

## AG SERIES ELECTRIC HEATERS

# INSTALLATION, OPERATION & MAINTENANCE MANUAL

Part#: 97B0172N01 | Created: April 9, 2025

Models: AGM and AGL

60Hz – HFC-410A and R-454B



Models:  
AGM/L  
04-20kW

## Table of Contents

|           |                                                     |
|-----------|-----------------------------------------------------|
| <b>3</b>  | Overview and Safety                                 |
| <b>4</b>  | Model Nomenclature                                  |
| <b>5</b>  | Installation                                        |
| <b>5</b>  | Internal installation – Vertical Systems            |
| <b>6</b>  | External Installation - Vertical Systems            |
| <b>7</b>  | External Installation - Horizontal                  |
| <b>8</b>  | Wiring                                              |
| <b>10</b> | Compatibility, Mounting Brackets, and Staging       |
| <b>11</b> | Electrical Data                                     |
| <b>12</b> | Example Wiring Diagrams                             |
| <b>12</b> | Packaged Units                                      |
| <b>14</b> | Air Handlers                                        |
| <b>16</b> | Dimensions                                          |
| <b>18</b> | Troubleshooting                                     |
| <b>18</b> | Electric heat output                                |
| <b>19</b> | Electrical Heat Functional<br>Troubleshooting Table |
| <b>20</b> | Revision History                                    |

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 800-299-9747 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products.

## Overview and Safety

### GENERAL INFORMATION

The AG Series Auxiliary Electric Heat modules are designed to be installed on both packaged heat pumps and air handlers.

- **Vertical Units – Figure 2:** Heater module installs internally on the SE, QE, VE, TE, and TS Series
- **Horizontal Units – Figure 7:** Heater module installs externally on SE, QE, VE, TE, and TS Series
- **Air Handlers – Figure 1:** Heater module installs internally on SA and TAH Series.
- **Compact Units – Figure 6:** Heater module installs externally on all orientations of the SZ and TZ Series

For more information on AG Series compatibility, please reference Table 1. Additionally, please note that revision “B” (Digit 7 of the model number) AG Series heaters are not forwards compatible with R-454B products. However, revision “C” AG Series heaters are backwards compatible with legacy R-410A products.

**NOTE:** Some SZ and TZ units require additional mounting brackets. For more information on which units require additional mounting brackets, please consult Table 2.

For added safety, the AG Series now includes one non-resettable thermal cutout per circuit. The non-resettable thermal cutout has a higher trip limit of 208°F (97.8°C), compared to the resettable temperature switches, which have a trip limit of 155°F (68.3°C). Replacement cutouts (PN: 13B0070N01) are available for order as service parts.

Horizontal units are rated for zero clearance at the unit and 1-inch clearance for the first three feet of duct. Vertical units are rated for zero clearance for both the unit and duct. Downflow units cannot be located directly over a discharge register. The discharge plenum must be constructed from non-combustible material. For all unit configurations, the minimum clearance for both the unit and the duct to combustible sources is zero feet.

### SAFETY

Warnings, cautions, and notices appear throughout this manual. Read these items carefully before attempting any installation, service, or troubleshooting of the equipment.

**DANGER:** Indicates an immediate hazardous situation, which if not avoided will result in death or serious injury. DANGER labels on unit access panels must be observed.

**WARNING:** Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.

**CAUTION:** Indicates a potentially hazardous situation or an unsafe practice, which if not avoided could result in minor or moderate injury or product or property damage.

**NOTICE:** Notification of installation, operation, or maintenance information, which is important, but which is not hazard-related.

#### WARNING



Disconnect power supply(ies) before servicing. Refer servicing to qualified service personnel. Electric shock hazard. May result in injury or death!

#### WARNING

The installation of water-source heat pumps and all associated components, parts, and accessories which make up the installation shall be in accordance with the regulations of ALL authorities having jurisdiction and MUST conform to all applicable codes. It is the responsibility of the installing contractor to determine and comply with ALL applicable codes and regulations.

#### WARNING

Only auxiliary electric heaters approved by ClimateMaster shall be installed in connecting ductwork. The installation of any other auxiliary devices is beyond ClimateMaster's responsibility.

#### CAUTION

CUT HAZARD - Failure to follow this caution may result in personal injury. Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing heat pumps.

Models:  
AGM/L  
04-20kW

## Model Nomenclature

1 2 3 4 5 6 7 8  
| A G | M | 1 2 | A | C | G |

### MODEL

AG

### CABINET SIZE

M = Medium

L = Large

### kW SIZE

| kW | Number of Elements | Cabinet Size |        |       |
|----|--------------------|--------------|--------|-------|
|    |                    | Small        | Medium | Large |
| 04 | 1                  | NO           | YES    | YES   |
| 05 | 1                  | NO           | YES    | NO    |
| 08 | 2                  | NO           | YES    | NO    |
| 10 | 2                  | NO           | YES    | YES   |
| 12 | 3                  | NO           | YES    | NO    |
| 15 | 3                  | NO           | NO     | YES   |
| 20 | 4                  | NO           | NO     | YES   |

### VOLTAGE

G = 208/230-1-60

### REVISION LEVEL

C = Available for R-410A and R-454B Products

### ELECTRIC HEAT TYPE

| Electric Heat Option | Powers Air Handler Motor | kW    | Power Distr Block | Circuit Breaker |
|----------------------|--------------------------|-------|-------------------|-----------------|
| A                    | NO                       | 04-10 | YES               | YES             |
|                      |                          | 12-20 |                   |                 |
| C                    | YES                      | 04-10 | YES               | NO              |
|                      |                          | 12-20 |                   |                 |

# Installation

Models:  
AGM/L  
04-20kW

## INTERNAL INSTALLATION – VERTICAL SYSTEMS

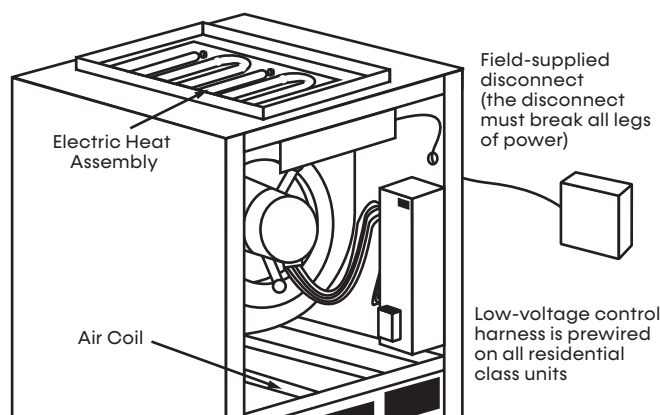
Use the following instruction for AG series installation on vertical SE, QE, VE, TE, and TS systems. These instructions should also be used for installation on all orientations of SA and TAH systems.

1. Disconnect power to the unit.
2. Remove the blower access panel(s) from the unit. From the electric heater, remove the control box and element covers.
3. Remove the blower mounting bolts and drop blower assembly as shown in Figure 3. Removal of electrical wiring should not be necessary.
4. Position the electric heater as illustrated in Figure 4 with its control box facing the front access panel of the unit. Attach the heater to the unit using the support pins on the back and bolts on the front.

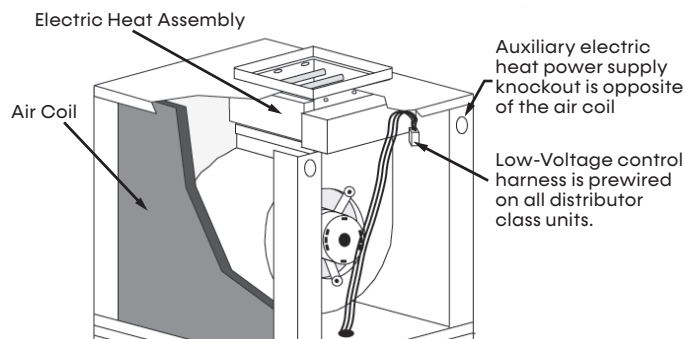
**NOTE: The electric heater air inlet dimensions must match the unit air outlet. The installer should refer to Table 1 or consult the factory if they do not match.**

5. Re-install the blower assembly on to electric heater using pins and bolts as before. Check the blower's electrical wiring for proper connection and remedy any pinched wire(s) or contact with sharp edges.
6. Route the low-voltage control harness through one of the 'pie' bushings in the heater control box and plug on to the P1 connector.
7. Install the power conduit through the unit cabinet as shown in Figure 5 and attach directly to the electric heater control box. See Figures 8-10.
8. Replace all covers and panels. Electric heater installation is complete. Proceed to wiring and setup.

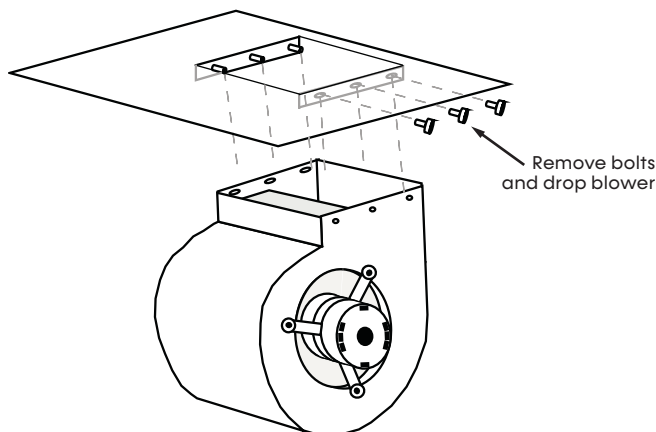
**Figure 1: Typical Air Handler Installation**



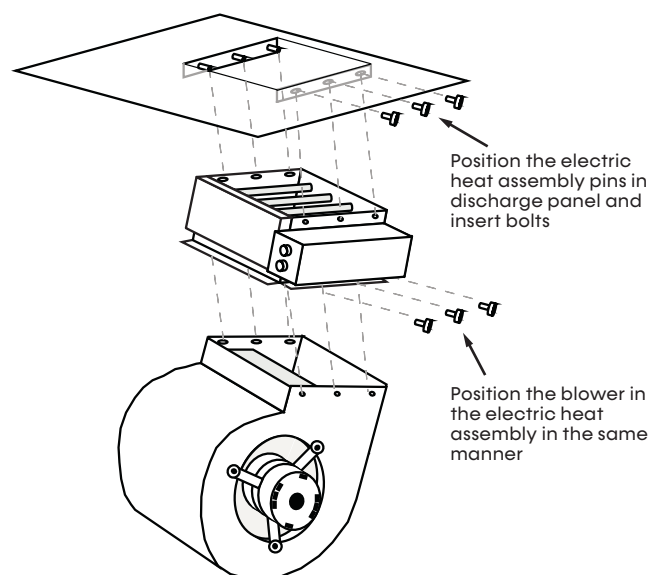
**Figure 2: Typical Vertical Unit Installation**



**Figure 3: Blower Removal**



**Figure 4: AG Electric Heat Mounting and Blower Reinstallation**



Models:  
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04-20kW

## Installation

### EXTERNAL INSTALLATION - VERTICAL SYSTEMS

Use the following instructions for AG Series installation on vertical SZ and TZ systems.

1. Disconnect power to the unit.
2. Remove the blower access panel(s) from the unit. From the electric heater, remove the control box and element covers.
3. Locate, remove, and discard blower discharge flanges from the unit but **save the screws**. If this is a new installation, flanges are packaged inside the blower compartment of vertical upflow units.

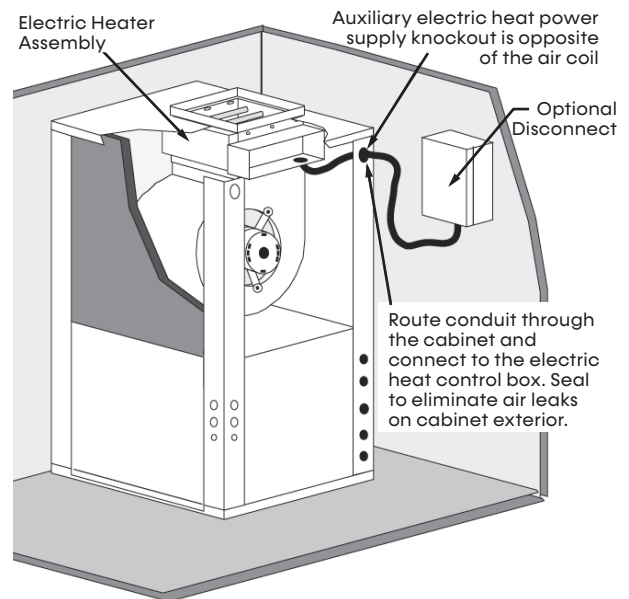
**NOTE: SZ and TZ sizes 036-042 vertical units require a transition bracket between the cabinet top and the electric heater. The transition bracket is ordered separately. See Table 2 for bracket compatibility.**

4. Position the electric heater as illustrated in Figure 6. The heater's control box should be facing the front access panel of vertical units.

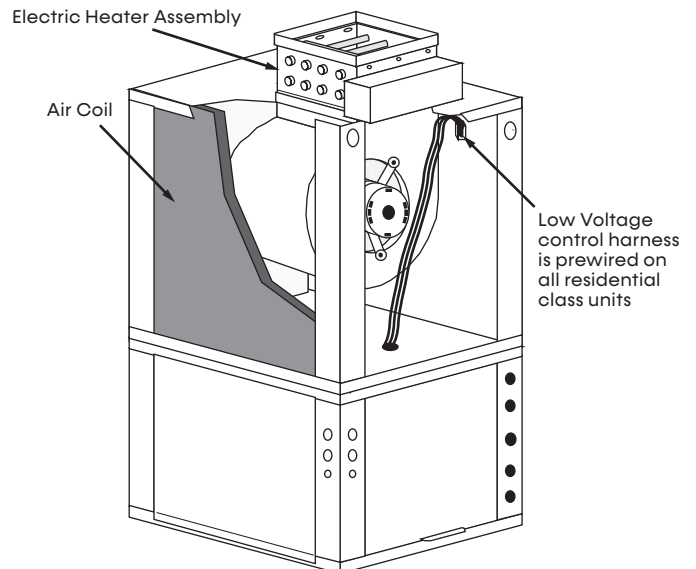
**NOTE: The electric heater air inlet dimensions must match the unit air outlet. The installer should refer to Table 1 or consult the factory if they do not match.**

5. Using the saved blower flange screws from step 3, attach the heater by its flanges to the unit panel. **Do not fasten the flange on control box side.**
6. Use field-supplied aluminum tape to seal all four heater flanges to the blower panel.
7. Locate and route the low-voltage control harness through the top panel knockout(s). Seal the penetration air tight. This harness is factory installed on all SZ and TZ units and wire-tied to the fan housing.
8. Route the control harness through one of the 'pie' bushings in the heater control box and plug on to the P1 connector.
9. Install power conduit and attach directly to the electric heater control box. See Figures 8-10.
10. Replace all covers and panels. Electric heater installation is complete. Proceed to wiring and setup.

**Figure 5: Internal Assembly Installation**



**Figure 6: External Assembly Installation**



# Installation

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## EXTERNAL INSTALLATION - HORIZONTAL

Use the following instructions for AG Series installation on horizontal SE, SZ, QE, VE, TE, and TZ systems.

1. Disconnect power to the unit.
2. Remove the blower access panel(s) from the unit. From the electric heater, remove the control box and element covers.
3. Remove and discard blower discharge flanges from the unit but **save the screws**.

**NOTE: All horizontal SZ and TZ units require a transition bracket between the cabinet and electric heater. The transition bracket is ordered separately. See Table 2 for bracket compatibility.**

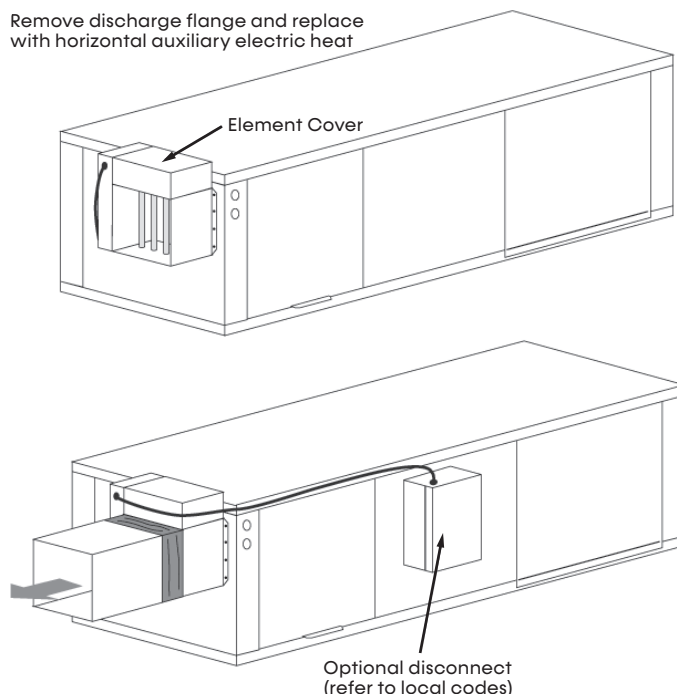
4. Position the electric heater as illustrated in Figure 7. Notice that the discharge air opening is off centered in the blower panel. The electric heater must be positioned so that its control box is located vertically over the wide side of this panel.

**NOTE: The electric heater air inlet dimensions must match the unit air outlet. The installer should stop and refer to Table 1 later in this document or consult the factory if they do not match.**

5. Using the saved blower flange screws from step 3, attach the heater by its flanges to the unit panel. **Do not fasten the flange on control box side.**
6. Use field-supplied aluminum tape to seal all four heater flanges to the blower panel.
7. Locate and route the low-voltage control harness through one of the unit corner post or blower panel knockout(s). Seal the penetration air tight. This harness is factory installed and wire-tied to the fan housing.
8. Route the control harness through one of the 'pie' bushings in the heater control box and plug on to the P1 connector.
9. Install power conduit and attach directly to the electric heater control box.
10. Replace all covers and panels. AG Series electric heater installation is complete. Proceed to wiring and setup.

**Figure 7: Typical Horizontal Installation**

Remove discharge flange and replace with horizontal auxiliary electric heat



Models:  
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## Wiring

### WIRING AND SETUP

1. Install power wiring and connect to the power block or circuit breakers. In 15 or 20kW models, two power circuits may be used to reduce wiring and breaker costs as in Figure 8. If a single-circuit supply is desired, install the optional single-circuit accessory kit (P/N 16B0002N02), as shown in Figure 9, that can be obtained from your distributor.

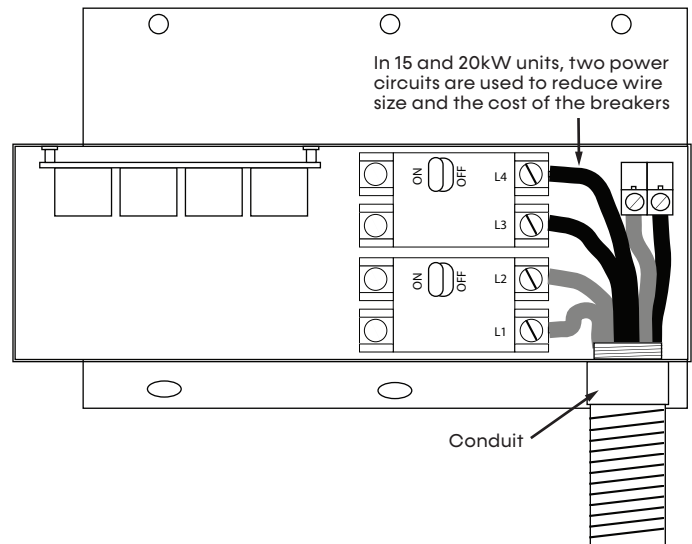
Optional for SA and TAH: AG\*\*\*C kits only. Blower power may be supplied from T3 & T4 CB5 breaker. Refer to wiring diagrams in the section, Example Wiring Diagrams - Packaged Units.

2. Ensure unit airflow setting is above minimum airflow rating for the electric heat model from Table 1.
3. Check heat staging for the application. Table 4 shows the factory-default staging and the alternate field-selectable staging where applicable. Staging changes are made by dip-switch settings. See Figure 11. These are identified as either ER1, ER2, ER3 or ER4 depending on the heater size.
4. Mark the appropriate box of the electric heat model installed on the additional serial plate on the exterior of the unit.
5. Turn on the power to the unit and the auxiliary electric heat.

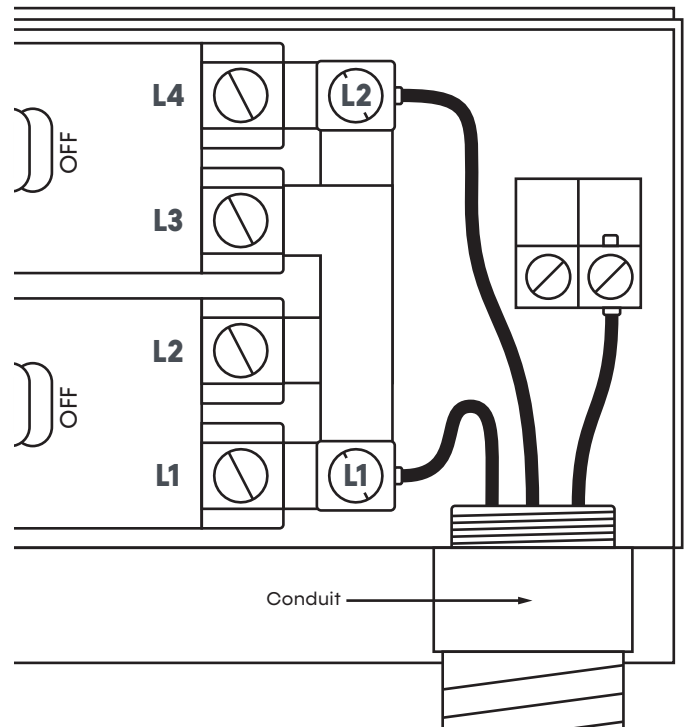
### AUXILIARY ELECTRIC HEAT STARTUP

Put the thermostat in emergency heat mode and increase the set point to engage the electric heater. If the thermostat is unavailable; jumper the thermostat input R to W. Stage 1 (EH1) will immediately be available in emergency heat mode. After running continuously for 5 minutes at EH1, Stage-2 (EH2) electric heat will engage. Verify proper electric heat operation.

**Figure 8: Power Wiring - Dual Circuits - 15, 20 kW**



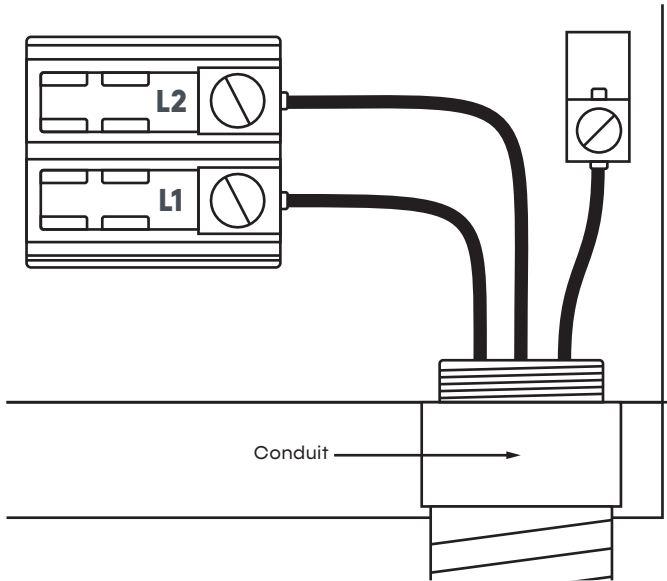
**Figure 9: Power Wiring - Single Circuit - 12, 15, 20 kW**



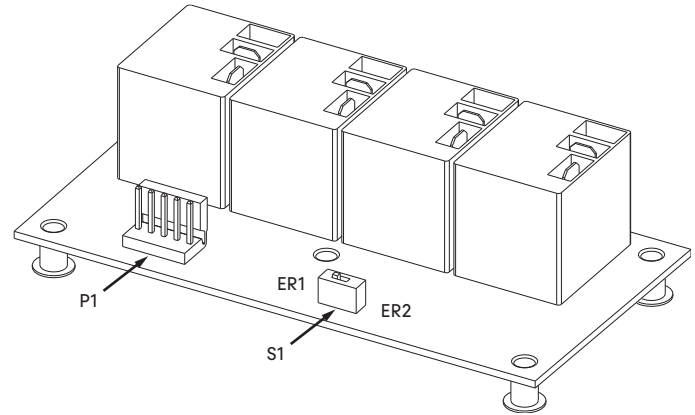
## Wiring

Models:  
AGM/L  
04-20kW

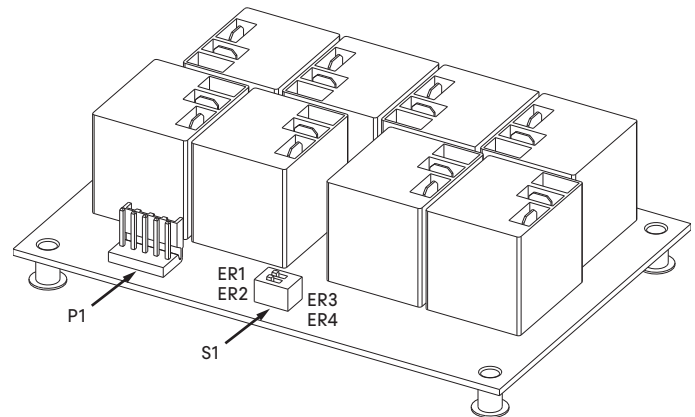
**Figure 10: Power Wiring - 4, 5, 8, and 10 kW**



**Figure 11: Staging Dip Switches  
(for AGM/L 4, 5, 8, and 10 kW)**



**Figure 12: Staging Dip Switches  
(for AGM/L 12, 15, and 20 kW)**



Models:  
AGM/L  
04-20kW

## Compatibility, Mounting Brackets, and Staging

**Table 1: AG Compatibility**

| Auxiliary Electric Heat Model | SE, TE, QE, and VE |    |           | SZ and TZ |           |           | SA and TAH                     |    |    |           | kW Rating |      | Btuh Rating |       | Minimum CFM Required |
|-------------------------------|--------------------|----|-----------|-----------|-----------|-----------|--------------------------------|----|----|-----------|-----------|------|-------------|-------|----------------------|
|                               | 024 - 030          | 36 | 048 - 072 | 24        | 030 - 042 | 048 - 060 | Auxiliary Electric Heat Model* | 24 | 36 | 048 - 060 | 208V      | 230V | 208V        | 230V  |                      |
| AGM04ACG                      | •                  |    |           | •         | •         |           | AGM04CCG                       | •  |    |           | 2.8       | 3.5  | 9600        | 12000 | 600                  |
| AGM05ACG                      | •                  |    |           | •         | •         |           | AGM05CCG                       | •  |    |           | 3.6       | 4.4  | 12300       | 15000 | 600                  |
| AGM08ACG                      | •                  |    |           | •         | •         |           | AGM08CCG                       | •  |    |           | 5.7       | 7    | 19400       | 24000 | 600                  |
| AGM10ACG                      | •                  |    |           | •         | •         |           | AGM10CCG                       | •  |    |           | 7.2       | 8.8  | 24600       | 30000 | 600                  |
| AGM12ACG                      |                    |    |           |           | •         |           |                                |    |    |           | 8.5       | 10.4 | 29000       | 35400 | 750                  |
| AGL10ACG                      |                    | •  | •         |           |           | •         | AGL10CCG                       |    | •  | •         | 7.2       | 8.8  | 24600       | 30000 | 1200                 |
| AGL15ACG                      |                    | •  | •         |           |           | •         | AGL15CCG                       |    | •  | •         | 10.8      | 13.2 | 36900       | 45000 | 1200                 |
| AGL20ACG                      |                    |    | •         |           |           | •         | AGL20CCG                       |    |    | •         | 14.4      | 17.6 | 49100       | 60000 | 1200                 |

\* Auxiliary Electric Heaters used with SZ models may require an additional bracket for proper installation. Consult SZ and TZ Mounting Brackets Table.

• Denotes compatibility

**Table 2: SZ and TZ Mounting Brackets**

| Configuration | Size        |             |             |
|---------------|-------------|-------------|-------------|
|               | 024-030     | 036-042     | 048-060     |
| Vertical      |             | S18S0010N20 |             |
| Horizontal    | S18S0010N11 | S18S0010N15 | S18S0010N25 |

**Table 3: AG Series Electric Heaters - Staging Options**

| Heater Model       | Staging     | Factory Setting |            |            | Alternate Setting |            |            |
|--------------------|-------------|-----------------|------------|------------|-------------------|------------|------------|
|                    | kW          | Dip Position    | Stage 1 kW | Stage 2 kW | Dip Position      | Stage 1 kW | Stage 2 kW |
| AGM04ACG           | 4           | ER1             | 4          |            |                   |            |            |
| AGM05ACG           | 5           | ER1             | 5          |            |                   |            |            |
| AGM08ACG           | 4 or 8      | ER1             | 4          | 4          | ER2               | 8          |            |
| AGM10ACG, AGL10ACG | 5 or 10     | ER1             | 5          | 5          | ER2               | 10         |            |
| AGM12ACG           | 4, 8, or 12 | ER1, ER4        | 4          | 8          | ER3, ER4          | 8          | 4          |
| AGL15ACG           | 5, 10 or 15 | ER1, ER4        | 5          | 10         | ER3, ER2          | 10         | 5          |
| AGL20ACG           | 10 or 20    | ER3, ER4        | 10         | 10         |                   |            |            |

## Electrical Data

Models:  
AGM/L  
04-20kW

Table 4: AG Series Electric Heaters - Electrical Data - SE, SZ, QE, VE, TE, TZ, and TS

| Auxiliary Electric Heat Model | Supply Circuit | Heater Amps |      | Minimum Circuit Amps |      | Maximum Fuse/Breaker Size |      |
|-------------------------------|----------------|-------------|------|----------------------|------|---------------------------|------|
|                               |                | 208V        | 230V | 208V                 | 230V | 208V                      | 230V |
| AGM04ACG                      | Single         | 13.7        | 15.1 | 17.1                 | 18.9 | 30                        | 30   |
| AGM05ACG                      | Single         | 17.3        | 19.2 | 21.6                 | 24   | 30                        | 40   |
| AGM08ACG                      | Single         | 27.4        | 30.3 | 34.3                 | 37.9 | 60                        | 60   |
| AGM10ACG                      | Single         | 34.7        | 38.3 | 43.4                 | 47.9 | 70                        | 80   |
| AGL10ACG                      | Single         | 34.7        | 38.3 | 43.4                 | 47.9 | 70                        | 80   |
| AGM12ACG                      | Single         | 41.1        | 45.4 | 51.4                 | 56.8 | 90                        | 100  |
|                               | Dual - L1/L2   | 27.4        | 30.3 | 34.3                 | 37.9 | 60                        | 60   |
|                               | Dual - L3/L4   | 13.7        | 15.1 | 17.1                 | 18.9 | 30                        | 30   |
| AGL15ACG                      | Single         | 52          | 57.5 | 65                   | 71.9 | 100                       | 100  |
|                               | Dual - L1/L2   | 34.7        | 38.3 | 43.4                 | 47.9 | 70                        | 80   |
|                               | Dual - L3/L4   | 17.3        | 19.2 | 21.6                 | 24   | 30                        | 40   |
| AGL20ACG                      | Single         | 69.3        | 76.6 | 86.6                 | 95.8 | 100                       | 100  |
|                               | Dual - L1/L2   | 34.7        | 38.3 | 43.4                 | 47.9 | 70                        | 80   |
|                               | Dual - L3/L4   | 34.7        | 38.3 | 43.4                 | 47.9 | 70                        | 80   |

## Notes:

- All heaters rated single phase 208/240V 60Hz
- All Fuses UL Class K general purpose
- All models 15kW or larger feature internal circuit breakers

Table 5: AG Series Electric Heaters - Electrical Data - SA and TAH

| Unit Model                | Head Kit Model | Supply Circuit | Heater Amps |      | Blower FLA | Minimum Circuit Amps |      | Maximum Fuse/Breaker Size |      |
|---------------------------|----------------|----------------|-------------|------|------------|----------------------|------|---------------------------|------|
|                           |                |                | 208V        | 230V |            | 208V                 | 230V | 208V                      | 230V |
| SA 024<br>TAH 026         | AGM04CCG       | Single         | 13.7        | 15.1 | 4.2        | 21                   | 23   | 35                        | 35   |
|                           | AGM05CCG       | Single         | 17.3        | 19.2 | 4.2        | 26                   | 28   | 40                        | 40   |
|                           | AGM08CCG       | Single         | 27.4        | 30.3 | 4.2        | 38                   | 42   | 60                        | 70   |
|                           | AGM10CCG       | Single         | 34.7        | 38.3 | 4.2        | 48                   | 52   | 80                        | 90   |
| SA 036<br>TAH 038         | AGL10CCG       | Single         | 34.7        | 38.3 | 4.2        | 48                   | 52   | 80                        | 90   |
|                           | AGL15CCG       | Dual- L1/L2    | 34.7        | 38.3 | 4.2        | 43                   | 48   | 70                        | 80   |
|                           |                | Dual- L3/L4    | 17.3        | 19.2 | 4.2        | 26                   | 28   | 40                        | 40   |
| SA 048-060<br>TAH 049-064 | AGL10CCG       | Single         | 34.7        | 38.3 | 7.5        | 51                   | 55   | 80                        | 90   |
|                           | AGL15CCG       | Dual- L1/L2    | 34.7        | 38.3 | 0.0        | 43                   | 48   | 70                        | 80   |
|                           |                | Dual- L3/L4    | 17.3        | 19.2 | 7.5        | 29                   | 32   | 40                        | 50   |
|                           | AGL20CCG       | Dual- L1/L2    | 34.7        | 38.3 | 0.0        | 43                   | 48   | 70                        | 80   |
|                           |                | Dual- L3/L4    | 34.7        | 38.3 | 7.5        | 51                   | 55   | 80                        | 90   |

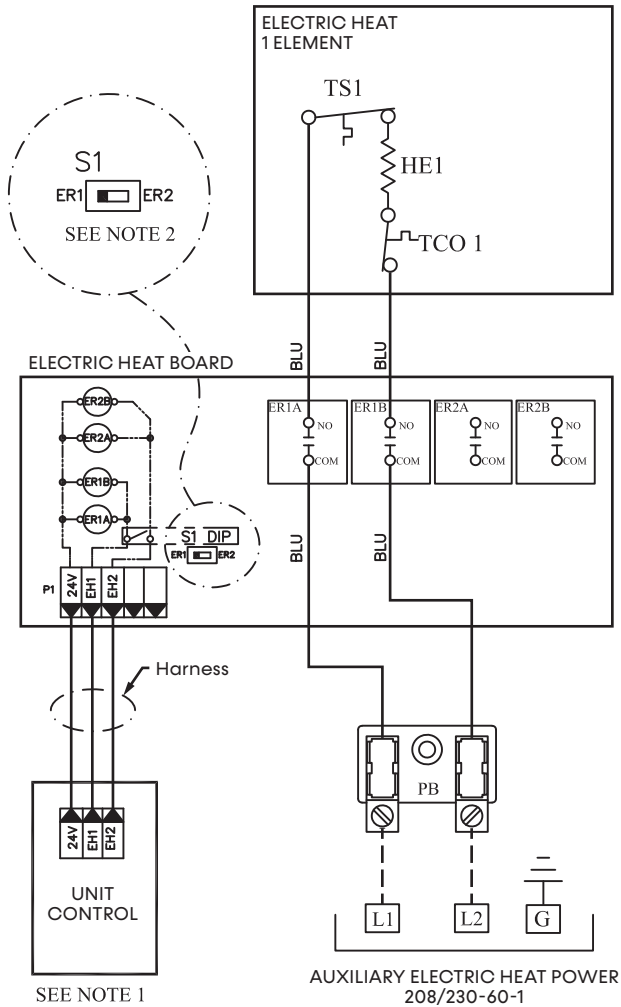
## Notes:

- All heaters rated single phase 208/240V 60Hz
- All Fuses UL Class K general purpose
- All models 15kW or larger feature internal circuit breakers

Models:  
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04-20kW

## Example Wiring Diagrams Packaged Units

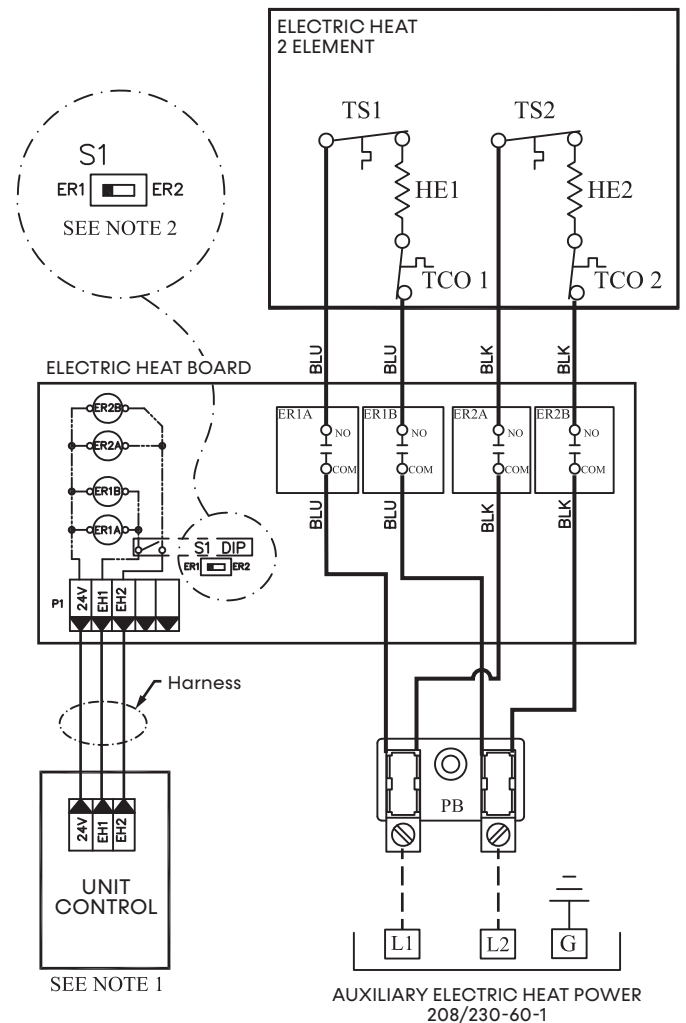
### 4 and 5 kW - Single Element



SEE NOTE 1

AUXILIARY ELECTRIC HEAT POWER  
208/230-60-1

### 8 and 10 kW - Two Element



SEE NOTE 1

AUXILIARY ELECTRIC HEAT POWER  
208/230-60-1

#### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER1 for auxiliary staging options consult Table 3.

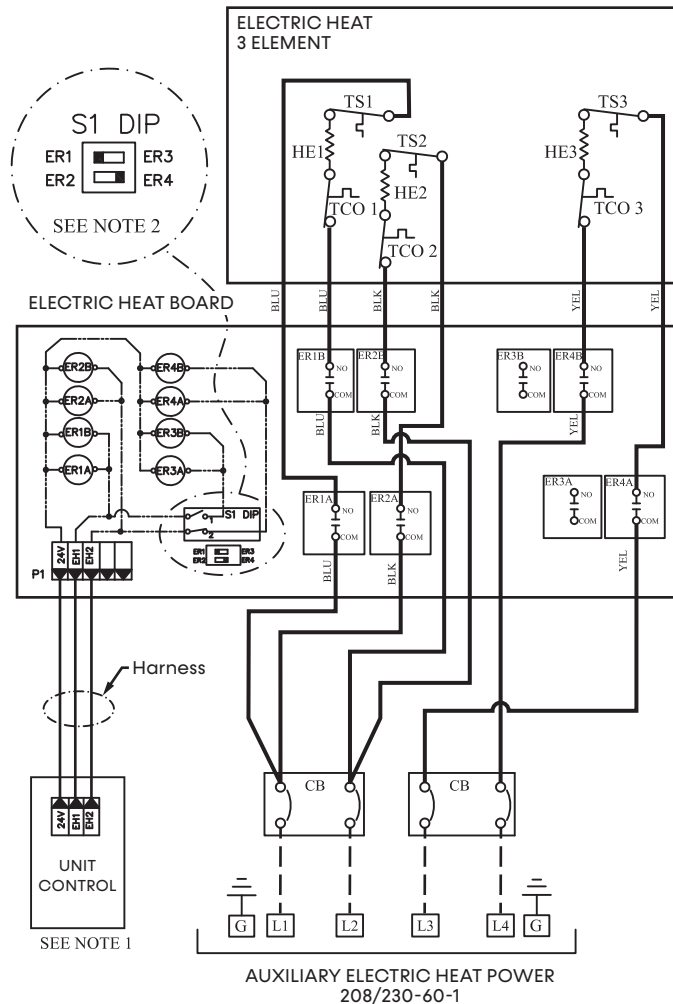
#### NOTES:

1. Field install Electric Heat harness to P1 connector.
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# Example Wiring Diagrams Packaged Units

Models:  
AGM/L  
04-20kW

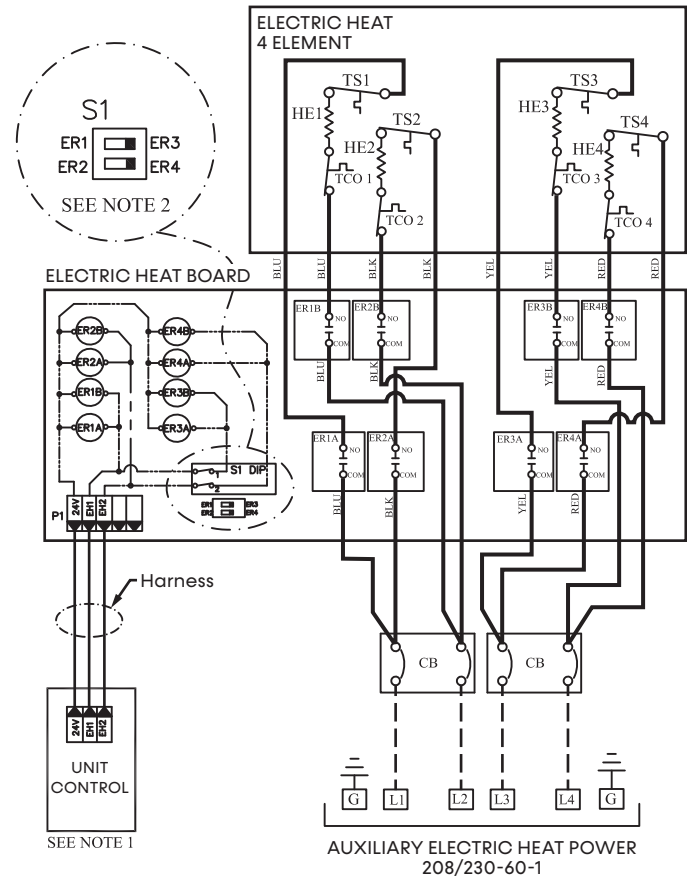
## 12 and 15 kW - Three Element



### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER1 and ER4 for auxiliary staging options consult Table 3.

## 20 kW - Four Element



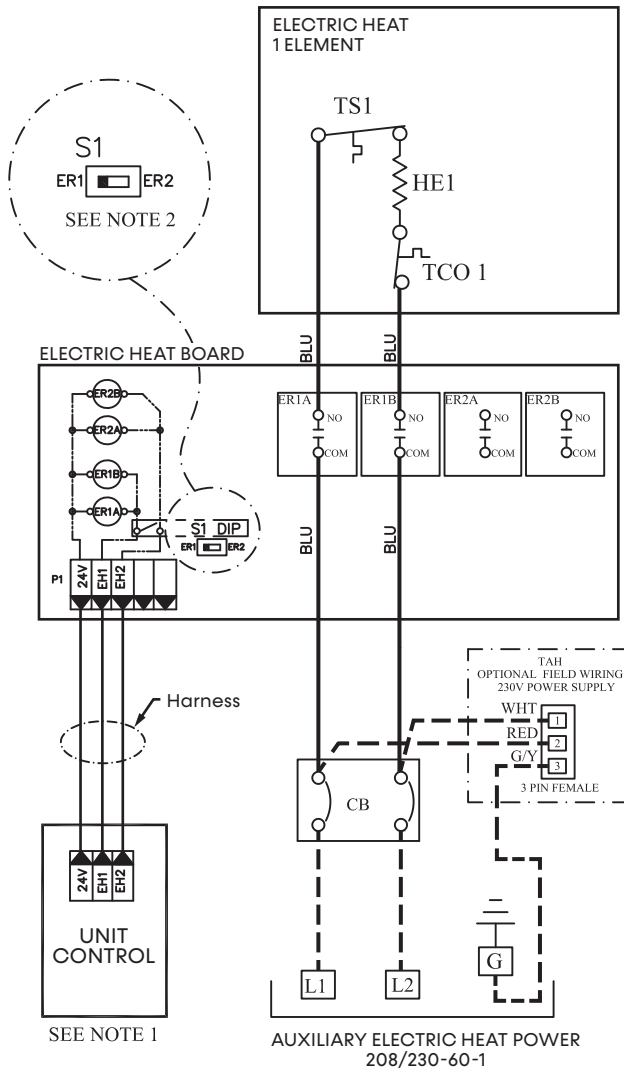
### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER3 and ER4 for auxiliary staging options consult Table 3.

Models:  
AGM/L  
04-20kW

## Example Wiring Diagrams Air Handlers

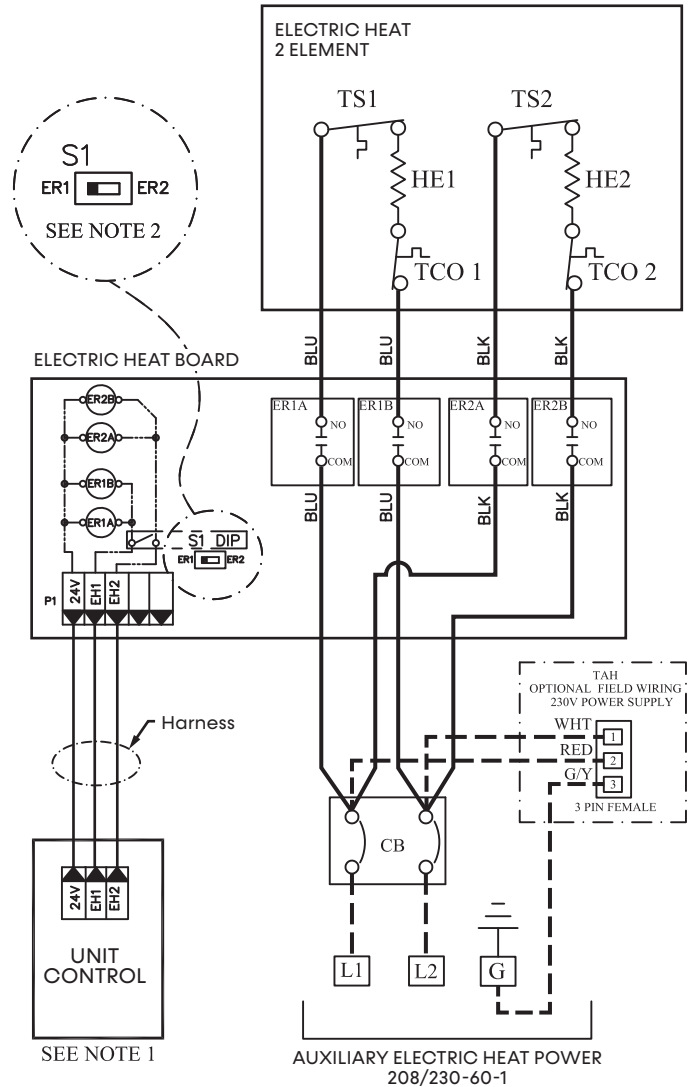
### 4 and 5 kW - Single Element



#### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER1 for auxiliary staging options consult Table 3.

### 8 and 10 kW - Two Element



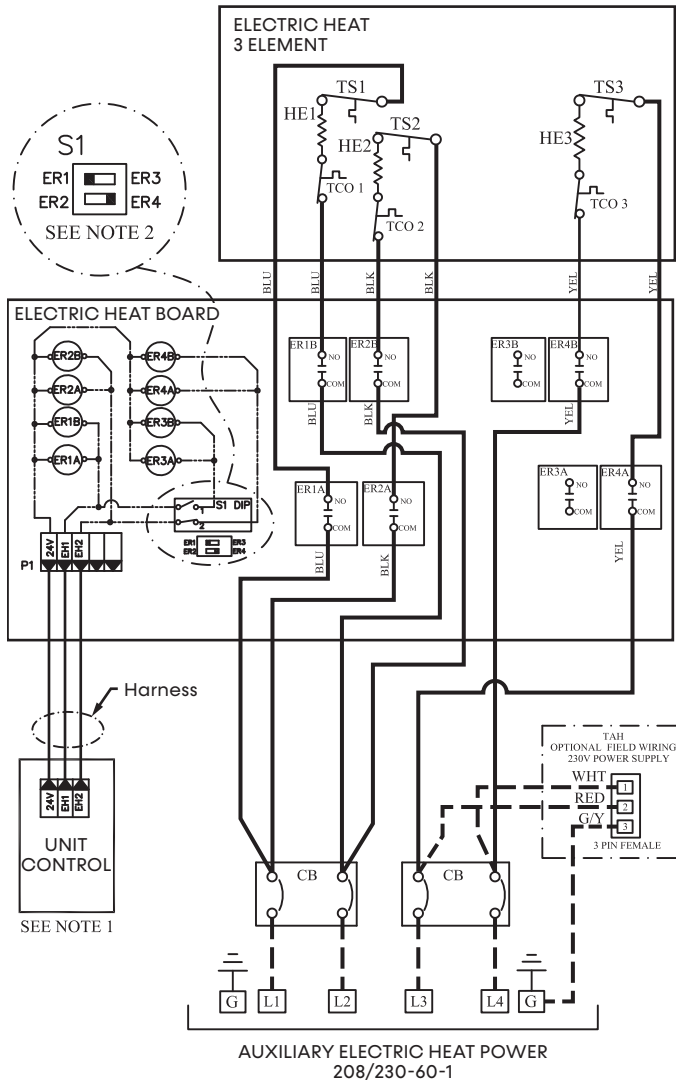
#### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER1 for auxiliary staging options consult Table 3.

# Example Wiring Diagrams Air Handlers

Models:  
AGM/L  
04-20kW

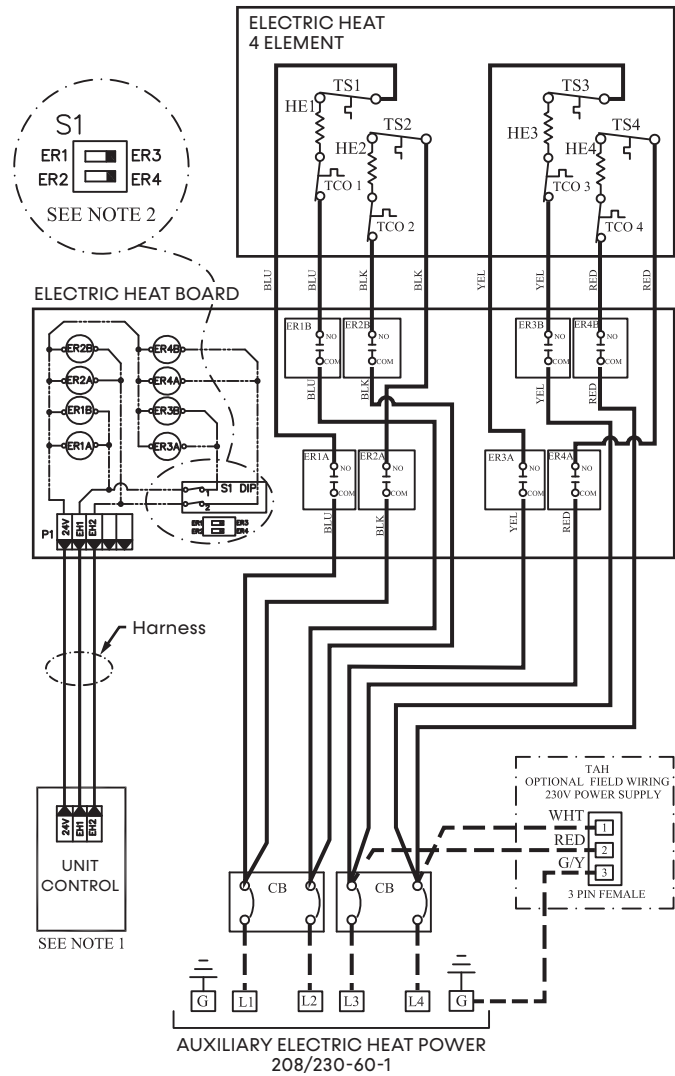
## 12 and 15 kW - Three Element



### NOTES:

1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER1 and ER4 for auxiliary staging options consult Table 3.

## 20 kW - Four Element



### NOTES:

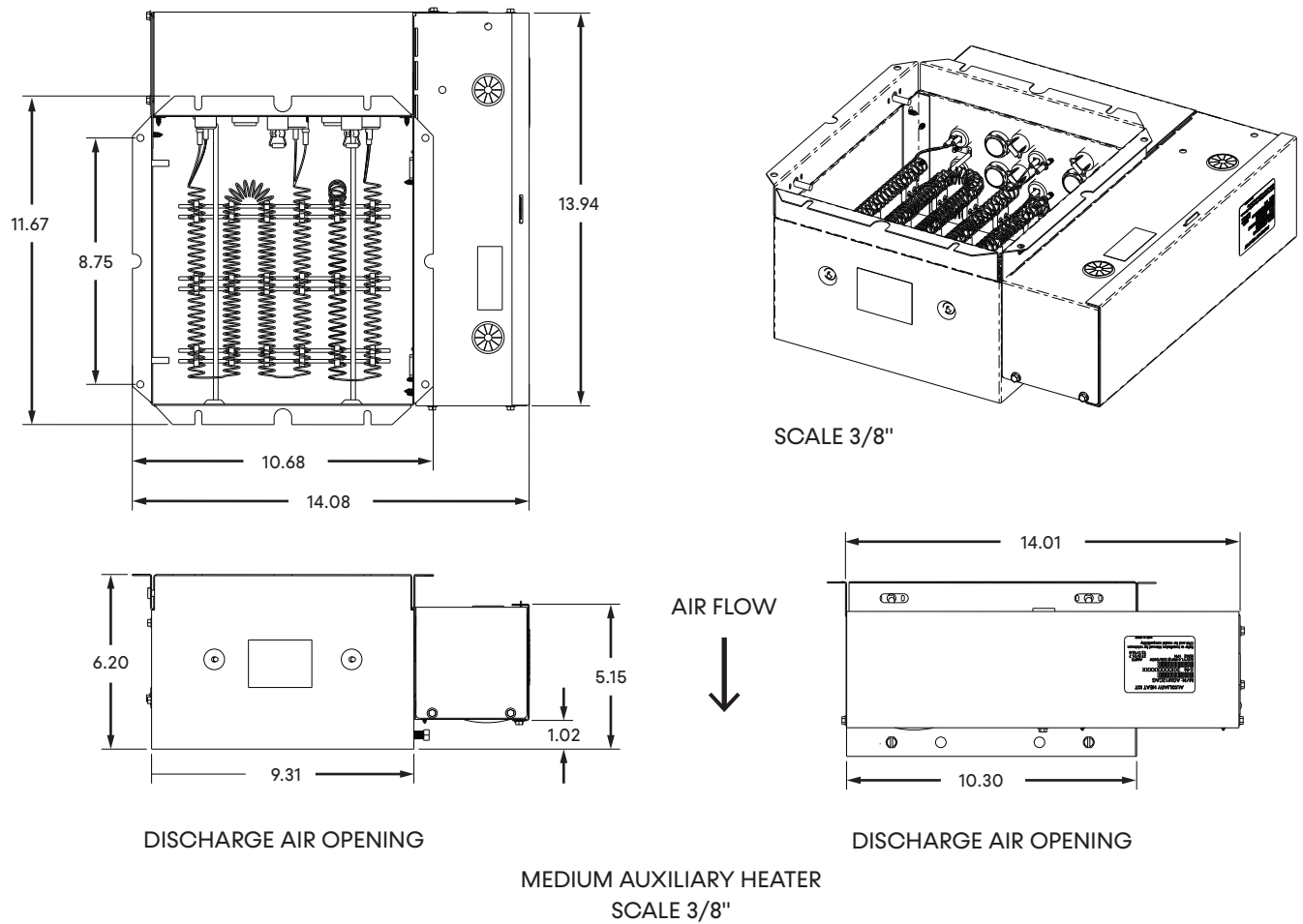
1. Field install Electric Heat harness to P1 connector.
2. Factory set dipswitch to ER3 and ER4 for auxiliary staging options consult Table 3.

Models:  
AGM/L  
04-20kW

## Dimensions

The maximum recommended air velocity for a supply plenum is 900 FPM. When connecting a plenum to an external auxiliary heater, ensure that the air velocity in the plenum does not exceed 900 FPM. Noise and air distribution issues may occur if supply plenum velocities exceed 900 FPM.

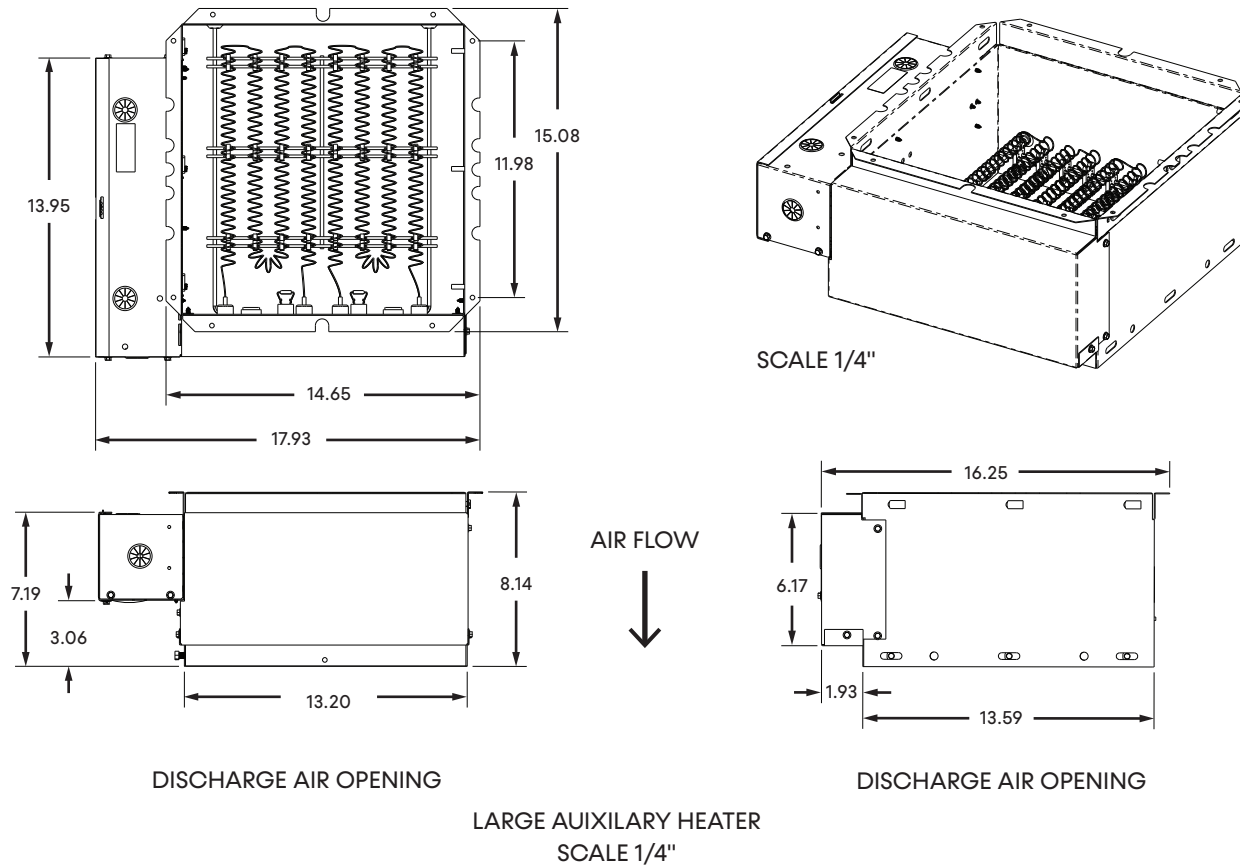
**Figure 13: Medium Auxiliary Heater - AGM Dimensions**



## Dimensions

Models:  
AGM/L  
04-20kW

**Figure 14: Large Auxiliary Heater - AGL Dimensions**



Models:  
AGM/L  
04-20kW

## Troubleshooting

### GENERAL TROUBLESHOOTING

If operational difficulties are encountered, perform the preliminary checks below before referring to the electric heat troubleshooting charts. Verify that the unit is receiving electrical supply power.

After completing the preliminary check described above, inspect for other obvious problems such as broken or disconnected wires, etc. If everything appears to be in order, but the electric heater still fails to operate properly, refer to the heat pump controller DXM2.5 or CXM2 Functional Troubleshooting Flow Chart or Electric Heater Functional Troubleshooting Table.

### ELECTRIC HEAT OUTPUT

Electric heat outputs are 24 VDC ground sinking and require a voltmeter set for DC to verify operation. The terminal marked **24 VDC** is the 24 VDC supply to the electric heater board; terminal EH1 is stage-1 electric heat; terminal EH 2 is stage-2 electric heat. When electric heat is energized (the thermostat is sending a W input into the heat pump controller), there is 24 VDC between terminal 24 VDC and EH1 (stage-1 electric heat) and/or EH2 (stage-2 electric heat). A reading of 0 VDC between 24 VDC and EH1 or EH2 indicates that the heat pump control board is NOT sending output signal to the electric heat board. The heat pump control board troubleshooting is best summarized as verifying inputs and outputs. After inputs and outputs are verified and board operation is confirmed, the problem must be elsewhere. For additional troubleshooting, see Table 6.

# Troubleshooting

Models:  
AGM/L  
04-20kW

## ELECTRICAL HEAT FUNCTIONAL TROUBLESHOOTING TABLE

The Electric Heater Functional Flow Table is a comprehensive method for identifying several malfunctions that may occur and is not limited to just the Electric Heater control board. Refer heat pump controller troubleshooting guide for additional functional troubleshooting.

**Table 6: Electric Heater Functional Flow**

| Fault                 | Possible Cause                            | Solution                                                                                                                                                                                                                                                                                                                    |
|-----------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No Electric Heat      | Main power problems                       | <ul style="list-style-type: none"> <li>Check line voltage and disconnect.</li> </ul>                                                                                                                                                                                                                                        |
|                       | Fan not activated                         | <ul style="list-style-type: none"> <li>Check jumper G and R for fan operation. Check for line voltage across blower relay contacts.</li> <li>Check fan power. Enable relay operation (if present).</li> <li>Check for line voltage at motor. Check capacitor.</li> </ul>                                                    |
|                       | Resettable Limit Switch tripped           | <ul style="list-style-type: none"> <li>Check fan power. The fan must be on before the heater turns on.</li> <li>Check for obstructions to airflow.</li> <li>Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.</li> </ul>                                                   |
|                       | One shot thermal cutout tripped           | <ul style="list-style-type: none"> <li>Check fan power. The fan must be on before the heater turns on.</li> <li>Check for obstructions to airflow.</li> <li>Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.</li> <li>Verify Resettable Limit Switch operation</li> </ul> |
| Low Output            | Heating element burned out                | <ul style="list-style-type: none"> <li>Replace electric heater</li> </ul>                                                                                                                                                                                                                                                   |
|                       | Cycling on automatic thermal limit switch | <ul style="list-style-type: none"> <li>Check fan power. The fan must be on before the heater turns on.</li> <li>Check for obstructions to airflow.</li> <li>Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.</li> </ul>                                                   |
| Overheating           | Insufficient airflow                      | <ul style="list-style-type: none"> <li>Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.</li> </ul>                                                                                                                                                                        |
|                       | Uneven or partially-blocked airflow       |                                                                                                                                                                                                                                                                                                                             |
|                       | High line voltage                         | <ul style="list-style-type: none"> <li>Check nameplate and voltage (nameplate and voltage should match).</li> </ul>                                                                                                                                                                                                         |
| Terminals Overheating | Loose connections                         | <ul style="list-style-type: none"> <li>Check for signs of terminal and wiring overheating. Tighten and repair as required.</li> </ul>                                                                                                                                                                                       |
|                       | Improperly sized wire                     | <ul style="list-style-type: none"> <li>All incoming wiring should be sized in accordance with the NEC and local codes.</li> </ul>                                                                                                                                                                                           |
|                       | High voltage                              | <ul style="list-style-type: none"> <li>Check nameplate and voltage (nameplate and voltage should match).</li> </ul>                                                                                                                                                                                                         |

Models:  
AGM/L  
04-20kW

## Revision History

| Date     | Section         | Description |
|----------|-----------------|-------------|
| 04/09/25 | First published |             |



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