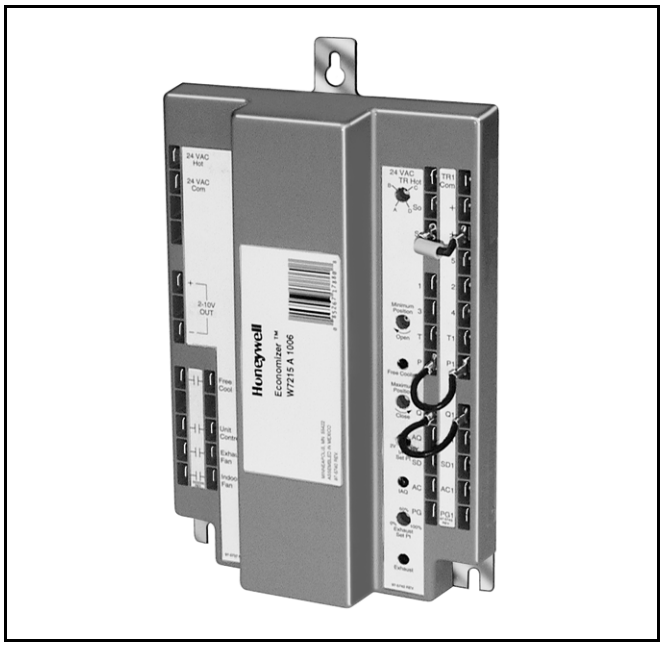
Honeywell

W6215, W7215, W7460 Economizer Logic Modules

FOR VENTILATION CONTROL

PRODUCT DATA



APPLICATION

W6215, W7215, and W7460 Economizer Logic Modules are used with an indoor sensor input (ISI), and solid state C7400 Enthalpy Sensors or C7650 Dry Bulb Temperature Sensors. All models proportion outdoor and return air dampers for control of free cooling in commercial HVAC equipment. The W7215B and W7460B are used with an outdoor sensor input (OSI) along with the ISI.

FEATURES

- **Operates from the space thermostat and an ISI to provide a totally integrated control system.**
- **Solid state control package provides accuracy, reliability and stability.**
- **Housed in high-impact, glass-fiber reinforced plastic case.**
- **Mounts on sheet metal duct or remotely in a mechanical room. Mounting screws included.**
- **The W6215 and W7215 are used with Honeywell Series 62 and Series 72 actuators (respectively). The W7460 is used with Honeywell M7415 Damper Actuators.**
- **Combines minimum and maximum damper position potentiometers and compressor staging relay functions with solid state enthalpy or dry bulb changeover control this control can be tempered by ISI, and fan cycling.**
- **Outdoor Sensor input incorporated into logic of W7215B and W7460B models.**
- **Shutdown and Air Change can be used with all models.**
- **Purge cycling can be used with the W6215A, W7215A and W7460A models.**
- **Terminals included for connecting optional S963B1128 Remote Potentiometers for remote minimum and maximum damper position control.**
- **LED and relay terminals indicate when free cooling is available.**
- **LED indicates when module is in ISI mode.**

Contents

63-2544-3

SPECIFICATIONS

Models: See Table 1.

Dimensions: See Fig. 1.

Electrical Ratings:
Input Voltage: 24 Vac +20%, -15%; 50/60 Hz (Class 2).
Nominal Power Consumption (at 24 Vac, 60 Hz):
W6215A: 12.5 VA.
W7215A, W7460A: 10 VA.
W7215B, W7460B: 10.5 VA.
Relay Contact Rating at 30 Vac (maximum power from class 2 input *only*): 1.5A run, 3.5A inrush.

Ambient Ratings:
Temperature:
Operating Ambient: -25°F to +125°F (-32°C to +52°C).
Shipping: -25°F to +125°F (-32°C to +52°C).
Humidity (Noncondensing): 5 to 95 percent rh.

Inputs:
Enthalpy (C7400): 2-wire (18,20,22 AWG) connection.
Dry Bulb Temperature (C7650): 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.
Indoor Sensor: 2-10 Vdc control signal.
Outdoor Sensor (W7215B and W7460B *only*): 2-10 Vdc control signal.

Outputs:
W7215: 2-10 Vdc.
W6215: Series 62 (Open/Close/Hold).
24 Vac out (W7215, W6215 only): 25 VA maximum.

Accessories:
32004783-001 Weather Shield Economizers.
4074EJM Bag Assembly. Consists of: Checkout jumper, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm checkout resistors, and 536 ohm, 665 ohm, and 3480 ohm resistors for use with Honeywell Series 90 Actuators.
C7046A Discharge Air Temperature Sensor.
C7150B Mixed Air Temperature Sensor.
C7400 Solid State Enthalpy Sensor.
C7650 Dry Bulb Temperature Sensor.
S963B1128 Remote Potentiometer to provide remote control of damper minimum or maximum position.
ST6008 Energy Management Timer for occupied/unoccupied control.

Approvals:
Underwriters Laboratories Inc. listed: Meets UL873 plenum requirements.

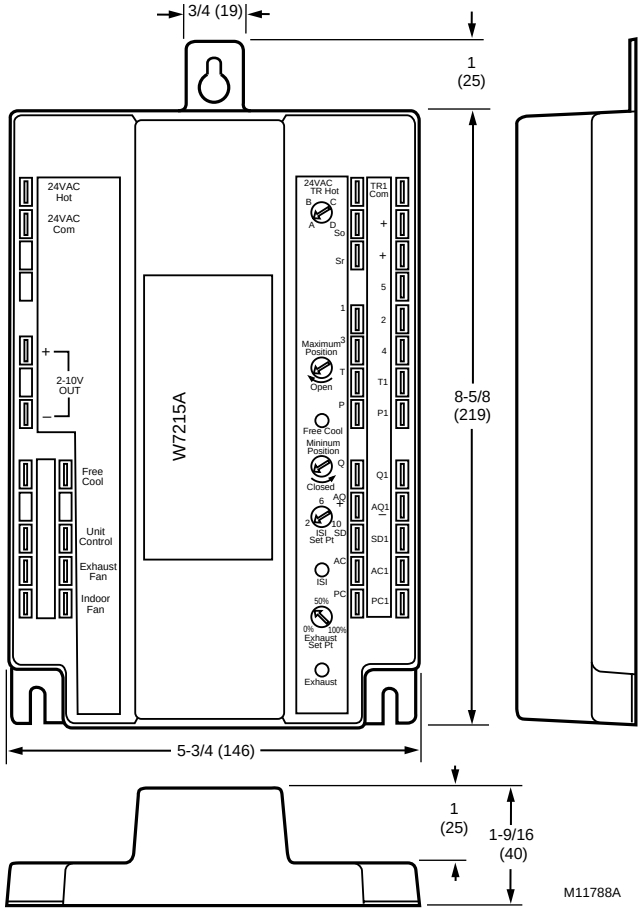


Fig. 1. W6215,W7215,W7460 dimensions in in. (mm). [W7215A shown]

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 Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Relations
   Honeywell, 1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, 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.

Table 1. W6215, W7215, and W7460 Economizer Models.

Model	For Use with Actuator	Discharge Air Temperature Input	Outdoor Sensor Input (OSI) Setpoint	Exhaust Fan Setpoint	Purge
W6215A	Honeywell Series 62	C7150B or C7046A Sensor	No	Adjustable	Yes
W7215A	Honeywell Series 72	C7150B or C7046A Sensor	No	Adjustable	Yes
W7215B	Honeywell Series 72	C7150B or C7046A Sensor	Yes	Fixed	No
W7460A	Honeywell M7415	C7150B or C7046A Sensor	No	Adjustable	Yes
W7460B	Honeywell M7415	C7150B or C7046A Sensor	Yes	Fixed	No

NOTE: All models include minimum and maximum position potentiometers, setpoint for enthalpy or dry-bulb, and ISI setpoint.

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.

⚠ CAUTION

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

Disconnect power supply before installation.

IMPORTANT

All wiring must agree with applicable codes, ordinances and regulations.

Location and Mounting

W6215, W7215, W7460 Economizer Logic Module

W6215, W7215, and W7460 Logic Modules mount directly on a sheet metal duct or panel. When planning the installation, allow enough clearance for maintenance and service. Mount device in a location protected from rain, snow, and direct sunlight. Secure device to sheet metal using the three supplied mounting screws, see Fig. 2.

NOTE: See Fig. 3 for representative locations of connected system devices.

C7400 Enthalpy Sensor and C7650 Dry Bulb Temperature Sensor

W6215,W7215,W7460 Logic Modules accept signals from either the C7400 Enthalpy Sensor or the C7650 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 that exposes it to freely circulating air and protects it from rain, snow, and direct sunlight.
2. Connect it to the S_O and + terminals of the device.

RETURN AIR SENSING

1. Ensure differential enthalpy control has a second sensor in the return air duct.
2. Connect this sensor to the S_R and + terminals of the W6215, W7215, or W7460.

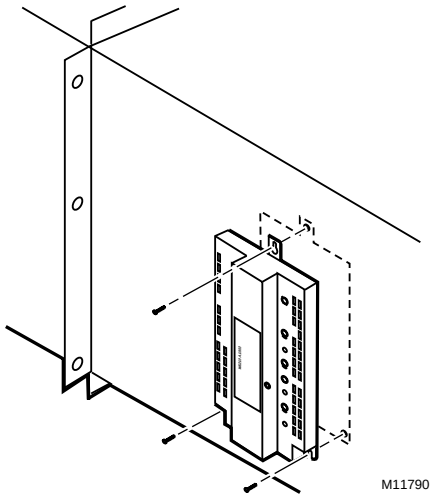


Fig. 2. Mounting W6215, W7215, W7460 on sheet metal.

Indoor Sensor Input

The ISI can be any sensor that provides a 2-10 Vdc output. The ISI 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 ISI potentiometer accordingly. The ISI LED lights when the ISI signal is above setpoint. 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 W6215, W7215, or W7460 (see Wiring section for details).
3. Adjust the ISI potentiometer setpoint to correspond to ISI voltage output at the threshold.

IMPORTANT

Ensure proper polarity of sensor connections. Incorrect polarity negates the sensor signal.

Outdoor Sensor Input (W7215B and W7460B *only*)

The OSI sensor can be any sensor that provides a 2-10 Vdc output. 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 that is protected from rain, snow, and direct sunlight.

IMPORTANT

Ensure proper polarity of sensor connections. Incorrect polarity negates the sensor signal.

2. Connect it to the OA and OA1 terminals of the W7215B, or W7460B (see Wiring section for details).
3. Adjust the OSI potentiometer setpoint to correspond to OSI sensor voltage output at the threshold.

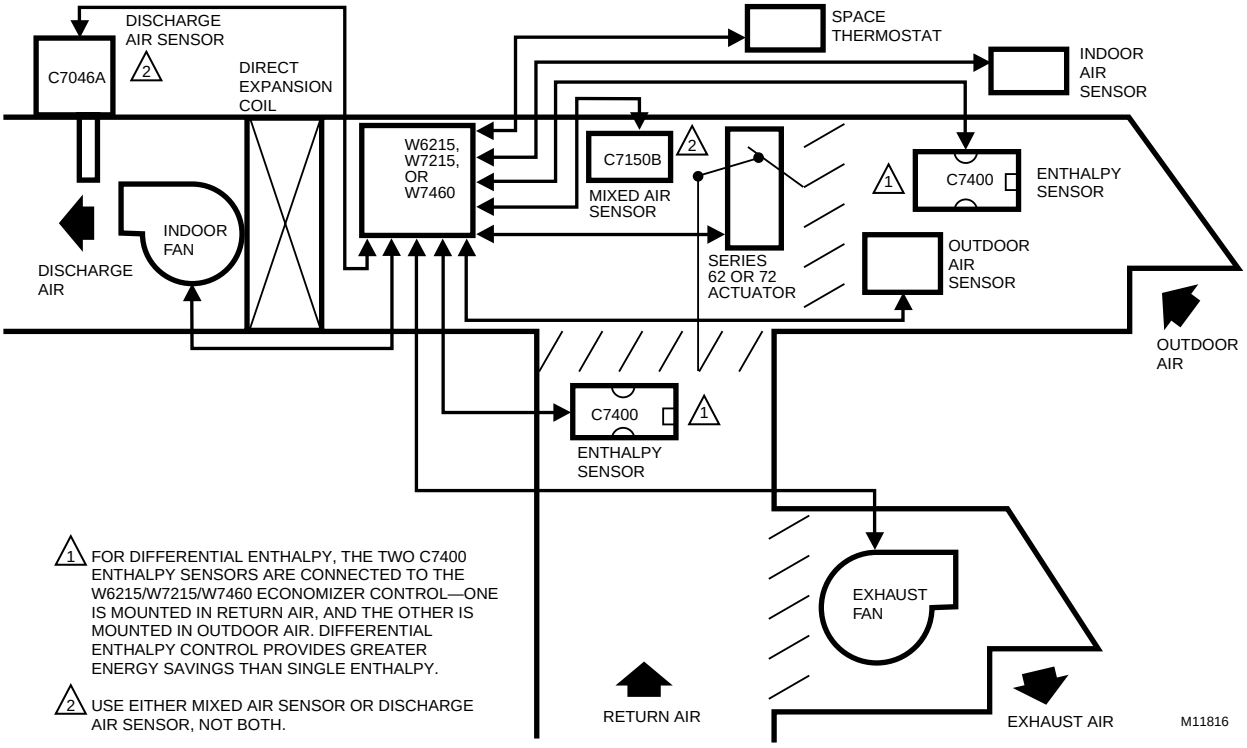


Fig. 3. Representative locations of connected Economizer system devices.

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 Fig. 6 through 25 for typical wiring diagrams.*
3. *Refer to Table 2 for a list of the wiring diagrams and corresponding Figure numbers in this document.*
4. *All device inputs and outputs must be 24 Vac Class 2.*

NOTE: All connections with label designation ending in *1* (examples: TR1, T1, P1, Q1, AQ1) are ac/dc common connections.

Optional Applications

Remote Minimum Position Control

Remote control of outdoor air dampers is desirable when requiring temporary additional ventilation. One potentiometer controls the damper minimum position, another potentiometer controls the damper maximum position. The addition of S963B1128 Remote Potentiometers allows occupants to open or close the dampers beyond minimum position for modified ventilation. Connect the potentiometers as shown in Fig. 4.

IMPORTANT

The minimum position signal takes priority to the maximum position signal. With the maximum set below the minimum, the logic module signals the actuator to maintain the minimum position.

Free Cool Timing

The Free Cool contacts close while the logic module operates free cooling. Connecting a timer to these contacts allows tracking of the free cooling usage time.

Table 2. Applicable Wiring Diagrams.

Logic Module	Actuator	Enthalpy Changeover	Figure	Comments
W6215A	Honeywell Series 62	Single	8	Single-stage cooling system.
		Single or Differential	9	Two-stage cooling system.
W7215A	Honeywell Series 72	Single	10	Single-stage cooling system.
		Single or Differential	11	Two-stage cooling system.
			12	T775 controller.
	Honeywell Series 90	n/a	6	Add Q7230 Interface Module.
W7215B	Honeywell Series 72	Single	13	Single-stage cooling system.
		Single or Differential	14	Two-stage cooling system.
			15	T775 controller.
W7460A	Honeywell M7415	Single	16	Single-stage cooling system.
		Single or Differential	17	Two-stage cooling system.
W7460B	Honeywell M7415	Single	18	Single-stage cooling system.
		Single or Differential	19	Two-stage cooling system.
ALL	n/a	n/a	20	W7100 controller.
			25	W973 Logic Panel.
			4	S963 remote damper control.
Parallel Wiring				
W6215	Honeywell Series 62	Single or Differential	21	Honeywell Series 62 Direct Coupled Actuators.
W7215A	Honeywell Series 72		22	Honeywell Series 72 Direct Coupled Actuators.
			23	Honeywell Series 72 Modutrol Motors.
	Honeywell M7415		24	M7415 Motors.

OPERATION

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

When wired as shown in Fig. 6 through 25, the logic module responds to the cooling thermostat signal. This system uses C7400 Solid State Enthalpy Changeover Sensor(s) or C7650 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 C7650 responds only to dry bulb temperature; use only in dry, arid climates.

The logic module functions as a true first stage of cooling providing maximum fuel 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. Tables 3 and 5 detail the input/output (I/O) logic of the module. Certain functions—Purge, Shutdown, and Air Change—override others, see Table 3. When these functions are all off, the logic module energizes the Unit Control and Indoor Fan contacts, operating according to Table 5.

Purge (W6215A, W7215A, and W7460A *only*)

When terminals PG and PG1 connect through relay contacts or a jumper:

1. Outdoor damper drives fully closed.
2. Exhaust fan turns on.

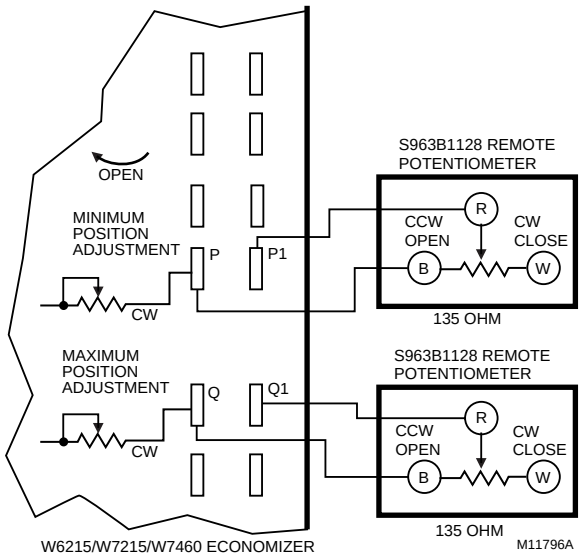


Fig. 4. S963B1128 Remote Potentiometer used with W6215, W7215, W7460 for remote damper control.

Table 3. W6215, W7215, W7460 Economizer Purge, Shutdown, and Air Change I/O Logic.

INPUTS			OUTPUTS			
Purge[a]	Shut-down	Air Change	Damper	Unit Control	Indoor Fan	Exhaust
On	-	-	Fully Closed	Off	Off	On
Off	On	-				Off
	Off	On	Fully Open		On	On

[a] Purge present only on W6215A, W7215A, and W7460A.

Shutdown

One contact closure shuts down all systems. When terminals SD and SD1 connect through relay contacts or a jumper:

1. Outdoor damper drives fully closed.
2. Exhaust fan turns off.
3. Indoor fan turns off.

Air Change

When terminals AC and AC1 connect through relay contacts or a jumper:

1. Outdoor damper drives fully open.
2. Exhaust fan turns on.
3. Indoor fan turns on.

NOTE: With Purge, Shutdown, and Air Change de-energized, Exhaust will be de-energized unless the signal exceeds the exhaust fan setpoint; other logic module functions remain unaltered.

SETTINGS AND ADJUSTMENTS

Potentiometers with screwdriver adjustment slots, located on the device face, provide adjustments for several parameters (see Fig. 5 for locations on device):

— ISI setpoint.
— OSI setpoint (W7215B and W7460B only).
— Minimum damper position.
— Maximum damper position.
— Enthalpy changeover.
— Exhaust setpoint (W6215A, W7215A and W7460A only).

Indoor Sensor Input Setpoint

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

Outdoor Sensor Input Setpoint (W7215B and W7460B *only*)

The OSI logic operates from a 2-10 Vdc sensor signal. The operation of these logic modules is slightly different from the other models, see Table 4.

Table 4. W7215B and W7460B OSI Operation.

OSI	ISI	Actuator	OSI LED	Alarm
Below set	Below set	Modulates[a]	Off	Off
	Above set	Modulates[b]		
		Modulates[c]		
Above set	Below set	Fully closed	On	Off
	Above set	Modulates[d]	On	On

[a] Modulation based on signal from mixed air sensor.
[b] With ISI signal greater than mixed air sensor signal: Modulation, based on ISI signal, between minimum and maximum positions.
[c] With ISI signal less than mixed air sensor signal: Modulation, based on mixed air sensor signal, between: M7215B: Minimum and full open positions M7460B: Minimum and maximum positions.
[d] Modulation based on mixed air sensor signal; *Alarm* terminals connect to energize warning light, audio alarm, or air cleaner.

Table 5. W6215, W7215, W7460 Economizer I/O Logic.

INPUTS					OUTPUTS		
	Enthalpy[a]					Compressor	
ISI	Outdoor	Return	Y1[b]	Y2[b]	Damper	1	2
Below set (ISI LED Off)	High (Free Cooling LED Off)	Low	On	On	Minimum position	On	On
			On	Off		On	Off
	Low (Free Cooling LED On)	High	On	On	Modulating[c]	On	Off
			On	Off		Off	Off
Above set (ISI LED On)	High (Free Cooling LED Off)	Low	On	On	Modulating[d]	On	On
			On	Off		On	Off
	Low (Free Cooling LED On)	High	On	On	Modulating[e]	On	Off
			On	Off		Off	Off

[a] For single enthalpy control, the module compares outdoor enthalpy to the ABCD setpoint.
[b] If both stages of cooling are off, the system is off and the damper is at: • Minimum position if ISI is below setpoint. • Modulating if ISI is above setpoint.
[c] W6215, W7460: Modulation, based on the mixed air sensor signal, between minimum and maximum positions. W7215: Modulation, based on the mixed air sensor signal, between minimum and full-open positions.
[d] Modulation, based on the ISI, between minimum and maximum positions.
[e] Modulation, based on the greater of ISI and mixed air sensor signals, between minimum and either maximum position (ISI) or fully open (mixed air signal).

NOTE: Each sensor has it's own setpoint for threshold and LED indication.

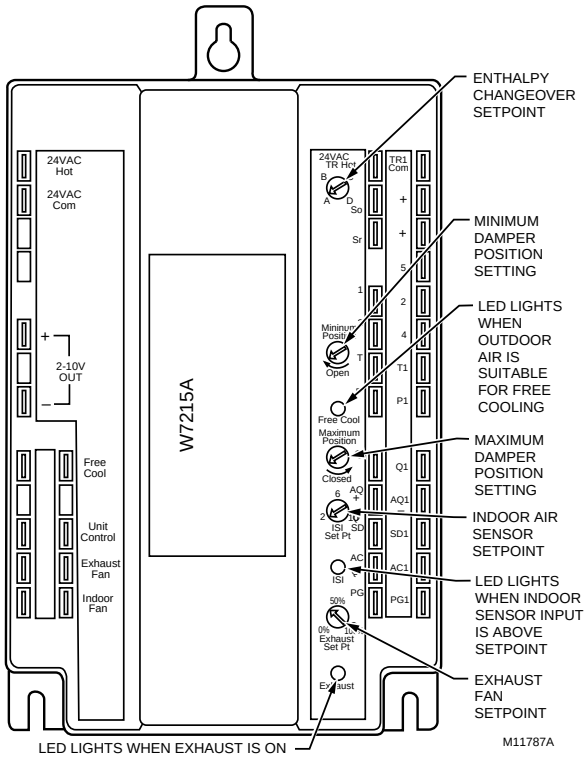


Fig. 5. Potentiometer and LED locations.

Adjusting Minimum and Maximum Positions

The minimum position potentiometer maintains the minimum outdoor air flow into the building during occupied period. The maximum position potentiometer allows the installer to limit the amount of outdoor air flow into the building, when the ISI overrides the mixed air sensor. Setting the maximum position of the damper prevents the introduction of large amounts of hot or cold air into the space.

IMPORTANT

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

NOTES:

- When the mixed air sensor takes control, it overrides the maximum position potentiometer.
- If mixed air temperature drops to 40°F, the mixed air sensor overrides the ISI and closes the damper to minimum position to protect from freezing the hot or chilled water coils. Control returns to normal once the mixed air temperature rises to 43°F.

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, as required by local codes, to enter the building.

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. Ensure that either the factory-installed jumper is in place across terminals P and P1 or, of remote damper position is required, that it is wired according to Fig. 4 and turned fully clockwise.
4. Connect 24 Vac across terminals TR and TR1.
5. 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.

Equation 1. Formula to aid in minimum position adjustment.

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

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

IMPORTANT

This procedure requires use of a quality thermometer capable of reading to 0.5°F [0.25°C].

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?

$$(0.1 \times 60°\mathrm{F}) + (0.9 \times 75°\mathrm{F}) = 6.0°\mathrm{F} + 67.5°\mathrm{F} = 73.5°\mathrm{F}$$

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.

Maximum Position Adjustment

1. Disconnect mixed air sensor from terminals T and T1 and short terminals T and T1.
2. Make sure either the factory-installed jumper is in place across terminals Q and Q1 or, if remote damper position is required, that it is wired according to Fig. 4 and turned fully clockwise.
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.

Enthalpy Changeover

Outdoor Enthalpy Changeover Setpoint

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 S_R and +.

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 instead of to a setpoint as it does for single enthalpy. Turn the 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 outdoor air damper opens to bring in outdoor air for free cooling.

Exhaust Setpoint

Except for Purge, Shutdown, and Air Change, the exhaust setpoint determines when the exhaust fan runs based on the damper position. When the ISI call for exhaust comes, the module provides a 45 ±15 second delay before exhaust fan activation. This delay allows the damper to reach the appropriate position to avoid unnecessary fan overload.

Adjustable Exhaust Setpoint (W6215A, W7215A, and W7460A *only*)

The W6215A, W7215A, and W7460A Logic Modules have an adjustable setpoint. This potentiometer allows the installer to set the exhaust setpoint at an actual damper position percentage open from fully closed.

Fixed Exhaust Setpoint (W7215B and W7460B)

The W7215B and W7460B Logic Modules have a fixed exhaust setpoint. The logic module uses an exhaust setpoint of 60 percent. When the damper reaches 60 percent open (from fully closed), the logic module calls for exhaust.

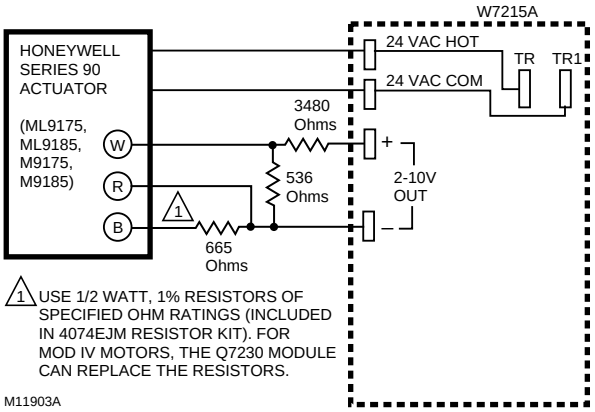


Fig. 6. W7215A used with Honeywell Series 90 Actuator.

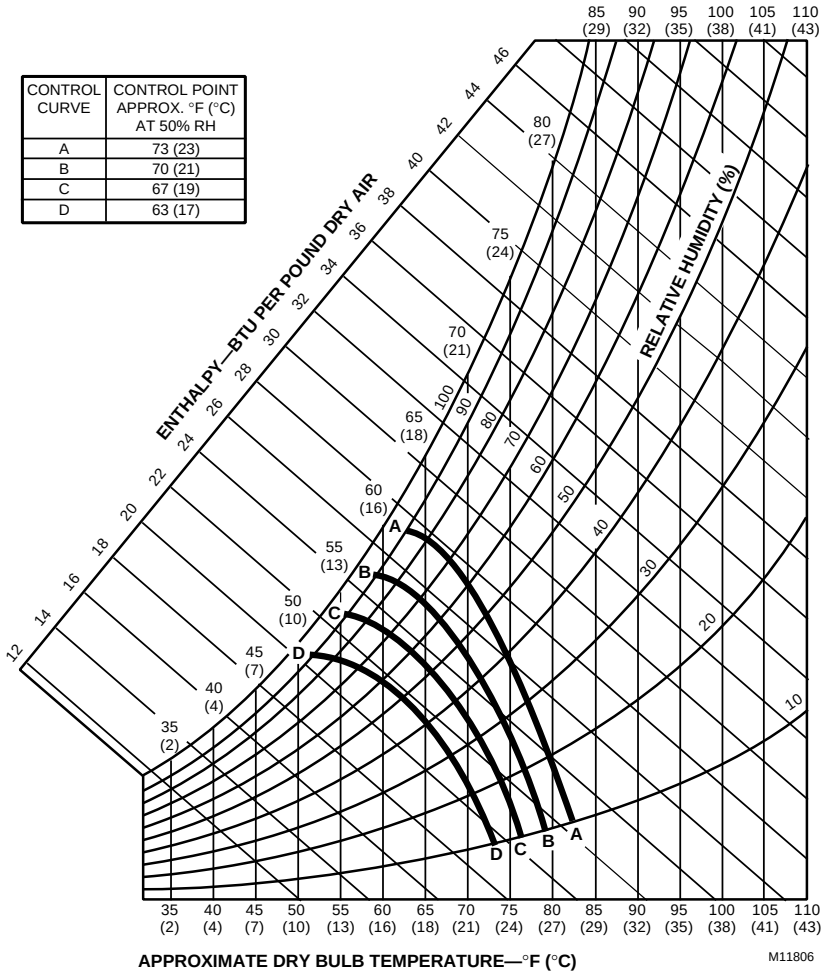
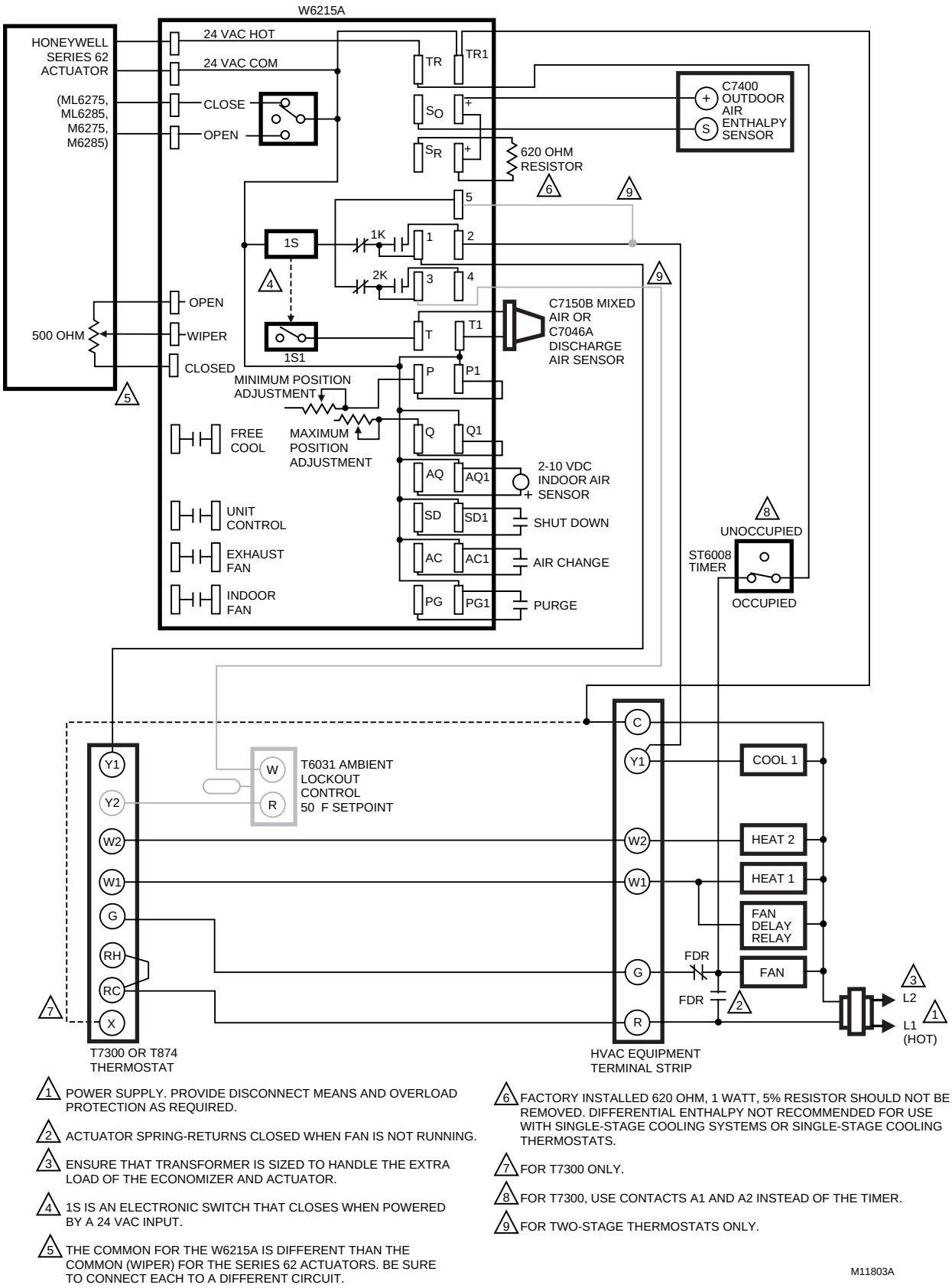


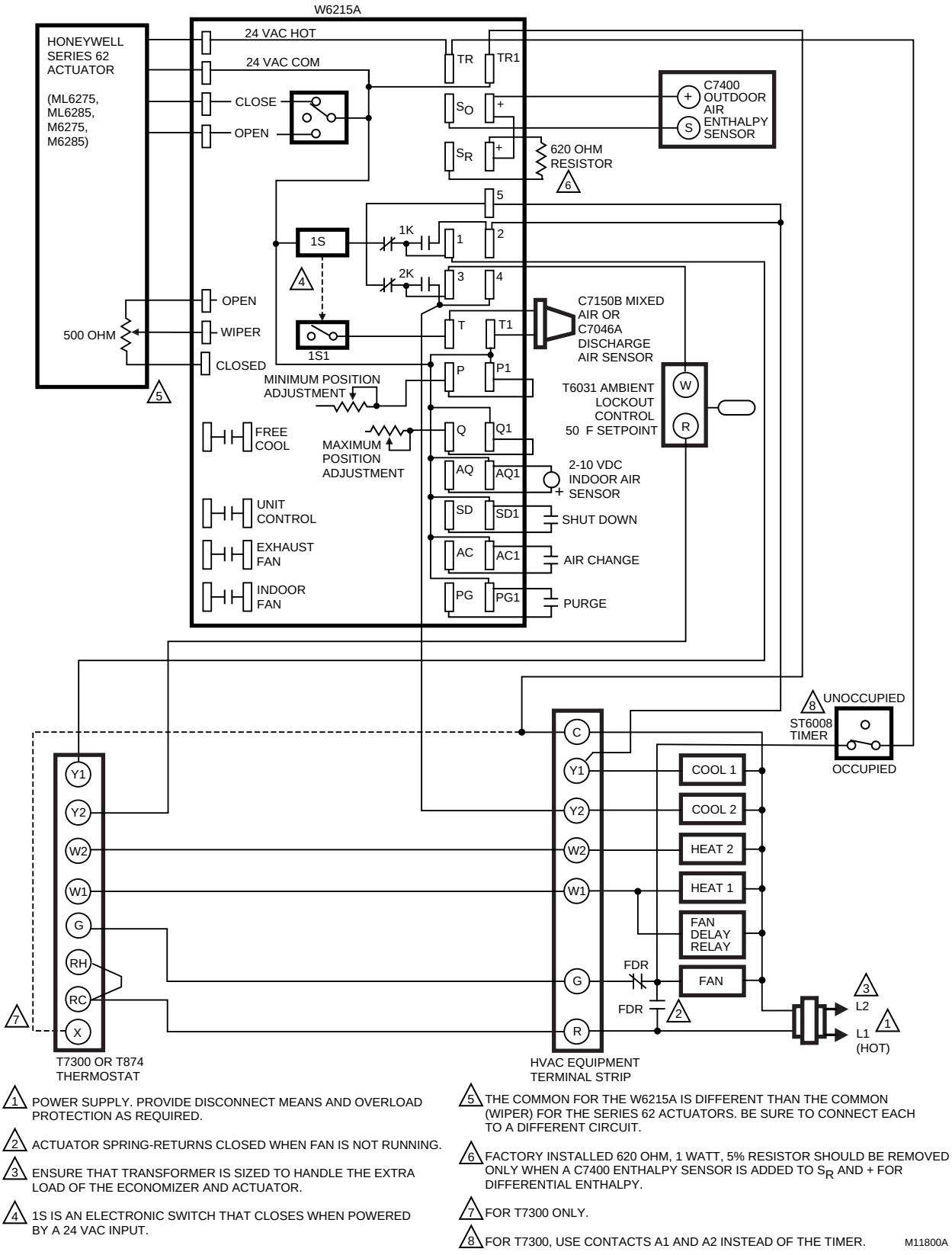
Fig. 7. W6215, W7210, and W7460/C7400 performance characteristics for enthalpy changeover settings.



1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.
3. ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.
4. 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.
5. THE COMMON FOR THE W6215A IS DIFFERENT THAN THE COMMON (WIPER) FOR THE SERIES 62 ACTUATORS. BE SURE TO CONNECT EACH TO A DIFFERENT CIRCUIT.
6. 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.
7. FOR T7300 ONLY.
8. FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.
9. FOR TWO-STAGE THERMOSTATS ONLY.

M11803A

Fig. 8. W6215A used in single-stage cooling system with single enthalpy changeover and Honeywell Series 62 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 THE COMMON FOR THE W6215A IS DIFFERENT THAN THE COMMON (WIPER) FOR THE SERIES 62 ACTUATORS. BE SURE TO CONNECT EACH TO A DIFFERENT CIRCUIT.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 FOR T7300 ONLY.

8 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

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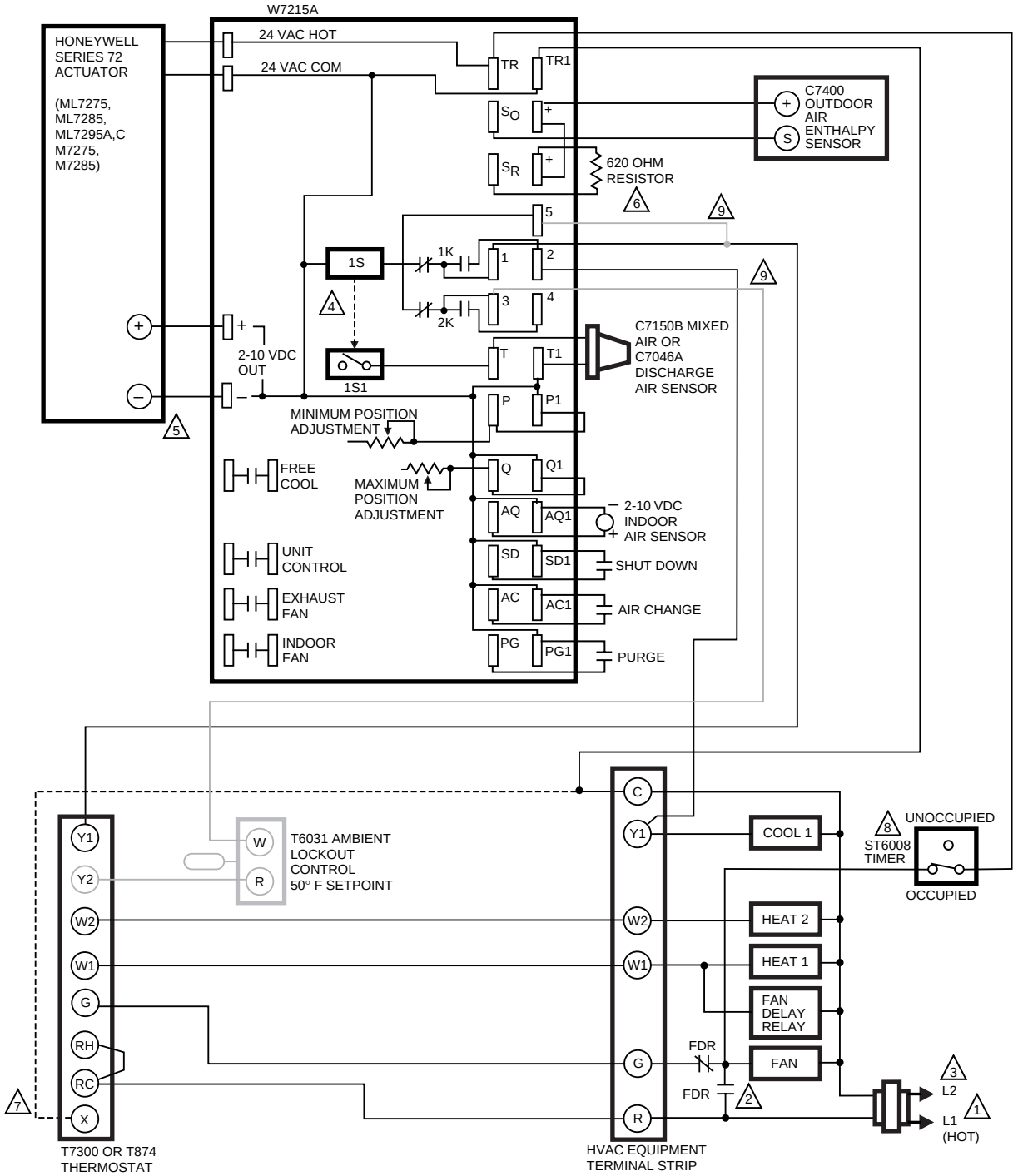
Fig. 9. W6215A used in two-stage cooling system with a Honeywell Series 62 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR THE ML7295A,C, USE THE 4-20mA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.

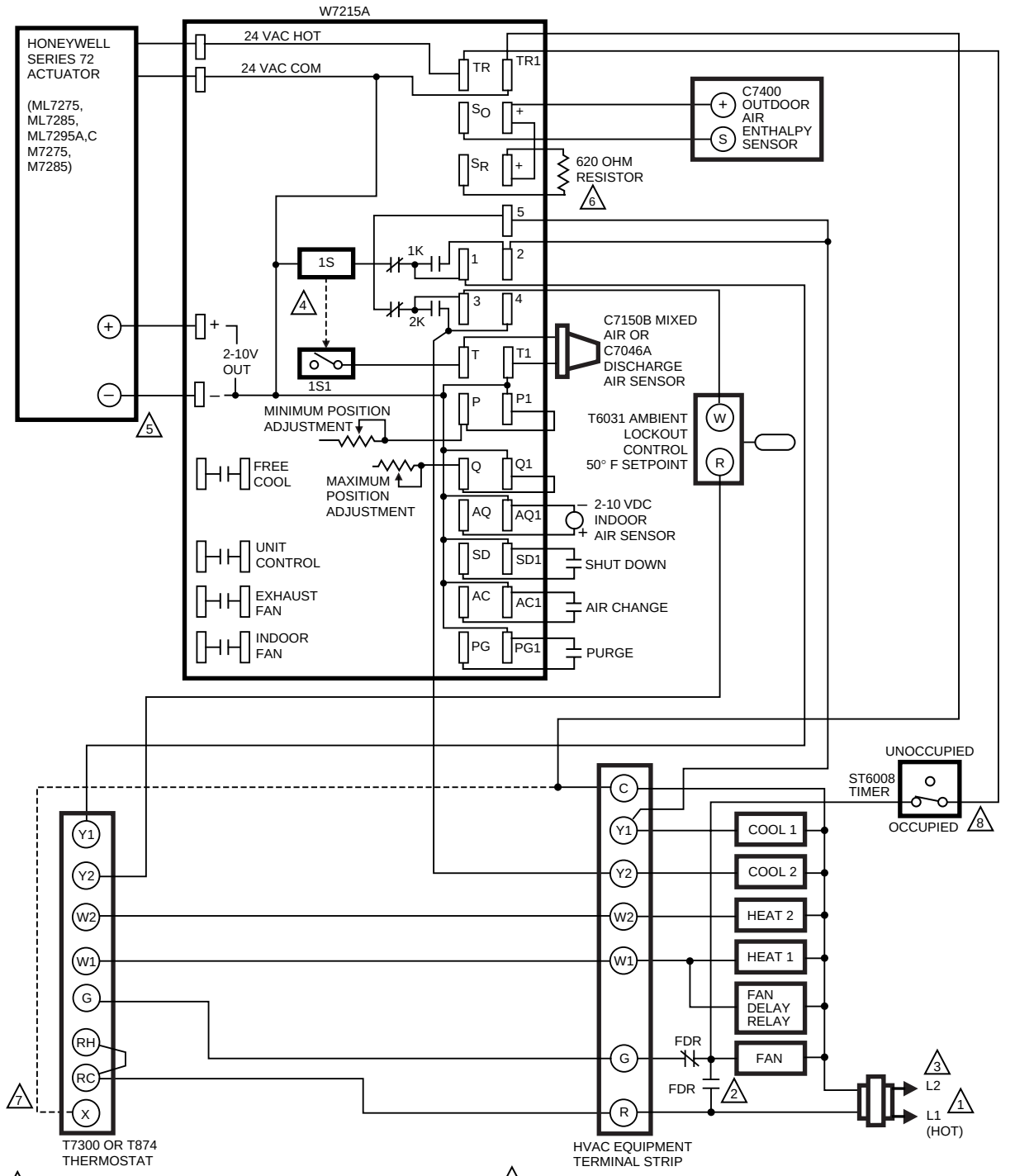
6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.

7 FOR T7300 ONLY.

8 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

9 FOR TWO-STAGE THERMOSTATS ONLY.

Fig. 10. W7215A used in single-stage cooling system with single enthalpy changeover and Honeywell Series 72 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR THE ML7295A,C, USE THE 4-20 mA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.

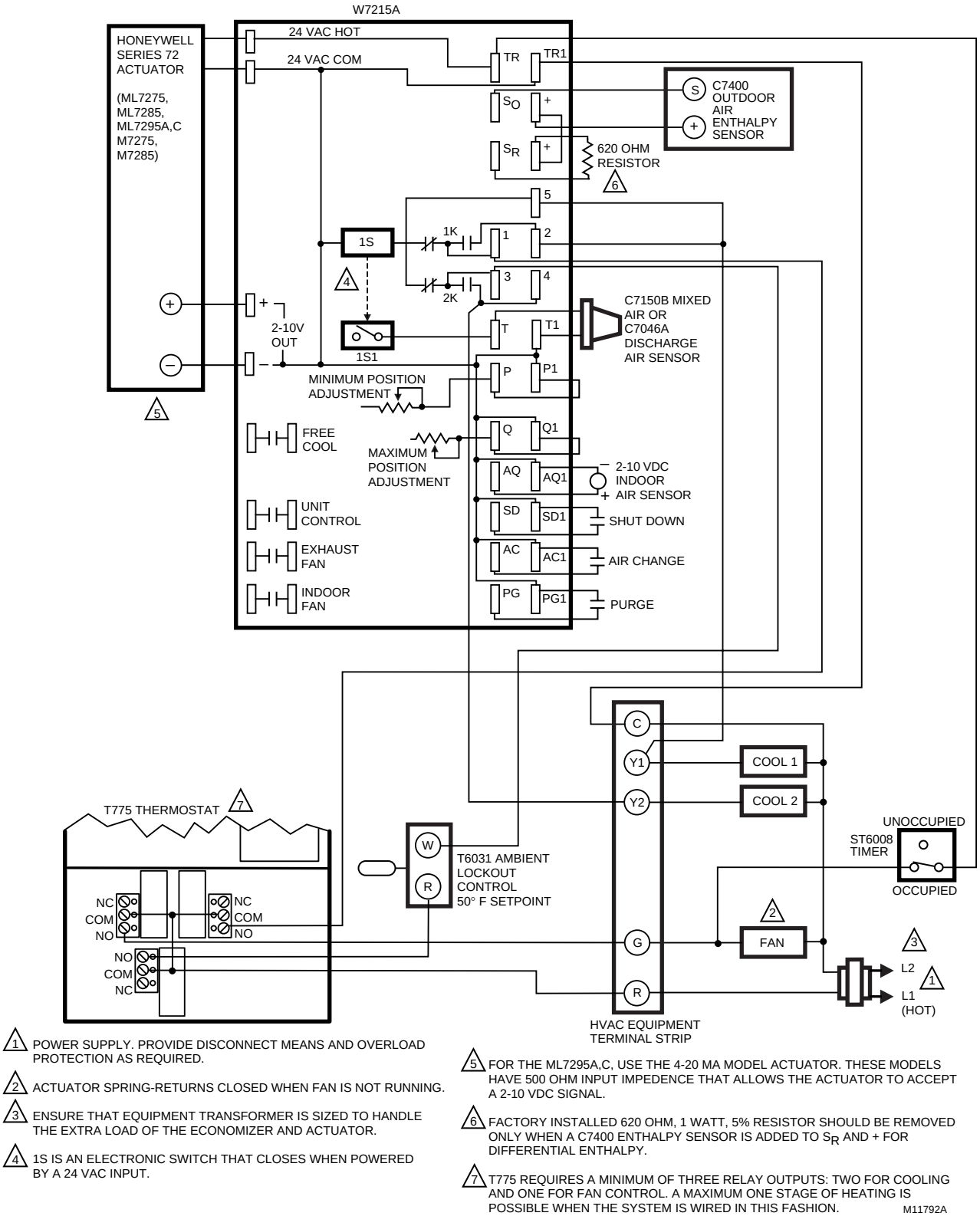
6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 FOR T7300 ONLY.

8 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

M11801A

Fig. 11. W7215A used in two-stage cooling system with Honeywell Series 72 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

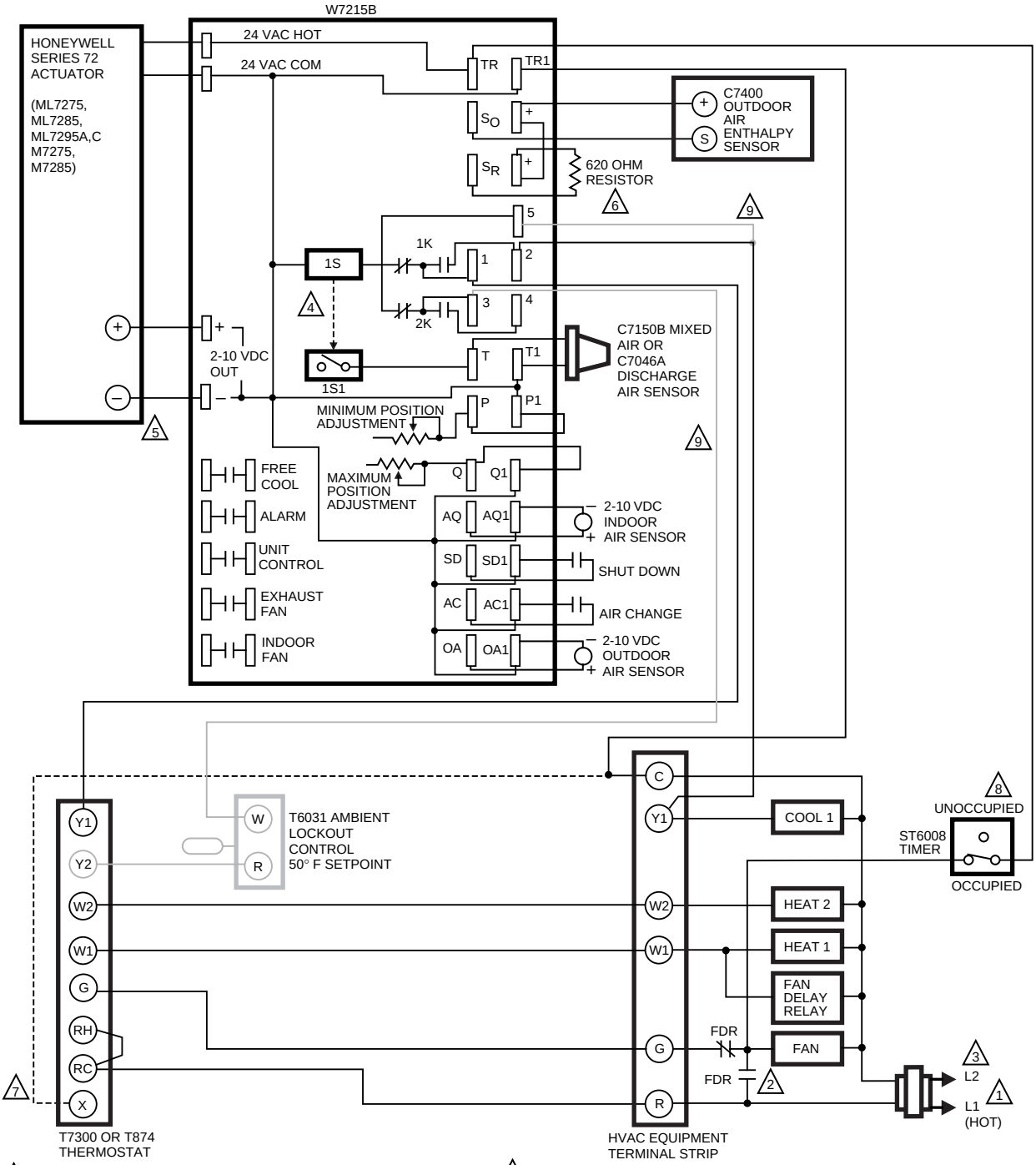
5 FOR THE ML7295A,C, USE THE 4-20 MA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 T775 REQUIRES A MINIMUM OF THREE RELAY OUTPUTS: TWO FOR COOLING AND ONE FOR FAN CONTROL. A MAXIMUM ONE STAGE OF HEATING IS POSSIBLE WHEN THE SYSTEM IS WIRED IN THIS FASHION.

M11792A

Fig. 12. W7215A used with T775 Controller and Honeywell Series 72 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR THE ML7295A,C, USE THE 4-20 mA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.

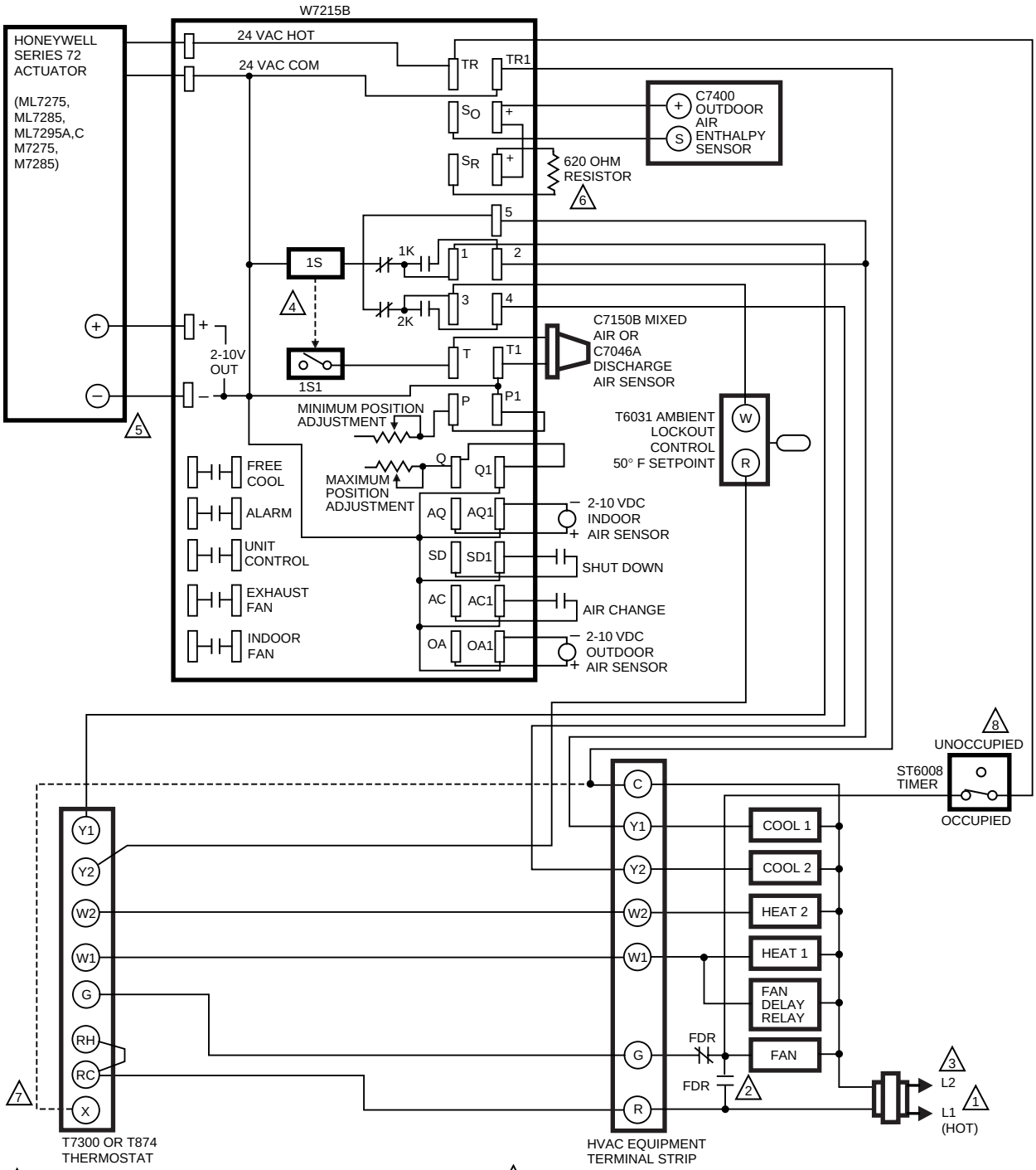
6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD NOT BE REMOVED. DIFFERENTIAL ENTHALPY NOT RECOMMENDED FOR USE WITH SINGLE-STAGE COOLING SYSTEMS OR SINGLE-STAGE COOLING THERMOSTATS.

7 FOR T7300 ONLY.

8 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

9 FOR TWO-STAGE THERMOSTATS ONLY.

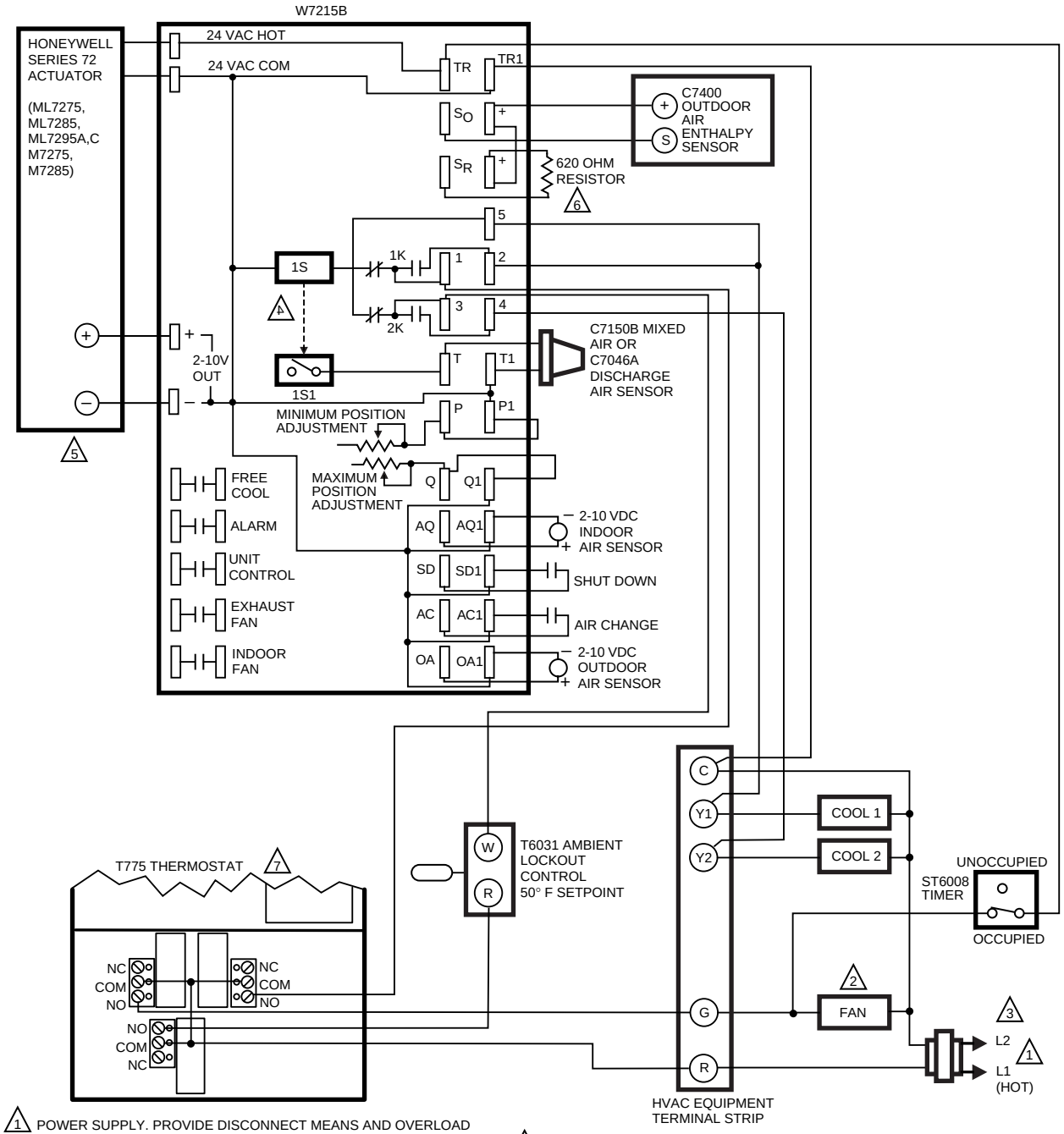
Fig. 13. W7215B used in single-stage cooling system with single enthalpy changeover and Honeywell Series 72 Actuator.



1. POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
2. ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.
3. ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.
4. 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.
5. FOR THE ML7295A,C, USE THE 4-20 mA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.
6. FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.
7. FOR T7300 ONLY.
8. FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

M11810A

Fig. 14. W7215B used in two-stage cooling system with Honeywell Series 72 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER AND ACTUATOR.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

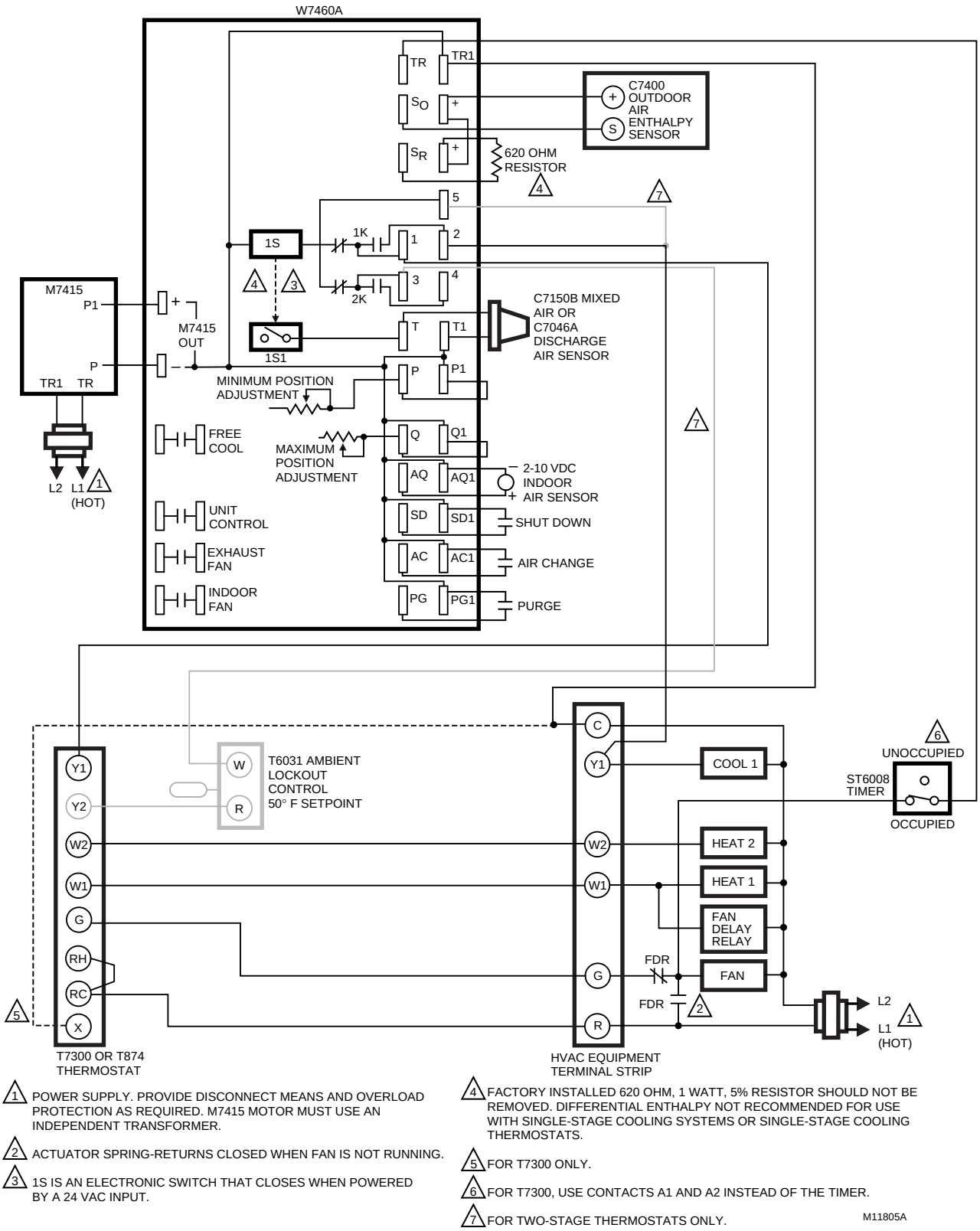
5 FOR THE ML7295A,C, USE THE 4-20 mA MODEL ACTUATOR. THESE MODELS HAVE 500 OHM INPUT IMPEDENCE THAT ALLOWS THE ACTUATOR TO ACCEPT A 2-10 VDC SIGNAL.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 T775 REQUIRES A MINIMUM OF THREE RELAY OUTPUTS: TWO FOR COOLING AND ONE FOR FAN CONTROL. A MAXIMUM OF ONE STAGE HEATING IS POSSIBLE WHEN THE SYSTEM IS WIRED IN THIS FASHION.

M11815A

Fig. 15. W7215B used with T775 Controller and Honeywell Series 72 Actuator.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M7415 MOTOR MUST USE AN INDEPENDENT TRANSFORMER.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

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.

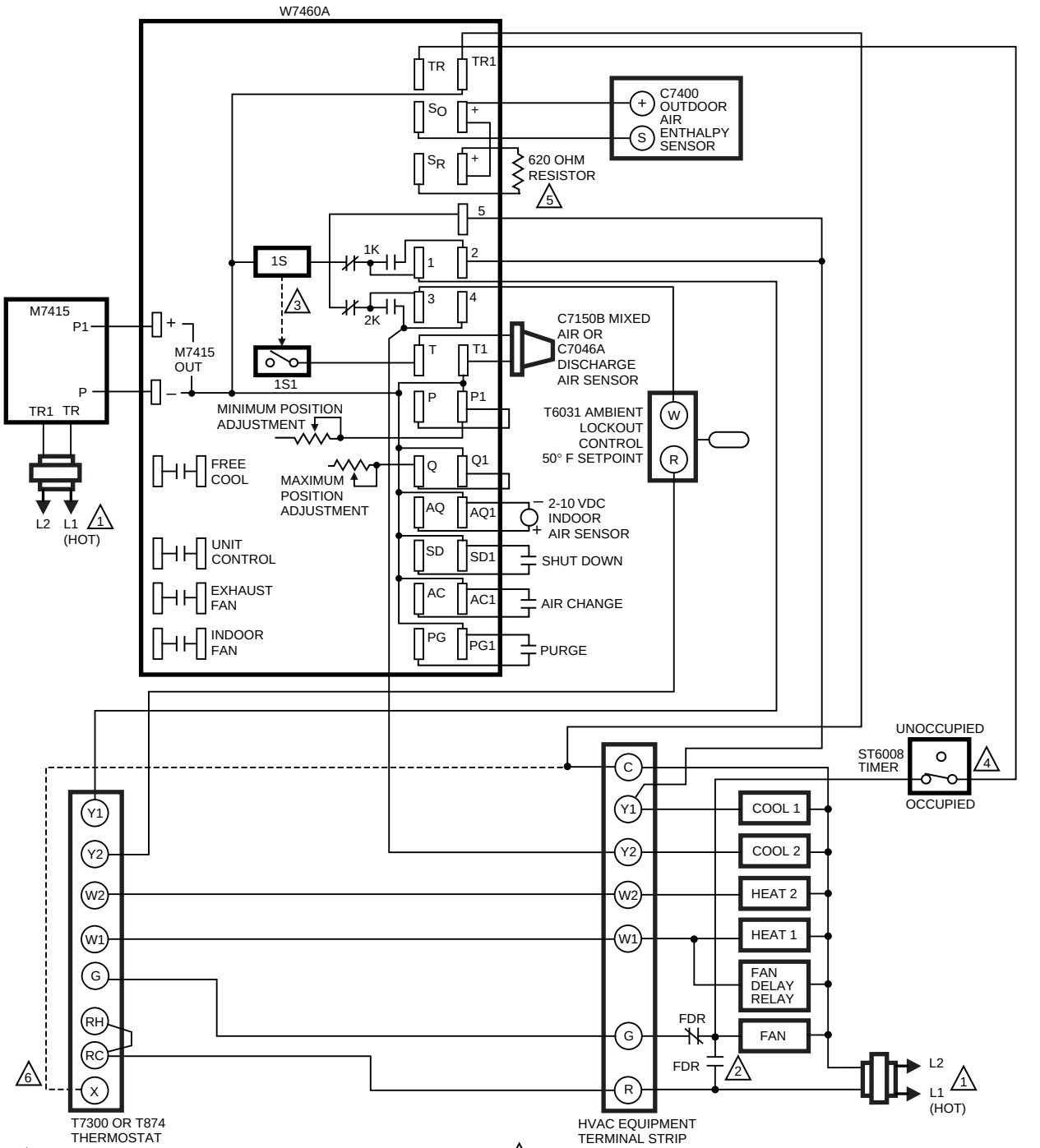
5 FOR T7300 ONLY.

6 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

7 FOR TWO-STAGE THERMOSTATS ONLY.

M11805A

Fig. 16. W7460A used in single-stage cooling system with single enthalpy changeover and M7415 Motors.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M7415 MOTOR MUST USE AN INDEPENDENT TRANSFORMER.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

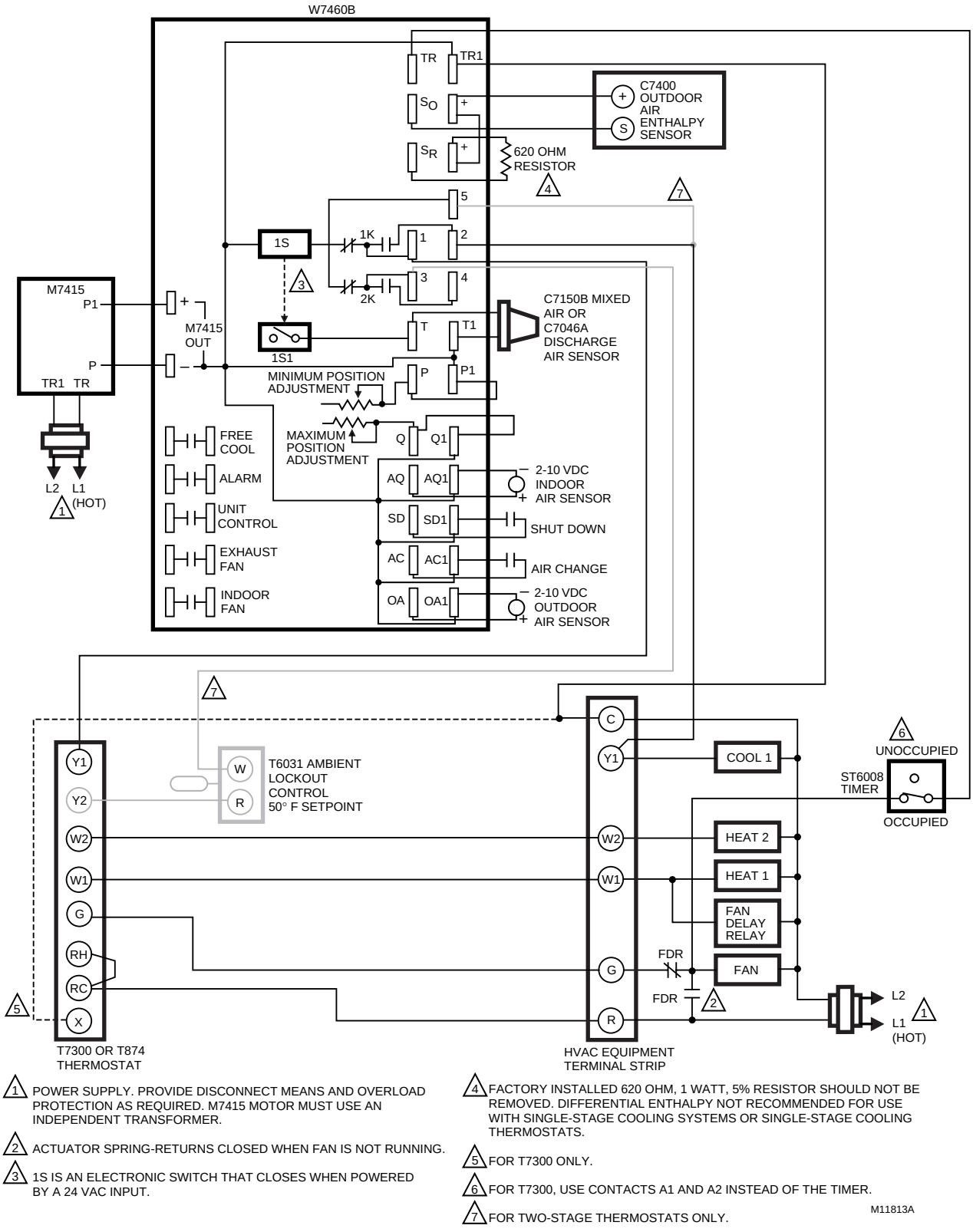
4 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

6 FOR T7300 ONLY.

M11802A

Fig. 17. W7460A used in two-stage cooling system with M7415 Motors.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M7415 MOTOR MUST USE AN INDEPENDENT TRANSFORMER.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

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.

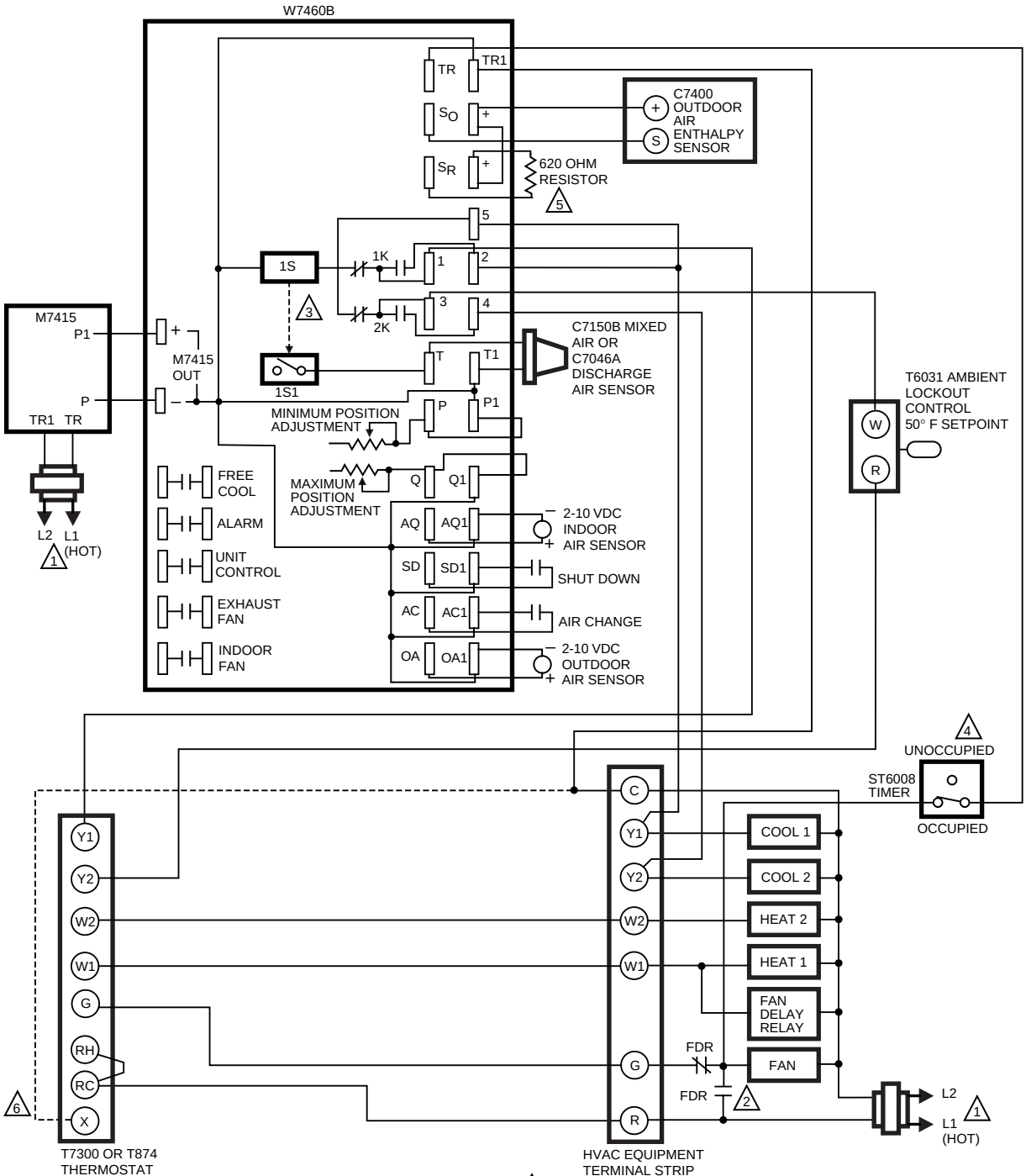
5 FOR T7300 ONLY.

6 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

7 FOR TWO-STAGE THERMOSTATS ONLY.

M11813A

Fig. 18. W7460B used in single-stage cooling system with single enthalpy changeover and M7415 Motors.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M7415 MOTOR MUST USE AN INDEPENDENT TRANSFORMER.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

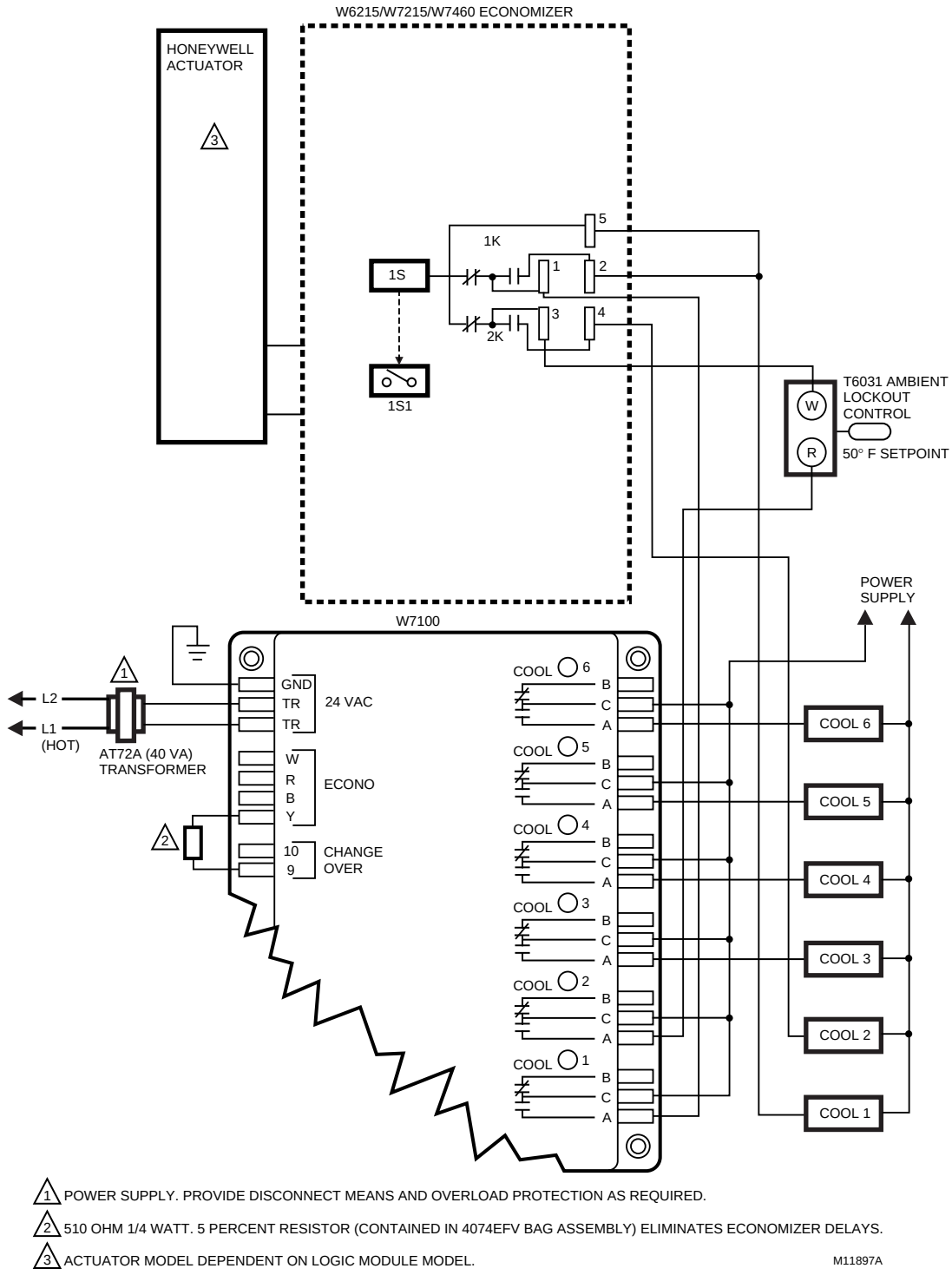
4 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

6 FOR T7300 ONLY.

M11811A

Fig. 19. W7460B used in two-stage cooling system with M7415 Motors.



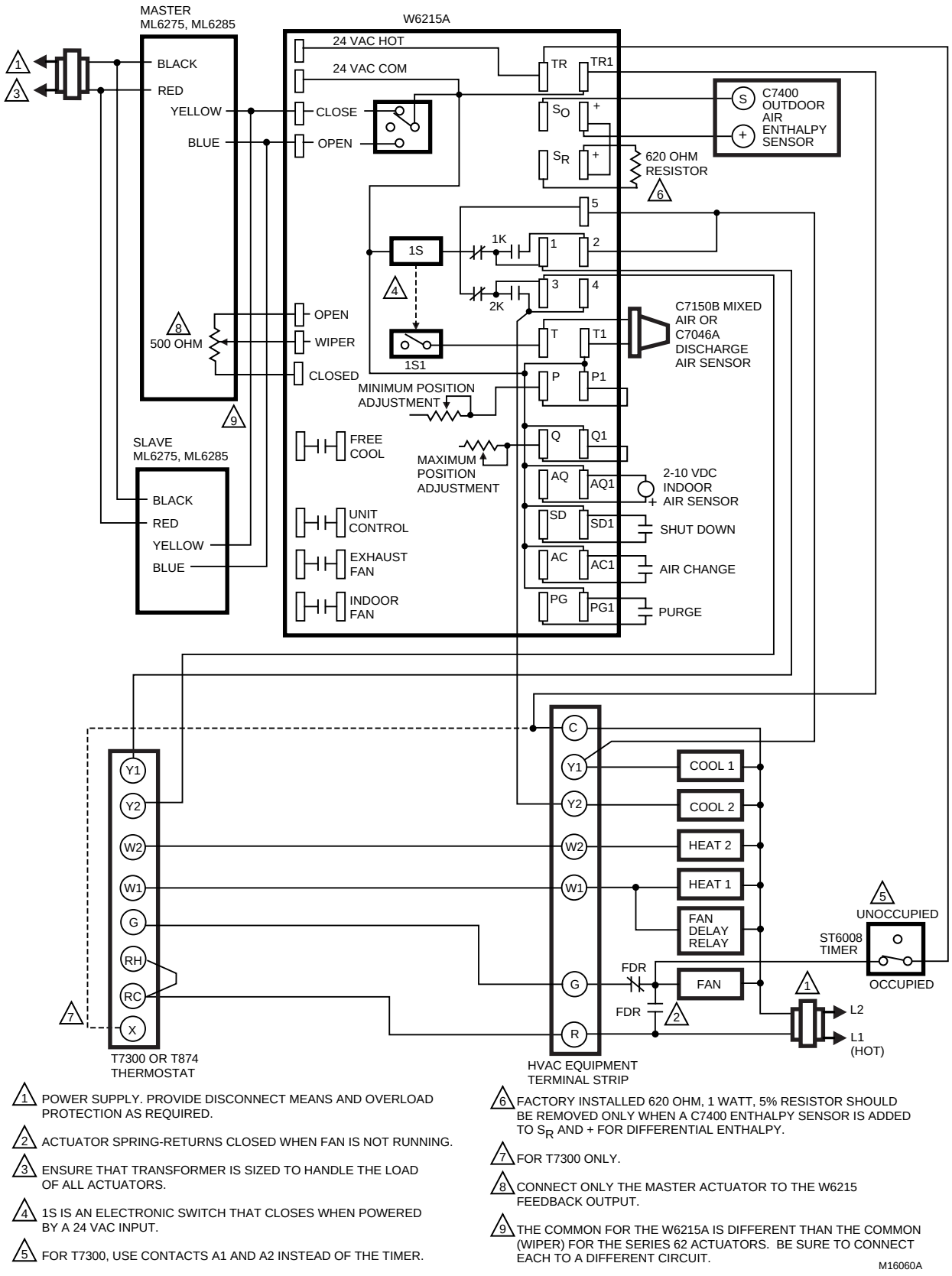
1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 510 OHM 1/4 WATT. 5 PERCENT RESISTOR (CONTAINED IN 4074EFV BAG ASSEMBLY) ELIMINATES ECONOMIZER DELAYS.

3 ACTUATOR MODEL DEPENDENT ON LOGIC MODULE MODEL.

M11897A

Fig. 20. W6215, W7215, or W7460 used with W7100 Controller.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE LOAD OF ALL ACTUATORS.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

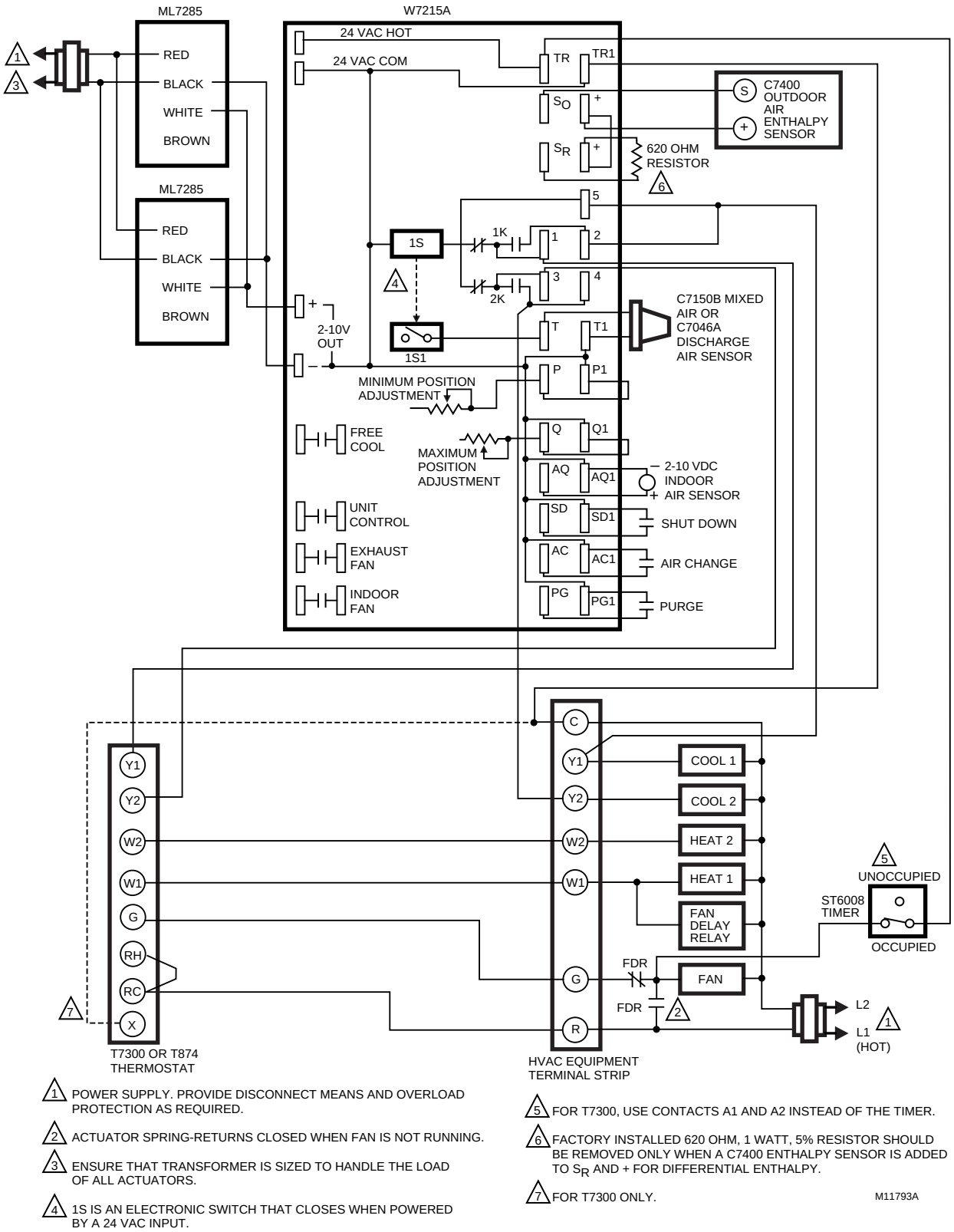
7 FOR T7300 ONLY.

8 CONNECT ONLY THE MASTER ACTUATOR TO THE W6215 FEEDBACK OUTPUT.

9 THE COMMON FOR THE W6215A IS DIFFERENT THAN THE COMMON (WIPER) FOR THE SERIES 62 ACTUATORS. BE SURE TO CONNECT EACH TO A DIFFERENT CIRCUIT.

M16060A

Fig. 21. W6215 controlling parallel-wired Honeywell Series 62 Direct Coupled Actuators.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE LOAD OF ALL ACTUATORS.

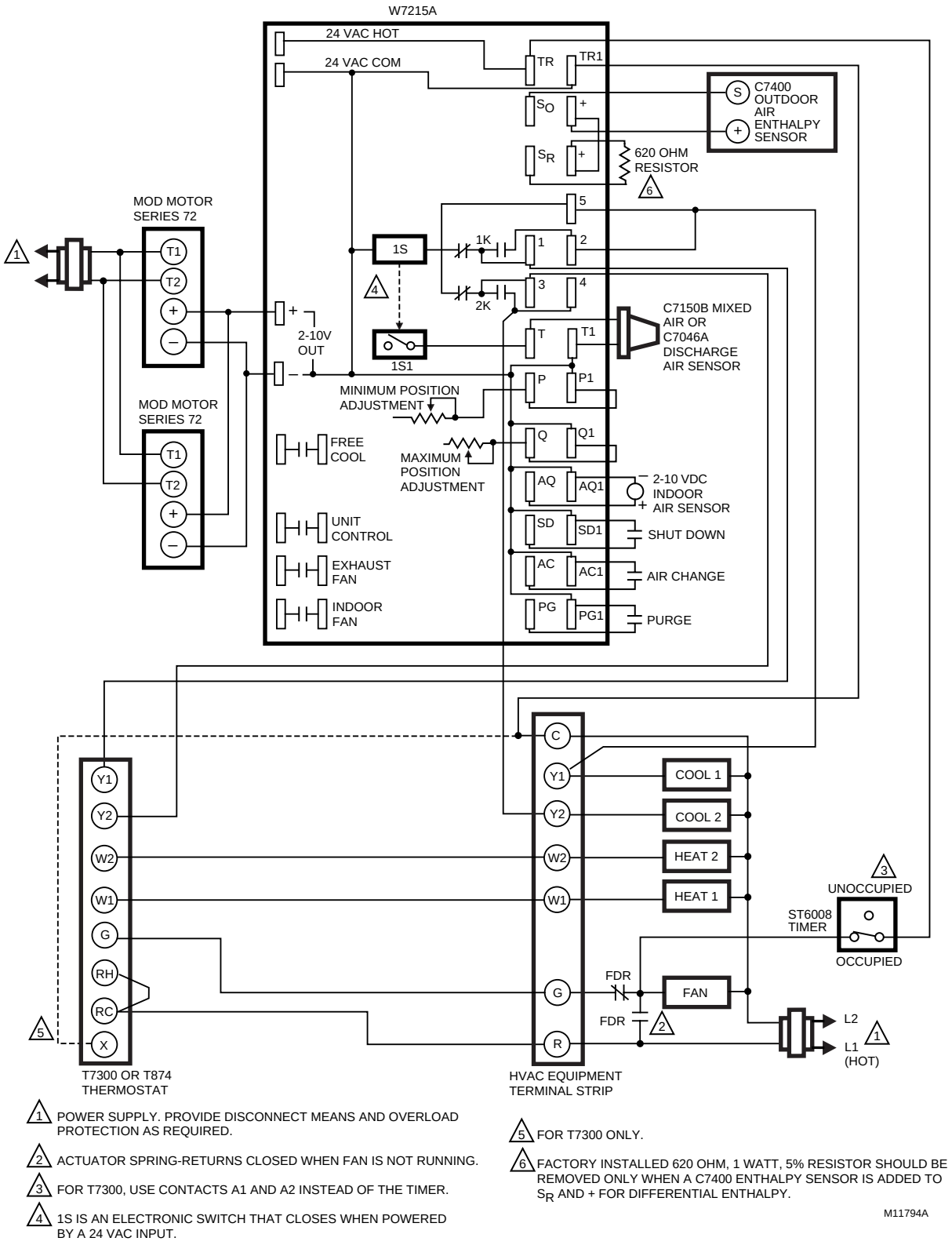
4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 FOR T7300 ONLY.

Fig. 22. W7215A controlling parallel-wired Honeywell Series 72 Direct Coupled Actuators.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

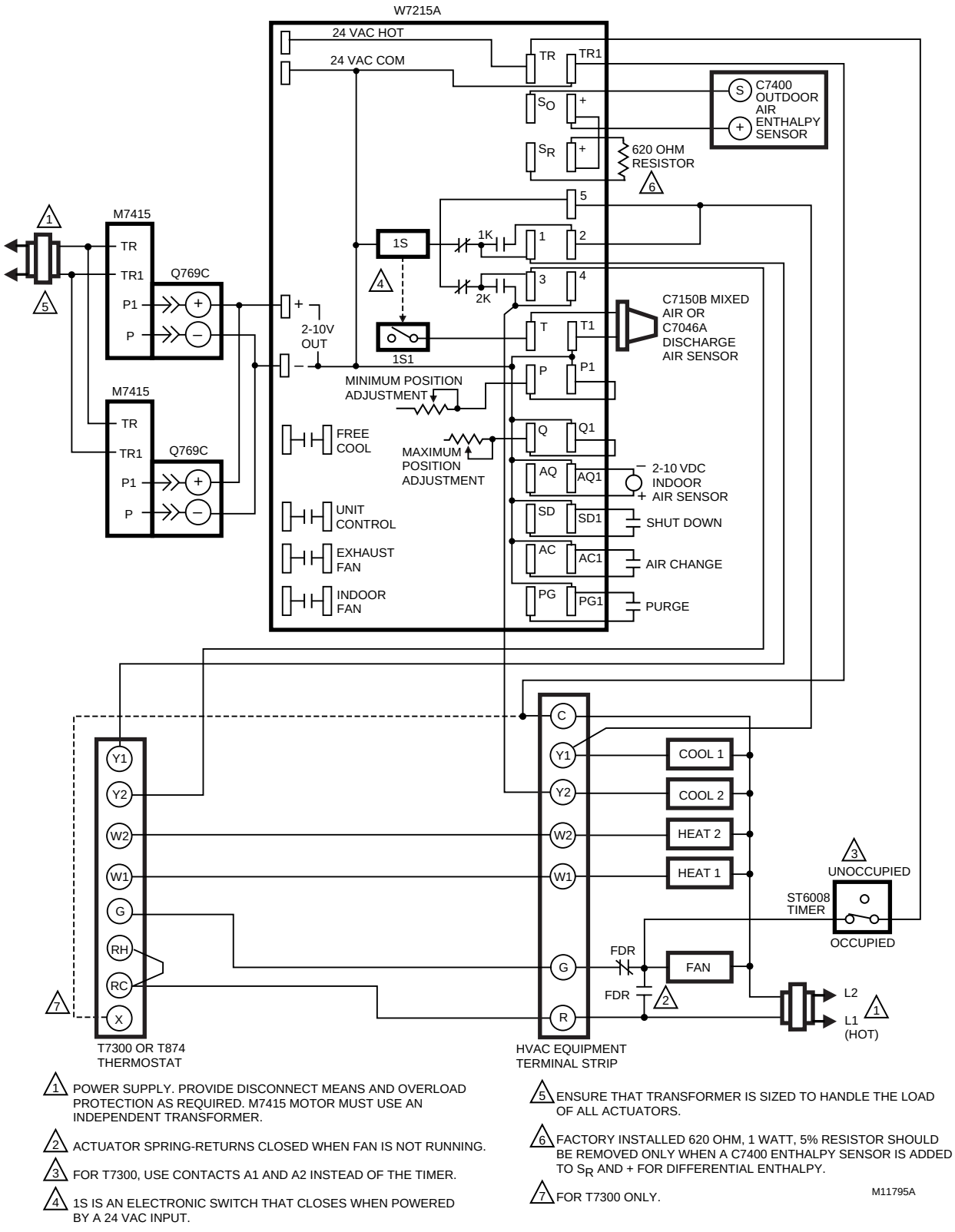
3 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 FOR T7300 ONLY.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

Fig. 23. W7215A controlling parallel-wired Honeywell Series 72 Modutrol Motors.



1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. M7415 MOTOR MUST USE AN INDEPENDENT TRANSFORMER.

2 ACTUATOR SPRING-RETURNS CLOSED WHEN FAN IS NOT RUNNING.

3 FOR T7300, USE CONTACTS A1 AND A2 INSTEAD OF THE TIMER.

4 1S IS AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.

5 ENSURE THAT TRANSFORMER IS SIZED TO HANDLE THE LOAD OF ALL ACTUATORS.

6 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY WHEN A C7400 ENTHALPY SENSOR IS ADDED TO S_R AND + FOR DIFFERENTIAL ENTHALPY.

7 FOR T7300 ONLY.

Fig. 24. W7215A controlling parallel-wired M7415 Motors.

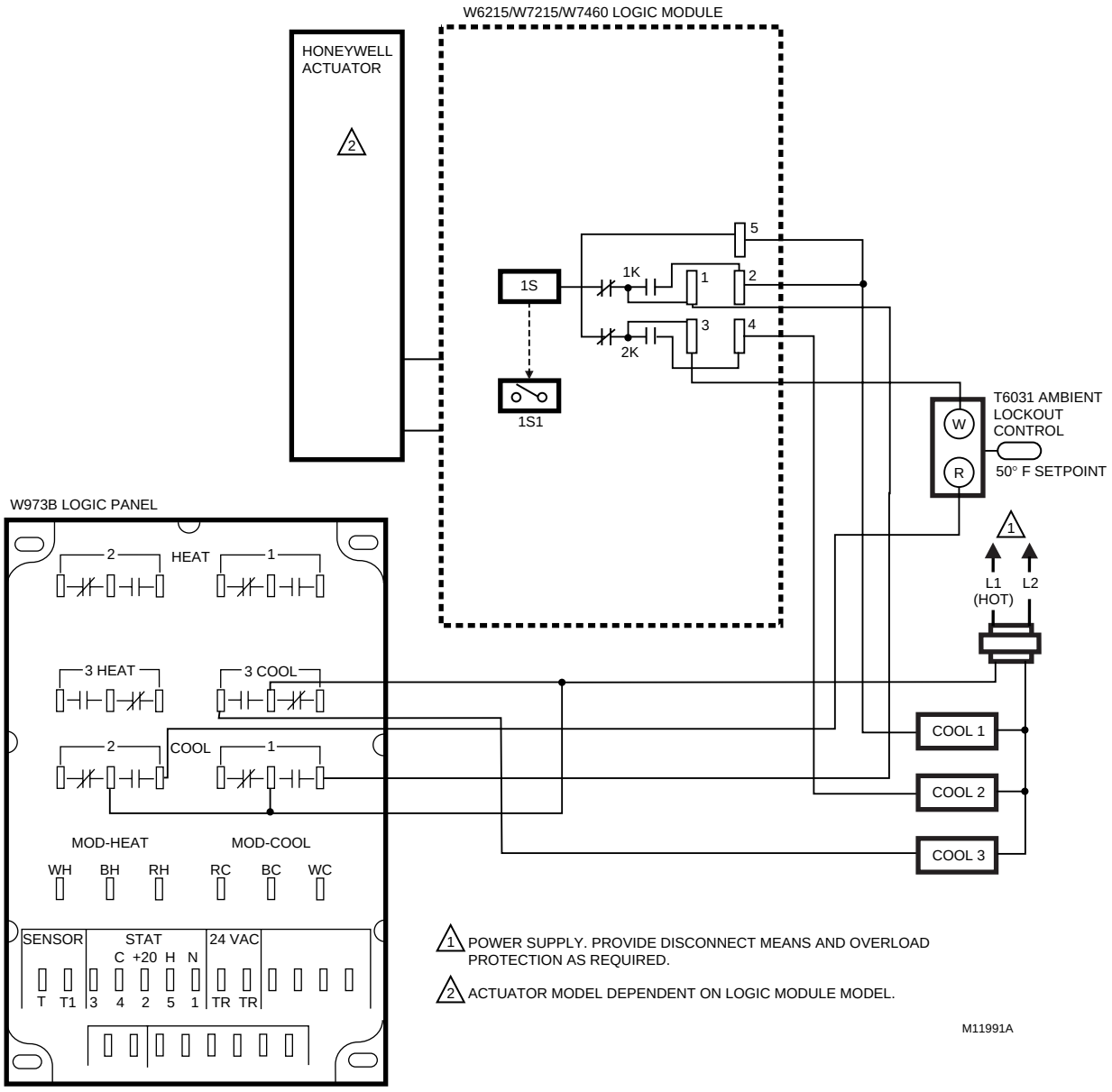


Fig. 25. W6215, W7215, or W7460 used with W973B Logic Panel.

CHECKOUT AND TROUBLESHOOTING

Checkout requires a 9V battery, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm resistors. Use Table 6 and Fig. 26 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.

Table 6. Checkout For W6215, W7215, W7460 Economizer Connected To Honeywell Actuator.

Step	Checkout Procedure	Proper Response
1.	CHECKOUT PREPARATION	
	a. Disconnect power at TR and TR1.	Free Cool, Unit Control, Indoor Fan, and Exhaust Fan contacts are open.
	b. Disconnect devices at P and P1, and Q and Q1.	-
	c. Jumper P to P1, and Q to Q1.	
	d. Turn minimum position potentiometer fully CCW.	
	e. Turn maximum position potentiometer fully CW.	
	f. Place 6.8K ohm resistor across T and T1.	
	g. Jumper TR to 1.	
	h. If connected, remove C7400 Enthalpy Sensor from terminals S_O and +. Connect 1.2K ohm 4074EJM Checkout Resistor across terminals S_O and +.	
	i. Set both ISI and Exhaust potentiometers fully CCW.	
	j. Put 620 ohm resistor across S_R and +.	
	k. Set enthalpy potentiometer to D.	
	l. Apply power (24 Vac) to terminals TR and TR1.	
2.	DIFFERENTIAL ENTHALPY	
	a. Execute step one, Checkout Preparation.	-
	b. Place 620 ohm resistor across S_O and +.	-
	c. Place 1.2K ohm resistor across S_R and +.	Free cool LED turns on.
	d. Remove 620 ohm resistor from S_O and +.	Free cool LED turns off.
3.	SINGLE ENTHALPY	
	a. Execute step one, Checkout Preparation.	-
	b. Set enthalpy potentiometer to A (fully CCW).	Free cool LED turns on.
	c. Set enthalpy potentiometer to D (fully CW).	Free cool LED turns off.
4.	ISI AND EXHAUST	
	a. Execute step one, Checkout Preparation.	-
	b. Ensure terminals AQ and AQ1 are open.	LED for both ISI and Exhaust should be off. Actuator drives fully closed.
	c. Connect 9V battery positive to AQ and negative to AQ1.	LED for both ISI and Exhaust turn on. Actuator drives 90 to 95 percent open.
	d. Turn Exhaust potentiometer CW until Exhaust LED turns off.	Exhaust LED turns off with potentiometer at approximately 90 percent. Actuator remains in position.
	e. Turn ISI potentiometer CW.	ISI LED turns off with potentiometer at approximately 9V. Actuator drives fully closed.
	f. Turn ISI and Exhaust potentiometers CW until Exhaust LED turns on.	45 seconds after Exhaust LED turns on, Exhaust contacts close.
5.	FREEZE PROTECTION	
	a. Execute step one, Checkout Preparation.	-
	b. Connect 9V battery positive to AQ and negative to AQ1.	LED for both ISI and Exhaust turn on. Actuator drives 90 to 95 percent open.
	c. Remove 6.8K ohm resistor from T and T1.	Exhaust LED turns off. Actuator drives fully closed.
	d. Replace 6.8K ohm resistor across T and T1.	Exhaust LED turns on. Actuator drives 90 to 95 percent open.
6.	MINIMUM AND MAXIMUM POSITION	
	a. Execute step one, Checkout Preparation.	-
	b. Connect 9V battery positive to AQ and negative to AQ1.	ISI LED turns on. Actuator drives 90 to 95 percent open.
	c. Turn maximum position potentiometer to midpoint.	Actuator drives to between 20 and 80 percent open.
	d. Turn maximum position potentiometer to fully CCW.	Actuator drives fully closed.
	e. Turn minimum position potentiometer to midpoint.	Actuator drives to between 20 and 80 percent open.
	f. Turn minimum position potentiometer fully CW.	Actuator drives fully open.

Table 6. Checkout For W6215, W7215, W7460 Economizer Connected To Honeywell Actuator. (Continued)

Step	Checkout Procedure	Proper Response
7.	AIR CHANGE, SHUTDOWN, AND PURGE	
	a. Execute step one, Checkout Preparation.	-
	b. Ensure terminals AQ and AQ1 are open.	-
	c. Turn minimum position potentiometer to midscale.	Actuator drives to between 20 and 80 percent open.
	d. Make sure Air Change, Purge, and Shutdown terminals are empty.	Exhaust LED turns on. Unit Control and Indoor Fan contacts close.
	e. Jumper Air Change terminals.	Exhaust LED turns on. Unit control contacts open. Indoor Fan contacts close. Actuator drives fully open.
	f. Jumper Shutdown terminals.	Exhaust LED turns off. Unit Control, Indoor Fan, and Exhaust Fan contacts open. Actuator drives fully closed.
	g. Remove Shutdown jumper.	Exhaust LED turns on. Unit control contacts open. Indoor Fan contacts close. Actuator drives fully open.
	h. Jumper Purge terminals.	Exhaust LED turns off. Unit Control, and Indoor Fan contacts open. Exhaust Fan contacts close. Actuator drives fully closed.
	i. Jumper Shutdown terminals.	-
8.	MIXED AIR INPUT	
	a. Execute step one, Checkout Preparation.	-
	b. Set enthalpy potentiometer to A.	Free cool LED turns on.
	c. Replace 6.8K ohm resistor (across T and T1) with 5.6K ohm resistor.	Actuator drives to between 20 and 80 percent open.
	d. Remove 5.6K ohm resistor and jumper T to T1.	Actuator drives fully open.
	e. Remove jumper from T to T1 and leave open.	Actuator drives fully closed.
	f. Replace 6.8K ohm resistor across T and T1.	Actuator drives fully closed.

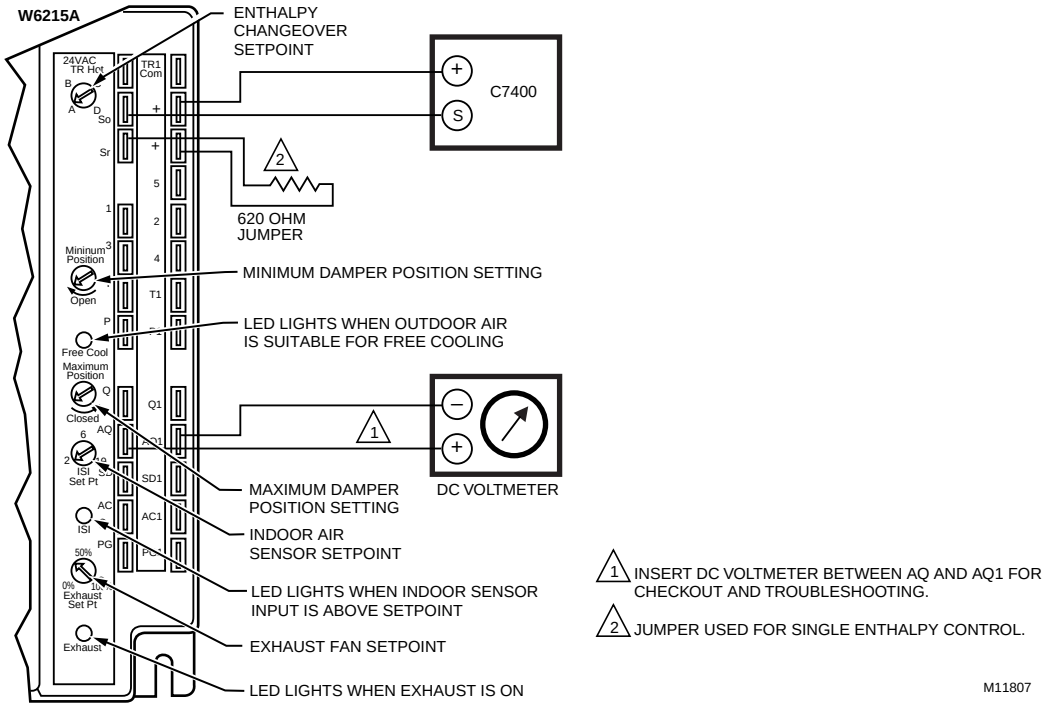


Fig. 26. Meter location for checkout and troubleshooting.

Home and Building Control
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422

Home and Building Control
Honeywell Limited-Honeywell Limitée
35 Dynamic Drive
Scarborough, Ontario
M1V 4Z9

Honeywell International
Home and Building Control
Honeywell Building
17 Changi Business Park Central 1
Singapore 486073

Honeywell Europe S.A.
3 Avenue du Bourget
1140 Brussels
Belgium

Honeywell Latin American Region
480 Sawgrass Corporate Parkway
Suite 200
Sunrise FL 33325