
INSTALLATION INSTRUCTIONS

CONTROLLER INSTALLATION, OPERATION & QUICK START GUIDE

8403-066 ECU Series Controller



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Bryan, Ohio 43506
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Manual: 2100-559A
Supersedes: 2100-559
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INSTALLATION

IMPORTANT: For optimum temperature sensor performance, the Bard ECU Series Controller must be mounted on an interior wall and away from any heat sources, sunlight, windows, air vents, air circulation obstructions and/or any other cause of erratic or false temperature sensing. **Thermostat covers are not recommended as they interfere with motion and temperature sensing.**

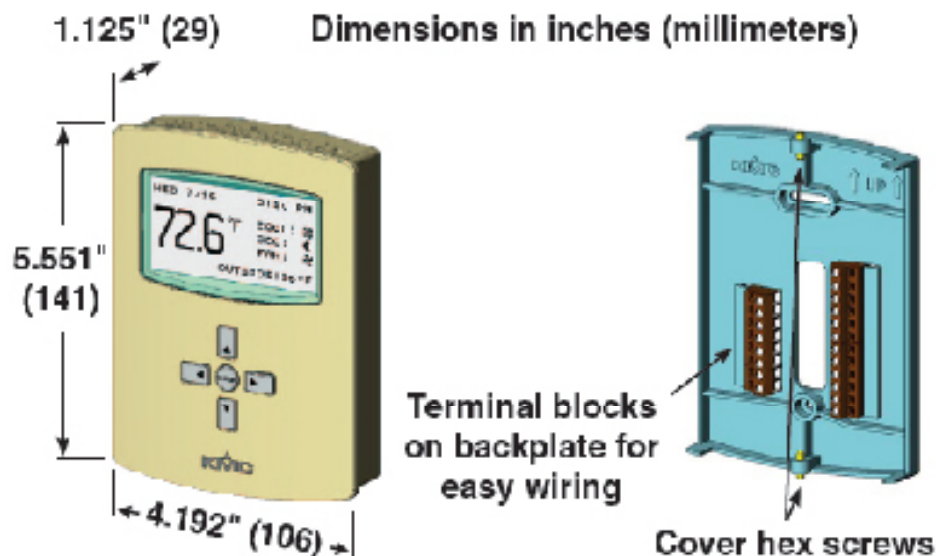
Mounting Controller

1. To complete rough-in wiring, it is suggested that 18 gauge solid conductor control wiring be used in general applications, particularly for ease in termination. When shielded wire is used, or in the rare instance where wire gauge required for length of run is greater than 18 gauge, stranded wire is recommended. See Figure 1 for exact number of conductors.

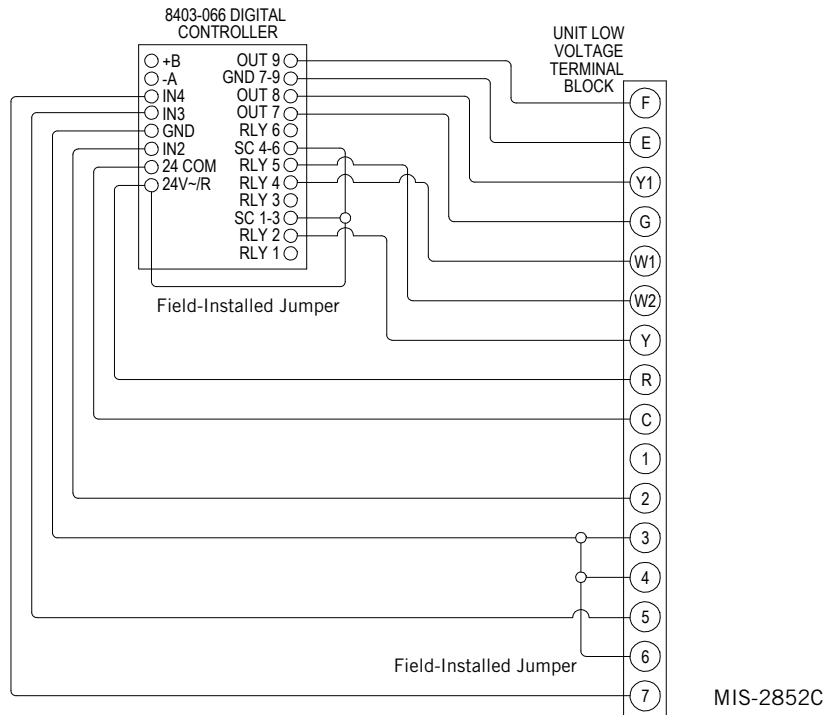
NOTE: Shielded wire must be used in applications where transient signals may accumulate and affect digital signal from control to unit.

2. Turn the hex screws in the bottom and top of the controller clockwise (inward) until they clear the cover. Remove base plate from controller.
3. Route completed wiring through base plate.
4. With the embossed "UP" arrows of the base plate pointing to the ceiling, fasten the base plate to the desired wall location or vertical 2x4 wall handybox.
5. Make appropriate control wire connections (see Table 1) to terminal blocks.
6. Replace controller over base plate, being careful not to pinch/dislodge connections.
7. Turn hex screws in bottom/top of controller counter-clockwise (outward) to secure cover.

ECU Series Controller 8403-066



**Figure 1
Control Wiring**



MIS-2852C

**Table 1
Controller Connections**

Control Terminal	Unit Terminal	Function	Type	Form
+B	--	MSTP + (Not Used)	Communications	--
-A	--	MSTP - (Not Used)	Communications	--
IN4	7	Outdoor Temperature Sensor	Input	10K Ohm Type 3
IN3	5	Pressure Transducer	Input	0-5 VDC, 0-700PSIG
GND	3,4,6	Sensor Grounds	Input	2-10 VDC
IN2	2	Lockout Alarm	Input	Relay Closure ¹
24 COM	C	24VAC COM	Power	24 VAC
24V~R	R	24VAC	Power	24 VAC
OUT 9	F	Fan Motor Control	Analog Output	2-10 VDC
GND7-9	E	Control Guard	Analog Output	2-10 VDC
OUT 8	Y1	Unloader Solenoid Control	Analog Output	0 or 5 VDC PWM ²
OUT 7	G	Blower Motor Control	Analog Output	2-10 VDC
RLY 4	W1	Heater Contactor #1	Relay Output	Relay 24 VAC
SC4-6	Jump to 24V	24VAC to Relay Outputs 4-6	Power	24 VAC
RLY 5	W2	Heater Contactor #2	Relay Output	Relay 24 VAC
RLY 6	--	Not Used	--	--
RLY 3	--	Not Used	--	--
SC1-3	Jump to 24V	24VAC to Relay Outputs 1-3	Power	24 VAC
RLY2	Y	Compressor Contactor	Relay Output	Relay 24 VAC
RLY 1		Not Used		--

¹ Open relay contacts 3 VDC, closed contacts 0 VDC

² Pulse Width Modulation

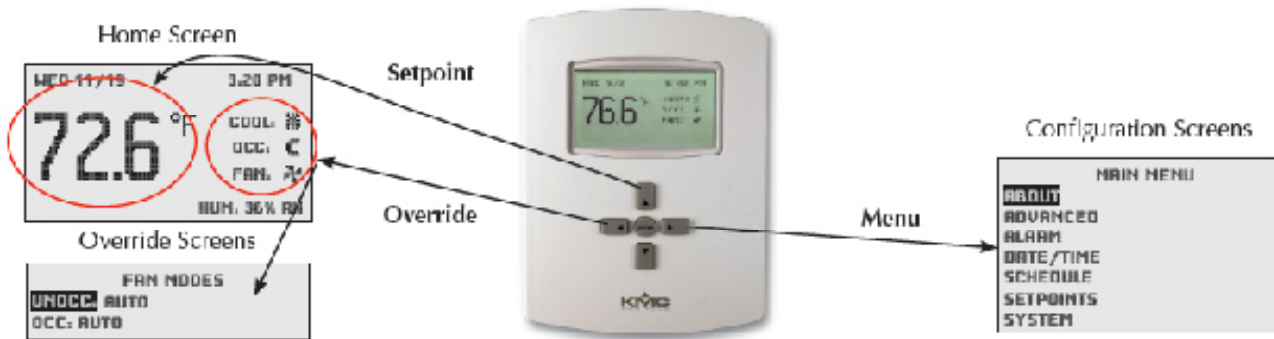
BASIC OPERATION

START-UP NOTE: Upon initial power-up, indoor fan will cycle on for approximately 30 seconds, and then shut off. System will be in the “OFF” position. Default time and date will be 12:00 a.m., Jan. 1, 2000. In order for the system to operate in either heating or cooling mode(s), the controller must be initially programmed with specific HVAC model number, specific system enabling and appropriate temperature setpoints.

BASIC SETUP

Home, Main Menu and Override Screens

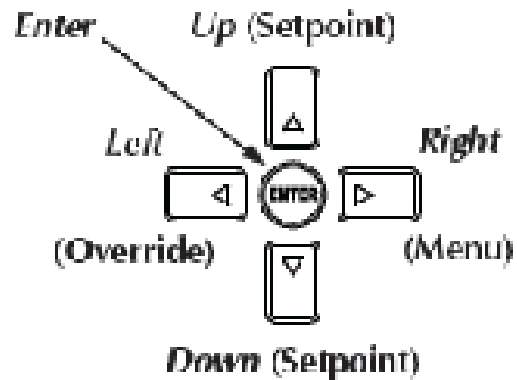
FIGURE 2
ECU Series Controller Home, Override and Configuration Screens



Navigate the menus and change settings by pressing a combination of the four arrow buttons and the ENTER button.

- ENTER button to select and/or exit value editing
- UP or DOWN button to move among entries
- RIGHT or LEFT button to move among value fields
- LEFT button to return to the Home screen

FIGURE 3
ECU Series Controller Buttons



QUICK START PROGRAMMING

Model Selection, System Enabling and Temperature Setpoints

Model Selection

To select specific HVAC unit model from the Home screen:

1. Press RIGHT button to access Main Menu screen.
2. Press DOWN button to scroll to ADVANCED. Press ENTER button.
3. In the ADVANCED menu screen, press ENTER button to enter the APPLICATION menu.
4. Controller will ask for Admin Level Password. Enter BARD. Press ENTER button.
5. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.
6. Press ENTER button again to select/enter Unit Model screen.
7. Press ENTER button again to highlight current model.
8. Press UP or DOWN button to choose from available models:
 - **W3*V** Model – Wall Mount 3 Ton Variable Capacity System (factory default)
 - **W5/6*V** Models – Wall Mount 4/5 Ton Variable Capacity Systems
 - **P60/72*V** Models – Packaged 5/6 Ton Variable Capacity Systems
9. Press ENTER button to select/save appropriate model.
10. Press LEFT button five (5) times to return to the Home screen.

System Enabling

To access system types from the Home screen:

1. Press RIGHT button to access the Main Menu screen.
2. Press DOWN button to scroll to SYSTEM. Press ENTER button.
3. Press ENTER button again to select System Enable.
4. Press UP or DOWN button to choose between six (6) options.

- AUTO = Conventional system in “Auto-Changeover” mode. HVAC system will cycle heating and cooling automatically to stay within preset heating and cooling setpoints.
- HEATING = Conventional system in “Heating-Only” mode. HVAC system will cycle heating in reference to heating setpoint only. Unit will not activate cooling sequence.
- COOLING = Conventional system in “Cooling-Only” mode. HVAC system will cycle cooling in reference to cooling setpoint only. Unit will not activate heating sequence.
- OFF = HVAC system is inactive.
- CCVC = “Continuous Compressor, Variable Capacity” application in “Auto-Changeover” mode. HVAC system will cycle heating and cooling automatically to stay within preset heating and cooling setpoints. Compressor will modulate from 100% to 20%, but will not shut off. Typically used for applications such as an MRI mobile trailer where cycling of compressor is not allowable due to use of onsite generators.
- CCFC = “Continuous Compressor, Full Capacity” application in “Auto-Changeover” mode. HVAC system will cycle heating and cooling automatically to stay within preset heating and cooling setpoints. Compressor will not modulate, but will stay at 100% capacity and will not shut off. Typically, this mode is selected for testing purposes only.

NOTE: Upon initial start-up of any system-enable utilizing compressor, the unit may undergo a series of self-diagnostics, wherein a series of audible “clicks” are heard. This may delay compressor function for up to 5 minutes.

4. Press ENTER button to save choice.
5. Press LEFT button two (2) times to return to Home screen.

Temperature Setpoints

To access temperature setpoints from the Home screen:

1. Press RIGHT button to access the Main Menu screen.
2. Press DOWN button to scroll to SETPOINTS. Press ENTER button.
4. Press UP or DOWN button to scroll through setpoint options.

- Cool Setpt/Heat Setpt are for occupied periods
 - Cool Setback/Heat Setback are for unoccupied periods, and will only be used if scheduling is enabled (see the Advanced Programming Features manual 2100-560)
 - Min Setpt Diff is the closest the heating and cooling setpoints can come to one another (3°F is recommended minimum).
 - Deadband is the space in degrees from setpoint in which the cooling and/or heating sequence will modulate to 100% capacity (2°F is recommended minimum).
5. Press ENTER button to select setpoint option.
 6. Press UP or DOWN buttons to enter specific degree amount for setpoint. Press ENTER button to save new setpoint.
 7. Press LEFT button two (2) times to return to Home screen.

NOTE: *Although cooling/heating setpoints can be accessed by simply pressing the UP or DOWN buttons during normal operation, any changes made in this fashion will not be permanent but last only for a specific length of time as an “override” feature. This temperature change will not be permanent. See the Advanced Programming Features manual 2100-560 for further information.*

NOTE: *Any system start-up conducted with indoor ambient temperatures lower than 56°F or above 86°F will experience an internal Low Temperature or High Temperature alarm. This will not affect normal operation and can be cleared easily. See the Advanced Programming Features manual 2100-560 for further information. Start-up procedures conducted with extreme temperatures indoors/outdoors may cause a “SERVICE” warning flashing on the face of the controller. This also will not affect normal operation, and should clear itself once interior temperatures and refrigerant pressures normalize.*

NOTE: *The ECU Series Controller will become sluggish/inoperable at extremely low temperatures (< 20°F). Care should be taken to warm controller before initial start-up.*

The ECU Series Controller should be fully operational at this point. For further controller enhancement or operation detail, please consult the most recent version of the Advanced Programming Features manual 2100-560.