

W7212, W7213, W7214 Economizer Logic Modules FOR VENTILATION CONTROL

PRODUCT DATA



FEATURES

- Operates from thermostat and DCV sensor to provide a totally integrated control system.
- Solid state control package provides accurate, reliable and stable control.
- Mounts on M7215 Motor or ductwork.
- Control can be tempered by DCV and fan cycling.
- Used with Honeywell actuators.
- Combines minimum and DCV maximum damper position potentiometers with compressor staging.
- Solid state enthalpy or dry bulb changeover control.
- Terminals included for switching between Occupied and Unoccupied operation.
- Terminals included for connecting optional S963B1128 Remote Potentiometer for remote minimum damper position control.
- LED indicates when free cooling is available.
- LED indicates when module is in DCV mode.
- LED indicates when exhaust fan contact is closed.
- W7213 is used with heat pump B terminal.
- W7214 is used with heat pump O terminal.

APPLICATION

W7212, W7213, and W7214 Economizer Logic Modules are used with C7232 Demand Control Ventilation (DCV) Sensors, and solid state C7400 Enthalpy Sensors or C7660 Dry Bulb Temperature Sensors. All models proportion outdoor and return air dampers for control of free cooling in commercial HVAC equipment.

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SPECIFICATIONS

Models: W7212A, W7213A, W7214A Logic Modules: for use with any Honeywell 2-10 Vdc actuator; includes DCV input; adjustable exhaust fan setpoint.

NOTES:

- All models include a minimum damper position potentiometer, and setpoints for: enthalpy or dry-bulb, occupied/unoccupied control, DCV operation, and DCV maximum.
- Occupied/Unoccupied overrides minimum damper position setting when building is unoccupied.

Dimensions: See Fig. 1.

Electrical Ratings:

Input Voltage: 24 Vac \pm 20%; 50/60 Hz (Class 2).
 Nominal Power Consumption (at 24 Vac, 60 Hz): 11.5 VA.
 Relay Contact Rating at 30 Vac (maximum power from class 2 input *only*): 1.5A run, 3.5A inrush.

IMPORTANT

All inputs and outputs must be 24 Vac Class 2.

Ambient Ratings:

Temperature: -40°F to +149°F (-40°C to +65°C).
 Humidity: 5 to 95 percent RH (noncondensing).

Inputs:

Enthalpy (C7400): 2-wire (18,20,22 AWG) connection.
 Dry Bulb Temperature (C7660): 2-wire (18,20,22 AWG) connection.
 Discharge Air (C7046): 2-wire (18,20,22 AWG) connection.
 Mixed Air (C7150): 2-wire (18,20,22 AWG) connection.
 DCV Sensor (C7232): 0/2-10 Vdc control signal; 100K ohm input impedance.

Outputs:

Actuator Signal: 2-10 Vdc.
 Minimum Actuator Impedance: 1K ohm.
 Exhaust Fan: Contact closure.
 24 Vac Out: 25 VA maximum.

Approvals:

Underwriters Laboratories Inc.: UL873 listed.
 Flammability Rating: UL94-5VB.
 Plenum Rated.
 CE.
 C-tick.

Accessories:

4074EJM Bag Assembly. Consists of: Checkout jumper, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm checkout resistors.
 C7046A Discharge Air Temperature Sensor.
 C7150B Mixed Air Temperature Sensor.
 C7232A,B Carbon Dioxide Sensors.
 C7400 Solid State Enthalpy Sensor.
 C7660 Dry Bulb Temperature Sensor.
 S963B1128 Remote Potentiometer to provide remote control of damper minimum position.
 ST6008 Energy Management Timer for occupied/unoccupied control.

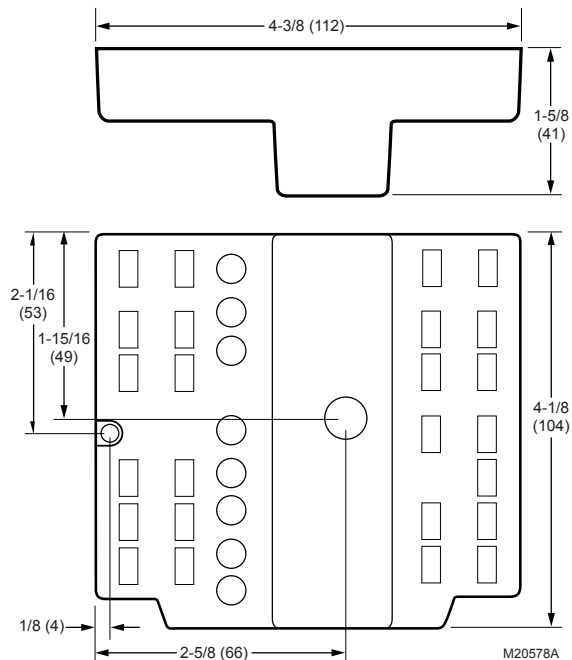


Fig. 1. Logic module dimensions in in. (mm).

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
 1885 Douglas Drive North
 Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure 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.

Location and Mounting

The logic modules mount on an M7215 or a sheet metal duct or panel. When planning the installation, allow enough clearance for maintenance and service (see Fig. 1 for dimensions). Mount device in a location protected from rain, snow, and direct sunlight. Secure device to sheet metal using the two supplied mounting screws, see Fig. 3.



CAUTION

Equipment Damage Hazard.
Mounting screws longer than 5/8 in. can damage internal motor components.

When mounting the module to an M7215 use only the included #6 5/8 in. thread-forming screw.

NOTE: See Fig. 4 for representative locations of connected system devices.

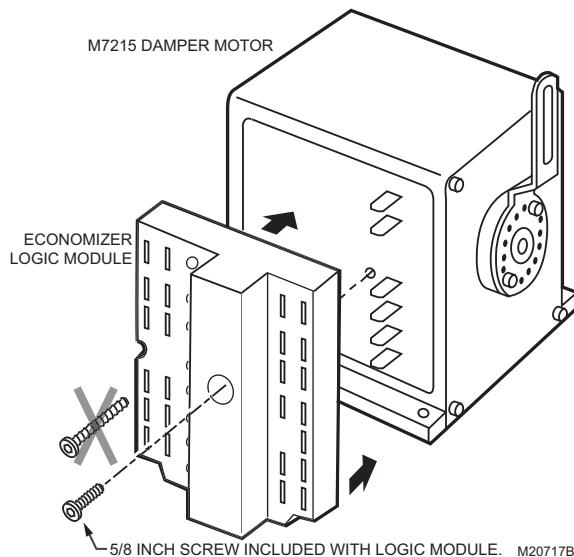


Fig. 2. Direct mounting of module.

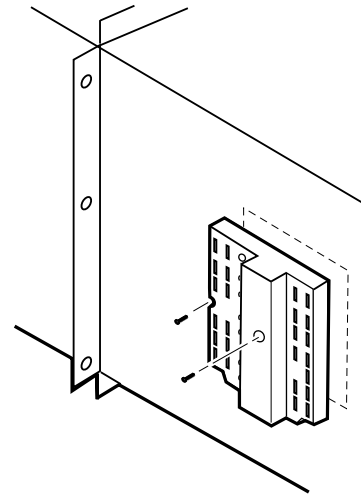


Fig. 3. Mounting the module on sheet metal.

C7400 Enthalpy Sensor and C7660 Dry Bulb Temperature Sensor

W7212, W7213, W7214 Logic Modules accept signals from either the C7400 Enthalpy Sensor or the C7660 Dry Bulb Temperature Sensor. The wiring is the same for either sensor.

IMPORTANT

When using differential sensing, both sensors must be of the same type (enthalpy or dry bulb).

OUTDOOR AIR SENSING

1. Mount sensor in any orientation exposing it to freely circulating air while protecting it from rain, snow, and direct sunlight.
2. Connect it to the SO and SO+ terminals of the device.

RETURN AIR SENSING

1. Ensure differential enthalpy control has a second enthalpy sensor in the return air duct.
2. Connect this sensor to the SR and SR+ terminals.
3. Ensure sensor is mounted in the return air duct for proper operation.

Demand Control Ventilation

The DCV can be any sensor that provides a 0/2-10 Vdc output. The DCV modulates the outdoor damper to provide ventilation based on occupancy. The designer determines contaminants to monitor, selects appropriate sensor, determines the sensor threshold, and adjusts the DCV potentiometer accordingly. The DCV LED lights when the DCV signal is above setpoint.

EXAMPLE: CO₂ sensor with 0 to 10 Vdc output range 0 to 2000 ppm. Zero (0) Vdc is equal to 0 ppm, 10 Vdc is equal to 2000 ppm, threshold is determined to be 800 ppm. DCV potentiometer to be set at 4 Vdc.

Mount the sensor according to the manufacturer specifications. If not available, use the following guidelines:

1. Mount sensor in an area with unobstructed air circulation.

2. Connect it to the AQ and AQ1 terminals of the W7212 (see Wiring section for details).
3. Adjust the DCV potentiometer setpoint to correspond to DCV voltage output at the threshold.

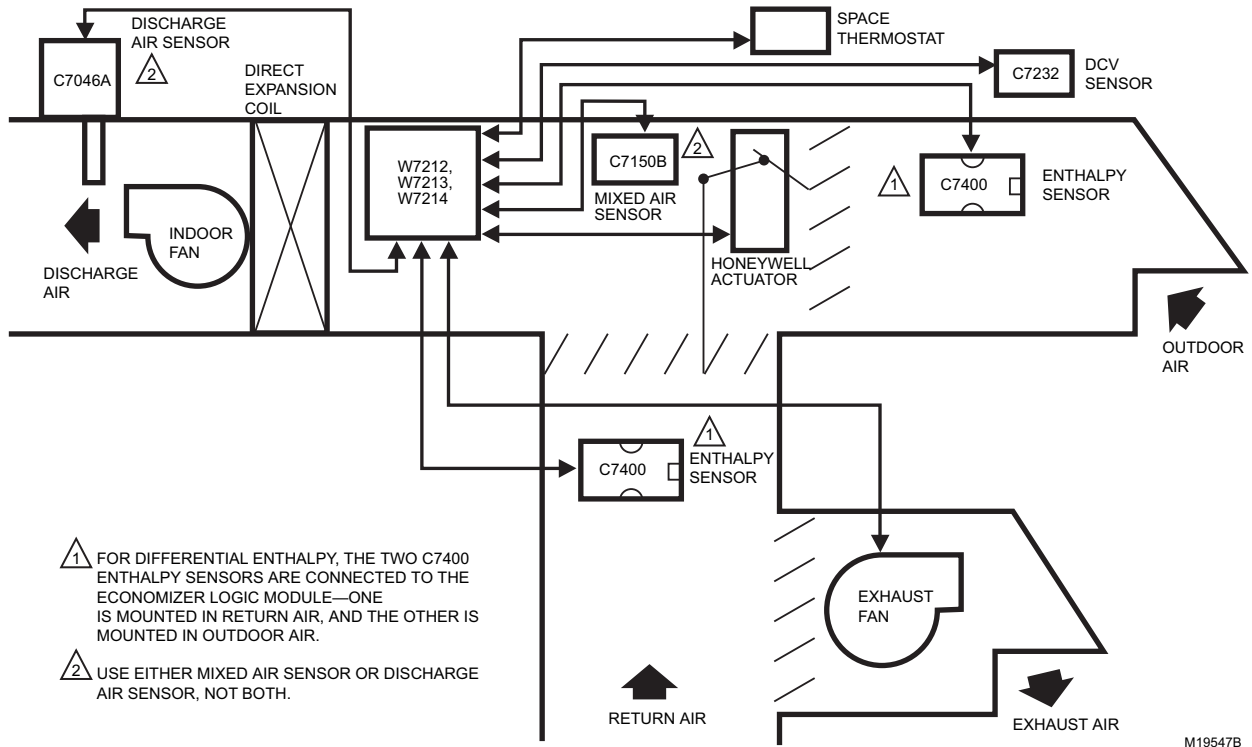


Fig. 4. Representative locations of connected economizer system devices.

Wiring



CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

IMPORTANT

1. All wiring must comply with applicable local codes, ordinances and regulations.
2. Refer to Table 1 for a list of the wiring diagrams and corresponding Figure numbers in this document.
3. All device inputs and outputs must be 24 Vac Class 2.
4. Ensure proper polarity of sensor connections. Incorrect polarity negates the sensor signal.

Optional Applications

Heat Pump Changeover (W7213, W7214 only)

In heat pump applications, the controller must have control of the changeover valve. To provide the logic module with the information necessary for proper information, there must be a

connection to the logic module O/B terminal. This terminal alerts the logic module as to when the system operates in cooling (the only time the economizer is used). During heating applications with defrost make sure to break the connection to the economizer using an isolation relay.

W7213 (CHANGEOVER TERMINAL B)

Connect the B terminal according to the following details:

- 24V power to B: System is in heating mode.
- No power to B: System is in cooling mode.

W7214 (CHANGEOVER TERMINAL O)

Connect the O terminal according to the following details:

- 24V power to O: System is in cooling mode.
- No power to O: System is in heating mode.

Remote Minimum Position Control

Remote control of outdoor air dampers is desirable when requiring temporary additional ventilation. The addition of a S963B1128 Remote Potentiometer allows occupants to open or close the dampers beyond minimum position for modified ventilation. Connect the potentiometer as shown in Fig. 5.

IMPORTANT

- The minimum position signal takes priority over the DCV maximum position signal. With DCV maximum set below the minimum, the logic module signals the actuator to maintain the minimum position.
- Freeze protection logic takes priority over all signals. For details, see the notes in the Adjusting Minimum and Maximum Positions section.

NOTE: For additional wiring applications, refer to the Design and Application Guide for Honeywell Economizers (form 63-8594).

Table 1. Applicable Wiring Diagrams.

Actuator	Enthalpy Changeover	Comments	Figure	Economizer
Honeywell MS7XXX	Single	Single-stage cooling system.	11	W7212
	Single or Differential	Two-stage cooling system.	12	
		Two-stage heat pump system.	14	W7213, W7214
Honeywell M7215	Single	Direct mount Logic Module to Motor.	8	W7212
n/a	n/a	S963 remote damper control.	5	
Honeywell Series 72	Single or Differential	Honeywell Series 72.	13	W7212

OPERATION

The purpose of the economizer is to use outdoor air for cooling, whenever possible, to reduce compressor operation.

Power at the N terminal determines the Occupied/Unoccupied setting:

- W7212:
 - 24 Vac (Occupied).
 - No power (Unoccupied).
- W7213, W7214:
 - 24 Vac (Unoccupied).
 - No power (Occupied).

— See Fig. 8 through 14 for controller hookup.

NOTE: When module is operating in Occupied mode, the minimum position is defined by the potentiometer. When the module is operating in Unoccupied mode, and there is no call for cooling, the damper drives fully closed.

When wired as shown in Fig. 8 through 14, the logic module responds to the cooling thermostat signal. The system uses C7400 Solid State Enthalpy Changeover Sensor(s) or C7660 Dry Bulb Temperature Sensor(s). The C7400 responds to both dry bulb temperature and humidity, allowing use of outdoor air

at higher temperatures for free cooling when humidity is low. The C7660 responds only to dry bulb temperature; use only in dry, arid climates and only in single dry bulb changeover. Do not use the C7660 in differential dry bulb applications.

The logic module functions as a true first stage of cooling providing maximum energy economy during the cooling cycle. It automatically locks out free cooling during heating; holding the outdoor air damper at the minimum position setting.

The logic module can operate as either a basic free cooling controller, or it can incorporate additional functions. Table 2 details the input/output (I/O) logic of the module.

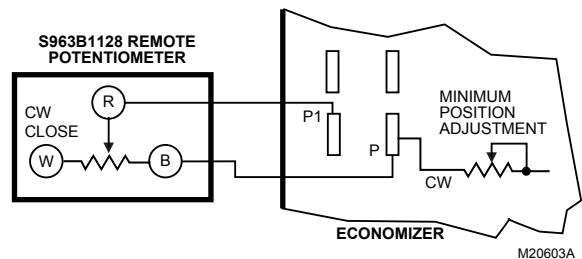


Fig. 5. S963B1128 Remote Potentiometer used with logic module for remote damper control.

Table 2. W7212 Economizer I/O Logic.

INPUTS					OUTPUTS			
Demand Control Ventilation (DCV)	Enthalpy ^a		Y1	Y2	Compressor		N Terminal ^b	
	Outdoor	Return			Stage 1	Stage 2	Occupied ^b	Unoccupied ^b
			Damper					
Below set (DCV LED Off)	High (Free Cooling LED Off)	Low	On	On	On	On	Minimum position	Closed
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating ^c (between min. position and full-open)	Modulating ^c (between closed and full-open)
			On	Off	Off	Off		
			Off	Off	Off	Off		
Above set (DCV LED On)	High (Free Cooling LED Off)	Low	On	On	On	On	Modulating ^d (between min. position and DCV maximum)	Modulating ^d (between closed and DCV maximum)
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating ^e	Modulating ^f
			On	Off	Off	Off		
			Off	Off	Off	Off		

^a For single enthalpy control, the module compares outdoor enthalpy to the ABCD setpoint.

^b Power at N terminal determines Occupied/Unoccupied setting:

- W7212: 24 Vac (Occupied), no power (Unoccupied).
- W7213,W7214: No power (Occupied), 24 Vac (Unoccupied).

^c Modulation is based on the mixed air sensor signal.

^d Modulation is based on the DCV signal.

^e Modulation is based on the greater of DCV and mixed air sensor signals, between minimum position and either maximum position (DCV) or fully open (mixed air signal).

^f Modulation is based on the greater of DCV and mixed air sensor signals, between closed and either maximum position (DCV) or fully open (mixed air signal).

NOTES:

- DCV and Free Cooling have setpoints and LED indications.
- For models with a B terminal (W7213):
No power to B: cooling mode, free cool enabled. Module follows logic detailed above.
24V power to B: heating mode, free cool disabled. Actuator drives to minimum position (closed when Unoccupied).
- For models with an O terminal (W7214):
24V power to O: cooling mode, free cool enabled. Module follows logic detailed above.
No power to O: heating mode, free cool disabled. Actuator drives to minimum position (closed when Unoccupied).

SETTINGS AND ADJUSTMENTS



CAUTION

Equipment Damage Hazard.
Excessive force can damage potentiometer controls.
 Use a small screwdriver when adjusting enthalpy changeover and minimum damper position controls.

Potentiometers with screwdriver adjustment slots, located on device face, provide adjustments for several parameters (see Fig. 6 for locations on device):

- DCV setpoint.
- Minimum damper position.
- DCV maximum damper position.
- Enthalpy changeover.
- Exhaust setpoint.

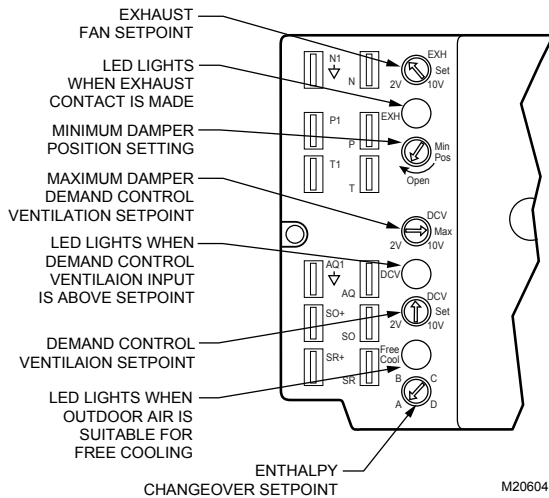


Fig. 6. Potentiometer and LED locations (W7212 shown).

Demand Control Ventilation Setpoint

The logic module modulates the outdoor damper to provide ventilation based on the 0/2-10 Vdc DCV. With no cooling signal, the DCV overrides the outdoor air damper when ventilation requires additional outdoor air.

Adjusting Minimum and Maximum Positions

The minimum position potentiometer maintains the minimum outdoor air flow into the building during the occupied period. The minimum position allows for the building effluents. The DCV maximum position potentiometer allows the installer to limit the amount of outdoor air flow into the building when the DCV overrides the mixed air sensor and allows the proper ventilation based on occupancy. Setting the DCV maximum position of the damper prevents the introduction of large amounts of hot or cold air into the space by preventing the dampers from opening 100%. Set the DCV maximum position at the maximum design occupancy.

IMPORTANT

With the DCV maximum position set below the minimum position, the minimum position overrides the maximum position (negating most DCV functions of the logic module, as the damper cannot move).

NOTES:

- When the mixed air sensor takes control based on an increased requirement for cooling, it overrides the DCV maximum position potentiometer and can drive the damper full-open.
- If the mixed air temperature drops to 45°F, the mixed air sensor overrides the DCV and closes the damper to protect from freezing the hot or chilled water coils. Control returns to normal once the mixed air temperature rises to 48°F. Some models of the W7212 close the damper fully and others close the damper to minimum position position.

Minimum Position Adjustment

For detailed assistance in minimum position selection reference the Economizer Application Guide (form 63-8594) Ventilation section. The following provides basic guidelines for minimum position selection and adjustment:

IMPORTANT

- Adjust the minimum position potentiometer to allow the minimum amount of outdoor air for building effluents, as required by local codes, to enter the building.
- This procedure requires use of a quality thermometer capable of reading to 0.5°F [0.25°C].

NOTE: Make minimum position adjustments with at least a 10°F [6°C] temperature difference between outdoor and return air.

1. Calculate the appropriate mixed air temperature, see Equation 1.
2. Disconnect mixed air sensor from terminals T and T1.
3. Place a jumper across terminals T and T1.
4. Ensure that either the factory-installed jumper is in place across terminals P and P1 or, if remote damper position is required, that it is wired according to Fig. 5 and turned fully clockwise.
5. Connect 24 Vac across terminals TR and TR1.
6. Carefully adjust the potentiometer on the face of the device with a small screwdriver until the mixed air temperature reaches the calculated value.

NOTE: Ensure that the sensed air is well mixed.

7. If all minimum and maximum position adjustments are complete, remove the T-T1 jumper and reconnect the mixed air sensor.

Equation 1. Formula to aid minimum position adjustment.

$$(T_O \times OA) + (T_R \times RA) = T_M$$

Where:

- T_O = Outdoor air temperature
- OA = Percent of outdoor air
- T_R = Return air temperature
- RA = Percent of return air
- T_M = Resulting mixed air temperature

NOTE: The following sample calculation uses only Fahrenheit temperature.

EXAMPLE: Assume local codes require 10% outdoor air during occupied conditions, outdoor air is 60°F and return air is 75°F. Under these conditions, what is the temperature of the mixed air?

$$(0.1 \times 60^\circ\text{F}) + (0.9 \times 75^\circ\text{F}) = 6.0^\circ\text{F} + 67.5^\circ\text{F} = 73.5^\circ\text{F}$$

Mixed air will be 73.5°F when OA is 60°F and RA is 75°F with 10 percent outdoor air entering the building.

DCV Maximum Position Adjustment

1. Disconnect mixed air sensor from terminals T and T1 and short terminals T and T1.
2. Connect a jumper between terminals AQ and SO+.
3. Connect 24 Vac across terminals TR and TR1.
4. Adjust the potentiometer on the face of the device with a screwdriver for desired maximum position.
5. If all minimum and maximum position adjustments are complete, remove the T-T1 jumper and reconnect the mixed air sensor.

Enthalpy Changeover Setpoint

Outdoor Enthalpy Changeover Setpoint (Single Enthalpy)

The outdoor enthalpy changeover setpoint returns the outdoor air damper to minimum position when enthalpy rises above its setpoint. Enthalpy setpoint scale markings, located in the device, are A, B, C, and D. See Fig. 7 for the corresponding control point. The factory-installed 620-ohm jumper must be in place across terminals SR and SR+. Temperature and humidity points to the left of the selected curve will allow the dampers to open for free cooling.

Differential Enthalpy Changeover Setting

Differential enthalpy control uses two C7400 Enthalpy Sensors connected to one logic module. The logic module compares outdoor air to return air.

NOTE: Turn the enthalpy setpoint potentiometer fully clockwise to the D setting.

The logic module selects the lower enthalpy air (return or outdoor) for cooling. For example, when outdoor air has lower enthalpy than return air, the module calls to open the outdoor air damper to bring in outdoor air for free cooling.

Exhaust Setpoint

The exhaust setpoint determines when the exhaust fan runs based on damper position. When the exhaust fan call is made, the module provides a 60 ±30 second delay before exhaust fan activation. This delay allows the damper to reach the appropriate position to avoid unnecessary fan overload.

NOTES:

- EF and EF1 are 24V dry contacts only. An external line voltage contactor is required to operate the exhaust fan.
- When the exhaust fan is deactivated the EF and EF1 contacts open immediately.

Adjustable Exhaust Setpoint

These logic modules have an adjustable exhaust setpoint. This potentiometer allows the installer to adjust the damper position at which the EF and EF1 exhaust fan contacts are made.

NOTE: The 60 ±30 second delay allows the outdoor damper to reach the exhaust setpoint prior to the EF and EF1 contacts being made.

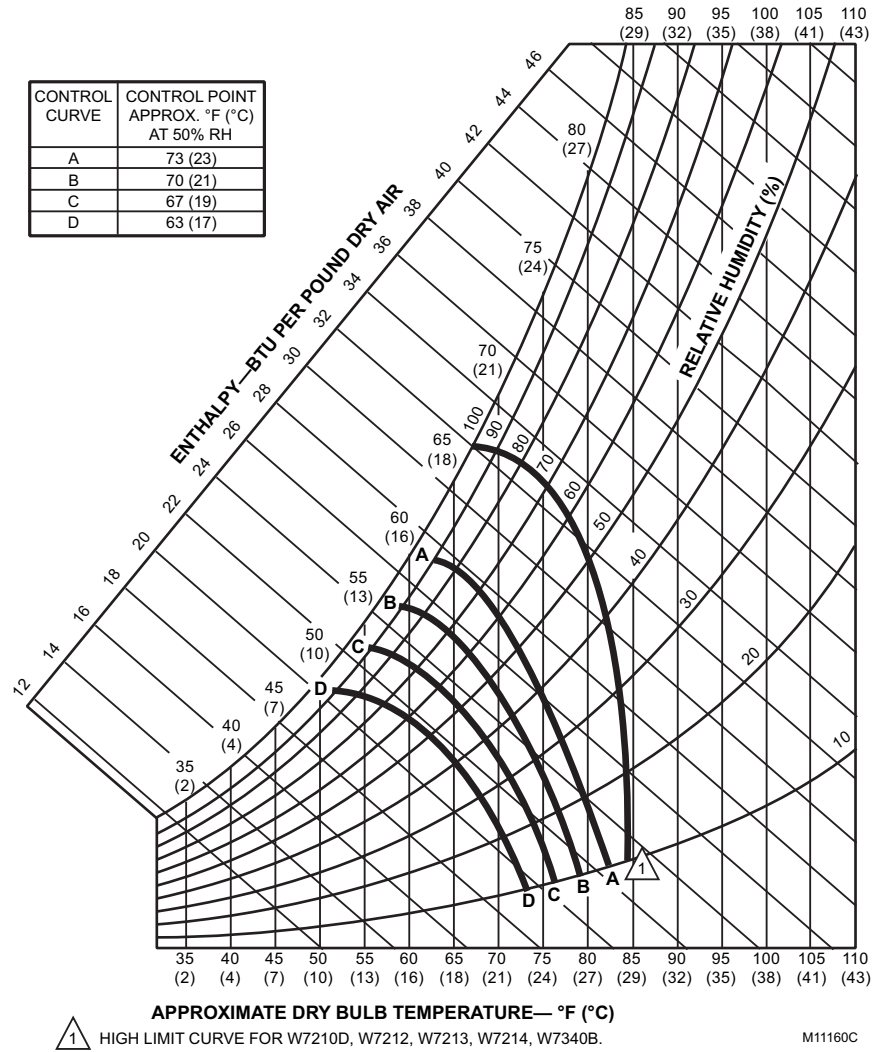
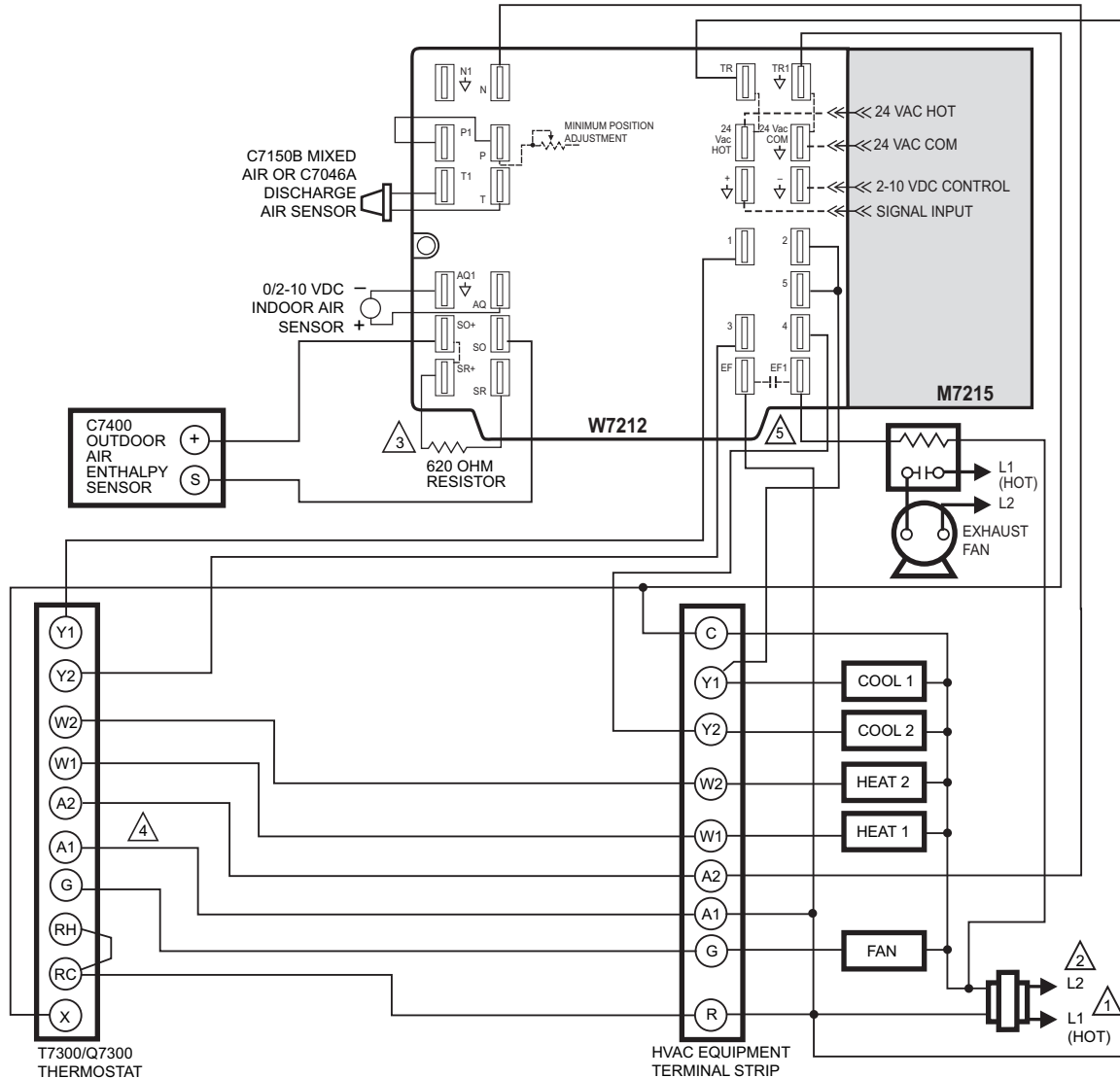


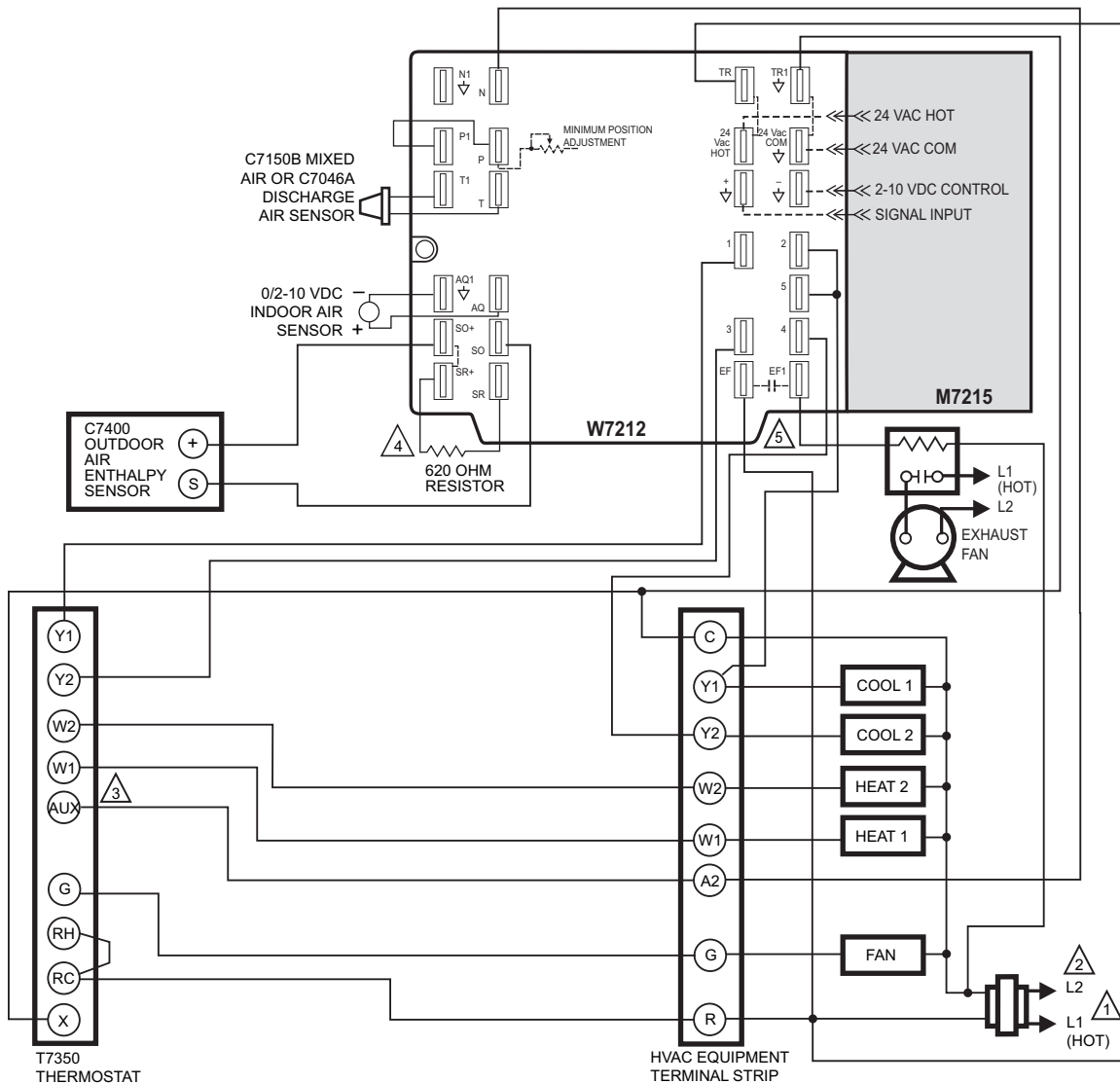
Fig. 7. W7212, W7213, W7214 performance characteristics for enthalpy changeover settings.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR. USE THE SAME TRANSFORMER FOR T7300 AND ECONOMIZER.
- 3 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.
- 4 T7300 TERMINALS A1 AND A2 ARE CONNECTED WHEN THERMOSTAT IS IN THE OCCUPIED MODE.
- 5 EF AND EF1 ARE DRY CONTACTS IN THE LOGIC MODULE.

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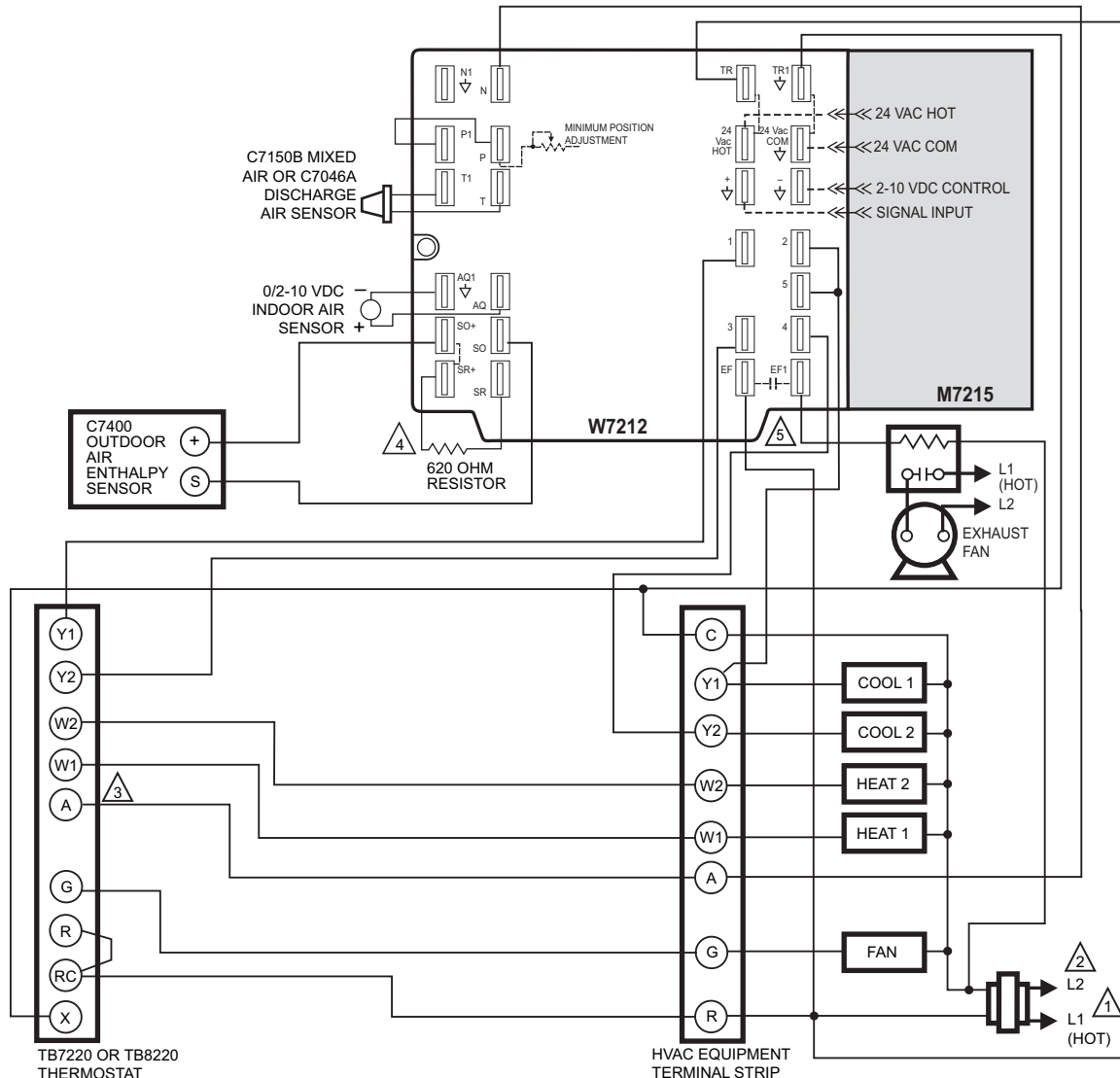
Fig. 8. W7212 used with M7215 Damper Motor and T7300 Thermostat.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR. THE SAME TRANSFORMER CAN BE USED FOR THE THERMOSTAT AND ACTUATOR.
- 3 IF SEPARATE HEATING AND COOLING TRANSFORMERS ARE USED, REMOVE JUMPER AT THERMOSTAT. T7350 - TERMINAL "AUX" IS POWERED BY THE HEATING TRANSFORMER (RH). IF POWERING THE ECONOMIZER TERMINAL "N" WITH THE THERMOSTAT TERMINAL "AUX", BE SURE THE ECONOMIZER IS POWERED BY THE SAME TRANSFORMER AS TERMINAL "AUX". IF NOT, USE AN ISOLATION RELAY TO POWER "N".
- 4 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.
- 5 EF AND EF1 ARE DRY CONTACTS IN THE LOGIC MODULE.

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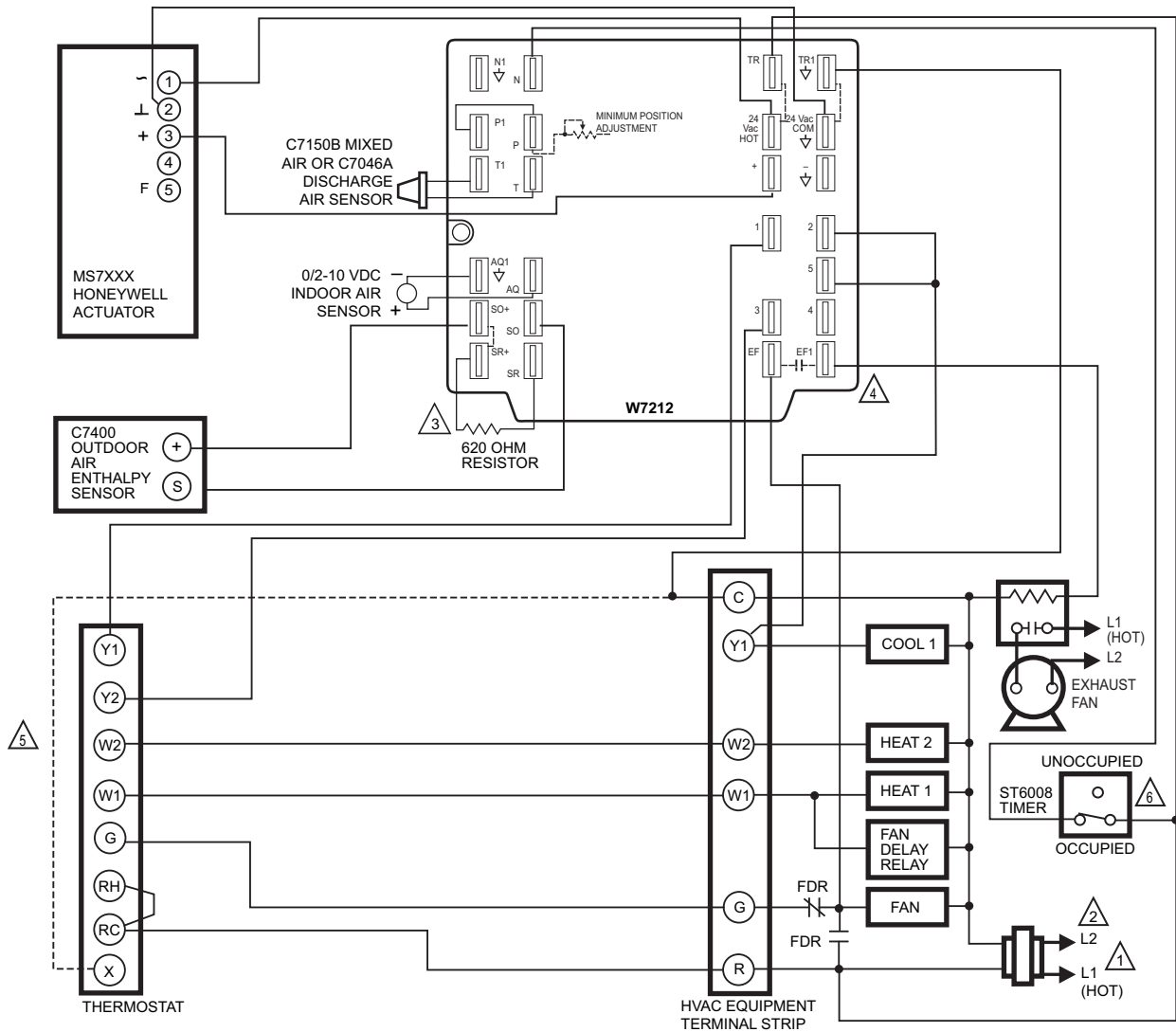
Fig. 9. W7212 used with M7215 Damper Motor and T7350 Thermostat.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR. THE SAME TRANSFORMER CAN BE USED FOR THE THERMOSTAT AND ACTUATOR.
- 3 IF SEPARATE HEATING AND COOLING TRANSFORMERS ARE USED, REMOVE JUMPER AT THERMOSTAT.
 TB7220 - TERMINAL "A" IS POWERED BY THE COOLING TRANSFORMER (RC).
 TB8220 - TERMINAL "A" IS POWERED BY THE HEATING TRANSFORMER (R).
 IF POWERING THE ECONOMIZER TERMINAL "N" WITH THE THERMOSTAT TERMINAL "A", BE SURE THE ECONOMIZER IS POWERED BY THE SAME TRANSFORMER AS TERMINAL "A". IF NOT, USE AN ISOLATION RELAY TO POWER "N".
- 4 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.
- 5 EF AND EF1 ARE DRY CONTACTS IN THE LOGIC MODULE.

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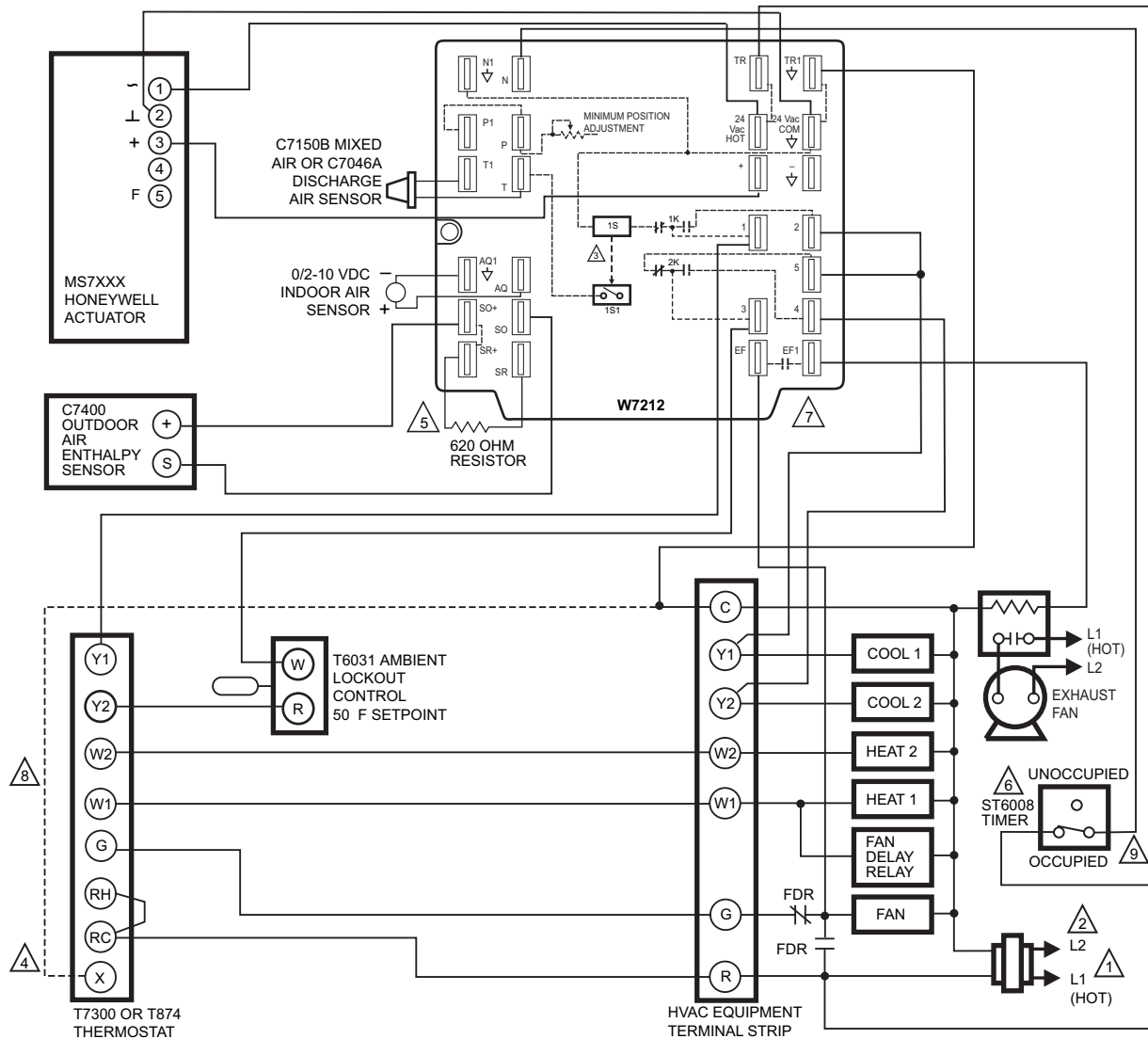
Fig. 10. W7212 used with M7215 Damper Motor and TB7220 or TB8220 Thermostats.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.
- 3 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.
- 4 EF AND EF1 ARE DRY CONTACTS IN THE LOGIC MODULE.
- 5 SEE WIRING DIAGRAMS FIGS 9 AND 10 FOR T7350 AND TB7220/TB8220.
- 6 TIME CLOCK IS AN OPTION TO USING OCCUPIED CONTACTS ON THE THERMOSTAT.

M13659

Fig. 11. W7212A used in single-stage cooling system with single enthalpy changeover and Honeywell actuator and time clock for occupancy.

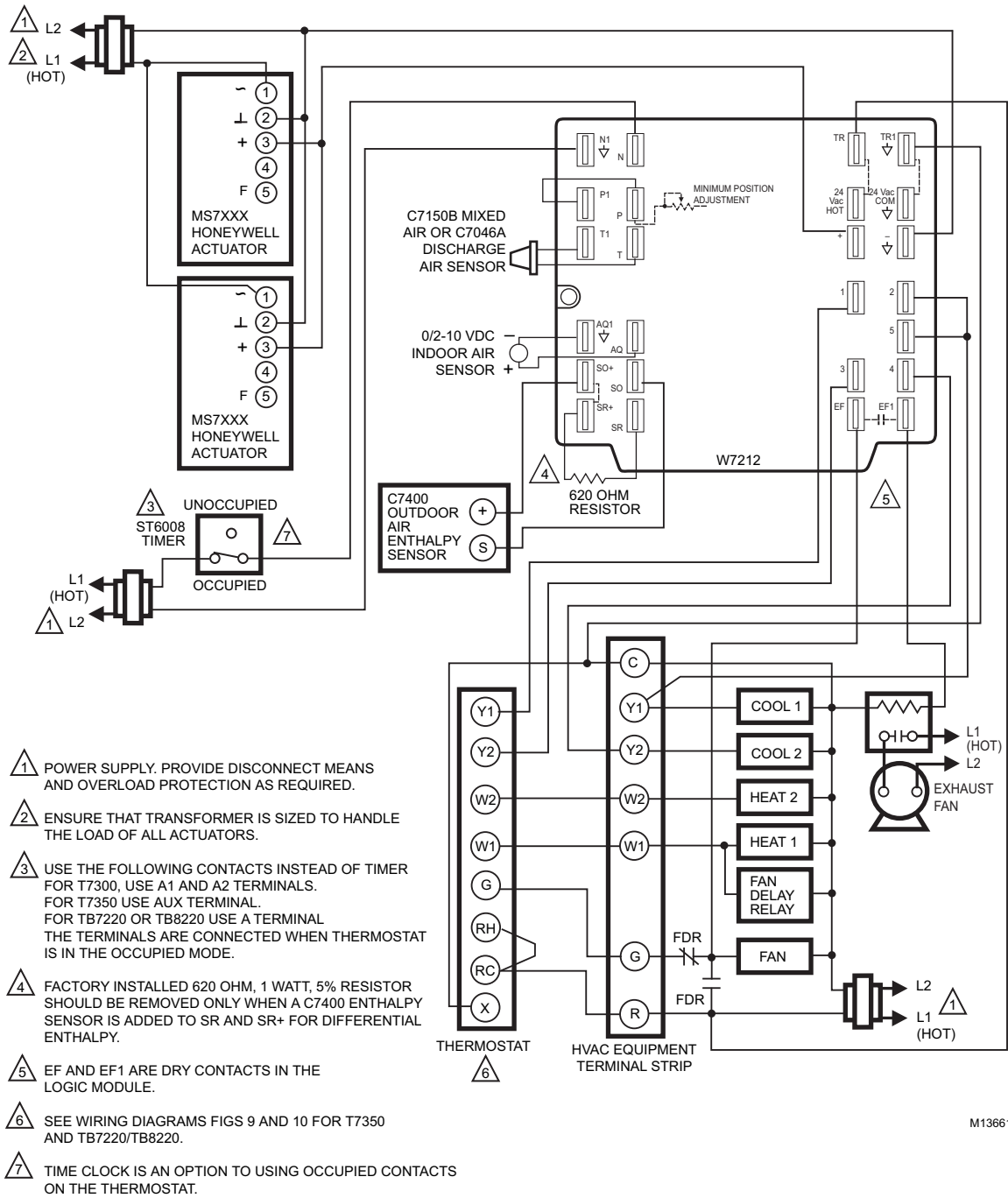


- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.
- 3 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.
- 4 FOR T7300 ONLY
- 5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO SR AND SR+ FOR DIFFERENTIAL ENTHALPY.

- 6 USE THE FOLLOWING CONTACTS INSTEAD OF TIMER FOR T7300, USE A1 AND A2 TERMINALS. FOR T7350 USE AUX TERMINAL. FOR TB7220 OR TB8220 USE A TERMINAL THE TERMINALS ARE CONNECTED WHEN THERMOSTAT IS IN THE OCCUPIED MODE.
- 7 EF AND EF1 ARE DRY CONTACTS IN THE LOGIC MODULE.
- 8 SEE WIRING DIAGRAMS FIGS 9 AND 10 FOR T7350 AND TB7220/TB8220.
- 9 TIME CLOCK IS AN OPTION TO USING OCCUPIED CONTACTS ON THE THERMOSTAT.

M13660

Fig. 12. W7212A used in two-stage cooling system with Honeywell Series 72 Actuator and time clock for occupancy.



M13661

Fig. 13. W7212 controlling parallel-wired Honeywell Series 72 Actuators and time clock for occupancy.

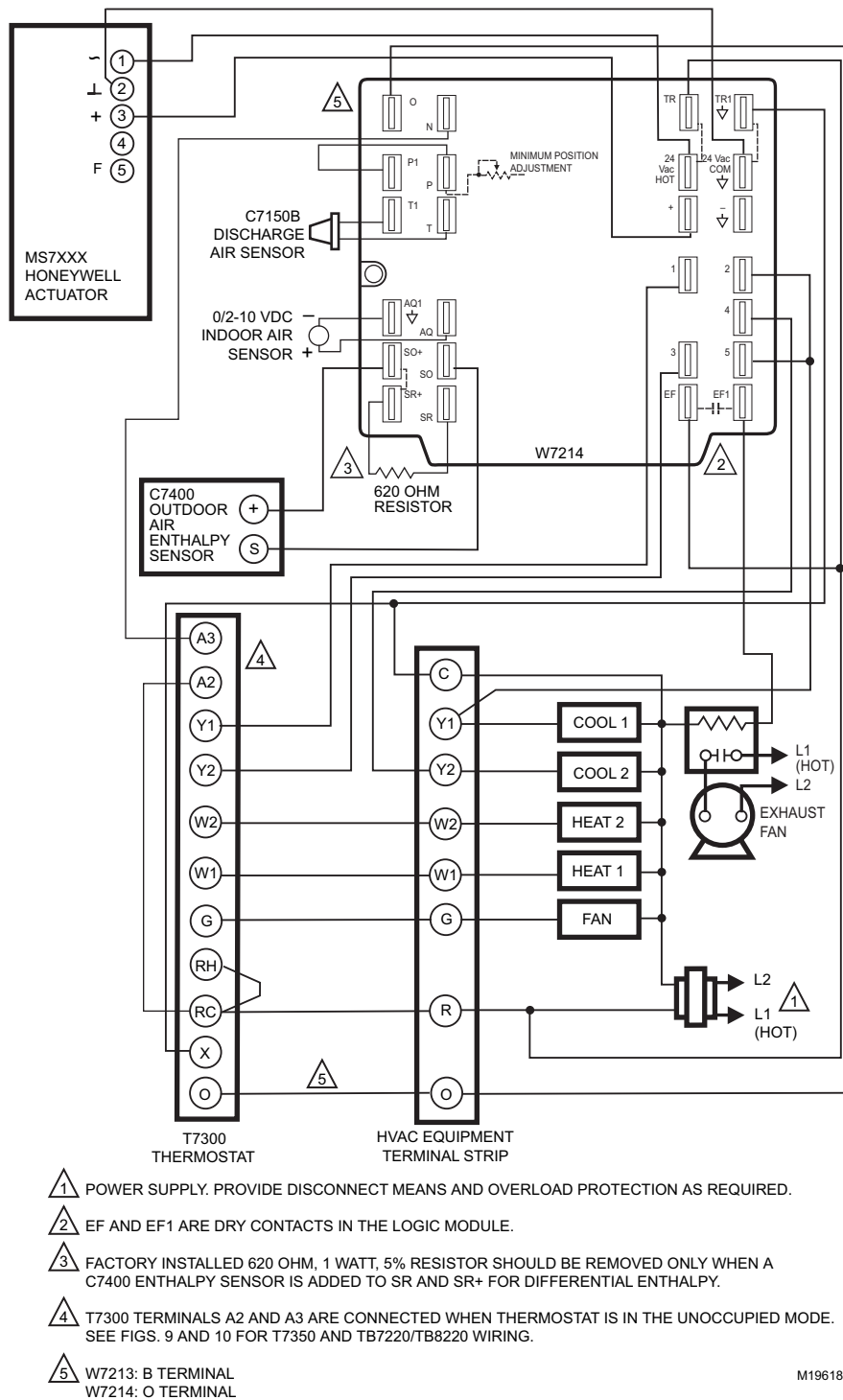


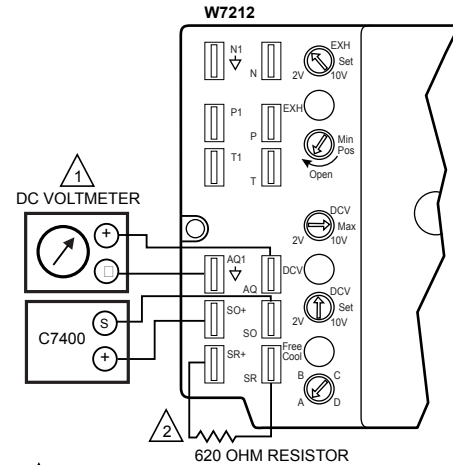
Fig. 14. W7213, W7214 controlling heat pump system.

CHECKOUT AND TROUBLESHOOTING

Checkout requires a 9V battery, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm resistors. Use Table 3 and Fig. 15 for checkout.

CAUTION

Equipment Damage Hazard.
Excessive force can damage potentiometer controls.
 Use a small screwdriver when adjusting enthalpy changeover and minimum damper position controls.



1 INSERT DC VOLTMETER BETWEEN AQ AND AQ1 FOR CHECKOUT AND TROUBLESHOOTING.

2 JUMPER USED FOR SINGLE ENTHALPY CONTROL. M20612

Fig. 15. Meter location for checkout and troubleshooting (W7212 shown).

Table 3. Checkout for W7212, W7213, W7214 Economizers Connected to Honeywell Actuator.

Step	Checkout Procedure	Proper Response
1.	CHECKOUT PREPARATION	
	Disconnect power at TR and TR1.	All LED are off; Exhaust Fan contacts are open.
	Disconnect devices at P and P1.	
	Jumper P to P1.	
	Place 5.6K ohm resistor across T and T1.	
	Jumper TR to 1.	
	W7212 only: Jumper TR to N.	
	If connected, remove C7400 Enthalpy Sensor from terminals S _O and +.	
	Connect 1.2K ohm 4074EJM Checkout Resistor across terminals S _O and +.	
	Put 620 ohm resistor across S _R and +.	
	Set minimum position, DCV setpoint, and Exhaust potentiometers fully CCW.	
	Turn DCV maximum position potentiometer fully CW.	
	Set enthalpy potentiometer to D.	
W7214 only: Jumper TR to O.		
Apply power (24 Vac) to terminals TR and TR1.		
2.	DIFFERENTIAL ENTHALPY	
	Execute step one, Checkout Preparation.	—
	Place 620 ohm resistor across S _O and +.	—
	Place 1.2K ohm resistor across S _R and +.	Free cool LED turns on.
	Remove 620 ohm resistor from S _O and +.	Free cool LED turns off.
3.	SINGLE ENTHALPY	
	Execute step one, Checkout Preparation.	—
	Set enthalpy potentiometer to A (fully CCW).	Free cool LED turns on.
	Set enthalpy potentiometer to D (fully CW).	Free cool LED turns off.

Table 3. Checkout for W7212, W7213, W7214 Economizers Connected to Honeywell Actuator. (Continued)

Step	Checkout Procedure	Proper Response
4.	DCV AND EXHAUST	
	Execute step one, Checkout Preparation.	—
	Ensure terminals AQ and AQ1 are open.	LED for both DCV and Exhaust should be off. Actuator drives fully closed.
	Connect 9V battery positive to AQ and negative to AQ1.	LED for both DCV and Exhaust turn on. Actuator drives to between 81 and 85 degrees open.
	Turn Exhaust potentiometer CW until Exhaust LED turns off.	Exhaust LED turns off with potentiometer approximately 90 percent CW. Actuator remains in position.
	Turn DCV setpoint potentiometer CW.	DCV LED turns off with potentiometer at approximately 9V. Actuator drives fully closed.
	Turn DCV setpoint potentiometer CCW until Exhaust LED turns on.	Exhaust contacts close 30-90 seconds after Exhaust LED turns on.
	Turn DCV setpoint potentiometer CW. Turn Exhaust potentiometer CCW until Exhaust LED turns on.	Exhaust LED turns off with potentiometer indication at approximately 9V. Exhaust contacts close 30-90 seconds after Exhaust LED turns on.
5.	MINIMUM AND MAXIMUM POSITION	
	Execute step one, Checkout Preparation.	—
	Connect 9V battery positive to AQ and negative to AQ1.	DCV LED turns on. Actuator drives to between 81 and 85 degrees open.
	Turn DCV maximum position potentiometer to midpoint.	Actuator drives to between 18 and 72 degrees open.
	Turn DCV maximum position potentiometer to fully CCW.	Actuator drives fully closed.
	Turn minimum position potentiometer to midpoint.	Actuator drives to between 18 and 72 degrees open.
	Turn minimum position potentiometer fully CW.	Actuator drives fully open.
	W7212: Remove jumper from TR and N. W7213, W7214: Jumper TR to N.	Actuator drives fully closed.
6.	MIXED AIR INPUT	
	Execute step one, Checkout Preparation.	—
	Set enthalpy potentiometer to A.	Free cool LED turns on. Actuator drives to between 18 and 72 degrees open.
	Remove 5.6K ohm resistor and jumper from T and T1. Remove jumper from T and T1 and leave open.	Actuator drives fully open. Actuator drives fully closed.
7.	HEAT PUMP INPUT - W7213, W7214 ONLY	
	Execute step one, Checkout Preparation.	—
	Set enthalpy potentiometer to A. W7213: Jumper TR to B. W7214: Remove jumper from TR and O.	Free cool LED turns on. Actuator drives to between 18 and 72 degrees open. Free cool LED turns off. Actuator drives fully closed.

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