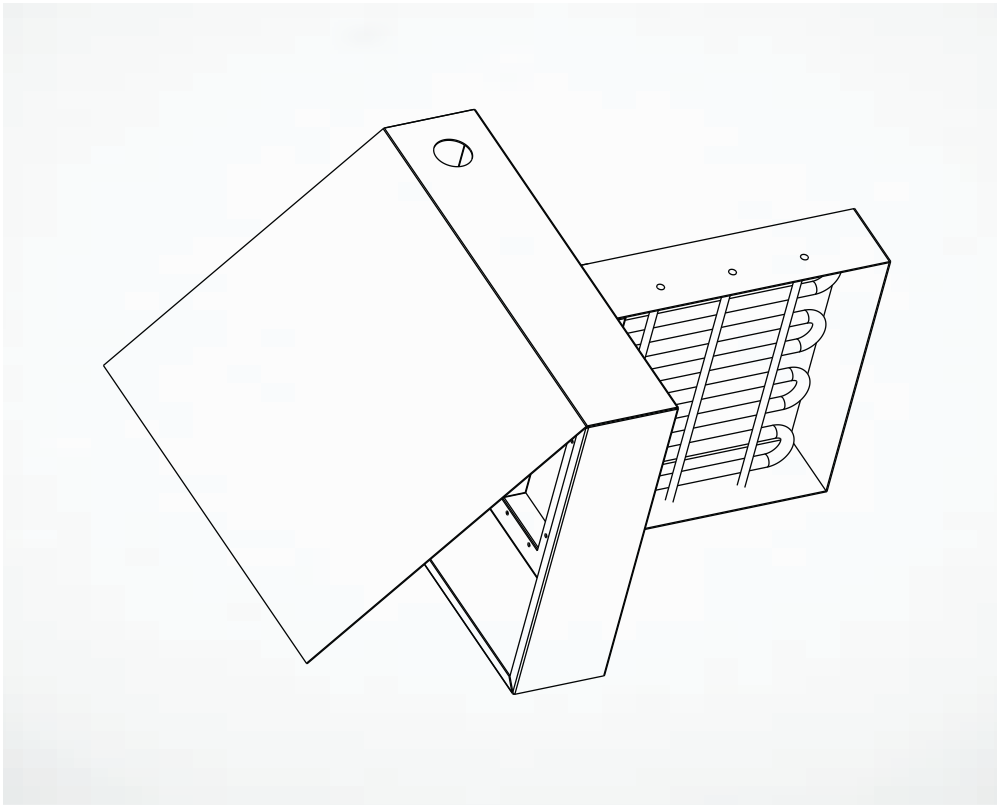
AH SERIES ELECTRIC DUCT HEATER

APPLICATION, OPERATION & MAINTENANCE MANUAL

Part#: 97B0153N01 | Revised: February 9, 2026

Models: AHS, AHM, and AHL



Models:
AH

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Overview

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GENERAL INFORMATION

The AH Series Auxiliary Electric Duct Heat modules are designed to be installed within the ductwork attached to packaged commercial water source heat pumps.

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.

ATTENTION: 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 the manufacturer shall be installed in connecting ductwork. The installation of any other auxiliary devices is beyond the manufacturer'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:
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Model Nomenclature

1	2	3	4	5	6	7	8
A	H	S	0	5	N	A	G

MODEL
AH = Accessory Electric Duct Heater

DUCT SIZE

	Width	Height
S	12.5"	12.0"
M	13.5"	14.0"
L	15.5"	15.0"

kW SIZE
05 = 5 KW
10 = 10 KW
15 = 15 KW
20 = 20 KW

VOLTAGE
E = 277-1-60
F = 480-3-60
G = 208/230-1-60
H = 208/230-3-60

REVISION LEVEL
A = Current

FUTURE
N = Not Applicable

Installation Instructions

Models:
AH

INSTALLATION

Before installing the heater, Inspect thoroughly for shipping damages. Notify carrier immediately if any damage is found. Check all porcelain insulators for breakage and inspect heater element wire to see that none have been deformed.

The minimum air velocity as shown in the **Electrical Data** table and on the heater label is required and must be even across the face of the heater. The temperature of the air entering the heater must not exceed 77°F.

Connect heater as shown on heater schematic wiring diagram. All electrical connections, wire sizes and type and conduit sizes shall meet the National Electric Code.

Main power supply, minimum wire sizes, circuit, fusing, etc. are shown on schematic wiring diagram.

The air duct system should be designed and installed in accordance with the standards of the National Fire Protection Association for the installation of Air-Conditioning and Ventilation Systems. (Pamphlet 90A or 90B)

Heaters should be mounted in the duct far enough away from the blower for any change in the direction of airflow to ensure even airflow over the entire face area of the heater. If a heater cannot be mounted at least 48 inches downstream from the blower or a change in direction of airflow, baffles must be Installed in the duct ahead of the heater to ensure even airflow across the face of the heater. Air filters, humidifiers, or cooling coils must be at least 48 inches from the nearest heating element.

All heaters are suitable for zero clearance between duct and combustible material.

The heating element is enclosed by a sheet metal wrapper. This wrapper is not to be used as part of the duct. To install, cut a hole in the side of the duct, ½ inch larger than the insert portion. Insert the heating element and fasten control panel to the side of the duct by means of sheet metal screws. If the duct is internally lined, then use a recessed element equal to the thickness of the internal insulation.

CHECKOUT

Before energizing this equipment for operation be sure that all electrical terminal connections, clamps, screws, etc, are tight as these may have become loose in shipment. It is advisable to retighten all electrical connections after the equipment has been in operation and the components have reached operating temperature. In addition to the above, the following tests and procedures should be followed.

1. Clean all dirt, dust and moisture from equipment.
2. Check for loose terminal connections.
3. Check for proper clearances of live parts, between phases and to ground and make sure that all required barriers are in place.
4. Check for missing insulation in equipment and on conductors.
5. Check for any modifications, alterations, for the use of unapproved parts.
6. Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
7. The equipment room or area should be dried of all dampness and moisture accumulations.
8. Check that conductors run in multiples to ensure that they are property phased.
9. Conduct an insulation resistance test of all equipment and wiring.

Any modifications or repairs to the equipment without written permission from the factory will be done at the installer's own risk and expense.

Leaving-air thermostats or other devices which may cause short-cycling of the contactors are not recommended for use with this equipment.

⚠ WARNING

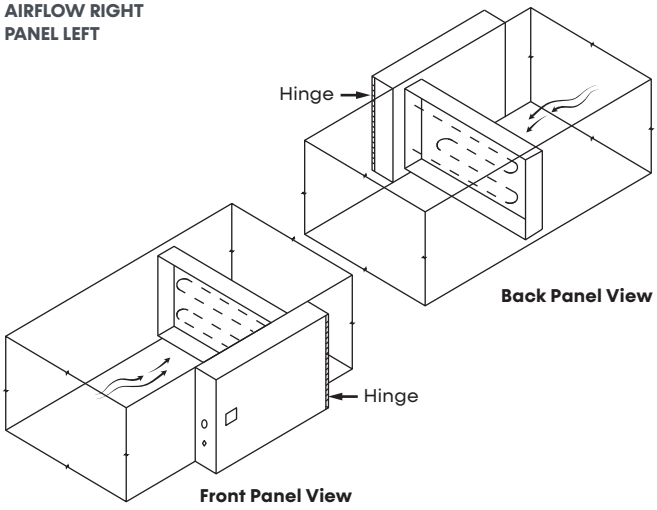
The use of discharge air sensing devices to control this heating unit is NOT factory recommended, and may void the warranty.

Models:
AH

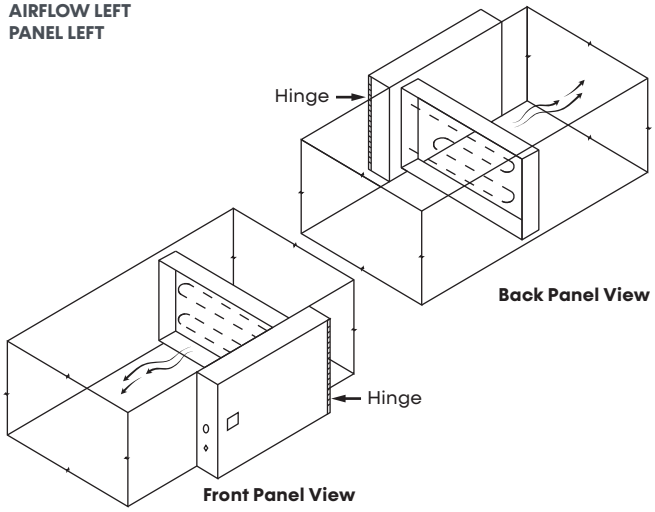
Mounting Positions

Horizontal Mounting Positions

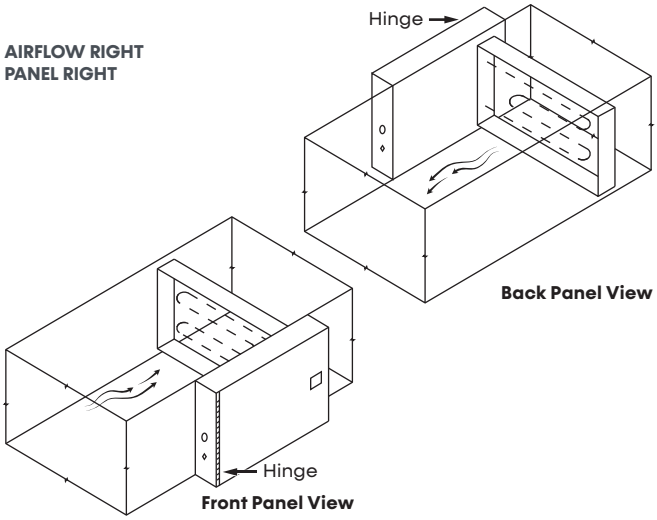
AIRFLOW RIGHT
PANEL LEFT



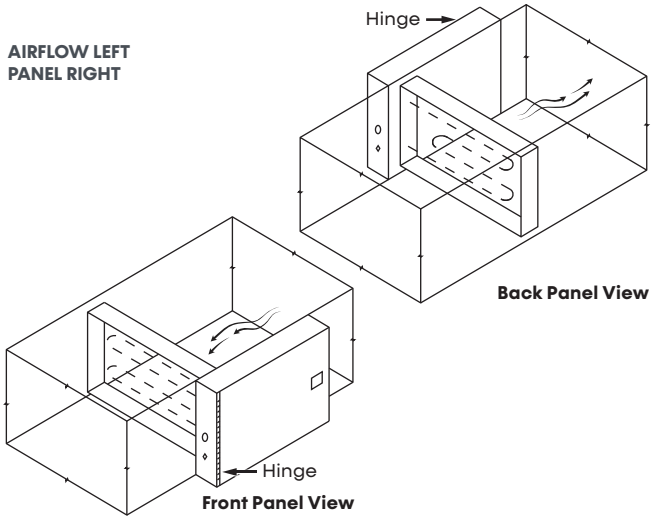
AIRFLOW LEFT
PANEL LEFT



AIRFLOW RIGHT
PANEL RIGHT

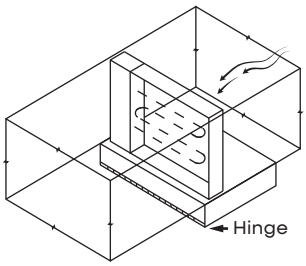


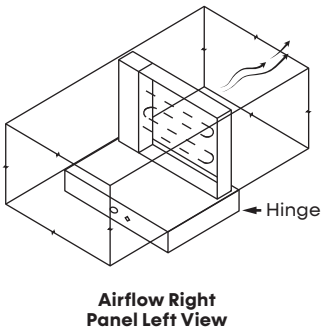
AIRFLOW LEFT
PANEL RIGHT



BOTTOM MOUNT

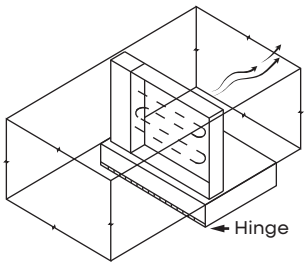
Airflow Left
Panel Right View

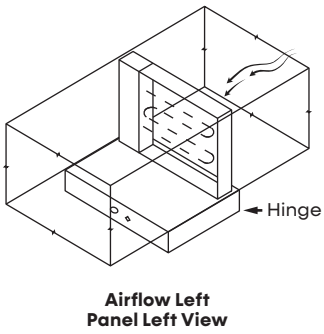




Airflow Right
Panel Left View

Airflow Right
Panel RightView





Airflow Left
Panel Left View

Mounting Positions

Models:
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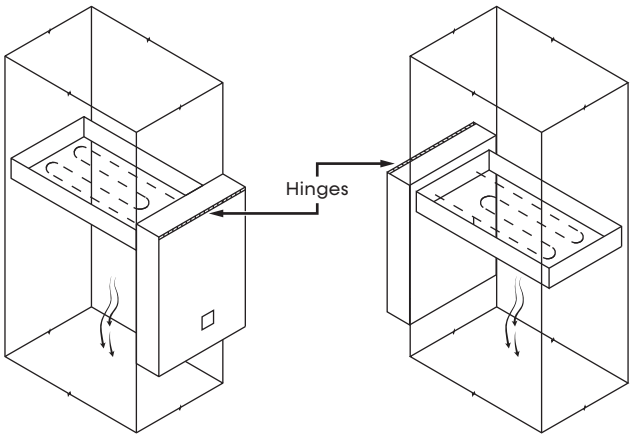
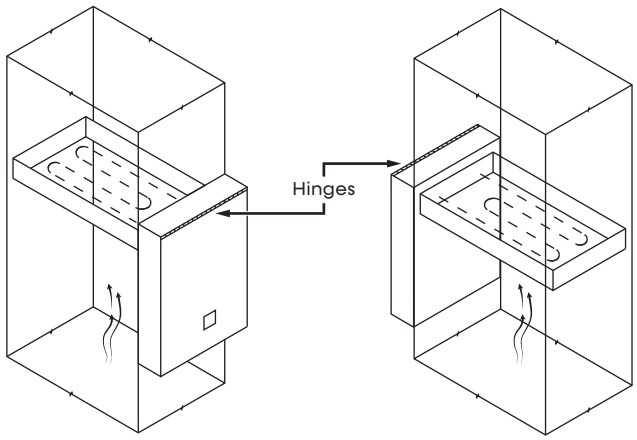
Vertical Mounting Positions

AIRFLOW DOWN
PANEL DOW



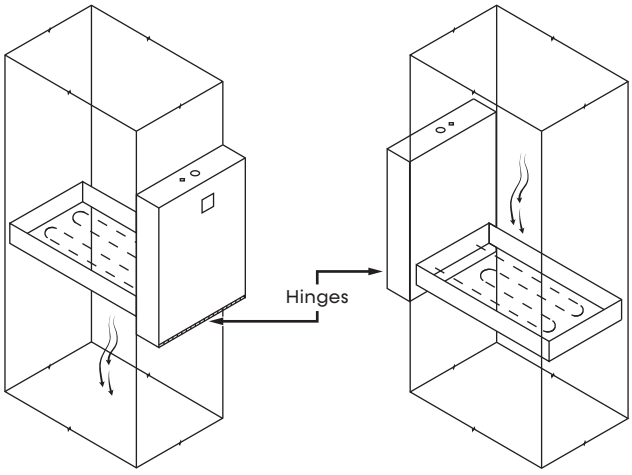
Front Panel View **Back Panel View**

AIRFLOW UP
PANEL DOWN



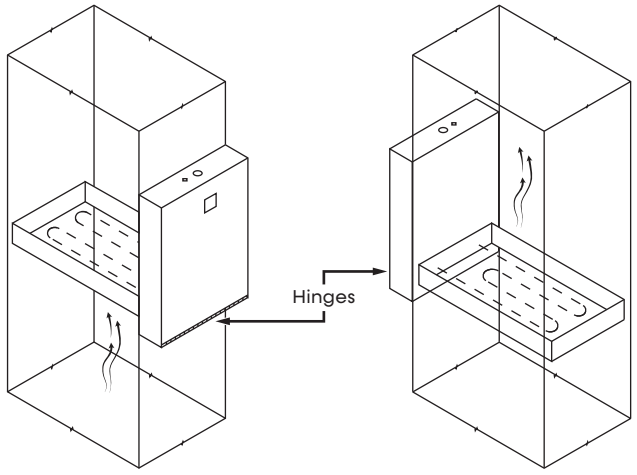
Front Panel View **Back Panel View**

AIRFLOW DOWN
PANEL UP



Front Panel View **Back Panel View**

AIRFLOW UP
PANEL UP



Front Panel View **Back Panel View**

Models:
AH

Wiring

WIRING AND SETUP

1. Install power wiring and connect to the terminal block or fuse block. Refer to the following figures:
   - **Single Phase Power Wiring**
   - **Three Phase Power Wiring**
2. Ensure unit airflow setting is above minimum airflow rating for the electric heat model from the **Electrical Data** table.
3. Turn on the power to the unit and the auxiliary electric heat.

Refer to the sample system wiring diagram for low voltage connections.

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. If the heater has more than one stage, refer to the control handling staging timings to verify additional stages are operating correctly.

Figure 1: Single Phase Power Wiring

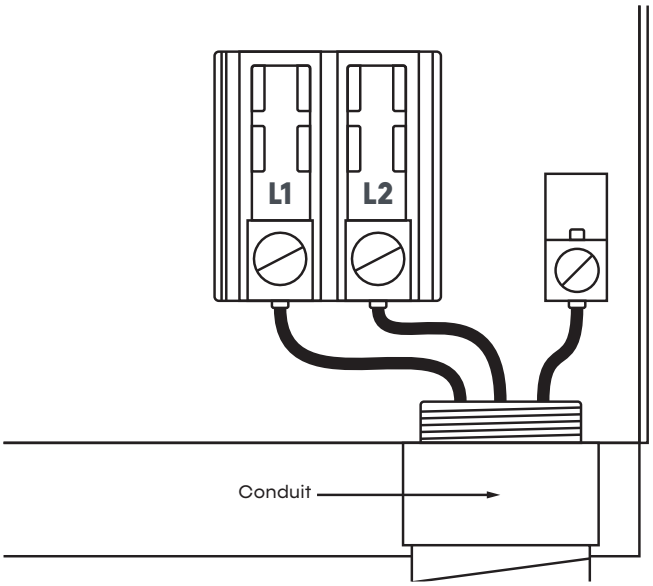
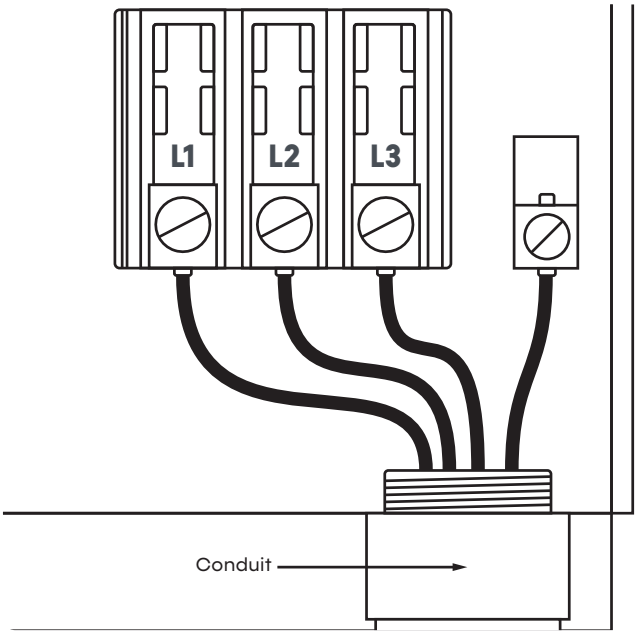


Figure 2: Three Phase Power Wiring



Sample System Wiring

Models:
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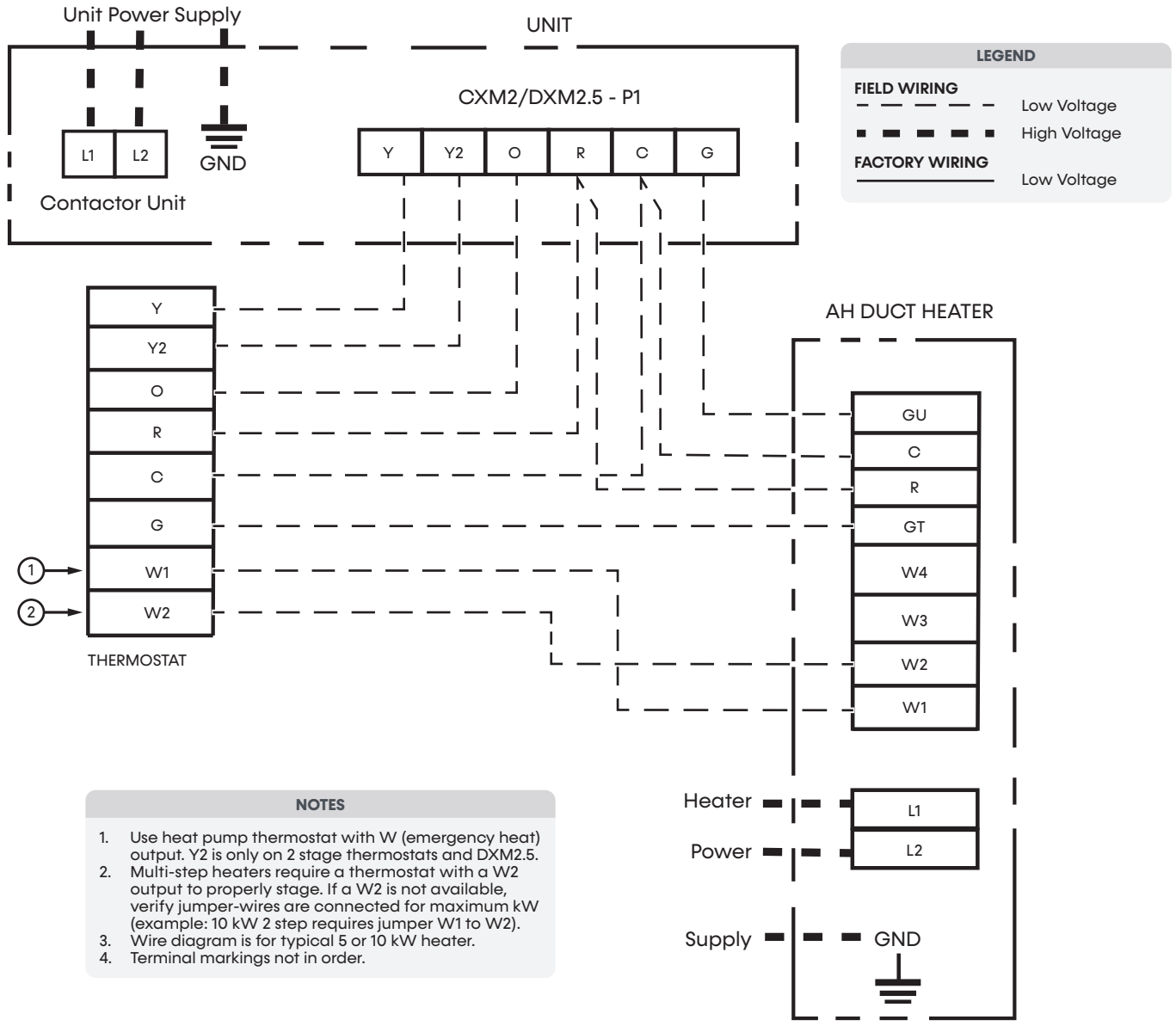

NOTES

1. Use heat pump thermostat with W (emergency heat) output. Y2 is only on 2 stage thermostats and DXM2.5.
2. Multi-step heaters require a thermostat with a W2 output to properly stage. If a W2 is not available, verify jumper-wires are connected for maximum kW (example: 10 kW 2 step requires jumper W1 to W2).
3. Wire diagram is for typical 5 or 10 kW heater.
4. Terminal markings not in order.

Models:
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Electrical Data

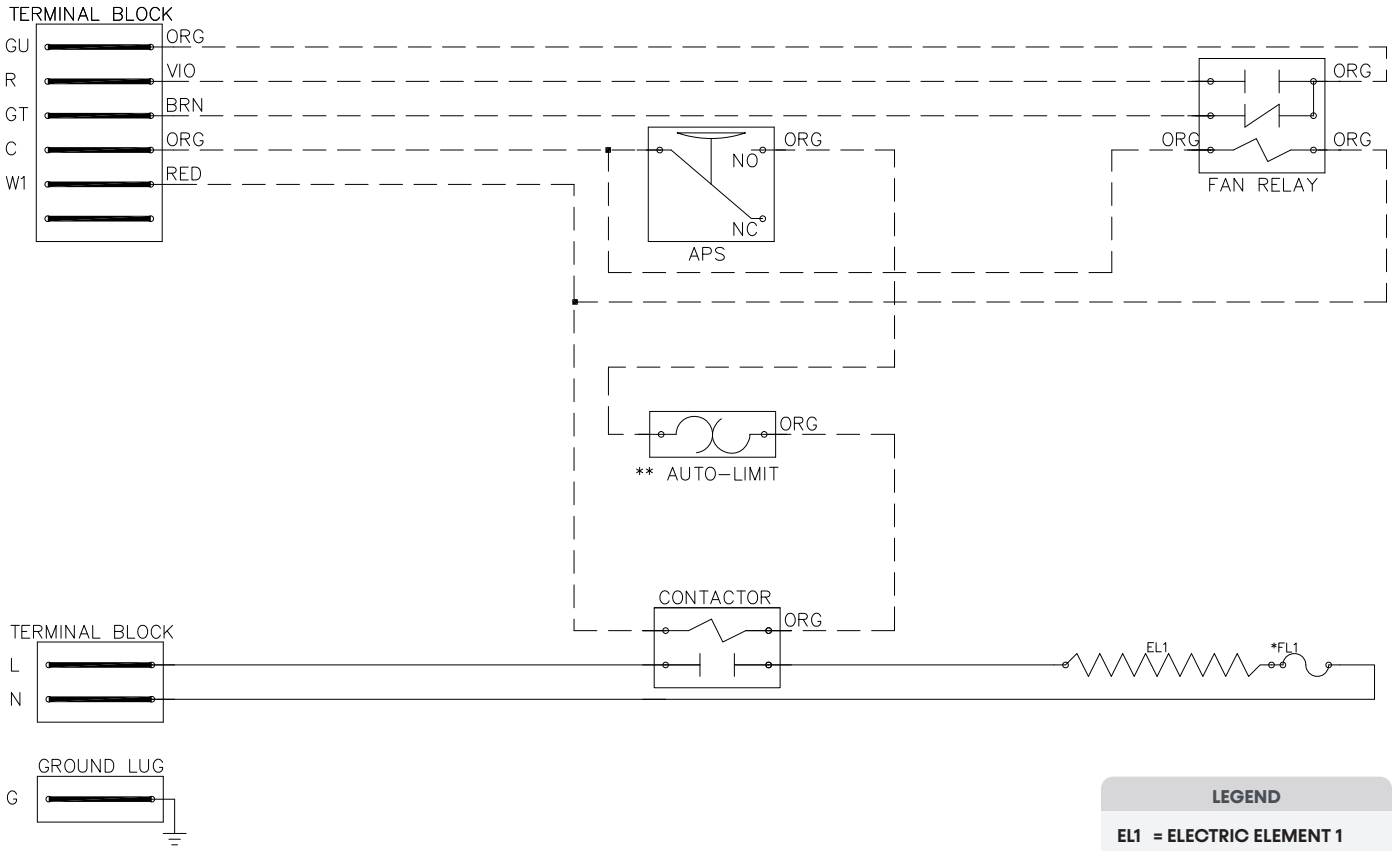
Table 1: Electrical Data

Model	Duct Size	Voltage Code	Voltage	kW	Amps	Stages	Minimum Air Velocity (ft/Min.)	Minimum Wire Size (AWG)[1]
05	S	E	277-1-60	4.6	16.61	1	460	6
		F	460-3-60	4.6	5.8		530	10
		G	208/230-1-60	3.8/4.6[2]	18.0/20.0[2]		520	6/6
		H	208/230-3-60	3.75/4.6[2]	10.4/11.6[2]		480	10/10
10	S	G	208/230-1-60	7.5/9.2[2]	36.1/40.0[2]	2	680	6
	M	E	277-1-60	9.2	33.21	2	520	10
		F	460-3-60	9.2	11.5	2	650	4/4
		G	208/230-1-60	7.5/9.2[2]	36.1/40.0[2]	2	680	8/8
		H	208/230-3-60	7.5/9.2[2]	20.82/23.1[2]	2	670	10
	L	E	277-1-60	9.2	33.21	2	520	3/3
		F	460-3-60	9.2	11.5	2	550	6/6
		G	208/230-1-60	7.5/9.2[2]	36.1/40.0[2]	2	580	6
		H	208/230-3-60	7.5/9.2[2]	20.82/23.1[2]	2	560	12
15	M	E	277-1-60	13.8	49.82	2	980	6/6
		F	460-3-60	13.8	17.3	2	900	10/10
		G	208/230-1-60	11.3/13.8[2]	54.1/60.0[2]	3	900	6
		H	208/230-3-60	11.2/13.8[2]	31.2/34.7[2]	2	900	10
	L	E	277-1-60	13.8	49.82	2	980	4/4
		F	460-3-60	13.8	17.3	2	730	8/8
		G	208/230-1-60	11.3/13.8[2]	54.1/60.0[2]	3	730	10
		H	208/230-3-60	11.2/13.8[2]	31.2/34.7[2]	2	730	12
20	L	F	460-3-60	18.4	23.1	2	910	10/10
		G	208/230-1-60	15.0/18.4[2]	72.1/80.0[2]	4	970	12/12
		H	208/230-3-60	15.0/18.4[2]	41.6/44.26[2]	2	970	6/6

1. Minimum wiring listed. All electrical connections and wire sizes must meet the National Electric Code as well as any applicable local codes.
2. 208V/230V

Example Wiring Diagram AHS05 - 277V - 1Ph - 60Hz

Models:
AH

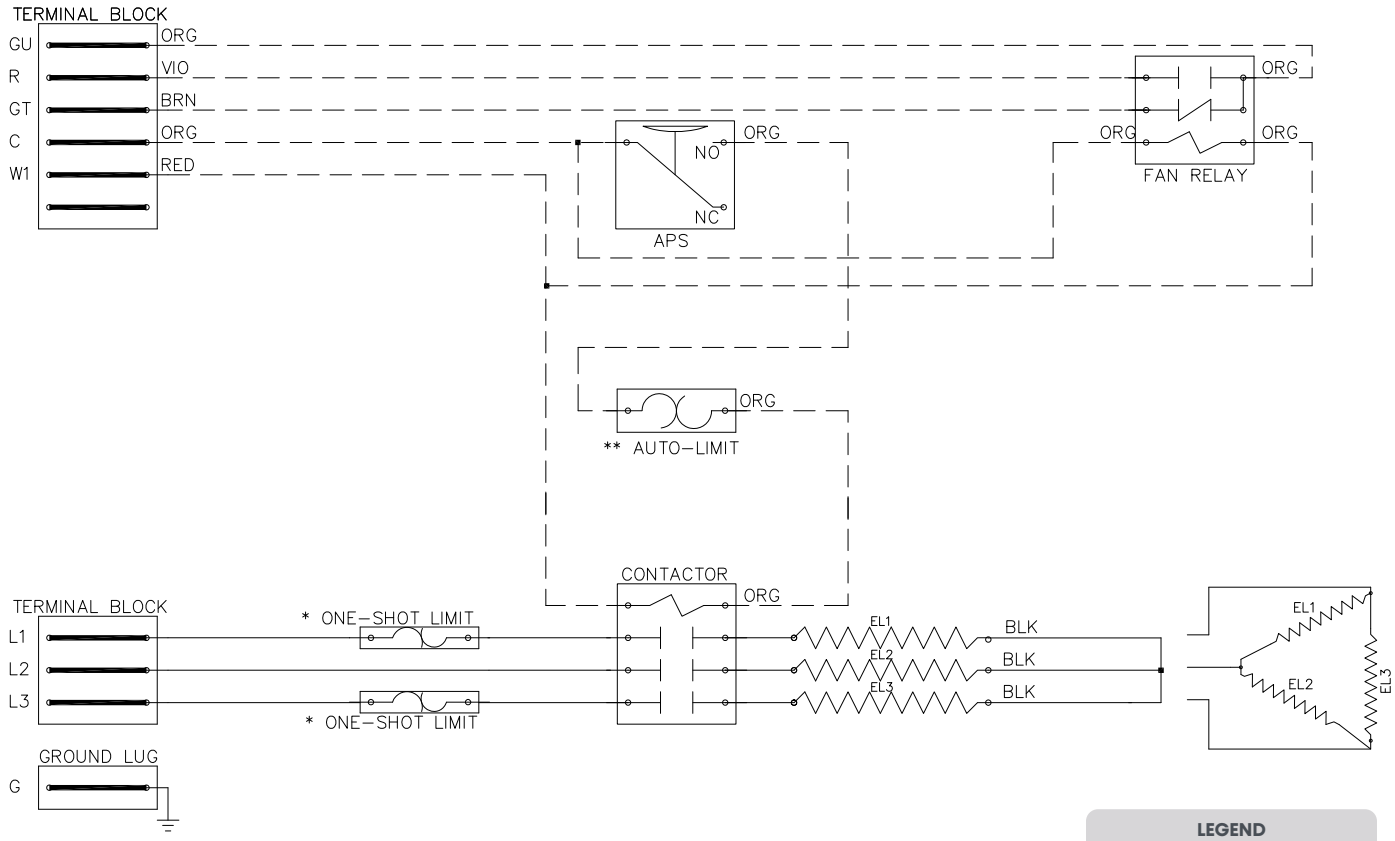


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHS05 - 460V - 3Ph - 60Hz



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Example Wiring Diagram
AHS05 - 208/230V - 1Ph - 60Hz

Models:
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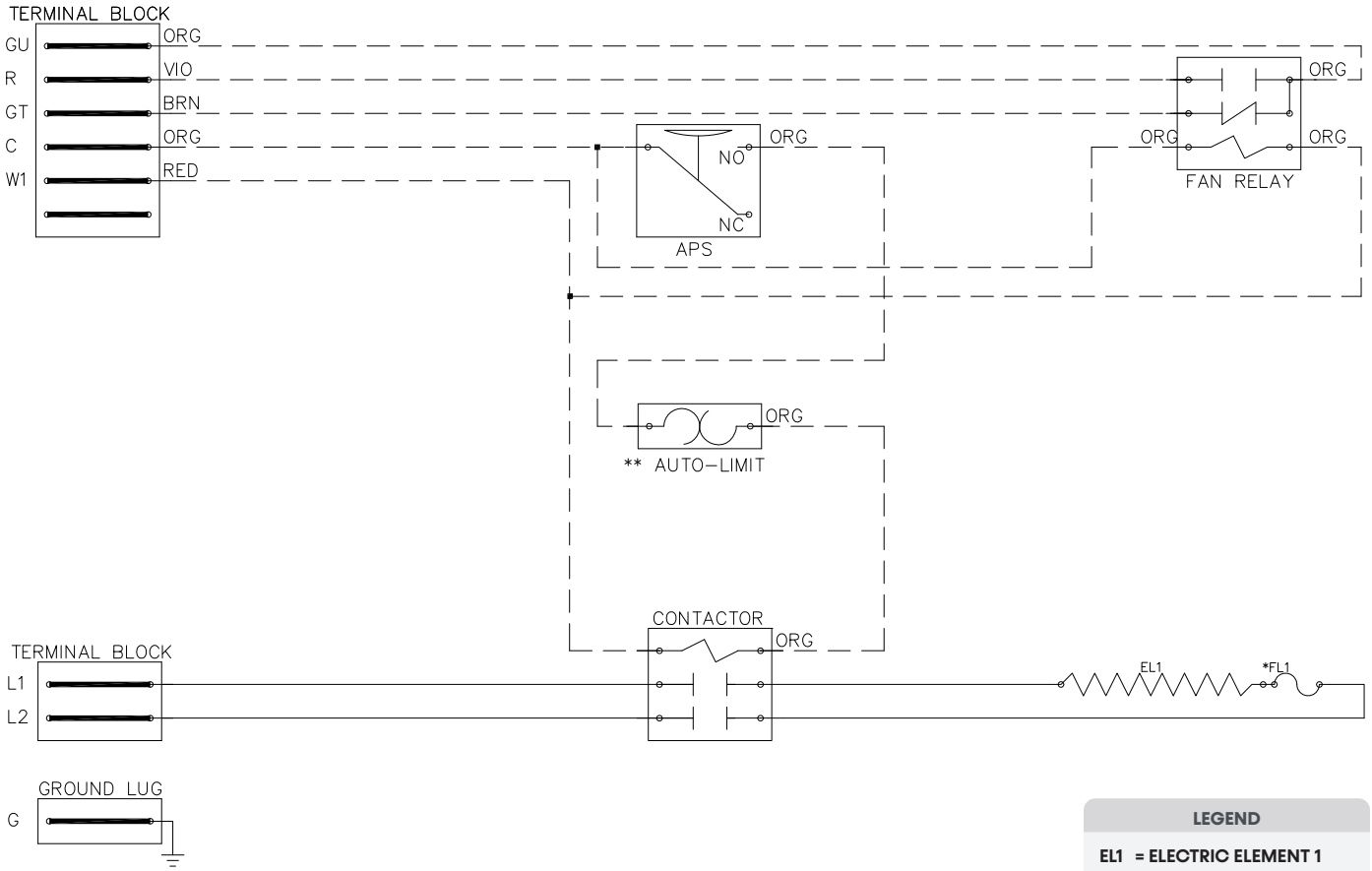

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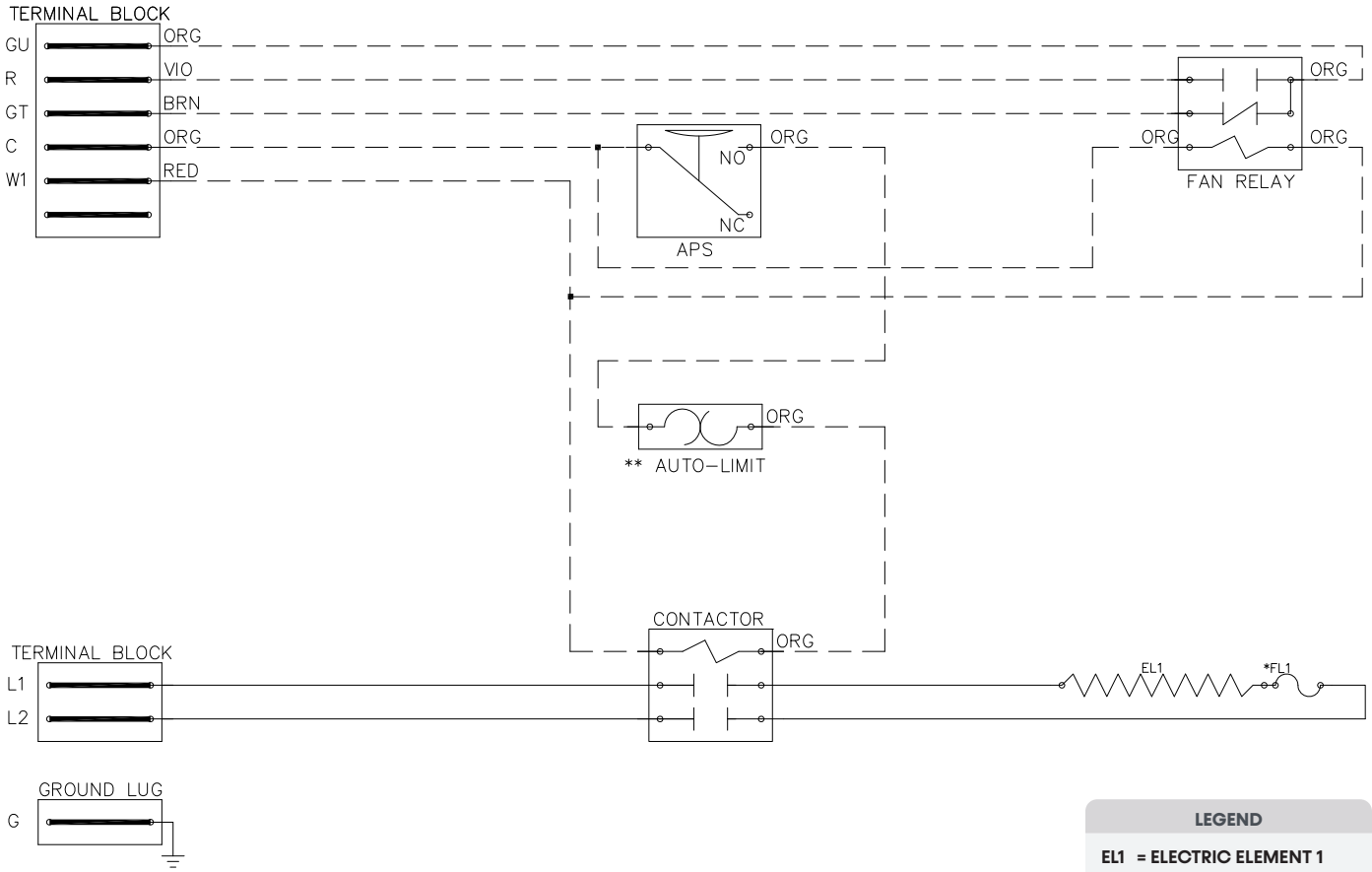
Models:
AH

Example Wiring Diagram
AHS05 - 208/230V - 3Ph - 60Hz



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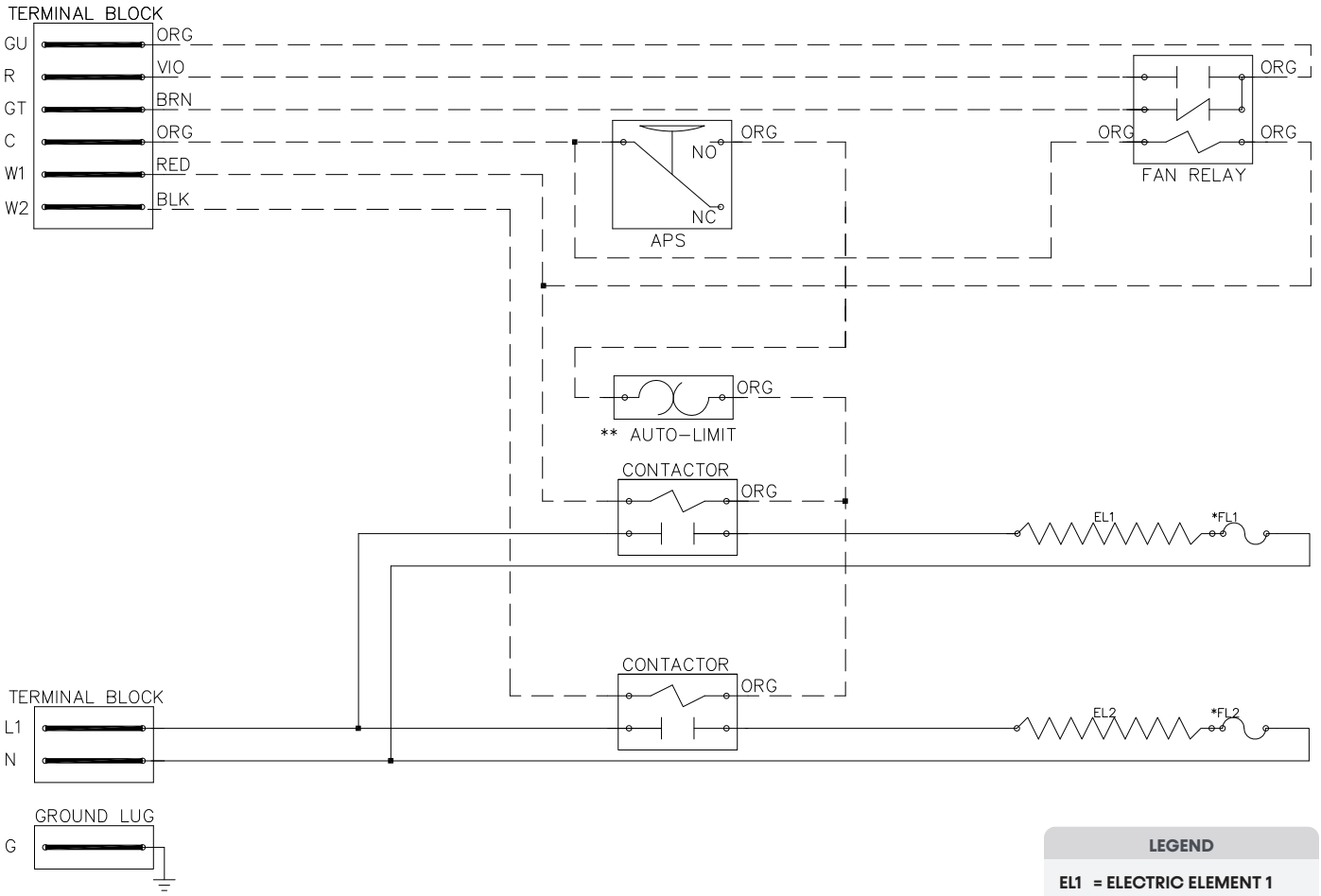
APS = AIR PRESSURE SWITCH

Example Wiring Diagram AHM10 - 277V - 1Ph - 60Hz

Models:
AH



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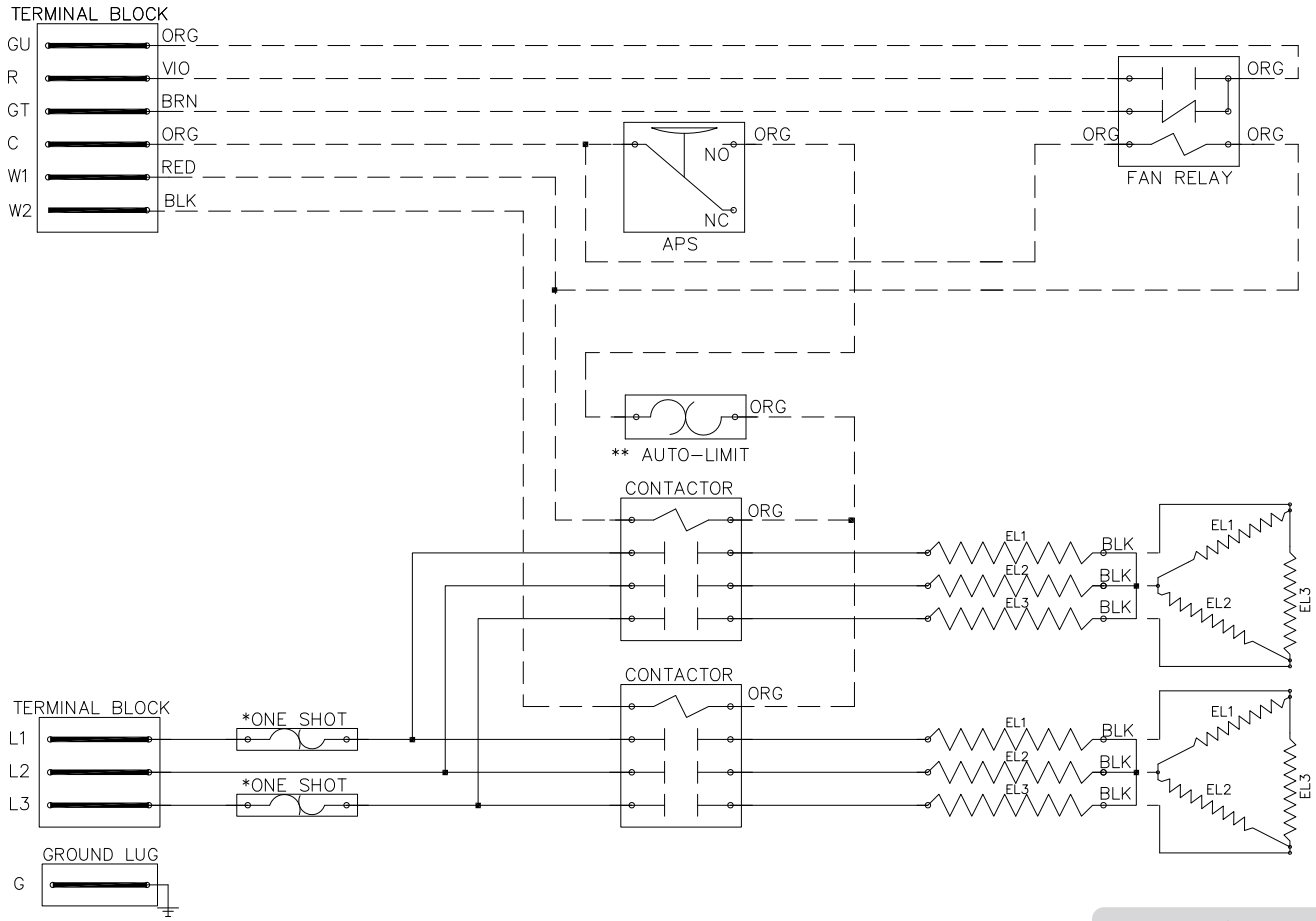
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHM10 - 460V - 3Ph - 60Hz



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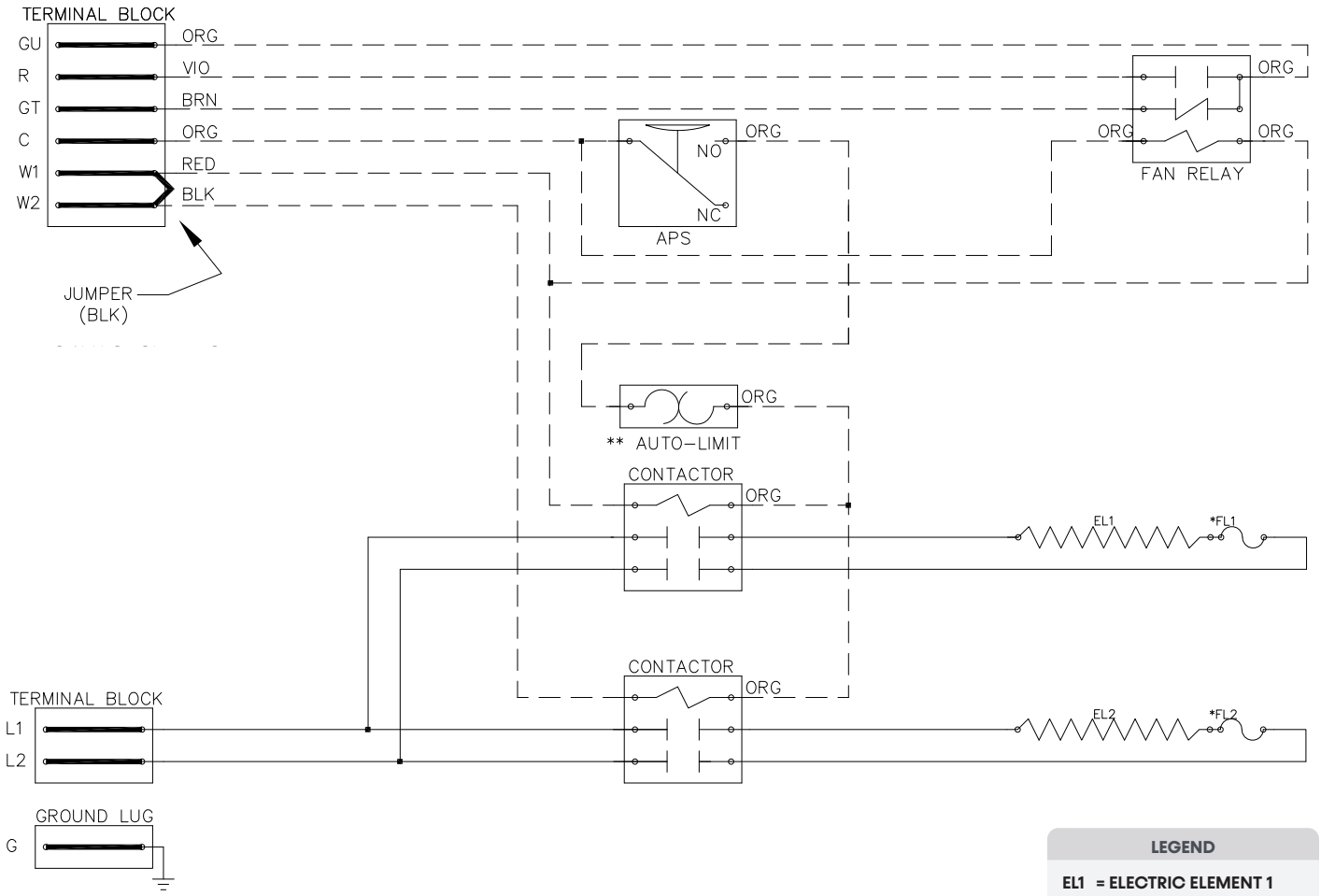
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram
AHM10 - 208/230V - 1Ph - 60Hz

Models:
AH



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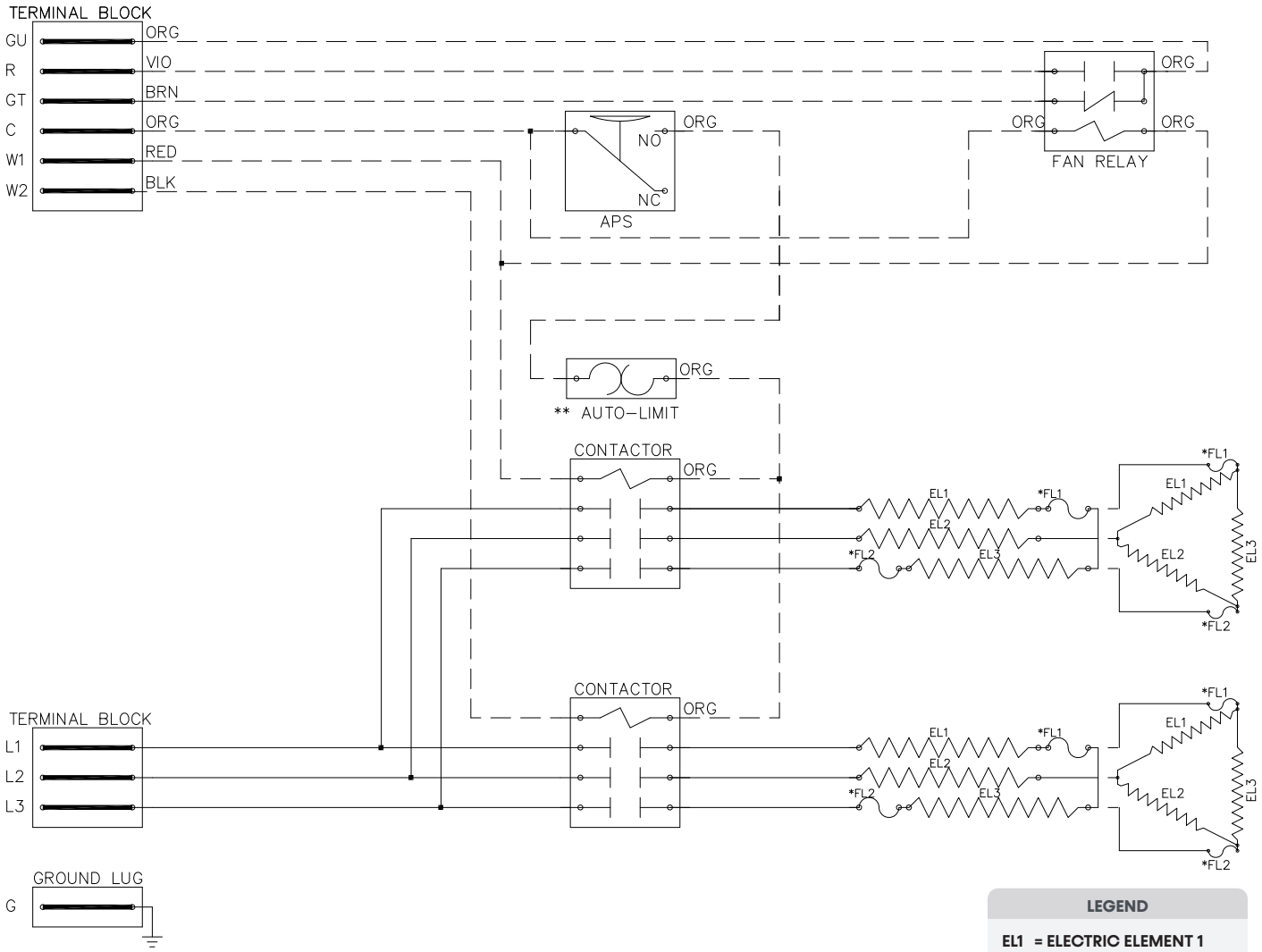
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHM10 - 208/230V - 3Ph - 60Hz



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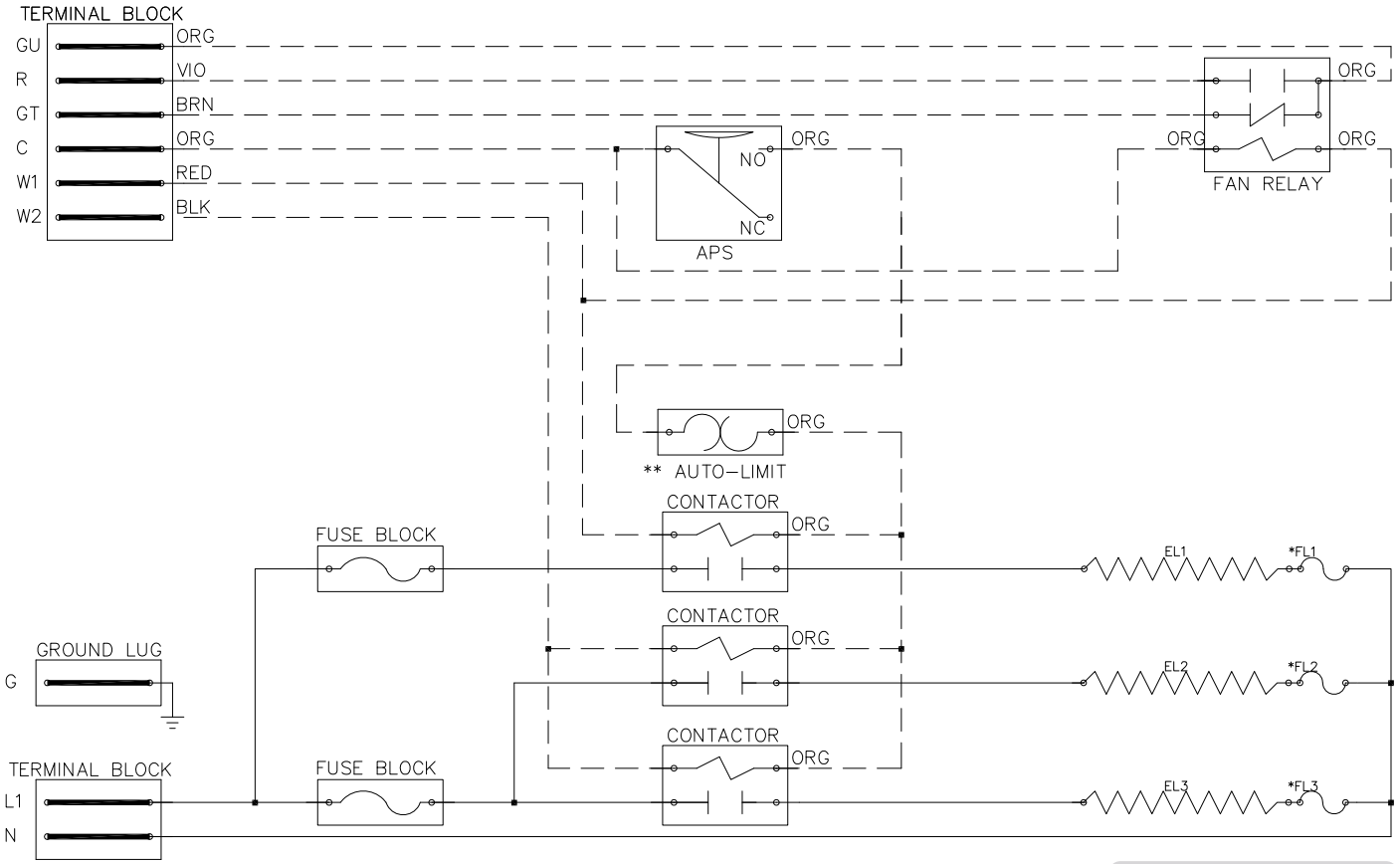
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram AHM15 - 277V - 1Ph - 60Hz

Models:
AH



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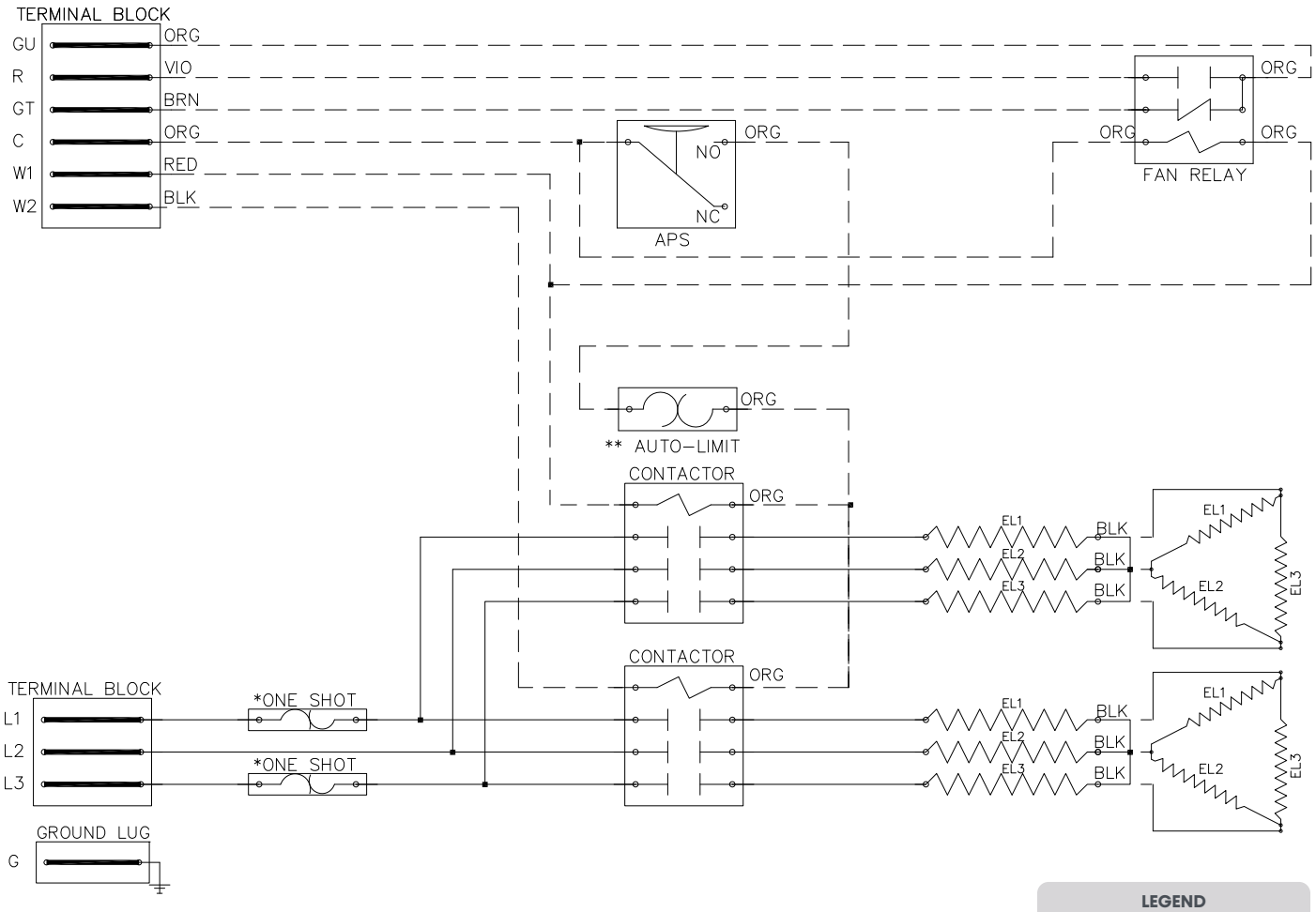
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHM15 - 460V - 3Ph - 60Hz



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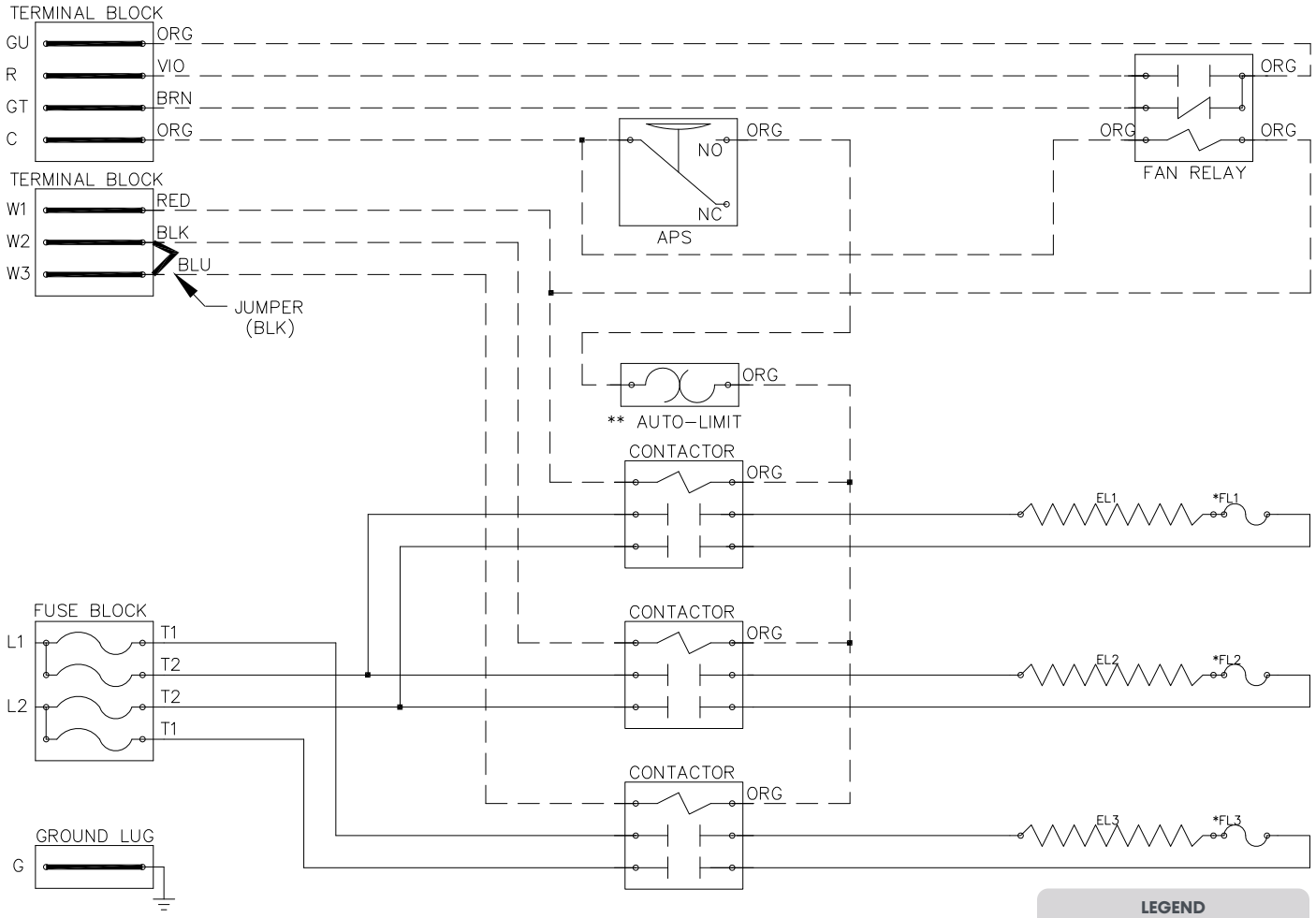
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram
AHM15 - 208/230V - 1Ph - 60Hz

Models:
AH



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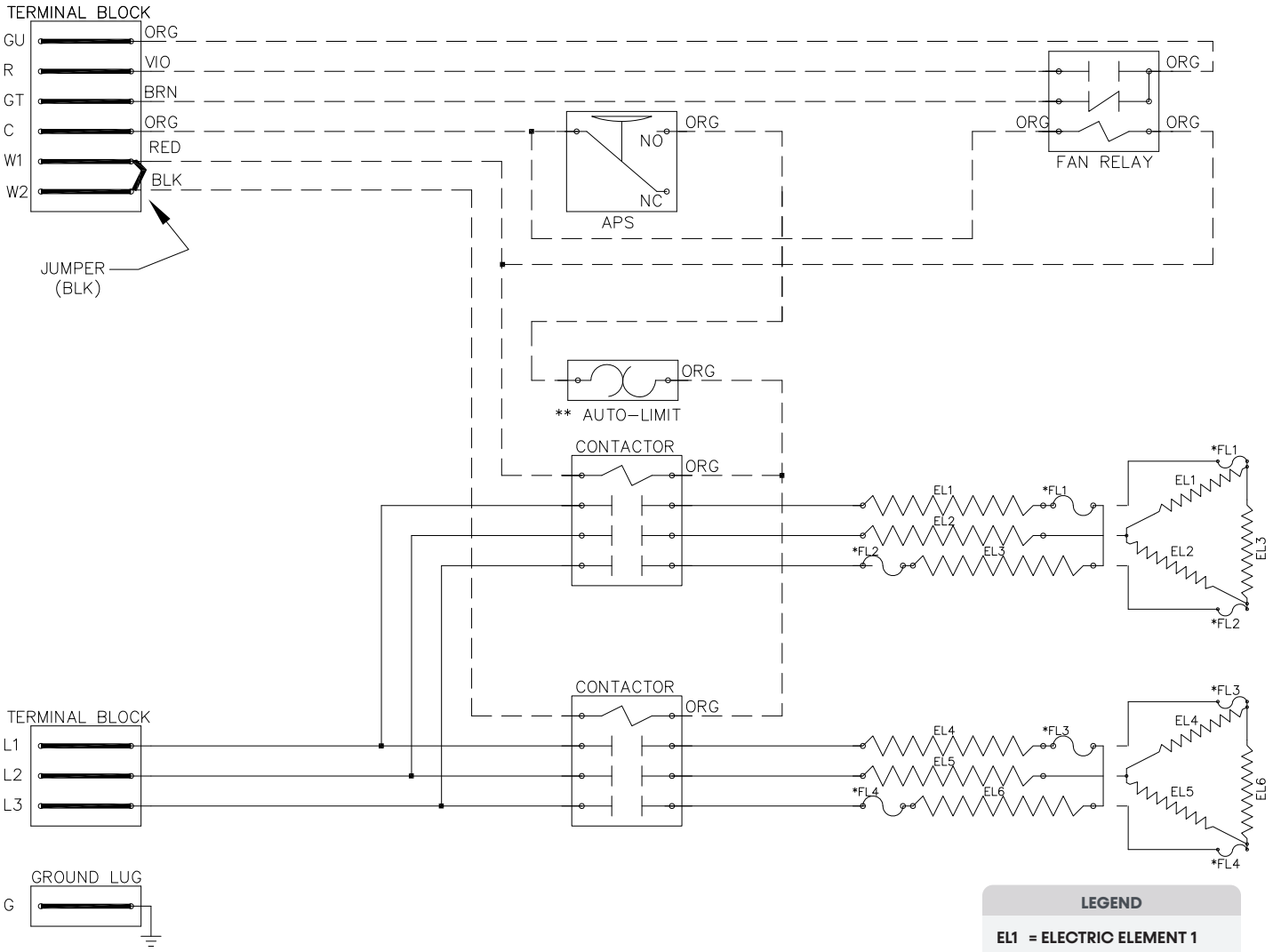
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHM15 - 208/230V - 3Ph - 60Hz



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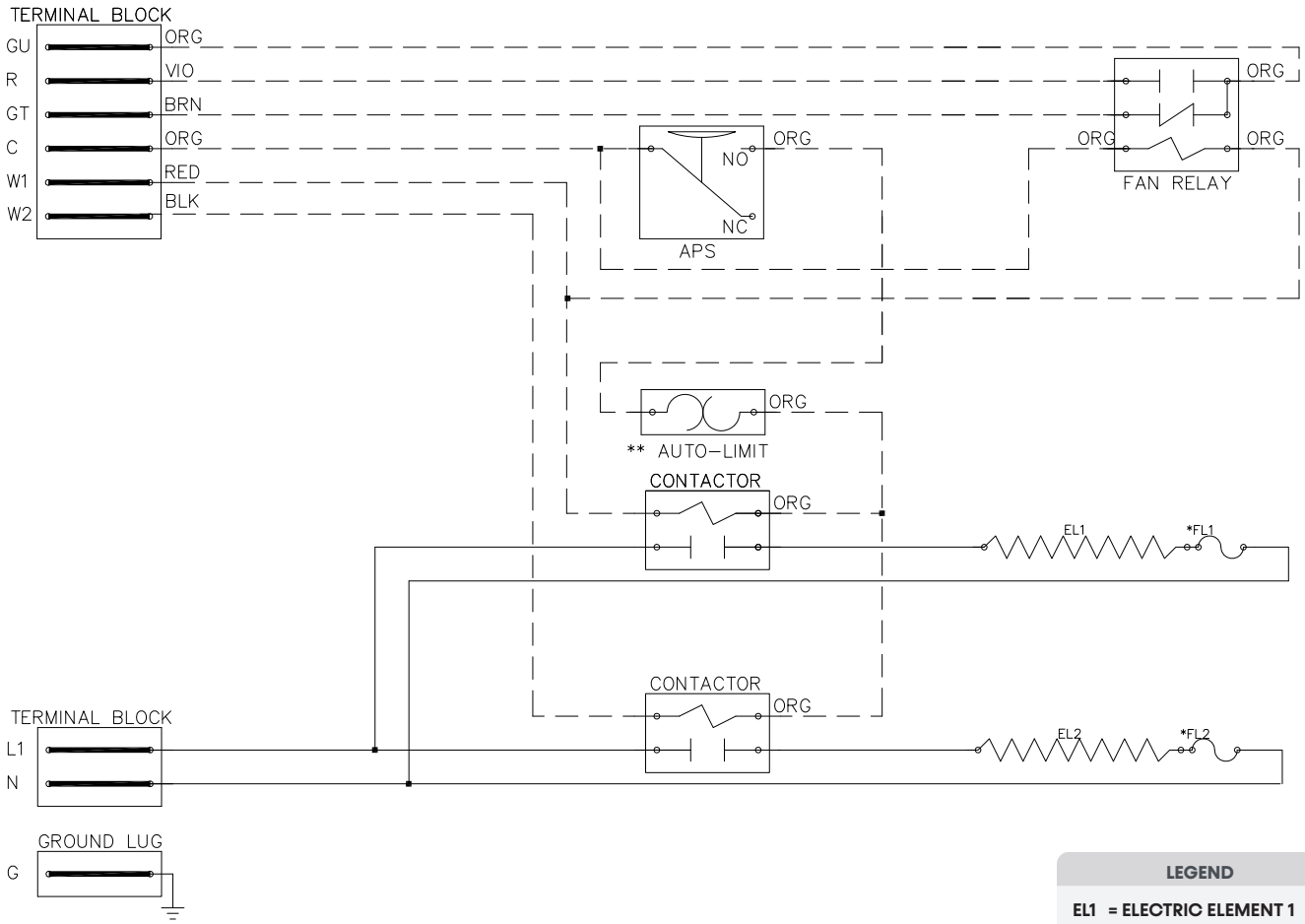
Example Wiring Diagram AHL10 - 277V - 1Ph - 60Hz

Models:
AH



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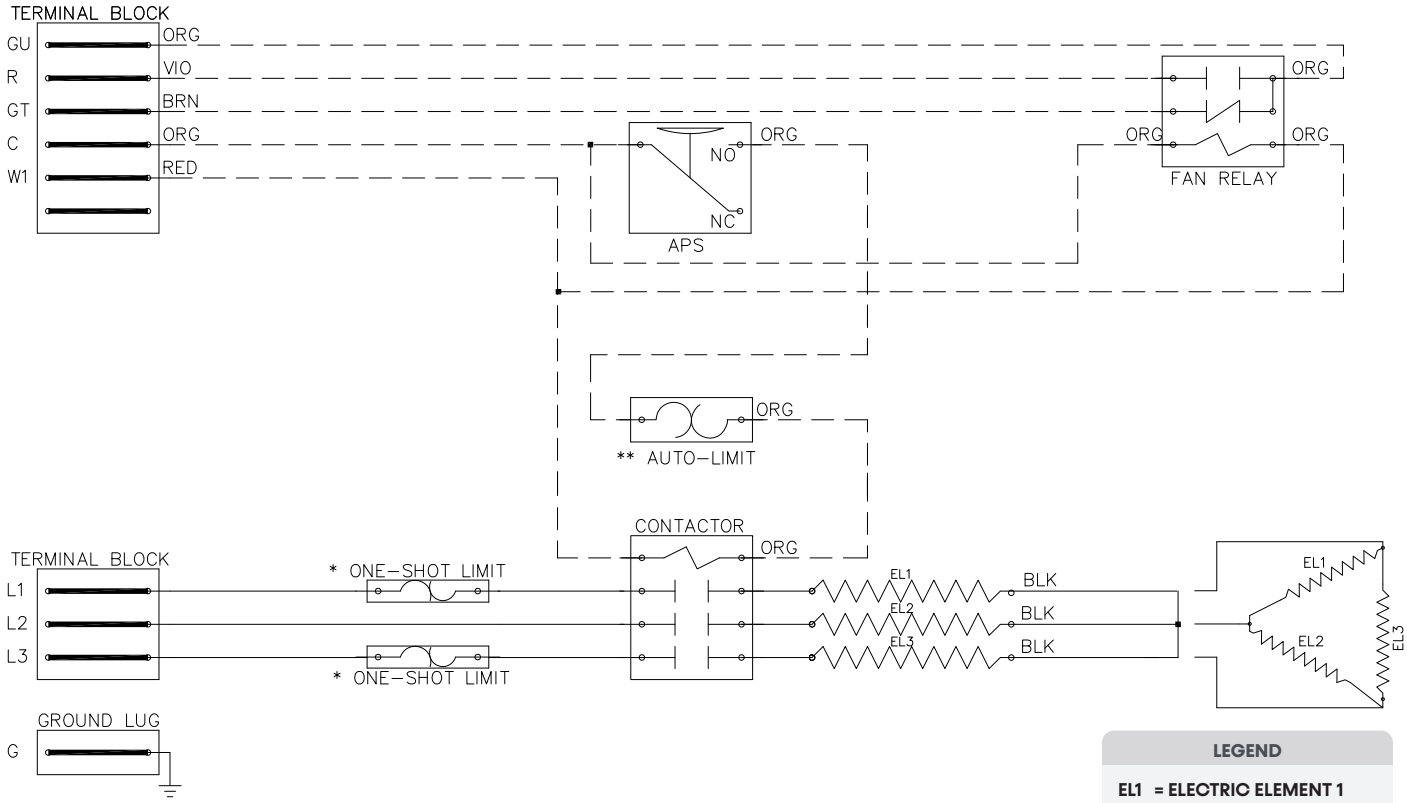
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHL10 - 460V - 3Ph - 60Hz

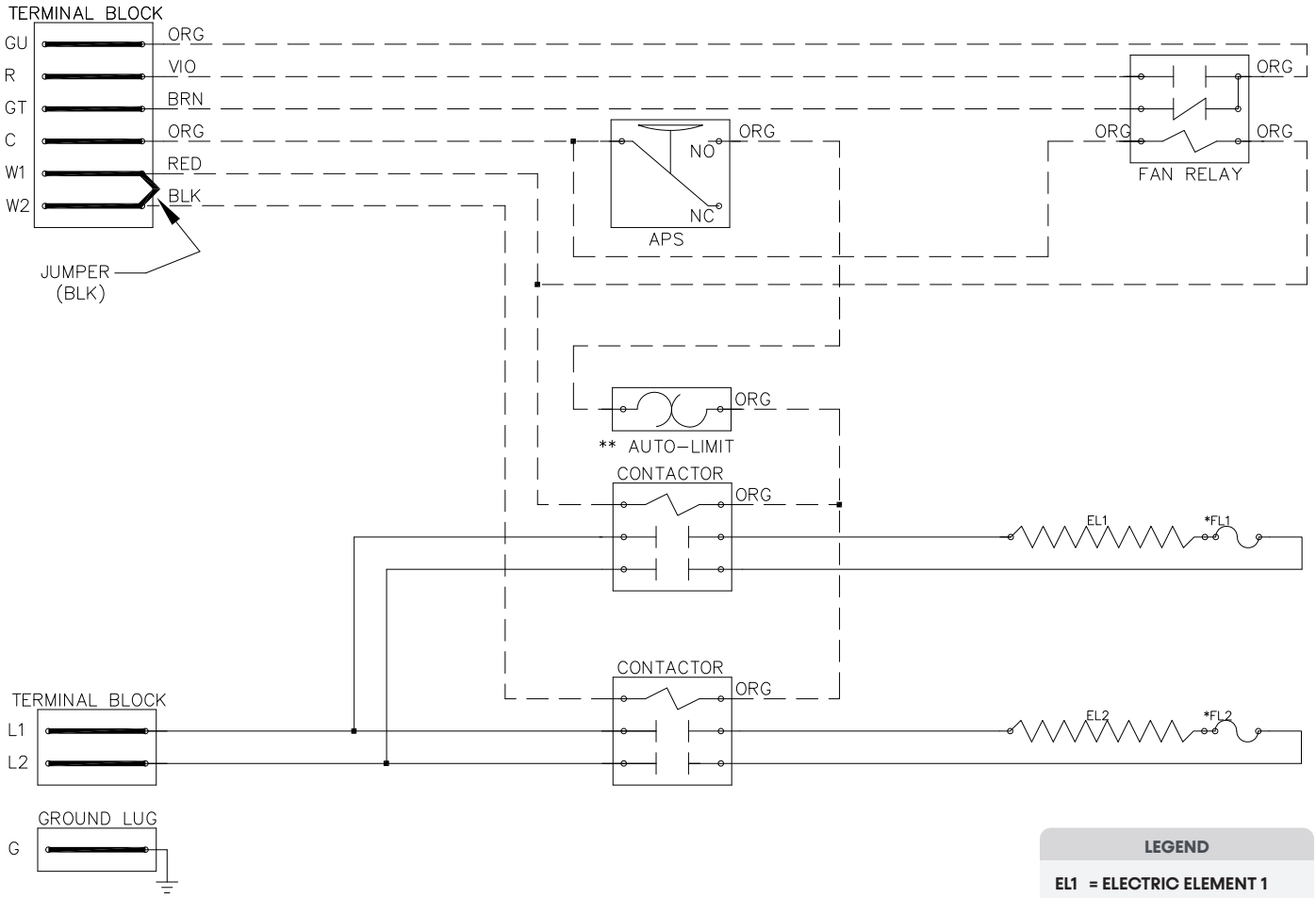


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram
AHL10 - 208/230V - 1Ph - 60Hz

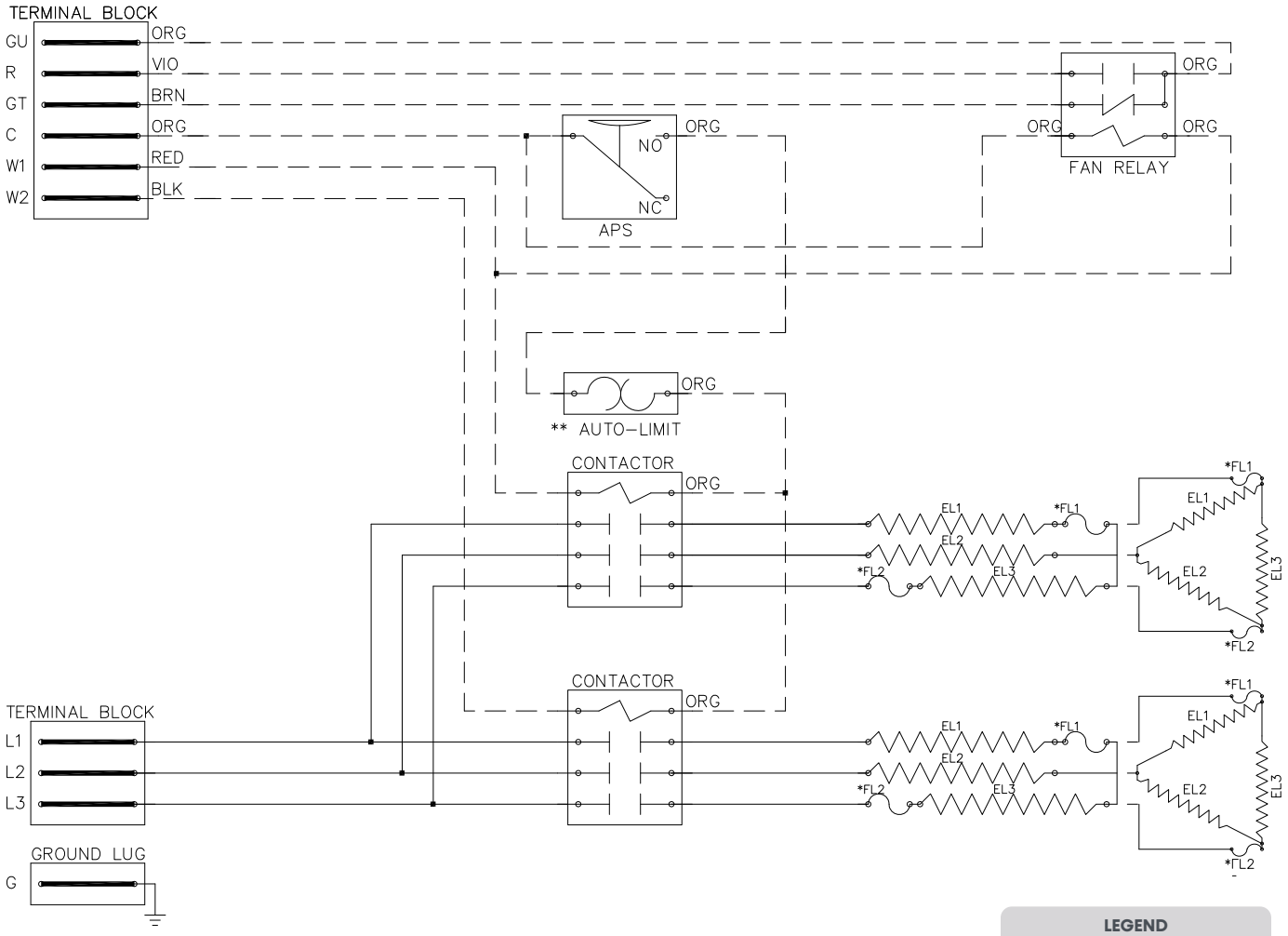
Models:
AH



LEGEND
EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

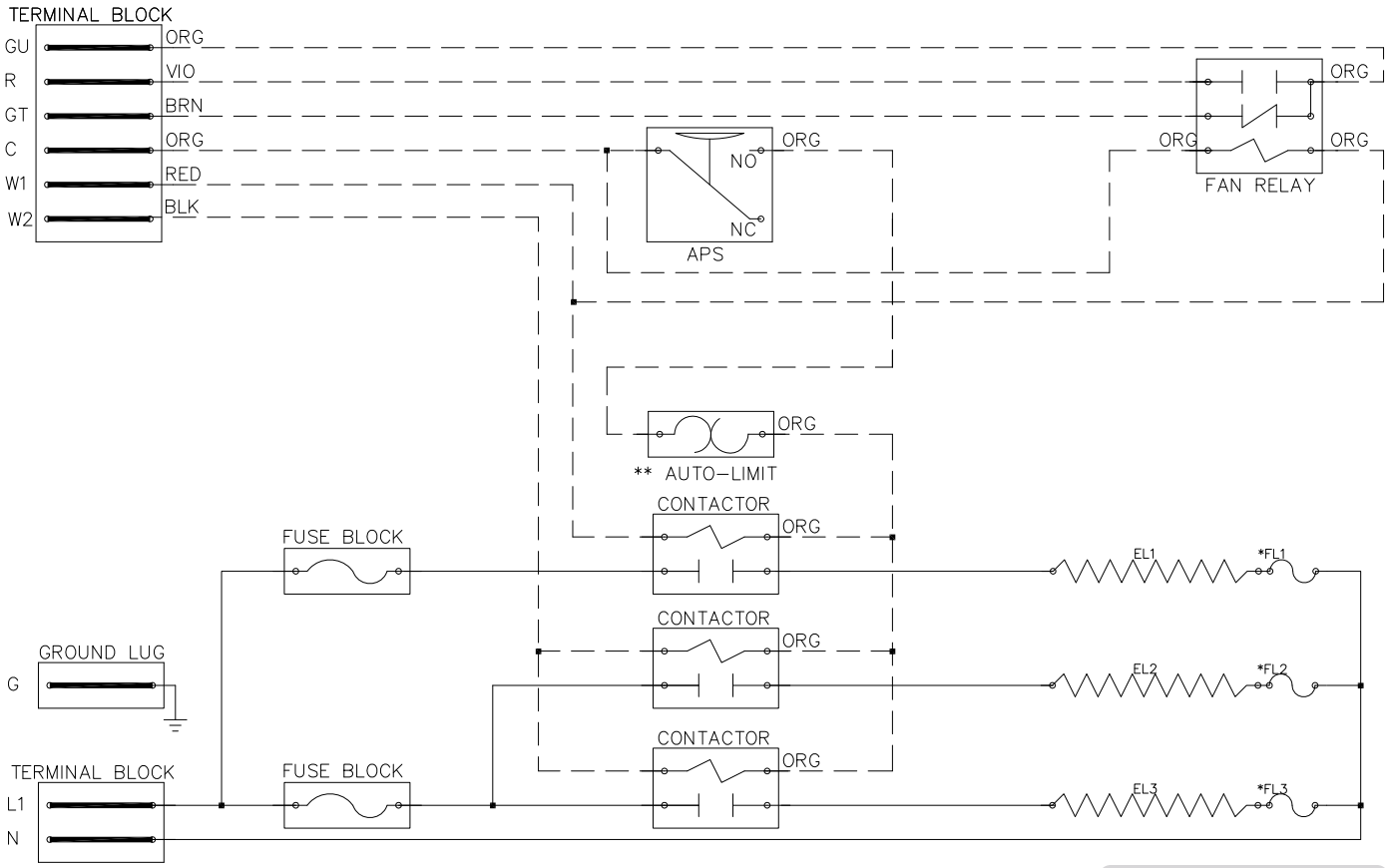
Example Wiring Diagram
AHL10 - 208/230V - 3Ph - 60Hz



LEGEND
EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram AHL15 - 277V - 1Ph - 60Hz

Models:
AH

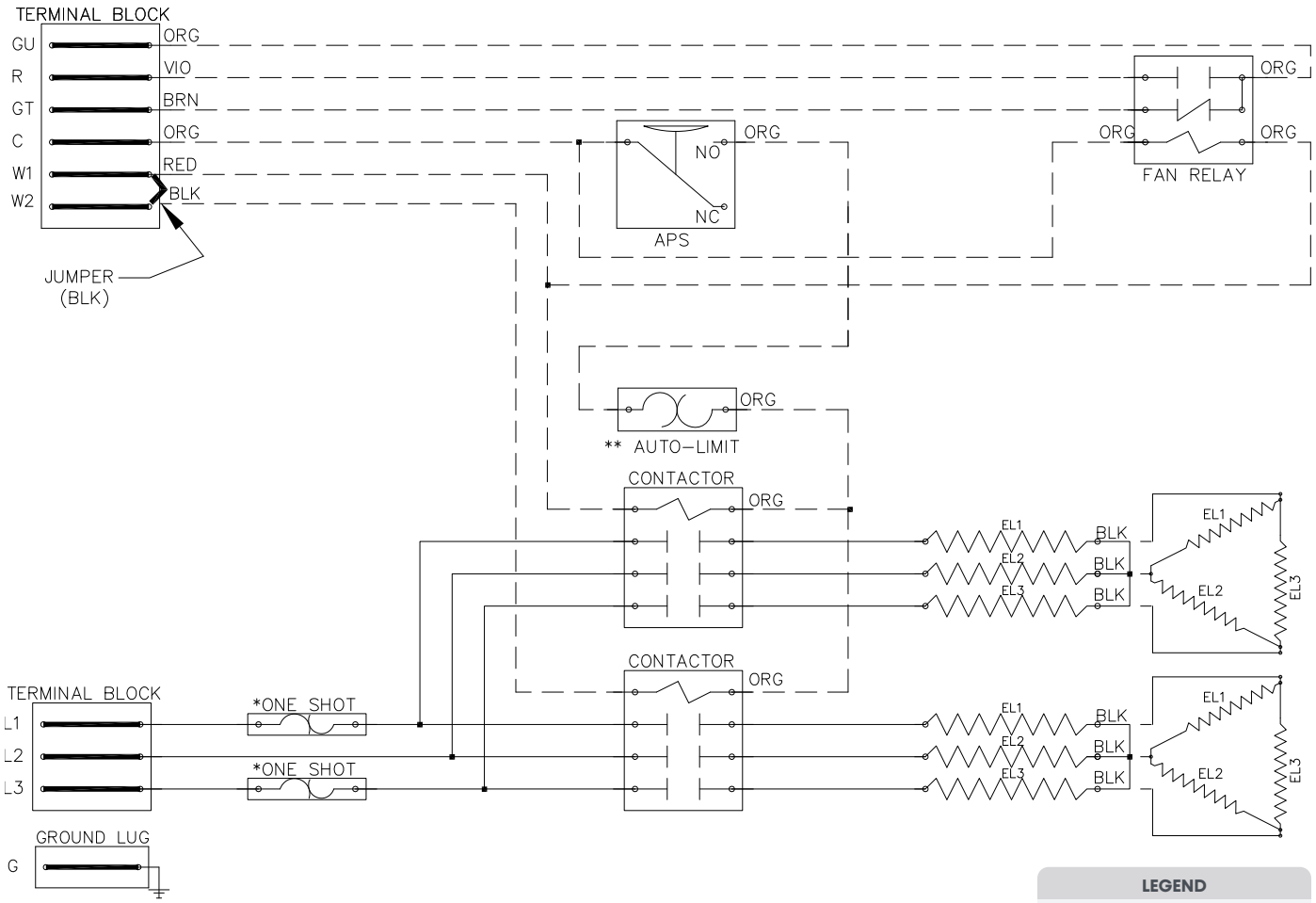


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHL15 - 460V - 3Ph - 60Hz

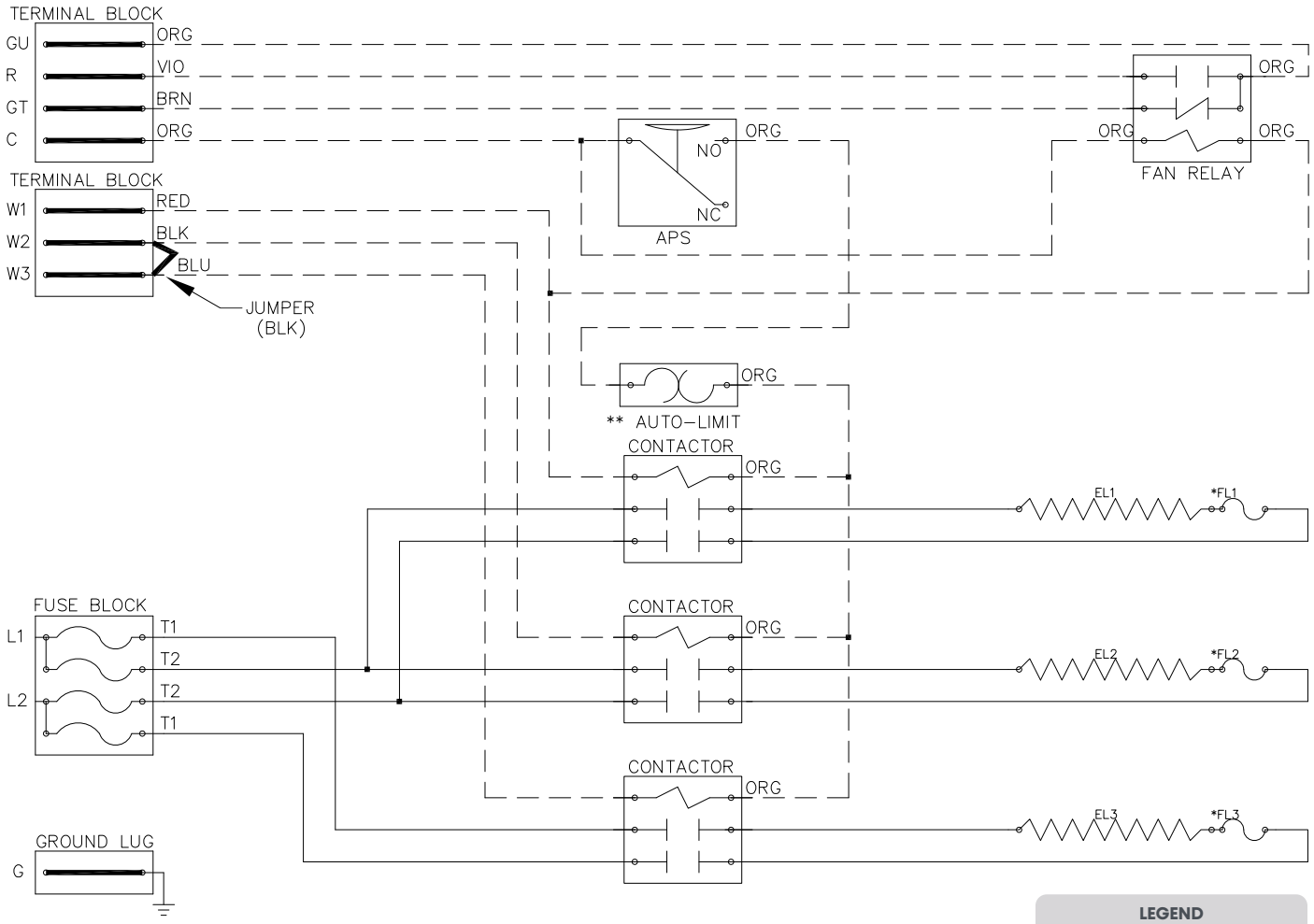


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram
AHL15 - 208/230V - 1Ph - 60Hz

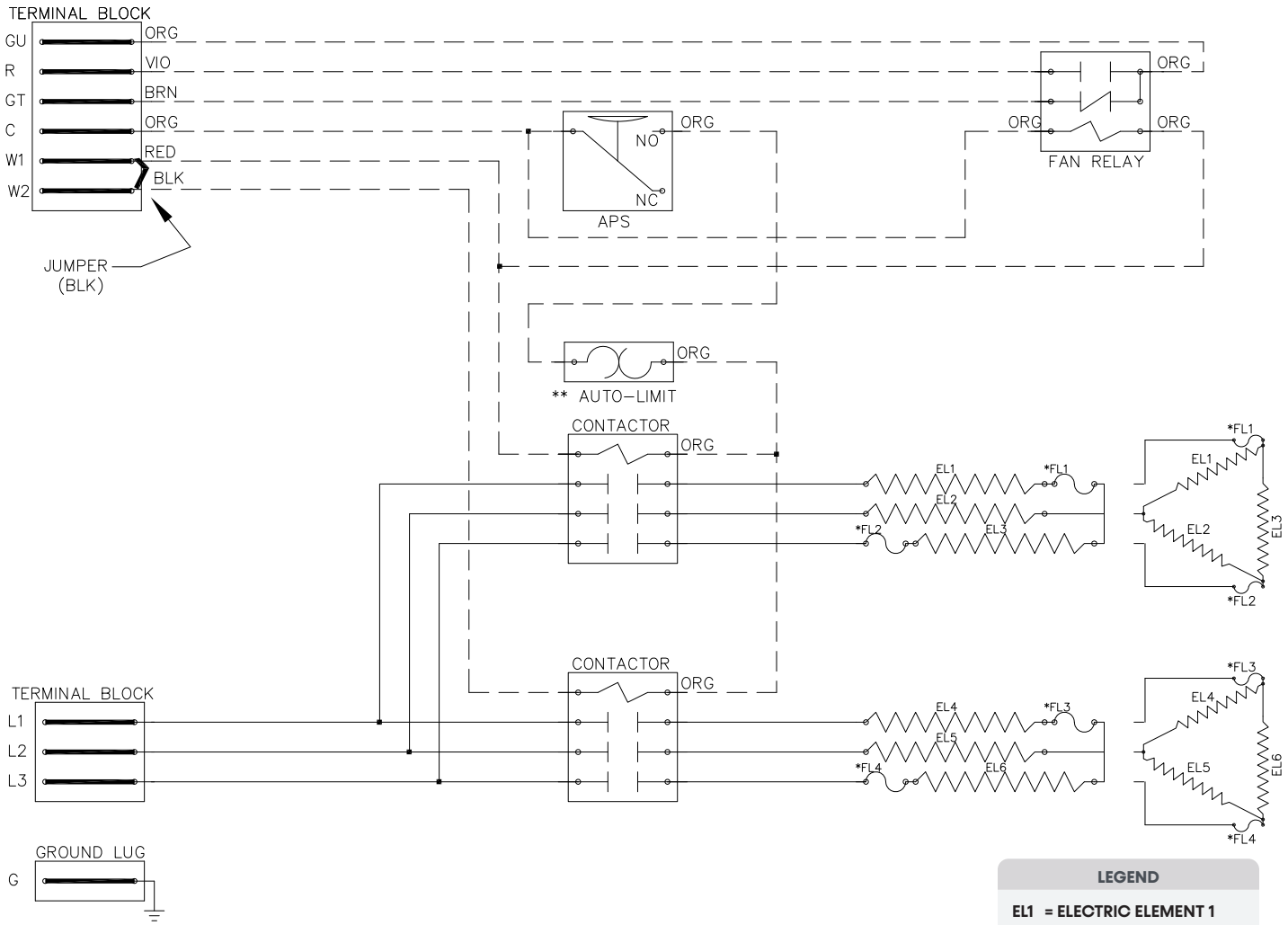
Models:
AH



LEGEND
EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

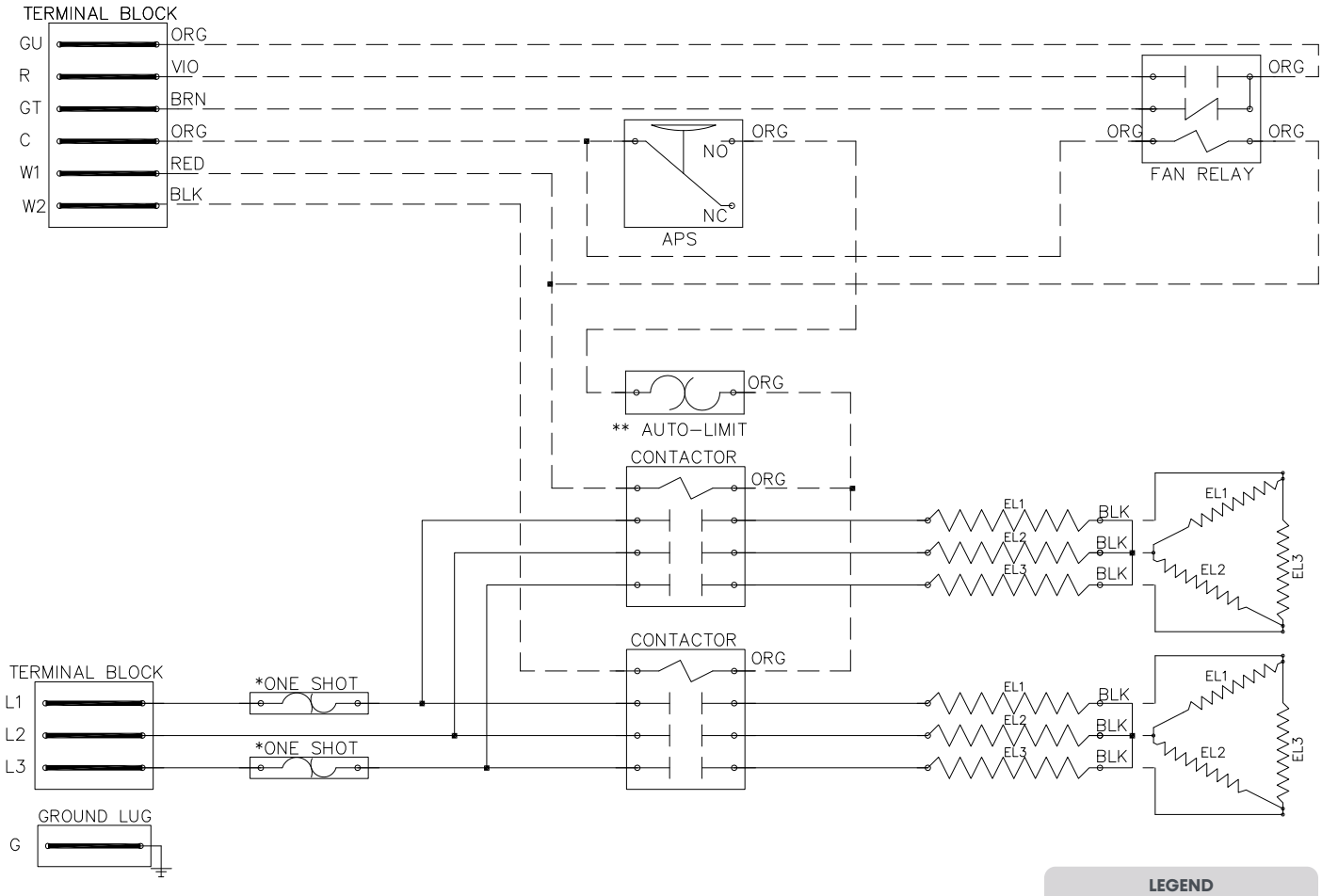
Example Wiring Diagram
AHL15 - 208/230V - 3Ph - 60Hz



LEGEND
EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram AHL20 - 460V - 3Ph - 60Hz

Models:
AH

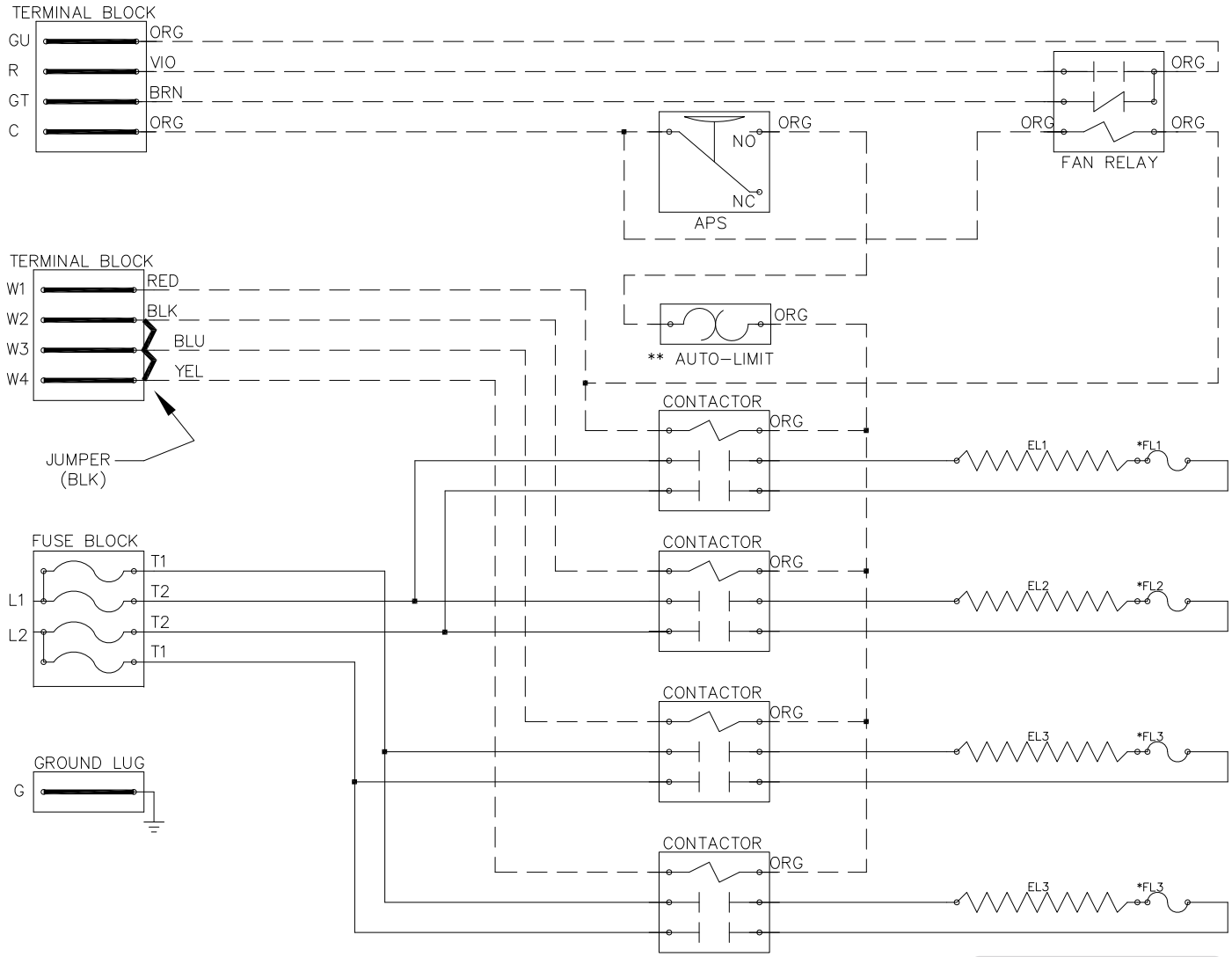


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Models:
AH

Example Wiring Diagram
AHL20 - 208/230V - 1Ph - 60Hz

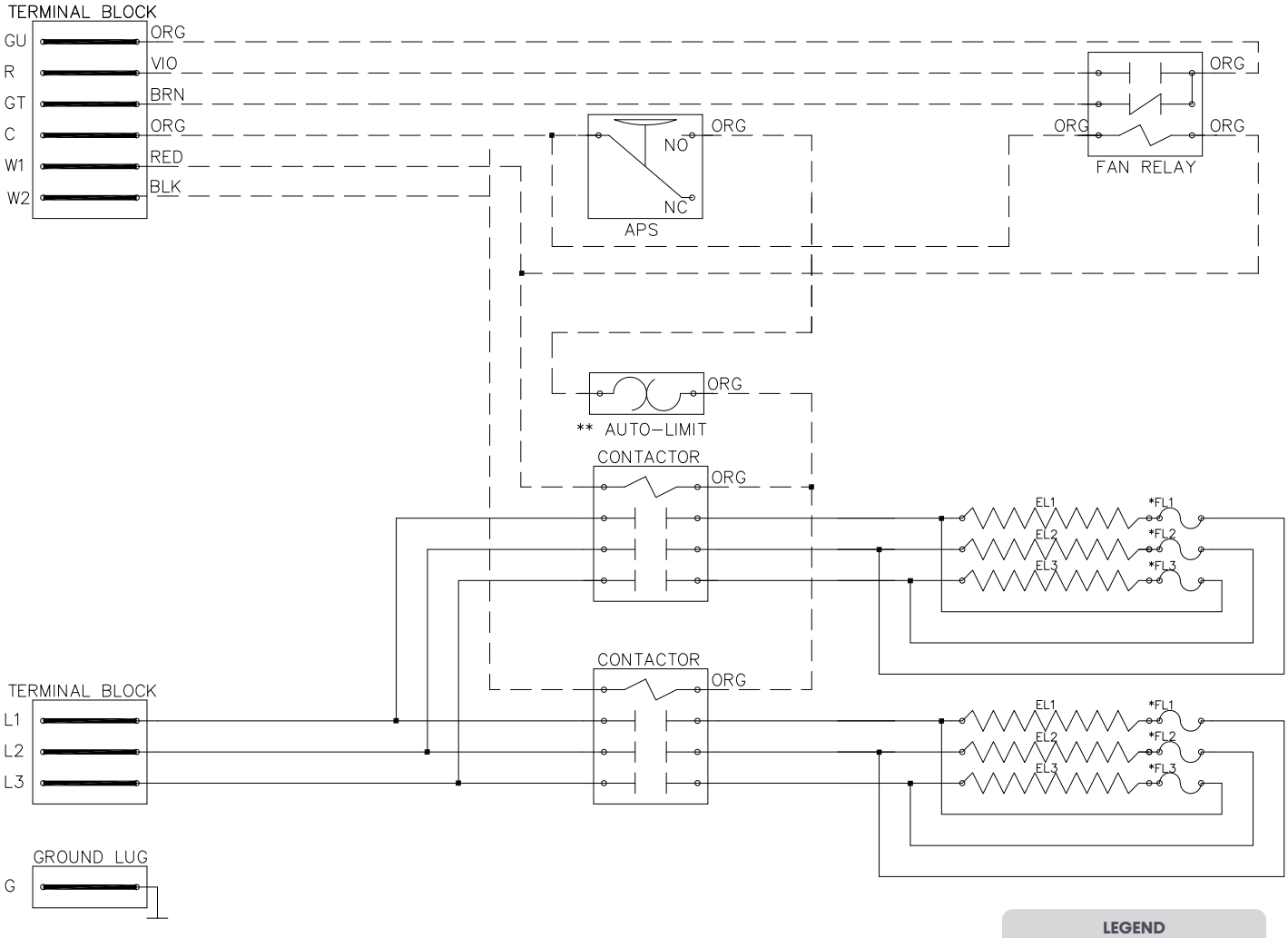


LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

Example Wiring Diagram
AHL20 - 208/230V - 1Ph - 60Hz

Models:
AH



LEGEND

EL1 = ELECTRIC ELEMENT 1
EL2 = ELECTRIC ELEMENT 2
EL3 = ELECTRIC ELEMENT 3
FL1 = FUSE LINK 1
FL2 = FUSE LIKE 2
FL3 = FUSE LINK 3
APS = AIR PRESSURE SWITCH

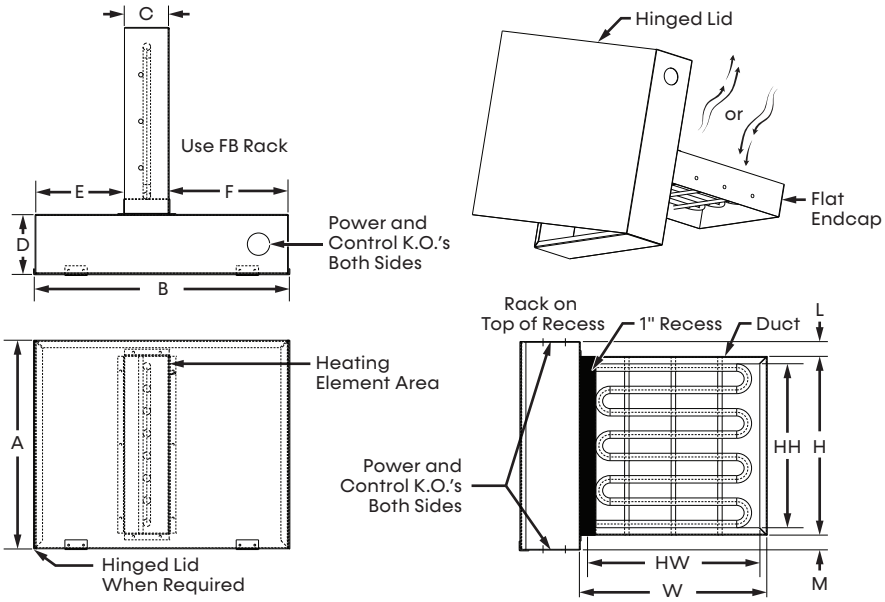
Models:
AH

Dimensions
AHS Heater

DESCRIPTION

- UL and CSA Listed
- Integral control box
- "Stab in" configuration
- Primary and secondary limit protection
- Recessed terminal connection
- Magnetic de-energizing contactors
- Fan relay control
- UL/NEC circuit fusing
- Hinged control box door
- Leaving air temperature should not exceed 135°F (57°C), auto reset limit switch is 145°F (62°C)

Figure 3: AHS Heater Dimensions

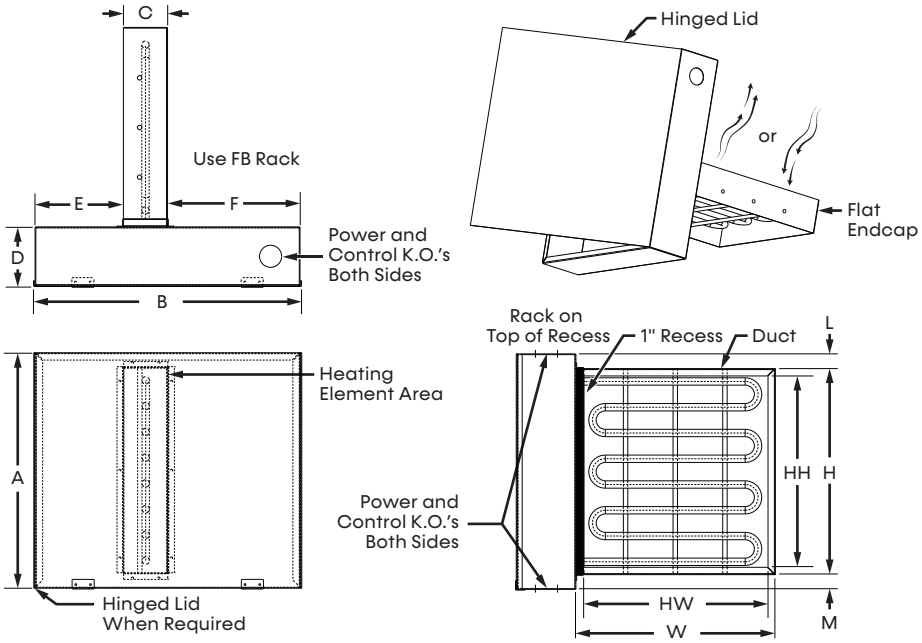


Model	A	B	C	D	E	F	L	M	W	HW	H	HH
AHS05	14 (35.56)	10 (25.40)	3 (7.62)	4 (10.16)	6 (15.24)	8 (20.32)	1 (2.5)	1 (2.5)	12.5 (31.75)	11.5 (29.21)	12 (30.48)	11.87 (30.15)
AHS05	14 (35.56)	17 (43.18)	3 (7.62)	4 (10.16)	6 (15.24)	8 (20.32)	1 (2.5)	1 (2.5)	12.5 (31.75)	11.5 (29.21)	12 (30.48)	11.87 (30.15)

Dimensions
AHM Heater

Models:
AH

Figure 4: AHM Heater Dimensions

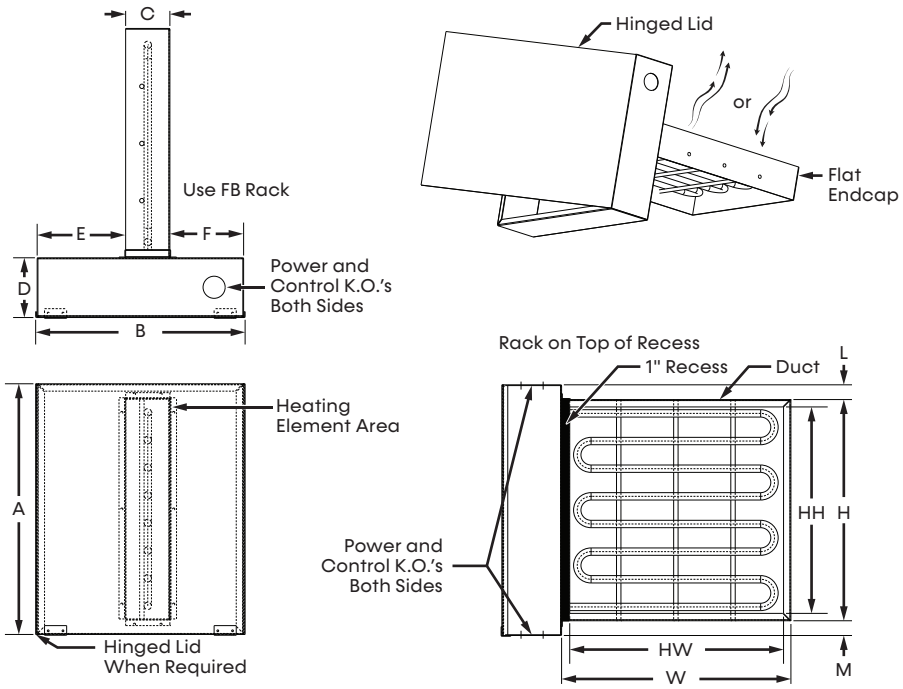


Model	A	B	C	D	E	F	L	M	W	HW	H	HH
AHM10	16 (40.64)	18 (45.72)	3 (7.62)	4 (10.16)	6 (15.24)	9 (22.86)	1 (2.5)	1 (2.5)	13.5 (34.29)	12.5 (31.75)	14 (35.56)	13.87 (35.23)
AHM15	16 (40.64)	20 (50.80)	6 (15.24)	4 (10.16)	6 (15.24)	8 (20.32)	1 (2.5)	1 (2.5)	13.5 (34.29)	12.5 (31.75)	14 (35.56)	13.87 (35.23)

Models:
AH

Dimensions
AHL Heater

Figure 5: AHL Heater Dimensions



Model	A	B	C	D	E	F	L	M	W	HW	H	HH
AHL10	17 (43.18)	14 (35.56)	3 (7.62)	4 (10.16)	6 (15.24)	5 (12.70)	1 (2.5)	1 (2.5)	15.5 (39.37)	14.5 (36.83)	15 (38.10)	14.87 (37.77)
AHL15	17 (43.18)	14 (35.56)	3 (7.62)	4 (10.16)	6 (15.24)	5 (12.70)	1 (2.5)	1 (2.5)	15.5 (39.37)	14.5 (36.83)	15 (38.10)	14.87 (37.77)
AHL20	17 (43.18)	19 (48.26)	3 (7.62)	4 (10.16)	6 (15.24)	10 (25.40)	1 (2.5)	1 (2.5)	15.5 (39.37)	14.5 (36.83)	15 (38.10)	14.87 (37.77)

Troubleshooting

Models: AH

GENERAL TROUBLESHOOTING

If you encounter operational difficulties, verify that the unit is receiving electrical supply power then 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 **Electric Heater Functional Troubleshooting** table.

ELECTRIC HEAT OUTPUT

Electric heat outputs are 24 VAC ground sinking and require a voltmeter set for AC to verify operation. The terminal marked **24 VAC** is the 24 VAC 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 to the AH Duct Heater), there is 24 VAC between terminal 24 VAC and EH1 (stage-1 electric heat) and/or EH2 (stage-2 electric heat).

A reading of 0 VAC between 24 VAC and EH1 or EH2 indicates that the thermostat is NOT sending output signal to the electric heat board. Thermostat troubleshooting is best summarized as verifying inputs and outputs. After inputs and outputs are verified and thermostat operation is confirmed, the problem must be elsewhere. For additional troubleshooting, see the **Electric Heater Troubleshooting** table.

ELECTRICAL HEAT FUNCTIONAL TROUBLESHOOTING TABLE

The Electric Heater Functional Flow table is a comprehensive method for identifying several malfunctions that may occur.

Table 2: Electric Heater Troubleshooting

Fault	Possible Cause	Solution
No Electric Heat	Main power problems	• Check line voltage and disconnect.
	Fan not activated	• Check jumper G and R for fan operation. Check for line voltage across blower relay contacts. • Check fan power. Enable relay operation (if present). • Check for line voltage at motor. Check capacitor.
	Resettable Limit Switch tripped	• Check fan power. The fan must be on before the heater turns on. • Check for obstructions to airflow. • Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.
	One shot thermal cutout tripped	• Check fan power. The fan must be on before the heater turns on. • Check for obstructions to airflow. • Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow. • Verify Resettable Limit Switch operation
Low Output	Heating element burned out	• Replace electric heater
	Cycling on automatic thermal limit switch	• Check fan power. The fan must be on before the heater turns on. • Check for obstructions to airflow. • Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.
Overheating	Insufficient airflow	• Check the electric heater for minimum airflow requirements. The duct must have sufficient airflow.
	Uneven or partially-blocked airflow	
	High line voltage	• Check nameplate and voltage (nameplate and voltage should match).
Terminals Overheating	Loose connections	• Check for signs of terminal and wiring overheating. Tighten and repair as required.
	Improperly sized wire	• All incoming wiring should be sized in accordance with the NEC and local codes.
	High voltage	• Check nameplate and voltage (nameplate and voltage should match).

Models:
AH

Notes

Notes

Models:
AH

Models:
AH

Revision History

Date	Section	Description
02/09/26	All	First created

97B0153N01