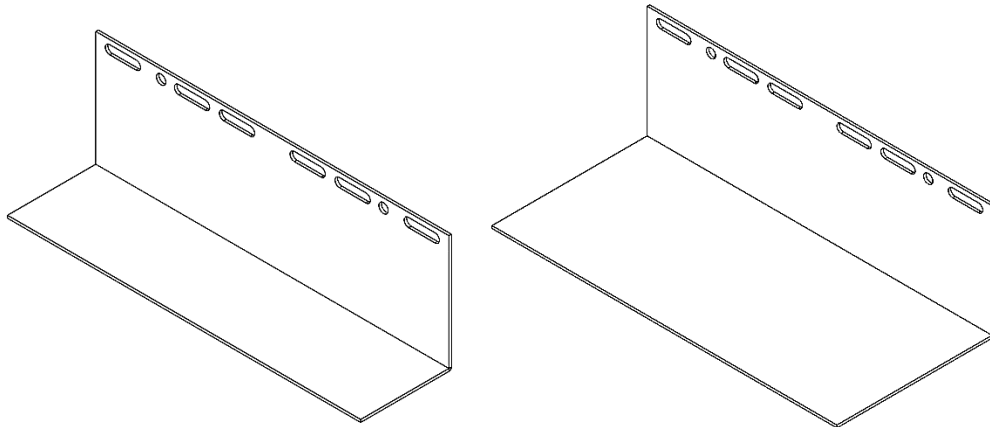


## Daikin Rooftop Systems

### Low Ambient Variable Frequency Drive Heater Option



## Table of Contents

Table of Contents .....	1
Heater Selection Guide .....	2
Heater Dimensions .....	3
Recommended Installation (mechanical).....	4
PART A: Heater Installation (both A and B kits):.....	4
PART B: Transformer Installation (both A and B): .....	5
Installation (electrical) .....	6
PART C: Electrical Installation (both Type A and Type B).....	6
Heater Controls.....	7
PART D: VFD Configuration, Type A only .....	7
Alternate PART D: Thermostat Installation, Type B only.....	8
Replacement Parts .....	9
Schematics (All Kits).....	10
Warnings and Disclaimers .....	11

## Heater Selection Guide

Kit Contents (see table to right)

Kit Contents	Kit Style	
	Type A	Type B
Transformer and fuses	X	X
Heater	X	X
Thermostat		X
Instruction Manual	X	X

**Type A:** For use in control boxes with ABB ACS320, ABB ACH550, Daikin MD4, and Daikin MD5 VFDs.

**Type B:** For use in control boxes with non-ABB VFDs, or no VFD.

### Selection Guide: Quick Reference

Unit	Heater Style	Anticipated Outside Air Temps	
		To -20°F	Below -20°F
Rebel C	A	100W	200W
Rebel A/B	None **	Heater not required	
Maverick	A/B*	100W	200W
Rooftop	A/B*	100W	200W
Vision	None	Indoor unit, no heater req'd	
Skyline	A/B*	100W	200W

\* Style depends on type and location of VFD

\*\* Heater not recommended due to VFD location and small panel size

**Note:** heater selection guide is intended only for reference, based upon laboratory testing. Suitability in your application is subject to many variables.

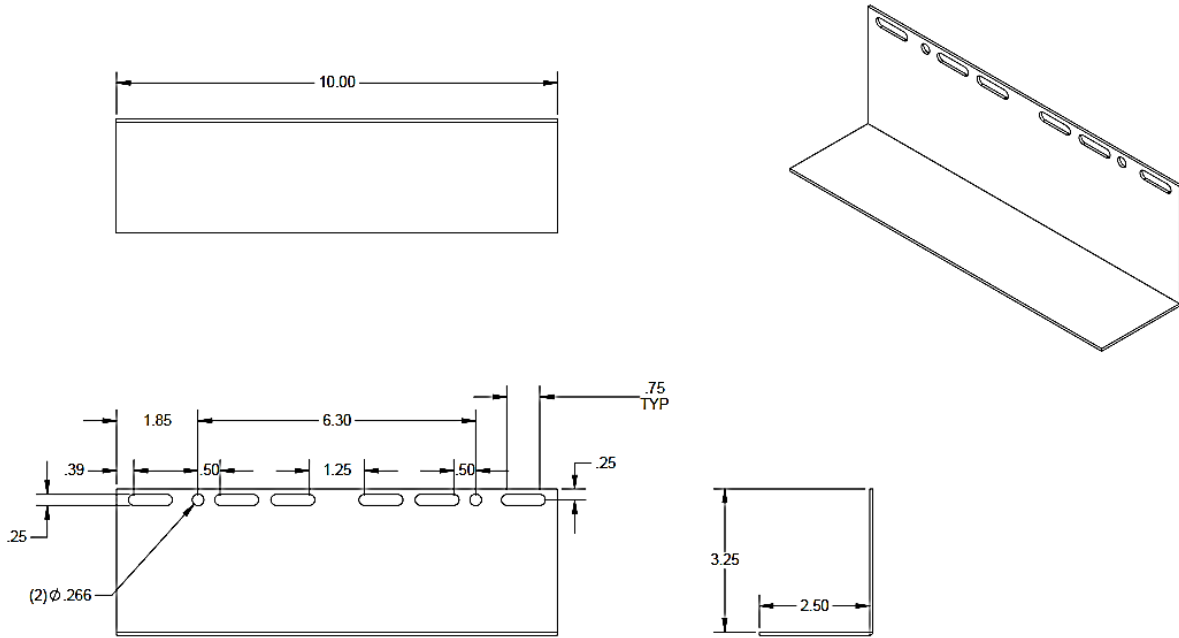
## Ordering Information

Kit Style	High Voltage (460-600V)		Low Voltage (200-240V)	
	100W	200W	100W	200W
A	404182030	404182050	404182020	404182040
B	404182070	404182090	404182060	404182080

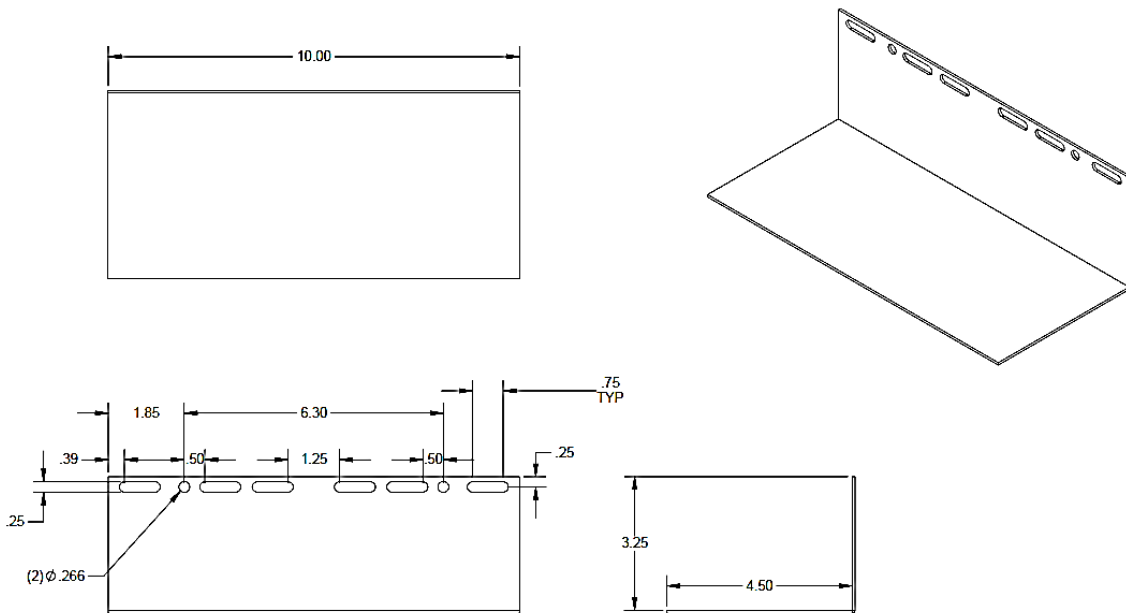
**NOTE:** Type A and Type B heater kits both require an enclosure around sensitive electronics in order to be effective in maintaining appropriate temperature. Protection of VFDs or other temperature-sensitive components in the airstream cannot be guaranteed with these kits.

# Heater Dimensions

## 100W Heater:



## 200W Heater:



**NOTICE**

NOTE: Distance from holes to heating pad is designed for minimum safe distance from heater to VFD. Mounting heater closer to the bottom of the VFD risks damaging the VFD.

## Recommended Installation (mechanical)

### PART A: Heater Installation (both A and B kits):

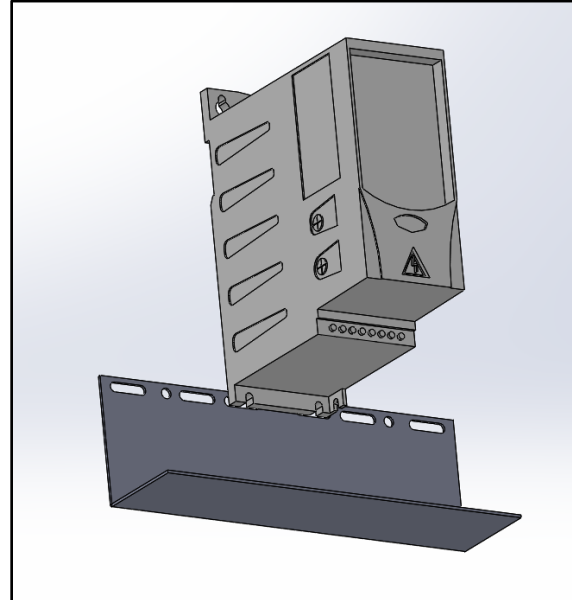
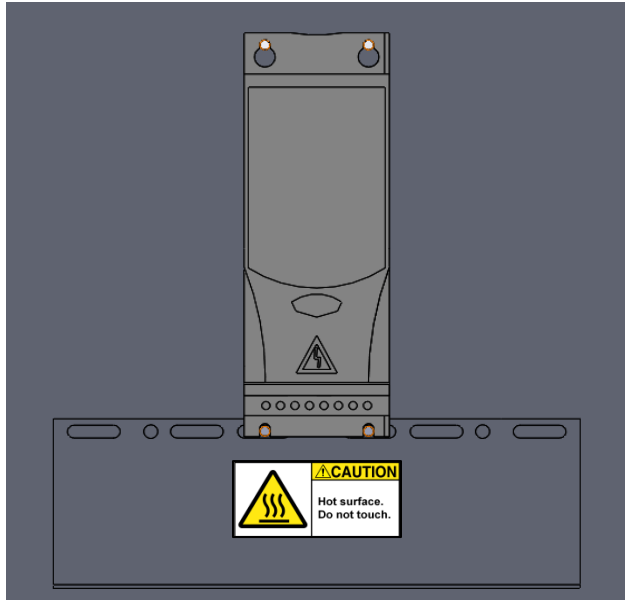
The following steps will explain how to properly install and position the included electric heater.

- 1) Apply included high temperature CAUTION label as shown below (left image).
- 2) Locate VFD drive (ABB for Type A kit, any manufacturer for Type B kit). Loosen, but do not remove, all mounting screws on drive.
- 3) Remove bottom mounting screws and insert heater between VFD and back sheet metal. (NOTE that heater has multiple slots and holes accommodate various sized drives. Choose mounting configuration which will best center heater underneath VFD).

NOTE: Do not mount heater closer to VFD than shown in images. Holes are placed at minimum safe distance from heating pad to bottom of VFD. (Lower is acceptable.)

- 4) Reinstall bottom mounting screws. Retighten all screws.

Final installation graphics: (shown here with ACS320, actual VFD may vary).



### CAUTION: Hot Surface!

Heater may be hot when in operation. Prior to servicing heater, disconnect heater from power and allow time for surface to cool.

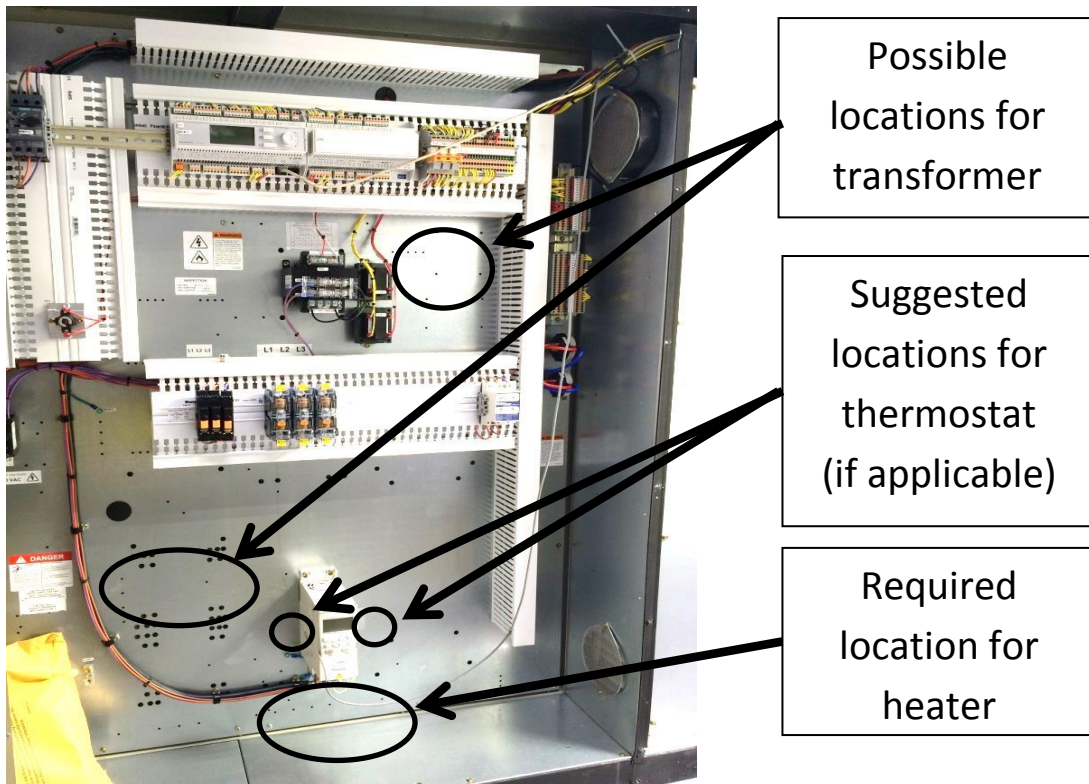
## PART B: Transformer Installation (both A and B):

The following steps will explain how to install the included transformer.

**WARNING:** Electrical work should only be performed by a qualified electrician or Daikin authorized service technician. High Voltage components are extremely dangerous if proper precautions are not taken.

- 1) Ensure disconnect switch is in “OFF” position. Verify power is OFF. When powered these components are extremely high voltage, and can be deadly if caution is not taken.
- 2) Locate appropriate mounting location for included transformer. Ensure the location is within reach of 72 inch leads on heater. NOTE: recommended placement of transformer is on back panel. Side panels are available if necessary. (Suggested location shown below in figure).
- 3) Fasten transformer with appropriately sized screws. NOTE: exercise care when drilling holes. Metal shards could damage nearby components or wiring. Make sure nothing is behind hole locations that could be damaged by drilling (such as wiring or refrigeration piping).

**NOTE:** Large Rebel depicted below – similar layout instructions apply to other Rooftop Systems.



## Installation (electrical)

### PART C: Electrical Installation (both Type A and Type B)

The following steps will instruct how to safely wire your transformer.



#### Electrical Hazard Warning!

Use caution when connecting or servicing heater. Power to unit must be disconnected and proper care must be used when servicing high voltage equipment.

- 1) VERY IMPORTANT: Ensure unit power is disconnected! The following steps deal with high voltage lines, and have the potential to cause serious bodily harm.**

NOTE: Allow 5 minutes after power disconnection to allow VFD capacitors to discharge before performing any electrical work involving the VFD (only applicable for Type A kits). See warnings in applicable VFD user manual for more information.

- 2) Wire according to schematic for specific kit/VFD. (See schematic on **page 10.**) Locate correct schematic based upon part number. Make sure to connect to correct terminal of transformer for this unit's line voltage (see table in schematic).**

NOTE: All wires will be carrying high voltage. When routing kit wires maintain distance (6") from low voltage wires and components. If crossing is necessary, make intersections perpendicular to each other. Do not run transformer/heater wiring parallel to control wiring.

NOTE: Crimp appropriate terminals onto field wires and/or supplied heater wiring, to ensure secure wiring connections (as necessary, depending on connection point).

NOTE: Recommended field wiring is shown below:

Field Wire 1	18 Gauge, 600V rated, Red
Field Wire 2	18 Gauge, 600V rated, White
Field Wire 3	18 Gauge, 600V rated, Red

- 3) Once electrical installation is complete and connections are checked for correctness, reconnect unit power.**

## Heater Controls

### PART D: VFD Configuration, Type A only

Please follow the following steps to configure your ABB VFD.

- 1) Enter the parameter menus of the ABB drive, using the drive keypad.
- 2) Under parameter folder 16, Operating Data, change parameter 1611 to “LONG VIEW”
- 3) Under parameter folder 32, Supervision, change parameter 3201 to “110 DRIVE TEMP”. Set parameter 3202 to 1°C, and set parameter 3203 to 5°C.
- 4) Under parameter folder 14, change parameter 1401 to “SUPERV1 UNDER”

Correct configuration of the VFD should be double checked by following these steps:

- 5) Check heat sink temperature (Parameter 0110, Drive Temp):
  - a. If heat sink temperature is above 5°C:
    - i. Test for continuity across the normally open relay (terminals 17/19 on ABB ACS320 and Daikin MD4, terminals 19/21 on ABB ACH 550 and Daikin MD5). Relay should be **open** (no continuity).
    - ii. Then, change parameters 3202 and 3203 to values higher than the current heat sink temperature of the drive (found in “Operating Data”). Suggested values are 75°C and 80°C. (See step 3 above).
    - iii. Again test for continuity across the same relay. Relay should be **closed** (continuity).
  - b. If heat sink temperature is below 1°C:
    - i. Test for continuity across the normally open relay (see step a. i.). Relay should be **closed** (continuity).
    - ii. At a later date when ambient temperatures are warmer, repeat testing.
  - c. If heat sink temperature is between 1°C and 5°C:
    - i. Condition of relay is uncertain in these conditions. Test again with different ambient conditions.
- 6) **Important! Do not forget to reprogram the limits to their correct values! See step 3 above. Reset values to 1°C and 5°C for lower and upper limits, respectively.**

NOTE: No VFD configuration required for Type B heater kit. Instead, thermostat installation is required (see page 8).

## **Alternate PART D: Thermostat Installation, Type B only**

**For non-ABB brand VFDs, an external thermostat is required. These steps guide the installation of this thermostat.**

- 1)** Locate appropriate location for thermostat switch (as close to VFD as possible – ideally halfway up VFD, closely to the side. See figure on page 5).
- 2)** Install switch with appropriate self-tapping screws. As with transformer installation, ensure metal shards do not damage existing components. Confirm space behind holes is free from components which might be damaged. (See warning statement on page 5, step 3.)

**Note: Thermostat is not needed and is not included in Type A kit.**



## Replacement Parts

### Fuses:

Primary	
Amps	Part No.
1/2 Amp	349937104
1 Amp	349937108
2 Amp	349937116

Secondary	
Amps	Part No.
1 Amp	263534011
2 Amp	263534012

Acceptable Replacement Fusing List All fuses time-delay characteristic		
	Primary (600V) F99A, F99B	Secondary (125V) F99C
Bussman	LP-CC, FNQ-R	FNM
Ferraz/Mersen	ATDR	TRM
Littelfuse	CCMR	FLM

WARNING: Risk of fire

NOTE: Replace fuses **only** with exact type and rating.

### Heaters:

Heater Size	Part No.
100W	910215353
200W	910215354

### Transformers:

Transformer Size	Part No.
100 VA	910217499
200 VA	910217500

### Thermostat:

Thermostat Part No:	910217501
---------------------	-----------

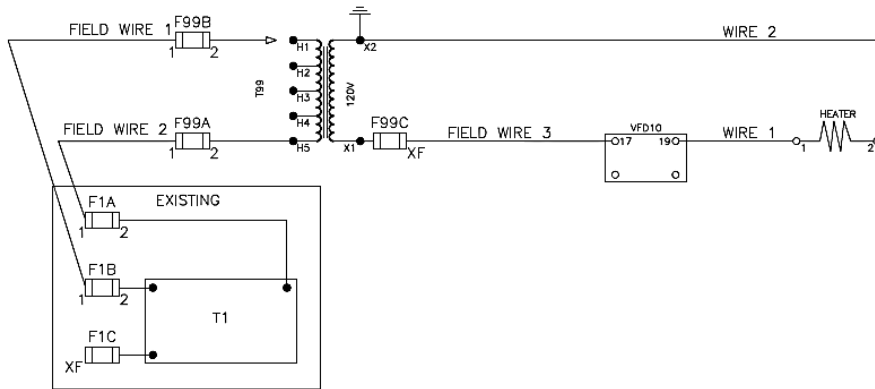
# Schematics (All Kits)

TRANSFORMER TERMINAL SELECTION	
LINE VOLTAGE	TERMINAL
575V	H1
460V	H2
230V	H3
208V	H4

208V OR 230V	F99A/F99B FUSING	
	100W HEATER	200W HEATER
	2 AMP	1 1/2 AMP
	F99C FUSING	
100W HEATER	200W HEATER	
	1 AMP	1 AMP
460V OR 575V	F99A/F99B FUSING	
	100W HEATER	200W HEATER
	2 AMP	1 AMP
	F99C FUSING	
100W HEATER	200W HEATER	
	2 AMP	2 AMP

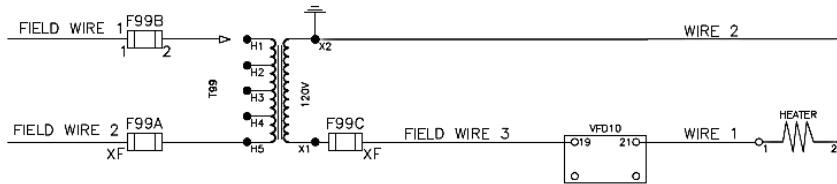
HEATER HAS INTEGRAL 'WIRE 1' AND 'WIRE 2' AT 72", CUT OR ADD WIRE AS NEEDED

404182020, 404182030, 404182040, 404182050 – ABB ACS 320 OR DAIKIN MD4

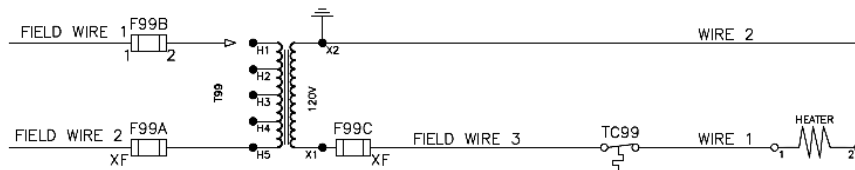


**Note:** on subsequent figures line voltage connection is omitted. Use same installation as above

404182020, 404182030, 404182040, 404182050 – ABB ACH 550 OR DAIKIN MD5



404182060, 404182070, 404182080, 404182090 – NON-ABB VFD



## Warnings and Disclaimers

The following compiles a list of warnings and notes associated with the installation and operation of this kit. Make sure to follow these warnings, as well as always having properly trained technicians and electricians, or Daikin-authorized technicians perform work.

**NOTE:** Use only official Daikin-supplied kit components for best results. Results of kit cannot be guaranteed if unofficial components are substituted. The only exception to this is for fuses – see table of acceptable replacement fuses on page 9.

**CAUTION:** While in operation, surface of heater will become very hot, and may be dangerous to touch. Use caution when opening control panel in ambient conditions where heater may be on (below 40°F ambient). Allow time for heater to cool before servicing heater or nearby components.

**WARNING:** This kit uses high voltage circuit elements. Extreme caution must be taken when installing and servicing these components. Even after unit power is disconnected, wait for minimum of 5 minutes before servicing panel to allow capacitors to discharge.

**NOTE:** When wiring heater kit, make note of existing components. Make small rerouting changes to existing wires (if necessary) to ensure that all cables are at least an inch from surface of heater. Additionally, do not route any new wires in heater kit nearby control wires carrying low voltage signals.

**NOTE:** Do not mount heater closer to VFD than proscribed by mounting holes. Figures on page 4 depict closest acceptable mounting configuration. Mounting VFD lower than proscribed is safe, but may decrease heater performance.

**DISCLAIMER:** Claims about temperature rating of kit are supported with laboratory testing. However, real world conditions can vary significantly from lab conditions. Listed temperature ratings are only intended as guidelines.

**WARNING:** Keep flammable materials away from heater. During operation, surface of heater will become hot (200+ °F) which could excite combustible substances.



### ***Daikin Applied Training and Development***

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin HVAC products, please visit us at [www.DaikinApplied.com](http://www.DaikinApplied.com) and click on Training, or call 540-248-9646 and ask for the Training Department.

### ***Warranty***

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

### ***Aftermarket Services***

To find your local parts office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-37PARTS (800-377-2787).

To find your local service office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

Products manufactured in an ISO Certified Facility.