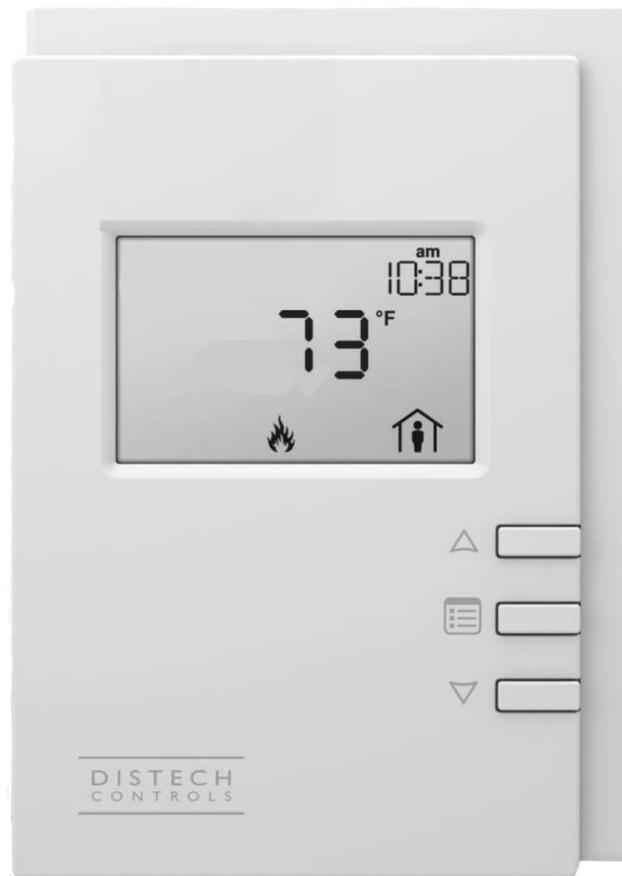


# *UC-3 Lite*

## User Guide



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# WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

Disconnect power supply before making wiring connections or working on this equipment. Follow all applicable safety procedures to prevent accidental power up. Failure to do so can result in injury or death from electrical shock or moving parts and may cause equipment damage.

Improper control adjustments and manual mode control can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before making adjustments.

## ***A Note About Custom Designs***

AbsolutAire often builds equipment with special features as requested by the customer. This manual only covers standard features and does not include any changes made for special feature requests by the customer.



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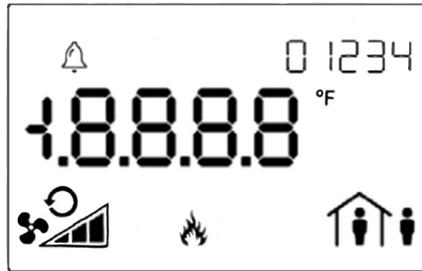
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## ***Introduction***

The Smart-View User Interface (UI) for the UC-3 Lite Control System displays the information necessary to operate and diagnose the Heating and Ventilating Unit.

This is connected to the controller via a CAT-5E cable with a maximum length of 600 feet.



HMI Screen Information

At the top left corner of the display there is a bell symbol. This is the system alarm indicator. If an alarm is present in the unit this indicator will blink. If no alarm is present this indicator will not be visible.

When navigating the menu, the menu title will be displayed at the top right. Across the center of the display is the data with the units of measure. The system is capable of displaying up to 4 decimal places. At the bottom left is the fan status. In the bottom center is the mode of operation and at the bottom right is the occupancy status.

Three buttons are available for operation (see cover page). The center button allows you to access the menu and scroll through the menu items. The up/down buttons are used to change values.

## ***Operation***

The system will display the current Space Temperature or Discharge Temperature, depending on the control type. The menu is separated into sub-menus for ease of use, and only the options the unit is equipped with will be displayed. When navigating the menu, blinking items are set points that can be changed while non-blinking items are statuses which can be viewed only.



To turn the unit on or off, press the “up arrow” to access the Fan Command. Use the “up arrow” to select the desired option, then press the center button “menu” to return to the main display.

To change set points such as temperature or building pressure, press the “menu” button until you see “SET POINTS” in the top right of the screen. Press the “up arrow” to enter this sub-menu. Your first choice will be “mode”. Use the up arrow to select “heat or vent”. When you have made your choice, press the “menu” button to move to the next menu item, which will be the Occupied Heat Set Point. Again, use the “up/down” arrow buttons to make your entry and press “menu” when finished. Continue scrolling through the Set Points sub-menu until all of your desired settings are completed. When scrolling the menu and you see the option “BACK” in the top right, pressing the “up arrow” will take you to the previous menu.

Scrolling through the “STATUS” sub-menu will allow you to view the status of all of the unit sensors and burner operation. This is useful for checking unit operation or outdoor conditions.

The “ALARMS” menu will only be displayed if there is a system alarm, as indicated by the blinking alarm bell on the display. When an alarm is present, scrolling through this sub-menu will allow you to view the alarm(s) in “plain English” enumerated text. This is useful for diagnosing the unit in the event of a problem.



Sensor Alarm Display



The “CONFIG” menu is where the primary operating set points for the unit are set such as the minimum and maximum allowable discharge temperatures, as well as other items. Again, use the “menu” button to scroll through the sub-menu and the “up/down” buttons to edit your selection.



## ***Menu Tree***

### **Main Display**

**Space\_Temp** – Current space temperature at the User Interface

**Disch\_Temp** - Current discharge temperature at the unit discharge.

### **Quick Access**

**Fan\_Command** – This is accessed by pressing the “up arrow” from the main screen and is used to turn the unit ON and OFF.

### **Set Points**

**Occupancy** - This is the unit occupancy setting. Select “OCC” or “UNOC” for occupied or unoccupied.

**Mode** – This is the mode of operation. Select “Heat” or “Vent”.

**Occ\_Heat** – Occupied Heat Set Point.

**Unocc\_Heat** – Unoccupied Heat Set Point.

**VFD\_Speed** – Manual Supply Fan VFD control (only available if the unit has a VFD).

**Damper\_Command** - Manual OA/RA damper position (only available if the unit has mixed air capabilities)

**Burner\_Reset** – Burner reset command for use during a burner lockout alarm. This is an “on/\_on\_” toggle selectable via the “up arrow” button (only visible if a burner lockout condition is present).

### **Status**

**Space\_Temp** – Current space temperature at the User Interface.

**DA\_Temp** – Current discharge air temperature.

**OA\_Temp** – Current outside air temperature.

**RA\_Temp** - Current return air temperature.

**Burner\_Status** - Current ON/OFF status of the burner.

**Heat\_Command** – Current command (0% - 100%) issued to the burner for heat.

**Fan\_Status** - Current ON/OFF status of the fan.



**Alarms** (alarm menu is only visible if an alarm is present)

**Dirty\_Filter** – Dirty filter indication.

**Low\_Temp\_Alarm** – Low temperature lockout alarm. This is an indication that the unit was discharging air colder than the “Low Temp Alarm” setting in the “Config” menu for greater than “Low Temp Time” minutes. Check the burner for proper operation.

**Space\_Sensor** – Space sensor alarm status. Enumerated “no-fault/open/short”. Check sensor wiring.

**OA\_Sensor\_Alarm** – Outside sensor alarm status. Enumerated “no-fault/open/short”. Check sensor wiring.

**RA\_Sensor\_Alarm** - Return sensor alarm status. Enumerated “no-fault/open/short”. Check sensor wiring.

**DA\_Sensor\_Alarm** – Discharge sensor alarm status. Enumerated “no-fault/open/short”. Check sensor wiring.

**Burner\_Lockout** – Burner lockout alarm status. Indicates the burner failed to light when requested. Enumerated “normal/lockout”.

**Motor\_Not\_Resp** – Motor not responding alarm status. This indicates the unit was enabled and the supply fan motor failed to start within two minutes. Check VFD or overload (as available), OA damper limit switch and wiring, and power.

**Burner\_Not\_Respond** - Indicates the burner was commanded to light and the controller did not receive confirmation.

**Burner\_Watchdog** - Indicates the burner did not reach the requested discharge temperature within 5 minutes. Possible problem with gas pressure or gas valves.

**Point\_Override** - Indicates a hardware point was overridden by the building management system. As all control points are available to the network, overrides are unnecessary. Remove the override to clear the alarm.



## **Config**

**Heat\_Lockout** – Heating mild weather stat setting. When the outside or mixed air temperature is above this setting the burner will be automatically disabled (only available if the unit has mild weather stat as an option).

**Low\_Temp\_Alarm** – If the unit discharges air below this temperature set point for “Low Temp Time” minutes it will shut down and close the isolation dampers (Only available if LTL is available).

**Low\_Temp\_Time** – The time delay (in minutes) for the “Low Temp Alarm” (Only available if LTL is available).

**Min\_Discharge** – The units minimum allowable discharge temperature.

**Max\_Discharge** – The units maximum allowable discharge temperature.

**Control\_Type** – Determines the type of control the unit will follow. Enumerated “space/discharge”.

**Cycle\_Occupied** – Determines if the unit will cycle on/off to space temperature when in occupied status. Enumerated “yes/no”.

**Cycle\_Unoccupied** – Determines if the unit will cycle on/off to space temperature when in unoccupied status. Enumerated “yes/no”.

**LTL\_Test** - Allows service personnel to test the Low Temp Alarm in warm weather (only available if Low Temp Alarm is used).



## ***Network Integration***

The controller in this unit can easily be integrated into a BACnet MS/TP Building Management System. The controller will automatically detect the baud rate of the network it is connected to after a power cycle, and will automatically begin communications.

The MAC Address is set via the dip switches on the front of the controller. When shipped, each unit will have a factory default MAC address with multiple units for the same project having incremented MAC addresses. The dip switches are numbered 1 through 8, with 1 being the LSB. The numbering is standard binary format (switches 1 and 3 ON equals an address of 5).

The Network Instance Number (device instance) is automatically configured based on the MAC Address setting. The network instance number will always be  $3640+(\text{MAC Address})$ . For example, if the MAC address is set to 25 the network instance number would be 364025. In the event of a duplicate instance number on the network, simply change the MAC address to change the instance number.

The following page has a complete listing of the BACnet points with their descriptions.



Point Type	Name	Description	Writeable	Program Units
Hardware Input 1	Discharge Air Temperature Sensor	Hardware Input - Discharge Air Temperature Sensor [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Hardware Input 2	Outside Air Temperature Sensor	Hardware Input - Outside Air Temperature Sensor [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Hardware Input 3	Return Air Temperature Sensor	Hardware Input - Return Air Temperature Sensor [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Hardware Input 4	Fan ON Status	Hardware Input - Unit Fan Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ON;OFF)
Hardware Input 5	Burner Status	Hardware Input - Burner Status [DO NOT WRITE TO THIS POINT]	N	N/A
Hardware Input 6	Dirty Filter Switch	Hardware Input - Dirty Filter Switch [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Hardware Output 1	Unit Enable Relay	Hardware Output - Unit Enable Relay [DO NOT WRITE TO THIS POINT]	N	Boolean (ENABLE;OFF)
Hardware Output 2	Burner Enable Relay	Hardware Output - Burner Enable Relay [DO NOT WRITE TO THIS POINT]	N	Boolean (ENABLE;OFF)
Hardware Output 3	Burner Reset Relay	Hardware Output - Burner Reset Relay [DO NOT WRITE TO THIS POINT]	N	Boolean (RESET;NORMAL)
Hardware Output 4	Common Alarm Relay	Hardware Output - Common Alarm Relay [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Hardware Output 5	Hardware Output 5	Unused Hardware Output 5	N	N/A
Hardware Output 6	VFD Speed Command	Hardware Output - VFD Speed Command [DO NOT WRITE TO THIS POINT]	N	Unit: percent
Hardware Output 7	Damper Command	Hardware Output - Mixed Air Damper Command [DO NOT WRITE TO THIS POINT]	N	Unit: percent
Hardware Output 8	Burner Command	Hardware Output - Burner Modulation Command [DO NOT WRITE TO THIS POINT]	N	Unit: percent
Analog Value 1	UnitDesignTempRise	Engineered Unit Design Temperature Rise [FACTORY CONFIGURATION POINT -DO NOT WRITE]	N	Unit: degrees-Fahrenheit
Analog Value 2	SpaceTemperatureSensor	Current Space Temperature Value [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Analog Value 3	DischargeTemperature	Current Discharge Temperature Value [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Analog Value 4	OutsideTemperature	Current Outside Temperature Value [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Analog Value 5	BurnerCommand	Current Modulation Command To The Burner [DO NOT WRITE TO THIS POINT]	N	Unit: percent
Analog Value 6	ControlSpaceTemperature	Unit Control Space Temperature - Current Space Temperature Value (AV-2) or Override Value (AV-33) if Override is used [DO NOT WRITE TO THIS POINT]	N	Unit: degrees-Fahrenheit
Analog Value 7	Custom RA Percent	Custom Return Air Percent [FACTORY CONFIGURATION POINT ONLY]	N	Unit: percent
Analog Value 8	Custom OA Percent	Custom Outside Air Percent [FACTORY CONFIGURATION POINT ONLY]	N	Unit: percent
Analog Value 26	network_OccupiedHeatSetPoint	Occupied Heat Set Point [55Â°F to 150Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 27	network_UnoccupiedHeatSetPoint	Unoccupied Heat Set Point [55Â°F to 150Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 28	network_MinimumDischargeTemp	Unit Minimum Permitted Discharge Temperature [45Â°F to 90Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 29	network_MaximumDischargeTemp	Unit Maximum Permitted Discharge Temperature [Minimum Discharge Value to 150Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 30	network_HeatLockoutSetPoint	Heat Lockout Set Point - Burner Automatically Shuts Off When OA is Above This Temperature [40Â°F to 70Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 31	network_LowTempAlarmSetPoint	Low Temperature Lockout Alarm Set Point [35Â°F to 70Â°F]	Y	Unit: degrees-Fahrenheit
Analog Value 32	network_LowTempAlarmDelayTime	Low Temperature Lockout Alarm Delay Minutes [2 to 15 minutes]	Y	Unit: minutes
Analog Value 33	network_SpaceTemperatureOverride	Overrides the Local Space Temperature Sensor (AV-2) - Used to Send Averaged or Network Temperatures to the Unit [Use '255' for local sensor control]	Y	Unit: degrees-Fahrenheit
Analog Value 34	network_VFD_SpeedCommand	VFD Speed Command [ONLY IF VFD IS AVAILABLE]	Y	Unit: percent
Analog Value 35	network_DamperCommand	Mixed Air Damper Command [ONLY IF RETURN AIR IS AVAILABLE]	Y	Unit: percent
Binary Value 1	FanStatus	Current Unit Fan Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ON;OFF)
Binary Value 2	UseSpaceSensorHMI	Use Local Space Sensor [FACTORY CONFIGURATION POINT - DO NOT WRITE]	N	Boolean (YES;NO)
Binary Value 3	Use_LTL	Use the Low Temperature Lockout Alarm Feature [FACTORY CONFIGURATION POINT - DO NOT WRITE]	N	Boolean (YES;NO)
Binary Value 4	BurnerLockoutAlarm	Burner Lockout Alarm Status [DO NOT WRITE TO THIS POINT]	N	Boolean (LOCKOUT;NORMAL)
Binary Value 5	DirtyFilterAlarm	Dirty Filter Alarm Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Binary Value 6	UnitEnableStatus	Unit Enable Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ENABLE;OFF)
Binary Value 7	BurnerEnableStatus	Burner Enable Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ENABLE;OFF)
Binary Value 8	MotorNotRespondingAlarm	Motor Not Responding Alarm Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Binary Value 9	BurnerNotRespondingAlarm	Burner Not Responding Alarm Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Binary Value 10	BurnerWatchdogAlarm	Burner Watchdog Alarm Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ALARM;NORMAL)
Binary Value 11	network_OccupancyCommand	Occupancy Command [0 = Occupied / 1 = Unoccupied]	Y	Boolean (UNOCCUPIED;OCCUPIED)
Binary Value 12	network_HVAC_Mode	HVAC Mode Command [0 = Vent (Summer) / 1 = Heat (Winter)]	Y	Boolean (HEAT;VENT)
Binary Value 13	network_ControlType	Unit Control Type [0 = Space / 1 = Discharge]	Y	Boolean (DISCHARGE;SPACE)
Binary Value 14	network_CycleWhenOccupied	Cycle to Space Temperature Set Point when Occupied [Yes/No]	Y	Boolean (YES;NO)
Binary Value 15	network_CycleWhenUnoccupied	Cycle to Space Temperature Set Point when Unoccupied [Yes/No]	Y	Boolean (YES;NO)
Binary Value 16	HardwareOutput_1_OverrideAlarm	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 17	HardwareOutput_2_OverrideAlarm	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 18	HardwareOutput_3_OverrideAlarm	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 19	HardwareOutput_4_OverrideAlarm	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 20	HardwareOutput_6_Override	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 21	HardwareOutput_8_OverrideAlarm	Network Hardware Output Override Alarm [Indicates hardware point was overridden from the network - remove the override]	N	Boolean (ALARM;NORMAL)
Binary Value 22	LowDischargeTempAlarm	Low Discharge Temperature Alarm Status [Command Unit Off then ON to Reset]	N	Boolean (ALARM;NORMAL)
Binary Value 23	BurnerStatus	Current Burner Status [DO NOT WRITE TO THIS POINT]	N	Boolean (ON;OFF)
Binary Value 24	network_BurnerResetCommand	Burner Reset Command [Toggle change of state (RESET to _RESET / or / _RESET to RESET) to reset a	Y	Boolean (RESET;_RESET)
Binary Value 25	Use_VFD	Indicates the Unit is Equipped with a VFD [FACTORY CONFIGURATION POINT - DO NOT WRITE]	N	Boolean (YES;NO)
Binary Value 26	Use_CO2_Detector	Indicates the Unit is Equipped with a CO2 Contact [FACTORY CONFIGURATION POINT - DO NOT WRITE]	N	Boolean (YES;NO)
Multi State Value 1	SpaceSensorAlarm	Space Temperature Sensor Alarm Status [DO NOT WRITE TO THIS POINT]	N	Enum: SENSOR RELIABILITY
Multi State Value 2	DischargeSensorAlarm	Discharge Temperature Sensor Alarm Status [DO NOT WRITE TO THIS POINT]	N	Enum: SENSOR RELIABILITY
Multi State Value 3	OutsideSensorAlarm	Outside Temperature Sensor Alarm Status [DO NOT WRITE TO THIS POINT]	N	Enum: SENSOR RELIABILITY
Multi State Value 4	Unit OA Percent	Unit Design OA [FACTORY CONFIGURATION POINT - DO NOT WRITE]	N	Enum: Confg OA Percent
Multi State Value 5	ReturnSensorAlarm	Return Temperature Sensor Alarm Status [DO NOT WRITE TO THIS POINT]	N	Enum: SENSOR RELIABILITY
Multi State Value 11	network_UnitEnableCommand	Unit Enable Command [USE THIS POINT TO COMMAND THE UNIT ON/OFF (OFF/ON/AUTO) -Auto will allow the unit to Cycle per the values of BV-14 and BV-15]	Y	Enum: UNIT ENABLE

