Honeywell

# JADE™ Economizer Module

(MODEL W7220)

**INSTALLATION INSTRUCTIONS**

This document describes wiring, power up, basic troubleshooting, and common installation issues for the JADE™ Economizer Module (Model W7220). For further information on mounting and operation, refer to Honeywell document 63-2700.

## BEFORE INSTALLATION

Review the following before installing the The W7220:

### Electrical

**Rated Voltage:** 20 to 30 Vac RMS; 50/60 Hz
Transformer: 100 VA maximum system input

**Relay Digital Output Rating:** 30 Vac

***IMPORTANT***
*All inputs and outputs must be Class 2 wiring.*

### Inputs

A Mixed air (MA) analog sensor is required on all W7220 units; either an OA (Outdoor Air) sensor for dry bulb change over or an OA Sylkbus sensor for outdoor enthalpy change over is required in addition to the MA sensor. An additional Return Air (RA) Sylkbus sensor can be added to the system for differential enthalpy changeover. JADE can be used with a CO2 indoor air sensor for Demand Control Ventilation and with a VFD for two speed fan operation.

**DCV ($CO_2$) Sensor (C7232):** 2-10 Vdc control signal; minimum impedance >50k ohm.

### Outputs

**Actuator signal:** 2-10 Vdc; minimum actuator impedance is 2k ohm; Sylkbus two-wire output for Honeywell Sylkbus communicating actuators.

**Exhaust fan, Y1, Y2 and AUX1 O:** Contact closure (24 Vac)
All Relay Outputs (at 30 Vac):
Running: 1.5A maximum
Inrush: 7.5A maximum

### When Installing This Product

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings given in instructions and on the product to ensure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.
5. For additional detailed information on this product go to customer.honeywell.com and download the product data sheet (lit no 63-2700) or scan QR code located on the label above MAT terminals with your smart phone.

### Accessories

50048926-001 2-pin edge connector for sensors (20 pieces per bag)
50048926-002 6-pin edge connector for field wiring (20 pieces per bag)
C7250 20k sensor for MA or OA (dry bulb changeover)
C7400S Sylkbus sensor for enthalpy control in OA and/or RA and RA for differential dry bulb changeover
W7220 PCMOD interface tool for JADE controller and Personal Computer. Go to www.customer.honeywell.com/economizertools for the software
50053060-001 Duct mounting kit for sensors
C7632 or C7232 $CO_2$ sensors

62-0331-15

# INSTALLATION AND SETUP

The Economizer module may be mounted in any orientation. However, mounting in the orientation shown above permits proper viewing of the LCD display and use of the keypad.

NOTE: JADE will be in the "set up" mode for the first 60 minutes after powered. If a sensor for OA air or Sylkbus device (sensor, actuator) is disconnected during the set up mode, the JADE will not alarm that failure. The MA sensor is a system "critical" sensor; if the MA sensor is removed during the set up mode, the JADE will alarm. After 60 minutes the JADE controller will change to operation mode and all components removed or failed will alarm in the operation mode.

# WIRING

All wiring must comply with applicable electrical codes and ordinances, or as specified on installation wiring diagrams. Module wiring in the field is terminated to the four screw terminal blocks located on the left and right sides.

Module wiring at the OEM factory is terminated via the header pin terminals located on the left and right sides. The header terminal pins and the terminal blocks have common terminations for the appropriate input or output. The part number for the OEM female mating connector is 0039973997.

## ⚠ WARNING

**Electrical Shock Hazard.**
**Can cause severe injury, death or property damage.**
Disconnect power supply before beginning wiring, or making wiring connections, to prevent electrical shock or equipment damage.

## ⚠ CAUTION

**Equipment Damage Hazard.**
**Electrostatic discharge can short equipment circuitry.**
Ensure that you are properly grounded before handling the unit.

Each terminal can accommodate the following gauges of wire:

- Single wire – from 18 AWG to 22 AWG solid or stranded
- Multiple wires – up to two 22 AWG stranded
- For the 24 Vac connections: single wire – from 14 to 18 AWG solid or stranded

For S-BUS wiring, the sensors may be mounted up to 200 ft. (61 m) from the JADE controller. When the length of wire is over 100 feet use twisted pair shielded wire.

NOTE: All wiring is polarity insensitive.

Refer to Fig. 1 through Fig. 7 for common wiring configurations. Refer to Fig. 8 for use with the Smart VFD. Figure 8 shows how to make a single-speed blower operate with two speeds with JADE. When the thermostat calls for first stage cooling or independent fan, the VFD will operate the fan at low speed. When the thermostat calls for first stage heat or second stage cooling, it will operate the fan at high speed. To achieve this, wire relays as shown, and configure the VFD to the minimum frequency M3.3.1 for low speed fan, and for high speed fan configure Preset frequency 1, M3.3.12.

## Actuator Wiring Options:

1. The JADE economizer controller can only have one (1) communicating actuator connected to it.
2. Up to four (4) non-communicating and (2) 2-position actuators (1 each on EXH1 and AUX1 O)
3. One (1) communicating and up to four (4) non-communicating and (2) 2-position actuators (1 each on EXH1 and AUX1 O)

When using a 2-position actuator on the AUX1 O the AUX1 O must be programmed for Exh2 and the % open is the % open of the outdoor damper when the 2-pos actuator opens. Connect 24 V to Exh1 and/or AUX1 O and ground to the JADE "C" terminal.

Note the W7220 economizer will not work with an old "black motor" M7415; replace the M7415 with a M7215 or MS3103 DCA.

**Table 1. Economizer Module - Left hand terminal blocks.**

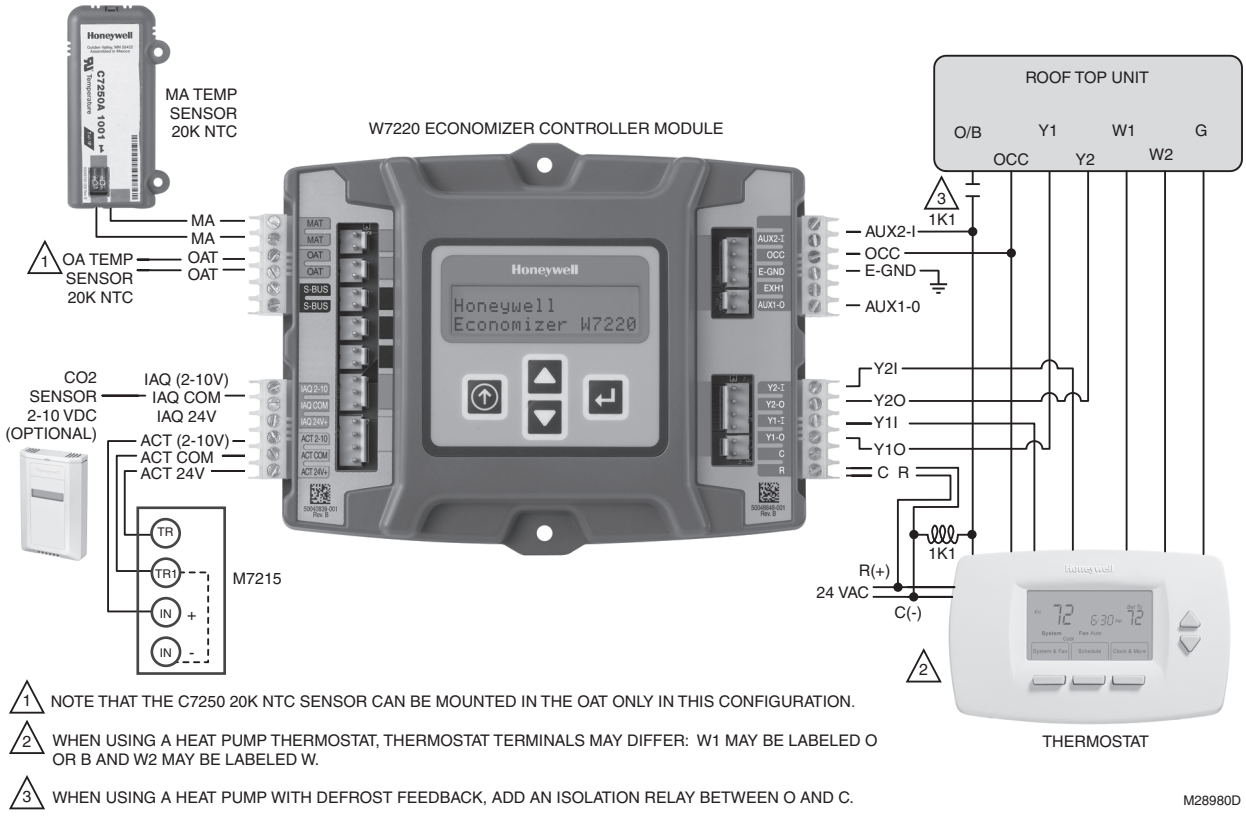
| Label | Type | Description |
|---|---|---|
| **Top Left Terminal Block** | | |
| MAT<br>MAT | 20k NTC and COM | Mixed Air Temperature Sensor (polarity insensitive connection) |
| OAT<br>OAT | 20k NTC and COM | Outdoor Air Temperature Sensor (polarity insensitive connection) |
| S-BUS<br>S-BUS | SYLK Bus | Sylk Bus sensor (polarity insensitive connection) |
| **Bottom Left Terminal Block** | | |
| IAQ 2-10 | 2-10 Vdc | Air Quality Sensor Input (e.g. $CO_2$ sensor) |
| IAQ COM | COM | Air Quality Sensor Common |
| IAQ 24V | 24 Vac | Air Quality Sensor 24 Vac Source |
| ACT 2-10 | 2-10 Vdc | Damper Actuator Output (2-10 Vdc) |
| ACT COM | COM | Damper Actuator Output Common |
| ACT 24V | 24 Vac | Damper Actuator 24 Vac Source |

**Table 2. Economizer Module - Right hand terminal blocks.**

| Label | Type | Description |
|---|---|---|
| **Top Right Terminal Block** | | |
| | n/a | The first terminal is not used |
| AUX2 I | 24 Vac IN | Shut Down (SD) or Heat (W) Conventional only or Heat Pump Changeover (O/B) in Heat Pump mode. |
| OCC | 24 Vac IN | Occupied / Unoccupied Input |
| E-GND | EGND | Earth Ground - System Required |
| EXH1 | 24 Vac OUT | Exhaust Fan 1 Output |

**Table 2. Economizer Module – Right hand terminal blocks. (Continued)**

| Label | Type | Description |
|---|---|---|
| AUX1 O | 24 Vac OUT | Programmable:<br>Exhaust fan 2 output or<br>ERV or System Alarm output. |
| **Bottom Right Terminal Block** | | |
| Y2-I | 24 Vac IN | Y2 in - Cooling Stage 2 Input from space thermostat |
| Y2-O | 24 Vac OUT | Y2 out - Cooling Stage 2 Output to stage 2 mechanical cooling |
| Y1-I | 24 Vac IN | Y1 in - Cooling Stage 1 Input from space thermostat |
| Y1-O | 24 Vac OUT | Y1 out - Cooling Stage 1 Output to stage 1 mechanical cooling |
| C | COM | 24 Vac Common |
| R | 24 Vac | 24 Vac Power (Hot) |




1 NOTE THAT THE C7250 20K NTC SENSOR CAN BE MOUNTED IN THE OAT ONLY IN THIS CONFIGURATION.

2 WHEN USING A HEAT PUMP THERMOSTAT, THERMOSTAT TERMINALS MAY DIFFER: W1 MAY BE LABELED O OR B AND W2 MAY BE LABELED W.

3 WHEN USING A HEAT PUMP WITH DEFROST FEEDBACK, ADD AN ISOLATION RELAY BETWEEN O AND C.

**Fig. 1. Stand-alone dry bulb Economizer configuration with black motor M7215.**

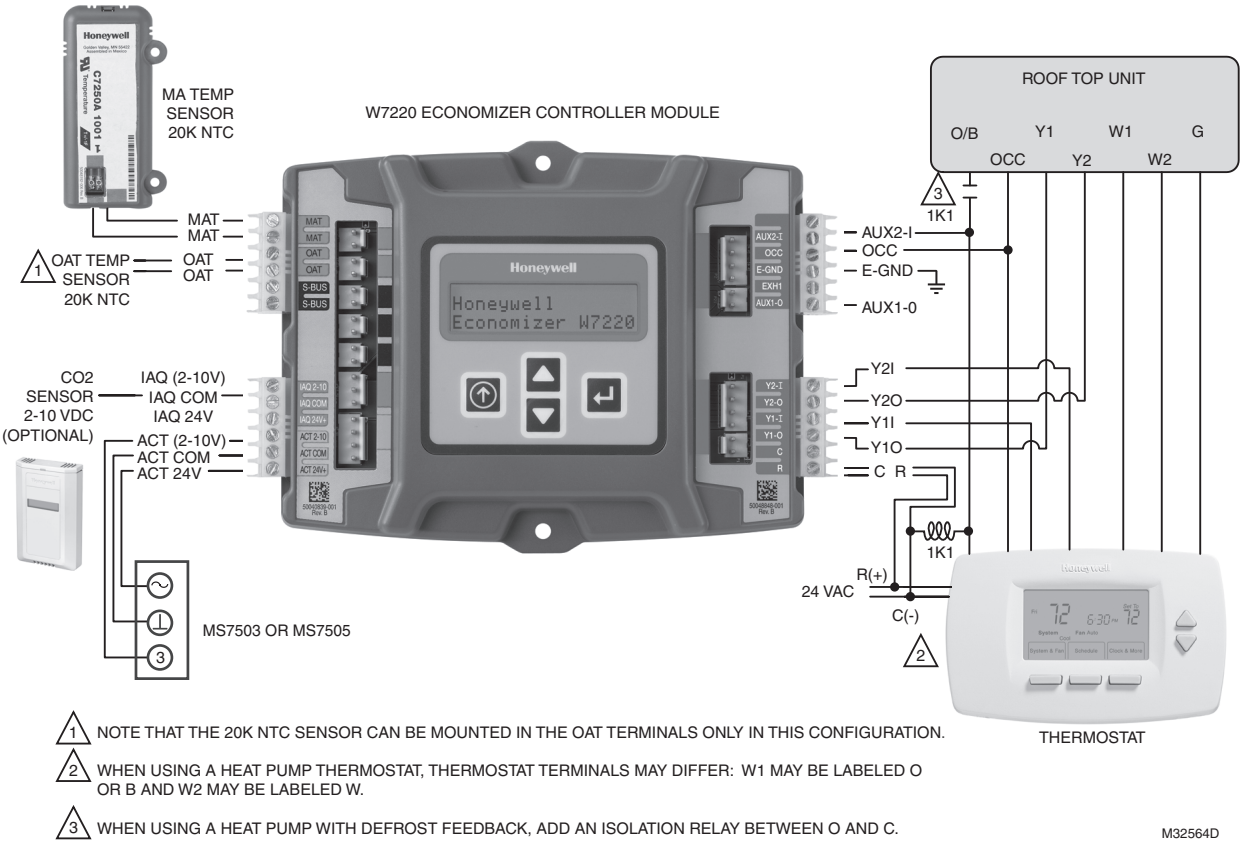



**Fig. 2. Stand-alone dry-bulb Economizer configuration with Honeywell MS7503 Direct Coupled Actuator.**

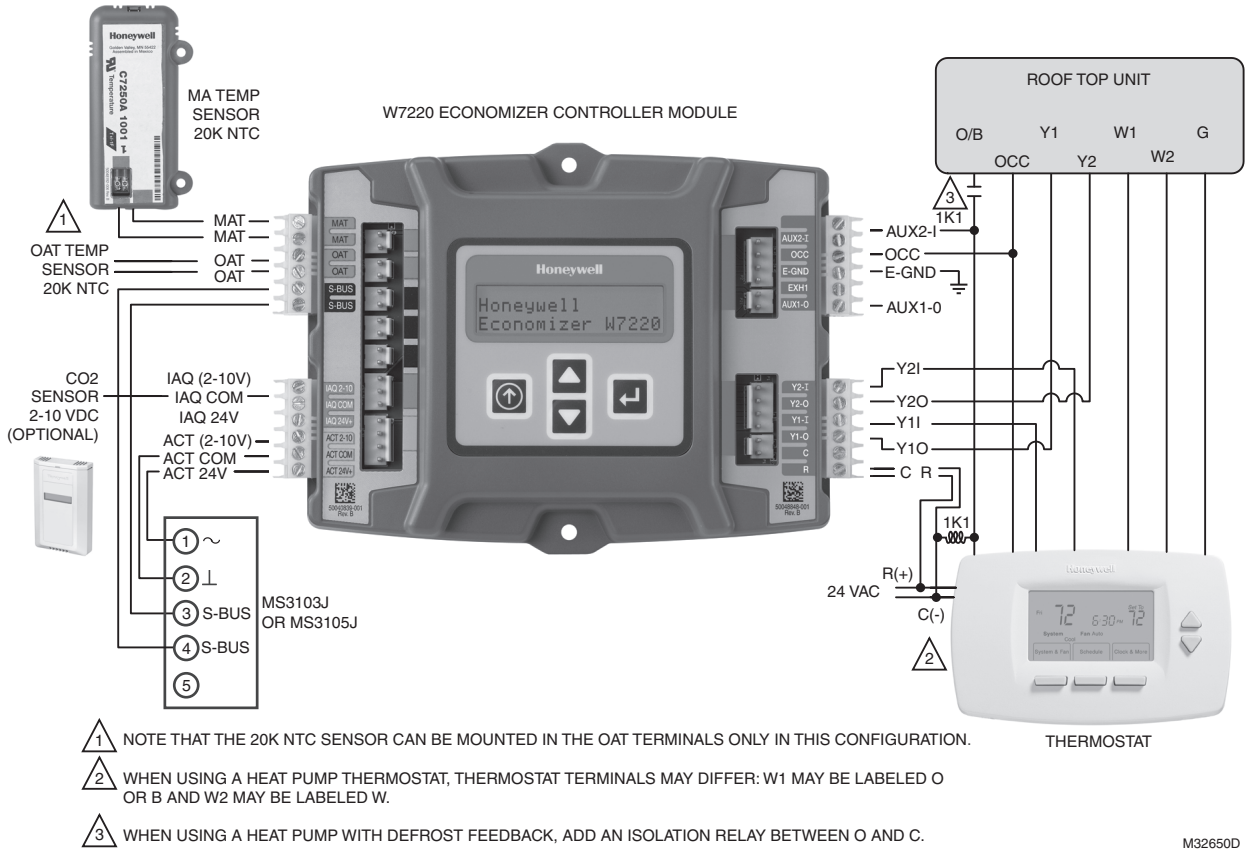



**Fig. 3. Stand-alone dry-bulb Economizer configuration with Honeywell MS3103J or MS3105J communicating actuators.**

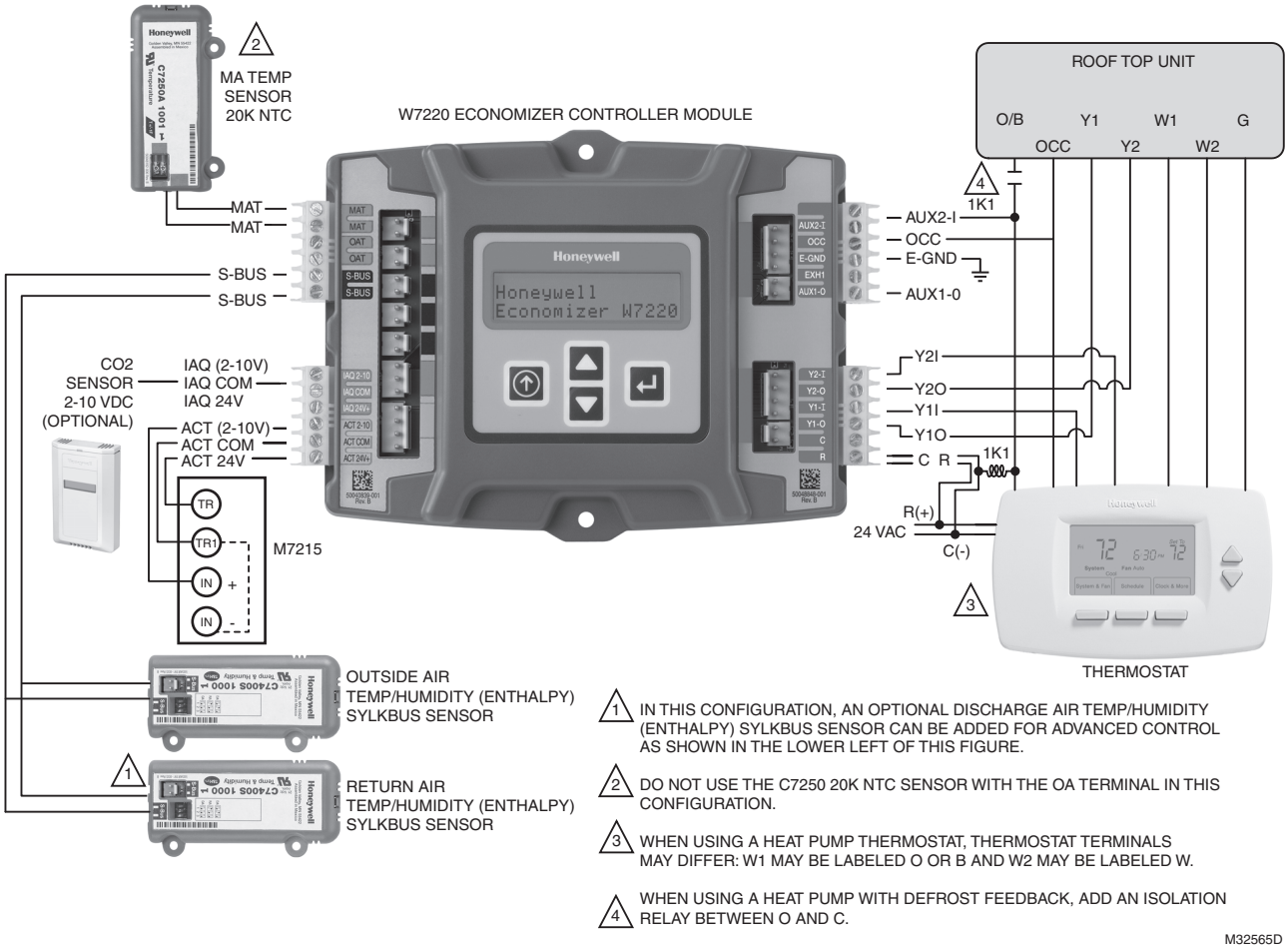



**Fig. 4. Economizer with Sylk Bus sensors for enthalpy configuration with Honeywell M7215 black motor.**

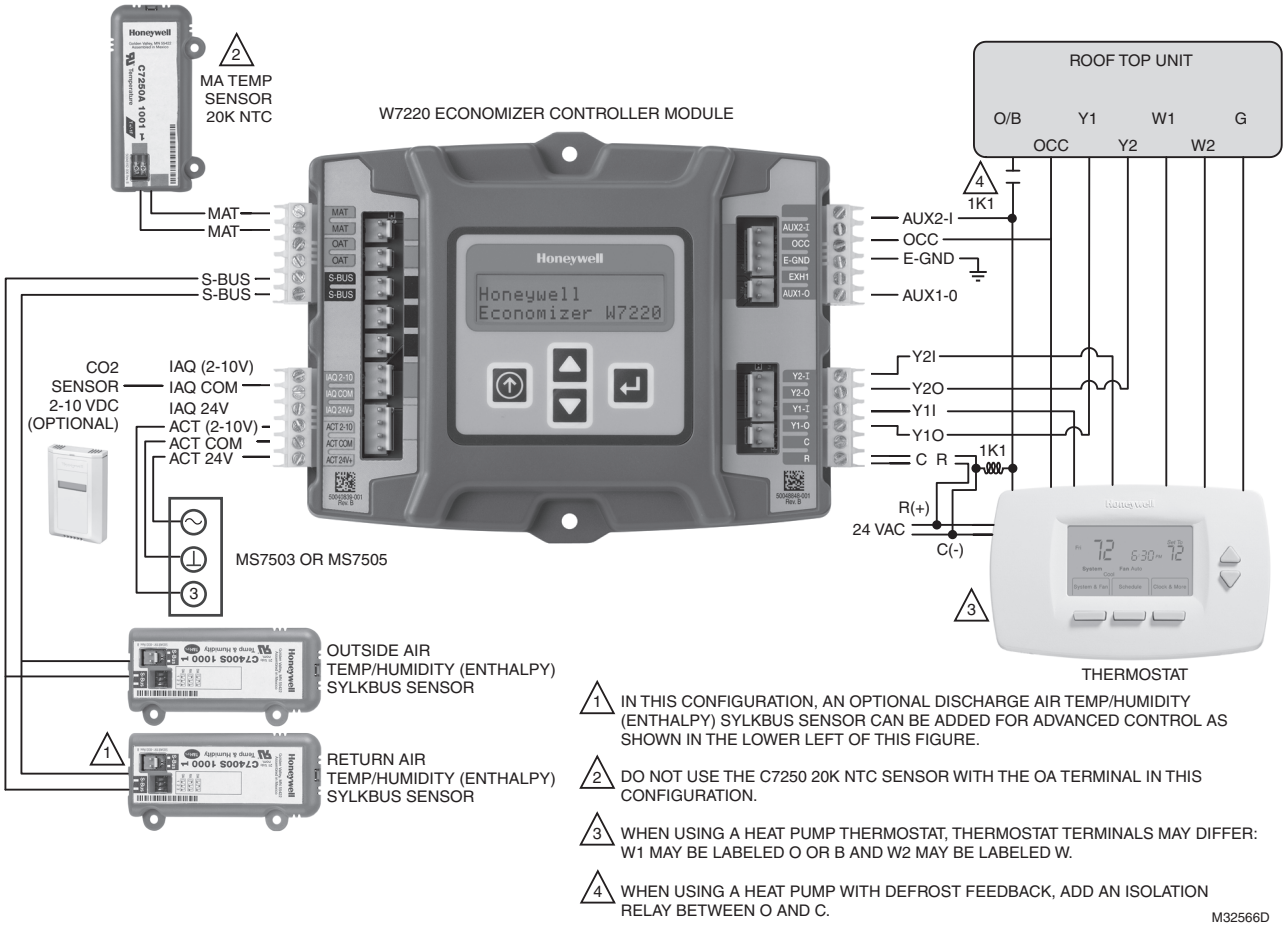



**Fig. 5. Economizer with Sylk Bus sensors for enthalpy configuration with a Honeywell MS7505 or MS7503 Direct Coupled Actuator.**

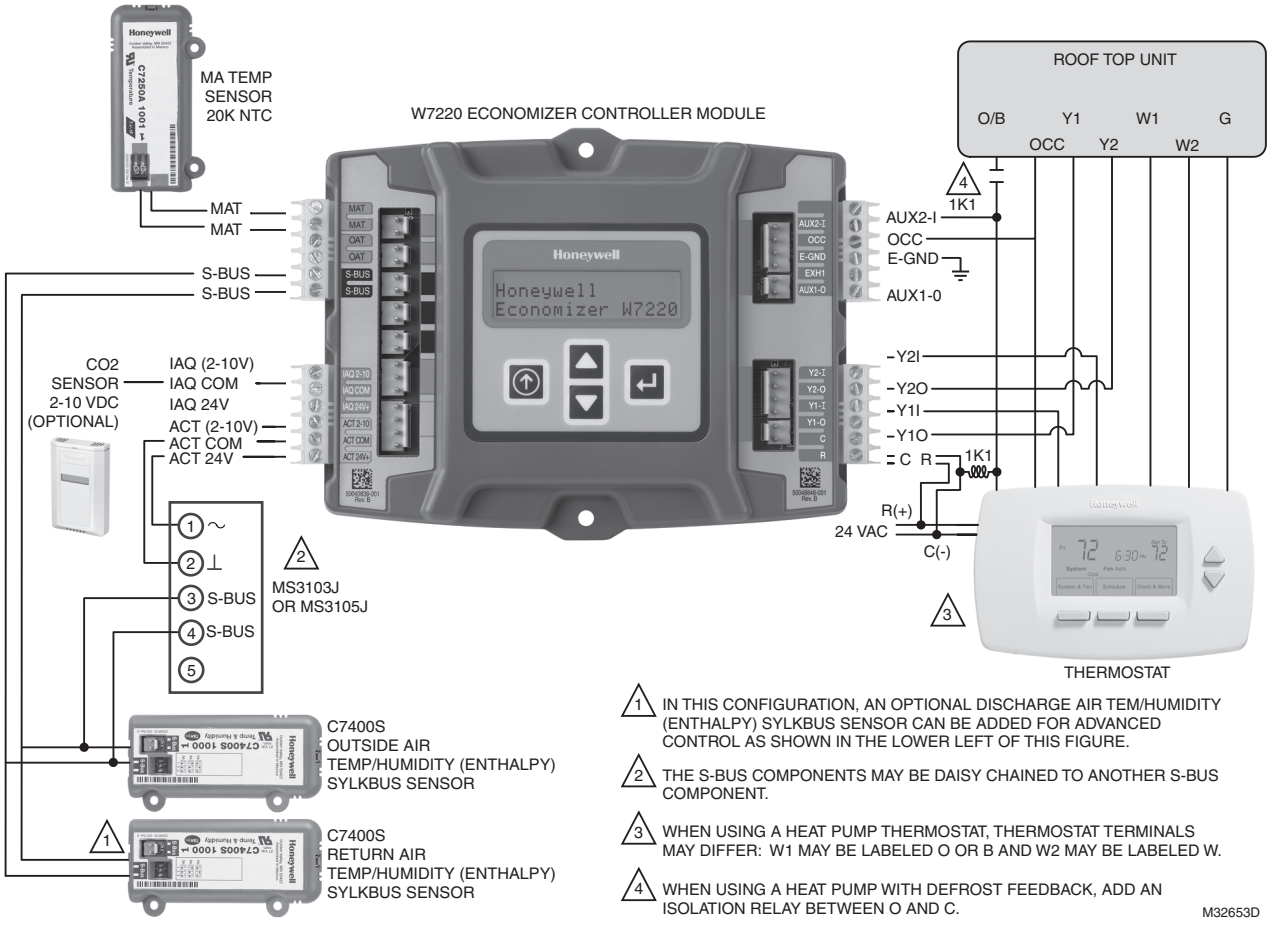



**Fig. 6. Economizer with Sylk bus sensor for enthalpy configuration with Honeywell MS3103 or MS3105 communicating actuators.**

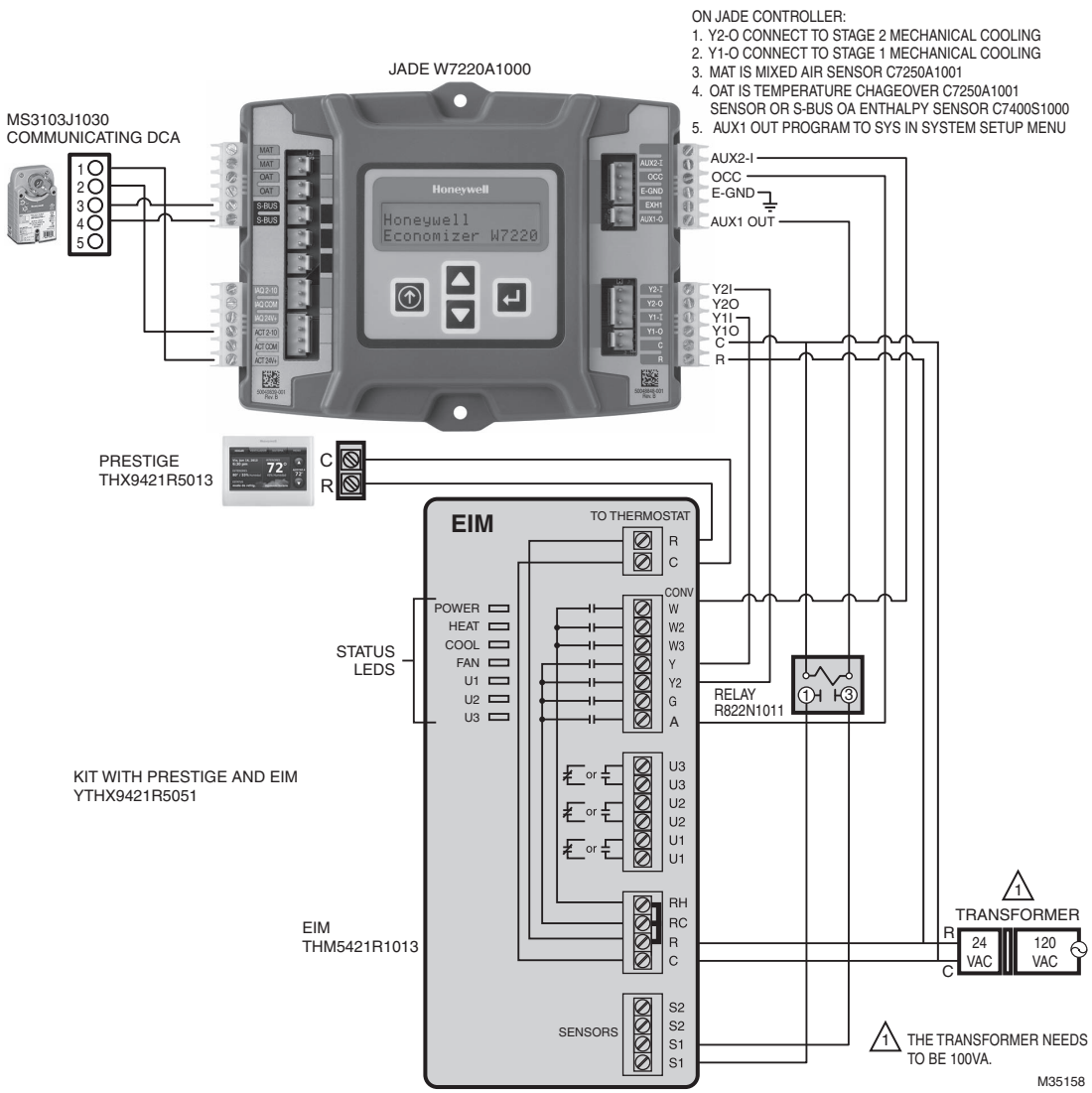
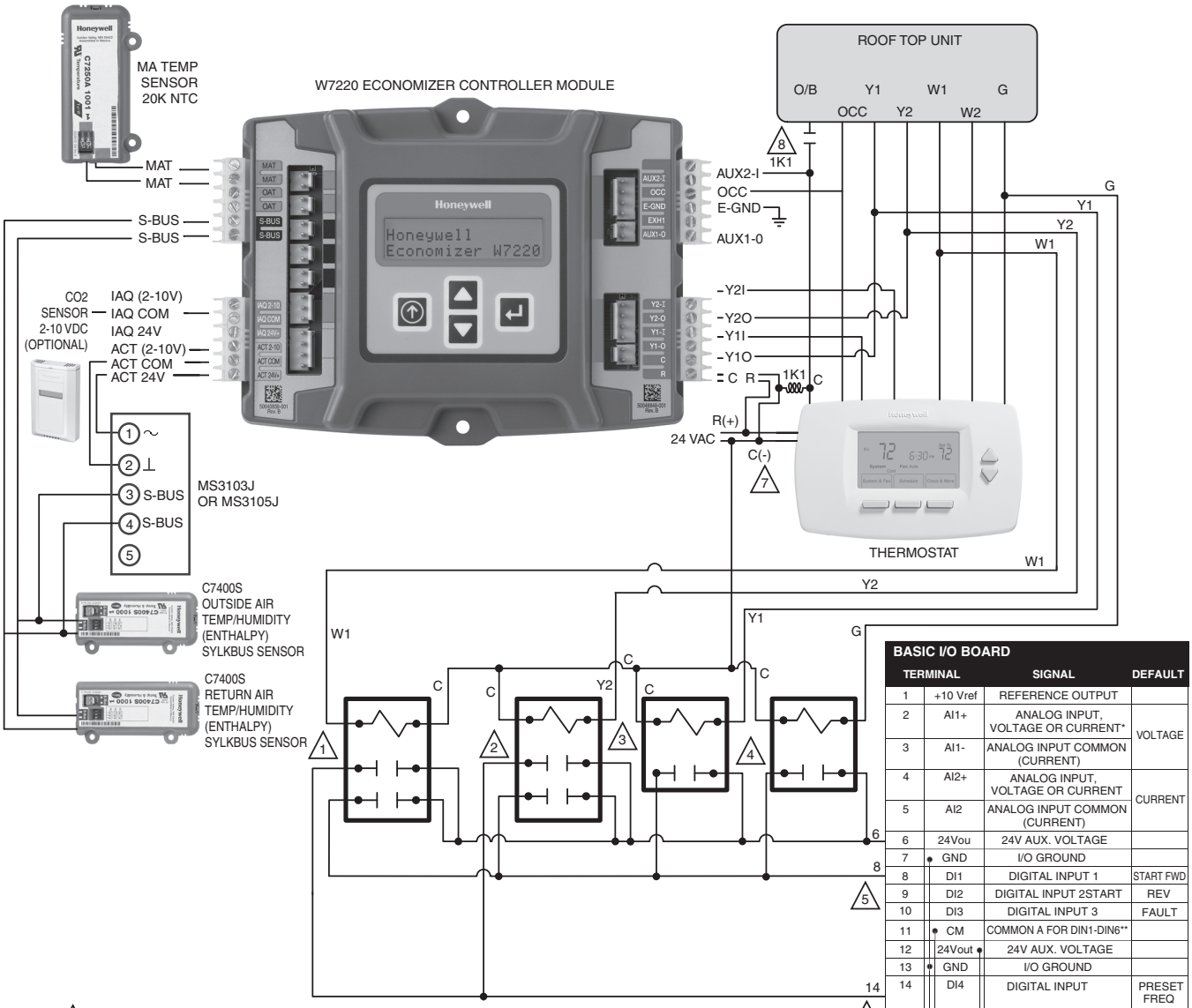



**Fig. 7. Economizer with Honeywell MS3103 or MS3105 communicating actuator and thermostat EIM.**



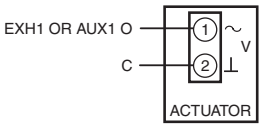

| BASIC I/O BOARD | | | |
|---|---|---|---|
| TERMINAL | SIGNAL | | DEFAULT |
| 1 | +10 Vref | REFERENCE OUTPUT | |
| 2 | AI1+ | ANALOG INPUT, VOLTAGE OR CURRENT* | VOLTAGE |
| 3 | AI1- | ANALOG INPUT COMMON (CURRENT) | |
| 4 | AI2+ | ANALOG INPUT, VOLTAGE OR CURRENT | CURRENT |
| 5 | AI2 | ANALOG INPUT COMMON (CURRENT) | |
| 6 | 24Vou | 24V AUX. VOLTAGE | |
| 7 | GND | I/O GROUND | |
| 8 | DI1 | DIGITAL INPUT 1 | START FWD |
| 9 | DI2 | DIGITAL INPUT 2START | REV |
| 10 | DI3 | DIGITAL INPUT 3 | FAULT |
| 11 | CM | COMMON A FOR DIN1-DIN6** | |
| 12 | 24Vout | 24V AUX. VOLTAGE | |
| 13 | GND | I/O GROUND | |
| 14 | DI4 | DIGITAL INPUT | PRESET FREQ SELECT 1 |
| 15 | DI5 | DIGITAL INPUT | PRESET FREQ SELECT 2 |
| 16 | DI6 | DIGITAL INPUT 6 | FAULT RESET |
| 17 | C | COMMON A FOR DIN1-DIN6** | |
| 18 | AO1 | ANALOG SIGNAL (+OUTPUT) | OP FREQ |
| 19 | AO-/GND | ANALOG OUTPUT COMMON | |
| 30 | +24 Vin | 24V AUXILIARY INPUT VOLTAGE | |
| A | RS485 | DIFFERENTIAL RECEIVER/ TRANSMITTER | |
| B | RS485 | DIFFERENTIAL RECEIVER/ TRANSMITTER | |

I/O BOARD ON SMARTVFD HVAC DRIVE HVFDSD

1. RELAY 1, DPDT RELAY, NO CONTACTS ENERGIZE DIGITAL INPUT 4 FOR HIGH SPEED FAN WITH W1 CALL.
2. RELAY 2, DPST RELAY, NO CONTACTS ENERGIZE DIGITAL INPUT 4 FOR HIGH SPEED FAN WITH Y2 CALL.
3. RELAY 3, SPST RELAY, NO CONTACTS ENERGIZE DIGITAL INPUT 1 FOR LOW SPEED FAN WITH Y1 CALL.
4. RELAY 4, SPST RELAY, NO CONTACTS ENERGIZE DIGITAL INPUT 1 FOR LOW SPEED FAN WITH G CALL.
5. LOW SPEED FAN IS CONFIGURED BY SETTING “MINIMUM FREQUENCY” WITH PARAMETER M1.8 OF THE STARTUP WIZARD OF THE SMARTVFD HVAC.
6. HIGH SPEED FAN IS CONFIGURED BY SETTING “PRESET FREQUENCY 1” WITH PARAMETER M3.3.12 OF THE SMARTVFD HVAC.
7. WHEN USING A HEAT PUMP THERMOSTAT, THERMOSTAT TERMINALS MAY DIFFER: W1 MAY BE LABELED O OR B AND W2 MAY BE LABELED W.
8. WHEN USING A HEAT PUMP WITH DEFROST FEEDBACK, ADD AN ISOLATION RELAY BETWEEN O AND C.

M35172

**Fig. 8. Economizer with Sylk bus sensor for enthalpy configuration with Honeywell MS3103 or MS3105 communicating actuators, thermostat and VFD for Two-speed fan operation .**




NOTE: ON/OFF ACTUATORS CAN BE USED ON THE EXH1 OR AUX1 O TERMINAL WITH GROUND TO THE C TERMINAL. WHEN PROGRAMMING THE EXH1 OR AUX1 O, THE % IS THE PERCENT OPEN POSITION OF THE OUTDOOR AIR DAMPER WHEN THE EXH1 OR AUX1 O TERMINAL IS ENERGIZED AND THE 2-POS DAMPER GOES OPEN. IF USING THE AUX1 O TERMINAL PROGRAM AUX1 O FOR EXH2.

M33409

**Fig. 9. 2-position actuator.**

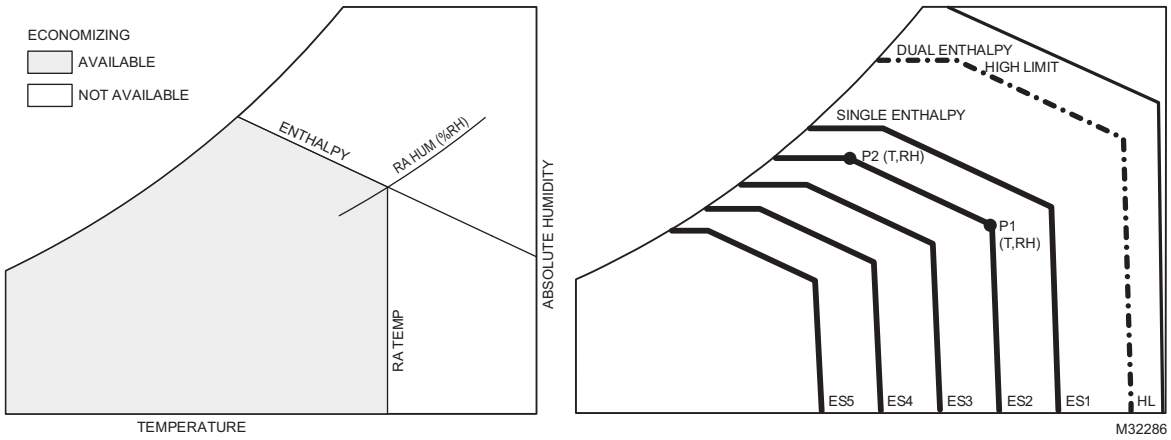



**Fig. 10. Single Enthalpy curves and boundaries.**

**Table 3. Single Enthalpy and Dual Enthalpy High Limit Curves.**

| Enthalpy Curve | Temp. Dry-Bulb (°F) | Temp. Dewpoint (°F) | Enthalpy (btu/lb/da) | Point P1 | | Point P2 | |
|---|---|---|---|---|---|---|---|
| | | | | Temp. °F | Humidity %RH | Temp. °F | Humidity %RH |
| ES1 | 80.0 | 60.0 | 28.0 | 80.0 | 36.8 | 66.3 | 80.1 |
| ES2 | 75.0 | 57.0 | 26.0 | 75.0 | 39.6 | 63.3 | 80.0 |
| ES3 | 70.0 | 54.0 | 24.0 | 70.0 | 42.3 | 59.7 | 81.4 |
| ES4 | 65.0 | 51.0 | 22.0 | 65.0 | 44.8 | 55.7 | 84.2 |
| ES5 | 60.0 | 48.0 | 20.0 | 60.0 | 46.9 | 51.3 | 88.5 |
| HL | 86.0 | 66.0 | 32.4 | 86.0 | 38.9 | 72.4 | 80.3 |

## Power Up

After the module is mounted and wired, apply power.

## Power Up Delay

Upon power up (or after a power outage or brownout), the W7220 controller module begins a 5 minute power up delay before enabling mechanical cooling.

### Initial Menu Display

On initial start up, Honeywell displays on the first line and Economizer W7220 on the second line. After a brief pause, the software version appears on the first line and the second line will be blank. After another brief moment the screen will display W7220 on the first line and STATUS on the second line. Refer to table 3 for menu structure.

## Power Loss (Outage or Brownout)

All setpoints and advanced settings are restored[a] after any power loss or interruption.

NOTE: If power goes below 18 Vac, the W7220 controller module assumes a power loss and the 5 minute power up delay will become functional when power returns above 18 Vac.

### Using the Keypad with Menus

To use the keypad when working with menus:
- Press the ▲ button to move to the previous menu.
- Press the ▼ button to move to the next menu.
- Press the ↵button (Enter) to display the first item in the currently displayed menu.
- Press the ⓵ button (Menu up) to exit a menu's item and return to the list of menus.

### Using the Keypad with Settings and Parameters

To use the keypad when working with Setpoints, System and Advanced Settings, Checkout tests, and Alarms:
- Navigate to the desired menu.
- Press the ↵button (Enter) to display the first item in the currently displayed menu.
- Use the ▲ and ▼ buttons to scroll to the desired parameter.
- Press the ↵button (Enter) to display the value of the currently displayed item.
- Press the ▲ button to increase (change) the displayed parameter value.[a]
- Press the ▼ button to decrease (change) the displayed parameter value.[a]
- Press the ↵button to accept the displayed value and store it in non-volatile RAM.
- CHANGE STORED displays.
- Press the ↵button (Enter) to return to the current menu parameter.
- Press the ⓵ button (MenuUp/Exit) to return to the previous menu.

[a] All settings are stored in non-volatile flash memory.

[a] When values are displayed, pressing and holding the ▲ or ▼ button causes the display to automatically increment.

## Menu Structure

Table 4 illustrates the complete hierarchy of menus and parameters for the JADE™ Economizer system.

The Menus in display order are:
- STATUS
- SETPOINTS
- SYSTEM SETUP
- ADVANCED SETUP
- CHECKOUT
- ALARMS

***IMPORTANT***

*Table 4 illustrates the complete hierarchy. Your menu parameters will be different depending on your configuration.*

*For example if you do not have a DCV ($CO_2$) sensor, then none of the DCV parameters appear and only MIN POS will display. If you have a CO2 sensor, the DCV MIN and DCV MAX will appear AND if you have 2 speed fan DCV MIN (high and low speed) and DCV MAX (high and low speed will appear).*

# SETUP AND CONFIGURATION

Before being placed into service, the JADE™ Economizer module must be setup and configured for the installed system.

***IMPORTANT***

*During setup, the Economizer module is live at all times.*

The setup process uses a hierarchical menu structure that is easy to use. You press the ▲ and ▼ arrow buttons to move forward and backward through the menus and press the ↵button to select and confirm setup item changes.

**Table 4. Menu Structure[a].**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| STATUS | ECON AVAIL | NO | YES/NO | YES = economizing available; the system can use Outdoor Air for free cooling when required. |
| | ECONOMIZING | NO | YES/NO | YES = Outdoor Air being used for 1st stage cooling. |
| | OCCUPIED | NO | YES/NO | YES = OCC signal received from space thermostat or unitary controller.<br>YES = 24 Vac on terminal OCC<br>No = 0 Vac on terminal OCC. |
| | HEAT PUMP | n/a[c] | COOL<br>HEAT | Displays COOL or HEAT when system is set to heat pump (non-conventional) |
| | COOL Y1-IN | OFF | ON/OFF | Y1-I signal from space thermostat or unitary controller for cooling stage 1.<br>ON = 24 Vac on term Y1-I<br>OFF = 0 Vac on term Y1-I |
| | COOL Y1-OUT | OFF | ON/OFF | Cool Stage 1 Relay Output to mechanical cooling (Y1-OUT terminal). |
| | COOL Y2-IN | OFF | ON/OFF | Y2-I signal from space thermostat or unitary controller for second stage cooling.<br>ON = 24 Vac on term Y2-I<br>OFF = 0 Vac on term Y2-I |
| | COOL Y2-OUT | OFF | ON/OFF | Cool Stage 2 Relay Output to mechanical cooling (Y2-OUT terminal). |
| | MA TEMP | _ _._ °F | -40 to 150 °F | Displays value of measured mixed air from MAT sensor. Displays --.- if not connected, short, or out- of-range. |
| | DA TEMP | _ _._ °F | -40 to 150 °F | Displays when Discharge Air Sylk Bus sensor is connected and displays measured discharge air temperature.<br>Displays --.-°F if sensor sends invalid value, if not connected, short or out-of-range. |
| | OA TEMP | _ _._ °F | -40 to 140 °F | Displays measured value of outdoor air temperature.<br>Displays --°F if sensor sends invalid value, if not connected, short or out-of-range. |
| | OA HUM | _ _ % | 0 to 100% | Displays measured value of outdoor humidity from OA Sylkbus sensor. Displays --% if not connected, short, or out- of-range. |
| | RA TEMP | _ _._ °F | 0 to 140 °F | Displays measured value of return air temperature from RA Sylkbus sensor. Displays --°F if sensor sends invalid value, if not connected, short or out-of-range. |
| | RA HUM | _ _ % | 0 to 100% | Displays measured value of return air humidity from RA Sylkbus sensor. Displays --% if sensor sends invalid value, if not connected, short or out-of-range. |
| | IN CO2 | _ _ _ ppm | 0 to 2000 ppm | Displays value of measured CO2 from CO2 sensor. Invalid if not connected, short or out-of-range. May be adjusted in Advanced menu by Zero offset and Span. |
| | DCV STATUS | n/a | ON/OFF | Displays ON if above setpoint and OFF if below setpoint, and ONLY if a CO2 sensor is connected. |
| | DAMPER OUT | 2.0V | 2.0 to 10.0 V | Displays output voltage or position to the damper actuator.[e] |
| | ACT POS | n/a | 0 to 100% | Displays actual position of actuator. |
| | ACT COUNT | n/a | 1 to 65,535 | Displays number of times actuator has cycled. 1 Cycle equals the sum of 180° of movement in any direction. |
| | ACTUATOR | n/a | OK/Alarm (on Alarm menu) | Displays Error if voltage or torque is below actuator range |
| | EXH1 OUT | OFF | ON/OFF | Output of EXH1 terminal. Displays ON when damper position reaches programmed percentage setpoint.<br>ON = 24 Vac Output; OFF = No Output. |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| STATUS CONTINUED | EXH2 OUT | OFF | ON/OFF | Output of AUX1 O terminal, if programmed for EXH2. Displays ON when damper position reaches programmed percentage setpoint ON = 24 Vac Output, OFF = No Output; displays only if AUX1 O = EXH2 |
| | ERV | OFF | ON/OFF | Output of AUX1 O terminal, if programmed for ERV. ON = 24 Vac Output, OFF = No Output; displays only if AUX1 O = ERV |
| | MECH COOL ON<br>or<br>HEAT STAGES ON | 0 | 0, 1, or 2 | Displays number of mechanical cooling stages that are active.<br><br>Displays the stage of heat pump heating that is active. |
| | FAN SPEED | 2 speed | LOW or HIGH | Displays speed of fan if JADE is programmed for 2-speed fan. |
| | W (HEAT IN) | n/a | ON/OFF | Displays status of heat if JADE is programmed for 2-speed fan. |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| SETPOINTS | MAT SET | 53°F | 38 to 70 °F; increment by 1 | The economizer will modulate the OA damper to maintain the mixed air temperature at the setpoint. |
| | LOW T LOCK | 32°F | -45 to 80 °F; increment by 1 | Setpoint determines outdoor temperature when the mechanical cooling cannot be turned on. Commonly referred to as the Compressor lockout. At or below the setpoint the Y1-O and Y2-O will not be energized on the controller. |
| | DRYBLB SET | 63°F | 48 to 80 °F; increment by 1 | *Dry bulb setpoint will only appear if using dry bulb change over.* Setpoint determines where the economizer will assume outdoor air temperature is good for free cooling; e.g.; at 63 °F setpoint unit will economizer at 62 °F and below and not economize at 64 °F and above. There is a a 2 °F deadband. |
| | DRYBLB DIF (Available firmware 1.15, June 2018, and later.) | 0°F | 0 to 6°F; increment by 2 | Drybulb Differential will only show if using dual drybulb, i.e., when an outdoor air temperature sensor C7250 is attached to OAT terminals, and a C7400S sensor is wired to S-Bus and configured for RAT (return air). Free cooling will be assumed whenever OA Temp is below *RAT minus this drybulb differential setting.* |
| | ENTH CURVE | ES3 | ES1, ES2, ES3, ES4, or ES5 | *ES curve will only appear if using enthalpy changeover.* Enthalpy boundary "curves" for economizing using single enthalpy. See page 11 for description of enthalpy curves. |
| | DCV SET | 1100ppm | 500 to 2000 ppm increment by 100 | Displays ONLY if a CO2 sensor is connected. Setpoint for Demand Control Ventilation of space. Above the setpoint, the OA dampers will modulate open to bring in additional OA to maintain a space ppm level below the setpoint. |
| | MIN POS | 2.8 V | 2 to 10 Vdc | Displays ONLY if a CO2 sensor is NOT connected. |
| | | | | With 2-speed fan units MIN POS L (low speed fan) and MIN POS H (high speed fan) settings are required. Default for MIN POS L is 3.2V and MIN POS H is 2.8V. |
| | VENTMAX | 2.8 V | 2 to 10 Vdc | Displays only if a CO2 sensor is connected. Used for Vbz (ventilation max cfm) setpoint. VENTMAX is the same setting as MIN POS would be if you did not have the CO2 sensor. |
| | | | 100 to 9990 cfm increment by 10 | If OA, MA RA and CO2 sensors are connected and DCV CAL ENABLE is set to AUTO mode, the OA dampers are controlled by CFM and displays from 100 to 9990 cfm. |
| | | | 2 to 10 Vdc | With 2-speed fan units VENTMAX L (low speed fan) and VENTMAX H (high speed fan) settings are required. Default for VENTMAX L is 3.2V and VENTMAX H is 2.8V. |
| | VENTMIN | 2.25 V | 2 to 10 Vdc | Displays only if CO2 sensor is connected. Used for Va (ventilation min cfm) setpoint. This is the ventilation requirement for less than maximum occupancy of the space. |
| | | | 100 to 9990 cfm increment by 10 | If OA, MA RA and CO2 sensors are connected and DCV CAL ENABLE is set to AUTO mode, the OA dampers are controlled by CFM and displays from 100 to 9990 cfm. |
| | | | 2 to 10 Vdc | With 2-speed fan units VENTMIN L (low speed fan) and VENTMIN H (high speed fan) settings are required. Default for VENTMIN L is 2.5V and VENTMIN H is 2.25V. |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| SETPOINTS CONTINUED | ERV OAT SP[d] | 32°F | 0 to 50 °F; increment by 1 | Only when AUX1 O = ERV |
| | EXH1 SET | 50% | 0 to 100%; increment by 1 | Setpoint for OA damper position when exhaust fan 1 is powered by the economizer.<br>With 2-speed fan units Exh1 L (low speed fan) and Exh1 H (high speed fan) settings are required. Default for Exh1 L is 65% and Exh1 H is 50% |
| | EXH2 SET | 75% | 0 to 100%; increment by 1 | Setpoint for OA damper position when exhaust fan 2 is powered by the economizer. Only used when AUX1 O is set to EHX2.<br>With 2-speed fan units Exh2 L (low speed fan) and Exh2 H (high speed fan) settings are required. Default for Exh2 L is 80% and Exh2 H is 75% |
| SYSTEM SETUP | INSTALL | 01/01/11 | | Display order = MM/DD/YY<br>Setting order = DD, MM, then YY. |
| | UNITS DEG | °F | °F or °C | Sets economizer controller in degrees Fahrenheit or Celsius. |
| | EQUIPMENT | CONV | CONV<br>HP | CONV = conventional.<br>HP O/B = Enables Heat Pump mode. Use AUX2 I for Heat Pump input from thermostat or controller (O or B terminal). |
| | AUX2 IN | Heat (W1)[g]<br>Note: If field factory default is available, AUX2 IN will default back to Shutdown (SD). | Shutdown (SD)<br>Heat (W1)<br>HP(O)<br>HP(B) | In CONV mode:<br>SD = Enables configuration of shutdown (default);<br>W = Informs controller that system is in heating mode.<br>NOTE: If using 2-speed fan mode, you must program CONV mode for W. Shutdown is not available in the two-speed fan mode.<br>In HP O/B mode:<br>HP(O) = energize heat pump on Cool (default);<br>HP(B) = energize heat pump on Heat. |
| | FAN SPEED | 2 speed[h]<br>Note: If field factory default is available, FAN SPEED will default back to 1-speed. | 1 speed/<br>2 speed | Sets economizer controller for operation of 1 speed or 2 speed supply fan. The controller does not control the fan but positions the OA and RA dampers to the heating or cooling mode settings.<br>NOTE: 2-speed fan option also needs Heat (W1) programmed in AUX 2 In. |
| | FAN CFM | 5000cfm | 100 to 50000 cfm; increment by 100 | This is the capacity of the fan. The value is found on the label from the RTU manufacturer. The cfm of the fan is only used with DCV CAL ENABLE AUO |
| | AUX1 OUT | NONE | NONE<br>ERV<br>EXH2<br>SYS | • NONE = not configured (output is not used)<br>• ERV= Energy Recovery Ventilator[d]<br>• EXH2 = second damper position 24 Vac out for second exhaust fan.<br>• SYS = use output as an alarm signal |
| | OCC | INPUT | INPUT or ALWAYS | When using a setback thermostat with occupancy out (24 Vac), the 24 Vac is input "INPUT" to the OCC terminal. If no occupancy output from the thermostat then change program to "ALWAYS" OR add a jumper from terminal R to OCC terminal. |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| ADVANCED SETUP | MA LO SET | 45 °F | 35 to 65 °F; increment by 1° | Temp to activate Freeze Protection (close damper or modulate to MIN POS if Mixed air temperature falls below set value) |
| | FREEZE POS | CLO | CLO<br>MIN | Damper position when freeze protection is active (closed or MIN POS). |
| | CO2 ZERO | 0ppm | 0 to 500 ppm; increment by 10 | CO2 ppm level to match CO2 sensor start level. |
| | CO2 SPAN | 2000ppm | 1000 to 3000 ppm; increment by 50 | CO2 ppm span to match CO2 sensor; e.g.; 500-1500 sensor output would be 500 CO2 zero and 1000 CO2 span. |
| | STG3 DLY | 2.0h | 0 min, 5 min, 15 min, then 15 min intervals. Up to 4h or OFF | Delay after stage 2 (Y2 IN) for cool has been active. Turns on 2nd stage of mechanical cooling when economizer is 1st stage call and mechanical cooling is 2nd stage call. Allows three stages of cooling, 1 economizer and 2 mechanical.<br>OFF = no Stage 3 cooling. |
| | SD DMPR POS | CLO | CLO<br>OPN | Indicates shutdown signal when JADE is programmed for SHUTDOWN. When controller receives 24 Vac input on the AUX2 IN terminal in conventional mode, the OA damper will open if programmed for OPN and the OA damper will close if programmed for CLO. All other controls, e.g., Y1-0, Y2-0, EXH1, etc. will shut off. |
| | DA LO ALM | 45 °F | NONE<br>35°F to 65°F in 5°F increments | Used for alarm for when the DA air temperature is too low. Set lower range of alarm, below this temperature the alarm will show on the display. Must have a DA temperature sensor (C7400S programmed for DA) in the discharge air. |
| | DA HI ALM | 80 °F | NONE<br>70 °F to 180 °F in 5° F increments | Used for alarm for when the DA air temperature is too high. Set high range of alarm, above this temperature the alarm will show on the display. Must have a DA temperature sensor (C7400S programmed for DA) in the discharge air. |
| | DCVCAL ENA | MAN | MAN (manual)<br>AUTO | Turns on the DCV automatic control of the dampers. Resets ventilation based on the RA, OA and MA sensor conditions. Requires all sensors (RA, OA, MA and CO2).<br>This operation is not operable with a 2-speed fan unit. |
| | MAT T CAL | 0.0 F° | +/-2.5F° | Allows for the operator to adjust for an out of calibration temperature sensor |
| | OAS T CAL | 0.0F° | +/-2.5F° | Allows for the operator to adjust for an out of calibration temperature sensor |
| | OAS H CAL | 0% RH | +/-10% RH | Allows for the operator to adjust for an out of calibration humidity sensor |
| | RA T CAL | 0.0F° | +/-2.5F° | Allows for the operator to adjust for an out of calibration temperature sensor |
| | RA H CAL | 0% RH | +/-10% RH | Allows for the operator to adjust for an out of calibration humidity sensor |
| | DA T CAL | 0.0 F° | +/-2.5F° | Allows for the operator to adjust for an out of calibration temperature sensor |
| | 2SP FAN DELAY | 5 Minutes | 0 to 20 minutes in 1 minute increments. | When in economizing mode this is the delay for the high speed fan to try to satisfy the call for second stage cooling before the first stage mechanical cooling is enabled. |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| CHECKOUT[f] | DAMPER MINIMUM POSITION | n/a | n/a | The checkout for the damper minimum positions is based on the system. See Table 5. |
| | DAMPER OPEN | n/a | n/a | Positions damper to the full open position.<br>Exhaust fan contacts enable during the DAMPER OPEN test. Make sure you pause in this mode to allow for exhaust contacts to energize due to the delay in the system. |
| | DAMPER CLOSE | n/a | n/a | Positions damper to the fully closed position. |
| | CONNECT Y1-O | n/a | n/a | Closes the Y1-O relay (Y1-O).<br>See CAUTION on page 24 |
| | CONNECT Y2-O | n/a | n/a | Closes the Y2-O relay (Y2-O).<br>See CAUTION on page 24 |
| | CONNECT AUX1-O | n/a | n/a | Energizes the AUX1-O output. |
| | CONNECT EXH1 | n/a | n/a | Closes the power exhaust fan 1 relay (EXH1) |
| ALARMS(#) | | | | Alarms display only when they are active. The menu title “ALARMS (#)” includes the number of active alarms in parenthesis (). When using SYLK bus sensors, "SYLK" will appear on the screen, and when using 20k OA temperature sensors, "SENS T" will appear on the screen. |
| | MA T SENS ERR | n/a | n/a | Mixed air sensor has failed or become disconnected - check wiring then replace sensor if the alarm continues |
| | CO2 SENS ERR | n/a | n/a | CO2 sensor has failed, gone out of range or become disconnected - check wiring then replace sensor if the alarm continues |
| | OA SYLK T ERR | n/a | n/a | Outdoor air enthalpy sensor has failed or become disconnected - check wiring then replace sensor if the alarm continues |
| | OA SYLK H ERR | n/a | n/a | |
| | RA SYLK T ERR | n/a | n/a | Return air enthalpy sensor has failed or become disconnected - check wiring then replace sensor if the alarm continues |
| | RA SYLK H ERR | n/a | n/a | |
| | DA SYLK T ERR | n/a | n/a | Discharge air sensor has failed or become disconnected - check wiring then replace sensor if the alarm continues |
| | OA SENS T ERR | n/a | n/a | Outdoor air temperature sensor has failed or become disconnected - check wiring then replace sensor if the alarm continues |
| | ACT ERROR | n/a | n/a | Actuator has failed or become disconnected - check for stall, over voltage, under voltage and actuator count. Replace actuator if damper is moveable and supply voltage is between 21.6 V and 26.4 V. Check actuator count on STATUS menu. |
| | FREEZE ALARM | n/a | n/a | Check if outdoor temperature is below the LOW Temp Lockout on setpoint menu. Check if Mixed air temperature on STATUS menu is below the Lo Setpoint on Advanced setup menu. When conditions are back in normal range then the alarm will go away. |
| | SHUTDOWN ACTIVE | n/a | n/a | AUX2 IN is programmed for SHUTDOWN and 24 V has been applied to AUX2 IN terminal |
| | DMP CAL RUNNING | n/a | n/a | If DCV Auto enable has been programmed, when the JADE is completing a calibration on the dampers, this alarm will display. Wait until the calibration is completed and the alarm will go away. Must have OA, MA and RA sensors for DCV calibration; set up is in the Advanced setup menu |
| | DA SENS ALM | n/a | n/a | Discharge air temperature is out of the range set in the ADVANCED SETUP Menu. Check the temperature of the discharge air. |
| ALARMS(#) CONTINUED | SYS ALARM | n/a | n/a | When AUX1-O is set to SYS and there is any alarm (e.g., failed sensors, etc.), the AUX1-O terminal has 24 Vac out. |
| | ACT UNDER V | n/a | n/a | Voltage received by Actuator is below expected range |
| | ACT OVER V | n/a | n/a | Voltage received by Actuator is above expected range |
| | ACT STALLED | n/a | n/a | Actuator stopped before achieving commanded position |

**Table 4. Menu Structure[a]. (Continued)**

| Menu | Parameter | Parameter Default Value | Parameter Range and Increment[b] | Notes |
|---|---|---|---|---|
| FEATURES ADJUSTABLE ONLY BY USE OF THE W7220 PC MOD TOOL | | | | |
| | ACT STALL ALARM SUPPRESSION | Disabled | Enabled or Disabled | If enabled this feature allows the operator to suppress the stall alarm in a specific range of the actuator stroke. |

[a] Table 4 illustrates the complete hierarchy. Your menu parameters may be different depending on your configuration. For example if you do not have a DCV ($CO_2$) sensor, then none of the DCV parameters appear.

[b] When values are displayed, pressing and holding the ▲ or ▼ button causes the display to automatically increment.

[c] n/a = not applicable

[d] ERV Operation: When in Cooling mode AND the conditions are NOT OK for economizing - the ERV terminal will be energized. In the Heating mode the ERV terminal will be energized when the OA is below the ERV OAT setpoint in the setpoint menu.

[e] When used with Honeywell communicating actuator the damper out is reported in XX.X% open versus XX.X Vdc.

[f] After 10 minutes without a command or mode change, the controller will change to normal operation.

[g] Default for AUX2 IN changed from SD to W1 with 1.15 firmware (June 2018).

[h] Default for FAN SPEED changed from 1-speed to 2-speed with 1.15 firmware (June 2018).

**Table 5. Damper minimum position settings and readings on checkout menu.**

| Fan Speed | Demand Control Ventilation (CO2 Sensor) | Setpoints | Checkout |
|---|---|---|---|
| 1 | NO | MIN POS | VMAX-HS |
| 1 | NO | N/A | N/A |
| 2 | NO | MIN POS H | VMAX-HS |
| 2 | NO | MIN POS L | VMAX-LS |
| 1 | YES | VENT MIN | VMIN-HS |
| 1 | YES | VENT MAX | VMAX-HS |
| 2 | YES | VENT MIN H | VMIN-HS |
| 2 | YES | VENT MAX H | VMAX-LS |
| 2 | YES | VENT MINL | N/A |
| 2 | YES | VENT MAX L | N/A |

# SEQUENCE OF OPERATION

**Table 6. Dry Bulb Operation No DCV (CO2 sensor) - 1 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| None | No | Off | Off | High | 0-v/Off | 0-v/Off | MIN POS | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | MIN POS | Closed |
| | | On | On | High | 24-v/On | 24-v/On | MIN POS | Closed |
| None | Yes | Off | Off | High | 0-v/Off | 0-v/Off | MIN POS | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | MIN POS to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | MIN POS to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

**Table 7. Dry Bulb Operation With DCV (CO2 sensor) - 1 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| Below CO2 set | No | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | VENTMIN | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN | Closed |
| | Yes | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | VENTMIN to Full-Open | Closed to Full-Open |
| Above CO2 set | No | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN to VENTMAX | Closed |
| | Yes | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | VENTMIN to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

**Table 8. Enthalpy Operation No DCV (CO2 sensor) - 1 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| None | No | Off | Off | High | 0-v/Off | 0-v/Off | MIN POS | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | MIN POS | Closed |
| | | On | On | High | 24-v/On | 24-v/On | MIN POS | Closed |
| None | Yes | Off | Off | High | 0-v/Off | 0-v/Off | MIN POS | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | MIN POS to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | MIN POS to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

**Table 9. Enthalpy Operation With DCV (CO2 sensor) - 1 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| Below set | No | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | VENTMIN | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN | Closed |
| | Yes | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | VENTMIN to Full-Open | Closed to Full-Open |
| Above set | No | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | Off | High | 24-v/On | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN to VENTMAX | Closed |
| | Yes | Off | Off | High | 0-v/Off | 0-v/Off | VENTMIN to VENTMAX | Closed |
| | | On | Off | High | 0-v/Off | 0-v/Off | VENTMIN to Full-Open | Closed to Full-Open |
| | | On | On | High | DELAY (b) 24-v/On | 0-v/Off[a] | VENTMIN to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

**Table 10. Dry Bulb Operation No DCV (CO2 sensor) - 2 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| None | No | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | MIN POS L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | MIN POS H | Closed |
| None | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | MIN POS L to Full-Open | Closed to Full-Open |
| | | On | On | High | DELAY[b] 24-v/On | 0-v/Off[a] | MIN POS H to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

[b] With 2SP FAN DELAY (Advanced Setup Menu) when in the economizing mode there is a delay for the high speed fan to try to satisfy the call for second stage cooling by turning on the fan to high and opening the OA damper 100% before the first stage mechanical cooling is enabled.

**Table 11. Dry Bulb Operation With DCV (CO2 sensor) - 2 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| Below set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | VENTMIN H to Full-Open | Closed to Full-Open |
| Above set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H to VENTMAX H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | DELAY[b] 24-v/On | 0-v/Off[a] | VENTMIN H to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

[b] With 2SP FAN DELAY (Advanced Setup Menu) when in the economizing mode there is a delay for the high speed fan to try to satisfy the call for second stage cooling by turning on the fan to high and opening the OA damper 100% before the first stage mechanical cooling is enabled.

**Table 12. Enthalpy Operation No DCV (CO2 sensor) - 2 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| NO CO2 SENSOR | No | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | MIN POS L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | MIN POS H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | MIN POS L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | MIN POS L to Full-Open | Closed to Full-Open |
| | | On | On | High | DELAY[b] 24-v/On | 0-v/Off[a] | MIN POS H to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

[b] With 2SP FAN DELAY (Advanced Setup Menu) when in the economizing mode there is a delay for the high speed fan to try to satisfy the call for second stage cooling by turning on the fan to high and opening the OA damper 100% before the first stage mechanical cooling is enabled.

**Table 13. Enthalpy Operation With DCV (CO2 sensor) - 2 Speed Fan.**

| DCV | OA Good to economize? | Y1-I | Y2-I | FAN SPD | Y1-O | Y2-O | Occupied | Unoccupied |
|---|---|---|---|---|---|---|---|---|
| Below set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | 24-v/On | 0-v/Off[a] | VENTMIN H to Full-Open | Closed to Full-Open |
| Above set | No | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | Low | 24-v/On | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | On | High | 24-v/On | 24-v/On | VENTMIN H to VENTMAX H | Closed |
| | Yes | Off | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to VENTMAX L | Closed |
| | | On | Off | Low | 0-v/Off | 0-v/Off | VENTMIN L to Full-Open | Closed to Full-Open |
| | | On | On | High | DELAY[b] 24-v/On | 0-v/Off[a] | VENTMIN H to Full-Open | Closed to Full-Open |

[a] With stage 3 delay (STG3 DLY) in Advanced setup menu can turn on 2nd stage of mechanical cooling Y2 –O after the delay if the call for Y1-I and Y2-I have not been satisfied.

[b] With 2SP FAN DELAY (Advanced Setup Menu) when in the economizing mode there is a delay for the high speed fan to try to satisfy the call for second stage cooling by turning on the fan to high and opening the OA damper 100% before the first stage mechanical cooling is enabled.

# TROUBLESHOOTING

## Alarms

The Economizer module provides alarm messages that display on the 2-line LCD.

NOTE: JADE will be in the “set up” mode for the first 60 minutes after powered. If a sensor for OA air or Sylkbus device (sensor, actuator) is disconnected during the set up mode, the JADE will not alarm that failure. The MA sensor is a system “critical” sensor; if the MA sensor is removed during the set up mode, the JADE will alarm. After 60 minutes the JADE controller will change to operation mode and all components removed or failed will alarm in the operation mode.

You can also navigate to the Alarms menu at any time.

### Clearing Alarms

Once the alarm has been identified and the cause has been removed (e.g. replaced faulty sensor), the alarm can be cleared from the display.

To clear an alarm, perform the following:

1. Navigate to the desired alarm.
2. Press the ↵ button.
3. ERASE? displays.
4. Press the ↵ button.
5. ALARM ERASED displays.
6. Press the ⓘ button (MenuUp/Exit) to complete the action and return to the previous menu.

NOTE: If an alarm still exists after you clear it, it re-displays within 5 seconds.

## Checkout Tests

Use the Checkout menu (Table 4) to test the damper operation and any configured outputs. Only items that are configured are shown in the Checkout menu.

NOTE: See “Interface Overview” on page 18 of 63-2700 for information about menu navigation and use of the keypad.

To perform a Checkout test:

1. Scroll to the desired test in the Checkout menu using the ▲ and ▼ buttons.
2. Press the ↵ button to select the item.
3. RUN? appears on the display.
4. Press the ↵ button to start the test.
5. The unit pauses and then displays IN PROGRESS.
6. When all parameters have been tested, press the ⓘ button (Menu up) to end the test (e.g. turn off the relay).

The checkout tests can all be performed at the time of installation or any time during the operation of the system as a test that the system is operable.

**⚠ CAUTION**

**Equipment damage may result.**

Be sure to allow enough time for compressor startup and shutdown between checkout tests so that you do not short-cycle the compressors

By using this Honeywell literature, you agree that Honeywell will have no liability for any damages arising out of your use or modification to, the literature. You will defend and indemnify Honeywell, its affiliates and subsidiaries, from and against any liability, cost, or damages, including attorneys’ fees, arising out of, or resulting from, any modification to the literature by you.

**Home and Building Technologies**

In the U.S.:

Honeywell

715 Peachtree Street NE

Atlanta, GA 30308

customer.honeywell.com

Honeywell

® U.S. Registered Trademark
© 2018 Honeywell International Inc.
62-0331—15 M.S. Rev. 05-18
Printed in United States