

ACCESSORY KIT INSTALLATION INSTRUCTION

LOW AMBIENT ACCESSORY

MODEL 2LA04703100

For Commercial 15 Thru 25 Ton R-410A Split-System Air Conditioning and Heat Pump
Condensing Units

AC Models: YC300, YH-25, J25YC, YC240, YH-20, J20YC, YD180, YJ-15, J15YD, YD240, YJ-20 and J20YD

Heat Pump Models: PC240, PH-20, J20PC, PD180, PJ-15, J15PD, PD240, PJ-20 and J20PD

GENERAL

These units are factory equipped with low ambient switches that work through the Simplicity control board to operate the compressors and condenser fans normally down to 40°F ambient temperature. The Electronic Low Ambient Controller 2LA04703100 accessory is designed to assure safe operation through condenser head pressure regulation down to 0° F ambient temperature.

INFORMATION

1. For single phase, permanent split capacitor motors.
2. Line Voltage Range(s): available from 120V AC through 600V AC.
3. Wiring must comply with local and national electric codes.
4. Max. running amps under all conditions shall not exceed 10 amps. Locked Rotor Amps (LRA) are not to exceed 30 amps for 1 second.
5. The controller requires a 24V AC external power source, supplied from the unit 24V AC control circuit.

CAUTION

It is important that the primary of the 24V AC power source must be on the same primary (lines) serving the motor.

TABLE 1: ACCESSORY COMPONENTS

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	161267	CONTROL, LOW AMBIENT
2	8	7768	STRAP,CABLE
3	2	5821	SCREW, #10-16X1.0
4	1	8493	0 °F Low Ambient Switch
5	2	5894	SCREW, #10-24X1.0
6	4	5919	RETAINER, WIRE
7	2	554898	WIRE RED
8	2	554899	WIRE BLK
9	1	557465	WIRE 115/YEL
10	1	526373	WIRE 117/YEL
11	1	524539	WIRE 721/YEL
12	1	557466	WIRE 722/YEL
13	1	524911	WIRE 806/BLU
14	1	524912	WIRE 807/BRN
15	1	524913	WIRE 808/BLU
16	1	524914	WIRE 809/BRN
17	1	524915	WIRE 811/WHT
18	1	524916	WIRE 812/WHT
19	1	524917	WIRE 813/ORN
20	1	524918	WIRE 814/ORN
21	1	558042	DIAGRAM, WIRING
22	1	540709	INSTR, LOW AMBIENT KIT

NOTE: Confirm that all of the hardware listed in the Accessory Component list is included in the kit. **Do not** begin installation if any part is missing. Read the instructions thoroughly before beginning this installation.

Table 1 details the parts included in this kit. Inspect the kit to ensure that all parts are included.

INSTALLATION

⚠ WARNING

Improper installation, adjustment, service or maintenance can cause injury or property damage. Therefore, only a qualified installer or qualified service personnel should perform this conversion.

⚠ WARNING

If the unit is connected to power sources, make sure that all electrical power to the unit has been disconnected prior to servicing.

1. Disconnect electrical power to the unit. **The unit may have more than one power source.**
2. Remove the unit control box access panel.
3. Mount the controller inside the control box with screws provided. See Figure 1.
4. Connect the controller using the wires provided according to the wiring label.
5. With an ohmmeter, measure the resistance across the "LOAD" and "LINE" terminals. A reading of ≤ 5 ohms means the controller may be improperly wired.

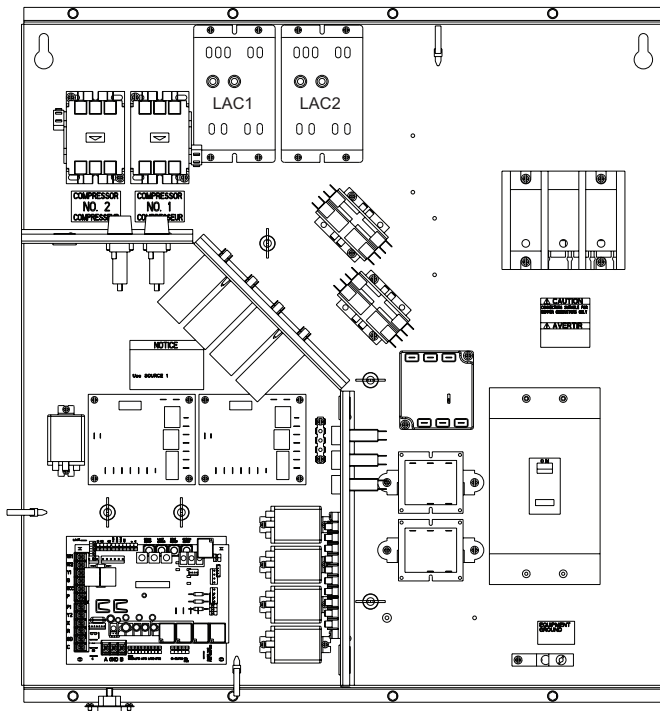


FIGURE 1: LOW AMBIENT CONTROL LOCATION

6. Attach the temperature sensor to the liquid line using the insulation tape provided. Firm contact is required between

the sensor's metal tab and the liquid line. Stretch the tape slightly and completely envelop the sensor. See Figure 2.

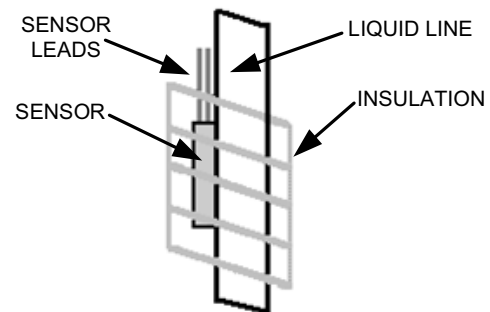


FIGURE 2: SENSOR INSTALLATION

7. Connect the sensor leads to the controller's "S1" and "COM" terminals. If necessary, extend the sensor leads by using the red and black wires (Items 7 & 8) and wire nuts.
8. Secure all wiring in a neat, workmanlike manner using wire ties.
9. Remove existing low ambient switch (LAS) and replace with new 0°F ambient switch.

SETTINGS

See Figure 5 for settings details.

1. "Min. Speed": Turn knob fully counter clockwise for fan motors with ball bearings.
2. "Range Adjust": Turn knob to modulate from 55° F-80° F thru 75° F-100° F. Turn knob toward the counter-clockwise direction for matchups with evaporator units having TXV metering devices.
3. "Span": Set jumper to "25°" position.
4. "HP": Set jumper to
 - a. "RA" position for heat pump.
 - b. "DA" position for condensing unit.

TEST PROCEDURE

1. Disable compressor(s)
2. Restore electrical power to the unit.
3. Set the unit thermostat for cooling demand
4. Verify operation as described above by monitoring liquid line temperature and observing motor speed.

NOTE: If the liquid temperature (T_L) at startup is:

- $T_L \leq 55^\circ$ F the motor will not start. Artificially increase the liquid line temperature to above 50°F, or short across the sensor terminals.
- 55° F $< T_L < 80^\circ$ F the motor will start at full speed, but modulate to a reduced speed proportional to the temperature sensed.
- $T_L \geq 80^\circ$ F the motor will start and run at full speed.

5. Disconnect electrical power to the unit.
6. Restore compressor(s).
7. Replace the control box access.
8. Restore electrical power to the unit.

OPERATION

- A call for cooling closes contactors M3 which energizes all condenser fans. The LAC starts all fans at full speed then adjusts according to the liquid line temperature.

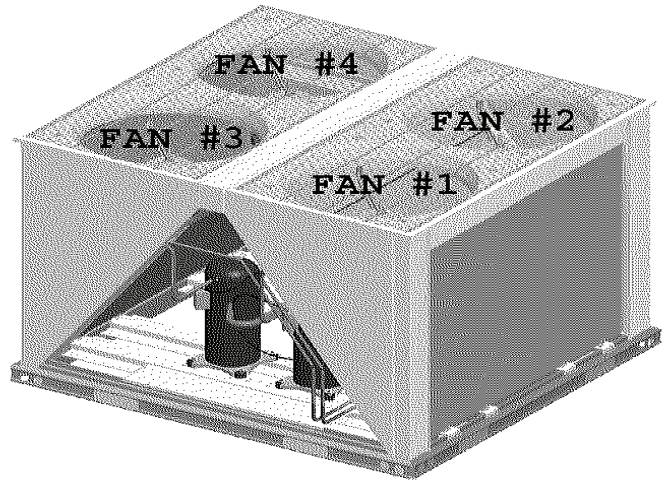


FIGURE 3: FAN LOCATION 15 AND 20 TON UNITS

- As the liquid line temperature drops, the fans' speed decreases accordingly until the minimum speed is reached.

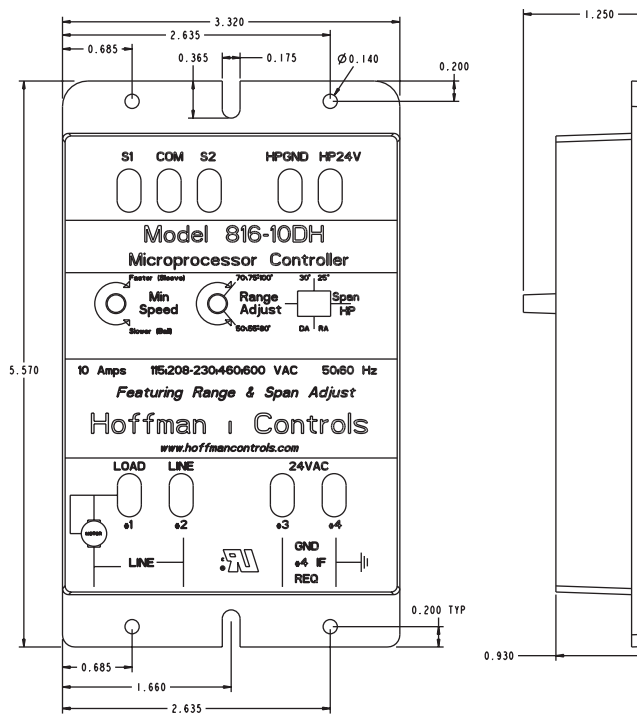


FIGURE 4: LOW AMBIENT CONTROLS

NOTES:

VOLTAGE RANGE (NOMINAL) 115/208-230/460/600
 CURRENT 10 AMPS
 FREQUENCY 50/60 HZ

INPUTS:
 SENSOR-DUAL 10K OHM @ 77°F
 HEAT PUMP 24V AC

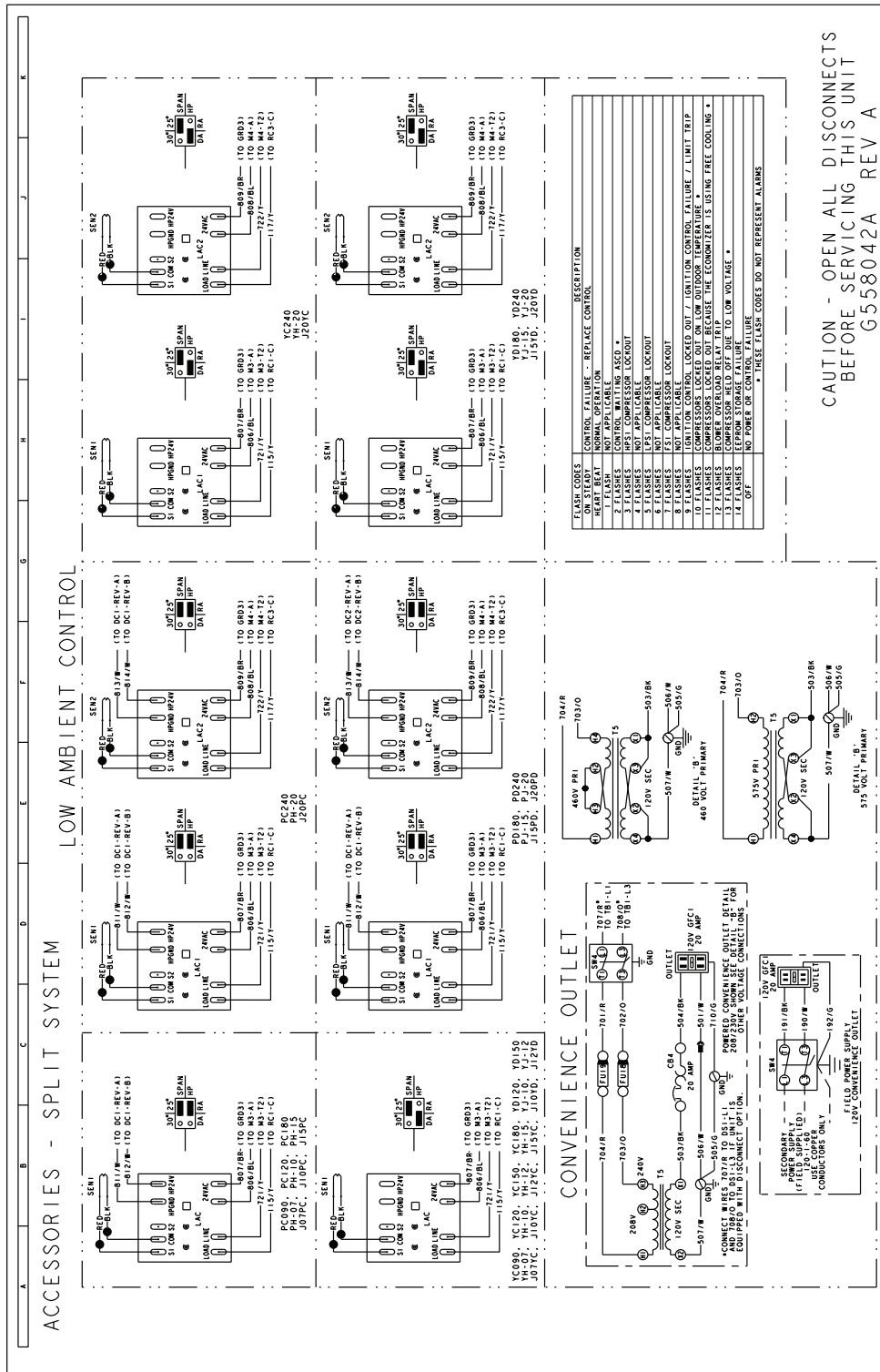
OUTPUT
 FAN MOTOR CONTROL - 1Ø 115V-600V AC

ADJUSTMENTS
 MIN SPEED ADJUST BALL BEARING 200 RPM
 SLEEVE BEARING 400 RPM

RANGE ADJUST SPAN 30°F 50°-80°F THRU 70°-100°F
 SPAN 25°F 55°-80°F THRU 75°-100°F

HEAT PUMP MODE JUMPER DA - DIRECT ACTING
 RA - REVERSE ACTING

ENVIRONMENT OPERATING -30°F - +160°F
 UL FILE #SA5917



CAUTION - OPEN ALL DISCONNECTS BEFORE SERVICING THIS UNIT
G558042A REV A

FIGURE 5: TYPICAL WIRING

Contact UPG Technical Services for questions regarding installation, 1-877-874-7378.

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