

**Operator: Save these instructions for future use!**

**FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR OPERATING THIS CONTROL COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.**

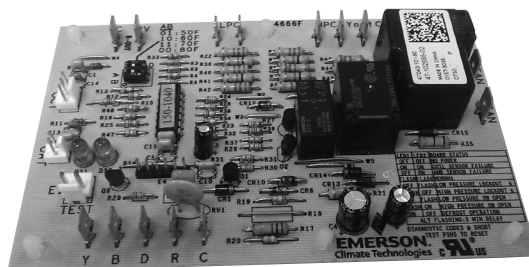
## DESCRIPTION

The 47D43-811 is a microprocessor-based demand defrost controller intended for Rheem heat pump systems. This controller uses basic differential temperature means to detect degradation of system performance due to ice build-up on the outdoor coil. The controller uses "self-calibrating" principles to calibrate itself to the heat pump system. The defrosting is performed by reversing the direction of flow of refrigerant.

The 47D43-811 is meant to replace the following controllers in Rheem heat pump systems:

### 47D43-811 Replaces

47D43-111	47-102685-04	47-21517-92	DDL-122131-2RH
47D43-111	47-102685-84	47-102684-02	DDL-122131-2RH
47D43-111 02	47-102685-05	47-102684-04	
47D43-101	47-102685-02	47-102684-07	
	47-21517-22	47-102684-08	



47D43-811

## PRECAUTIONS

### ⚠ CAUTION

- This control is intended only for Rheem heat pump systems.
- Replace 47D43-811 control as a unit - no user serviceable parts.

If in doubt about whether your wiring is millivolt, line or low voltage, have it inspected by a qualified heating and air conditioning contractor or licensed electrician.

Do not exceed the specification ratings.

All wiring must conform to local and national electrical codes and ordinances.

This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction.

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### ⚠ WARNING

- To prevent electrical shock and/or equipment damage, disconnect electric power to system at main fuse or circuit breaker box until installation is complete.
- This control is not intended for use in locations where it may come in direct contact with water. Suitable protections must be provided to shield the control from exposure to water (dripping, spraying, rain, etc.)
- Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper or loss of heat pump operation and/or shock hazard.
- Following installation or replacement, follow appliance manufacturer's recommended installation/service instructions to insure proper operation.
- Do not use on circuits exceeding specified voltage. Higher voltage will damage control and could cause shock or fire hazard.

# SPECIFICATIONS

## Electrical Ratings [ @ 77°F (25°C)]:

Rated Voltage . . . . .	24 VAC
Rated Voltage Range . . . . .	18-30 VAC
Max. Power Consumption @ 24 VAC . . . . .	4.08 VA
Nominal Frequency. . . . .	50/60 Hz
Relay Load Ratings:	
Compressor Contactor Relay . . . . .	0 VA in rush, 6 VA holding
Fan Relay . . . . .	1/2 HP @ 240, 1/4 HP @ 120 VAC
Reversing Valve Relay (RV) . . . . .	24 VA
Auxiliary Heat Relay (D) . . . . .	1 Amp. 0.6 P.F.
Operating Temperature Range . . . . .	-40° to 150° F (-40° to 65° C)
Humidity Range . . . . .	5% to 95% relative humidity (non-condensing)
High Pressure Cutout Switch (HPC) . . . . .	18 VAC
Low Pressure Cutout Switch (LPC) . . . . .	18 VAC

## Timing Specifications @ 60Hz\*

	Nom	Units
Defrost Lockout Time	34	Mins.
Maximum Defrost Time	14	Mins.
Transient Delay (Normal)	2	Mins.
Back to Back Transient Delay	4	Mins.
Maximum Frosting Time	6	Hrs.
Short Cycle Lockout Time	5	Mins.
Noise Abatement Time (Normal)	30	Sec.
Noise Abatement Time (Forced Defrost)	5	Sec.





\*50Hz Timings are 20% longer.

# OPERATION

Each controller has 24 VAC input and B, Y, and D terminals for connection to a standard thermostat. The controller has pins for connection of two temperature sensors to measure ambient and coil temperature, as well as connections for high- and low-pressure switch monitoring. Controlled outputs are outdoor fan, reversing valve, and compressor contactor. The 47D43 provides two LEDs for status and fault indication.

## Option Switch

Switch labeled SW1 is used to select the defrost mode termination temperature of outdoor coil. Defrost mode is terminated when the coil temperature exceeds the selected termination temperature. Temperature options for SW1 switch settings are:

	B	A	
	On	Off	50° F
	Off	On	60° F
	On	On	70° F (default)
	Off	Off	80° F

## Test Pins

The pins labeled **TEST** can be used to change operation mode in the field. Momentarily short the test pins to force the system into the defrost mode. Momentarily short the test pins again to terminate the defrost mode. To avoid unnecessary system mode transition, do not use the test pins frequently.

## Diagnostic Features

The control continuously monitors system operation. If a fault occurs, the two LEDs on the control will indicate a diagnostic code, if more than one fault occurs, only the code with the higher priority will be shown.

The table shows the diagnostic codes.

LED #1	LED #2	Fault Indication	Display Priority
Off	Off	No power	0
On	On	Coil sensor failure	4
Off	On	Ambient sensor failure	3
Flash*	Flash*	Normal	1
Off	Flash*	Low pressure lockout	7
Flash*	Off	High pressure lockout	8
On	Flash*	Low pressure switch open	5
Flash*	On	High pressure switch open	6
On	Off	Defrost mode	1
Alternating Flash		5-minute delay	2

\* The flash time is to be 0.5 seconds on and 0.5 seconds off followed by 2 seconds off.

# INSTALLATION

On some units, the Outdoor Ambient Temperature (OAT) and Outdoor Coil Temperature (OCT) sensors may be attached permanently to the controller. The 47D43-811 includes replacement OAT and OCT sensors that plug onto the 2- and 3-pin connectors on the controller board.

Before removing the old controller, note the location of the OCT sensor on the outdoor coil. The new sensor should be attached to the coil in the same location, or as close as possible. The OAT sensor is typically 24-48" long, although some controllers have the sensor on the board. Placement of the OAT sensor is not as critical as the OCT sensor, but both sensors are required for the controller to operate.

Six metal standoffs, 0.375 inch long, are used to support and mount the control into the unit.

Board size is 3.375 in. x 3.625 in. and requires 1 inch of headroom (not including mounting).

**Typical System Wiring Table**

47D43 Terminal	Type	System Component Connection
C	0.25" QC	Reversing valve common
RV	0.25" QC	Reversing valve output
HPC (2)	0.25" QC	High pressure cutout switch
LPC (2)	0.18" QC	Compressor call output
CC	0.25" QC	Compressor contactor coil
Fan (2)	0.25" QC	Outdoor fan control
C	0.25" QC	Common, 24 VAC return
R	0.25" QC	24 VAC input
D	0.25" QC	Defrost output
Y	0.25" QC	Compressor call input
OAT	2-pin connector	Outdoor ambient temperature sensor
OCT	2-pin connector	Outdoor coil temperature sensor

## NOTE

All wiring should be installed according to local and national electrical codes and ordinances.

The 47D43-811 control may be mounted on any convenient surface using the six standoffs provided.

The control must be secured to an area that will experience a minimum of vibration and remain below the maximum ambient temperature rating of 150° F. The control is approved for minimum ambient temperatures of -40° F.

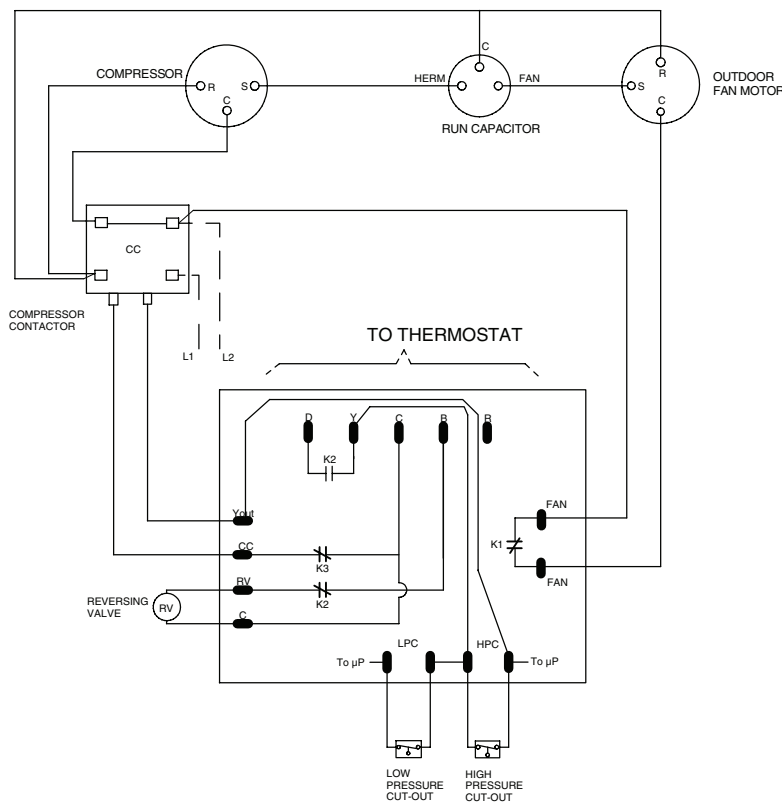
Any orientation is acceptable.

Refer to the wiring diagram and wiring table when connecting the 47D43-811 control to other components of the system.

UL approved, 105° C rated 18 gauge min., stranded 2/64" thick insulation wire is recommended for all low voltage safety circuit connections.

UL approved, 105° C rated 16 gauge min., stranded 2/64" thick insulation wire is recommended for all line voltage connections.

Following installation or replacement, follow appliance manufacturer's recommended installation or service instructions to insure proper operation.



**Fig 1. Typical System Wiring Diagram**

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