DAIKIN UNIVERSITY

Daikin VRV III-S
Key Points of Installation

Participant Guide

VRVIII-S System

Key Points of the Installation Process

Daikin eQuip App

The Daikin eQuip App includes:

- Technical Specifications
- System Compatibility List
- Error Code Descriptions
- System Configuration Details (Field Settings, Emergency Settings, etc.)
- Thermistor Information
- Technical Documents (Installation and Operation Manuals, Submittal Data Sheets)

NOTE: Access to modules requires registration through the Daikin eQuip app (Wi-Fi or Cellular service required). Users will be designated a user type based on registration criteria and will have access to select modules and functions. Daikin University module is available to all users.

Daikin eQuip App Cont.

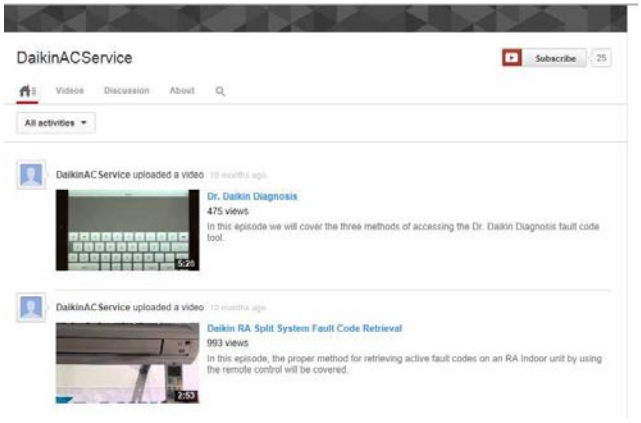
- Spare Parts Database
- Additional Refrigerant Calculations
- Marketing Materials (Product Brochures and Flyers)
- Daikin University Course Listings
- Unit of Measurement Converter
- General Information (News Updates, FAQ's, Dealer Directory, Daikin Key Department Contact Directory)

NOTE: Access to modules requires registration through the Daikin eQuip app (Wi-Fi or Cellular service required). Users will be designated a user type based on registration criteria and will have access to select modules and functions. Daikin University module is available to all users.

Troubleshooting Videos

"How to" troubleshooting videos are available on the Daikin AC YouTube Service channel

http://www.youtube.com/user/DaikinACService?feature=mhee



Dr. Daikin

Dr. Daikin

Diagnostic Tool

Fault Code Identification

Three ways to help with ERROR CODES:

WEB: www.drdaikin.com

MOBILE WEB: http://mobile.drdaikin.com

SMS TEXT: **Error** plus (**code**)

- send to 32075 -

Example: Error U4

Daikin AC Website

Daikin University Training

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Daikin University Facilities:

- Carrollton, TX
- Irvine, CA
- Long Island City, NY

Daikin Approved Training Facilities:

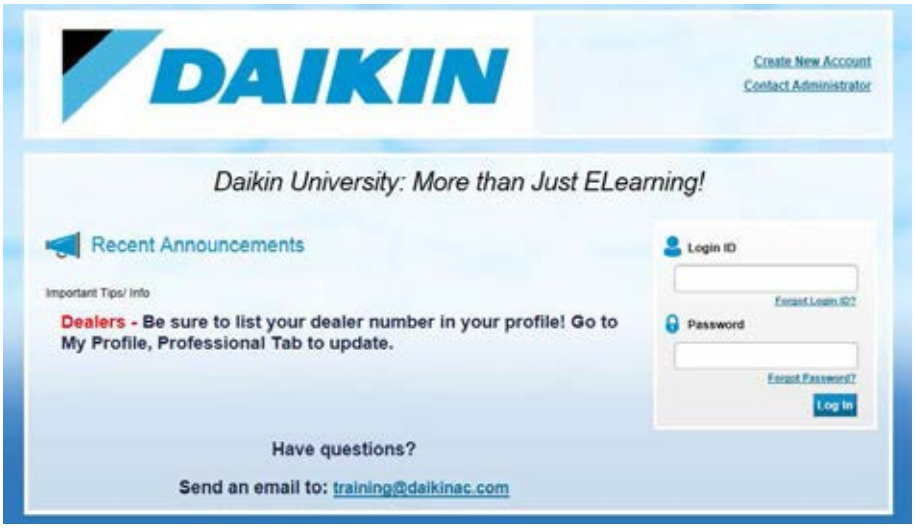
- Miami/Davie, FL* (Daikin)
- Atlanta/Marietta, GA* (Daikin)
- New Haven, CT
- Boise, ID
- Boston/Woburn, MA
- Detroit/New Hudson, MI
- Newark/W. Caldwell, NJ
- Greensboro, NC
- Columbia/Cayce, SC
- Houston, TX

Daikin University Training

Daikin University offers the following classroom training for VRV

- VRV Install Only
- VRV Commissioning Only
- VRV Install & Commissioning
  - Offered as an 8-hour or 16-hour (hands-on activities) format
- VRV Service & Troubleshooting
- VRV Product & Applications
- VRV Applications: Selection Tools
- VRV Design Workshop
- Engineer Day

Daikin University



Topics

- VRVIII-S System Introduction and Components
- Piping & Charging Considerations
- Refrigerant System Design
- VRVIII-S Outdoor & Unit Installation Overview
- VRVIII-S System & Control Wiring
- Optional Systems Accessories
- Commissioning

VRVIII-S

The VRVIII-S Key Points of Installation training module is intended to provide an overview of the most basic installation procedures for the outdoor and indoor units in a typical system. The intent is to review the main highlights of installation to promote a general understanding of the product line. This presentation is not intended on its own to qualify any individual or company to install a VRVIII-S system.

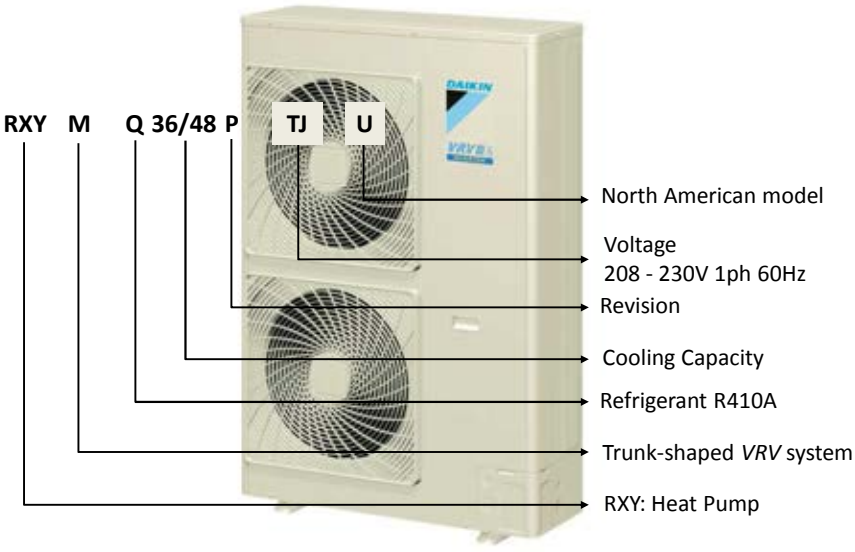
As with any Daikin VRV system installation, it is strongly recommended that the Daikin **VRV Installation and Commissioning** 1-day or 2-day training be utilized to provide comprehensive training to HVAC installation professionals. Log on to the Daikin University website for full training information.

Along with the factory training, the Daikin factory publications should always be referenced.

VRVIII-S

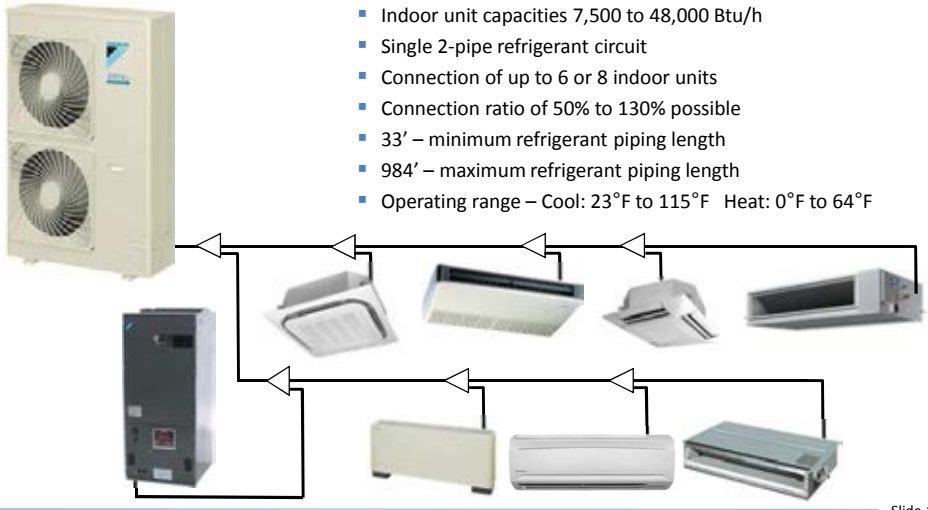
Product Introduction

VRVIII-S Nomenclature



Outdoor Units RXYMQ36&48PVJU

- 208/230vac 1Ph - 30 amp power to outdoor unit
- Outdoor unit models: 36,000 & 48,000 Btu/h
- Single inverter scroll compressor
- Indoor unit capacities 7,500 to 48,000 Btu/h
- Single 2-pipe refrigerant circuit
- Connection of up to 6 or 8 indoor units
- Connection ratio of 50% to 130% possible
- 33’ – minimum refrigerant piping length
- 984’ – maximum refrigerant piping length
- Operating range – Cool: 23°F to 115°F Heat: 0°F to 64°F



Ductless Indoor Units

Type	Model	Capacity Sizes	Description
	FXFQ_TVJU Round flow sensing cassette	7.5 MBtu to 48 MBtu	▪ 360° Discharge air pattern with 23 field configured distribution patterns ▪ Condensate Lift Pump ▪ Outside Air integration possible ▪ Factory Long-Life Filter
	FXZQ_M7VJU 2’ x 2’ 4-Way Ceiling Cassette	7.5 MBtu to 18 MBtu	▪ 2, 3, or 4 way configured air flow ▪ Condensate Lift Pump ▪ Outside Air integration possible ▪ Factory Long-Life Filter
	FXAQ_PVJU Wall–mounted Unit	7.5 MBtu to 24 MBtu	▪ Quiet operation ▪ Powered louvers – programmable ▪ Optional Condensate Pump Kit ▪ Factory Long-Life Filters
	FXHQ_MVJU Ceiling Suspended Unit	12 MBtu to 36 MBtu	▪ Wide air discharge with long throw ▪ Powered Louver – Programmable ▪ Less than 8’ high ▪ Factory Long-Life Filters
	FXNQ_MVJU9 FXLQ_MVJU9 Floor Standing Unit	12 MBtu to 24 MBtu	▪ Top Discharge / Bottom Return ▪ Space saving free-standing or wall-mounted ▪ Optional Condensate Pump ▪ Factory Long-Life Filter

Ducted Indoor Units

Type	Model	Capacity Sizes	Description
	FXDQ_MVJU Slim Duct Built-In Concealed Low Static	7.5 MBtu to 24 MBtu	▪ Low profile and low sound levels ▪ Ductless soffit or adapt to minimal duct ▪ installation for supply and return ▪ Condensate Lift Pump ▪ Rear or Bottom Return
	FXMQ_PVJU DC Ducted Concealed Medium Static	9 MBtu to 48 MBtu	▪ ECM blower for adjustable static pressure settings up to .8“ w.g. ▪ Condensate Lift Pump ▪ Front Discharge – Rear Return ▪ MERV rated filters available ▪ DZK Zoning option
	FXMQ_MVJU Medium Static Ducted	72 MBtu & 96 MBtu	▪ 6 and 8 ton capacity models ▪ Standard blower motors ▪ Gravity condensate drain ▪ Front Discharge – Rear Return
	FXTQ_PAVJU Vertical Air Handler	12 MBtu to 54 MBtu	▪ Upflow / Horizontal Right ▪ ECM Blower motor for efficiency ▪ Automatic static pressure adjust ▪ Optional Heat Strip Kits 3 - 20 kW

Ventilation Units

Type	Model	Capacity Sizes	Description
	FXMQ_MFVJU 100% O.A. Processor	48, 72, & 96 MBtu 636, 989, & 1236 CFM	▪ Remote Controller set Discharge Temp – BRC1E72 or BRC4C82 ▪ Front Discharge – Rear Return ▪ Gravity condensate drain ▪ Brazed flange on gas line ▪ Discharge Air Sensor
	Energy Recovery Ventilator VAM_GVJU	300, 470, 600 & 1200 CFM	▪ 208/230vac 1 Phase power ▪ 4 Airflow Rate Models: Operating Range: 5° to 122°FDB < 80% Relative Humidity ▪ Integration with VRV systems or standalone operation ▪ DIII-Net Communications ▪ Centralized Control or BRC1E72 Navigation Remote ▪ Humidifier integration possible

Piping & Charging Considerations

Daikin Tools

Individual Torque Wrench Kit

TLTESM

Service Tool Kit

DACA-99S TK-1

Daikin Tool Kit

Proper deburring is critical to a successful flare

Additional Tools for Install

- Metric tools (hex key set and socket set) are required when installing or servicing Daikin VRVIII-S systems
- Nitrogen regulator capable of measuring up to 700 plus PSI is necessary for pressurizing systems to 550 PSIG
- Daikin offers a full selection of torque wrenches that are adjustable to the required torque and sized for the Daikin system flare nuts

Torque Wrench Set
Part # TLTWSM

5/16 Valve Core Removal Tool

700 PSI Min

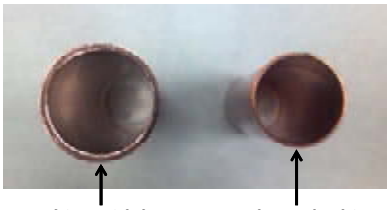
Metric Socket Set

Metric Hex Key Set

Refrigerant Pipe Deburring

- When cutting copper tubing the cut ends must be de-burred to provide a square end to eliminate an increased chance of a leak if the cut is not properly deburred
- To properly remove the cut burrs, use a deburring tool to provide a smooth and square cut end in the tubing
  - Be careful to not under cut the inside tube diameter creating a chamfered edge

Deburring Tool



Tubing with burrs **Deburred tubing**

R-410A Rated Flare Tool

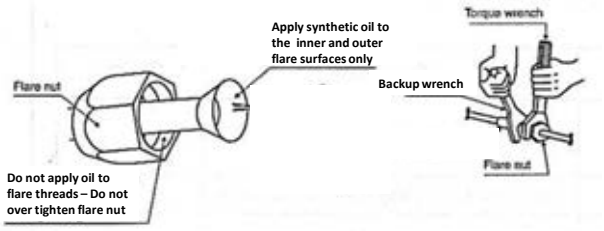
- Use a proper R-410A flare tool for high quality flares
- R-410A flares are deeper providing more surface area for sealing
- Daikin Flare nuts are heavier than standard R-410A flare nuts
- Daikin provides the proper flare nuts on all indoor and outdoor units

Daikin 3/8" Flare

Standard 3/8" Flare

R-410A Flaring

- Check the flare cone for proper diameter and a smooth polished finish
  - Use the Daikin Flare Gauge
- Apply synthetic oil to the cone inner and outer surfaces only
- Do not lubricate the flare threads
- Do not use any type of thread sealant on the flare threads
- Always use a torque wrench to tighten flare nut connections
  - Backup wrench on indoor unit connections required
  - Refer to Installation Manuals for flare nut torque specifications



Torque Chart

Table 1

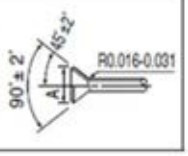
Pipe size (in.)	Tightening torque (ft.lbf)	Flare dimensions A (in.)	Flare shape (in.)
ϕ1/4	10.4–12.7	0.342–0.358	
ϕ3/8	24.1–29.4	0.504–0.520	
ϕ1/2	36.5–44.5	0.638–0.654	
ϕ5/8	45.6–55.6	0.760–0.776	

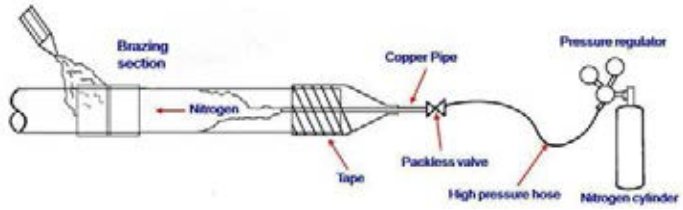
Table 2

Pipe size (in.)	Further tightening angle	Recommended arm length of tool (in.)
ϕ1/4	60 to 90 degrees	Approx. 5-7/8
ϕ3/8	60 to 90 degrees	Approx. 7-7/8
ϕ1/2	30 to 60 degrees	Approx. 9-13/16
ϕ5/8	30 to 60 degrees	Approx. 11-13/16

Torque wrenches are preferred

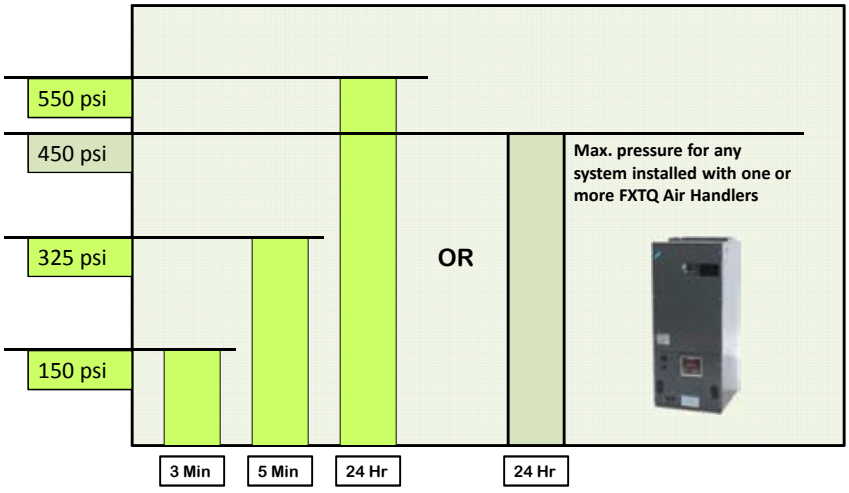
Brazing – Nitrogen Purge

Proper Nitrogen purge **must** be used during all brazing (Pressure regulated up to 3 PSIG) to prevent oxidation formation in the piping



System Nitrogen Pressure Test

Verify all stop valves are securely closed before pressure test



Nitrogen Pressure Testing Considerations

Nitrogen pressure is subject to fluctuation above 300 psi, based on ambient temperature changes. Use this formula to compensate for temperature changes from one day to the next when performing the 24 hour pressure test. The following formula will determine system pressure drop caused by low ambient temperature.

Note the **T**emperature when the system is **p**ressurized (**Tp**) Subtract the **T**emperature when the pressure is **c**hecked (**Tc**) Multiply by a factor of 0.80 to get the **P**ressure **D**rop (**PD**)

(**Tp – Tc**) x 0.80 = **P**ressure **D**rop

System Triple Evacuation

Daikin Recommends Triple Evacuation

- Evacuate the system to 4000 microns, hold for 15 minutes
- Break vacuum with dry nitrogen to pressure of 2-3 PSIG
- Evacuate to 1500 microns & maintain for 20 minutes
- Break vacuum with dry nitrogen to pressure of 2-3 PSIG
- Evacuate to below 500 microns and hold for 60 minutes

Line Components

Only install driers, oil traps, shut off valves or any other line components in your piping work if instructed to do so in the IOM documents – if no instruction, it's because it is NOT necessary (for Daikin).

The only acceptable piping is **ACR** (copper) type tubing which is dehydrated and sealed at both ends.

PolyVinylEther Oil (PVE)

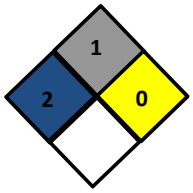
- Compatible with all HFC Refrigerants
- Excellent anti-wear properties
- Better solubility with process fluids
- Superior Resistance to Cap tube blockage
- Better lubricity
- Optimal for non-drier systems
- Very Hygroscopic but with No Hydrolysis
- Moisture easily removed with vacuum
- Care must be taken to prevent contamination by the introduction of other oils

R-410A Safety

- Asphyxia
- Heavier than air
- Products of Decomposition
- Skin Irritant
- Frostbite
- Storage below 125 F
- Do not leak test with air

ASHRAE

HMIS®



NFPA 704

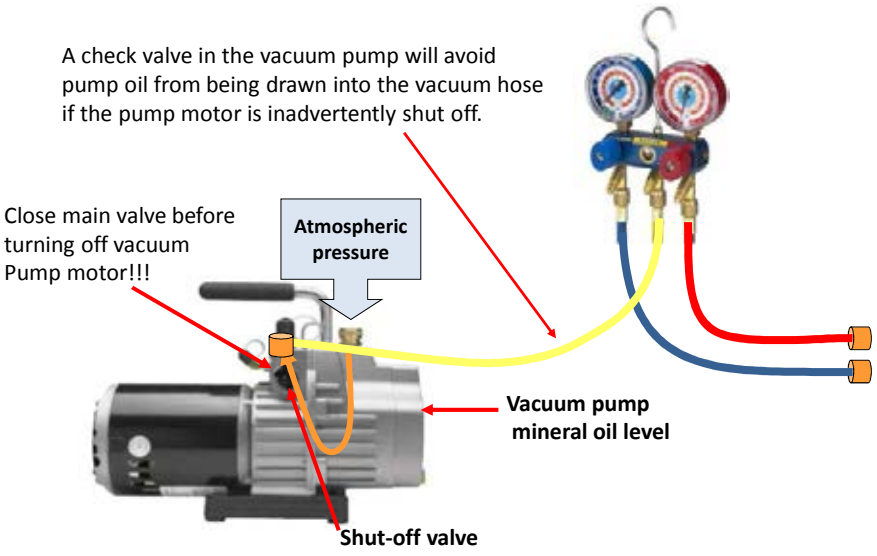
Safety Glasses

Gloves

R-410A Charging Manifold

- "Combination" Manifold Gauges should **never** be used on any VRV systems
- Use a dedicated R-410A manifold set for Daikin systems only
- All Daikin VRV systems use PVE oil – Not POE
- Manifold Gauges must be rated for R-410A @ 800 / 500 psi
- Hoses rated @ 800 psi
- Maintain Hoses for dependability (replace as needed)
- **Daikin** uses 5/16" service ports

Vacuum Pump



Digital Micron Gauge

- As driers are not used in VRVIII-S refrigerant lines it is imperative to properly evacuate the system to remove all moisture to ensure a clean and dry system
- All R-410A systems must be triple evacuated down to 500 microns or less for an hour
  - The proper evacuation level can only be determined with an accurate micron gauge

Digital Scale – System Charging

- VRVIII-S systems are charged with R-410A refrigerant by weight based on the length of the liquid lines only.
- All liquid lines should be measured as accurately as possible to ensure optimum system performance.
- Each liquid line diameter is multiplied by a factor per measured foot of piping.
- The refrigerant change is designated as the “Additional Refrigerant Charge”.

Additional Refrigerant Charge

Charging Connection

- **The “Additional Refrigerant Charge Mode” is used when there is not enough system vacuum from the final evacuation cycle to complete the “Additional Refrigerant Charge” amount**
- **Connect the high side manifold hose to the charging service port (liquid line service valve), and bleed the hose**
  - Low side manifold hose is not used for this procedure
  - Refer to the weight of refrigerant taken on the last cycle of the triple evacuation operation
- **Initiate the “Additional Refrigerant Charge Mode” at the outdoor unit Service PCB**
  - Information can be found within the Installation/Operation Manuals and VRV Commissioning Guide
  - When the total calculated refrigerant charge is taken based on the scale reading, close off the High side gauge

Refrigerant System Design

Piping Lengths – REFNETs - Insulation

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Refrigerant Piping Network

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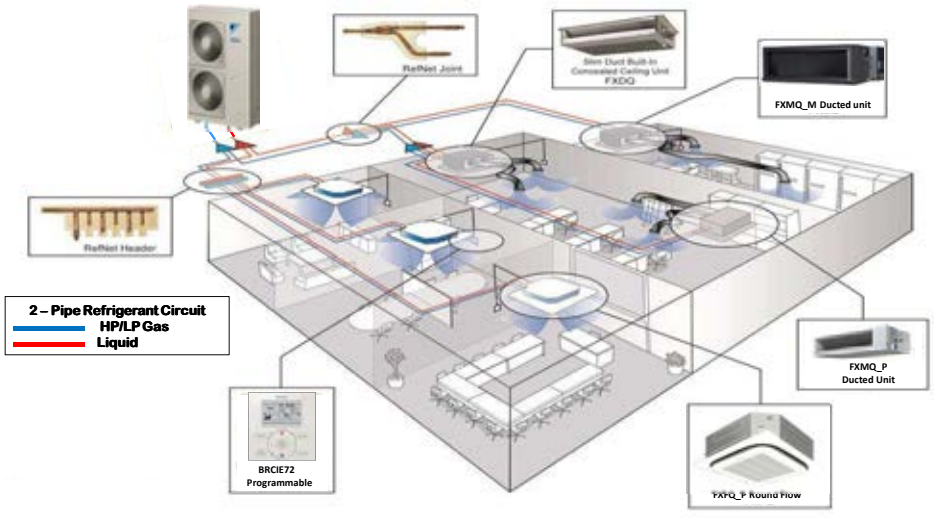
All indoor units operate in the same mode, Heat or Cool



One Remote Controller is configured as the system Changeover Master

REFNET Components

Daikin has designed **REFNET Y Branch and Headers** to be used for branching off from the main refrigerant lines.

- Split the refrigerant circuit
- Branch off to the indoor units

REFNETs are engineered to control turbulence and maintain flow through the refrigerant system.

REFNETs are provided in 4 capacity Kits

- Heat Pump Kit
  - Liquid & HP/LP Gas

REFNETs MUST be installed in specific positions

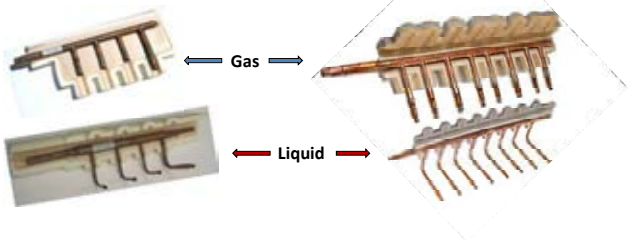
- Y Branch: Level/UP/Down
- Header – Level Only

REFNET "Y" Branch – Gas

REFNET "Y" Branch - Liquid

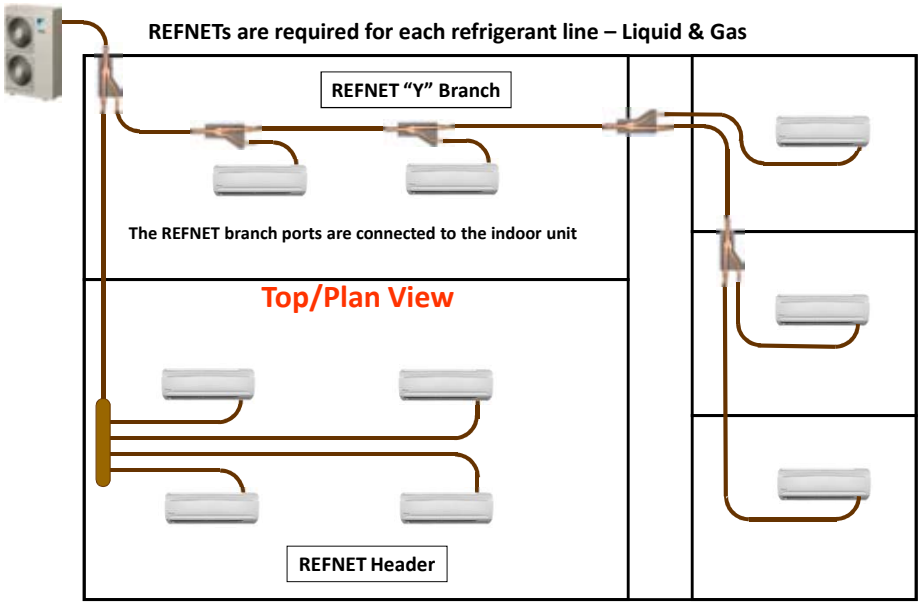
REFNET Header 4-port

REFNET Header 8-port



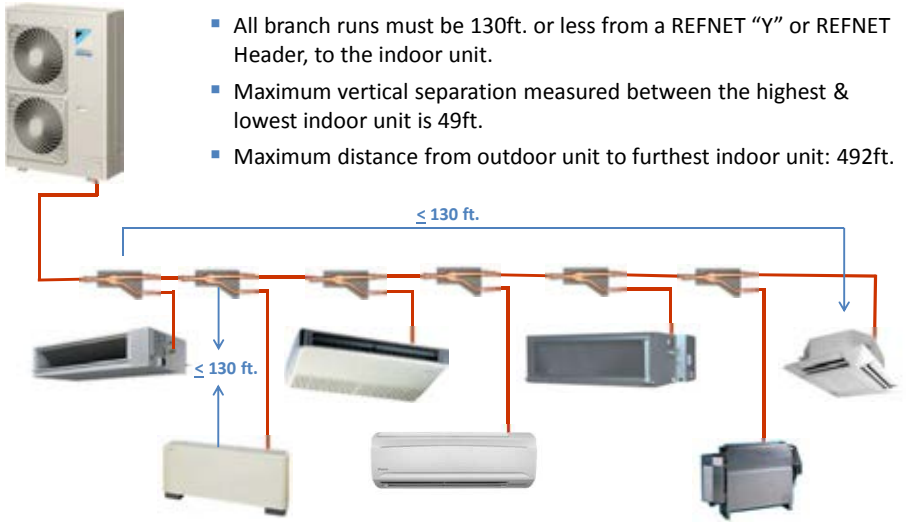
REFNET Application

REFNETs are required for each refrigerant line – Liquid & Gas



Piping Length Requirements

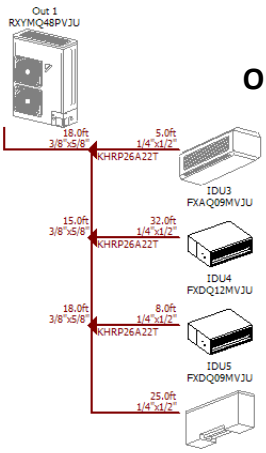
- The maximum distance from the first **REFNET** to the farthest indoor unit is 130ft.
  - All branch runs must be 130ft. or less from a REFNET "Y" or REFNET Header, to the indoor unit.
  - Maximum vertical separation measured between the highest & lowest indoor unit is 49ft.
  - Maximum distance from outdoor unit to furthest indoor unit: 492ft.



VRVIII-S Xpress Piping Report Example

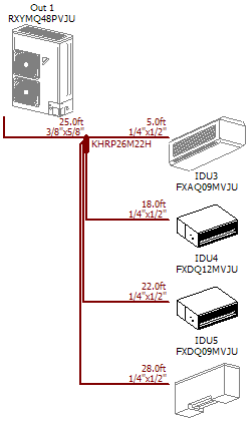
- Total refrigerant network layout
- REFNET kit part numbers
  - Location
  - Piping lengths
- Outdoor Unit & Indoor Unit
- Outdoor Unit & Indoor Unit

REFNET "Y" Branch



OR

REFNET Header



VRVIII-S Outdoor & Indoor Unit

Installation Overview

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VRVIII-S Outdoor Unit Clearances

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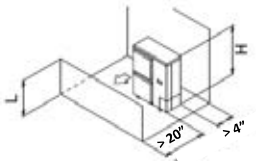
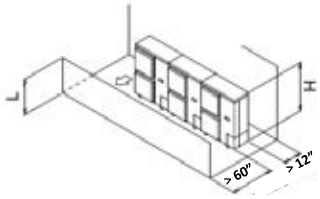
- The minimum clearance for one outdoor unit is ≥ 4” on the coil inlet side and ≥ 20” on the coil discharge side
- Verify actual placement and refer to the VRVIII-S Installation Manual for all placement scenarios and clearance specifications

Clearance Examples

• When the upward area is open
(1) When one outdoor unit is installed individually



(2) When two or more outdoor units are installed side by side



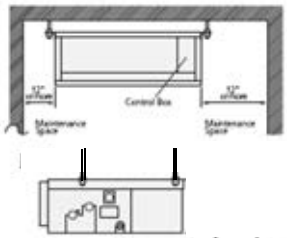
Ducted Indoor Unit

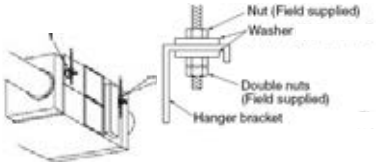
FXDQ Slim Duct

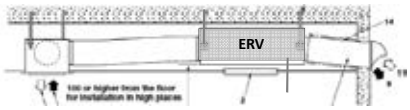
FXMQ_P
Ducted Concealed

FXMQ_MF
100% O.A. Processor

VAM ERV

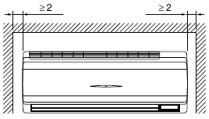


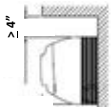




Reinforce the insulation on the refrigerant piping according to the installation environment. If the temperature above the ceiling might exceed 80°F or the humidity RH80%, condensation may form on the surface of the insulation.

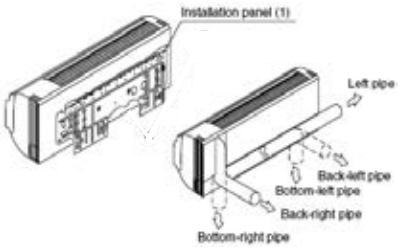
Wall Mount Indoor Unit





- Maintain a minimum of 2” clearance from right or left corner and a minimum of 4” clearance from ceiling for easy indoor unit cover removal and installation
- Mount the installation panel with at least 8 screws
- Observe the 5 exit paths for the refrigerant lines
- Wall mount indoor units have gravity condensate removal – condensate pump is optional

3 1/8” hole through wall for refrigerant lines and condensate removal

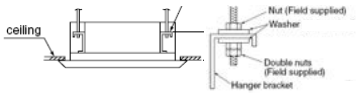


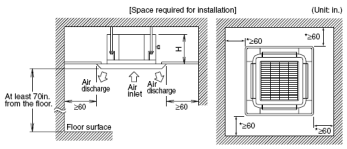
FXAQ Condensate Pump

Example of a typical condensate pump installation in indoor unit enclosure

Ceiling Mounted Indoor Unit

FXZQ 2X2
4-Way Cassette

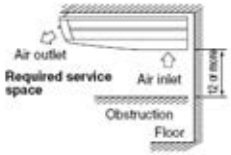




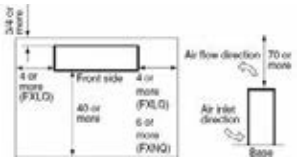
FXFQ
Round Flow
Sensing Cassette

- The ceiling mounted indoor units are all suspended using threaded rod
- Maintain the clearances as stated in the Installation Manuals
- The ceiling cassettes are shipped in 2 boxes: Indoor Unit and Decoration Panel
- The FXFQ & FXZQ Ceiling cassettes have condensate lift pumps standard
- The FXHQ Ceiling Suspended indoor units use gravity condensate removal. Condensate pumps optional

FXHQ
Ceiling Suspended



Floor Standing Indoor Unit



- The floor standing units can be mounted on the floor or to the wall
- Gravity condensate removal – Condensate pump is optional
- Long life air filter slides out from bottom

Unitary Multi-Position Air Handler

FXTQ_PA

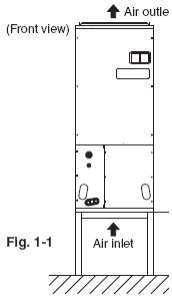
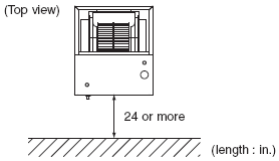
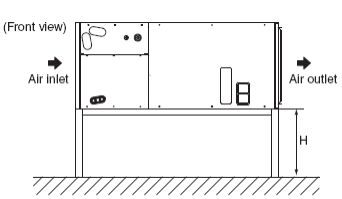
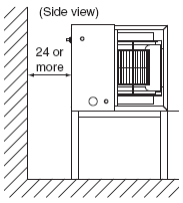


Fig. 1-1



- The FXTQ_PA is installed as an upflow or horizontal right
- Condensate drain requires trap
- Full dimension of cabinet must be supported
- Cabinet requires a minimum of 24” front clearance for servicing
- Refrigerant connections are brazed





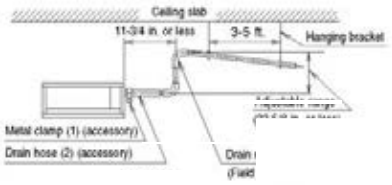
Condensate Removal – Lift Pump

FXZQ 2X2
4-Way Cassette

FXFQ
Round Flow Sensing Cassette

FXMQ_P
DC Ducted Concealed

FXDQ Slim Duct



Lift Pump Piping

- Refer to specific indoor unit Installation Manual for riser height specification
- A flexible insulated drain coupling and clamp are included (accessory)
- Riser pipe inside diameter must be ¾ inch – field supplied reducer may be required

Caution: Use of a larger ID riser pipe may generate an "AF" code with unit stop

- Never connect condensate drain piping to a sewer vent
- The FXDQ & FXMQ_P indoor units can be converted to gravity condensate removal

VRV Refrigerant Piping Procedures

Keep refrigerant piping clean and sealed during installation

- Use dry nitrogen purge during brazing process
- Eliminate debris contamination in refrigerant piping
- Installation period less than 30 days: cap or tape ends
- Installation period more than 30 days – pinch/braze the ends

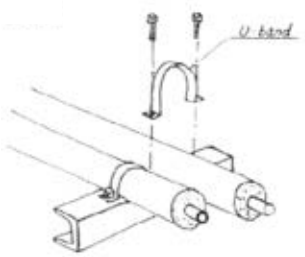
Refrigerant piping must be properly insulated the entire length

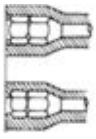
- Recommended ¾" wall insulation
- Liquid and Gas pipes must be individually insulated
- Flare nut connections at indoor units must be insulated

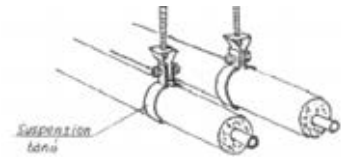
Refrigerant piping must be properly supported

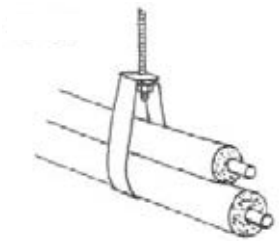
- Follow local code requirements for piping support locations
- Support piping within 12" of indoor unit units

Measure the liquid lines as they are installed









Insulation Specifications

The Liquid and Gas piping must be completely insulated

- Recommended wall thickness – 3/4”
- All flare connections at indoor units must be insulated

DACA-CP3-1
Universal Condensate Pump Features

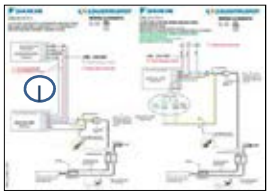
- Single universal pump for all Daikin ductless split, SkyAir and VRV indoor unit models up to 42MBh
- 208/230 vac 14 watt voltage
- Maximum Flow Rate 5 GPH to provide a larger capacity, less running hours and more reliability
- Quiet operating sounds as low as 20 dB(A) (independently tested)
- Maximum flexibility and installation ease with an all-inclusive installation kit
- Hassle-free maintenance with a plug-in power cord
- Improved performance and energy savings with a combined mechanical and gravity drain

Kit Contents:

- piston pump, power cable, anti-siphon device (#ACC00216)
- drain fitting (#ACC00205)
- 2 year warranty

Condensate Pump Kit Contents

A. Pump Assembly
B. ¼" ID. Discharge tube w/check valve & male barb fitting (40")
C. Power/Safety Switch cable (60")
D. Rubber pump mounting pads R&L
E. 1/4" x 3/8" Self-sealing Drain Fitting
F. Drain outlet to float assembly inlet fitting
G. Float assembly w/cable & vent tube
H. Float assembly mount with double sided adhesive tape
I. Instruction sheet



NOTE: Inline fuse (2amp), ¼" ID. Discharge tubing & barbed couplings are field supplied - Refer to pump Installation Instructions

Condensate Pump Kit

Drain hose and fitting should be installed on indoor unit first

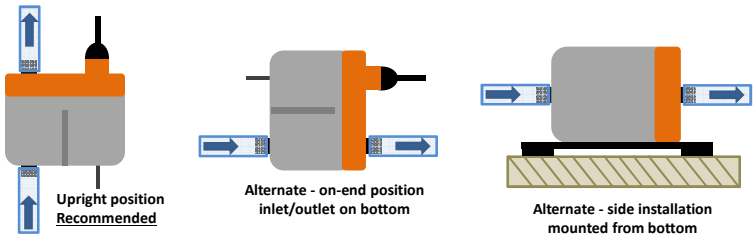
DACA-CP3-1 Kit Contents Shown

Pump Installation Tips

- Pump Motor Installation
  - R&L rubber mounting pads provided
    - Wall or surface mount
    - Suspended
    - Attached to refrigerant line

Upright wall mount | Suspended | Attached to refrigerant line

- Pump Motor Positions
  - Acceptable



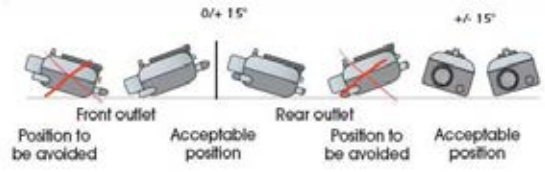
Upright position Recommended | Alternate - on-end position inlet/outlet on bottom | Alternate - side installation mounted from bottom

NOTE: Wall mount fan coil installations require the refrigerant lines to only be run on right side of unit for pump to be installed within the cabinet.

Pump Installation Tips

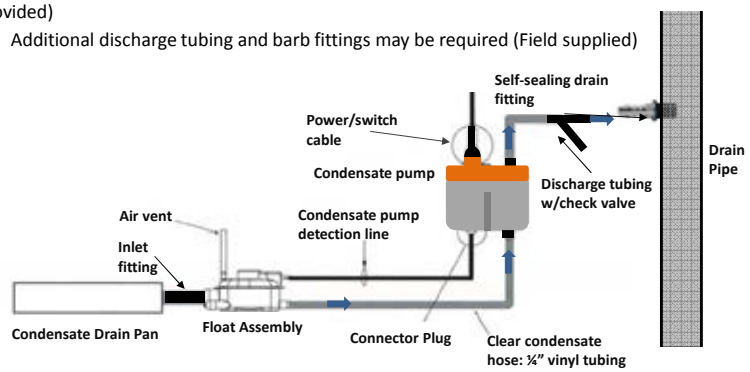
- Float Assembly Installation
  - Float assembly has a 1/4" front and rear outlets
  - Front outlet is capped from the factory
  - The float assembly must be supported
  - Recommended float assembly position: flat and level
  - Install the float assembly where it can be accessed for maintenance

- Alternate float assembly positions



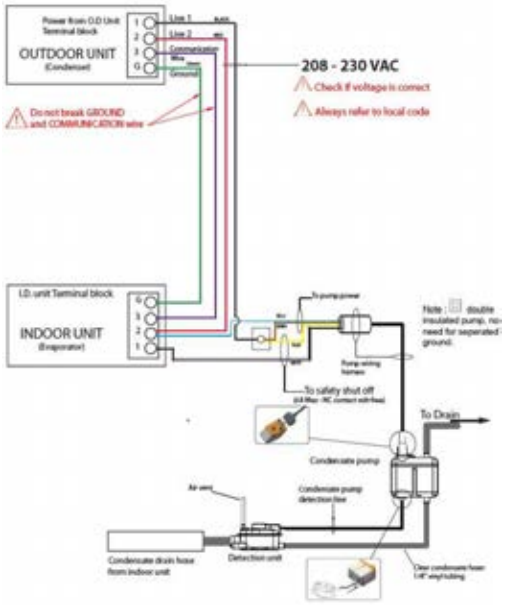
Pump Installation Tips

- Trim to fit the black rubber inlet fitting from drain pan outlet to inlet of float assembly (Provided)
  - Drain outlet adapters may be required (Field supplied)
- Install air vent on float assembly (Provided)
  - Air vent tube must terminate above drain pan level
- Install ¼" clear tubing from float outlet to pump inlet (Field supplied)
- Install ¼" clear tubing from pump outlet to self-sealing drain fitting including check valve (Provided)
  - Additional discharge tubing and barb fittings may be required (Field supplied)



Pump Installation Tips

- Condensate pump is powered from the indoor unit on terminals 1 & 2
  - The pump motor requires no ground conductor
  - Float switch safety controls line voltage power to indoor unit by switching terminal 1 (Yellow & White)
- Always follow local codes for proper wiring
- Refer to the pump Installation Instructions for additional information.

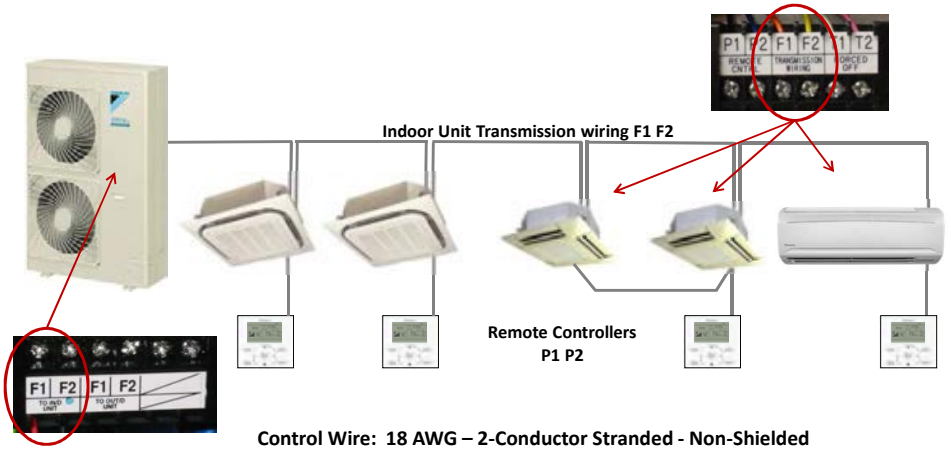


Pump Installation Tips

- **After the condensate pump system has been installed it should be checked and tested to verify proper operation**
  - Verify all line voltage connections and power supply voltage
  - Verify the correct positioning of the pump motor and float assembly
  - Verify float assembly detection cable is connected to the pump
  - Verify that all tubing is in place with tight connections
  - Self-sealing drain fitting is properly installed in drain pipe where applicable
  - Cycle the pump by priming the condensate drain pan with water when possible
  - Check for excessive vibration and noise from the pump
  - Verify leak-free operation

VRVIII-S System & Control Wiring

DIII-Net Architecture



Outdoor Unit F1 F2 IN

Control Wire: 18 AWG – 2-Conductor Stranded - Non-Shielded

- Daisy-chain wiring from outdoor unit to each indoor unit
- Outdoor unit **F1 F2 IN**, to each indoor unit **F1 F2** – Remote controller **P1 P2**
- 16 vdc circuit – NO wire nut splices - Splices should be soldered
- Do not strap control wire to conduit containing ac voltage wiring

Control Circuit Terminal Designations

Outdoor Unit Control Terminal Circuits

- **F1 F2 In** – Outdoor Unit to Indoor Units
- **F1 F2 Out** – Multi-Zone Control
  - iTouch
  - iTouch Manager
  - Gateway – LON Works or BACnet

VRVIII-S

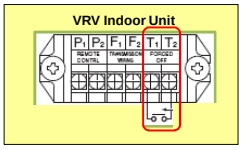
Indoor Unit Control Terminal Circuits

- **P1 P2** – Indoor Unit to Remote Controller
  - Remote Controller power supply and data transfer
- **F1 F2** – Outdoor Unit to Indoor Unit Communications
- **T1 T2** – Forced Off (Default N.O.) External Contacts

All VRV Indoor Units

Indoor Unit T1 T2 Forced Off

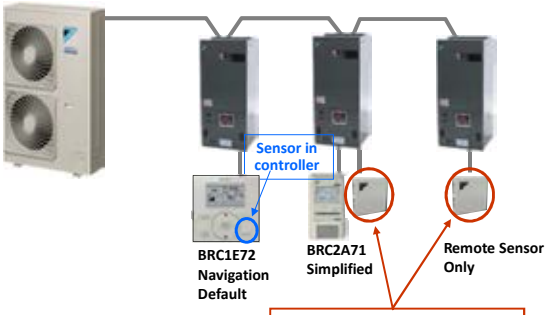
- **VRV** Indoor Unit control includes selectable **Forced Off** operation from an outside safety device (dry contact) using the T1 T2 terminals
  - Optional Condensate Pump Float Switch
  - Motion Sensor or Door Switch
  - Card Key Remote Start/Stop
  - Fire Safety System
- Factory Default - Forced Off (N.O.) Manual Restart
  - Field Setting – 12 (22) 1-01
  - Input N.O. – Normal Operation
  - Input Closed – Unit Stop – Manual Restart Required – **AO** Fault
- Reprogram Setting to **External Protection Device** (N.C.) Auto restart on contact close (Condensate Float Switch)
  - Reprogram Field Setting – 12 (22) 1-**03**
  - Input N.C. – Normal Operation
  - Input Open – Unit /Outdoor Unit Stop – **AO** Fault Code on connected Remote Control's, other Remote Control's indicate **U9** Fault Code
  - Auto reset on contact close



External Input	Mode No.	1st Code No.	2nd Code No.
Forced Off	12(22)	1	**01** - Default
ON/OFF Op	12(22)	1	02
Ext Protection Device	12(22)	1	03

FXTQ_PA Temperature Control

The FXTQ_PAVJU is <u>not</u> equipped with a return air sensor. The factory default temperature control setting uses the sensor in the BRC1E72 controller. A field setting change is required including the KRCS01-4B Remote Sensor when using the BRC2A71 Simplified Remote Controller, or no Remote Controller.



Temperature Control Options

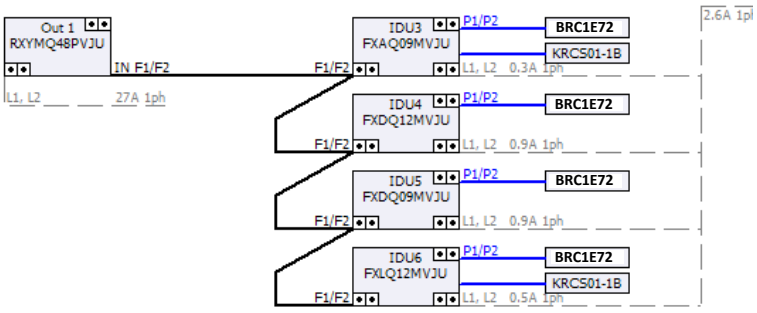
- BRC1E72 Navigation Remote Controller (factory default)
- BRC2A71 Simplified Remote Controller & KRCS01-4B Remote Sensor
- KRCS01-4B Remote Sensor Only

Line & Control Xpress Wiring Report

Indicates line voltage circuit
- Total circuit ampacity
- All FC's on one circuit

Indicates control circuit
- Terminal Designations
- Control Part Numbers

Indicates Control Part #



Local Remote Controllers

BRC1E72

Navigation Remote Controller

BRC1E52A7

BRC2A71

Simplified

BRC7C/7E/4C

Hand-held Wireless

BRC1E72 Navigation Remote Controller

- Large Backlit LCD Display
- Field selectable main displays
- Automatic Changeover – Adjustable deadband
- Selectable clock and language format
- Control 1-16 indoor units on one controller
- Dual and Single Cool and Heat set points
- Selectable 12/24 hour clock display
- Auto-adjustable Daylight Savings Time (DST)
- Maximum 16 connectable indoor units
- Optional Face Decals

BRC1E52A7 Euro Nav Remote Controller

- Remote Controller for the FXFQ, TVJU R… Flow Sensing Cassette
- Provides functionality of Celsius a… Fahrenheit
- Similar to the BRC1E72 remote controller
- Controls the sensors and flaps
- Has icons on the face decal instead of text

Available June 2014!

BRC2A71 - Simplified Controller

- Standard LCD Display
- Optional face plates
- Cool and Heat setpoint display
- Error code display
- Auto changeover for Heat Recovery only
- No program function for powered louvers

No Pictograms

No Fan Button

No Mode Button

BRC4C/7CE_ Handheld Wireless

- Solution for applications which cannot use wired Remote Controllers
- Wireless Remote Controllers are provided as kits
- Cool or Heat temperature setpoint display
- Commonly used control buttons on face with programming buttons behind cover

The Hand-Held Remote Controllers do not have a sensor for measuring space temperature

Remote Sensor KRCS01-1B (4B)

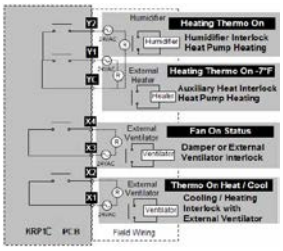
VRV Indoor Units incorporate a built-in return air thermistor temperature sensor as standard (excl. FXTQ)

- KRCS01-1B (4B) Remote Sensor is offered to replace the return air thermistor when:
  - Outside fresh air is brought in to the indoor unit return air
  - Ceiling height of indoor unit return is 13ft. or more
  - Above ceiling plenum return is used
- Standard (Non-Plenum Rated) 39ft. cable (Plenum Rated) 40ft. and 80ft. cable optional

NOTE: KRCS01-4B Remote Sensor Kit for FXMQ_P, FXFQ_P and FXTQ_PA Indoor Units

Wiring Adapter PCB KRP1C74,75

- Applied to individual VRV indoor units to facilitate local interlock of external devices
  - Humidifier
  - Aux Heat – Electric, Hot Water (Single Stage)
  - Fresh Air Dampers
  - Ventilators
- Adapter PCB Powered by indoor unit PCB
- Dry Contacts Rating: ≤ 1 amp @ 24vac



NOTE: KRP1C Adapter PCB's not available for FXAQ FC's

Optional System Accessories

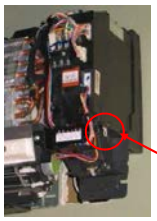
FXAQ Wall Mount Unit Gravity Drain Safety

Optional Condensate Safety **DACA – CFS1**

- Install pan sensor on RH side of drain pan
- Install the solid state controller on indoor unit cover
- Connect switch contacts to the X15 Jumper
- Connect line voltage wires to L1 L2 on indoor unit
  - Use fork crimp connectors on line voltage wires

Drain Pan Water Sensor

Electronic Control Switch
Line Voltage Powered



Generates "A3" code

X15A Jumper

NOTE: DACA-CFS1 Condensate Safety Kit can also be applied to FXLQ & FXNQ units

Optional Outdoor Unit Wall Bracket

Part # DACA-WB-3

Rated up to 500lb capacity

Wall brackets are an effective and secure way to elevate the VRVIII-S ODUs for snow line requirements and when ground-level space is minimal or non-existent.

Optional Refrigerant Piping Covers

- Refrigerant piping covers can be used for interior exposed piping on the indoor wall mount indoor units for a finished look
- For outside installations to the outdoor unit, piping covers offer physical protection for the piping and UV protection for the piping insulation

System Commissioning

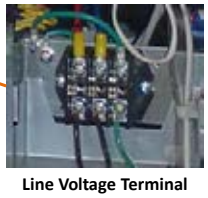
Internal Connections & Layout

Outdoor Unit Service PCB

Status LED's & Setting Push Buttons

RXYMQ36~48PVJU

DIII-Net Terminal Block

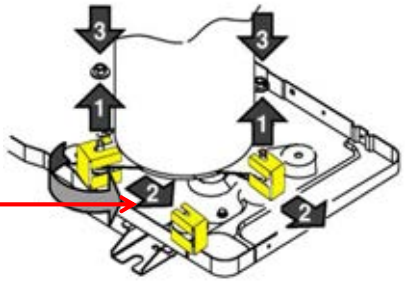


Line Voltage Terminal Block

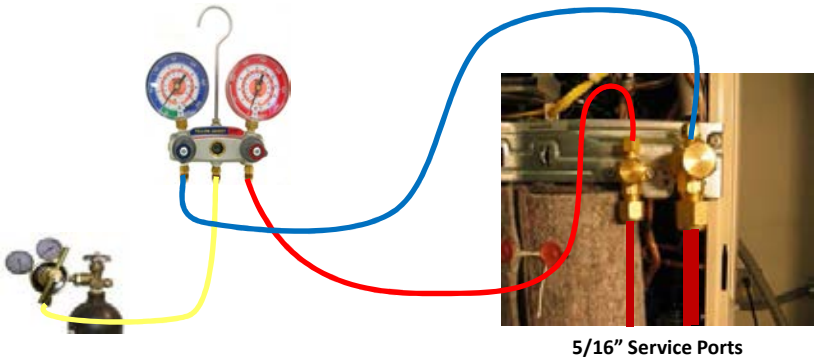
Stop Valves & 5/16" Service Ports

Compressor Shipping Plates

- Compressor shipping brackets must be removed before start up.
- There are two brackets on the compressor underneath the compressor blanket. One in front and one on the right side.
- They are yellow in color and once removed retighten down compressor bolts.
- Failure to remove shipping plates can result in excessive noise during operation.



Pressure Test Connections



5/16" Service Ports

- Connect manifold gauges to the service ports
- Connect nitrogen cylinder with regulator
- Do not energize indoor or outdoor units.

  (If units are energized, the EEV's close)
- Perform the pressure test 3-step sequence

Nitrogen Pressure Testing Considerations

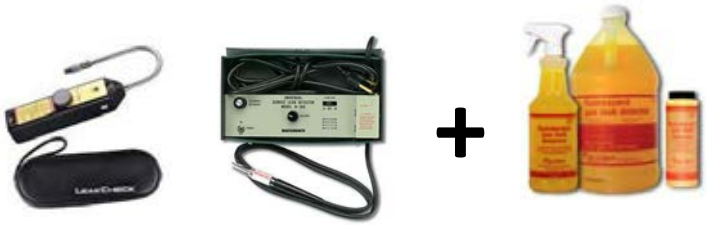
Nitrogen pressure is subject to fluctuation above 300 psi, based on ambient temperature changes. Use this formula to compensate for temperature changes from one day to the next when performing the 24 hour pressure test. The following formula will determine system pressure drop caused by low ambient temperature.

Record the **T**emperature when the system is **p**ressurized (**Tp**)
Subtract the **T**emperature when the pressure is **c**hecked (**Tc**)
Multiply by a factor of 0.80 to get the **P**ressure **D**rop (**PD**)

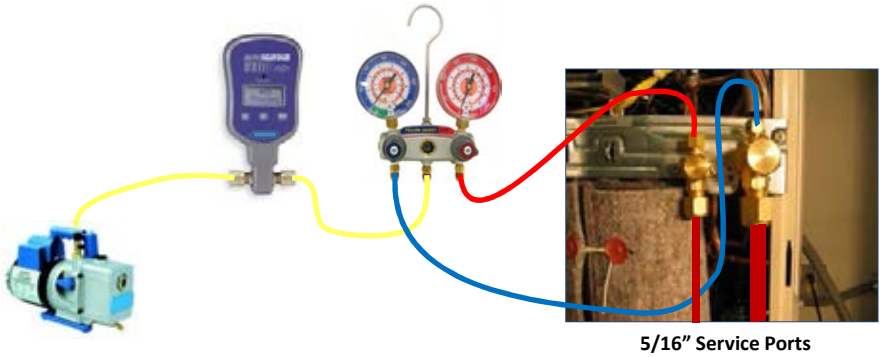
(**Tp – Tc**) x 0.80 = **P**ressure **D**rop

System Refrigerant Leak Detection

- To properly check for refrigerant leaks use a high quality R-410A rated electronic leak detector and refrigerant liquid leak detector
- Never use a refrigerant dye for leak detection



Evacuation Connections



5/16" Service Ports

- Connect manifold gauges, digital micron gauge and vacuum pump
- Always perform Triple Evacuation to 500 microns or less
- Close off manifold gauges and main pump shut-off valve before turning pump motor off
- The final vacuum cycle will be used to draw in the calculated "Additional Refrigerant Charge"

Refrigerant Charge Procedures

All VRVIII-S systems are charged based on the calculated "Additional Refrigerant Charge" for the system being commissioned

- Calculate the "Additional Refrigerant Charge" procedure for the system being commissioned.
- After determining the amount of the "Additional Refrigerant Charge", use the vacuum in the system from the final evacuation cycle, and weigh in liquid refrigerant through the liquid service port.
  - If there is not enough vacuum to draw in the total charge, use the "Additional Refrigerant Charge Mode" to complete the system charging process.
- After the system receives the full or partial charge, all of the stop valves may be opened.

Refrigerant Charging Facts

- Accurate refrigerant charging is critical for optimum system performance
- The VRVIII-S system cannot be charged by refrigerant operating pressures, superheat or subcooling temperatures; refrigerant must be weighed into the system
- All VRVIII-S outdoor units have a factory refrigerant charge based on the unit model
  - The factory refrigerant charge is indicated on the unit ID label
- The total system refrigerant charge is comprised of the factory charge and the "Additional Refrigerant Charge" for the specific system

REFRIGERANT R410A 8.8 LBS.

+

"Additional Refrigerant Charge"

= TOTAL SYSTEM CHARGE

Additional Refrigerant Charge Calculation

Total length (ft) of 1/4" liquid line X .015 lbs. / ft. = _____

+

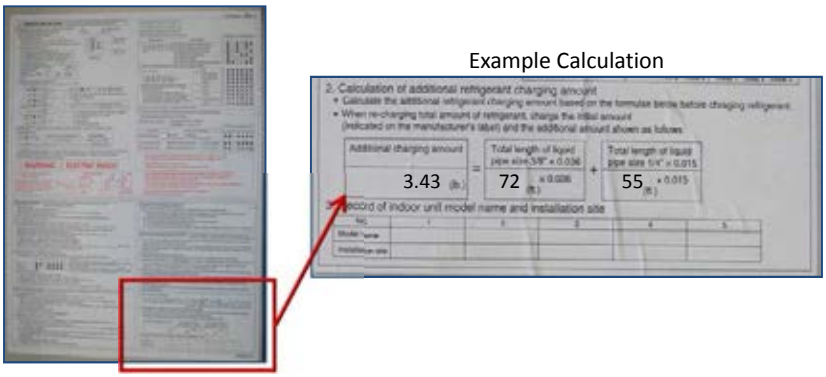
Total length (ft) of 3/8" liquid line X .036 lbs. / ft. = _____

= Total "Additional Refrigerant Charge" (lbs)

Note: 0.1 lbs. = 1.6 Oz.

Additional Refrigerant Charge Instructions

- Refrigerant charging and commissioning instructions are listed on a label applied to the inside outdoor unit service cover.
- Fill out the lengths of the liquid lines installed. This information is crucial for future service work.



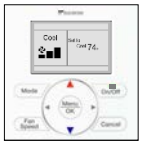
Power Supply Voltage

- **Before** energizing **any** of the system components, use a Voltmeter to verify that the line voltage power supply to the outdoor unit and all indoor units corresponds to the equipment nameplate, and within the stated range.
  - 208/230 vac. 1 phase = 187 – 253 vac. range
- All indoor units are shipped with EEVs fully open
  - EEVs will motor fully closed when line voltage power is applied to the indoor unit

Indoor Units Power Up

- Power up all indoor units first
- Verify the indoor unit control PCB's indicate normal operation with the **green** **flashing** status LED on the board
  - Verify all wired Remote Controllers have a display but the status LEDs (**green** or **red**) are **OFF**

Indoor Unit Control PCB



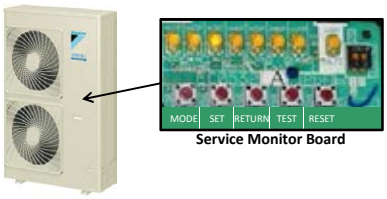
Outdoor Unit Power Up

Power up outdoor unit for a period of 6 hours to ensure the crankcase heater eliminates any liquid refrigerant in the compressor prior to startup. During this time, all of the Navigation Remote Controllers (BRC1E72) can be configured with the "Initial Settings".

Outdoor Unit Power Up

Initialization

- Upon power up of the outdoor unit, the outdoor PCB will perform a 12 to 20 minute **initialization operation** where it assigns addresses to the outdoor unit(s) and all indoor units
- This mode is identified by **H2P** flashing and **H3P** solid
- Near completion of **initialization,** both the **H2P** and **H3P** LED's will be on solid (this is normal during this step)
- When the **H2P** light goes out and only **H3P** remains on solid, this will indicate the **initialization operation** has successfully completed
- If **H2P** will not go out after 30 minutes or more, there is an error in the system
  - Turn one of the Remote Controllers to **ON** and verify the error code and resolve the issue
  - Cycle power on outdoor unit which will restart **initialization** mode again



Service Monitor Board

BRC1E72 Navigation Remote Controller

During the initial outdoor unit power up time, all of the system BRC1E72 Remote Controllers can be configured with the "Initial Settings" that apply. Settings are made with the Controllers in the OFF mode.

Standard

Detailed

Simple

System Control Communications

- When the **initialization operation** has been completed the control system must be checked to ensure that all indoor units in the system are communicating with the outdoor unit.
- Using Monitor Mode 1 from the Service PCB on the outdoor unit, the indoor units in the system can be counted, verifying system communications.

DIII-Net Transmission Circuit

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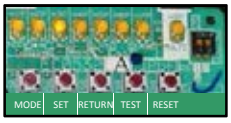
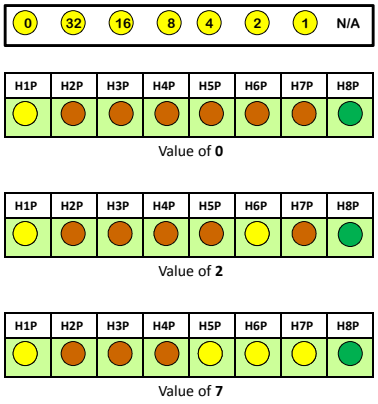
Counting Indoor Units



- Using the outdoor unit PCB status LEDs, a binary number is applied to each LED: **H1P through H7P** as read from right to left
- When in the **Monitor Mode 1** or **Service Mode 2**, the LEDs will display, using binary numbers, the number of times the **SET** button is pressed
- When counting indoor units is enabled, the flashing LEDs represent the number of units recognized in the control system

Example of binary value indications



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Counting Indoor Units

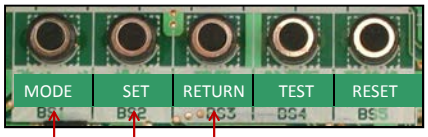
- System Monitor Mode is accessed by pressing the **MODE** button one time – H1P flashing
- The number of times the **SET** button is pressed will be indicated by the corresponding binary numbers
- **H1P to H7P LED** status is continuously updated when any button is pressed

Binary number for each LED

0	32	16	8	4	2	1	N/A

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P

The number of indoor units counted will flash in binary code on the **H1P to H7P** LEDs



- Press **MODE** 1 time
- Press **SET** 5 times
- Press **RETURN** & count up the LEDs
- Press **MODE** one time to return to normal status: H3P solid

Forced Fan ON Procedure

- At start - LED status Normal **H3P** solid

SERVICE MODE 2

- Press and Hold the **MODE** button for approximately 5 seconds until you see **H1P** on solid
- Press the **SET** button 5 times **H1P-H7P** LEDs will indicate the binary number for every press of the **SET** button
- Press the **RETURN** button once, **H7P** flashing – This operation is OFF
- Press the **SET** button once **H6P** flashing – Turn operation ON
- Press the **RETURN** button once **H6P** on solid – Lock the setting
- Press the **RETURN** button once**H6P** off - Activate the setting

STOP - Check all the indoor units for the blowers that are not running

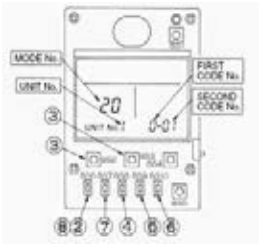
- Press the **MODE** button once **H3P** Solid – Normal Operation

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P

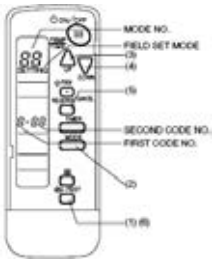
Indoor Unit Field Settings

- System communications is now verified and fully operational
- All ductwork is connected and all air filters are installed
- Indoor Unit Field Settings related to airflow, static pressure adjustments can now be programmed at the Remote Controllers, before Check Operation is run
  - Ducted indoor units may require the static pressure be adjusted or programmed
  - Ceiling Cassette indoor units must be programmed for 2-way & 3-way supply air distribution and ceiling height (FXFQ), to optimize unit operating parameters
- The field settings for each indoor unit are listed in the specific unit Installation Manual

Navigation Remote



Simplified



Wireless

FXMQ_P Auto Static Adjust

- Enter and save the field setting for start of airflow adjustment from the remote controller
- From the main display select FAN mode
- Turn the indoor unit to ON from the remote controller – **green** LED
- Indoor Unit will go into Auto Adjust setting mode for 5 to 10 minutes
- Upon completion of Auto Adjust the indoor unit will go off and **green** LED also goes off
- Verify through MODE 21 that field setting has now changed to: Completion of airflow adjustment 11 (21) 7-02

MODE NO.	FIRST CODE NO.	Setting contents
11 (**21**)	7	Airflow adjustment
SECOND CODE NO.		
01	02	03
OFF	Completion of airflow adjustment	Start of airflow adjustment

NOTE: If you choose to manually set static pressure the Field Setting for Auto Adjust must be OFF. Change code to: 11(21) 7-01

FXMQ_P Manual Static Pressure Adjust

- Specific static pressure can be programmed based on the static pressure codes provided in the Installation Manual
  - Codes which do not apply to a specific capacity model are not selectable
  - "Auto Adjust" mode must be OFF 11(21) 7-01

External Static Pressure	MODE NO.	FIRST CODE NO.	SECOND CODE NO.
0.12 inWG (*1)	13 (23)	06	01
0.20 inWG			02
0.24 inWG			03
0.28 inWG			04
0.32 inWG			05
0.36 inWG			06
0.40 inWG			07
0.44 inWG (*2)			08
0.48 inWG (*2)			09
0.52 inWG (*2)			10
0.56 inWG (*2)			11
0.60 inWG (*2)			12
0.64 inWG (*2)			13
0.72 inWG (*2)			14
0.80 inWG (*2)			15

FXDQ Static Pressure Change

- It is recommended to change the static pressure to **High** when converting to a ducted system.
- To change static from **Standard** to **High**, a field setting must be programmed at the remote controller.
  - Change Field Setting **13(23) 5 – 01 to 02**

Mode No. Note 2	Setting Switch No.	Setting Contents	Second Code No. (Note 3) 01	02	03	04
13(23)	0	Setting of normal air flow	N	H	S	—
	1	Selection of air flow direction (Set when a blocking pad kit has been installed.)	F (4 directions)	T (3 directions)	W (2 directions)	—
	3	Operation of downward flow flap: Yes/No	Equipped	Not equipped	—	—
	4	Field set air flow position setting	Draft prevention	Standard	Ceiling Soiling prevention	—
	5	Setting of static pressure selection	Standard	High static pressure	—	—

FXFQ Ceiling Height Setting

To ensure proper air flow delivery, it is recommended to set the actual ceiling height field setting code that applies to the specific installation

		FXFQ - PVJU		MODE NO.	FIRST CODE NO.	SECOND CODE NO.
		09 · 12 · 18 · 24 · 30 type	36 · 48 type			
Ceiling height (ft.)	Standard · All round outlet	≤ 8-3/4	≤ 10-1/2	13 (23)	0	01
	High ceiling 1	8-3/4 - 10	10-1/2 - 12			02
	High ceiling 2	10 - 11-1/2	12 - 13-3/4			03

Air Discharge Settings

When the 4-way ceiling cassettes require changes to the discharge positions from the factory default of 4-way discharge to 2-way or 3-way, a field setting change is required along with an optional “Blank-off Kit”.

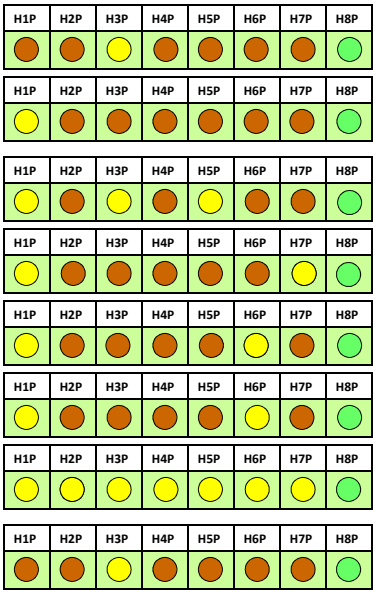
	Mode No.	First Code	Setting Contents	Second Code No.			
				01	02	03	04
	13(23)	1	Selection of airflow direction	F (4 directions)	T (3 directions)	W (2 directions)	-

Additional Refrigerant Charge Mode

- START - Normal Status **H3P** Solid
- Press and HOLD **MODE** button for 5 seconds until **H1P** goes Solid
- Press the **SET** button 20 times
- LED will indicate binary number for every press of the **SET** button 0+16+4
- Press the **RETURN** button once **H7P** flashing – This operation is OFF
- Press the **SET** button once **H6P** flashing – Turn operation ON
- Press the **RETURN** button once, **H6P** solid – Lock the setting
- Press the **RETURN** button once Activate the setting,

Add Refrigerant now thru the charging service port - watch scale for correct amount of refrigerant to add. When complete, close manifold valve.

- Press the **MODE** button once **H3P** solid – Normal mode



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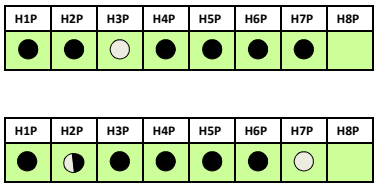
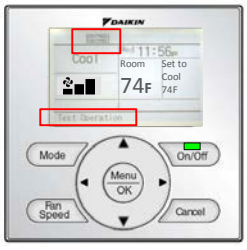
Check Operation Mode

- Verify that all Remote Controllers are **OFF** <u>before</u> starting Check Operation or a U3 error will occur.
- To begin, press and **hold** the **TEST** button for 5 seconds until LED light sequence changes to **H2P** flashing & **H7P** solid.
- Check Operation will take approximately 15 to 40 minutes to complete depending on the size of the system and number of indoor units.
- Remote Controllers will indicate Central Control with status LEDs on solid.
- Check Operation always runs in the COOL mode.





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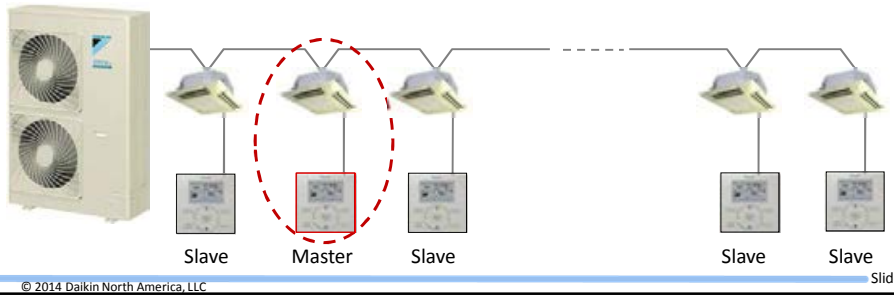
Operation Mode Changeover

The indoor units all operate in the same mode and require one Remote Controller to be configured as the Changeover Master.

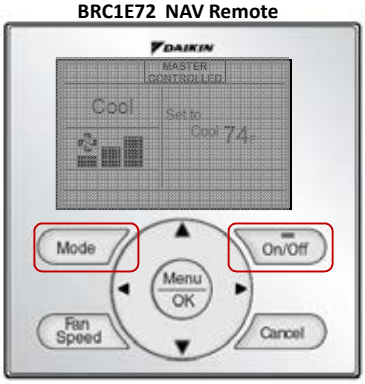
- The Master remote controller determines the system mode of operation (Cool, Dry, Heat, Fan) based on the Heat and Cool set points or user selected mode.
- The Master Remote Control determines the mode that the sub(s) can operate under:
  - Master in Cool or Dry ⟹ Sub(s): Cool, Dry and Fan are available
  - Master in Heat mode ⟹ Sub(s): Heat and Fan are available
  - Master in Fan mode ⟹ Sub(s): Fan is Available



Configure Changeover Master

MASTER

BRC1E72 NAV Remote



- A designated Remote Controller must be configured as the Master in a Heat Pump system where a Branch Selector Box is connected to multiple indoor units with individual Remote Controllers.
- To configure a **BRC1E72** (NAV Remote) as a *Changeover Master*
  - Press any button to bring on the display back light
  - The MASTER CONTROLLED icon will be flashing on all NAV remote controllers
  - Press the **Mode** button once and the Icon will disappear on the Master
  - All other NAV Remote Controllers (slaves) will display MASTER CONTROLLED solid

To change the Master, press & hold the **Mode** button for 5 seconds on the Master Remote Control. All Remote Control's go into Master configuration mode.

Configure Changeover Master

- A designated Remote Controller must be configured as the Master in a Heat Pump system where a Branch Selector Box is connected to multiple indoor units with individual Remote Controllers.
- To configure a **BRC2A71** (Simplified)
  - The Master Controlled 主人 symbol will be flashing (Changeover Under Control) on all Simplified Remote Control's
  - Press the **Mode** button once and the symbol will disappear on the Master
  - All other "Simplified" Slave Remote Controllers will display 主人 solid

To change the Master, press & hold the **Mode** button for 5 seconds on the Master Remote Control. All Remote Control's go into Master configuration mode.

MASTER
BRC2A71 Simplified

Configure Changeover Master

- On power up of indoor units, all "Master Controlled" icons will be flashing on wired controllers only. Wireless controllers will not display icon
- Go to the wireless controller you want set as the Master and while pointing the wireless controller at the indoor unit
- Press and hold the **MODE** button for approx 4 seconds . You will hear "BEEP BEEP" then another "BEEP BEEP"
- To change the Master to different zone, go to the Master wireless controller and hold **MODE** button for 4 seconds. Listen for the "BEEP BEEP"
- Go to another remote and press **MODE** button

Wireless Hand-Held Remote Controller

Additional Field Settings

- Any remaining system field settings can now be programmed
- Field Settings are listed in the Indoor Unit Installation Manuals and the VRVIII-S Service Manual
- Indoor Units (Suggested Examples)
  - T1 T2 Forced OFF configurations – ON/OFF – External Protection Device N.C.
  - Power Louvers Operation (see indoor unit Installation Manual)
  - Remote Controller Main-Sub Configuration (see controller Installation Manual)
  - NAV remote sensor priority
  - Remote Sensor priority
  - KRP1C Status Output
  - Fan Auto Configuration ("P" series indoor units only)
  - Set Point ranges
  - Air Filter Alert

T1 T2 Forced Off External Protection Device

- Any indoor units utilizing T1 T2 for optional condensate pumps must have the "Forced Off" field setting changed to accommodate the safety float switch operation ("External Protection Device" - N.C. – Auto reset)
  - T1 T2 Forced Off has a factory default of N.O. – Manual reset - Code 01
  - NOTE: When the float switch is connected to T1 T2, the Remote Controller will display
  - CENTRAL CONTROL or 人 and cannot be turned on manually unless the field setting is changed to 03.
- Change the field setting to **12(22) 1-03** for condensate float switch operation: N.C. with automatic reset

EXAMPLE: Field Setting for optional condensate pump float switch connected to indoor unit T1 T2 Forced Off

Mode No. (Note 2)	First Code No.	Setting Contents	Second Code No.(Note 3) 01	02	03	04	Details No
	0	Optional accessories output selection (field selection of output for adaptor for wiring)	Indoor unit turned ON by thermostat	—	Operation output	Malfunction output	(5)
12 (22)	1	ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)	Forced OFF	ON/OFF control	External protection device input	—	(6)

T1 T2 Forced Off

Forced Off is programmed for N.O. (Code 01) Manual Reset (Factory Setting)

- Field Setting will reprogram dry contact configuration and restart sequence
  - Code 02 – ON/OFF operation (Start/Stop)
  - Code 03 – N.C. External Field Protection Device Auto Reset (Optional Condensate Pump Float Switch)

External Input	Mode No.	1st Code No.	2nd Code No.
Forced Off	12(22)	1	01 – Default Manual Reset
ON/OFF Op	12(22)	1	02
Ext Protection Device	12(22)	1	03 Auto Reset

Space Sensor Priority



Space Sensor priority can be changed for specific applications

- Return Air thermistor disabled (Direct fresh air / High ceiling return)
- FXTQ Air handler with BRC2A71 Simplified Remote Controller
- BRC1E72 Remote Controller Sensor Priority
- No Remote Controller used

Mode No. (Note 1)	First Code No.	Description	(Cells in bold are factory default settings) 01	02	03	04
10(20)	2	Priority of thermistor sensors for space temperature control	**The return air thermistor is primary and the remote controller thermistor is secondary**	Only the return air thermistor will be utilized.	Only the remote controller thermistor will be utilized.	--

Power Louver Operation

The VRV indoor units with power louvers (flaps) can be programmed

- Power Louver settings are programmed from the BRC1E72 Navigation Remote Controller only
- Factory set operation: louvers oscillate up and down automatically when the indoor unit is ON
- Select Air Flow Direction from the Main Menu on the BRC1E72 Remote Controller, the louvers can be programmed to a selected angle when the indoor unit is ON

Commissioning Complete Indicator

Commissioning is complete once the VRVIII-S system is operated from each zone in **Heating** and **Cooling** ambient temperatures permitting

Topics

- VRVIII-S System Introduction and Components
- Piping & Charging Considerations
- Refrigerant System Design
- VRVIII-S Outdoor & Unit Installation Overview
- VRVIII-S System & Control Wiring
- Optional Systems Accessories
- Commissioning