

Packaged Heat Pumps Phase Monitor Accessory
Split Systems, 6 to 20 Tons (21.5 to 70.3 kW)
Rooftop Units, 3 to 27.5 Tons (10.5 to 96.7 kW)
50/60 Hz

Installation Instructions

Part No.: CRPHASE3001A02, CRPHASE3002A00, and CRPHASE3002A01

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IMPORTANT: Read these instructions completely before attempting to install the accessory.

SAFETY CONSIDERATIONS

Installation of this accessory can be hazardous due to system pressures, electrical components, and equipment location (such as a roof or elevated structure). Only trained, qualified installers and service technicians should install, start-up, and service this equipment.

When installing this accessory, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply:

- Follow all safety codes
- Wear safety glasses and work gloves
- Use care in handling and installing this accessory

It is important to recognize safety information. This is the safety-alert symbol: . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

PACKAGE CONTENTS

For the package contents for CRPHASE3001A02 for 208/230-v and 460-v units, see Table 1. For the package contents for CRPHASE3002A00 for 575-v units, see Table 2.

Table 1 — CRPHASE3001A02 (208/230-v and 460-v)

QTY	CONTENTS
1	Phase Monitor Part No. HK35AC003
1	Installation Instructions
4	6B - 20 in. x 3/4 in. LG Screws
1	Harness Assembly 1
1	Harness Assembly 2
1	Harness Assembly 3

Table 2 — CRPHASE3002A00 (575-v)

QTY	CONTENTS
1	Phase Monitor Part No. 48HG503588
1	Installation Instructions
4	6B - 20 in. x 3/4 in. LG Screws
1	Harness Assembly 1
1	Harness Assembly 2
1	Harness Assembly 3

DANGER

ELECTRICAL SHOCK HAZARD

Failure to follow this warning will result in personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lock(s) and lockout tag(s). Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate. Unit may have more than one power switch.

GENERAL

The phase monitor accessory will monitor the sequence of 3-phase electrical systems to provide phase reversal protection. The phase monitor will also monitor the phase voltage inputs (L1, L2, L3) to provide phase loss protection for a 3-phase device.

The phase monitor will work on either a Delta or Wye power connection.

Phase Reversal Protection

The phase monitor has a bypass function based on line cycles that is factory set for 10 minutes. If the phase monitor determines that all phases are in correct relationship for 10 consecutive minutes and 24 vac is applied, then relay K1 will remain energized regardless of the phase sequence of the inputs. (See Fig. 1.)

The bypass function will be reset if all 3 phases are restored in a phase loss event. The control operation timing is based on 60 Hz system. When the control is used on a 50 Hz system, the bypass time may be longer since this timer is based on line cycles.

Phase Loss Protection

If the phase monitor senses that any of the 3 inputs (L1, L2, L3) does not have AC voltage, relay K1 is de-energized. This phase loss protection is always active as long as 24 vac is applied and is not affected by the bypass function. In the event of phase loss, the bypass function is reset. Relay K1 is re-energized only when all 3 phases are restored and are in correct sequence.

INSTALLATION

Install Phase Monitor

Remove access panel and control box cover.

Attach the phase monitor to the high voltage section on the control box using 2 sheet metal screws. (See Fig. 1.)

For R-410A Units

1. Disconnect power to unit and install lockout tag. Wait 5 minutes. Secure power to the rooftop unit and wait 5 minutes.
2. Install the phase monitor module in the unit control box as shown in Fig. 2. Use the screws provided in the kit, screwing into the pre-drilled holes in the back of the control box.
3. Using the applicable provided wiring harness for the unit, connect as follows:
 - a. Harness Assembly 1: For TC, HC, and LC units, connect the female Molex[®] plug to the phase monitor relay (PMR) male connector on the unit-mounted terminal board. See the applicable terminal board diagrams (see Fig. 2 and Fig. 3).
 - b. Harness Assembly 2: For FC, GC, and JC units without SystemVu[™], connect the female quick plugs to the phase monitor male quick connectors on the unit-mounted terminal board. See the applicable terminal board diagram (see Fig. 4) and wiring diagram (see Fig. 5).
 - c. Harness Assembly 3: For FC, GC, and JC units with SystemVu, connect the red and pink wires to TB3 in positions 5 and 6, respectively, and connect the female quick plug of the brown wire to TB4 male quick connector in position 6 on the unit-mounted terminal board. See the applicable terminal board diagram (see Fig. 6) and wiring diagram (see Fig. 7).

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4. Cut Jumper 1 on the control board. (See Fig. 8-11.)
5. Wiring harness routing:
 - a. For 208-230/460-v: Route the wiring harness along the top of the control box, connecting the pink wire to the CONTACTOR spade connector, the red wire to the 24VAC spade, and the brown wire to the COM spade of the phase monitor module. (See Fig. 12.)
 - b. For 575-v: Route the wiring harness along the top of the control box connecting the pink wire to the Y-OUT spade connector, the red wire to the Y spade, and the brown wire to the C spade of the phase monitor module. (See Fig. 13.)
6. On the phase monitor module, connect the black wire to the L1 terminal, the yellow wire to the L3 terminal, and the blue wire to the L2 terminal.
7. Indoor Fan Contactor (IFC) connections:
 - a. For all units with 3-phase indoor fan motor EXCEPT 48/50LC:
On the IFC, connect the black wire to terminal 11 and the blue wire to terminal 13. On the compressor contactor (C), (C1), or (C2), connect the yellow wire to terminal 13. (See Fig. 8.)
 - b. For YAC and PHP (packaged heat pump) 208-230/460-v and 1-phase indoor fan motor EXCEPT 48/50LC:
On the compressor contactor (C) or (C1), or on the IFC on units with crankcase heater, connect the black wire to terminal 11 and the yellow wire to terminal 13. Connect the blue wire to the input power terminal board (TB). (See Fig. 9.)
 - c. For all PAC 208-230/460/575-v with 1-phase indoor fan motor EXCEPT 48/50LC, and for YAC and PHP 575-v with 1-phase indoor fan motor EXCEPT 48/50LC:
On the IFC, connect the black wire to terminal 11 and the blue wire to terminal 23. On the compressor contactor (C) or (C1), connect the yellow wire to terminal 13. (See Fig. 10.)
 - d. For all 48/50LC Units:
On the compressor contactor (C2) or (C), connect the black wire to terminal 11, the yellow wire to terminal 12, and the blue wire to terminal 13. (See Fig. 11.)
8. Cut the PMR jumper on the terminal board. (See Fig. 2 and 3.)
9. Restore power to rooftop unit.

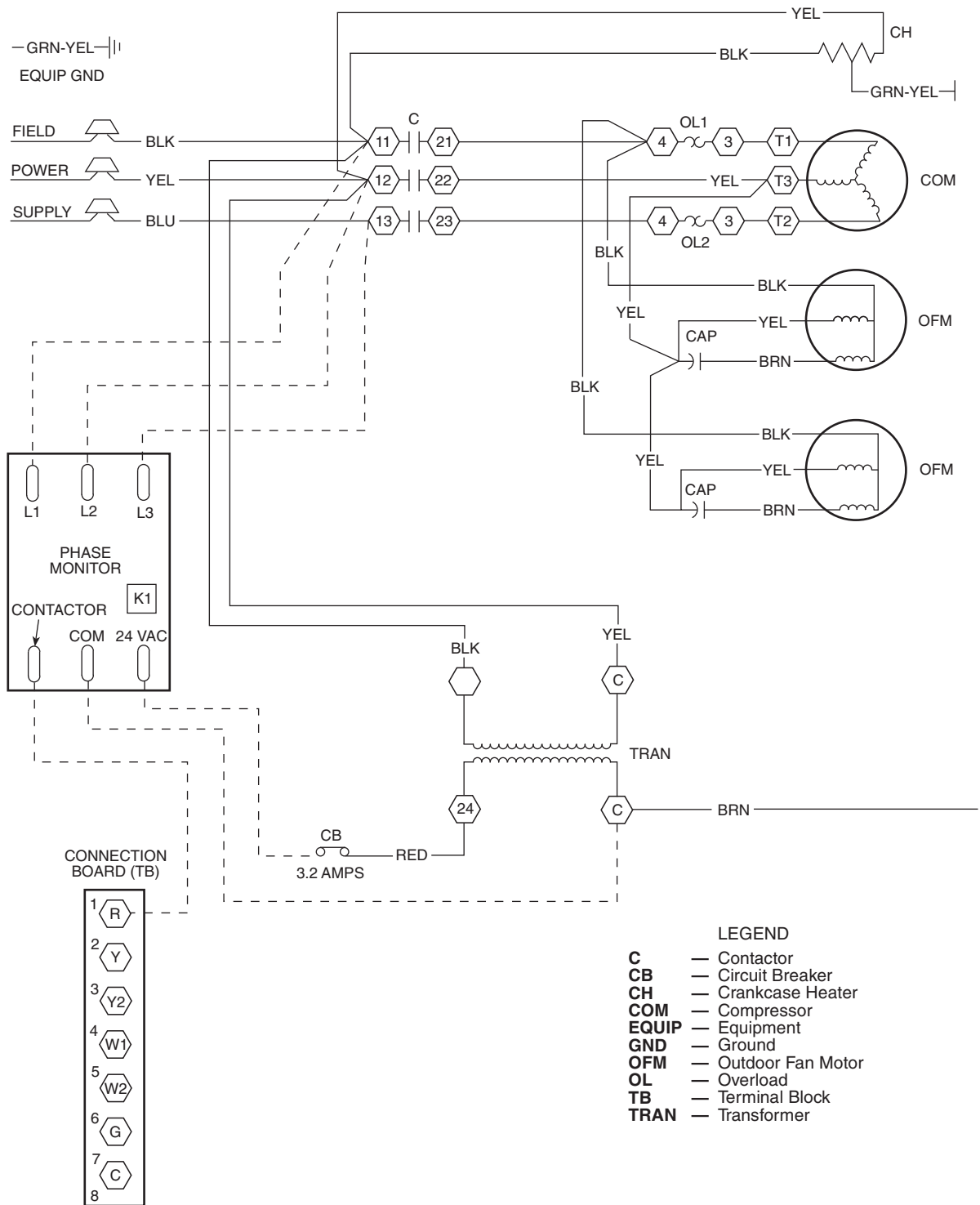


Fig. 1 — Typical Wiring Phase Monitor

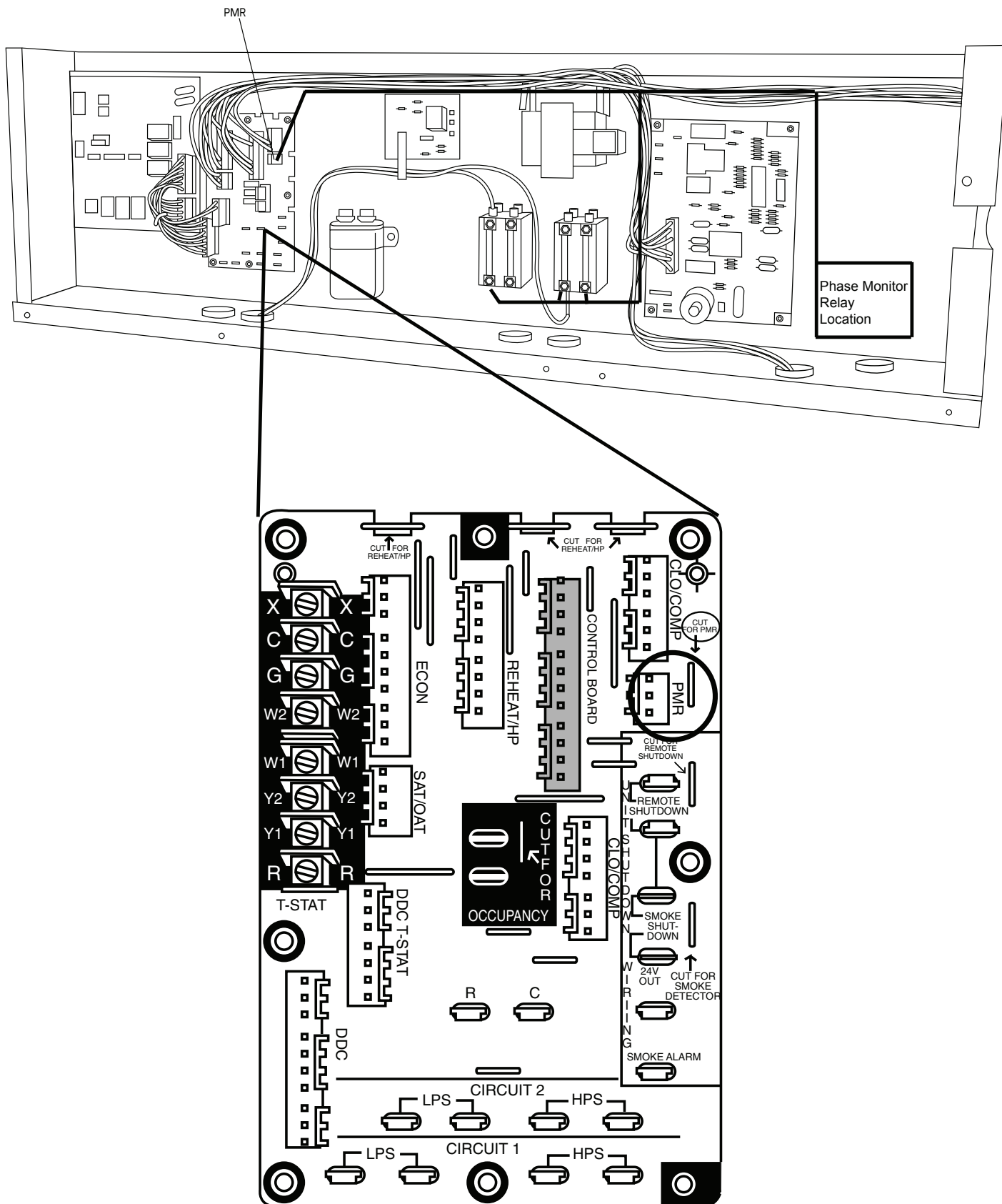


Fig. 2 — Controls Box Showing Mounting Location and Recommended Wire-Routing Path with Exploded View of Terminal Board (YAC with 3-Phase Indoor Fan Motor Shown)

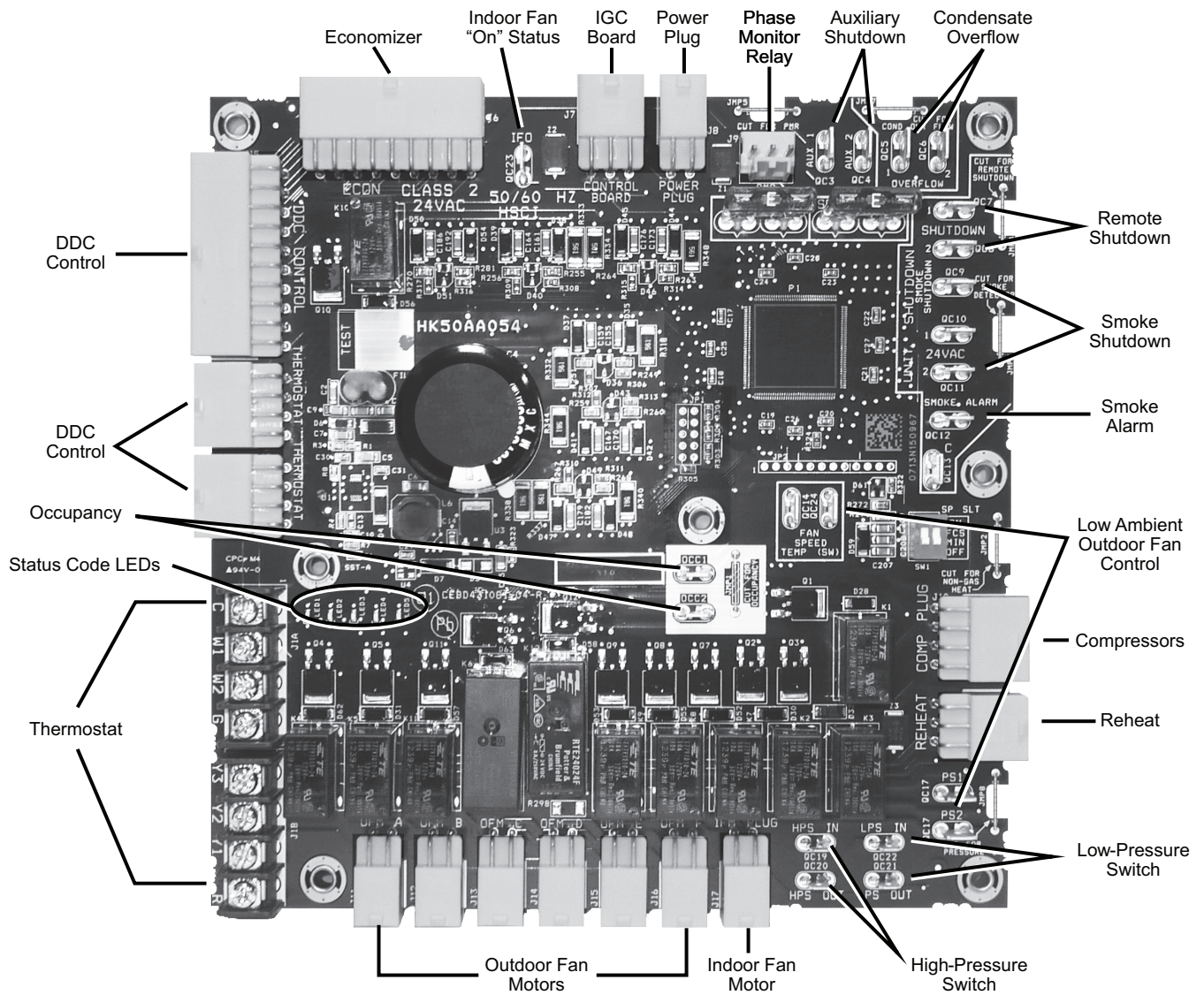


Fig. 3 — 48/50LC Control Board

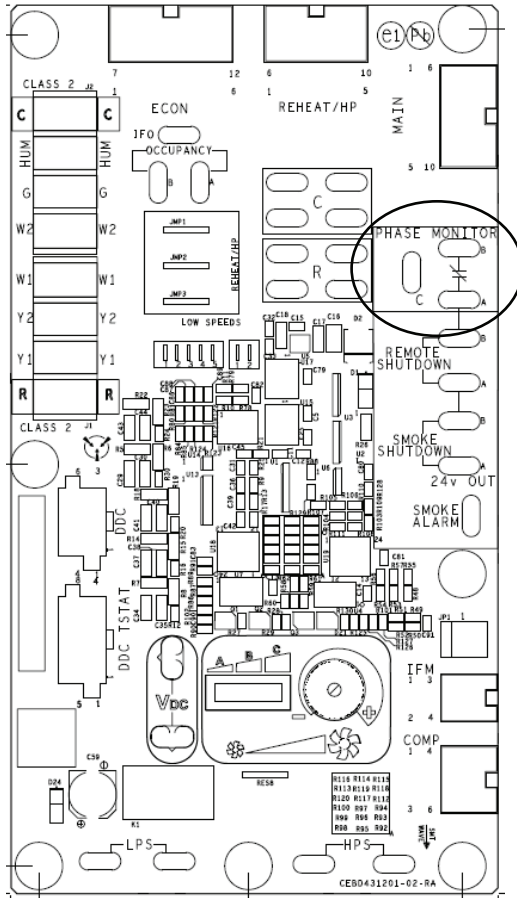


Fig. 4 — FC, GC, and JC without SystemVu Control Board (UCB)

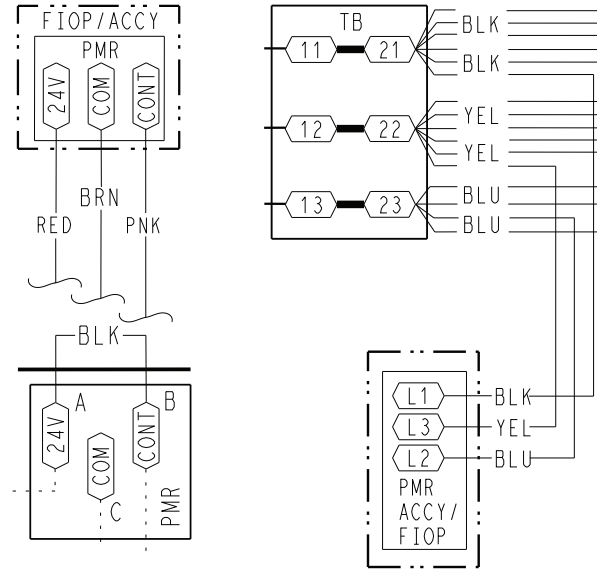


Fig. 5 — FC, GC, and JC without SystemVu Wiring Diagram

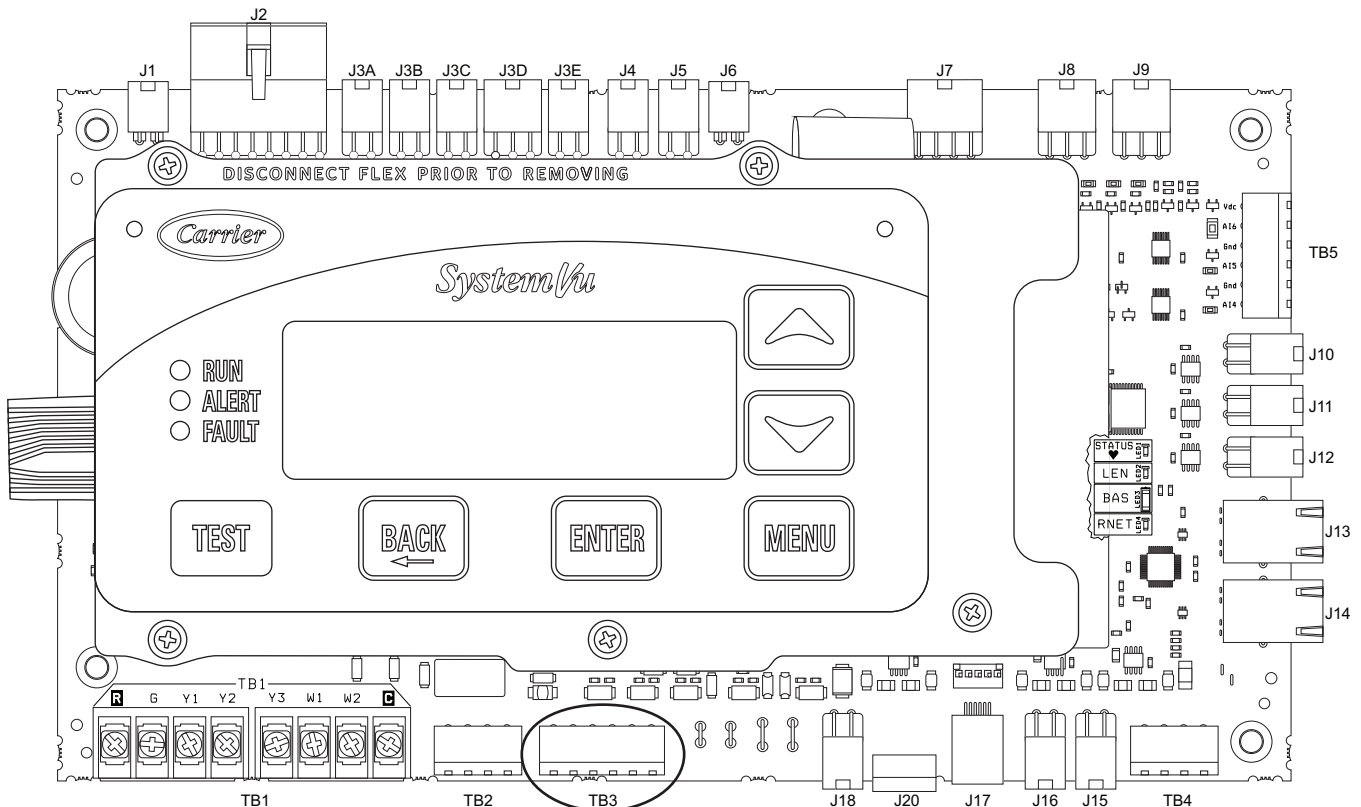


Fig. 6 — FC, GC, and JC with SystemVu Control Board

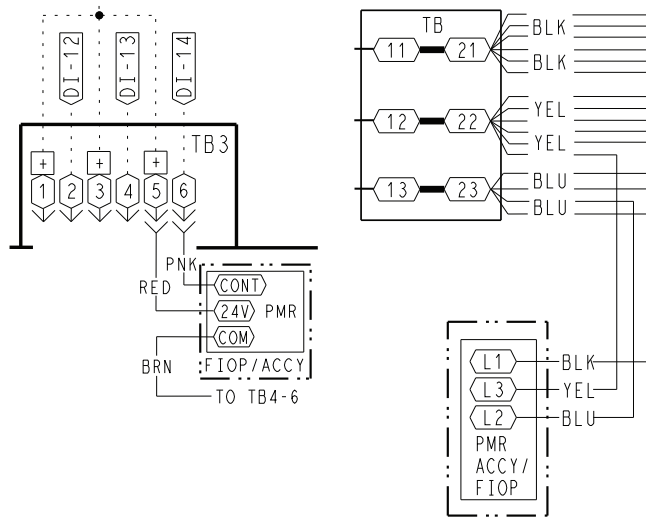
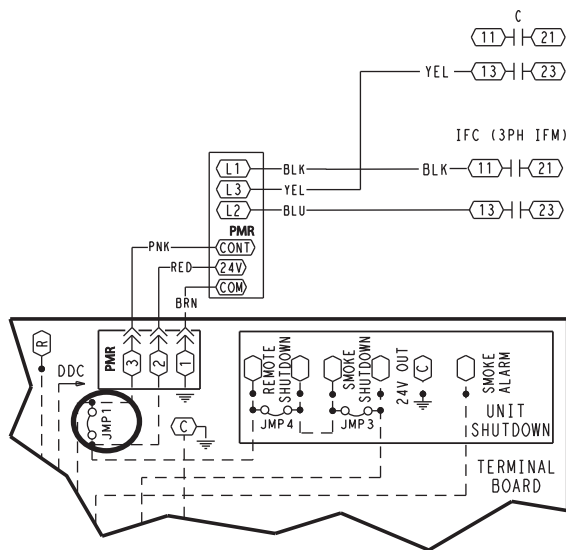
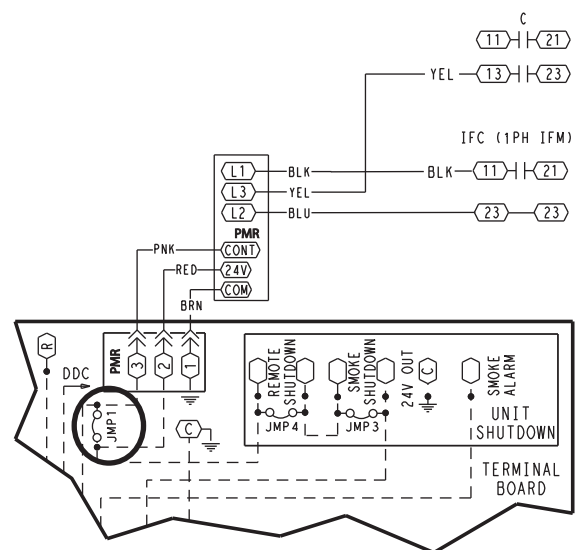


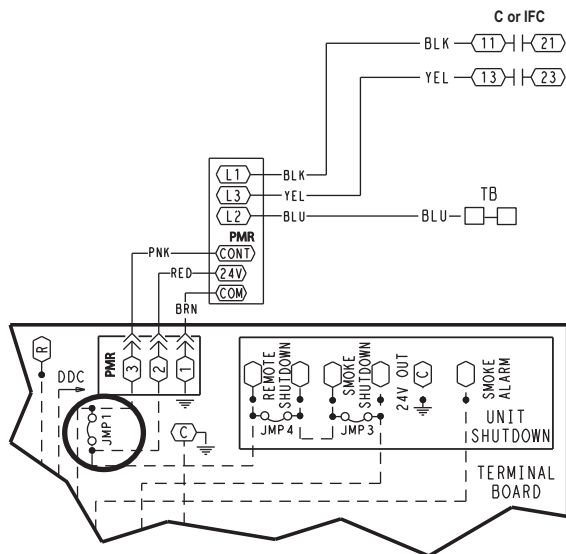
Fig. 7 — FC, GC, and JC with SystemVu Wiring Diagram



**Fig. 8 — IFC Wiring Diagram
All Units with 3-Phase Indoor Fan Motor
EXCEPT 48/50LC**



**Fig. 10 — IFC Wiring Diagram
All PAC Units with 1-Phase Indoor Fan Motor
EXCEPT 48/50LC;
YAC and PHP Units with 575-v and
1-Phase Indoor Fan Motor
EXCEPT 48/50LC**



**Fig. 9 — IFC Wiring Diagram
YAC and PHP Units with 208/230-460-v and
1-Phase Indoor Fan Motor
EXCEPT 48/50LC**

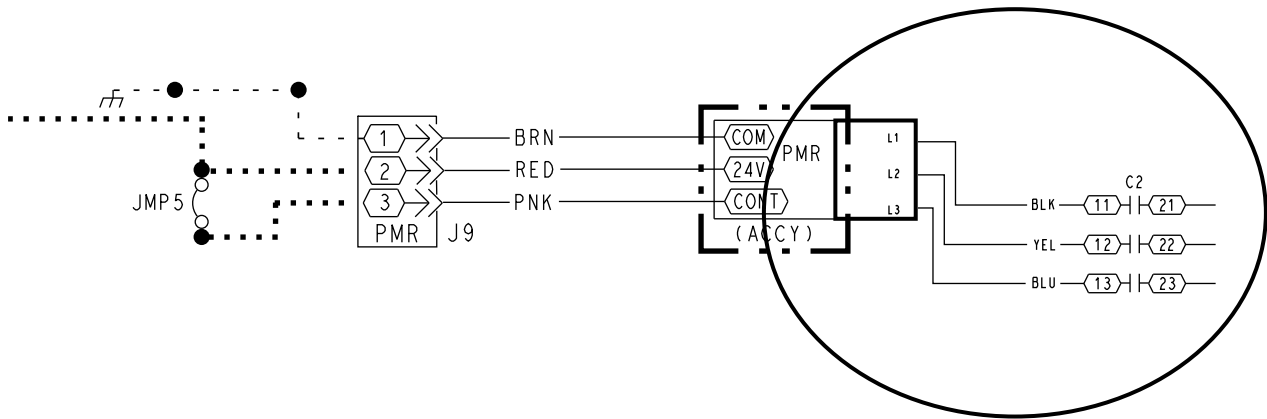
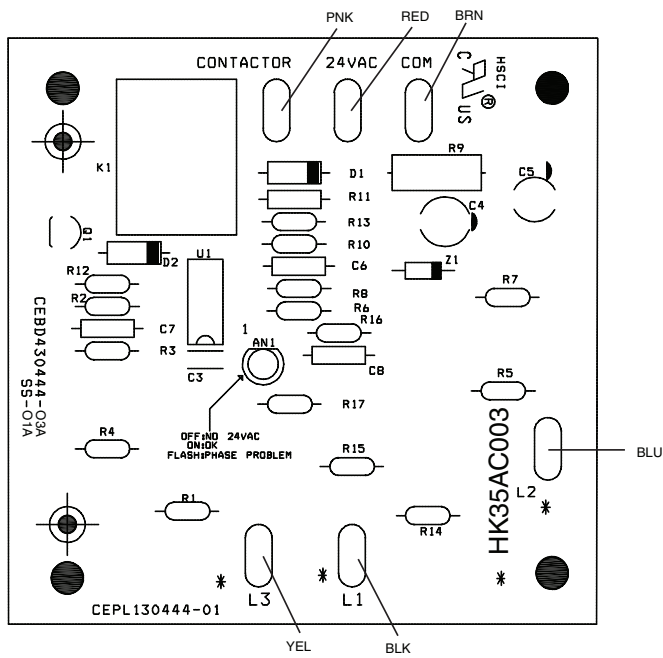


Fig. 11 — IFC 48/50LC Wiring Diagram



**Fig. 12 — Phase Monitor Module Detail
(208/230-v and 460-v)**

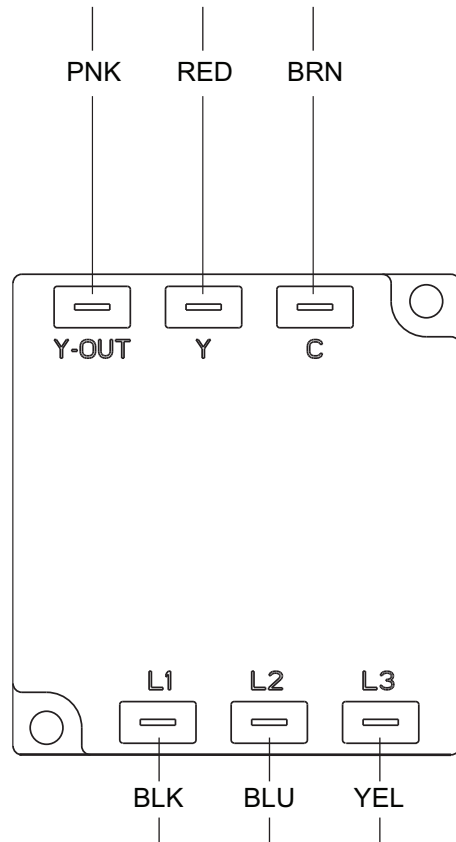


Fig. 13 — Phase Monitor Module Detail (575-v)