[9]	Used to enter formula number
[UP ARROW]	Used to increment formula number
[DOWN ARROW]	Used to decrement formula number
[RIGHT ARROW]	Used to increment step number (only active in run mode if Step Advance is Enabled - see Section 6.4.7)
[LEFT ARROW]	Used to decrement step number (only active in run mode if Step Advance is Enabled - see Section 6.4.7)
[HELP]	Used to display control status information
[TEMP]	Used to switch display between actual inlet and outlet temperatures, programmed inlet and outlet temperatures, the programmed and actual temperature difference, and the set and actual modulating gas valve positions. The display will show the selected temperature for five seconds, then return to the actual inlet and outlet temperature display
[MODE SEL]	Used to select operation mode (will take user to Program Mode from Run Mode]
[TIME]	Used to switch display between programmed step time, formula remaining time, formula elapsed time, and step time remaining. The display will show the selected time for five seconds, then return to the elapsed time display
[NAME]	Used to switch display between formula name and step name
[HUMID]	Used to switch display between programmed humidity, outlet humidity, and ambient humidity. The display will show the selected humidity for five seconds, then return to the actual humidity display
[START]	Used to start running the formula at with the currently selected step
[SIGNAL]	Used to cancel error or end-of-formula signal

1.2 Mode Select

When the processor is first powered up, it will be in the Run Mode. To change to any of the other modes (Program Mode, Manual Mode, Options Mode), press the [MODE SEL] key. You may be required to enter a password to leave the Run Mode.

1.3 Select Formula

Formulas may be selected by one of the two following methods:

1. Press the [UP ARROW] and [DOWN ARROW] keys to scroll through the available formulas. The formula name and number will appear on the top line of the top display. The step number, inlet and outlet temperatures, and time will appear on the bottom line of the top display.

2. Press the keys on the numeric keypad ([0]-[9]) to enter the desired formula number ([0][1] = formula 1, [1][6] = formula 16, etc.). The formula name and number will appear on the top line of the top display. The step number, inlet and outlet temperatures, and time will appear on the bottom line of the top display.

Note: Formulas can only be selected after the current formula has run to the end step and the [SIGNAL] or [STOP] button has been pressed.

1.4 Select Step

1. To scroll through the available steps in the selected formula, use [RIGHT ARROW] and [LEFT ARROW] to scroll to the desired step. The step name will appear on the top line of the top display, and the step number will appear on the bottom line of the top display.

2. Press [EXIT] to return to formula selection.

Note: Selecting steps is protected by an option setting, but can be unprotected if desired. See Step Advance in section 6.4.7 of the manual.

1.5 Run a Formula

1. Select desired formula.

2. Press the [START] key. The control will start the dryer, and will enter Run Mode/Running.

2. Run Mode/Running

2.1 Active Keys

[STOP] Used to stop the dryer. The control will enter the Run Mode/Stopped mode.

[SIGNAL] Used to cancel the signal and resume processing the formula. If the formula has reached the end step, the control will enter Run Mode/Idle.

[HELP] Used to display control status information

[TEMP] Used to switch display between actual inlet and outlet temperatures, programmed inlet and outlet temperatures, the programmed and actual temperature difference, and the set and actual modulating gas valve positions. The display will show the selected temperature for five seconds, then return to the actual inlet and outlet temperature display

[TIME] Used to switch display between programmed step time, formula remaining time, formula elapsed time, and step time remaining. The display will show the selected time for five seconds, then return to the elapsed time display

[NAME] Used to switch display between formula name and step name

[HUMID] Used to switch display between programmed humidity, outlet humidity, and ambient humidity. The display will show the selected humidity for five seconds, then return to the actual humidity display

2.2 Running Formula

The control will begin running the formula with the currently selected step. The step timer will be started when the step's other criteria are met.

2.2.1 Maintain Outlet Temperature Setting

A. The control will open the high fire or proportional gas valve to raise the outlet temperature when below the setpoint.

B. The control will close the high fire or proportional gas valve to lower the outlet temperature when above the setpoint.

C. The control will start the step timer when the programmed outlet temperature is first achieved after the control is started.

2.2.2 Maintain Inlet Temperature Setting

A. The control will open the high fire or proportional gas valve to raise the inlet temperature when below the setpoint.

B. The control will close the high fire or proportional gas valve to lower the inlet temperature when above the setpoint.

C. The control will start the step timer when the programmed inlet temperature is first achieved after the control is started.

2.2.3 Inlet/Outlet temperature difference

A. The control will open the high fire or proportional gas valve to raise the outlet temperature when below the setpoint.

B. The control will close the high fire or proportional gas valve to lower the outlet temperature when

above the setpoint.

C. The control will start the step timer when the programmed difference between the inlet and outlet temperatures is reached.

2.2.4 Humidity

A. The control will open the high fire or proportional gas valve to raise the outlet temperature when below the setpoint.

B. The control will close the high fire or proportional gas valve to lower the outlet temperature when above the setpoint.

C. The control will start the step timer when the outlet humidity has reached the setpoint and has remained there for the Humidity at Setpoint Time (see manual section 6.4.25).

3. Run Mode/Stopped

3.1 Active Keys

[0]-[9] Used to enter formula number

[UP ARROW] Used to increment formula number

[DOWN ARROW] Used to decrement formula number

[RIGHT ARROW] Used to increment step number (only active in run mode if Step Advance is Enabled - see Section 6.4.7)

[LEFT ARROW] Used to decrement step number (only active in run mode if Step Advance is Enabled - see Section 6.4.7)

[HELP] Used to display control status information

[TEMP] Used to switch display between actual inlet and outlet temperatures, programmed inlet and outlet temperatures, the programmed and actual temperature difference, and the set and actual modulating gas valve positions. The display will show the selected temperature for five seconds, then return to the actual inlet and outlet temperature display

[MODE SEL] Used to select operation mode (will take user to Program Mode from Run Mode]

[TIME] Used to switch display between programmed step time, formula remaining time, formula elapsed time, and step time remaining. The display will show the selected time for five seconds, then return to the elapsed time display

[NAME] Used to switch display between formula name and step name

[HUMID] Used to switch display between programmed humidity, outlet humidity, and ambient humidity. The display will show the selected humidity for five seconds, then return to the actual humidity display

[START] Used to start running the formula at with the currently selected step

[SIGNAL] Used to cancel error or end-of-formula signal

4. Program Mode

The Program Mode is used to configure the control's dry formulas. The user may configure up to 96 dry formulas consisting of up to 7 steps each. This section explains how to select and name formulas, program dry steps, and enter temperature and humidity settings. Steps may be inserted, deleted or renamed.

4.1 Entering Program Mode

If the password feature has not been enabled, press the [MODE SEL] key and proceed to step 4 below. Otherwise, start with step 1.

Note: the factory default password is 5500 on the DC-5500, and 5750 on the DC-5750. To change the control password, see the Password entry under Options, section 6.4.8. This example assumes that the control has been set up with the factory default password. If your password is different, use it instead.

1. Press the [MODE SEL] key. (example for the DC-5500 with default password)
   The top display will now read:

2. Press the 5, then the 5, then the 0, and then the 0.
   The top display will now read:

3. Press the [ENTER] key. The control will now be in the Program Mode, and the "PRO" light will be illuminated.

4.2 Active Keys

[UP ARROW]	Used to increment formula number (will discard any changes made to the current step if the step has not been saved)
[DOWN ARROW]	Used to decrement formula number (will discard any changes made to the current step if the step has not been saved)
[RIGHT ARROW]	Used to increment step number (will discard any changes made to the current step if the step has not been saved)
[LEFT ARROW]	Used to decrement step number (will discard any changes made to the current step if the step has not been saved)
[MODE SEL]	Used to select operation mode (will take user to Manual Mode from Program Mode)
[TEMP]	Used to program inlet temperature, outlet temperature, and temperature difference setpoints for the current step
[TIME]	Used to program step time for the current step
[NAME]	Used to program step names and formula names
[HUMID]	Used to program humidity for the current step
[STOP]	Used to make the current step an end step

[SIGNAL] Used to program an operator signal on the current step

4.3 Displays

When the control first enters the Program Mode, the top line of the top display will show the formula name and number. The bottom line of the top display will show the step number, programmed temperatures and programmed time. The status LEDs will show the outputs that have been programmed for that step.

4.4 Selecting a Formula

Select the Formula to be edited using the [UP ARROW] key to go to the next-higher numbered formula and the [DOWN ARROW] key to go to the next-lower numbered formula.

4.5 Editing the Formula Name

To edit the formula name, you must have the current formula name displayed on the top line of the top display. (When programming a new formula, the formula name will be "Formula xy", where xy is the formula number, i.e. Formula 1 will be called "Formula 1".) If the formula name is **not** displayed on the top line of the top display, press the [UP ARROW] key then the [DOWN ARROW] key.

1. Press the [NAME] key. A flashing cursor will appear on the first letter of the formula name on the top display. You are now in the text-entry mode, which will allow you to program the formula name.

2. The multifunction keys [0]-[9] are used to enter letters and numbers. For example, the [1] key also contains the letters A, B and C. The first time the key is pressed, the number "1" will appear at the cursor location. The next time the key is pressed, the letter "A" will appear at the cursor location. The next time the key is pressed, the letter "B" will appear, and so on.

3. Use the multifunction keys to select the first letter of the formula name. Press the [RIGHT ARROW] key to move the cursor location to the second letter of the formula name and select the next letter.

4. If a mistake is made, the [LEFT ARROW] and [RIGHT ARROW] keys may be used to position the cursor over the letter that needs to be changed. The [CLEAR] key will clear the entire formula name.

5. Use the method outlined above to program the rest of the formula name. When finished, press the [ENTER] key to save the formula name. The bottom line of the top display will read "Name saved" for one second.

4.6 Selecting Formula Steps

First, select the formula you wish to edit, then

1. To select the step to be edited, use the [RIGHT ARROW] key to move to the next-higher numbered step, and the [LEFT ARROW] key to move to the next-lower numbered step. Notice that the leftmost two digits of the bottom line of the top display will increase or decrease as you press the [RIGHT ARROW] and [LEFT ARROW] keys, respectively. These digits represent the step number. The step name is shown on the top line of the top display.

4.7 Editing the Step Name

If the default step name is acceptable, proceed to section 4.8. If you wish to change or edit the step name, use the following procedure:

1. Press the [NAME] key. A flashing cursor will appear on the top line of the top display. You are now in the text-entry mode, which will allow you to program the step name.

2. The multifunction keys [0]-[9] are used to enter letters and numbers. For example, the [1] key also contains the letters A, B and C. The first time the key is pressed, the number "1" will appear at the cursor location. The next time the key is pressed, the letter "A" will appear at the cursor location. The next time the key is pressed, the letter "B" will appear, and so on.

3. Use the multifunction keys to select the first letter of the step name. Press the [RIGHT ARROW] key to move the cursor location to the second letter of the step name and select the next letter.

4. If a mistake is made, the [LEFT ARROW] and [RIGHT ARROW] keys may be used to position the cursor over the letter that needs to be changed. The [CLEAR] key will clear the entire step name.

5. Use the method outlined above to program the rest of the step name. When finished, press the [ENTER] key to save the step name. The bottom line of the top display will read "Name saved" for one second.

4.8 Programming Outputs

Above each number on the numeric keypad (also referred to as the multifunction keys) are "quick select" outputs. Many outputs can be programmed with a single keystroke using these keys.

1. To select the outputs to be activated on the step, press the multifunction keys with the desired output functions marked on them.

Output	Multi-Function Key#
Recirculation	1
Burner (modulating gas valve machines)	2
High Fire/Low fire (high fire/low fire machines)	2
Cooldown	3
Basket Forward	5
Basket Reverse	0
Signal	Signal

2. Proceed to programming temperature, humidity, and time for this step.

4.9 Programming Temperatures

4.9.1 Selecting burners

If you are programming a dry step, you will need to choose a burner setting. Depending on the type of gas valve control your dryer uses, you may have a high fire and low fire gas valve, a continuous modulating gas valve, or a pulse modulation gas valve setup.

High Fire/Low Fire - to select a gas valve, press the [HEAT] key. The control will cycle through high and low fire, high fire only, and low fire only settings. If high and low fire are programmed, the dryer control will open the low fire valve at the beginning of the dry step and leave it open for the duration of the step and maintian the programmed temperature by opening and closing the high fire gas valve. If the low fire or high fire valves are selected individually, the dryer control will maintain the programmed temperature with whichever valve was selected.

Modulating Gas Valves - On machines with continuous or pulse modulating gas valve, pressing the [HEAT] key selects or de-selects heat on the current step. The dryer control will control the valve position or pulse width using a PID algorithm to maintain the programmed temperature.

4.9.2 Temperature Programming Procedure

Any time you are programming a dry step, you will need to enter a temperature for the control to maintain.

1. Press the [TEMP] key. Notice that the rightmost digit in the Inlet Temperature field begins to flash.

2. Enter the desired inlet temperature using the multifunction keys. For example, if you want an inlet temperature of 500 degrees, press the [5] key, then press the [0] key twice. The display will now read "500" with the second "0" flashing. If this is a cooldown step, you may enter a 0 here. If you are drying at an outlet temperature for a programmed time, the programmed inlet temperature will be the inlet temperature limit for that step.

3. Once you have the desired inlet temperature programmed, press the [TEMP] key. The outlet temperature will now begin to flash.

4. Enter the desired outlet temperature, again using the multifunction keys. If you are drying to a temperature difference, the control will maintain this outlet temperature until the inlet temperature has come down to the programmed differential. If you are programming a cooldown step, this is the "target" temperature for the cooldown.

5. Press the [TEMP] key again. The word "difference" will appear on the bottom line of the top display, followed by a number representing the target temperature difference. If you do not wish to use the temperature difference feature, leave this number at zero.

6. Press the [TEMP] key again. The cursor will disappear, and the display will show the step's programmed inlet and outlet temperatures.

Note: If the wrong temperature has been selected, it is important to make sure that **the cursor is flashing** in either of the temperature fields before making any change. After you have verified that the cursor is flashing in the correct field, press the [CLEAR] key and the field will change to "0". The correct value can be now programmed. **If the [CLEAR] key is pressed without any cursor flashing, the entire step will be erased, including any outputs or time that had been programmed.**

4.9.3 Temperature Programming Notes

The DC-5500 and DC-5750 will run dry steps differently depending on the way temperatures are programmed.

Outlet Temperature Only - The control will open and close the gas valves to maintain the programmed outlet temperature on a dry step, or run the blowers and basket motors until the outlet temperature is below the programmed outlet temperature on a cooldown step.

Inlet Temperature Only - The control will open and close the gas valves to maintain the programmed inlet temperature on a dry step, or run the blowers and basket motors until the inlet temperature is below the programmed inlet temperature on a cooldown step.

Outlet Temperature and Temperature Difference - The control will open and close the gas valves to maintain the programmed outlet temperature. When the difference between the inlet and outlet temperatures reaches the programmed temperature difference, the control will start the step timer.

4.10 Programming Recirculation

Recirculation routes exhaust air back to the inlet side of the dryer for a specified amount of time at the beginning of a dry step.

1. Press the [RECIRC] key. Notice that the recirculation LED will come on, and the control will ask for a recirculation time. This is the amount of time that the recirculation damper will be used to route exhaust air back to the inlet side of the dryer.

2. Use the numeric keys to enter the desired recirculation time.

3. Press [ENTER] to save the recirculation time.

4.11 Programming Time

4.11.1 Time Programming Procedure

When the step time needs to be entered or changed, use the following procedure:

1. Press the [TIME] key. Notice that the right most digit of the time display begins to flash. Again, as with temperature, the flashing cursor is the control's way of requesting input from the multifunction keys.

2. Enter the required time for this step by using the multifunction keys. For example, to program a step time of 1 minute and 30 seconds, press the [1] key, then the [3] key and then the [0] key. The time field will now read "01:30", with the 0 flashing.

3. When the desired time has been selected press the [TIME] key and notice that the flashing cursor has turned off.

4.11.2 Time Programming Notes

The DC-5500 and DC-5750 can be configured to start their step timers at the beginning of a dry step or wait until temperature and humidity have been achieved. To configure the controls to start the step time at the beginning of the step, set the "Wait for temp to start step time" option to "No". To configure them to wait for temperature and humidity to be acheived, set the option to "Yes".

4.12 Programming Humidity

When step humidity needs to be entered or changed, use the following procedure :

1. Press the [HUMID] key. Notice that the right most digit of the humidity display begins to flash. Again, as with time and temperature, the flashing cursor is the control's way of requesting input from the multifunction keys.

2. Enter the required humidity for this step by using the multifunction keys. For example, to program a humidity of 30 percent, press the [3] key and then the [0] key. The humidity field will now read "30h", with the 0 flashing.

3. When the desired humidity has been selected press the [HUMID] key and notice that the flashing cursor has turned off.

4.13 Save Step

When all the desired elements of the step have been entered, the step must be recorded into memory. To do this, press [ENTER]. The bottom display will flash "Step Saved" for about 1 second and then automatically advance to the next step.

4.14 End Step

When you have completed entering all required steps for a formula, the last step must be an End step. Simply go to the next available step in your formula and press the [STOP/END] key. Display will read "** END **". Without this end step, the formula will cycle around to the beginning and repeat the entire formula again.

4.15 Programming Edit

The programming edit functions were developed specifically to allow the user to perform special programming tasks, such as editing step name, inserting a step and deleting a step.

4.15.1 Insert a Step

The new step being added will always be inserted **before** the selected step. For example, if you want to insert a new step between Step 3 and 4, proceed as follows:

A. Select step 4 using the [RIGHT ARROW] or [LEFT ARROW] keys.

B. Press the [EDIT] key. The top line of the top display will now read "1-Ins, 2-Del", and the bottom line of

the top display will read "3-Name, 4-Jump".

C. Press the [1] key.

D. A new step will be inserted and the bottom line of the top display will now read "Step Saved".

After the insertion is complete, the contents of the following STEPS will be renumbered one higher. When the renumbering is complete, the bottom display will flash "Step Saved". The Program Edit Mode will be exited and the Program Mode reentered automatically.
See Section 4.7 for programming STEP data.

4.15.2 Delete a Step

A. Select the STEP you wish to DELETE using the [RIGHT ARROW] or [LEFT ARROW] keys.

B. Press the [EDIT] key. The top display will now read "1-Ins, 2-Del", and the bottom display will read "3-Name, 4-Jump".

C. Press the [2] key.

D. Deletion is complete.

After the deletion is complete, the contents of the selected step will be cleared and all of the steps following the current step will be renumbered one lower. When the renumbering is complete, the Program Edit Mode will be exited and the Program Mode reentered automatically.

4.15.3 Edit Step Name

A. Select the desired STEP to be edited.

B. Press the [EDIT] key. The top line of the top display will now read "1-Ins, 2-Del", and the bottom line of the top display will read "3-Name, 4-Jump".

C. Press the [3] key. The displays will show the current step data with a flashing cursor in the name display.

D. Use the multifunction keys [0 - 9] to edit the old name or use the [CLEAR] key to clear the entire line and enter a new name.

E. Press [EXIT] to complete the changes and save the step name.

4.15.4 Jump / Go To

This feature is useful when you need to jump by several STEPS.

A. Press the [EDIT] key. The top display will now read "1-Ins, 2-Del", and the bottom display will read "3-Name, 4-Jump".

B. Press the [4] key. The display will read "Jump to Step", with a flashing cursor.

C. Using the numeric keypad, select the step you wish to go to. Press [ENTER] and notice that the step no. has changed to the desired step.

4.16 Exit Program Mode

Press [MODE SEL] to move from the Program Mode into the Manual Mode.
Press [MODE SEL] again to move from the Manual Mode into the Options Mode.
Press [MODE SEL] again to move from the Options Mode into the Run Mode.

5. Manual Mode

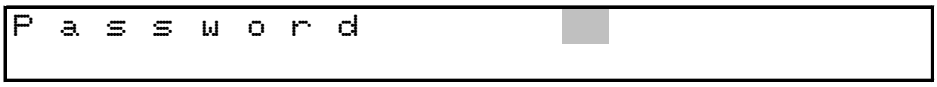
The Manual Mode is used to view the formula counters and hour meter and to check the raw values of the control system's analog channels.

5.1 Entering Manual Mode

If the password feature has not been enabled, press the [MODE SEL] key and proceed to step 4 below. Otherwise, start with step 1.

Note: the factory default password is 5500 on the DC-5500, and 5750 on the DC-5750. To change the control password, see the Password entry under Options, section 6.4.8. This example assumes that the control has been set up with the factory default password. If your password is different, use it instead.

1. Press the [MODE SEL] key. (example for the DC-5500 with default password)
   The top display will now read:



2. Press the 5, then the 5, then the 0, and then the 0.
   The top display will now read:

3. Press the [ENTER] key. The control will now be in the Program Mode, and the "PRO" light will be illuminated.

4. Press [MODE SEL] again. The control will now be in the Manual Mode, and the "MAN" light will be illuminated.

5.2 Active Keys

[MODE SEL] Used to exit the Manual Mode and enter the Options Mode

[EDIT] Used to review the hour meter and formula counters

5.3 Displays

When first entering the Manual Mode the top line of the top display will show "Manual Mode". The bottom line of the top display will show the current inlet and outlet temperatures and outlet humidity.

5.4 Reviewing the Hour Meter and Formula Counters

1. Press the [EDIT] key. The review hour meter/formula count section of the Manual Mode will be entered. The top line of the top display will read "Hour meter" and the bottom line of the top display will read hours and minutes of run time.

2. Press the [UP ARROW] key. The top display will read "01 {formula name}" and the bottom display will read: Load XX, Total XXXX. (Load Count, if not reset, will count 255 loads and then roll over and start at zero again. Total Count, regardless of resets, will count to 65,535 loads and then roll over and start at zero.

3. Press [UP ARROW], to advance to the next formula for review.

4. Press the [EXIT] key to exit the review hour meter/formula count section and return to the Manual Mode.

NOTE: Formulas will only be displayed if they have been previously run. The total counter will not be reset.

5.5 Resetting Formula Counters

1. Press the [EDIT] key to enter the review hour meter/formula count section. The top display will read "Hour meter" and the bottom display will read Load XX, Total XXXX.

2. Press the [CLEAR] key. The display will read "Clear Daily Counters: No". Press the [ON/OFF] key to change option to YES.

3. Press [ENTER] to finalize reset of Load Counters for all formulas.

4. Press the [EXIT] key to exit the review hour meter/formula count section and return to the Manual Mode.

5.6 Exiting Manual Mode

Press [MODE SEL] to exit the Manual Mode and go into the Options Mode.
Press [MODE SEL] again to exit the Options Mode and return to the Run Mode.

6. Options Mode

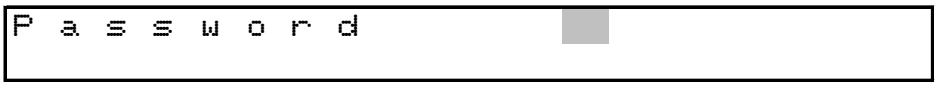
The Options Mode is used to view the formula counters and hour meter and to check the raw values of the control system's analog channels.

6.1 Entering Options Mode

If the password feature has not been enabled, press the [MODE SEL] key and proceed to step 4 below. Otherwise, start with step 1.

Note: the factory default password is 5500 on the DC-5500, and 5750 on the DC-5750. To change the control password, see the Password entry under Options, section 6.4.8. This example assumes that the control has been set up with the factory default password. If your password is different, use it instead.

1. Press the [MODE SEL] key. (example for the DC-5500 with default password)
   The top display will now read:



2. Press the 5, then the 5, then the 0, and then the 0.
   The top display will now read:

3. Press the [ENTER] key. The control will now be in the Program Mode, and the "PRO" light will be illuminated.

4. Press [MODE SEL] again. The control will now be in the Manual Mode, and the "MAN" light will be illuminated.

5. Press [MODE SEL] again. The control will now be in the Options Mode, and the "OPT" light will be illuminated.

6.2 Active Keys

[UP ARROW]	Used to go to the next option
[DOWN ARROW]	Used to go to the previous option
[EDIT]	Used to edit option values
[CLEAR]	Used to reset the option value. Use only when cursor is flashing on an option value.
[ENTER]	Used to save the changed option value.
[MODE SEL]	Used to exit the Options Mode and enter Run Mode.
[1] - [0]	Used to enter numeric option values.
[EXIT]	Used to exit the editing function.
[ON/OFF]	Used to toggle from NO to YES in the Options Mode.

6.3 Displays

When first entering the Options Mode the display will show the option that was selected the last time the Options Mode was used.

6.4 Option Settings

6.4.1 Motor On

Enter the time for the basket motor run time (used only by dry formulas programmed for reversing). The valid range for this field is from 1 second to 4 minutes and 15 seconds. Consult your dryer manual for the correct setting.

6.4.2 Motor Off

Enter the time for the basket motor pause (used only by dry formulas programmed for reversing). The valid range for this field is from 0 seconds to 12.5 seconds, the smallest unit of change is .05 seconds. Consult your dryer manual for the correct setting.

6.4.3 Signal On

Enter the on time for the signal output. The valid range for this field is .1 seconds to 10 seconds, the smallest unit of change is .05 seconds. The default for this field is .5 seconds. If a mechanical bell is connected, this field can be changed to 10 seconds and the next field, signal off time, can be changed to zero seconds, which will cause the control to ring the bell continuously.

6.4.4 Signal Off

Enter the off time for the signal output. The valid range for this field is 0 seconds to 10 seconds, the smallest unit of change is .05 seconds. The default for this field is .5 seconds. Changing this field to zero will cause the signal to ring without any pulsing.

6.4.5 Display Brightness

Enter the number from the following chart to set the display brightness.

2- Dim (25%)
5- Medium Dim (50%)
7- Medium Bright (75%) (Default setting)
1- Bright (100%)

Changes to this field will take effect immediately.

6.4.6 Temperature Timeout

Enter the time in minutes and seconds for the maximum allowable time for the dryer to come up to temperature. The default for this field is 10:00 minutes. The valid range for this field is zero to 25 minutes, the smallest unit of change is 15 seconds. This may cause some confusion if the user tries to set the time-out to 4:10 minutes, the dryer control will round this entry to 4:15 minutes. This field must be configured for proper control operation.

6.4.7 Step Advance

Press [ON/OFF] key, to toggle between YES (enabled) or NO (disabled). If this feature is enabled, it will allow the operator to change steps during a formula, or to start a formula on a step other than step one. If this feature is disabled the step can still be changed if the machine has a supervisor key option. If the supervisor key option has not been configured consult a Factory Authorized Technician to setup this option.

6.4.8 Password

Enter the password required for entry to the program, manual and options modes. The factory default for this field is 5500 on DC-5500 controls, and 5750 on DC-5750 controls. It is recommended that the user change this field. If this field is set to 0 the password feature will be disabled. The operator may also enter the program and options modes with the use of the supervisor key, if this feature has been configured. If the supervisor key feature has not been configured consult a Factory Authorized Technician to setup the feature.

6.4.9 Chirp Time

Enter the on time for the key chirp output. The valid range for this field is .05 seconds to .95 second, the smallest unit of change is .05 seconds. The default for this field is .10 seconds. This feature may be disabled by setting this field to zero.

6.4.10 Low Temperature

Enables the temperature interlock features of the dryer control. This feature keeps the door closed while the temperature of the machine is above the set value. The valid range for this field is 0 to 255 degrees Fahrenheit.

6.4.11 Open Door Time

On machines equipped with an automatic door, this setting is used to set the amount of time that it takes the door to go from fully closed to fully open. There is no default for this field. The valid range for this field is 0 to 255 seconds.

6.4.12 Raise Machine Time

On machines equipped with a tilting basket, this setting is used to set the amount of time that it takes to go from the run position to the load or unload positions. There is no default for this field. The valid range for this field is 0 to 255 seconds.

6.4.13 Humidity at Setpoint Time

This setting is used to set the amount of time that the outlet humidity must be at setpoint before starting the step timer. The default for this field is 60.

6.4.14 Inlet Temperature Limit

This setting is used to set the maximum allowable inlet temperature. When this temperature is reached, the control will shut off the burner and start a cooldown cycle. The default for this field is 600.

6.4.15 Outlet Temperature Limit

This setting is used to set the maximum allowable inlet temperature. When this temperature is reached, the control will shut off the burner and start a cooldown cycle. The default for this field is 250.

6.4.16 Wait for Temp. to Start Step Timer

This setting is used to tell the dryer control that it should wait for the programmed inlet or outlet temperature to be achieved before starting the step timer. The default for this field is “Yes”.

6.4.17 Rotate Basket After Low Temperature

This setting is used to tell the dryer control that it should continue rotating the basket after low temperature has been reached at the end of a cycle. The default for this field is “Yes”.

6.4.18 Keep Blowers On In End Step

This setting is used to tell the dryer control that it should continue running the blowers when it reaches the end of the cycle. Pressing the [STOP] or [SIGNAL] key at the end of the cycle will turn the blowers off. The default for this field is “Yes”.

6.4.19 Rotate Basket In End Step

This setting is used to tell the dryer control that it should continue running the blowers when it reaches the end of the cycle. Pressing the [STOP] or [SIGNAL] key at the end of the cycle will turn the blowers off. The default for this field is "Yes".

6.5 Exit Options Mode

Press the [MODE SEL] key to exit the Options Mode and enter the Run Mode.

7. Technical Configuration Mode

This section provides the information that controls proper setup and operations of your dryer. **Only Qualified Service Personnel should change I/O assignments, as the safe operation of the washer may be effected. Failure to fully understand this data may result in the improper operation of the dryer and the dryer control. Incorrect setup may result in washer malfunctioning, which could result in personal injury, dismemberment or death. Custom Control Systems Inc. assumes no responsibility for improper use or setup of this unit. Contact a Factory Authorized Service Technician, to establish correct setup procedures.**

7.1 Entering Technical Configuration Mode

If the password feature has not been enabled, press the [MODE SEL] key and proceed to step 4 below. Otherwise, start with step 1.

Note: the factory default password is 5500 on the DC-5500, and 5750 on the DC-5750. To change the control password, see the Password entry under Options, section 6.4.8. This example assumes that the control has been set up with the factory default password. If your password is different, use it instead.

1. Press the [MODE SEL] key. (example for the with default password)
   The top display will now read:

2. Press the 5, then the 5, then the 0, and then the 0.
   The top display will now read:

3. Press the [ENTER] key. The control will now be in the Program Mode, and the "PRO" light will be illuminated.

4. Press [MODE SEL] again. The control will now be in the Manual Mode, and the "MAN" light will be illuminated.

5. Press [MODE SEL] again. The control will now be in the Options Mode, and the "OPT" light will be illuminated.

6. Press the [DOWN ARROW] key until the display reads "Factory Options". Press [EDIT] key and enter password 1206.

7. Display now read "I/O Assignments". Proceed to Section 7.3

7.2 Active Keys

[UP ARROW]	Used to increment I/O Assignment
[DOWN ARROW]	Used to decrement I/O Assignment
[RIGHT ARROW]	Used to select LED relay, input, and type
[LEFT ARROW]	Used to select LED relay, input, and type
[EDIT]	Used to edit values

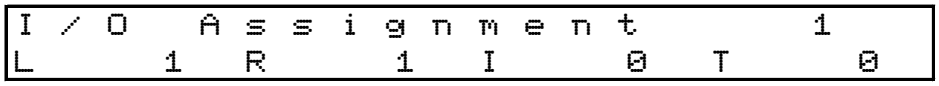
[CLEAR]	Used to clear value. Use only when cursor is flashing on value
[ENTER]	Used to complete entry and save data
[MODE SEL]	Used to exit Options Mode and enter Run Mode
[1] - [9]	Used to enter numeric values.
[EXIT]	Used to EXIT the editing function.

7.3 Configuring I/O Assignments

When in Configuration Mode, the [UP ARROW] Key will scroll through the following:

I/O Assignments
Multi I/O Assignments
Clear Entire Memory

1. Select I/O Assignments, press [EDIT], to begin configuring.
2. Press [UP ARROW] key, to scroll through each I/O or by using the numeric keypad, enter the desired I/O number which you wish to jump to.
3. Press [RIGHT ARROW] key, to edit LED, Output, Input, Type. The cursor will flash on the "I" location, to enable editing of the LED Number.



4. Record your specific I/O information on provided chart, See Appendix C.

7.3.1 High Fire

LED: Enter the number corresponding to the high fire LED.
Relay: Enter the number corresponding to the high fire relay. The dryer control will energize this output when it wants to open the high fire gas valve.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.2 Low Fire

LED: Enter the number corresponding to the low fire LED.
Relay: Enter the number corresponding to the low fire relay. The dryer control will energize this output when it wants to open the low fire gas valve.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.3 Recirculation

LED: Enter the number corresponding to the recirculation damper LED.
Relay: Enter the number corresponding to the recirculation damper relay. The dryer control will energize this output when it wants to activate the recirculation damper.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.4 Signal

LED: Enter the number corresponding to the signal LED. This field should not be changed zero, although the signal will still operate there will be no visual indication on the dryer control.
Relay: Enter the number corresponding to the signal relay. If the piezo signal output from the back of the dryer control is used this field may be changed to zero. Additional fields in the options list should also be reviewed for setting the signal on and signal off times.
Input: Enter the number corresponding to the signal input. This input is normally floating high, connecting this input to the input common will acknowledge the signal.
Type: 0: The chirp output will sent to the cpu output and the relay output.
1: The chirp output will not be sent to the relay assignment.

7.3.5 Basket Forward

LED: Enter the number corresponding to the basket forward LED.
Relay: Enter the number corresponding to the motor forward starter relay.
Input: This field is not currently used.
Type: 0: Standard motor forward and reverse relays are used. Additional fields in the options list should also be reviewed for setting the motor on and motor off times.
1: Variable frequency drive with analog inputs. Please review the section on connecting variable frequency drive controllers. Additional fields in the option list must also be reviewed for setting the RPM minimum and RPM maximum settings.

7.3.6 Basket Reverse

LED: Enter the number corresponding to the motor reverse LED.
Relay: Enter the number corresponding to the motor reverse start relay.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.7 (Not Used)

7.3.8 (Not Used)

7.3.9 (Not Used)

7.3.10 (Not Used)

7.3.11 (Not Used)

7.3.12 (Not Used)

7.3.13 Auxiliary 1

LED: Enter the number corresponding to the auxiliary output LED.
Relay: Enter the number corresponding to the auxiliary output relay.
Input: This field is not currently used.
Type: 0: This output will turn off if the dryer control is stopped while running a formula.
1: This output will remain on if the dryer control is stopped while running a formula.

7.3.14 Auxiliary 2

LED: Enter the number corresponding to the auxiliary output LED.
Relay: Enter the number corresponding to the auxiliary output relay.
Input: This field is not currently used.
Type: 0: This output will turn off if the dryer control is stopped while running a formula.
1: This output will remain on if the dryer control is stopped while running a formula.

7.3.15 Auxiliary 3

LED: Enter the number corresponding to the auxiliary output LED.
Relay: Enter the number corresponding to the auxiliary output relay.
Input: This field is not currently used.
Type: 0: This output will turn off if the dryer control is stopped while running a formula.
1: This output will remain on if the dryer control is stopped while running a formula.

7.3.16 Auxiliary 4

LED: Enter the number corresponding to the auxiliary output LED.
Relay: Enter the number corresponding to the auxiliary output relay.
Input: This field is not currently used.
Type: 0: This output will turn off if the dryer control is stopped while running a formula.
1: This output will remain on if the dryer control is stopped while running a formula.

7.3.17 Gas Blower

LED: Enter the number corresponding to the gas blower LED.
Relay: Enter the number corresponding to the gas blower relay. The dryer control will energize this output when running the gas blower during a dry step.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.18 Exhaust Blower

LED: Enter the number corresponding to the exhaust blower LED.
Relay: Enter the number corresponding to the exhaust blower relay. The dryer control will energize this output when running the exhaust blower during a dry step.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.19 Lint Blowdown

LED: Enter the number corresponding to the lint blowdown LED.
Relay: Enter the number corresponding to the lint blowdown relay. The dryer control will energize this output for 15 seconds at the beginning of a dry formula
Input: This field is not currently used.
Type: This field is not currently used.

7.3.20 De-Linter

LED: Enter the number corresponding to the de-linter LED.
Relay: Enter the number corresponding to the de-linter relay. The dryer control will energize this output for 15 seconds at the beginning of a dry formula
Input: This field is not currently used.
Type: This field is not currently used.

7.3.21 Fireye Enable

LED: Enter the number corresponding to the Fireye enable LED.
Relay: Enter the number corresponding to the Fireye enable relay. The dryer control will energize this output whenever it wishes to use the burner.
Input: Enter the number corresponding to the Fireye enabled input. The dryer control looks for this input to indicate that the burner has been lit and that the flame is within specifications.
Type: This field is not currently used.

7.3.22 Exhaust Pressure

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the exhaust pressure switch input. The dryer control expects a connection between this input and the input common to indicate that the exhaust pressure is within the acceptable limits.
Type: This field is not currently used.

7.3.23 Gas Pressure

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the gas pressure switch input. The dryer control expects a connection between this input and the input common to indicate that the gas pressure is within the acceptable limits.
Type: This field is not currently used.

7.3.24 Excessive Backpressure

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the excessive backpressure switch input. The dryer control expects a connection between this input and the input common to indicate that the exhaust backpressure has exceeded acceptable limits.
Type: This field is not currently used.

7.3.25 Lint Thermal Switch

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the lint trap thermal switch input. The dryer control expects a connection between this input and the input common to indicate that there is a fire in the lint trap.
Type: This field is not currently used.

7.3.26 Modulating Valve Enable

LED: This field is not currently used.
Relay: Enter the number corresponding to the modulating gas valve enable relay. The dryer control will energize this relay when the modulating gas valve is in use.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.27 Modulating Valve Open

LED: This field is not currently used.

Relay: Enter the number corresponding to the modulating gas valve open relay. The dryer control will energize this relay when it needs to open the modulating gas valve.

Input: This field is not currently used.

Type: This field is not currently used.

7.3.28 Modulating Valve Close

LED: This field is not currently used.

Relay: Enter the number corresponding to the modulating gas valve close relay. The dryer control will energize this relay when it needs to close the modulating gas valve.

Input: This field is not currently used.

Type: This field is not currently used.

7.3.29 Start

LED: Enter the number corresponding to the Run Mode LED. The default for this field is 29.

Relay: Enter the number corresponding to the run output. The behavior of this output depends on the Start I/O Assignment type.

Input: Enter the number corresponding to the external start input. When the dryer control sees a connection between this input and the input common, it will start the current formula.

Type: 0: The dryer control will energize the start output whenever the control is running a formula in the Run Mode.

1: The dryer control will pulse the start relay when the control starts running a formula in the Run Mode, and will energize the stop relay whenever the control is stopped.

2: The dryer control will energize the start relay whenever the control is running a formula in the run mode. If the dryer control is pulsing the operator signal, it will pulse the start relay as well. When the dryer control is stopped, it will energize the stop relay.

7.3.30 Stop

LED: Enter the number corresponding to the Program Mode LED. The default for this field is 30.

Relay: Enter the number corresponding to the stop relay. The behavior of this output depends on the Start I/O Assignment type.

Input: Enter the number corresponding to the external stop input. When the dryer control sees a connection between this input and the input common, it will stop the current formula.

Type: 0: The dryer control uses an external stop switch connected to the stop input.

1: The dryer control uses the falling edge of the Start input as the external stop input.

7.3.31 Formula Up

LED: Enter the number corresponding to the Manual Mode LED. The default for this field is 31.

Relay: This field is not currently used.

Input: Enter the number corresponding to the external formula up selector switch.

Type: 1: Will disable the membrane Formula Up/Down, Start and Signal keys from working in the run mode.

7.3.32 Formula Down

LED: Enter the number corresponding to the Options Mode LED. The default for this field is 32.

Relay: This field is not currently used.

Input: Enter the number corresponding to the external formula down selector switch.

Type: This field is not currently used.

7.3.33 Hold

LED: Enter the number corresponding to the hold LED. The default for this field is 26. This field should not be set to zero, there are many reasons why the dryer control may place a formula on hold. Please refer to the help key in the run section of this manual.

Relay: Enter the number corresponding to the hold output. If an output number is entered, the output will turn on whenever the dryer control enters a hold state.

Input: Enter the number corresponding to the external hold input. The dryer control expects to see a connection between this input and the input common to place the formula timer on hold.

Type: This field is not currently used.

7.3.34 Communication

LED: Enter the number corresponding to the communication LED. The default for this field is 34.

Relay: This field is not currently used.

Input: This field is not currently used.

Type: This field is not currently used.

7.3.35 Basket Motor Overload

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the basket motor overload relay contact. If the contact is normally closed, enter the input number plus 100.

Type: 0: Normal basket motor overload message is displayed.

1: A general motor overload is displayed. This will allow machines that have all motor overloads tied to a single common to be monitored.

7.3.36 Blower Motor Overload

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the blower motor overload relay contact. If the contact is normally closed, enter the input number plus 100.

Type: This field is not currently used.

7.3.37 Basket Rotation

LED: Enter the number corresponding to the basket rotation LED. The dryer control will illuminate this LED when it senses the basket rotation switch.

Relay: This field is not currently used.

Input: Enter the number corresponding to the basket rotation switch input.

Type: 0: The basket rotation sensor is a mechanical limit switch that is closed once per rotation. The switch is connected to the contact closure input set in the input field of the I/O Assignment. Each time the control sees this input pulse, it loads a timer with the number of seconds set in the basket rotation time option (section 7.5.11). The control will display a "Basket Not Rotating" error if this timer runs out.

1: The basket rotation sensor is a proximity switch or photoeye that pulses more than once per rotation. The sensor is connected to the high speed counter input set in the input field of the I/O Assignment. Each time the control sees this input pulse, it loads a timer with the number of seconds set in the basket rotation time option (section 7.5.11). The control will display a "Basket Not Rotating" error if this timer runs out.

2: The basket rotation sensor is part of a mechanical timer system that provides a solid contact closure when the basket rotation is good. When the control has this input, it loads an internal timer for the time set in the basket rotation time option (section 7.5.11).

7.3.38 Supervisor Key

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the external supervisor key switch. When the dryer control sees a contact between this input and the input common it will allow the supervisor to advance or decrement the step number, or even change the current formula number without completing the current formula.
Type: 0: Allow password or supervisor key to use mode select.
1: Require password and supervisor key to use mode select.

7.3.39 Tilt Safety

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the tilt function/tilt safety switch. When the dryer control sees a contact between this input and the input common it will start the process of opening the dryer's door or tilting the basket.
Type: This field is not currently used.

7.3.40 Jog

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the jog switch. When the dryer control sees a contact between this input and the input common and the machine has been tilted to the load or unload position, it will run the basket motor.
Type: This field is not currently used.

7.3.41 Run Position Front

LED: This field is not currently used.
Relay: This field is not currently used.
Input: See type for explanation of behavior.
Type: 0: The dryer has momentary pushbutton switches for the run, load, and unload positions. When the dryer control sees a contact between this input and the input common, it will begin tilting the machine to the selected position.
1: The dryer has a three-position selector switch for run, load, and unload positions. When the dryer control sees a maintained contact between this input and the input common, it will tilt the machine in the appropriate direction. If the dryer control does not see contact on either the load or unload position switches, it will automatically tilt the machine to the run position.

7.3.42 Load Position Front

LED: This field is not currently used.
Relay: This field is not currently used.
Input: See type on the Run Position Front I/O Assignment (I/O Assignment number 41).
Type: This field is not currently used.

7.3.43 Unload Position Front

LED: This field is not currently used.
Relay: This field is not currently used.
Input: See type on the Run Position Front I/O Assignment (I/O Assignment number 41).
Type: This field is not currently used.

7.3.44 Door Open Front

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the front door open switch input. Contact between this input and the input common indicates to the dryer control that the dryer's front door is open.
Type: This field is not currently used.

7.3.45 Door Closed Front

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the front door closed switch input. Contact between this input and the input common indicates to the dryer control that the dryer's front door is closed.
Type: This field is not currently used.

7.3.46 Raise Door Front

LED: This field is not currently used.
Relay: Enter the number corresponding to the raise/open front door relay. The dryer control will energize this output when opening the front door.
Input: Enter the number corresponding to the raise/open front door pushbutton switch. When the dryer control sees a contact between this input and the input common, it will energize the raise front door output.
Type: This field is not currently used.

7.3.47 Lower Door Front

LED: This field is not currently used.
Relay: Enter the number corresponding to the lower/close front door relay. The dryer control will energize this output when closing the door.
Input: Enter the number corresponding to the lower/close front door pushbutton switch. When the dryer control sees a contact between this input and the input common, it will de-energize the raise front door output.
Type: This field is not currently used.

7.3.48 Raise Rear

LED: This field is not currently used.
Relay: Enter the number corresponding to the raise rear relay. The dryer control will energize this output when raising the rear of the machine.
Input: Enter the number corresponding to the rear up switch input. Contact between this input and the input common indicates to the dryer control that the rear of the dryer has been raised.
Type: This field is not currently used.

7.3.49 Lower Rear

LED: This field is not currently used.
Relay: Enter the number corresponding to the lower rear relay. The dryer control will energize this output when lowering the rear of the machine.
Input: Enter the number corresponding to the rear down switch input. Contact between this input and the input common indicates to the dryer control that the rear of the dryer has been lowered.
Type: This field is not currently used.

7.3.50 Raise Front

LED: This field is not currently used.

Relay: Enter the number corresponding to the raise front relay. The dryer control will energize this output when raising the front of the machine.

Input: Enter the number corresponding to the front up switch input. Contact between this input and the input common indicates to the dryer control that the front of the dryer has been raised.

Type: This field is not currently used.

7.3.51 Lower Front

LED: This field is not currently used.

Relay: Enter the number corresponding to the lower front relay. The dryer control will energize this output when lowering the front of the machine.

Input: Enter the number corresponding to the front down switch input. Contact between this input and the input common indicates to the dryer control that the front of the dryer has been lowered.

Type: This field is not currently used.

7.3.52 Run Position Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: See type for explanation of behavior.

Type: 0: The dryer has momentary pushbutton switches for the run, load, and unload positions. When the dryer control sees a contact between this input and the input common, it will begin tilting the machine to the selected position.

1: The dryer has a three-position selector switch for run, load, and unload positions. When the dryer control sees a maintained contact between this input and the input common, it will tilt the machine in the appropriate direction. If the dryer control does not see contact on either the load or unload position switches, it will automatically tilt the machine to the run position.

7.3.53 Load Position Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: See type on the Run Position Rear I/O Assignment (I/O Assignment number 52).

Type: This field is not currently used.

7.3.54 Unload Position Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: See type on the Run Position Rear I/O Assignment (I/O Assignment number 52).

Type: This field is not currently used.

7.3.55 Door Open Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the rear door open switch input. Contact between this input and the input common indicates to the dryer control that the dryer's rear door is open.

Type: This field is not currently used.

7.3.56 Door Closed Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the rear door closed switch input. Contact between this input and the input common indicates to the dryer control that the dryer's rear door is closed.

Type: This field is not currently used.

7.3.57 Raise Door Rear

LED: This field is not currently used.

Relay: Enter the number corresponding to the raise/open rear door relay. The dryer control will energize this output when opening the rear door.

Input: Enter the number corresponding to the raise/open rear door pushbutton switch. When the dryer control sees a contact between this input and the input common, it will energize the raise rear door output.

Type: This field is not currently used.

7.3.58 Lower Door Rear

LED: This field is not currently used.

Relay: Enter the number corresponding to the lower/close rear door relay. The dryer control will energize this output when closing the door.

Input: Enter the number corresponding to the lower/close rear door pushbutton switch. When the dryer control sees a contact between this input and the input common, it will de-energize the raise rear door output.

Type: This field is not currently used.

7.3.59 Jog Forward Front

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the machine's front pendant jog forward input..

Type: This field is not currently used.

7.3.60 Jog Forward Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the machine's rear pendant jog forward input..

Type: This field is not currently used.

7.3.61 Jog Reverse Front

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the machine's front pendant jog reverse input..

Type: This field is not currently used.

7.3.62 Jog Reverse Rear

LED: This field is not currently used.

Relay: This field is not currently used.

Input: Enter the number corresponding to the machine's rear pendant jog reverse input..

Type: This field is not currently used.

7.3.63 Cycle End

LED: Enter the number of the LED you wish to have flash on the control's front panel at the end of a cycle.

Relay: Enter the number corresponding to the cycle end relay. The dryer control will energize this output when the dryer reaches the end of the drying cycle.

Input: This field is not currently used.

Type: This field is not currently used.

7.3.64 Soil Brush

LED: This field is not currently used.
Relay: Enter the number corresponding to the soil brush relay. The dryer control will energize this output when operating the machine's basket soil brush.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.65 Front Control

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the front control input. When the dryer control sees contact between this switch and the input common, it will switch control of the rear door to the front side controls.
Type: This field is not currently used.

7.3.66 Rear Control

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the rear control input. When the dryer control sees contact between this switch and the input common, it will switch control of the front door to the rear side controls.
Type: This field is not currently used.

7.3.67 Safety / Tilt Function Rear

LED: This field is not currently used.
Relay: This field is not currently used.
Input: If your machine is equiped with a rear safety input, enter the number corresponding to the rear safety input. When the dryer control sees contact between this switch and the input common, it will allow the machine to tilt.
Type: This field is not currently used.

7.3.68 Movement Alarm

LED: This field is not currently used.
Relay: Enter the number corresponding to the movement alarm output. When the dryer control sees the dryer moving (jogging or tilting), it sounds this alarm.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.69 Blower Door

LED: This field is not currently used.
Relay: Enter the number corresponding to the blower door relay. The dryer control will energize this output two minutes after the dryer reaches the end of the drying cycle.
Input: Enter the number corresponding to the blower door input. This switch tells the dryer control control that the blower door is closed.
Type: This field is not currently used.

7.3.70 Fire Alarm / High Temperature

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the fire alarm input. When the dryer control sees this input energized, it sounds an alarm.
Type: This field is not currently used.

7.3.71 Main Power On / MCR

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the main power on (main control relay) input. This input tells the dryer control that the dryer is ready for operation.
Type: This field is not currently used.

7.3.72 Low Gas Pressure

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the low gas pressure input. This input energized indicates that the minimum gas pressure is achieved.
Type: This field is not currently used.

7.3.73 Burner Motor Overload

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the blower motor overload relay contact. If the contact is normally closed, enter the input number plus 100.
Type: This field is not currently used.

7.3.74 Input Power On

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the input power on input. This input energized indicates that the 24 volt DC is supplied.
Type: This field is not currently used.

7.3.75 Burner Pressure

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the burner pressure input. This switch indicates that the air pressure in the burner is good.
Type: This field is not currently used.

7.3.76 Sprinkler System Cutoff

LED: This field is not currently used.
Relay: This field is not currently used.
Input: Enter the number corresponding to the sprinkler system cutoff input. This switch energized turns off the sprinklers.
Type: This field is not currently used.

7.3.77 Cooldown Light

LED: Enter the number corresponding to the cooldown LED. There is no default for this field. The cooldown LED will flash whenever the cooldown relay is active.
Relay: Enter the number corresponding to the cooldown light output. There is no default for this field. The dryer control will activate this light when the dryer is cooling down as part of a cooldown step or when the dryer has been stopped.
Input: This field is not currently used.
Type: This field is not currently used.

7.3.78 Vari-Air

LED: Enter the number corresponding to the Vari-Air LED. There is no default for this field. The Vari-Air LED will flash whenever the Vari-Air relay is active.

Relay: Enter the number corresponding to the Vari-Air relay. There is no default for this field. On machines equipped with the Vari-Air system, the control will activate this relay during heat steps when the temperature is below setpoint by the number of degrees set in the Vari-Air Offset option setting.

Input: This field is not currently used.

Type: This field is not currently used.

7.4 Multi I/O Assignments

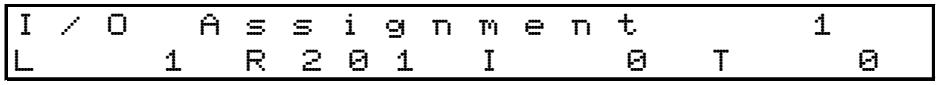
The DC-5500, under normal conditions, only assigns one relay output per logical output-for example, it will only activate one relay on the I/O unit to start or stop the blower. Multi I/O Assignments become necessary when you are in a situation where you need to activate or deactivate more than one relay to properly control the machine. The dryer control allows as many as four relays to be assigned to each Multi I/O Assignment.

7.4.1 Configuring Multi I/OAssignments

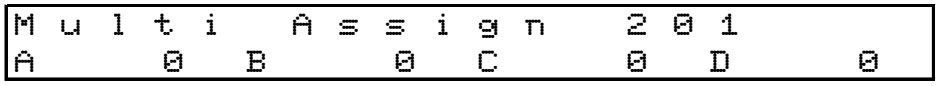
Setting up a Multi I/OAssignment is a two stage process. First, you must figure out which I/O Assignment corresponds to the function you need to control. Then, you need to decide which relay outputs you need to control, and whether they need to be normally open or normally closed.

Caution: Be very careful that you do not assign a relay output in both the Multi I/O Assignments and the regular I/O Assignments. If you do assign an output in more than one place, the control will behave unpredictably.

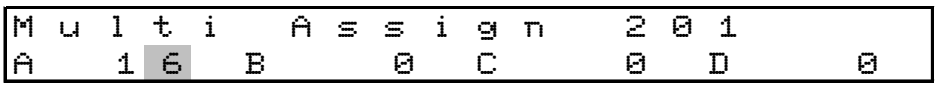
1. In the I/O Assignment section, select the I/O Assignment that requires multiple relays. In the relay field for that I/O Assignment, enter the number that corresponds to the Multi I/O Assignment you wish to use.
   Note: The Multi Relay Assignments are numbered 201 through 216. Each of these Multi I/O Assignments may be used with only one I/O Assignment.



2. Exit the I/O Assignment section and enter the Multi I/O Assignment section. Select the Multi I/O Assignment you just entered in the Relay section of the I/O Assignments.



3. Press the [RIGHT ARROW] key. The cursor will begin flashing on the number to the right of the letter A. Use the Multi-Function keys to enter the number of the first relay that you wish to assign. If you wish to have the relay be normally closed instead of normally open, add 100 to the relay number.



4. Press the [RIGHT ARROW] key to move to the next field and enter the number of the second relay you wish to assign. Repeat this process for the third and fourth relays.

5. When finished adding relays to the Multi I/O Assignments, press the [EXIT] key to return to the Factory Options section.

7.5 Machine Configuration

The Machine Configuration section contains configuration options for advanced users that are critical to the proper operation of the dryer.

7.5.1 Display Average

Used to set the number of temperature and humidity readings averaged together for the display. The default for this field is 39.

7.5.2 Inlet Proportional Band

Used to set the width of the proportional band for PID control of the inlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.3 Inlet Integral Constant

Used to set the integral constant for PID control of the inlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.4 Inlet Derivative Constant

Used to set the derivative constant for PID control of the inlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.5 Outlet Proportional Band

Used to set the width of the proportional band for PID control of the outlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.6 Outlet Integral Constant

Used to set the integral constant for PID control of the outlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.7 Outlet Derivative Constant

Used to set the derivative constant for PID control of the outlet temperature on machines equipped with a modulating gas valve. This setting will be determined in the field.

7.5.8 Flame Control Timeout

This setting is used to set the amount of time that the dryer control will wait for an input from the flame control indicating that the pilot light and main flame have been lit when starting the dryer. The default for this setting is 10 seconds.

7.5.9 Inlet Valve Offset

This setting is used to set the PID valve offset for the modulating gas valve when using PID control for the inlet temperature. The default for this field is 50. The PID valve offset is used to set the "resting" state of the valve.

7.5.10 Outlet Valve Offset

This setting is used to set the PID valve offset for the modulating gas valve when using PID control for the outlet temperature. The default for this field is 50. The PID valve offset is used to set the "resting" state of the valve.

7.5.11 Basket Rotation Time

This setting tells the dryer control how long it should wait between inputs from the basket rotation sensor before sounding an alarm. The default for this field is 60. Set this field to 0 if the dryer does not have a rotation sensor.

7.5.12 Motor Starter Time Delay

This setting is used to tell the dryer control how long it should wait at the beginning of a cycle between starting the blower motor and starting the basket motor. The default for this field is 2 seconds.

7.5.13 Fire Alarm Startup Delay

This setting is used to tell the dryer control how long it should wait between starting the dryer and looking at the fire alarm input. The default for this field is 10 seconds.

7.5.14 Lint Trap Blowdown Time

This setting is used to tell the dryer control how long it should energize the lint trap blowdown output when it calls for a lint trap blowdown. The default for this field is 5 seconds.

7.5.15 Lint Trap Blowdown Frequency

This setting is used to tell the dryer control how often it needs to call for a lint trap blowdown while running. The default for this field is 5 minutes.

7.5.16 Lint Trap Blowdown on Start

This setting is used to tell the dryer control to perform a lint trap blowdown when the machine is started. The default for this field is "Yes".

7.5.17 Lint Trap Blowdown on Stop

This setting is used to tell the dryer control to perform a lint trap blowdown when the machine is stopped. The default for this field is "Yes".

7.5.18 Lint Trap Blowdown at Formula End

This setting is used to tell the dryer control to perform a lint trap blowdown at the end of the cycle. The default for this field is "Yes".

7.5.19 Lint Trap Blowdown Delay

This setting is used to tell the dryer control how long it should wait after it has shut down the main blower before performing the blowdown. This delay allows the pressure in the exhaust duct to drop, increasing the effectiveness of the blowdown. The default for this option is 30 seconds, and it cannot be set to less than 15 seconds.

7.5.20 Inlet Temperature Offset

This setting is used to set the number of degrees of offset used for the inlet temperature. The default for this field is 0.

7.5.21 Outlet Temperature Offset

This setting is used to set the number of degrees of offset used for the outlet temperature. The default for this field is 0.

7.5.22 Minimum High Fire Valve Time

This setting is used to tell the dryer control the shortest period of time that it can keep the high fire valve open. The default for this field is 3.

7.5.23 Temperature Debounce Time

This setting is used to tell the dryer control how long the actual dryer temperature has to be below the setpoint before it opens the high fire gas valve. The default for this field is 3.

7.5.24 Hysteresis

This setting is used to set the number of degrees of temperature band around the setpoint. The default setting for this field is -5. When hysteresis is set to -5, the dryer control will open the high fire gas valve once the temperature has fallen below five degrees under the setpoint, and will leave it on until the temperature has reached the setpoint again. When hysteresis is set to 0, the dryer control will open the high fire gas valve when the temperature drops below the setpoint, and leave it on until the temperature passes the setpoint. When hysteresis is set to +5, the dryer control will open the high fire gas valve when the temperature drops below the setpoint, and leave it on until the temperature is five degrees higher than the setpoint.

7.5.25 A/D Converter Resolution

This setting is used to tell the dryer control what kind of resolution does the digital to analog converter has, eight or ten bit.

7.5.26 Jog Delay Time

This setting is used to tell the dryer control how many seconds is basket to rotate after the jog button is released. The default for this field is 3.

7.5.27 Use Initial Purge

This setting is used to tell the dryer control if the initial purge is to be used. Initial purge lasts 10 seconds. The default for this field is "Yes".

7.5.28 Recirculation Damper Temperature Offset

This setting is used to tell the dryer control when to activate the recirculation damper output. This setting is available only on dryers with type 1 recuirculation (I/O Assignment 3, see section 7.3.3). The dryer control will activate the recirculation damper when the outlet temperature reaches the setpoint temperature, plus or minus the recirculation damper temperature offset. (To set a negative value, press the [YES/NO] key while editing the setting). For example, if the outlet temperature is set to 180 degrees and this option is set to -5, the dryer control will activate the recirculation damper output when the outlet temperature reaches 175 degrees.

7.5.29 Recirculation Damper Hysteresis

This setting is used to tell the dryer control when to activate the recirculation damper output. The hysteresis setting works in concert with the recirculation damper temperature offset setting. It is used to keep the recirculation damper output from pulsing on and off at a rate that would possibly damage the dryer. (To set a negative value, press the [YES/NO] key while editing the setting). The hysteresis setting is the number of degrees above or below the offset setpoint that the control will turn the damper on or off. For example: Outlet temperature set to 180 degrees. Recirculation Damper Temperature Offset set to -5 degrees. Hysteresis set to -2 degrees. The control will activate the recirculation damper output at 175 degrees. At that point, it will keep the output on as long as the outlet temperature stays above 173 degrees. If the outlet temperature drops below 173 degrees, the dryer control will shut the recirculation damper output off until the temperature rises above 175 degrees again.

7.5.30 Vari-Air System Temperature Offset

This setting is used to tell the dryer control when to de-activate the Vari-Air system output. This setting is available only on dryers that have a Vari-Air system output configured (I/O Assignment 78, see section 7.3.78). The dryer control will shut off the Vari-Air output when the outlet temperature reaches the number of degrees above or below setpoint specified in this option. (To set a negative value, press the [YES/NO] key while editing the setting). For example, if the outlet temperature is set to 180 degrees and this option is set to -5, the dryer control will deactivate the Vari-Air output when the outlet temperature reaches 175 degrees.

7.5.31 Vari-Air System Hysteresis

This setting is used to tell the dryer control when to activate the Vari-Air system output. The hysteresis setting works in concert with the Vari-Air system offset setting. It is used to keep the Vari-Air output from pulsing on and off at a rate that would possibly damage the dryer. (To set a negative value, press the [YES/NO] key while editing the setting). The hysteresis setting is the number of degrees above or below the offset setpoint that the control will turn the Vari-Air output on or off. For example: Outlet temperature set to 180 degrees. Vari-Air System Temperature Offset set to -5 degrees. Hysteresis set to +2 degrees. The control will de-activate the Vari-Air output at 177 degrees. At that point, it will keep the output off as long as the outlet temperature stays above 177 degrees. If the outlet temperature drops below 175 degrees, the dryer control will activate the Vari-Air output until the temperature rises above 177 degrees again.

7.5.32 Low Fire Shutoff Temperature Difference

This setting is used to tell the dryer control when to shut off the low fire gas valve. This option is only available on machines with a low fire gas valve (I/O Assignment 2, see section 7.3.2). The dryer control will shut off the low fire gas valve when the outlet temperature exceeds the setpoint plus or minus the number of degrees set in this option. (To set a negative value, press the [YES/NO] key while editing the setting). For example: If the outlet temperature is set to 180 degrees and this option is set to +5 degrees, the low fire output will be shut off above an outlet temperature of 185 degrees, and will be turned on below that.

7.5.33 Low Fire Hysteresis

This setting is used to tell the dryer control when to activate the low fire gas valve output. The hysteresis setting works in concert with the low fire shutoff temperature difference setting. It is used to keep the low fire output from pulsing on and off at a rate that would possibly damage the dryer. (To set a negative value, press the [YES/NO] key while editing the setting). For example, if the outlet setpoint is 180 degrees, the low fire shutoff temperature difference is set to +5, and this option is set to -2, the dryer will shut off the low fire valve when the outlet temperature reaches 185. It will remain off until the temperature drops below 183, at which point the dryer control will turn it back on.

7.5.34 High Fire Setpoint Offset

This setting is used to tell the dryer to "offset" the setpoint when used with high fire. For example, if this option is set to -5 degrees, and the outlet temperature setpoint is 180 degrees, the dryer control will shut off the high fire gas valve when the outlet temperature reaches 175 degrees, and will re-open it when the outlet temperature drops below 175 degrees. (To set a negative value, press the [YES/NO] key while editing the setting).

7.5.35 Communication Unit ID (DC-5500 Only)

Enter the unit identification number for the communications network. The default for this field is zero, which will disable the communications network features. Care MUST be taken to ensure that no two controls have the same communication identification number, if this happens communication error will occur on both machines.

7.5.36 Communications Speed (DC-5500 Only)

Used to set the baud rate of the DC-5500's on board serial port. If no value is entered, the port defaults to 19,200 baud.

Valid settings:

96 - 9600 baud
192 - 19,200 baud
200 - maximum port rate (available only to facilities using ComLink (CL-1000).

7.5.37 Network Configuration (DC-5750 Only)

Used to set the network IP address of the control.

A. Control IP Address: the network address of the dryer control.
B. Address of the computer running the Reporter data-gathering application.

7.6 Calibrating the Gas Valve

The dryer controls have a convenient mode for setting up the control to work with the modulating gas valve. To determine which kind of modulating valve your dryer has, check the type field of the Modulating Valve Open I/O Assignment (see section 7.3.27).

7.6.1 Gas Valve Calibration for modulating motor-driven gas valves

1. To use the calibration mode, go to the machine configuration section of the Options mode, select "Calibrate Gas Valve" and press the [EDIT] key.
   The display will now read:

```
Current value      45
Closed value        0
```

2. The control will energize the output to close the gas valve. When the current value shown on the display stops decreasing, verify that the gas valve is in the fully closed position and press the [ENTER] key. The display will now read:

```
Current value      45
Closed value       45
```

   If you wish to manually enter a value for the closed position, type in the number using the multifunction keys.

3. When you are finished setting the closed value for the valve, press the [EXIT] key. The display will now read:

```
Current value     215
Open value          0
```

4. The control will energize the output to open the gas valve. When the current value shown on the display stops increasing, verify that the gas valve is in the fully open position and press the [ENTER] key. The display will now read:

```
Current value   215
Open value      215
```

If you wish to manually enter a value for the open position, type in the number using the multifunction keys.

5. When you are finished setting the open value for the valve, press the [EXIT] key, which will exit the valve calibration mode.

7.6.2 Gas Valve Calibration for analog-controlled gas valves

1. To use the calibration mode, go to the machine configuration section of the Options mode, select "Calibrate Gas Valve" and press the [EDIT] key.
   The display will now read:

```
Valve closed value
old    500   new   500
```

2. The control will send the analog output corresponding to the value in the "new" field on the display to the modulaing valve. To enter a new value for the closed position, enter the number you wish to use and press [ENTER]. When you have arrived at the value you want, press the [ENTER] key again to save the value. You will see the value you just entered appear by the word "old" on the display. Press [EXIT] to move to the valve open position.
   The display will now read:

```
Valve open value
old   1500   new   1500
```

3. Follow the same procedure as in step 2 to set the open position value. When finished, press the [ENTER] key twice to save the value, then press the [EXIT] key to leave the valve configuration section.

7.7 Input Indicator Assignments

The input indicator assignments allow you to use an LED on the front panel of the dryer control to indicate the status of an input on the I/O unit. The input indicator assignment number is the number of the input you are assigning an LED to. The LED field is the number of the LED you wish to assign as a front panel indicator.

7.8 Clearing Entire Memory

This function will clear all configuration, setting and formula information in the dryer control. Be absolutely certain you wish to clear all information out of the control before proceeding.

To clear entire memory:

1. Press the [EDIT] key.
2. Press the [ON/OFF] key to select "Yes" on the display.
3. Press the [ENTER] key to clear the memory.

7.9 Exit Technical Configuration

Press the [EXIT] key, then [MODE SEL], to return to the Run Mode.

Appendix A

Character Set

Provided below, is a partial list of the available characters used in programming formula and step names. To access this list, you must be programming or editing a formula or step name. Press the [UP or DOWN ARROW] keys to scroll through the set of characters.

See Edit Formula Name, Section 4.5, and Editing Step Name, Section 4.7, for more details.

! " # $ % & ' ( ) * + , - . /

0 1 2 3 4 5 6 7 8 9 : ; < = > ? @

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

[\ ] ^ _ `

a b c d e f g h i j k l m n o p q r s t u v w x y z

{ | } ~

Appendix B

The dryer control has a list of pre-programmed step names. These names cannot be edited or erased. However, new step names may be added in the Program Mode by simply entering the new name according to the instructions in section 4.7.

Blowdown
Cooldown
Dry
Humid/Time
Temp Diff
Temp/Time

Appendix C
I/O Assignment Chart

Number	Name	LED	Relay	Input	Type
1	High Fire				
2	Low Fire				
3	Recirculation				
4	Signal				
5	Basket Forward				
6	Basket Reverse				
7	Not Used				
8	Not Used				
9	Not Used				
10	Not Used				
11	Not Used				
12	Not Used				
13	Aux 1				
14	Aux 2				
15	Aux 3				
16	Aux 4				
17	Gas Blower				
18	Exhaust Blower				
19	Lint Blowdown				
20	Delinter				
21	Fireye				
22	Exhaust Pressure				
23	Gas Pressure				
24	Excessive Backpressure				
25	Lint Thermal Switch				
26	Modulating Valve Enable				
27	Modulating Valve Open				
28	Modulating Valve Close				
29	Start				
30	Stop				
31	Formula Up				
32	Formula Down				
33	Hold				
34	Communications				
35	Motor Overload				
36	Blower Motor Overload				
37	Basket Rotation				
38	Supervisor Key				
39	Tilt Safety				
40	Jog				
41	Run Position Front				
42	Load Position Front				
43	Unload Position Front				
44	Door Opened Front				
45	Door Closed Front				
46	Raise Door Front				
47	Lower Door Front				
48	Raise Rear				
49	Lower Rear				

I/O Assignment Chart
Page 2

Number	Name	LED	Relay	Input	Type
50	**Raise Front**				
51	**Lower Front**				
52	**Run Position Rear**				
53	**Load Position Rear**				
54	**Unload Position Rear**				
55	**Door Opened Rear**				
56	**Door Closed Rear**				
57	**Raise Door Rear**				
58	**Lower Door Rear**				
59	**Jog Forward Front**				
60	**Jog Forward Rear**				
61	**Jog Reverse Front**				
62	**Jog Reverse Rear**				
63	**Cycle End**				
64	**Soil Brush**				
65	**Front Control**				
66	**Rear Control**				
67	**Rear Safety**				
68	**Movement Alarm**				
69	**Blower Door**				
70	**Fire Alarm**				
71	**Main Power On**				
72	**Low Gas Pressure**				
73	**Burner Motor Overload**				
74	**Input Power On**				
75	**Burner Pressure**				
76	**Fire Alarm Cutoff**				
77	**Cooldown Light**				
78	**Vari-Air**				

Multi I/O Assignment Chart

Number	Name	A	B	C	D
1					
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Options

Name	Setting
Motor on	
Motor off	
Signal on	
Signal off	
Display brightness	
Temperature timeout	
Allow step advance	
Password	
Chirp time	
Low temperature	
Open door time	
Raise machine time	
Humidity at setpoint time	
Inlet temperature limit	
Outlet temperature limit	
Wait for temp to start step time	
Rotate basket after low temperature	
Keep blowers on in end step	
Rotate basket in end step	

Machine Configuration

Name	Setting
Display average	
Inlet proportional band	
Inlet integral constant	
Inlet derivative constant	
Outlet proportional band	
Outlet integral constant	
Outlet derivative constant	
Flame control timeout	
Inlet valve offset	
Outlet valve offset	
Basket rotation time	
Motor starter time delay	
Fire alarm startup delay	
Lint trap blowdown time	
Lint trap blowdown frequency	
Lint trap blowdown on start	
Lint trap blowdown on stop	
Lint trap blowdown at formula end	
Lint trap blowdown delay	
Inlet temperature offset	
Outlet temperature offset	
Minimum high fire valve time	
Temperature debounce time	
Hysteresis	
A/D converter resolution	
Jog Delay Time	
Use Initial Purge	
Recirculation Damper Temperature Offset	
Recirculation Damper Hysteresis	
Vari-Air Temperature Offset	
Vari-Air Hysteresis	
Low Fire Shutoff Temperature Difference	
Low Fire Hysteresis	
High Fire Setpoint Offset	
Communications unit ID	
Communication speed	
Control IP address	
Reporting system IP address	
Valve closed value	

Input Indicator Assignments

Input	Name	LED
1		
2		
3		
4		
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46		
47		
48		

Index

I

J

K

L

M

N

O

P

R

S

T

U

V

W