

# GeniSys™ Display or Contractor's Tool

for Advanced Burner Control



## Description / Applications

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The Beckett GeniSys™ Display is an optional attachment for the GeniSys Primary Control that allows a technician to monitor and program the primary control variables. The Beckett GeniSys™ Contractor Tool is a rugged hand-held version of the display module for use by service engineers. The screen on both the Display and the Tool show current burner status, control timings, and burner cycle history. The display and tool programming mode allows a technician to customize both the pre-time and post-time settings. When the Display remains on the burner, a lockout service message can be programmed that displays a custom message.

# Features

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- 32 character backlit alphanumeric display
- Sealed pushbutton keypad
- Low voltage operation
- Continuous real-time cycle monitoring
- Continuous cad cell resistance reading
- Continuous AC line voltage read-out
- Real-time error notification
- Customizable pre-time (valve-on delay) & post-time (motor off delay)
- 15 cycle history monitoring
- Five Year Warranty
- Customizable lockout service message

# Specifications

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## Electrical Ratings

### Inputs:

- Voltage: 5 Vdc  $\pm$ 4%
- Current: 25 mA maximum display current

## Environmental Ratings:

- Storage Ambient Temperature: -22°F to +150°F (-30°C to +65°C)
- Operating Ambient Temperature: 0°F to +150°F (-18°C to +65°C)
- Moisture: 5 to 85% RH, non-condensing and non-crystallizing

# Installation

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With a slotted screwdriver, carefully remove the COM2 port cover on the right side of the GeniSys control.

- When installing the display, slide the display down into place by slightly tipping the display towards the rear to engage the rear mounting fingers, then carefully aligning the display receptacle with the four COM2 pins on the control, and pressing in place. No additional fastening or wiring is required.

- When installing the contractor's tool, plug the connector from the interface cord into the COM1 or COM2 port.

After the contractor's tool or the display module has been installed on the control, the current readings will be displayed. Refer to Paragraph A. Also, readings for the most recent 15 burner cycles can also be displayed. Refer to Paragraph B.

# Operation

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The display was designed to function as both a monitor and a programmer. The display consists of two rows of 16 alphanumeric characters. Below the display are 4 keys:



The Back key is used to step back through the display screens or to reply 'no' to a question.



The Select key is used to advance through the display screens or to respond yes to a question.



Use this key to scroll back to the previous screen, to decrease pre-time and post-time timing, and scroll through the character sets when customizing the Service Message screen.



Use this key to scroll forward to the next display screen, to increase pre-time and post-time timings and to scroll through the character sets when customizing the Service Message screen.

There are five main functional display groupings within the module; Burner Status (Paragraph A), Burner History (Paragraph B), Pre-time Change (Paragraph C), Post-time Change (Paragraph D) and the Service Message Program (Paragraph E).

## A. Burner Status Mode

1. The current burner status will automatically display whenever the burner is cycling and the module is connected to the primary control.



2. During normal burner operation, the display reflects the current state of the burner. For example, when the burner is idle, the control will display Standby followed by the number of minutes the burner remained idle (up to 1 hour). The second row of characters displays the cad cell resistance in ohms, followed by the line voltage. Note that if the cad cell resistance is greater than 50Kohms, the screen will display >50 kohm. Note also that the line voltage display may become inaccurate below 84 volts when connected to a 120 volt GeniSys Control and below 10 volts when connected to a 12 volt DC Control.

3. As the burner cycles through PRE-TIME, TRIAL FOR IGN (Trial for Ignition), IGN CARRYOVER (Ignition Carryover), RUN (Burner Run), POST-TIME and PUMP PRIME the module will display the operation, followed by the time that either is remaining or has elapsed in that specific step.

**Standby** - During this time, the burner is idle and waiting for a signal to turn on.

**Pre-time** - The Pre-time screen will display the number of seconds remaining in the Pre-time (valve-on delay). Below the time reading is the cad cell resistance and the line voltage reading.



**Trial for Ign** - This screen displays the amount of time left in Trial for Ignition, before the control locks out.



**Ign Carryover** - This screen displays the amount of time that the igniter will remain on after the cad cell detects a flame.



**Run** - The burner Run screen will display the number of minutes and seconds the burner has been firing.



**Post-time** - The Post-time screen will display the number of seconds remaining in Post-time (motor-off delay).



**Pump Prime** - When priming the pump this screen will display the time remaining in pump prime.



- If the flame is lost during run, the burner will recycle. The display will list the Recycle Time that remains, the cad cell resistance and the line voltage.
- When the control enters hard lockout, a message will be displayed on the screen that indicates the reason for the lockout. After three seconds, the display will switch to a screen that can be easily customized with the service agency's phone number or any other message. Refer to the information in Paragraph E to customize the display.



## B. Burner Cycle History

- From the burner status display, pressing the Next key will display the View History screen.



- From the View History screen, pressing the PREV key will return the display to the burner status. Pressing the SEL key will display the Last 15 Cycles History screen.



3. Pressing the Back key at this stage will return the display to the View History screen. Pressing the PRE key will display the hours since the screen was last cleared. Pressing the NEXT key will display the Lifetime Cycle Count screen. **Note that the data associated with the Cycles and Hours Since Cleared parameters (First 2 screens) is stored on the display module. To log this information the display must remain connected to the control.**



4. From this screen, pressing the BACK key returns you to the View History screen, and pressing the PREV key displays the cycles since last cleared screen. To reset/clear the hours, press and hold the SEL key for 3 seconds and respond Yes to the Clear Counts? prompt.



5. From this screen, pressing the BACK key returns you to the View History screen, and pressing the PREV key displays the Lifetime Cycles screen. To reset/clear the cycles, press and hold the SEL key for 3 seconds and respond Yes to the Clear Counts? prompt.



6. Pressing the BACK key at this stage will return the display to the View History screen.



7. From this screen either press the BACK key to return to the View History screen or press the SEL key to display a single parameter's readings through the 15 burner cycles. For example, to display the Run Time for all 15 cycles, press SEL and use the SEL and BACK keys to scroll through the Run Time for all 15 burner cycles.



8. To display the various readings associated with a single burner cycle, press the NEXT or PREV keys. For example, to display the time required to light the burner, the cad cell maximum and average resistance, the average line voltage, the cycle end reason, and the time the burner remained off.





1 CYCLE AGO  
502 OHMS AVG



1 CYCLE AGO  
AVG 112V



1 CYCLE AGO  
Cycle End Reason\*

- \* The possible cycle end reasons are as follows,  
**Recycled** - The burner was shut down because the flame was lost.  
**Pump Prime** - The burner cycle was terminated due to a manual pump prime override.  
**Manual Shutdown** - The Reset button was held to shut down the burner.  
**Low Voltage** - The burner shut down because the line voltage to the burner dropped too low.  
**CFH Ended** - The burner cycle ended because there was no longer a call for heat.  
**Replace Control** - This indicates that the control detected an internal failure.  
**Did Not Light** - The cad cell did not sense flame at the end of the trial for ignition (lockout) time.  
**Lost Flame** - The burner was shut down because of excessive recycling.  
**Pre-time Flame** - A flame was detected at the end of the Pre-time (valve-on-delay).



1 CYCLE AGO  
8:20 OFF TIME

9. To return to the Cycle History screen, press BACK once. To return to the Burner History screen, press BACK a second time.

### C. Pre-time Set Program

1. From either the View History or the Burner Status screens, press and hold the NEXT key for 3 seconds. The Pre-time screen will be displayed showing the current Pre-time (valve-on delay) time setting.



Hold 3 seconds

PRE-TIME 0:00  
SEL TO CHANGE

2. To change the Pre-time setting, press the SEL key. If the current setting is zero a screen appears that asks if a valve has been installed. By pressing the Back (No) key, a screen will be displayed as a reminder that a valve is needed. See manual supplied with burner. A valve must be installed to operate in pre-time.



VALVE INSTALLED?  
NO YES

3. If the response is SEL (Yes), a select Pre-time screen will be displayed. Use the PREV and NEXT keys to select the desired time setting. Pre-time can be set to either 0, 5, 10, 15, 30, or 45 seconds. Note that if you install a control that is programmed for pre-time and/or post-time and the burner does not have a valve, an error will be detected by the control.



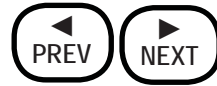
PRE-TIME 0:00  
NO < > YES

4. After selecting the desired time, press the SEL(Yes) key to display a confirmation screen.



ACCEPT 0:30  
NO YES

- To accept the change press SEL, to return to the initial Pre-time screen press the BACK(No) key.
- A BACK(No) response will display a Change Cancelled screen and will return to the initial Pre-time Select to Change Screen. A SEL (Yes) response will update the pre-time, then display the new time setting on the initial Pre-time, Select to Change screen.



- From the Pre-time, Select to Change screen, press PREV to return to the View History Screen (Paragraph B) or press NEXT to set the Post-time (motor-off delay). Note that replacement labels are supplied in the packaging with the Display. After changing the Pre and/or Post-time, peel and mount the correct label over the existing label being careful not to cover the bar code.

- After selecting the desired time, press the SEL (Yes) key to display a confirmation screen.



- To accept the change press SEL, to return to the initial Post-time screen press the BACK (No) key.



#### D. Post-time Set Program

- From the Pre-time, Select to Change screen, press the NEXT key to access the Post-time (motor off delay) Select to Change screen. The Post-time screen will be displayed showing the current post-time setting.



- A BACK (No) response will display a Change Cancelled screen and will return to the initial Post-time, Select to Change Screen. A SEL (Yes) response will update the post-time then display the new time setting on the initial Post-time, Select to Change screen. Note that replacement labels are supplied in the packaging with the Display. After changing the Pre and/or Post-time, peel and mount the correct label over the existing label being careful not to cover the bar code.

- To change the Post-time setting, press the SEL key. If the current setting is zero a screen appears that asks if a valve has been installed. By pressing the Back (No) key, a screen will be displayed as a reminder that a valve is needed. See manual supplied with burner. A valve must be installed to operate in post-time.



- If the response is SEL (Yes) a select Post-time screen will be displayed. Use the PREV and NEXT to select the desired time setting. Post-time can be set to 0, 5, 15, or 30 seconds, or 1, 2, 4, or 8 minutes. **Note that if you install a control that was preprogrammed for pre-time and/or post-time and the burner does not have a valve, an error will be detected by the control.**

- From the Post-time Select to Change screen, press PREV to return to the Pre-time Change screen (Paragraph C) or press NEXT to continue to the Service Message Program (Paragraph E).

#### E. Service Message Program

- From the Post-time Change screen, pressing the NEXT key will display the Service Message SEL to Change programming screen.



- This feature allows customization of the screen that is displayed when the burner detects a hard lockout condition. The screen is divided into two rows of 16 characters each. These characters can be selected to display a custom message. For example, your business name and phone number can be displayed when the burner requires service.

## Information Chart

Screen Message	Sensor/Monitor/ Message	Notes/Checks
### ohms avg	Cad Cell	Historical cycle data located in Control. Average Cad Cell resistance measurement during burner operation.
### ohms max	Cad Cell	Historical cycle data located in Control. Maximum Cad Cell resistance measurement during burner operation.
##:## run time	Timer	Historical cycle data located in Control. Indicates burner run time.
##:## to light	Timer/Cad Cell	Historical cycle data located in Control. This value is the time elapsed prior to the Cad cell resistance indicating a flame in the chamber.
avg ### v	Line voltage (L1)	Historical cycle data located in Control. Average line voltage measurement during burner operation.
Did Not Light	Cad Cell	Historical cycle data located in Control. Message indicates the Cad cell did not detect a flame during trial for ignition.
Heat Call End	Thermostat or Limit Inputs	Historical cycle data located in Control. Indicates the cycle ended when an open circuit was detected in the T-T or Limit circuit.
Lifetime Cycles	Counter	Counter located in Control, can not be reset and does not require Display to function. Display required to monitor.
Lost Flame	Cad Cell	Historical cycle data located in Control. Message indicates that the control locked out after the burner attempted to recycle multiple times.
Low voltage	Line voltage (L1)	Historical cycle data located in Control. Indicates the cycle ended when the line voltage dropped below approximately 78 volts.
Manual Shutdown	Reset button pressed	Historical cycle data located in Control. Indicates the cycle ended when the Reset button was pressed.
Pre-Time Flame	Cad Cell	Historical cycle data located in Control. Message indicates the cycle ended because the Cad cell detected a flame during the Pre-time function.
Pump Prime	Reset button pressed >15 seconds	Real-time indication of the burner functioning in the pump prime mode.
Recycled	Cad Cell	Historical cycle data located in Control. Indicates the Cad cell detected a loss of flame. Control starts 60 second time delay then initiates a new cycle if there is a call for heat.
Replace Control		Historical cycle data located in Control. Control runs a continuous self-check and will display this message if a cycle ended after detecting an internal malfunction.
Service Messages	Technician entered	Located in Display. When the burner is in hard lockout the display flashes between the customized message and the reason for the lockout.
Since Cleared Cycles	Counter	Counter located in Display, reset from display.
Since Cleared Hours	Timer	Timer located in Display, reset from display.

3. When the Service Message, Sel to Change screen is SEL, the message, Call for Service followed by number symbols on the second row, will be displayed. The cursor will automatically highlight the space on the lower row to the left of the number symbol on the display. These characters have been preprogrammed, but all the characters can be easily customized.
4. Using the PREV and NEXT keys, scroll through the character set until the desired character or a space is displayed, then press the SEL (Yes) key. The cursor will shift to the right. Again use the PREV NEXT keys to display the desired character and press SEL. Use the BACK (No) key to move the cursor to the previous position. Continue with the character selection until the screen displays the desired message.

SEL  
(YES)

*CALL FOR SERVICE*  
*###-###-####*

5. Pressing the SEL key at the last position on the second line moves the cursor to the first position on the top line.
6. When the desired message is displayed press the BACK(No) key, when the cursor is at the beginning of either line, to save and exit the screen.

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