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

JADE™ Economizer Controller W7220

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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

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Kit Part Number</th>
<th>Kit Includes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Bulb with Black Motor</td>
<td>Y7220A7215</td>
<td>Actuator OA Sensor</td>
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<tr>
<td>Dry Bulb with Non Communicating DCA</td>
<td>YL7220A7903</td>
<td>MAT Sensor CO2 Sensor</td>
</tr>
<tr>
<td>Dry Bulb with Communicating 27 lb-in DCA</td>
<td>YL7220AJ3103</td>
<td></td>
</tr>
<tr>
<td>Dry Bulb with Communicating 44 lb-in DCA</td>
<td>YL7220AJ3105</td>
<td></td>
</tr>
<tr>
<td>Dry Bulb with Communicating 27 lb-in DCA and CO2 Wall Sensor without Display</td>
<td>YL7220ACW3103</td>
<td></td>
</tr>
<tr>
<td>Enthropy with Black Motor</td>
<td>Y7220S7215</td>
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<tr>
<td>Enthropy with Black Motor and CO2 Wall Sensor with a Display</td>
<td>Y7220SCW7215</td>
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<tr>
<td>Enthropy with Black Motor and CO2 Duct Sensor with a Display</td>
<td>Y7220SCD7215</td>
<td></td>
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<tr>
<td>Enthropy with Non-Communicating DCA</td>
<td>YL7220S7503</td>
<td></td>
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<tr>
<td>Enthropy with Communicating 27 lb-in DCA</td>
<td>YL7220SJD3103</td>
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<tr>
<td>Enthropy with Communicating 44 lb-in DCA</td>
<td>YL7220SJD3105</td>
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<tr>
<td>Enthropy with Communicating 27 lb-in DCA and CO2 Wall Sensor with a Display</td>
<td>YL7220SCW3103</td>
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<tr>
<td>Enthropy with Communicating 27 lb-in DCA and CO2 Duct Sensor with a Display</td>
<td>YL7220SCD3103</td>
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### Sensors

<table>
<thead>
<tr>
<th>Function</th>
<th>OS Number</th>
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</thead>
<tbody>
<tr>
<td>Mixed Air Temperature or Outdoor Air Temperature Sensor</td>
<td>MAT or OAT C7250A1001</td>
</tr>
<tr>
<td>Outdoor Air or Return Air Enthropy Sensor</td>
<td>OAE, RAE, RAT DAT C7400S1000</td>
</tr>
<tr>
<td>Wall Mount CO2 Sensor with Fixed Settings</td>
<td>CO2 C7632A1004</td>
</tr>
<tr>
<td>Wall Mount CO2 Sensor with Selectable Settings</td>
<td>CO2 C7232A1016</td>
</tr>
<tr>
<td>Duct Mount CO2 Sensor with Selectable Settings</td>
<td>CO2 C7232B1014</td>
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</table>

### Accessories

<table>
<thead>
<tr>
<th>Used With</th>
<th>Function</th>
<th>OS Number</th>
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</thead>
<tbody>
<tr>
<td>C7400S1000, C7250A1001</td>
<td>2-pin edge connector (20 pack)</td>
<td>50048926-001</td>
</tr>
<tr>
<td>W7220A1000</td>
<td>6-pin edge connector (20 pack)</td>
<td>50048926-002</td>
</tr>
<tr>
<td>C7250A and C7400S Sensors</td>
<td>Duct mount kit</td>
<td>50053060-001</td>
</tr>
<tr>
<td>W7220A1000</td>
<td>PCMOD - Connects with PC to communicate with JADE</td>
<td>W7220-PCMOD</td>
</tr>
</tbody>
</table>

**Note:** See pages 318-322 for sensor submittal data.
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 setback thermostat and sensors to provide Outdoor Air dry-bulb economizer control. Optional Syk bus sensors can be connected to the controller for single or differential enthalpy control. An additional Return Air Syk bus sensor can be added for differential dry bulb control.

**SPECIFICATIONS**

**Electrical**
- Rated Voltage ........................................ 20 to 30 Vac; 50/60 Hz
- Transformer: maximum 100 VA
- Nominal Power Consumption: (at 24 Vac, 60 Hz) 11.5 VA without sensors or actuators
- Relay Digital Output Rating at: 1.5A run;
- 30 Vac (maximum power from Class 2 input only) 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

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

**DCV (CO2) 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; Sykbus output for Honeywell Sykbus 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 Syk™ 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**

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**IMPORTANT**

**All inputs and outputs must be Class 2 wiring.**
Wiring Diagrams - JADE Economizer

W7220

**Fig 1.** Standalone dry bulb Economizer configuration with black motor M7215.

**Fig 2.** Standalone dry bulb Economizer configuration with Honeywell MS7503 or MS7505 Direct Coupled Actuator.
**Wiring Diagrams - JADE Economizer**

**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.
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.
ON JADE CONTROLLER:
1. Y2-O CONNECT TO STAGE 2 MECHANICAL COOLING
2. Y1-O CONNECT TO STAGE 1 MECHANICAL COOLING
3. MAT IS MIXED AIR SENSOR C7250A1001
4. OAT IS TEMPERATURE CHAGEOVER C7250A1001
5. OAT IS TEMPERATURE CHAGEOVER C7250A1001
6. OAT IS TEMPERATURE CHAGEOVER C7250A1001
7. AUX1 OUT PROGRAM TO SYS IN SYSTEM SETUP MENU

THE TRANSFORMER NEEDS TO BE 100VA.

Fig 8. W7220 JADE™ Wired to a Prestige with EIM and MS3103 Communicating DCA.
Fig 9. W7220 JADE with the SmartVFD HVAC for Two Speed Fan Operation.