Economizer Selection

The JADE™ economizer doesn't heat or cool anything. It simply brings in outdoor air to naturally lower a building's interior temperature. You don't need a certified programmer or installer to set up and operate the JADE economizer. JADE is designed to work seamlessly with existing and future roof top systems. The LCD screen delivers continuous messages, important diagnostics and system status.

Section 4: Economizers

Product Selection - JADE™ Economizer

W7220

JADE economizers make energy saving easier for your customers. For buildings with less than 100,000 sq ft and stand-alone rooftop unit applications JADE delivers fresh air ventilation and energy savings. It is packed with features you'd expect in more expensive units, but it can be installed and configured by technicians without significant training.

- LCD screen delivers continuous messages, diagnostics and system status
- Color-coded wiring terminals make wiring easy
- Built-in freeze protection closes outdoor dampers to protect coils when outdoor temperatures drop
- Two-wire Sylk® bus communications enable simple wiring and enhanced diagnostics
- Demand control ventilation (DCV) saves energy with clean outside air without over ventilating and conditioning excess air
- UL Listed
- Title 24 and IECC2015 compliant

Y-Pack

Control Type	Kit Part Number	Kit Includes			
		Actuator	OA Sensor	MAT Sensor	CO2 Sensor
Dry Bulb with Black Motor	**Y7220A7215**	M7215A1008	C7250A1001	C7250A1001	
Dry Bulb with Non Communicating DCA	**YL7220A7503**	MS7503A2030	C7250A1001	C7250A1001	
Dry Bulb with Communicating 27 lb-in DCA	**YL7220AJ3103**	MS3103J1030	C7250A1001	C7250A1001	
Dry Bulb with Communicating 44 lb-in DCA	**YL7220AJ3105**	MS3105J3030	C7250A1001	C7250A1001	
Dry Bulb with Communicating 27 lb-in DCA and CO2 Wall Sensor without Display	**YL7220ACW3103**	MS3103J1030	C7250A1001	C7250A1001	C7632A1004
Enthalpy with Black Motor	**Y7220S7215**	M7215A1008	C7400S1000	C7250A1001	
Enthalpy with Black Motor and CO2 Wall Sensor with a Display	**Y7220SCW7215**	M7215A1008	C7400S1000	C7250A1001	C7232A1016
Enthalpy with Black Motor and CO2 Duct Sensor with a Display	**Y7220SCD7215**	M7215A1008	C7400S1000	C7250A1001	C7232B1014
Enthalpy with Non-Communicating DCA	**YL7220S7503**	MS7503A2030	C7400S1000	C7250A1001	
Enthalpy with Communicating 27 lb-in DCA	**YL7220SJ3103**	MS3103J1030	C7400S1000	C7250A1001	
Enthalpy with Communicating 44 lb-in DCA	**YL7220SJ3105**	MS3105J3030	C7400S1000	C7250A1001	
Enthalpy with Communicating 27 lb-in DCA and CO2 Wall Sensor with a Display	**YL7220SCW3103**	MS3103J1030	C7400S1000	C7250A1001	C7232A1016
Enthalpy with Communicating 27 lb-in DCA and CO2 Duct Sensor with a Display	**YL7220SCD3103**	MS3103J1030	C7400S1000	C7250A1001	C7232B1014

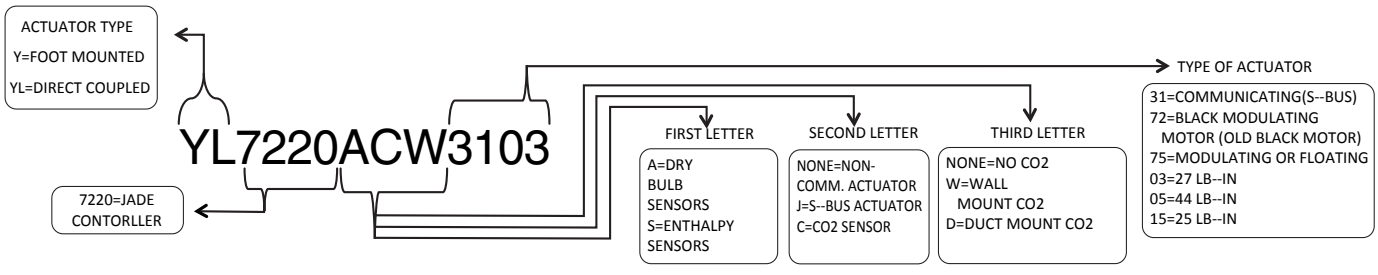
Sensors

	Function	OS Number
Mixed Air Temperature or Outdoor Air Temperature Sensor	MAT or OAT	**C7250A1001**
Outdoor Air or Return Air Enthalpy Sensor	OAE	**C7400S1000**
Wall Mount CO2 Sensor with Fixed Settings	CO2	**C7632A1004**
Wall Mount CO2 Sensor with Selectable Settings	CO2	**C7232A1016**
Duct Mount CO2 Sensor with Selectable Settings	CO2	**C7232B1014**

NOTE:
See pages 318-322 for sensor submittal data.

Accessories

Used With	Function	OS Number
C7400S1000, C7250A1001	2-pin edge connector	50048926-001
W7220A1000	6-pin edge connector	50048926-002
C7250A and C7400S Sensors	Duct mount kit	50053060-001
W7220A1000	PCMOD - Connects with PC to communicate with JADE	W7220-PCMOD



W7220

The JADE™ Economizer System is an expandable economizer control system, which includes a W7220 Economizer controller with an LCD and keypad. The W7220 can be configured with optional sensors. The W7220 controller is used as a standalone economizer wired directly to a commercial set back thermostat and sensors to provide Outdoor Air dry-bulb economizer control. Optional Sylk bus sensors can be connected to the controller for single or differential enthalpy control. An additional Return Air Sylk bus sensor can be added for differential dry bulb control.

SPECIFICATIONS

Electrical

Rated Voltage	20 to 30 Vac; 50/60 Hz Transformer: 100 VA maximum
Nominal Power Consumption (at 24 Vac, 60 Hz)	11.5 VA without sensors or actuators
Relay Digital Output Rating at 30 Vac (maximum power from Class 2 input only)	1.5A run; 3.5A inrush @ 0.45PF (200,000 cycles) or 7.5A inrush @ 0.45PF (100,000 cycles)
External Sensors Power Output	21 Vdc +/- 5% @ 48mA

IMPORTANT

All inputs and outputs must be Class 2 wiring.

Inputs: sensors

Dry Bulb Temperature (optional) and Mixed Air (required), C7250A	2-wire (18 to 22 AWG); Temperature range -40 to 150 °F (-40 to 65 °C). Temperature accuracy -0°F/+2°F
Temperature and Humidity, C7400S1000 (optional)	Temperature: range -40 to 150 °F (-40 to 65 °C) Temperature accuracy -0°F/+2°F Humidity: range 0 to 100% RH with 5% accuracy.

NOTE: Up to three (3) SYLK Bus sensors may be connected to the JADE™ Economizer controller: outdoor air (OA), return air (RA) and discharge (supply) air (DA).

DCV (CO_2) Sensor (C7232 or C7632)	2-10 Vdc control signal;
4 Binary inputs	1-wire 24 Vac + common GND 24 Vac power supply: 50/60Hz;

Outputs

Actuator signal	2-10 Vdc; Sylkbus output for Honeywell Sylkbus communicating actuators.
Exhaust fan, Y1, Y2 and AUX1 O	All Relay Outputs (at 30 Vac): Running: 1.5A maximum Inrush: 7.5A maximum

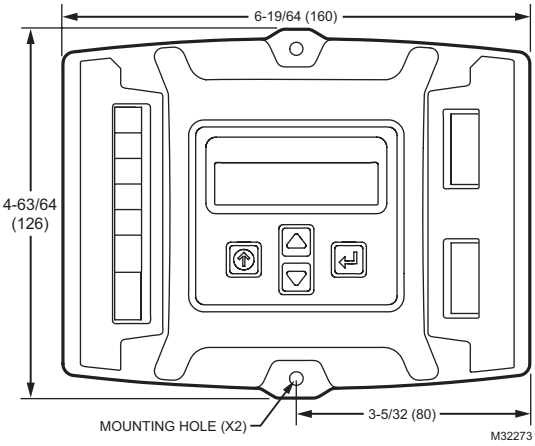
Environmental

Operating Temperature	-40 to 150 °F (-40 to 65 °C).
Storage Temperature	-40 to 150 °F (-40 to 65 °C)
Shipping Temperature	-40 to 150 °F (-40 to 65 °C)
Relative Humidity	5% to 95% RH non-condensing
Dimensions	Height: 4.98 inches (126.4 mm) Width: 6.3 inches (160 mm) Depth: 1.34 inches (34 mm)
Weight	0.58 lb. (0.265 kg)
Approvals	UL listed (XAPX) for USA and Canada.

FEATURES

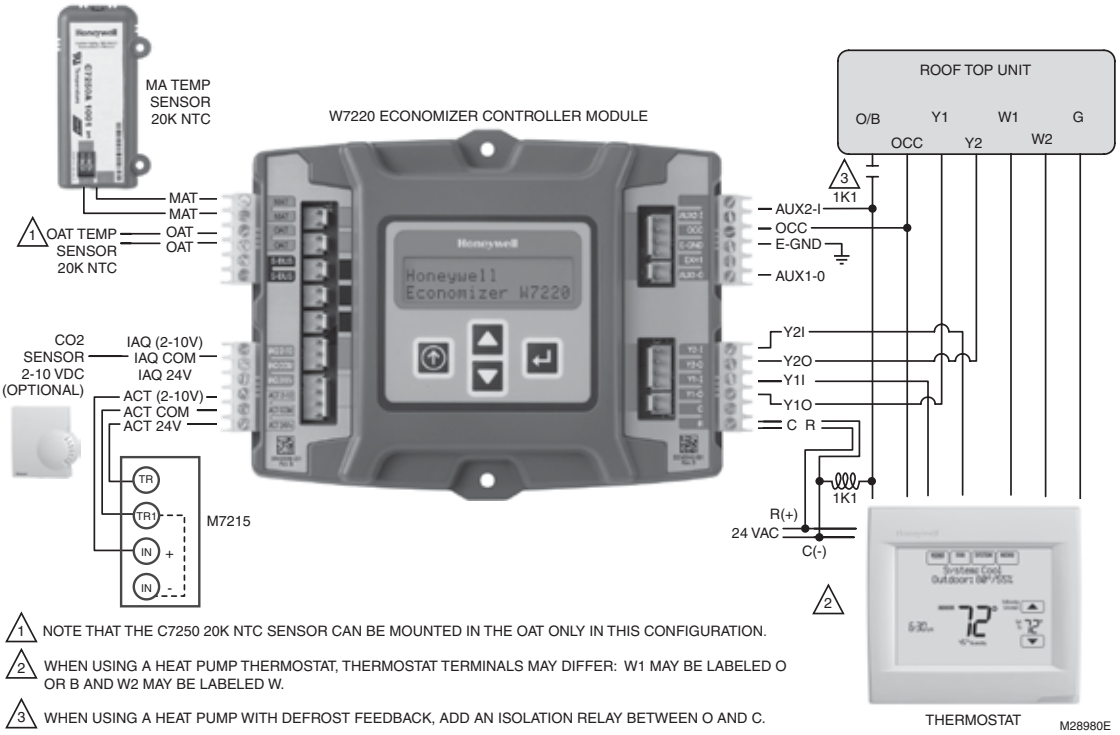
- LCD Screen delivers continuous messages, important diagnostics feedback and system status.
- Color-coded wiring terminals help with easy installation.
- Built-in freeze protection closes the outdoor dampers to protect coils when temperatures drop.
- Two-wire Sylk™ bus communications enable simple integration and future expansion.
- On-board fault detection and diagnostics quickly identify sensor failures or loss of communication, saving time on service and commissioning.

DIMENSIONS DIAGRAM



Wiring Diagrams - JADE Economizer

W7220

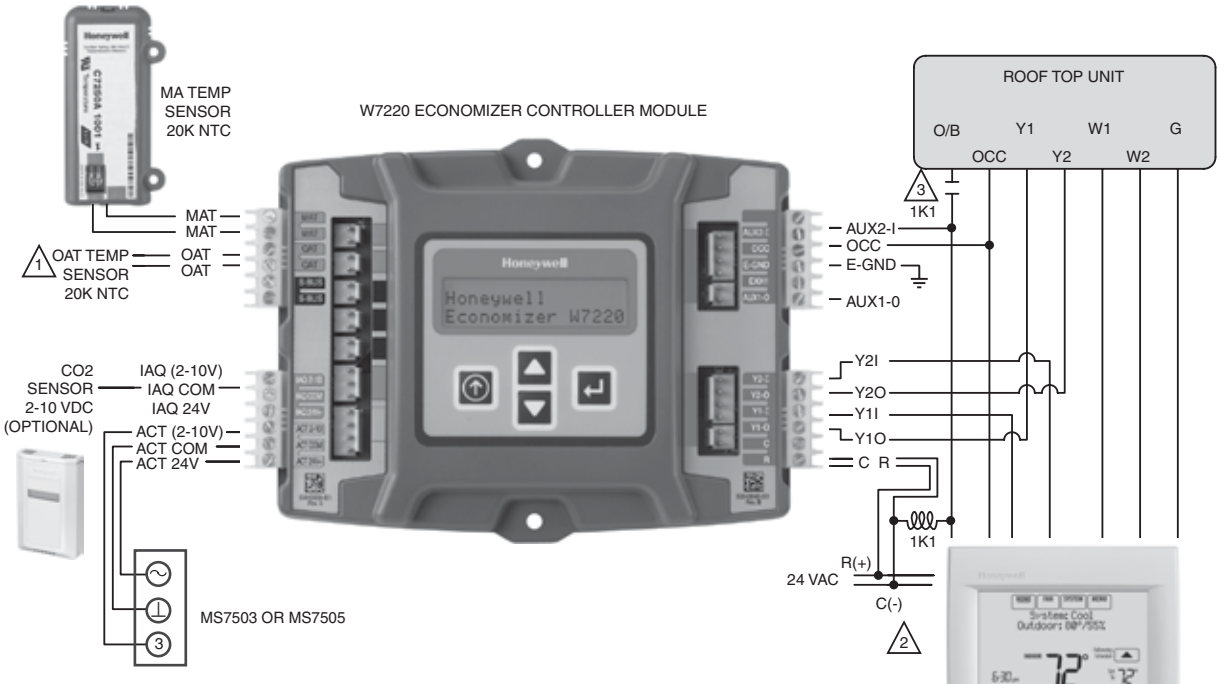


1 NOTE THAT THE C7250 20K NTC SENSOR CAN BE MOUNTED IN THE OAT ONLY IN THIS CONFIGURATION.

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. Standalone dry bulb Economizer configuration with black motor M7215.



1 NOTE THAT THE 20K NTC SENSOR CAN BE MOUNTED IN THE OAT TERMINALS 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 2. Standalone dry bulb Economizer configuration with Honeywell MS7503 or MS7505 Direct Coupled Actuator.

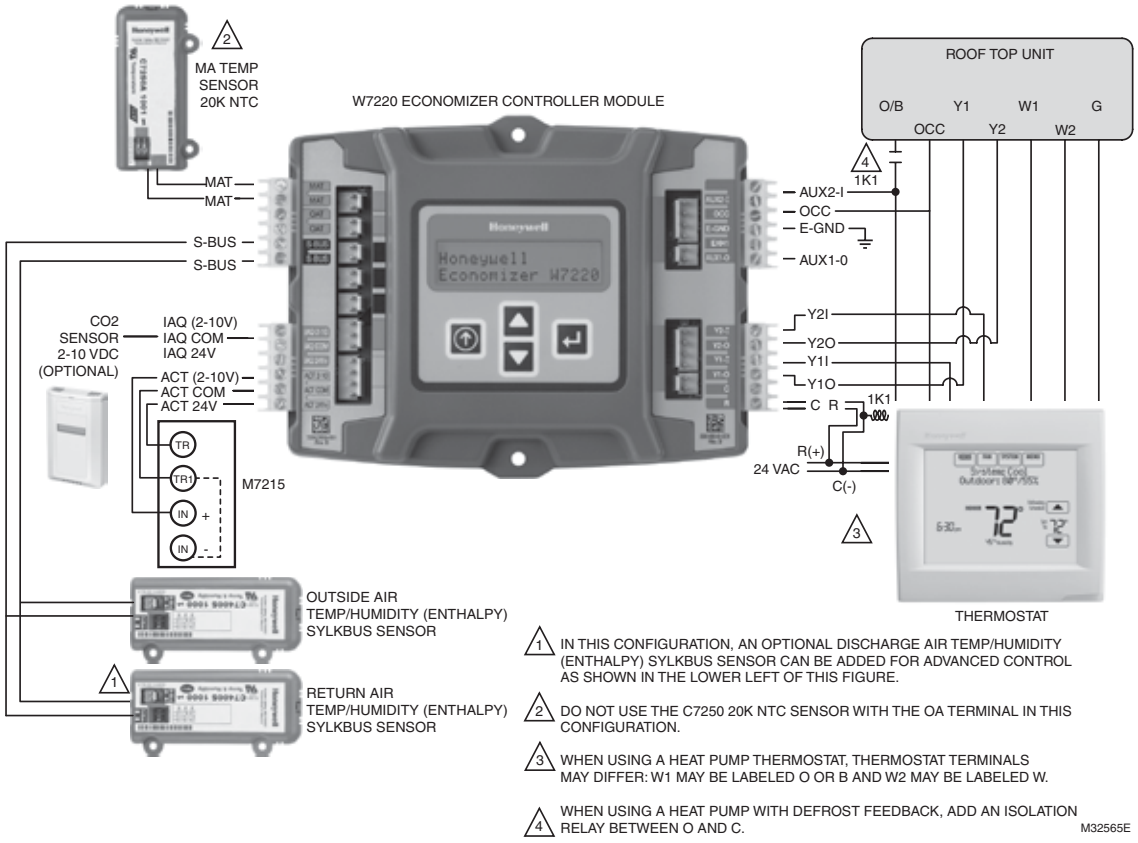


Fig 3. Economizer with Sylk Bus sensors for enthalpy configuration with Honeywell M7215 black motor.

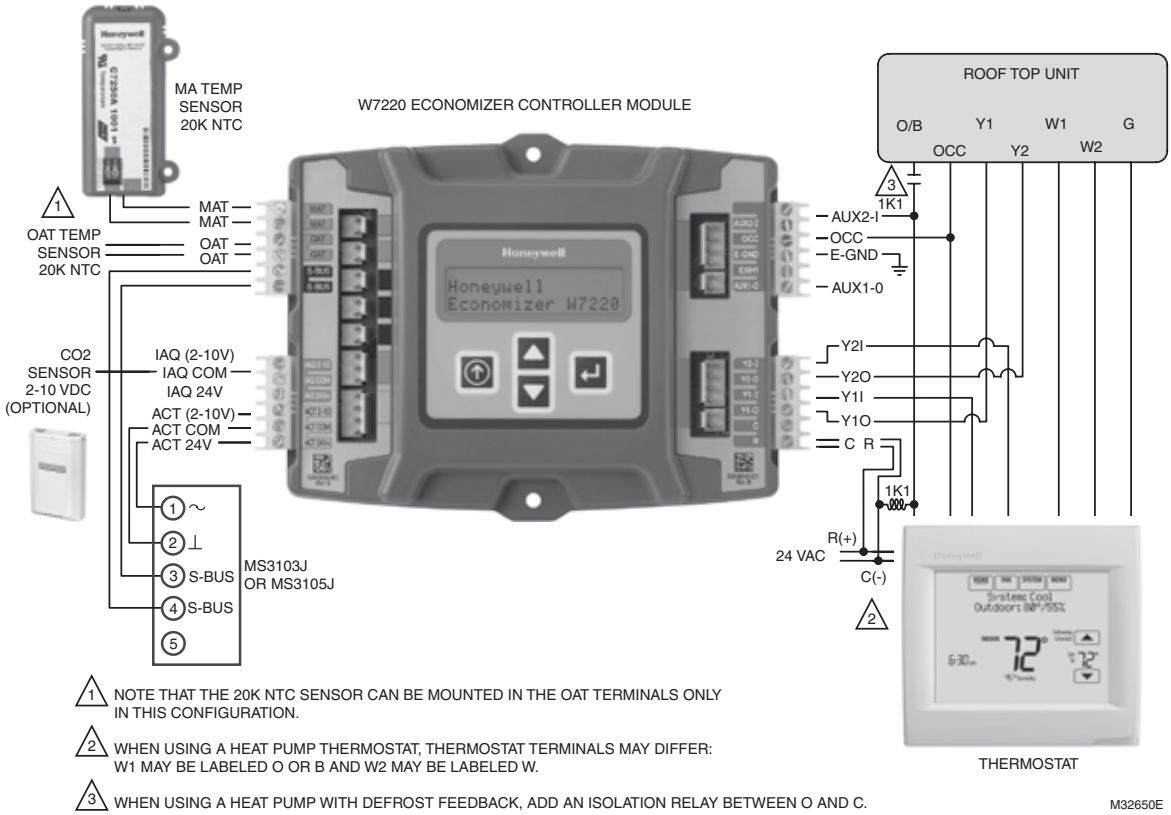


Fig 4. Standalone dry bulb Economizer configuration with Honeywell MS3103J or MS3105J communicating actuators.

Wiring Diagrams - JADE Economizer

W7220

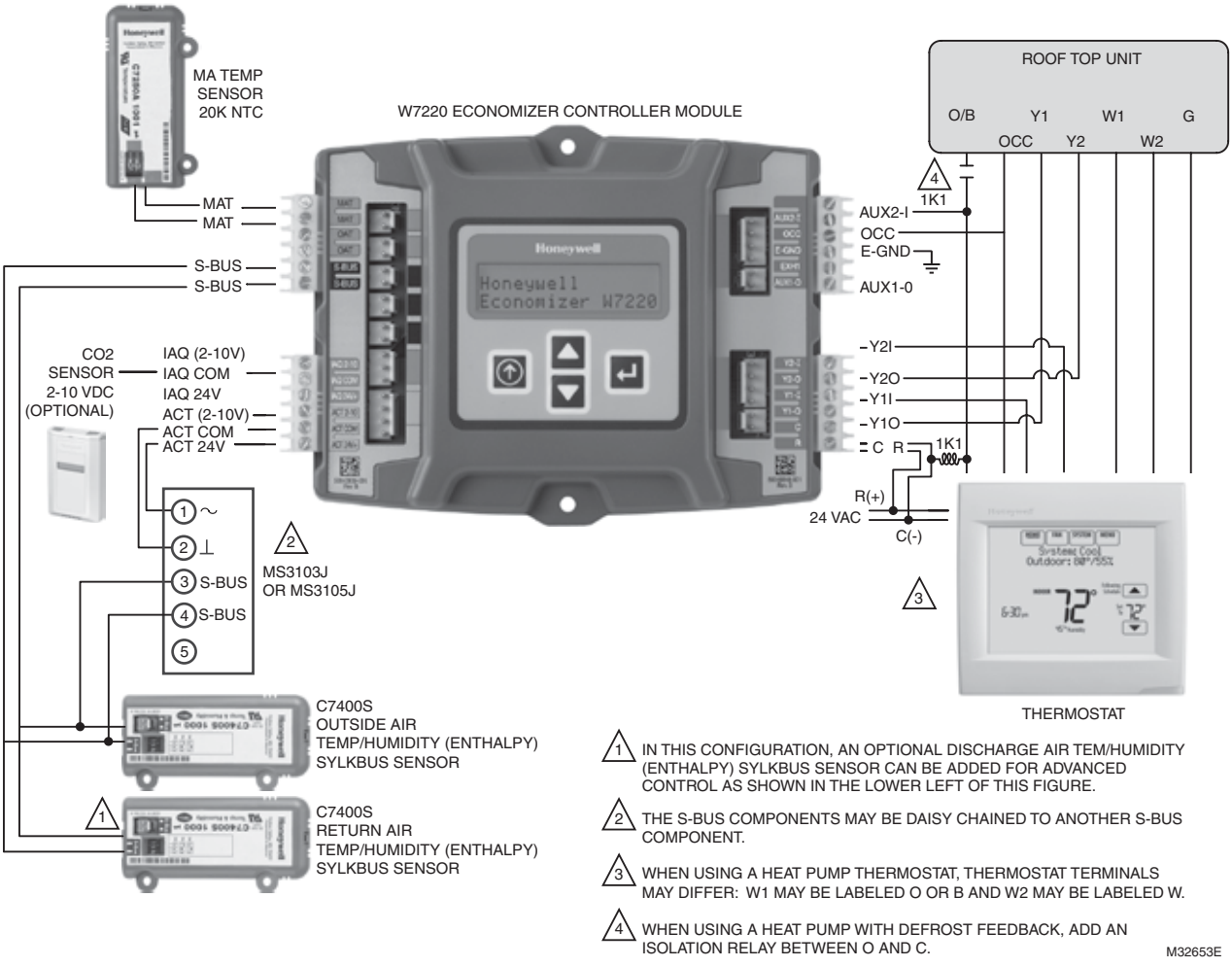


Fig 6. Economizer with Sylk bus sensor for enthalpy configuration with Honeywell MS3103 or MS3105 communicating actuators.

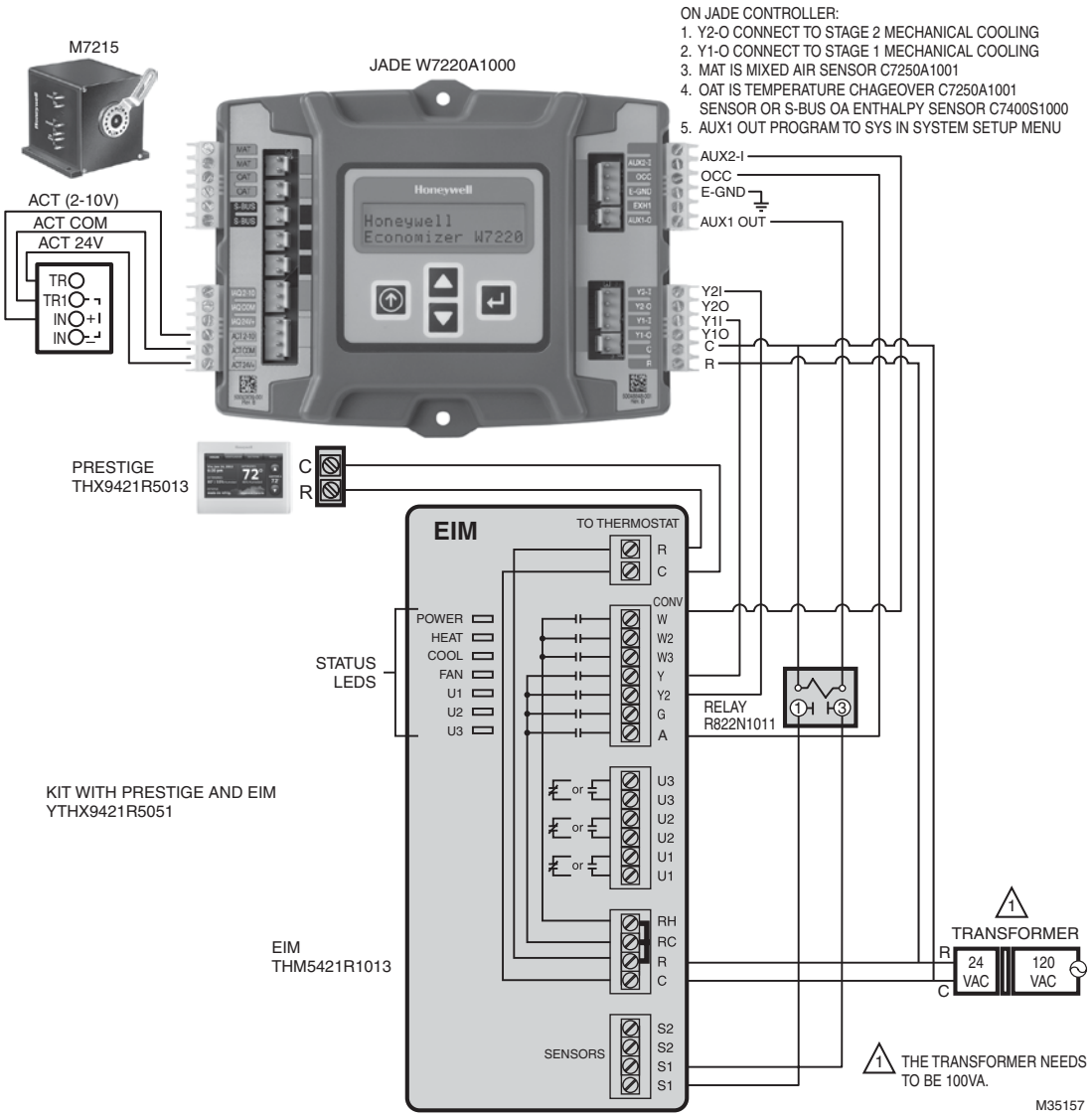


Fig 7. Prestige with EIM connected to JADE™ Economizer and M7215 Black Motor.

Wiring Diagrams - JADE Economizer

W7220

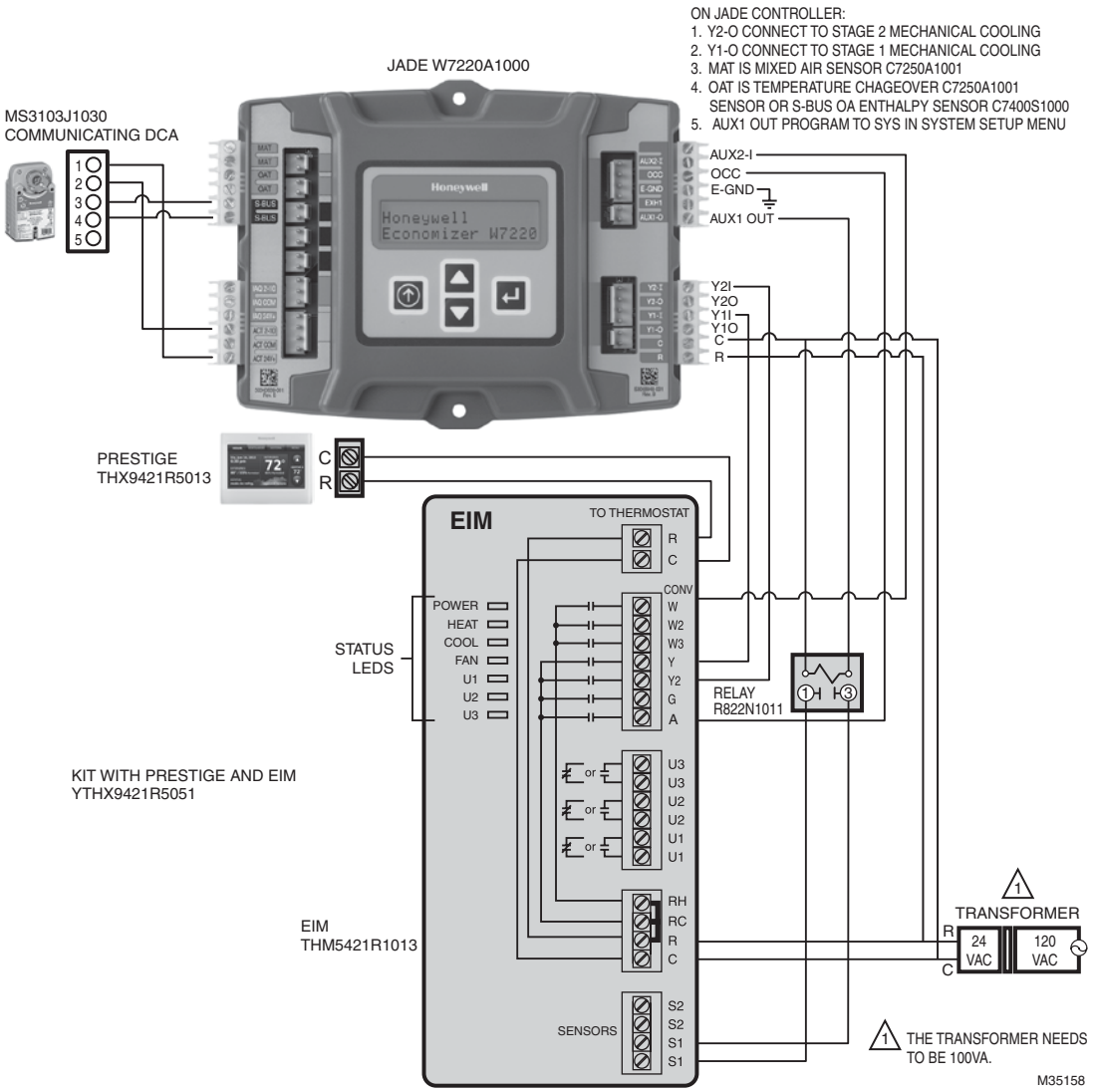
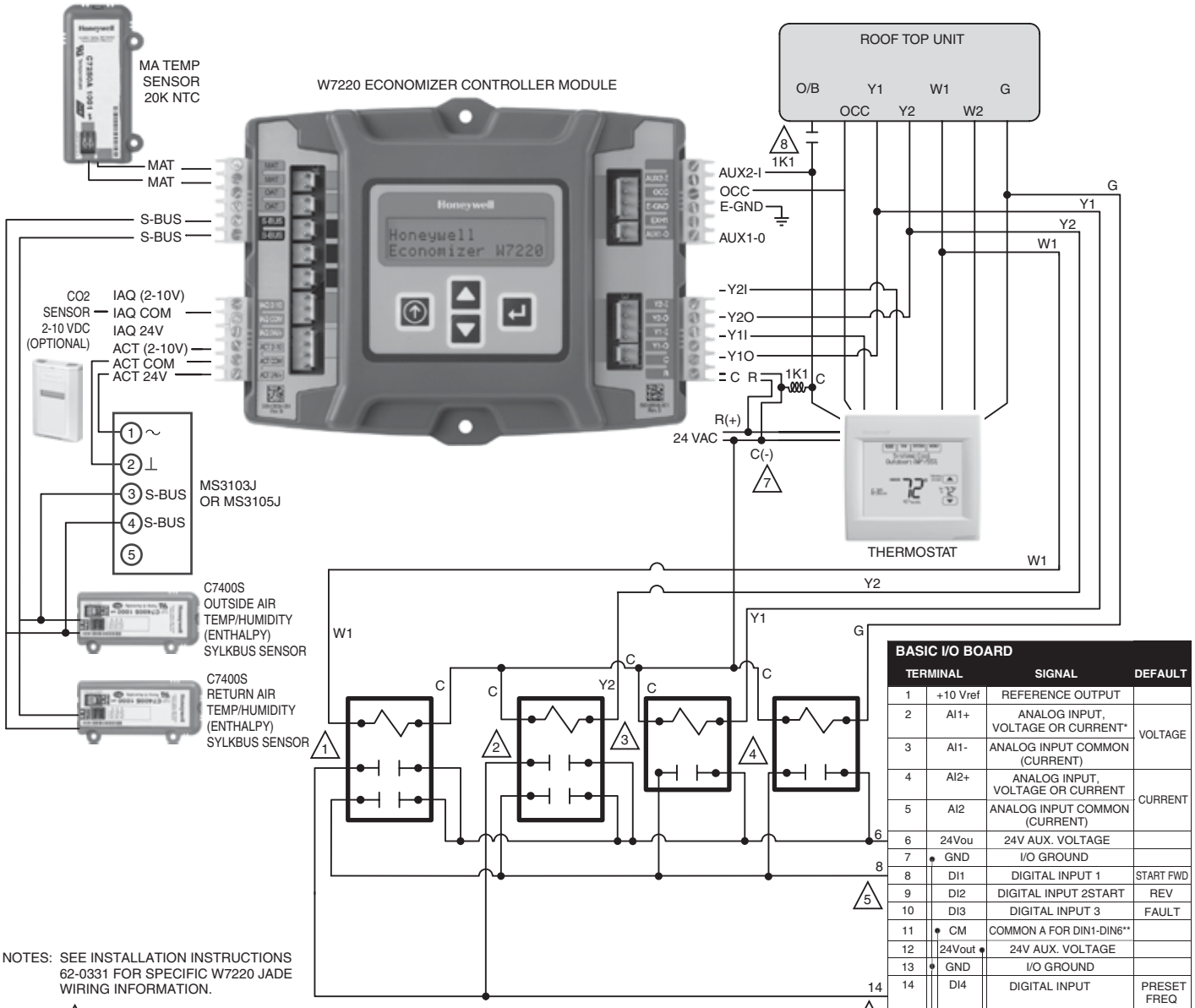


Fig 8. W7220 JADE™ Wired to a Prestige with EIM and MS3103 Communicating DCA.

W7220



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

M35159A

NOTES: SEE INSTALLATION INSTRUCTIONS 62-0331 FOR SPECIFIC W7220 JADE WIRING INFORMATION.

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.

Fig 9. W7220 JADE with the SmartVFD HVAC for Two Speed Fan Operation.

Notes