DAIKIN UNIVERSITY

Daikin VRV
Installation & Commissioning

Participant Guide

DAIKIN VRV
Product & Technology Introduction Review

RESIDENTIAL | LIGHT COMMERCIAL | COMMERCIAL

Training Department
September 2012

Daikin VRV Concept

What is VRV® ?

Variable - *System capacity varies with load*

Refrigerant - *R-410A Direct Expansion System*

Volume - *Refrigerant flow regulated by EEV's and a variable speed compressor*

- *VRV - Daikin* Registered trademark
- Introduced in 1982 – Worlds first VRF system
- Over 1 million installations worldwide
- Over 25,000 systems in the US and Canada
- Multiple Indoor units connected to one condenser system
- Air Cooled and Water Cooled systems
- Ultra high comfort control and efficiency

Daikin VRV concept

DAIKIN AC absolute comfort

Multiple Fan Coil Control + Inverter = *Daikin VRV*

- Daikin *VRV* incorporates multiple technologies to provide ultra high energy savings, comfort control and reliability
  - Multiple indoor fan coils connected to a single refrigerant network
  - Inverter control system to modulate system capacity as loads change
- Heat Pump & Heat Recovery systems

R-410A INVERTER

1

DAIKIN VRV Product & Technology Introduction

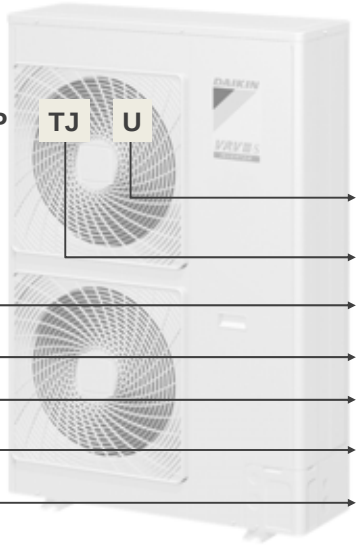
DAIKIN AC absolute comfort

VRV System Models
VRVIII-S® *VRVIII*® *VRV-WIII*®
Condensers & Indoor Units

VRV Systems

VRV Nomenclature

VRVIII-S
Heat Pump



RXY M Q 36/48 P TJ U

- U: UL listed for US market
- TJ: voltage 208 - 230V 1ph 60Hz
- P: Revision
- 36/48: Cooling Capacity
- Q: Refrigerant R410A
- M: Trunk-shaped *VRV* system
- RXY: Heat Pump

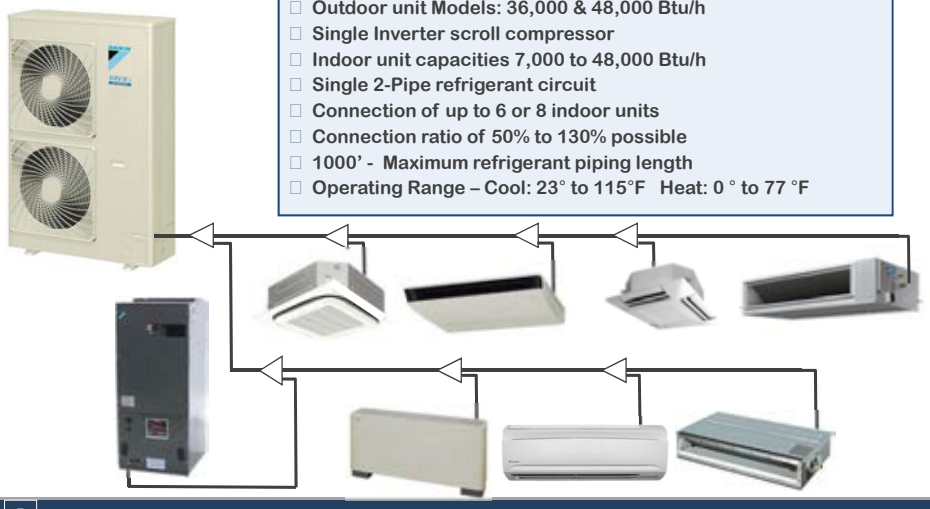
VRV Systems

DAIKIN AC absolute comfort

VRVIII-S Heat Pump

RXYMQ36&48P

- 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 7,000 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
- 1000' - Maximum refrigerant piping length
- Operating Range – Cool: 23° to 115°F Heat: 0 ° to 77 °F



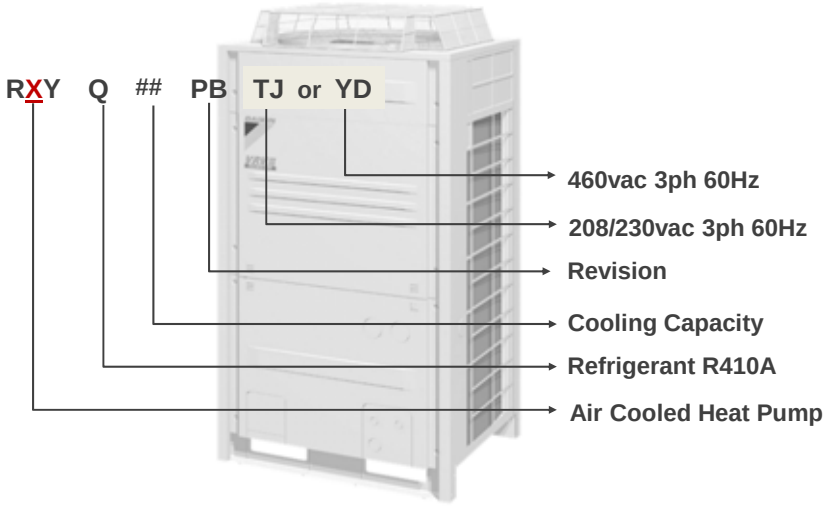
VRV Systems

DAIKIN AC absolute comfort

VRV Nomenclature

DAIKIN AC absolute comfort

VRVIII Heat Pump

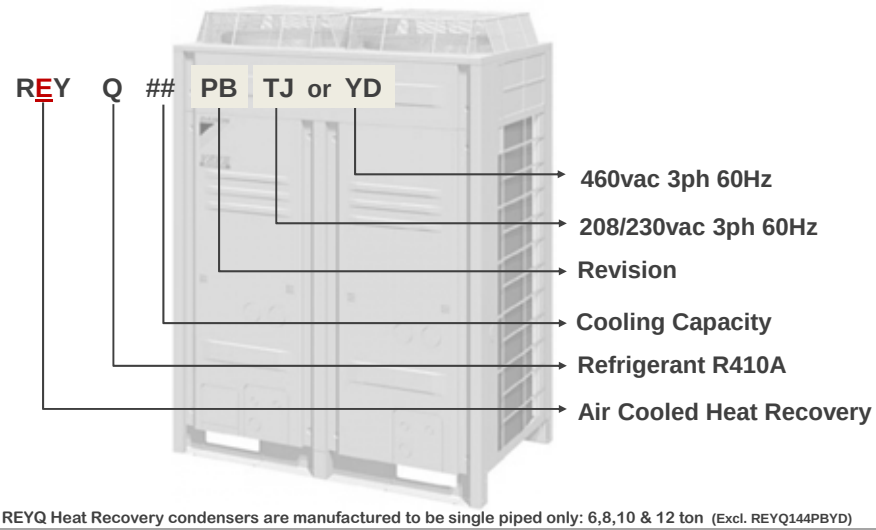


Heat Pump condensers are manufactured to be single piped or manifolded (Excl. RXYQ144PBTJ)

VRV Nomenclature

DAIKIN AC absolute comfort

VRVIII Heat Recovery Single Piped

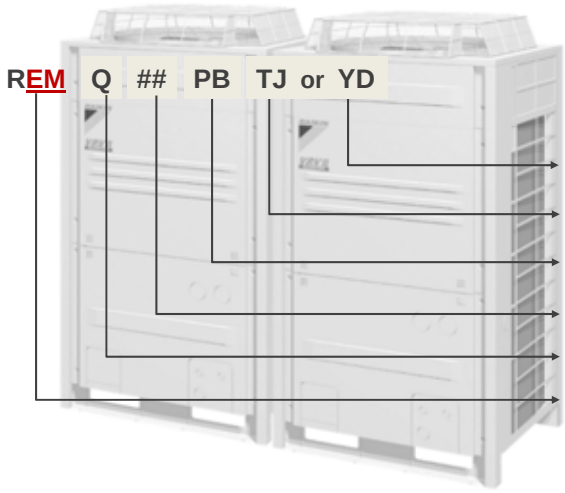


REYQ Heat Recovery condensers are manufactured to be single piped only: 6,8,10 & 12 ton (Excl. REYQ144PBYD)

VRV Nomenclature

DAIKIN AC absolute comfort

VRVIII Heat Recovery Manifolded Module



REMQ Heat Recovery condensers are manufactured to be manifolded only: 6,8,10 & 12 ton (Excl. REYQ144PBTJ)

Slide 11 © 2012 Daikin AC

VRV Systems

DAIKIN AC absolute comfort

VRV III RXYQ & REY(M)Q

- 208/230vac 3ph and 460vac 3ph models
- Heat Pump and Heat Recovery models
- Dual scroll compressors – 1 Inverter and 1 Standard
  - Excl. 6 ton HP & HR units & 12 ton 208/230vac. units
- System capacities: HP 6 – 30 Ton / HR 6 – 28 Ton
- Connection of up to 62 indoor units
- Connection ratio of 50% to 200% possible
- 3,280' - Maximum refrigerant piping length
- Operating Range: Cool: 23° to 115°F Heat: 0° to 77°F

6

Slide 12 © 2012 Daikin AC

VRV Systems

VRV Nomenclature

VRV-WIII

RWEY Q 72/84 P TJ YD U or N

- YD → 460vac 3ph 60Hz
- TJ → 208/230vac 3ph 60Hz
- P → Revision
- 72/84 → Cooling Capacity
- Q → Refrigerant - R410A
- RWEY → Water-cooled type

Same unit model is used for Heat Pump - Heat Recovery & Geothermal operation.

VRV Systems

DAIKIN AC absolute comfort

VRV-WIII
Water Cooled RWEYQ_P

- 208/230vac & 460vac 3 phase models
- 6 & 7 ton single condenser models
  - Heat Pump / Heat Recovery operation
  - Geothermal
- Single inverter scroll compressor
- System capacities: 6 to 21 ton
- Standard EWT: 60°F to 113°F
  - Geothermal EWT: 14°F (heat)
- Max. refrigerant piping length: 980 ft.
- Connection of up to 12 – 32 fan coils
- Standard connection ratio: 50% to 130%

Interior Installation Only

6 | Field Configured Geothermal Operation | Slide 15 | © 2012 Daikin AC

VRV Systems

DAIKIN AC absolute comfort

Indoor Units

All 208/230vac 1 Phase powered

Slide 16 | © 2012 Daikin AC

DAIKIN VRV *Product & Technology Introduction*

VRV Basic Controls

VRV Basic Controls

Local Remote Controllers

BRC1E71

Navigation Remote Controller

BRC2A71

Simplified

BRC7C/7E/4C

Hand-held Wireless

DIII – NET 16vdc digital control network

VRV Basic Controls

DAIKIN AC absolute comfort

Remote Sensor KRCS01-1B (4B)

- ***VRV*** Fan Coil 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 fan coil return air
    - Ceiling height of fan coil return is 13ft or more
    - Above ceiling plenum return is used
  - Standard 39ft cable - Plenum Rated 40ft and 80ft cable optional

NOTE: KRCS01-4B Remote Sensor Kit for FXMQ_P, FXFQ_P and FXTQ Fan Coil Units

DAIKIN VRV Product & Technology Introduction

DAIKIN AC absolute comfort

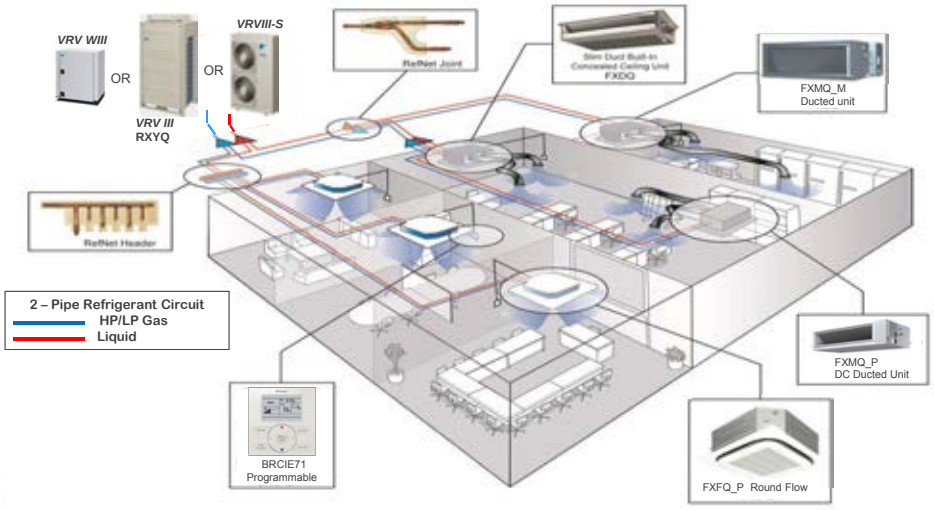
VRV System Types

Heat Pump / Heat Recovery

VRV Heat Pump Systems

DAIKIN AC absolute comfort

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



One Remote Controller is configured as the system *Master*

VRV Heat Pump Systems

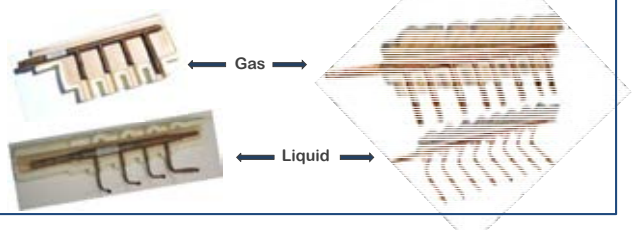
DAIKIN AC absolute comfort

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 fan coils
- *RefNets* are engineered to control turbulence and maintain flow through the refrigerant system.
- *RefNets* are provided in 4 capacity Kits
  - **Heat Pump Kit**
    - Liq. & 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**

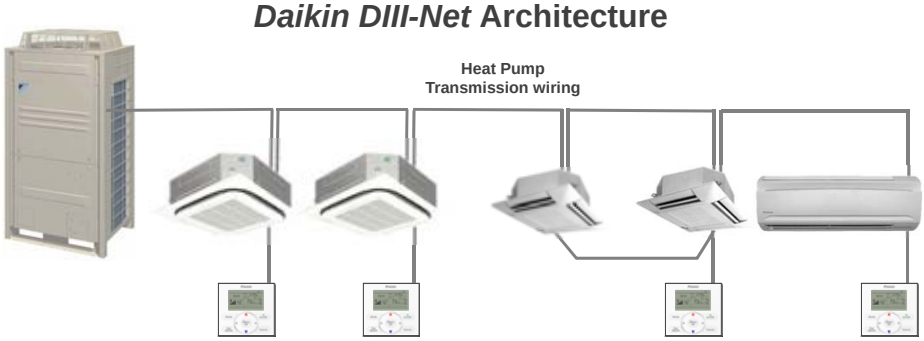
RefNet Header 4-port **RefNet Header 8-port**



VRV Heat Pump Systems

DAIKIN AC absolute comfort

Daikin DIII-Net Architecture



- The *DIII-Net* communications is proprietary to Daikin *VRV* systems
- Simple 2 conductor wire, non polarity sensitive, 16vdc communications circuit
  - 16/18 awg. 2-conductor stranded, non-shielded
  - Daisy chain wiring to all system components
- Maximum system control wire length: 6,600 ft.

VRV Heat Pump Systems

DAIKIN AC absolute comfort

Control Circuit Terminal Designations

- Fan Coil Control Terminal Circuits
  - **P1 P2** – Fan Coil to Remote Controller
    - Remote Controller power supply and data transfer
  - **F1 F2** – Communications from condenser to all Fan Coils
  - **T1 T2** – Forced Off (Default N.O.) External Contacts

All *VRV* Fan Coils

- Condenser Control Terminal Circuits
  - **F1 F2 In** – Condenser to Fan Coils
  - **F1 F2 Out** – Multi-Zone Control
    - iTouch
    - iTouch Manager
    - Gateway – LON Works or BACnet
  - **Q1 Q2** (*VRVIII* & *VRV-WIII*) – Manifolded Modules

VRVIII – VRV-WIII

VRVIII-S

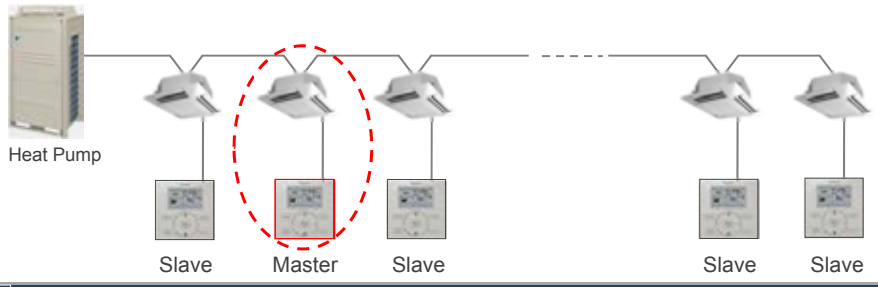
1

VRV Heat Pump Systems

DAIKIN AC absolute comfort

Operation Mode Changeover

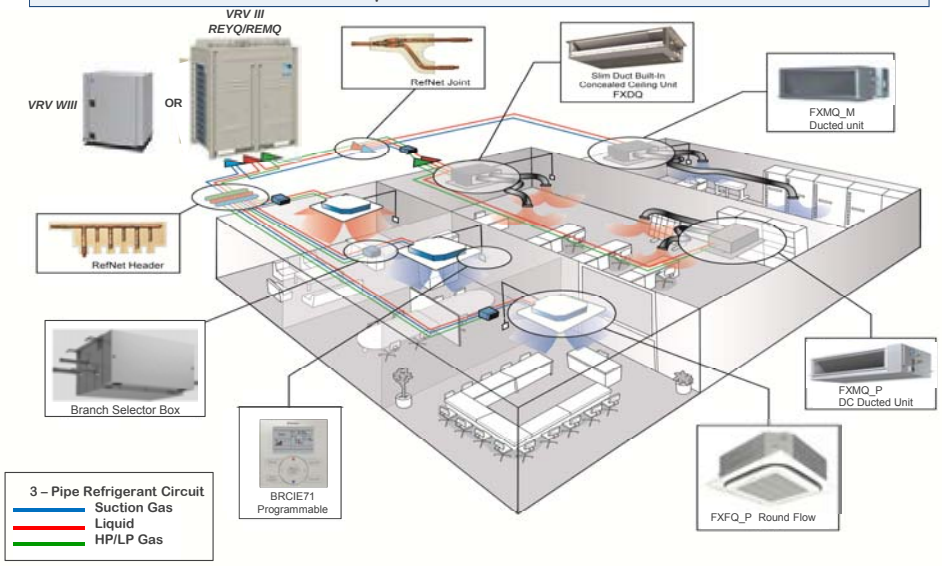
- Heat Pump controlled fan coils all operate in the same mode and require one Remote Controller to be configured as the Master
  - The Master remote controller determines the system mode of operation (Cool, Dry, Heat, Fan) based on the Heat and Cool setpoints or user selected mode.
  - The Master RC determines the mode that the slaves can operate under:
    - Master in Cool or Dry ⟶ Slaves: Cool, Dry and Fan are available
    - Master in Heat mode ⟶ Slaves: Heat and Fan are available
    - Master in Fan mode ⟶ Slaves: Fan is Available



VRV Heat Recovery Systems

DAIKIN AC absolute comfort

Indoor fan coil units operate in simultaneous Heat and Cool modes



VRV Heat Recovery Systems

DAIKIN AC absolute comfort

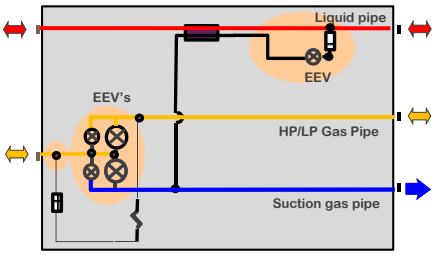
Branch Selector Box

- Provides Heating/Cooling changeover to the connected fan coil or fan coils
- EEV refrigerant control
- Brazed refrigerant connections
- 208/230vac 1 ph. powered

208-230vac.

Single Port Model Numbers:

BSVQ36PVJU 36,000 Btu - Up to 5 FC's
BSVQ60PVJU 60,000 Btu - Up to 8 FC's
BSVQ96PVJU 96,000 Btu - Up to 8 FC's

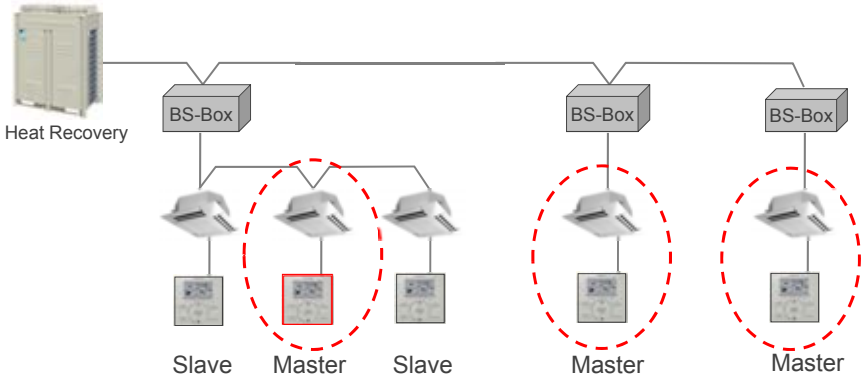


VRV Heat Recovery Systems

DAIKIN AC absolute comfort

Operation Mode Changeover

- When two or more Fan Coils with dedicated Remote Controllers are connected to one BS-Box, one of the Remote Controllers must be configured as the Master
  - Master determines the BS-Box operation mode
  - The Slave indoor units follow the Master's operation mode

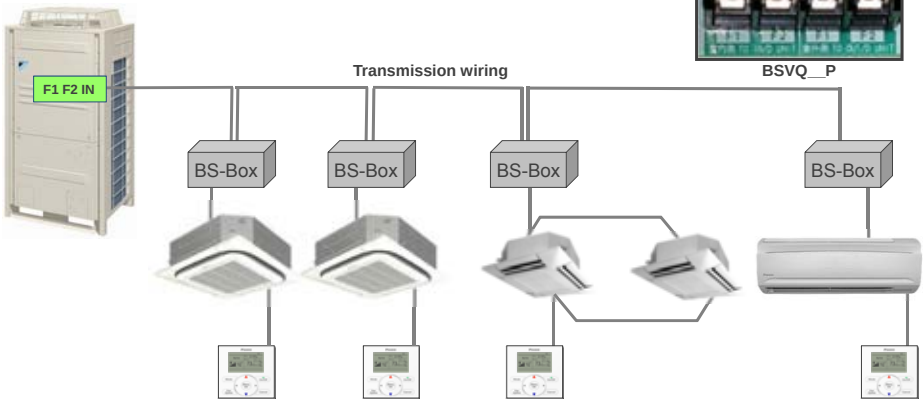


VRV Heat Recovery Systems

DAIKIN AC absolute comfort

Branch Selector Control Circuits

BSVQ__P



- Same 2 conductor control wire used to connect all Branch Selectors to Condenser
- **F1 F2 In** daisy chain wired from Condenser terminal block to **F1 F2 Out** on Branch Selectors
- **F1 F2 In** from Branch Selector to **F1 F2** on connected fan coil(s)

DAIKIN VRV *Product & Technology Introduction*

DAIKIN AC absolute comfort

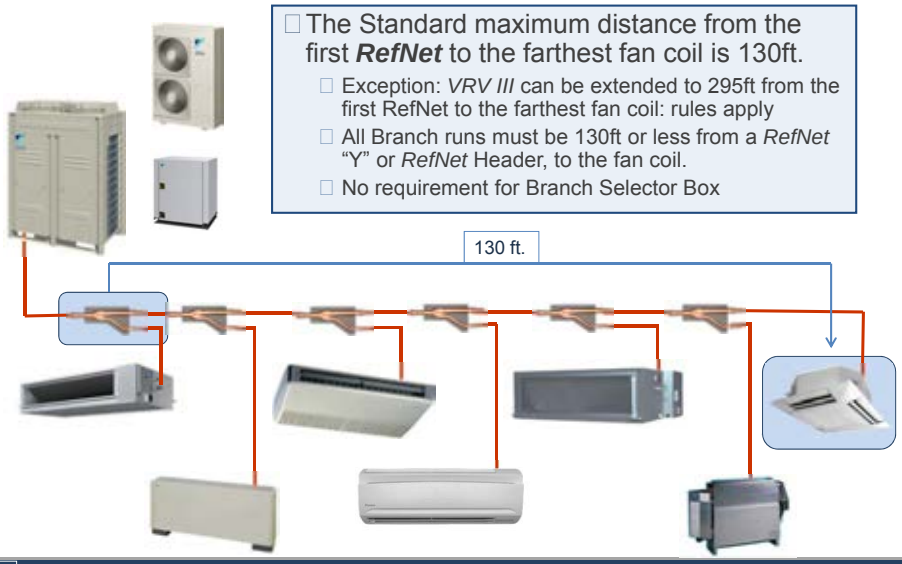
VRV Refrigerant Piping Lengths

VRV Refrigerant Piping

DAIKIN AC absolute comfort

RefNet Piping Length Requirements

- The Standard maximum distance from the first ***RefNet*** to the farthest fan coil is 130ft.
  - Exception: *VRV III* can be extended to 295ft from the first RefNet to the farthest fan coil: rules apply
  - All Branch runs must be 130ft or less from a *RefNet* "Y" or *RefNet* Header, to the fan coil.
  - No requirement for Branch Selector Box



DAIKIN AC absolute comfort

DAIKIN VRV Product & Technology Introduction

VRV Basic System Control Operations

VRV Basic System Control

DAIKIN AC absolute comfort

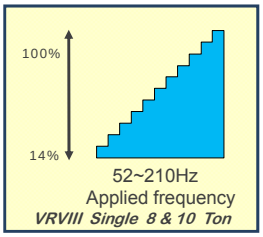
Compressor Capacity Control

***Inverter* Control**
Adjusts compressor speed (capacity) up or down to correct deviation from the target pressure values (system load)

37 Applied Capacity Steps

Control System
- Sets Target low & high pressure values at the Condenser
- Sets the Target evap. & cond. Temps in the indoor Fan Coils
- Local Remote Controllers initiate a system Thermo-ON with a 1° deviation from set point
- Local Remote Controllers initiate a system Thermo-OFF when all set points are reached

Condenser Control
- **COOL** Operation
  - Detects the system operating suction pressure at the condenser once every 20 seconds & Target Evap temp
- **HEAT** Operation
  - Detects the system operating high pressure at the condenser once every 20 seconds & Target Cond temp



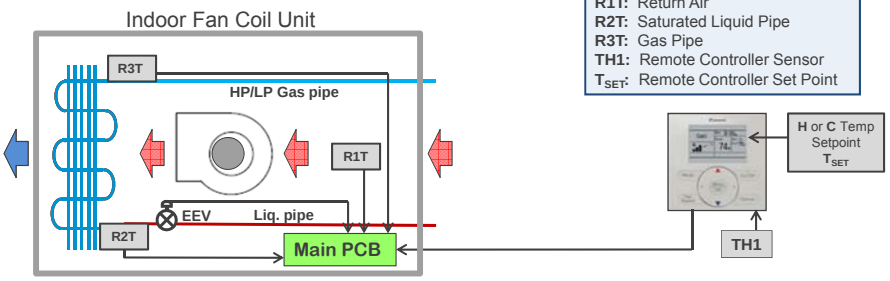
VRV Basic System Control

DAIKIN AC absolute comfort

Electronic Expansion Valve Control

- *VRV* fan coils have 3 thermistor sensors (excl. FXTQ & FXMQ_MF)
  - The sensor signals are used to regulate refrigerant volume through the fan coil using **P**roportional, **I**ntegral & **D**erivative (PID) control, to correct deviation from target temperature values by adjusting the Electronic Expansion Valve in pulses to modulate open and close

SENSOR LEGEND
R1T: Return Air
R2T: Saturated Liquid Pipe
R3T: Gas Pipe
TH1: Remote Controller Sensor
T_{SET}: Remote Controller Set Point



VRV Basic System Control

DAIKIN AC absolute comfort

Basic Fan Coil Control

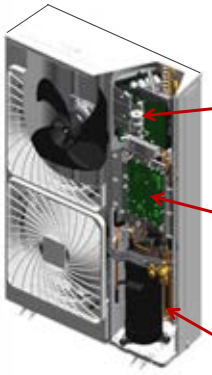
- **Blower cycling**
  - Constant Fan – User selectable speeds: L – H – (HH)
    - COOL mode – User selectable (Thermo-ON & Thermo-OFF)
    - HEAT mode – Thermo-ON - User selectable / Thermo OFF – LL
  - Fan Auto Setting ("P" series fan coils only)
    - Blower cycling may be reprogrammed in the field
- **Electronic Expansion Valve**
  - Modulates from 0 to 2000 pulses (PID control)
    - COOL mode
      - Thermo-ON - Modulates to maintain target superheat temperatures
      - Thermo-OFF – Closes (0 pulse)
    - HEAT mode
      - Thermo-ON – Modulates to maintain target subcooled temperatures
      - Thermo-OFF – Minimum Open (200 pulses approx)
- **Condensate Lift Pump** (FXFQ FXZQ FXDQ FXMQ_P)
  - COOL Thermo-ON – Constant operation
  - COOL Thermo-OFF- 5 minute residual operation then OFF
- **Control PCB** (A1P)
  - Field Settings programmed from RC reside in permanent memory
  - Contains unit control address and Group Address

VRV Basic System Control

DAIKIN AC absolute comfort

VRVIII-S Heat Pump

RXYMQ36/48PVJU Single Phase



70 watt tandem modulating DC Fan Motors
Low Pressure Loss Bellmouth with
Aero Spiral Fans

Smooth Sine Wave Inverter

Digital Microprocessor
- Simple system commissioning at control PCB

Standard *VRV* Control Operations
- Auto Addressing
- Check Operation Mode
- Pump Down Residual
- Time/Temp Defrost
- Restart Standby
- Crankcase Heater Control

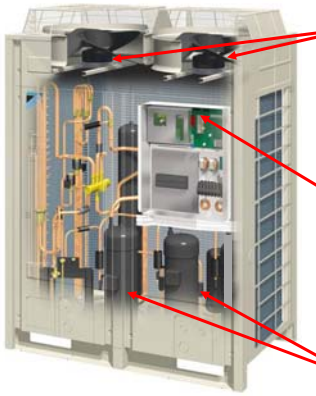
Single Reluctance Digitally Commutated
Daikin G2 Scroll Compressor

VRV Basic System Control

DAIKIN AC absolute comfort

VRVIII Heat Pump & Heat Recovery Models

RXYQ REYQ/REMQ



Outdoor DC Fan(s)
Single or Dual modulating DC fan motors
Low Pressure Loss Bellmouth with Aero Spiral Fans
Field Adjustable Fan ESP

Advanced *VRV* Control system
Condenser Control PCB
Standard VRV Control Operations *PLUS*:
Auto Charge – Uninterrupted Heat in Defrost (HR)
Manifolded Condenser Rotation Start
Emergency Operation

Daikin G2 high efficiency scroll compressors
1-INV & 1 STD compressor

NOTE: 6 Ton Heat Pump Condenser has one Inverter scroll compressor only

VRV Basic System Control

DAIKIN AC absolute comfort

VRV-WIII Water Cooled

Single *Daikin* G2 Scroll Compressor

Smooth Sine Wave Inverter

Condenser Control PCB
All standard VRV Control operations
Water Heat Exchanger - Oil Return
No Defrost operation needed

1 NOTE: Automatic Charge is not available for this product

DAIKIN VRV Product & Technology Introduction

DAIKIN AC absolute comfort

VRV Multi-Zone Control Systems

VRV Multi-Zone Controls

DAIKIN AC absolute comfort

Multi-Zone Control Systems

Intelligent Manager

Intelligent Controller

BACnet

LonWorks®

Centralized Controller

Unified On/Off

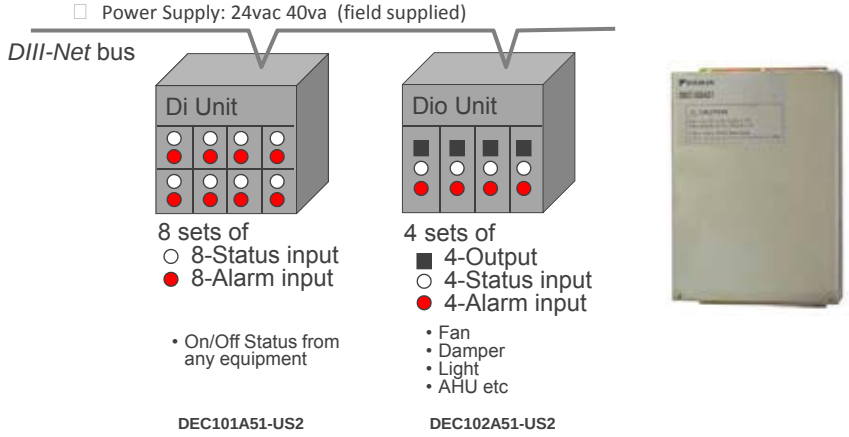
Schedule Timer

VRV Multi-Zone Controls

DAIKIN AC absolute comfort

Digital Input and Input/Output units

- Equipment is controlled like an indoor unit
  - On / Off based monitoring / controlling
  - One *DIII-Net* address is assigned to each set for third party equipment
  - Power Supply: 24vac 40va (field supplied)

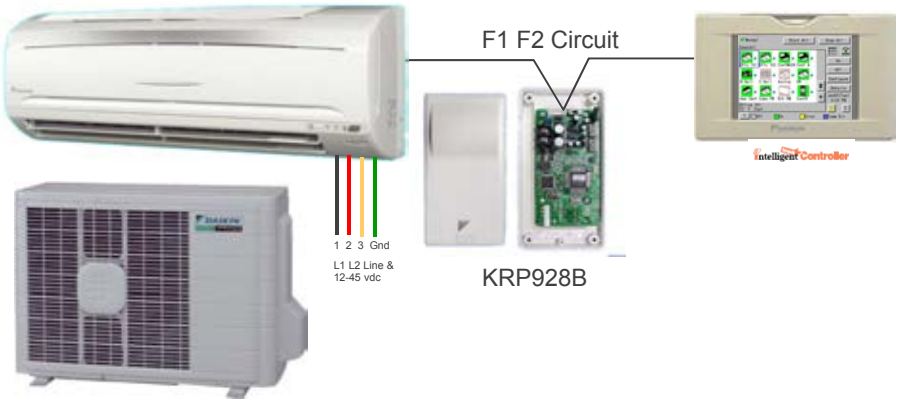


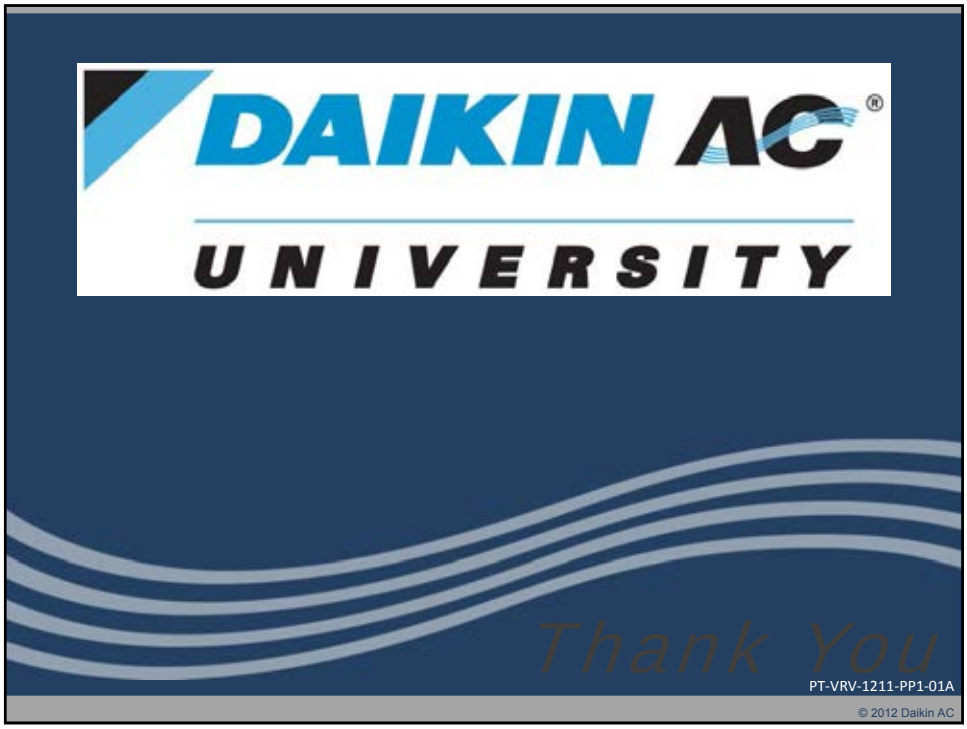
VRV Multi-Zone Controls

DAIKIN AC absolute comfort

Mini-Split Interface Adapter KRP928B

Simple installation to interface Mini-split 4-wire communications to the *VRV D-III Net* 2-wire F1 F2 communications




DAIKIN AC
UNIVERSITY
Thank You
PT-VRV-1211-PP1-01A
© 2012 Daikin AC

VRV
Basic System Installation

Training
Department
May 2011

DAIKIN AC
absolute comfort

DAIKIN AC
absolute comfort

VRV
Basic System Installation Agenda

- VRV – Basic Refrigerant Piping
  - Piping Layout
  - Refrigerant Components
  - Basic piping length requirements
  - Xpress Piping Report
- VRV – Basic Piping Installation
  - Piping Installation Recommendations
  - VRVIII Manifolded systems
  - Pressure Equalization piping
- VRV – Indoor Units
  - Fan Coil Installation
  - Branch Selector Box Installation
- VRV – Controls and Control Wiring
  - Local Remote Controls
  - Control Circuits
  - Xpress Wiring Report
- VRV – Condenser Basic Installation

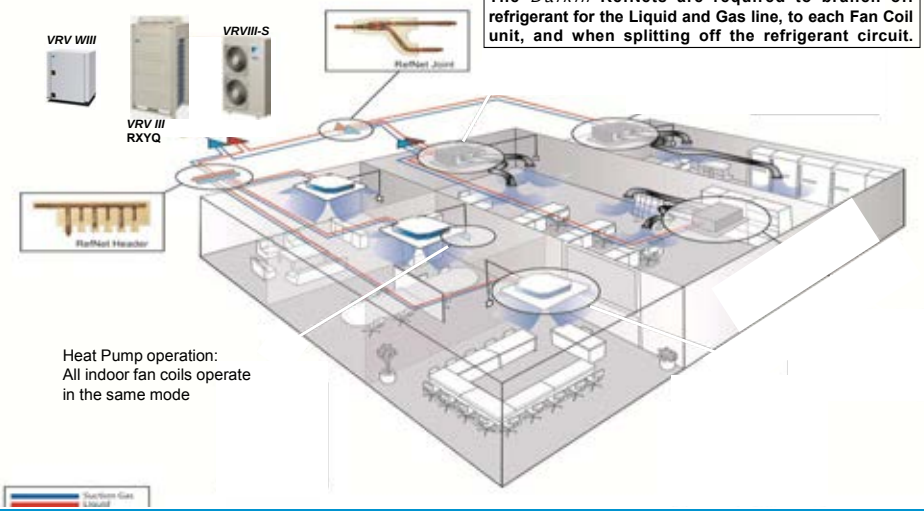
VRV Basic Refrigerant Piping
Specifications & Installation

absolute comfort

VRV
Heat Pump Refrigerant Piping

absolute comfort

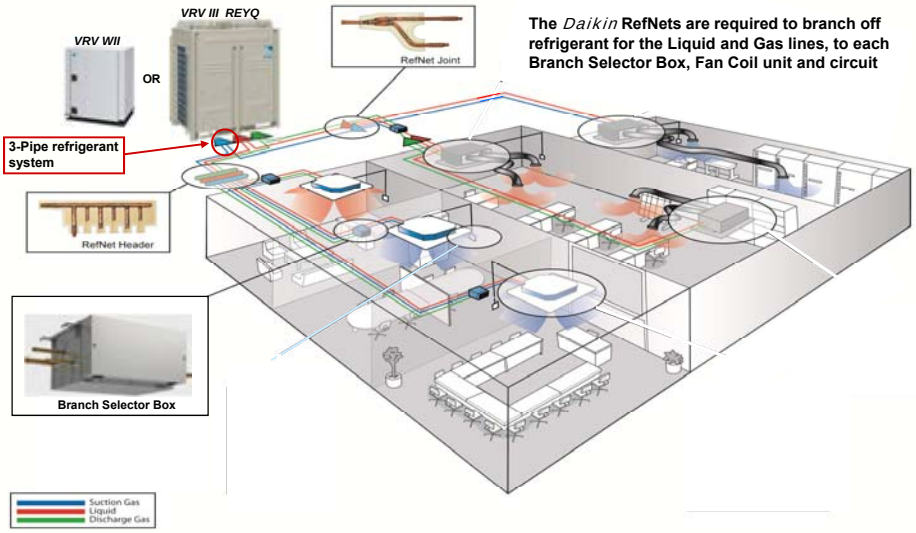
The *Daikin* RefNets are required to branch off refrigerant for the Liquid and Gas line, to each Fan Coil unit, and when splitting off the refrigerant circuit.



Heat Pump operation:
All indoor fan coils operate in the same mode

VRV

Heat Recovery Refrigerant Piping



The *Daikin* RefNets are required to branch off refrigerant for the Liquid and Gas lines, to each Branch Selector Box, Fan Coil unit and circuit

One system provides simultaneous cooling and heating

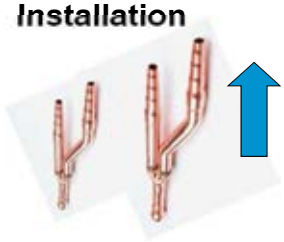
RefNet Components

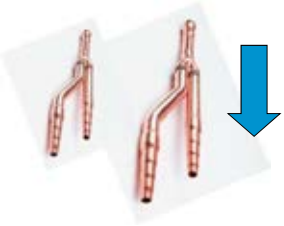
RefNet "Y" Branch – Gas & Liquid Kit

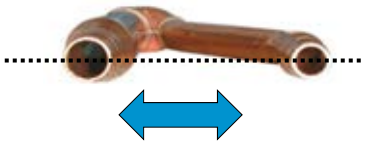
RefNet Header Gas & Liquid Kit

4-Port & 8-Port

VRV RefNet "Y" Joint
Installation

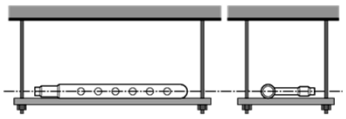


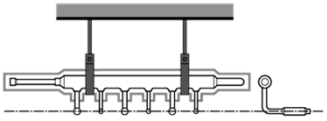




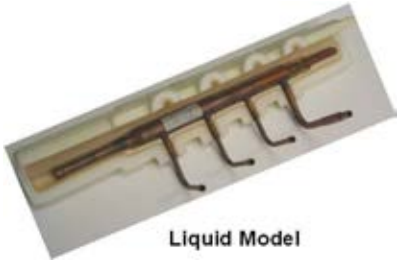
- RefNet Y Joints to be installed: straight up - straight down – level (+/- 15°)
- Each RefNet included in the branch kit is labeled to identify circuit: Liquid – Gas – Suction (HR)

VRV RefNet Header
Installation



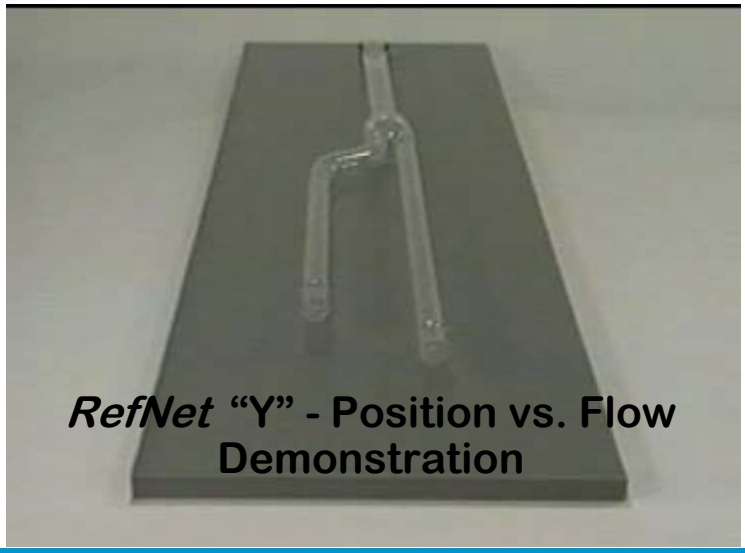


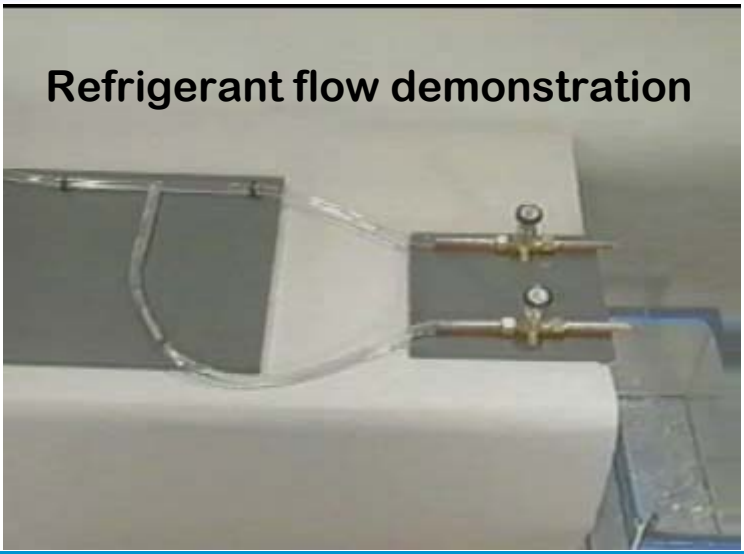
Gas Model



Liquid Model

- RefNet Headers must be installed in a level position only
- Properly support headers to insure solid installation
- Refrigerant circuit is terminated at header (Deadhead)
- Unused branch ports are to be brazed closed
- Each RefNet included in the branch kit is labeled to identify circuit: Liquid – Gas – Suction





VRV

RefNet Branch Kits

- The Daikin *RefNets* are provided as "Branch Kits" for Heat Pump and Heat Recovery systems
  - Heat Pump – KHRP26____ Kit includes 2 *RefNets* (Liquid & Dual Pressure Gas)
  - Heat Recovery – KHRP25____ Kit includes 3 *RefNets* (Liquid, Suction & Dual Pressure Gas)
- Each *RefNet* included in the Branch Kits is individually labeled for proper identification

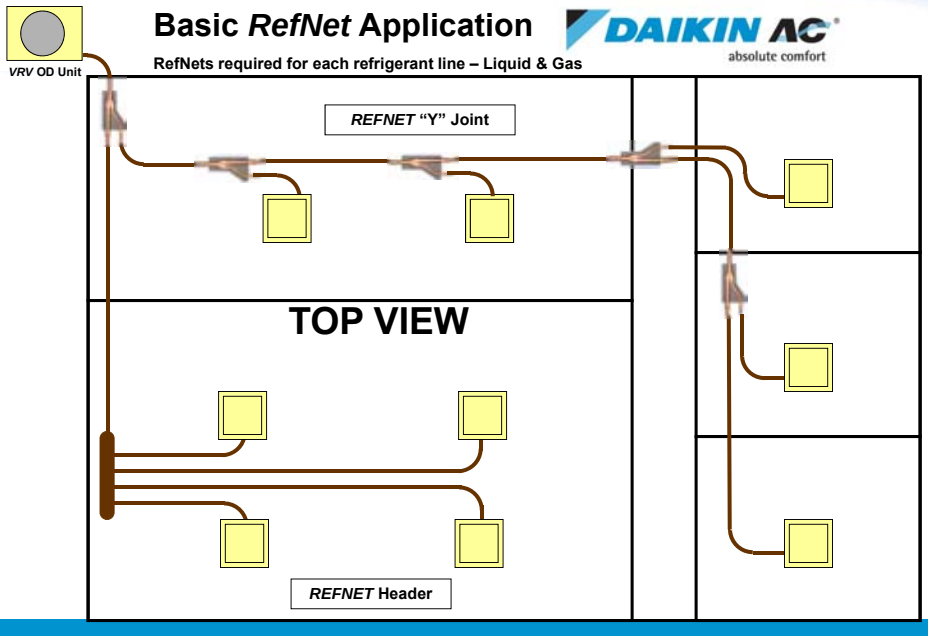
***RefNet* Branch Kits**

***RefNet* "Y" Joint** Heat Pump (2-Pipe)	Heat Recovery (3-Pipe)	***RefNet* Header** Heat Pump (2-Pipe)	Heat Recovery (3-Pipe)
KHRP26A22T	KHRP25A22T	4 - PORT KHRP26M22H(9)	_____
KHRP26A33T	KHRP25A33T(9)	8 - PORT KHRP26M33H(9)	8 - PORT KHRP25M33H(9)
KHRP26M72TU(9)	KHRP25M72TU(9)	8 - PORT KHRP26M72H(9)	8 - PORT KHRP25M72H(9)
KHRP26M73TU(9)	KHRP25M73TU(9)	8 - PORT KHRP26M73HU(9)	8 - PORT KHRP25M73HU(9)

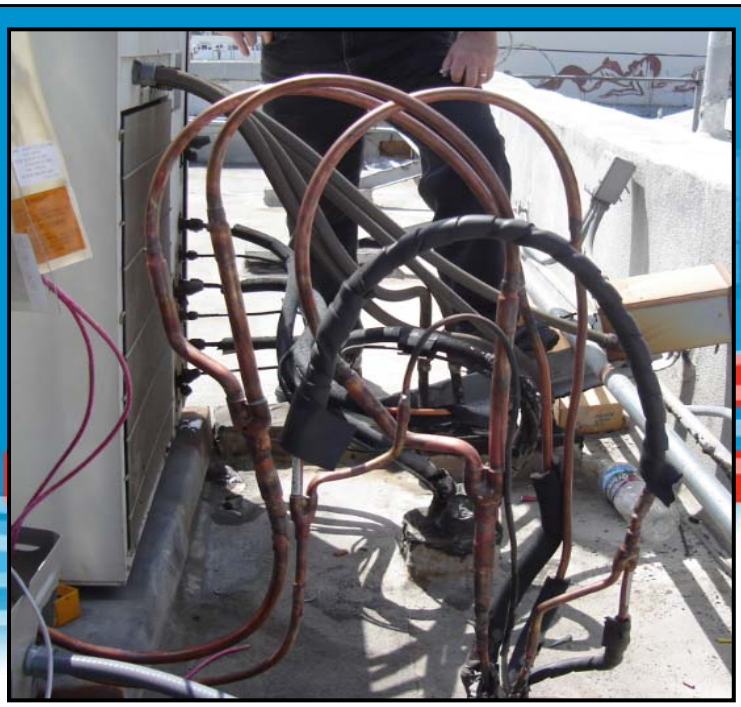
***RefNet* Branch Kits are determined by the Outdoor Unit capacity and connected fan coil capacities in the refrigerant circuit**

Basic *RefNet* Application

RefNets required for each refrigerant line – Liquid & Gas



No RefNet Y after a header unless HR with multiple FC's on one BS Box



DAIKIN AC
absolute comfort

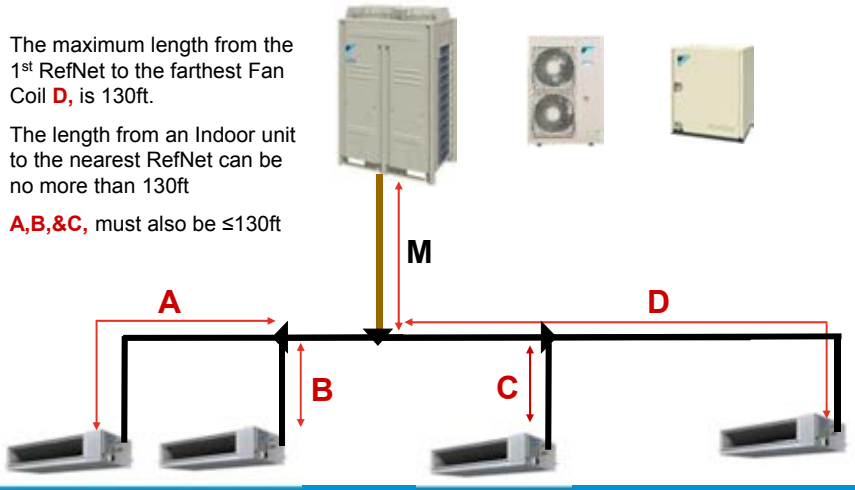
Excessive equivalent length

Unnecessary Trap

Unnecessary Trap

Piping Length

- The maximum length from the 1st RefNet to the farthest Fan Coil **D,** is 130ft.
- The length from an Indoor unit to the nearest RefNet can be no more than 130ft
- **A,B,&C,** must also be ≤130ft



Piping Length

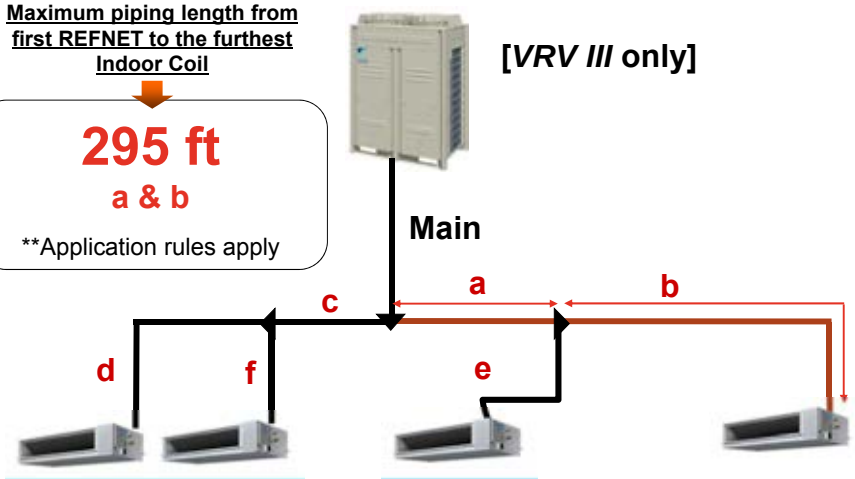
Maximum piping length from first REFNET to the furthest Indoor Coil

295 ft

a & b

**Application rules apply

[*VRV III* only]

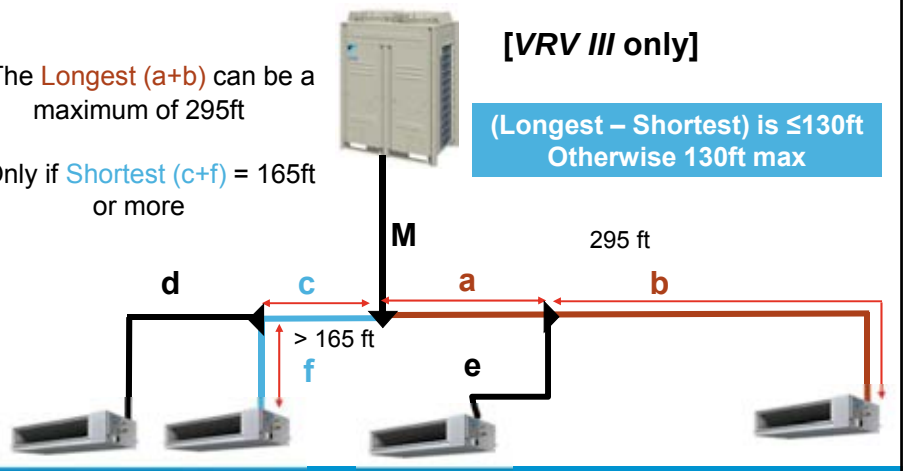


Piping Length

- The Longest (a+b) can be a maximum of 295ft
- Only if Shortest (c+f) = 165ft or more

[*VRV III* only]

(Longest – Shortest) is ≤130ft
Otherwise 130ft max

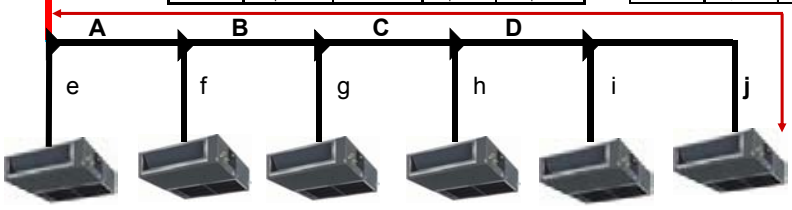


Main Piping Size

- If the outdoor unit to the furthest indoor unit has an equivalent length of ≥295 ft the main line (M) must be upsized
- Heat Pump – Liquid & Gas Pipes
- Heat Recovery – Liquid Pipe only

	Suction gas		Liquid	
	Std	One Size Up	Std	One Size Up
RXYQ72	φ 3/4	φ 7/8	φ 3/8	φ 1/2
RXYQ96	φ 7/8	N/A	φ 3/8	φ 1/2
RXYQ120	φ 1 1/8	N/A	φ 1/2	φ 5/8
RXYQ144	φ 1 1/8	N/A	φ 1/2	φ 5/8
RXYQ168	φ 1 1/8	N/A	φ 5/8	φ 3/4
RXYQ192	φ 1 1/8	N/A	φ 5/8	φ 3/4
RXYQ216	φ 1 1/8	N/A	φ 5/8	φ 3/4
RXYQ240	φ 1 3/8	N/A	φ 5/8	φ 3/4

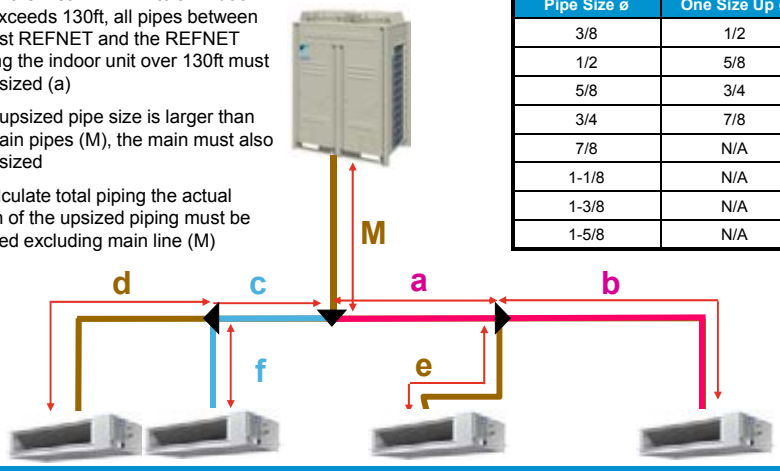
	Liquid	
	Std	One Size Up
REYQ72	φ 3/8	φ 1/2
REYQ96	φ 3/8	φ 1/2
REYQ120	φ 1/2	φ 5/8
REYQ144	φ 1/2	φ 5/8
REYQ168	φ 5/8	φ 3/4
REYQ192	φ 5/8	φ 3/4
REYQ216	φ 5/8	φ 3/4
REYQ240	φ 5/8	φ 3/4



Long Piping Lengths

- If from the first REFNET to an indoor unit exceeds 130ft, all pipes between the first REFNET and the REFNET serving the indoor unit over 130ft must be upsized (a)
- If the upsized pipe size is larger than the main pipes (M), the main must also be upsized
- To calculate total piping the actual length of the upsized piping must be doubled excluding main line (M)

Piping Size (O.D)	
Pipe Size ø	One Size Up ø
3/8	1/2
1/2	5/8
5/8	3/4
3/4	7/8
7/8	N/A
1-1/8	N/A
1-3/8	N/A
1-5/8	N/A



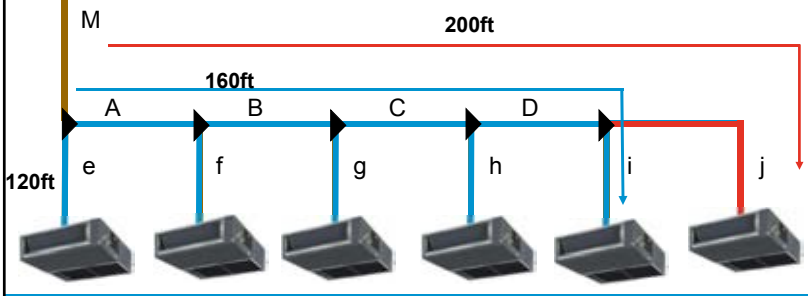
Piping Length

e = 120ft, this is within the ≤130ft limit from an indoor unit to the nearest REFNET (**f, g, h, i & j** must also follow this rule)

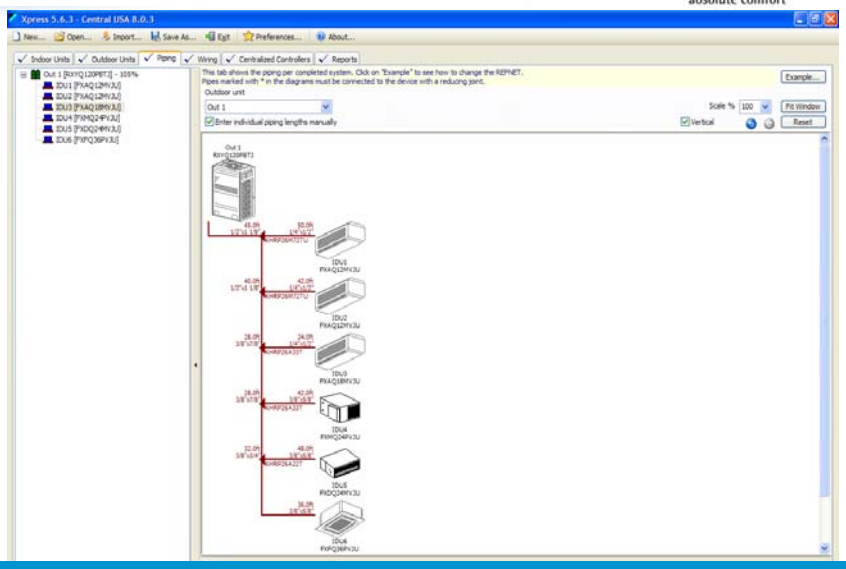
A +B +C +D +j (longest length)=200ft, the difference between the longest and shortest (**e**) is 80ft, this is within the limitations (longest – shortest ≤130ft)

A+B+C+D+i = 160ft, from the first REFNET to indoor (i) is over **130ft** so the liquid and gas pipes must be upsized between REFNETS (A+B+C+D only) (HP/LP pipe is also upsized on a Heat Recovery System)

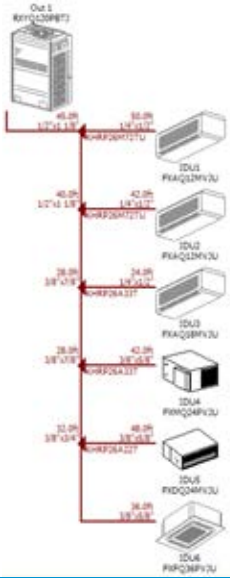
When calculating total actual pipe length in the example below M+2A+2B+2C+2D+e+f+g+h+i+j ≤3,280 ft



VRV Xpress Piping Report

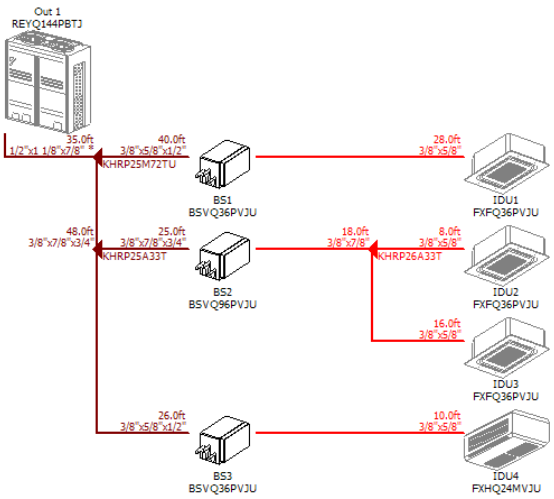


VRV Xpress Piping Report



- ***X***press refrigerant piping report
  - Lays out all of the refrigerant piping including all system component model numbers and ID designations
    - Outdoor Unit (condenser)
    - Indoor Units
    - RefNets (“Y” and Header)
    - Branch selector boxes
  - Indicates refrigerant piping line lengths
    - Automatically sizes piping based on components and lengths
- ***X***press piping report must be updated to insure system accuracy

VRV Xpress Piping Report

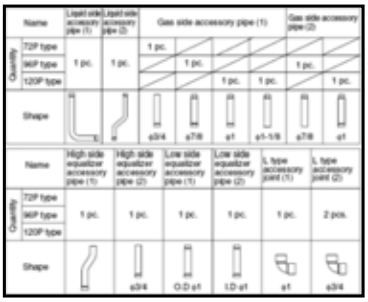


VRV Piping Installation

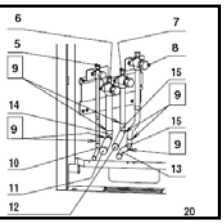
absolute comfort

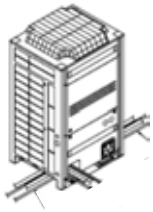
VRV III Piping Accessories

Supplied Copper fitting accessories for the Outdoor Unit



10. Liquid side accessory pipe (1)
11. Low side equalizer accessory pipe (1)
12. Gas side accessory pipe (1)
13. High side equalizer accessory pipe (1)
14. L type accessory joint (1)
15. L type accessory joint (2)
16. Liquid side accessory pipe (2)
17. Low side equalizer accessory pipe (2)
18. Gas side accessory pipe (1)
19. High side equalizer accessory pipe (2)

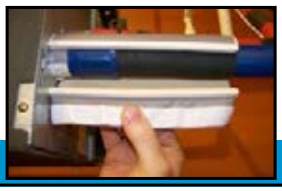




VRV Refrigerant Piping

- The Liquid and Gas piping must be completely insulated
  - Recommended wall thickness – 3/4”
  - All flare connections must be insulated

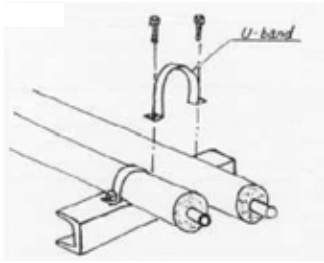
Fan Coil Installation Kit

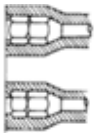


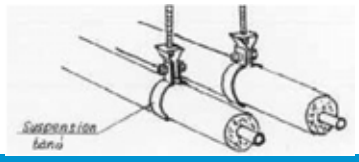
VRV Refrigerant Piping

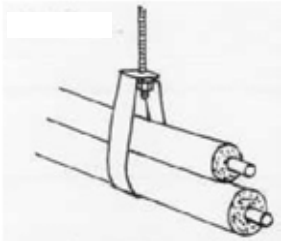
DAIKIN AC absolute comfort

- **VRV Refrigerant piping installation procedures**
  - Keep refrigerant piping clean and sealed during installation
    - Use Nitrogen purge during brazing process
    - Eliminate debris contamination in refrigerant piping
    - Installation period less than 30 days – pinch/braze or tape ends
    - Installation period more than 30 days – pinch/braze ends
  - Refrigerant piping must be properly insulated
    - Recommended ¾" wall insulation
    - Liquid and Gas pipes must be individually insulated
    - All Flare nut connections must be insulated
  - Refrigerant piping must be properly supported
    - Follow local code requirements for piping support locations
    - Support piping within 12" of BS Box and Fan Coil unit
  - Keep track of each refrigerant circuit during installation
    - Measure liquid lines as they are installed
    - Avoid crossing refrigerant lines during installation





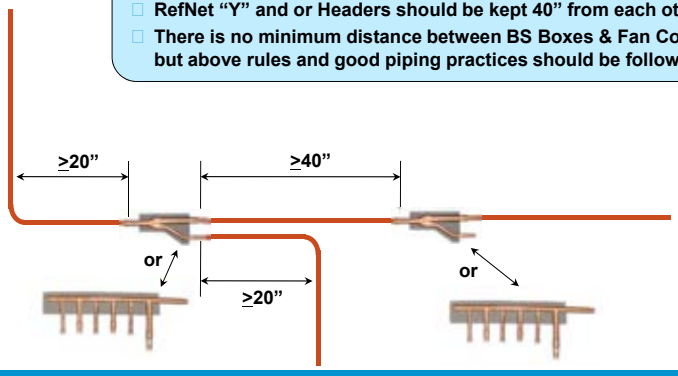




VRV RefNet

Installation recommendations

- **90° Elbows should be kept 20" from Fan Coils & BS Boxes**
- **90° Elbows should be kept 20" from RefNets & Headers**
- **RefNet "Y" and or Headers should be kept 40" from each other**
- **There is no minimum distance between BS Boxes & Fan Coils, but above rules and good piping practices should be followed**



NOTE: This procedure is recommended to avert potential noise issues in the piping

VRV III Manifolded System
Refrigerant Piping

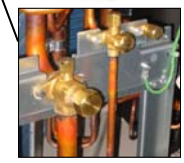
DAIKIN AC
absolute comfort

DAIKIN AC
absolute comfort

VRVIII Heat Pump
Double & Triple Module Piping

- High and Low pressure equalizing pipes are no longer required for heat pump manifolded systems
- No oil balance lines required
- **BHFP22P100U** "Y" Branch Kit for Double module HP systems
- **BHFP22P151U** "Y" Branch Kit for Triple module HP systems
- Faster installation with less labor and material cost

Liquid Pipe
Dual Press Gas



Wrong

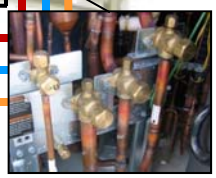
Right

15°
15°

Multi Connection "Y" Branch

VRVIII Heat Recovery
Double & Triple Module Piping

- Double & Triple manifolded Heat Recovery modules require a ¾" HP/LP Pressure Equalization pipe
- Uninterrupted Heat operation in the defrost mode
- **BHFP26P90U** "Y" Branch Kit for double module HR systems
- **BHFP26P136U** "Y" Branch Kit for triple module HR systems



HP/LP Equalization Pipe ¾"

Liquid Pipe

Suction

Dual Press Gas

Wrong

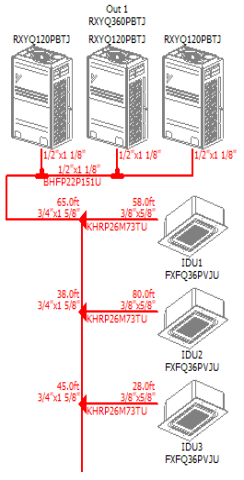
Right

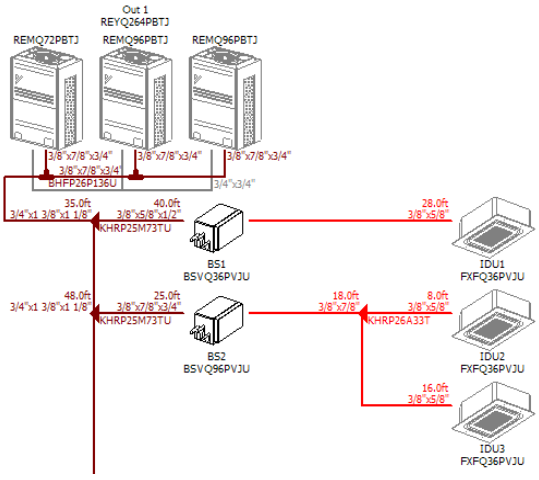
15°

15°

Multi Connection "Y" Branch

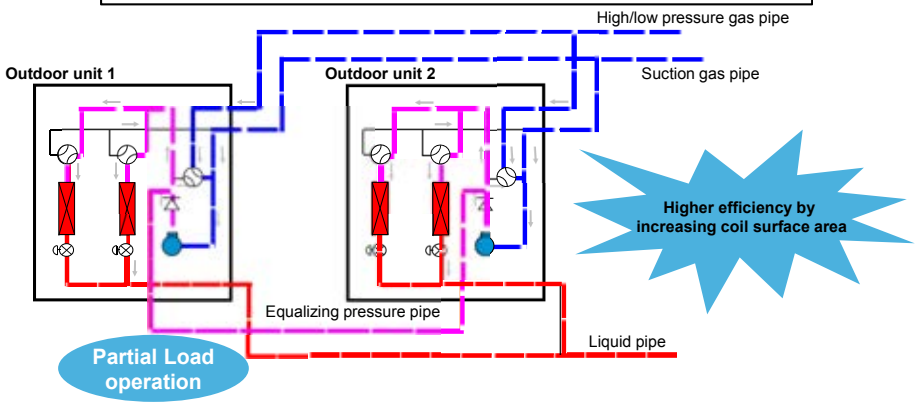
VRVIII Xpress
Manifolded system Piping Report





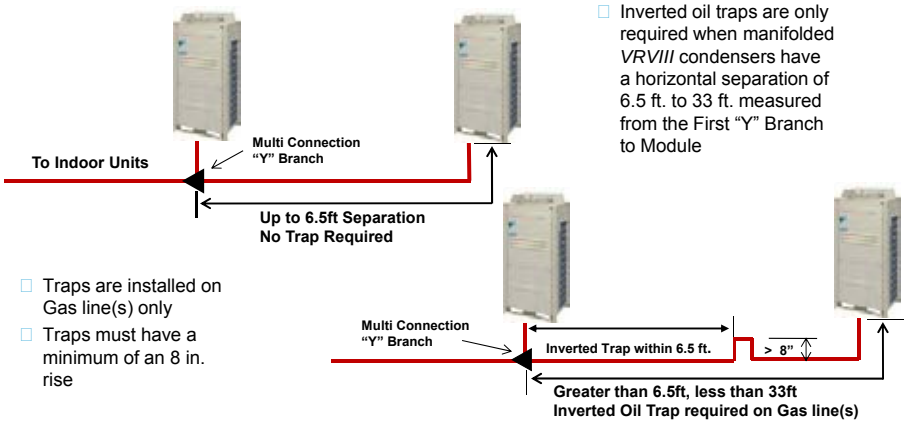
VRVIII Equalizing Pressure Pipe – Heat Recovery

When a single condenser module is operating due to low load, refrigerant is bypassed to the other condenser through the pressure equalizing pipe.
By utilizing both heat exchangers part load energy efficiency is improved



NOTE: No Equalizer circuits on Heat Pump Models ("PB" series)

VRVIII Manifolded Systems
Module Interconnecting Piping Lengths

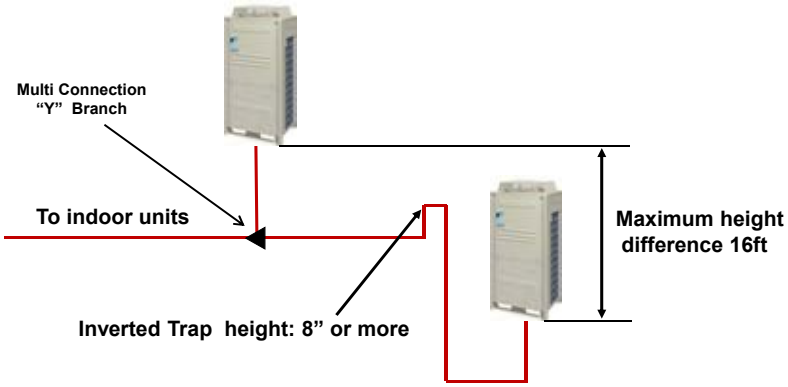


- Inverted oil traps are only required when manifolded *VRVIII* condensers have a horizontal separation of 6.5 ft. to 33 ft. measured from the First "Y" Branch to Module

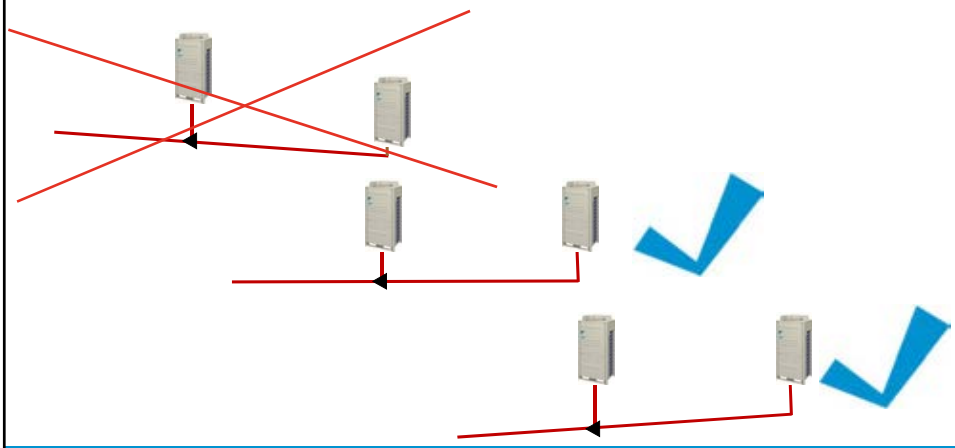
- Traps are installed on Gas line(s) only
- Traps must have a minimum of an 8 in. rise

NOTE: Refer to condenser installation manual for all refrigerant piping requirements

VRVIII Manifolded Systems
Module Interconnecting Piping Lengths



VRVIII Manifolded Systems
Module Interconnecting Piping Lengths



VRV

Indoor Units
Fan Coil & BS Box
Basic Installation

DAIKIN AC
absolute comfort

DAIKIN AC
absolute comfort

VRV Ducted Units

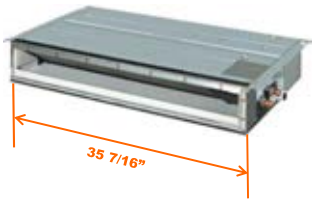
FXDQ_MVJU
Slim Duct Concealed

- Available from 7 MBtu to 24 MBtu
- Models: FXDQ07,09,12,18 & 24MVJU
  - Low Static (ESP .04 - .17 wg.)
  - Static Pressure can be selected with field setting at RC
- Fur-Down drop ceiling or minimal duct
- Low Profile – low sound level 36dB
- Standard Long Life Filter
- Condensate Lift Pump - 24” rise
- Field configured rear or bottom return
- Weight: 07,09,12 = 51 lb. 18 = 63 lb. 24 = 71 lb.

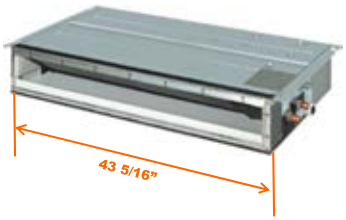
FXDQ Specifications

FXDQ07-09-12MVJU
H 7 7/8" / Depth 24 7/16"

FXDQ18MVJU
H 7 7/8" / Depth 24 7/16"



FXDQ24MVJU
H 7 7/8" / Depth 24 7/16"

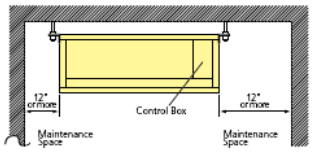


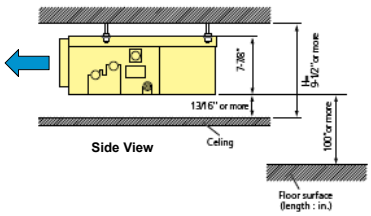
- Cabinet height and depth dimensions stay the same between capacity models. Only the width dimension changes

- External static pressure selectable by remote controller providing optimal flexibility and range of comfort.
  FXDQ07~12M models: in. Wg 0.12-0.04 factory set
  FXDQ18~24M models: in. Wg 0.16-0.06 factory set

FXDQ
Clearances
Return Configuration

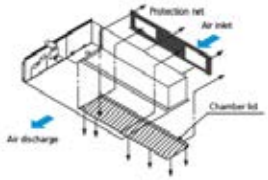
Front (discharge) View

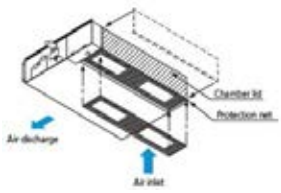




Side View

Coil can be field configured for rear or bottom return





FXDQ Slim Duct Built-in Concealed Installation Examples

For minimal ducted applications
10ft to 15ft maximum lengths

NOTE: For attic installations, entire fan coil cabinet must be wrapped with min. 1” insulation

Custom ducted applications for rectangular or round duct

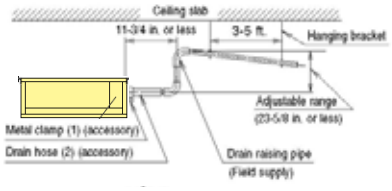
Field adjustable External Static Pressure adjustment (Standard / High) at the Remote Controller

Field supplied duct adapter

FXDQ
Condensate Removal - Lift Pump (Standard)

- Max. drain riser height: 24”
- Flexible, insulated drain coupling is included
- Max. riser pipe diameter from coil outlet: ¾” ID
  - Larger diameter pipe may generate an “AF” code
- Never connect drain piping to sewer vent

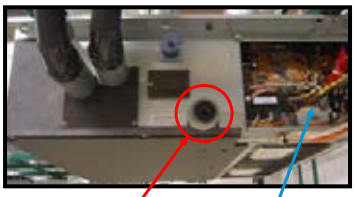
Fan Coil Installation Kit



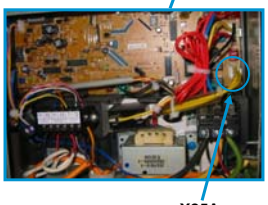
Lift Pump Piping

FXDQ
Condensate Removal - Gravity

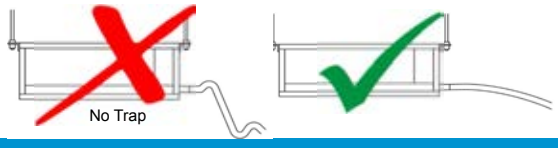
- Gravity Condensate Conversion
  - Unplug Lift Pump connector at PCB X25A
  - Remove coil drain plug and connect to drain piping
- Field supplied condensate drain pipe
  - Use flexible drain connector (Accessory)
  - Must not contain any traps or kinks in the line
  - Must maintain an even slope of 1/100 or greater



Drain Plug



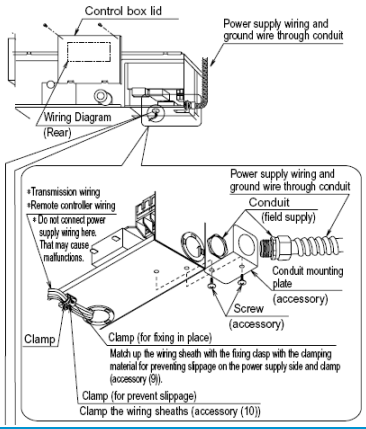
X25A



FXDQ Line voltage and Control Voltage

10-1 HOW TO CONNECT WIRINGS

- Wire only after removing the control box lid as shown in Fig. 14.



[Connecting electrical wiring, remote controller wiring, and transmission wiring] (Refer to Fig. 15)

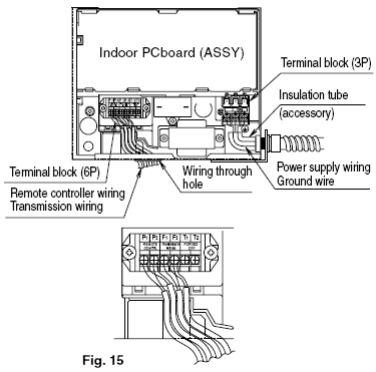


Fig. 15

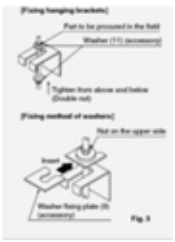
FXMQ_PVJU
DC Ducted Concealed

Models from 7 MBtu to 48 MBtu (FXMQ07- 48P)

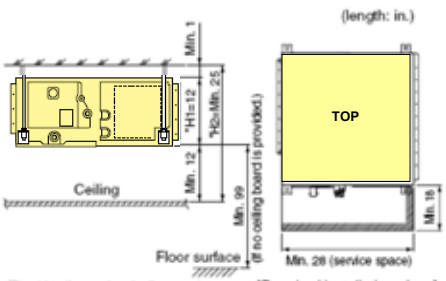
- Improved efficiency with our new DC (ECM) fan motor
- Medium ESP capabilities of up to 1" W.G
- "Auto" adjust or select SP range from Remote Controller
- 3 user select fan speeds available + Fan "Auto" Logic
- Low profile design – less than 12" high
- Built in Condensate Lift pump for 28" rise
- Field supplied filter box and filters
- Optional Filters (MERV 8 & 13)
- Mechanical service from below
- Weight: 55 lb. 07,09,12 80 lb. 18,24,30 102 lb. 36&48

FXMQ_PVJU
Installation

- Install Fan Coil with all-thread bolts
- Install nut and washer above and below each angle bracket
- Min. 1" open clearance from top of Fan Coil to bottom of structure
- Min. 28" X 18" service access on side



(2) Use hanging bolts to install the indoor unit. Check that the place of installation withstands the weight of the indoor unit. Secure the hanging bolts with proper beams if necessary.



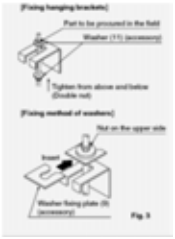
- The H1 dimension indicates the height of the product.
- Determine the H2 dimension by maintaining a downward slope of at least 1/100 as specified in "7. DRAIN PIPING WORK".

[Required installation place]
The dimensions indicate the minimum required space of installation.

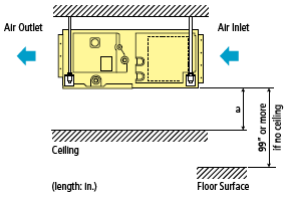
Fig. 2-1

FXMQ_PVJU
Installation

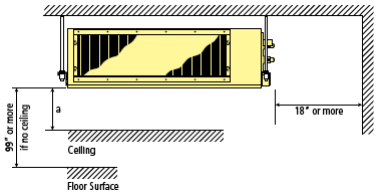
- Install Fan Coil with all-thread bolts
- Install nut and washer above and below each angle bracket
- Min. 1” open clearance from top of Fan Coil to bottom of structure
- Field supplied Supply Plenum



Side View



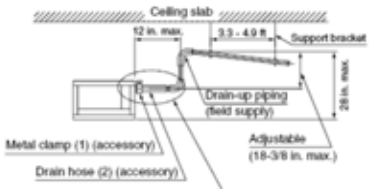
Front (discharge) View

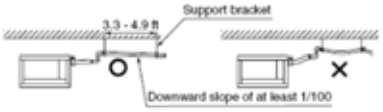


FXMQ_P
Condensate Removal - Lift Pump (Standard)

- Max. drain riser height: 28”
- Flexible, insulated drain coupling is included
- Max. riser pipe diameter from coil outlet: ¾” ID
  - Larger diameter pipe may generate an “AF” code
- Never connect drain piping to sewer vent
- Properly support the horizontal piping to eliminate piping deflection

Fan Coil Installation Kit



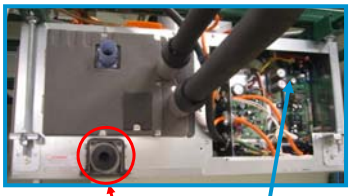


Lift Pump Piping

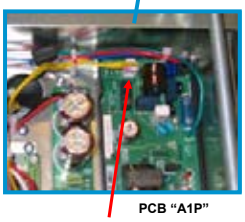
FXMQ_P

Condensate Removal - Gravity

- Gravity Condensate Conversion
  - Unplug Lift Pump connector at PCB (A1P) X25A
  - Remove coil drain plug and connect to drain piping
- Field supplied condensate drain pipe
  - Use flexible drain connector (Accessory)
  - Must not contain any traps or kinks in the line
  - Must maintain an even slope of 1/100 or greater

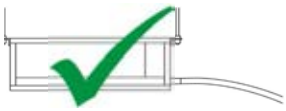


Drain Plug



PCB "A1P"

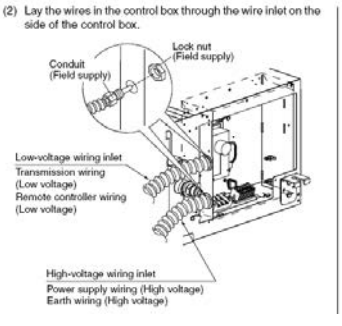
X25A

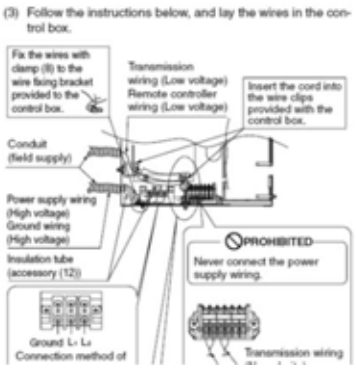


≥ 1/100*

FXMQ_PVJU

Line Voltage and Control Voltage





FXMQ_PVJU
MERV 13 Filter Kits

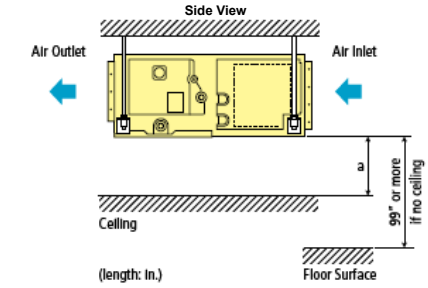
- Filter boxes are installed with “Keyhole” style attachment holes
- Filter access from RH or LH
- Static pressure ports are installed for manometer readings across filter media

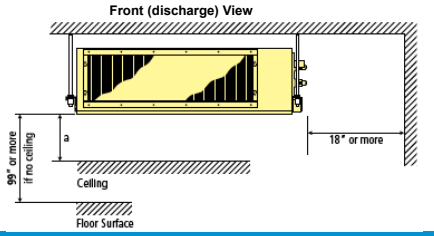
FXMQ_M Medium Static Ducted Unit

- FXMQ72 & 96MVJU
  - Greater design flexibility with a capacity range extended to 96MBH
  - Improved ductwork and filtration flexibility with high CFM and ESP capabilities of up to 1.1” W.G.
  - Field selectable static pressure
  - Low profile design of less than 19” high to reduce required installation space
  - Gravity condensate drain
  - Can be connected to all current North American 3 phase VRV Systems
  - Liquid Line Flare Connection – Gas Line is a brazed flange assembly
  - Weight: 302 lb.

FXMQ_MVJU
Installation

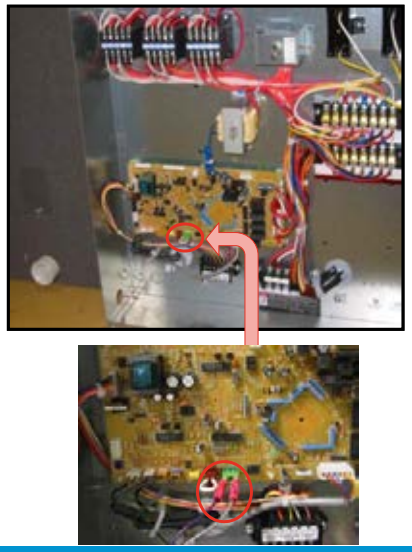
- Install Fan Coil with all-thread bolts
- Install nut and washer above and below each angle bracket
- Min. 1” open clearance from top of Fan Coil to bottom of structure
- Field supplied Supply Plenum





FXMQ_MVJU
Condensate Pump

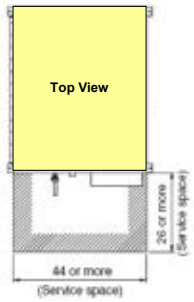
- A field supplied condensate pump must be used when gravity condensate removal is not possible
- Pump must be properly sized for the specific application
- Locate the X8A jumper on the FXMQ PCB and splice in the pump float switch wires

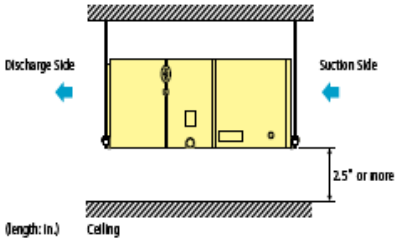


FXMQ_MVJU

Dimensions and Clearances

Capacity Model MBtu	72	96
Height	18 1/8"	18 1/8"
Depth	43 5/16"	43 5/16"
Width	54 3/8"	54 3/8"





FXTQ_PAVJU

Vertical Air Handler

- Offered in 8 model sizes from 12 MBTU's to 54 MBTU's
- Integrated EEV, PCB & Other Components
- Upflow and Horizontal Right configuration
- 208-230V/1/60Hz Power Supply
- Brazed Pipe Connections (1/4"x1/2" and 3/8"x5/8")
- Hi & Low Fan Speeds + Fan "AUTO" Logic
- ECM Blower Motor
- ESP automatically set based on installed ductwork (Max. 0.5" WG)
- Slide-in Electric Heater Options - 3kW to 20 kW
- NOTE: System Pressure Test to 450 psi only

FXTQ_PAVJU Multi-position Air Handler
Specifications

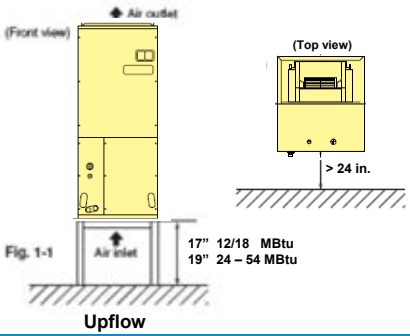
FXTQ12/18PAVJU

FXTQ24/30/36/42/48/54PAVJU

NOTE: High Efficiency Air Filters are not available for this product, and should not be used

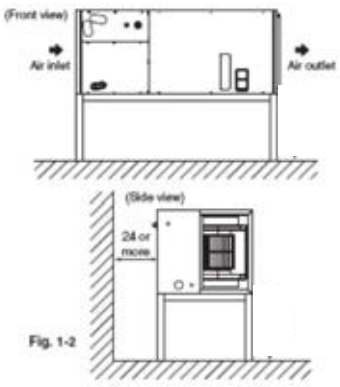
FXTQ_PAVJU
Installation

- The Fan Coil cabinet must be firmly supported on the bottom for upflow and the full underside when in the horizontal right position
- Insure that the cabinet is perfectly level



Upflow

Horizontal Right



FXTQ_PAVJU

Condensate Installation

- Fan Coil requires a “P Trap” for the condensate drain
- Copper type W, or sched’l 40 PVC tubing may be used for the condensate drain
- Provision should be made to clean the trap

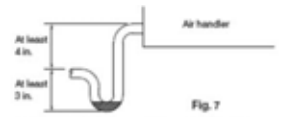


Fig. 7

• Observe the following guidelines when installing concentrated drain piping. Select the thickness of the concentrated drain piping to reflect the capacity of the machine to which it will be connected. (Install a drain trap for each indoor unit.) (Refer to Fig. 8)

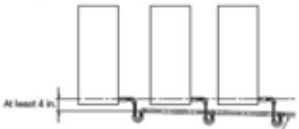
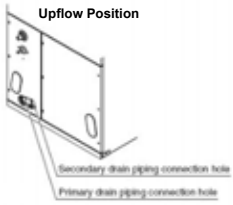
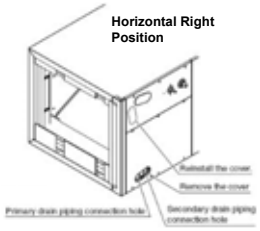


Fig. 8

Upflow Position



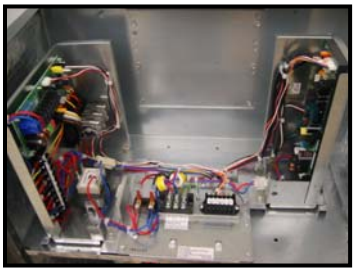
Horizontal Right Position



FXTQ_PAVJU

Line & Control circuits

- PCB’s, Line voltage and Control voltage connections
- Control transformer set for 240 vac
- For 208 vac power supply change transformer primary tap



Line Voltage Control Voltage

FXTQ_PAVJU
Temperature Control

- The **FXTQ-PAVJU** is <u>not</u> equipped with a return air sensor.

Temperature Control Options:

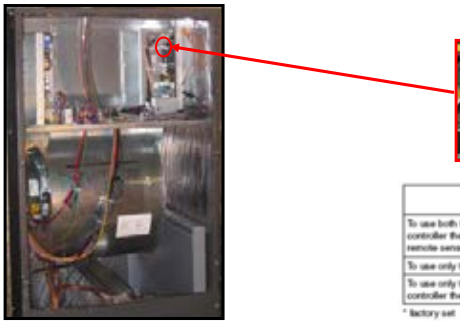
- BRC1E71 Remote Controller
- BRC2A71 Simplified <u>with</u> KRCS01-4B Remote Sensor
- KRCS01-4B Sensor Only

NOTE: BRC1E71 is factory default – Field setting change is required for Remote Sensor Applications

FXTQ_PAVJU
Remote Sensor Application

- KRCS01-4B Remote Sensor Connection
- Control application using Simplified RC or no RC
- Any application using the Remote Sensor requires a field setting change at the Remote Controller [**10**(20) **2**-**02**] "C9" or "CJ" fault code if field setting is not changed

KRCS01-4B Remote Sensor



X16A Remote Sensor Cable Connection

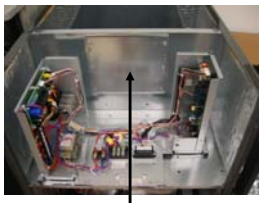
	Mode No.	FIRST CODE NO.	SECOND CODE NO.
To use both the remote controller thermistor and the remote sensor	10 (20)	2	01
To use only the remote sensor			02
To use only the remote controller thermistor			03*

* factory set

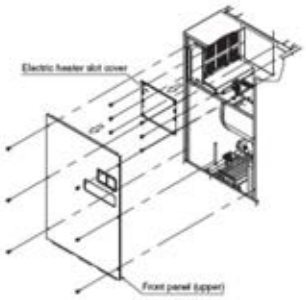
NOTE: Remote Sensor Cable uses a 4 pin (2-wire) connector at X16A

FXTQ_PAVJU
Optional Electric Heat Kit

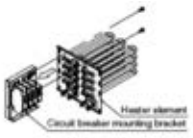
Strip Heat Modules
- SkyAir – 3kW to 10kW
- VRVIII-S – 3kW to 20kW



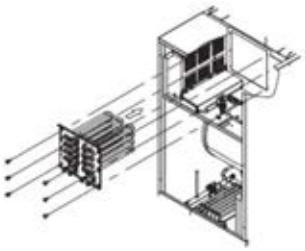
Electric strip heat module slot cover



Remove Top Access Panel and Heater Element Cover



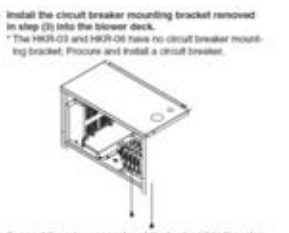
Install the Heater Element Module and Circuit Breakers



FXTQ_PAVJU
Optional Electric Heat Kit

Strip Heat Modules
- VRV – 3kW to 20kW

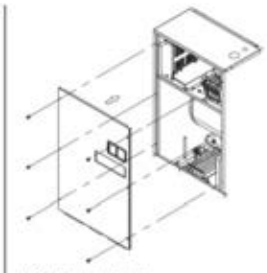
Install the heater circuit breaker Mounting Bracket and Circuit Breakers



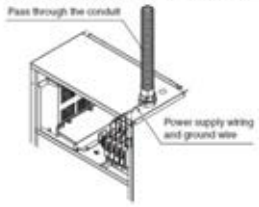
Connect heater relay harness to the harness on fan coil

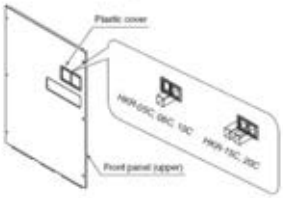
FXTQ_PAVJU
Optional Electric Heat Kit

- Install the line voltage wiring into top of cabinet
- Remove the breaker knockout cover on front panel
- Install Front Panel
- Field setting at remote controller is required



Pass the power supply wiring and the ground wire through the conduit (conduit should be field supplied). The hole for running wires through should be sealed completely to prevent air from entering.





(12) On-site setting of heater

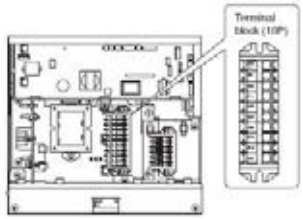
(12)-1 Electric heater capacity setting

Electric heater capacity setting (Optional kit)	Mode No.	FIRST CODE NO.	SECOND CODE NO.
HKR-03, 05, 06, 08, 10, 15, 20 type	11 (21)	5	01
Without heater			00*

* Factory set

FXTQ_PAVJU
Optional Humidifier and Air Purifier

- Field supplied accessories can be controlled
- Run the wires through the low voltage hole
- Connect the device control wires on Terminal Block 10P
- Field setting at remote controller is required for fan control

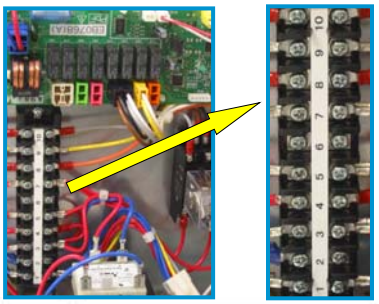


Terminal No.	Input/output signal
1, 2	Outputs: Indoor unit ON signal. (AC 24V)
3, 4	Outputs: Indoor unit cooling THERMO-ON signal. (AC 24V)
5, 6	Receives input: Air purifier operation ON signal. (dry contact)
7, 8	Receives input: Humidifier operation ON signal. (dry contact)
9, 10	Receives input: Forced closure of Indoor Unit Electronic Expansion Valve during cooling operation. (dry contact)

FXTQ_PAVJU

Humidifier Interlock

- New control logic has been added to improve humidifier integration
  - No additional control board is required
- Switches the indoor unit fan to high fan speed when the humidifier on signal is received
  - Terminals 7-8, dry contact
- The fan residual run on timer can be programmed on site from 30-120 seconds
  - Helps remove excess moisture from ductwork



Terminal No.	Input/output signal
7, 8	Receives input: Humidifier operation ON signal. (dry contact)

Mode No.	FIRST CODE NO.		01	02	03
14 (24)	4	FAN SPEED UNDER OPERATING purifier and humidifier	Refer to remote controller setting SPEED	H*	
14 (24)	5	FAN RESIDUE TIME FOR HUMIDIFIER	30 [sec]	60* [sec]	120 [sec]

* factory set

VRV Duct-free Units

- FXAQ (7/9/12/18/24)MVJU – (7,000 to 24,000 Btu/h)

Wall Mounted

- Very low sound levels
- Auto-swing feature ensures efficient air distribution
- Louvers automatically close when unit is turned off
- Wide air discharge outlet distributes a comfortable airflow through the entire space
- Flexible routing of refrigerant and condensate lines

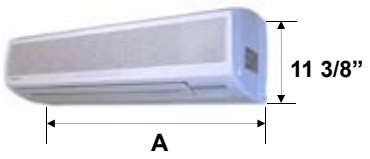
Options Include:

- Condensate Pump
- Controls

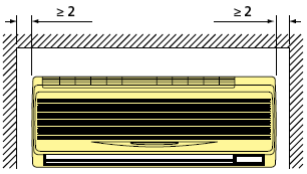
FXAQ Wallmount

Dimensions and Clearances

Capacity Model MBtu	07/09/12	18/24
A	31 1/4”	41 3/8”



[Space required for installaion (in.)]



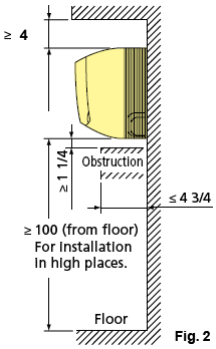


Fig. 2

FXAQ Wallmount

Dimensions and Clearances

- Select a location for the unit where the airflow will not be blocked
- Avoid locations exposed to direct sunlight
- Install the mounting panel securely to the wall with a minimum of 6 screws
- Refrigerant and Condensate piping may exit unit in one of 5 directions
- For surface exposed lines, use cutout for refrigerant and condensate lines

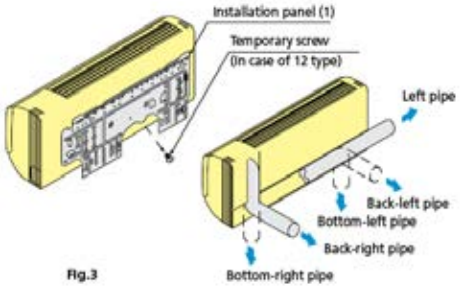


Fig.3

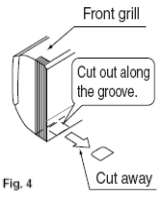


Fig. 4

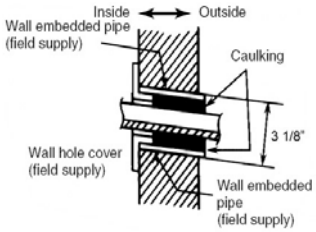
FXAQ

Wall Mounting Plate

FXAQ

FXAQ

- Installing refrigerant and drain pipe through exterior wall
  - For walls containing metal frame or siding, use field supplied conduit or grommet to prevent heat transfer, electrical shock or fire
  - Fill all gaps around the piping with caulk or putty to prevent water leaks
  - Drill or cut a 3 1/8" diameter hole
  - Insure that the hole has a slight down angle from the inside to the outside



FXAQ

Rear of Wall Mount Unit - Right hand exit

FXAQ

Rear of Wall Mount Unit - Left hand exit

FXAQ

Hook the indoor unit onto the installation panel. (Refer to Fig. 9)

- Placing buffering material between the wall and the indoor unit at this time will make work easier.

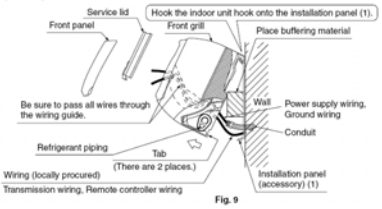
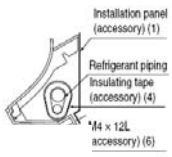


Fig. 9

Secure the indoor unit to the installation panel with the securing screws.



When making the penetration on the left side of the unit tuck the line set in the back of unit and wrap with felt tape.

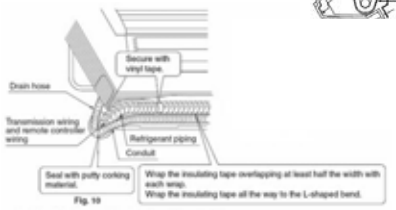


Fig. 10

- Seal the piping through-hole with putty corking material.

FXAQ

Gravity Drain

- The drain pipe should be short with a downward slope and should prevent air pockets from forming.
- Watch out for the points in the figure 16 when performing drain work.

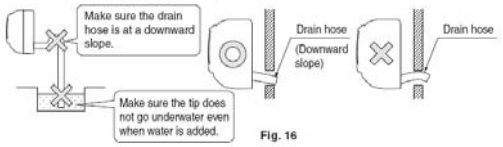


Fig. 16

- Make sure the diameter of the extension drain piping is the same as the indoor unit drain hose (hard vinyl chloride, I.D. 9/16") or bigger.
- In case of converging multiple drain pipes, install them referring to Fig. 18.
- Select diameter of drain piping which adapts to the capacity of the unit connected.

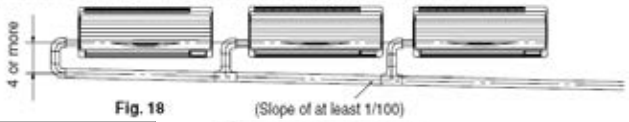


Fig. 18

When making the penetration on the left side of the unit it is possible to relocate the drain from right to left.

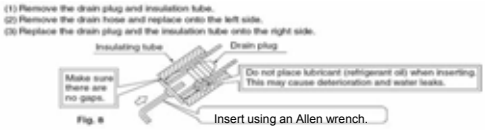
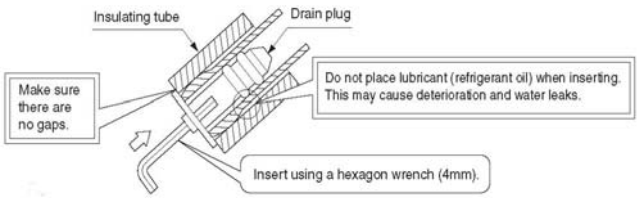


Fig. 8

FXAQ

Condensate Pump Right Hand Exit

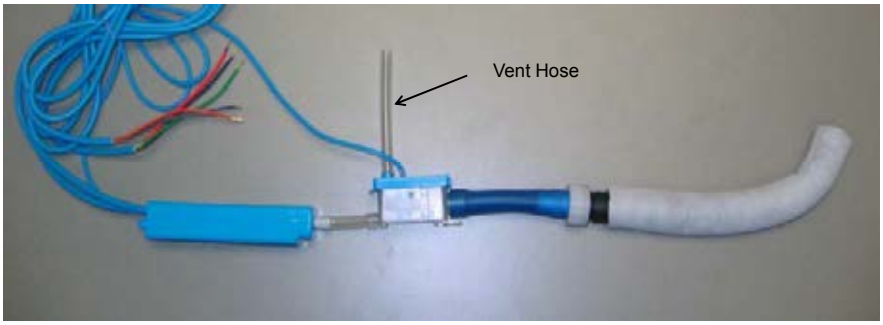
Drain from unit must be swapped to the left hand side (factory shipped right hand).



1. Remove the drain plug from left hand side. (see above) Plug can be twisted out carefully without tools. Use Allen wrench method if plug seems tight.
2. Grasp drain hose on unit very close to where it connects and gently twist out.
3. Swap Insulation tube.
4. Install drain plug in right hand side where drain hose was connected.

FXAQ
Condensate Pump Right Hand Exit

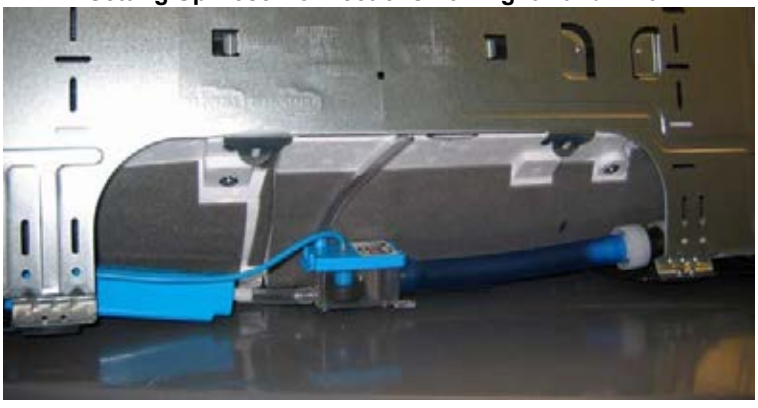
Complete Drain & Pump Assembly



Drain hose and fitting should be installed on Indoor Unit first.

FXAQ Condensate Pump

Setting Up Hose Connections For Right Hand Exit



Right Hand Exit View from Back

FXAQ

Condensate Pump Right Hand Exit

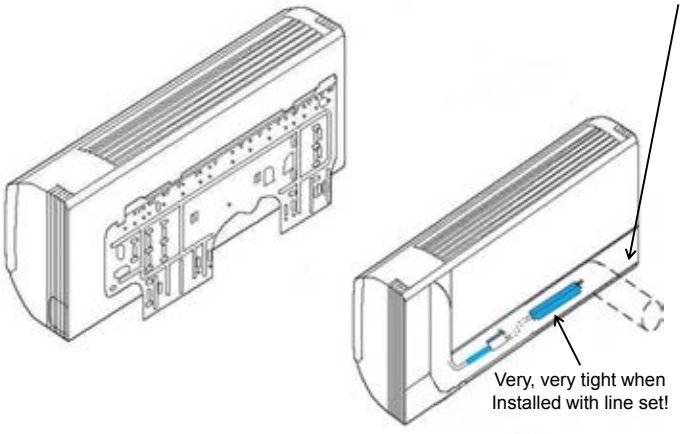
Setting Up Hose Connections For Right Hand Exit

Hold back insulation and push corrugated tubing into fitting.
After it bottoms out slide insulation back towards fitting.

FXAQ

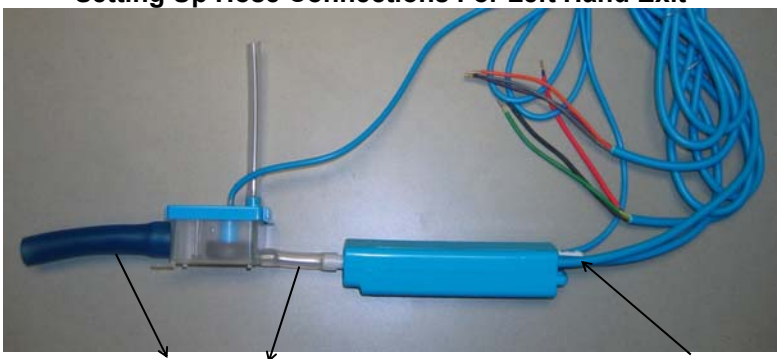
Condensate Pump Left Hand Exit

Using the left hand exit gives you very little room for the pump and float assembly



FXAQ
Optional Condensate Pump Kit

Setting Up Hose Connections For Left Hand Exit



Cut tubing as you assemble pump, line set and drain assembly

Pump outlet connection. Run to main drain of building or equivalent.

Verify lubing lengths before cutting. Lengths may vary depending on installation.

VRV
DIII-Net
Alternate Condensate Safety

Alternate float switch connection from T1 T2 Forced Off to PCB jumper X15A or X8A . Interruption of safety through jumper disables operation of connected fan coil only, remaining fan coils continue full cool operation. Outdoor unit operation is not affected.

X8A Jumper

FXLQ/FXNQ

X8A Circuit interruption disables fan coil and generates an "A3" code

Splice in optional condensate pump float switch leads to jumper using crimp butt connectors or solder

FXAQ

X15A Circuit interruption disables fan coil and generates an "A3" code

FXHQ

X8A

X15A Jumper

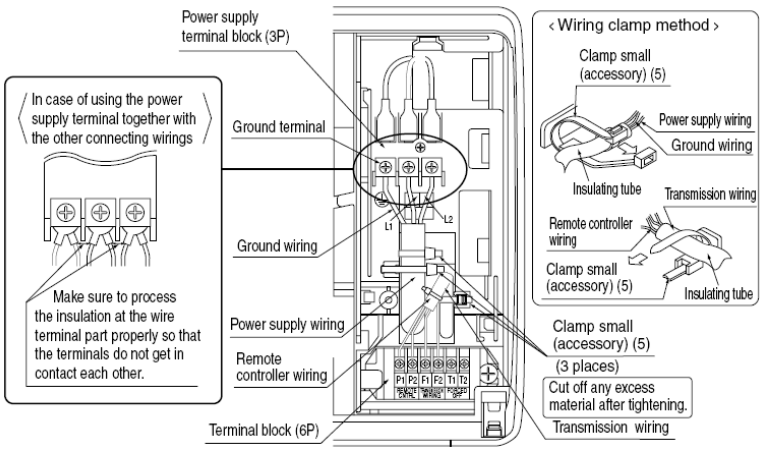
FXAQ

Priming Pump

Don't forget to prime pump! The pump will buzz for a minute of two while it is pulling the water through itself.

FXAQ

Wiring Connections



FXFQ (7/9/12/18/24/30/36)**M**VJU

3x3 4-Way Ceiling Cassette,

- Sound pressure levels as low as 28dB(A)
- Space-saving above ceiling height of unit less than 12”
- Selectable auto-swing louver positions
- Simple installation with easy-fit decorative panel
- Service access through RA grille – washable filter
- Condensate lift pump up to 22”
- Field configured for 2 or 3 way air discharge
- Branch duct provision
- Fresh-Air inlet provision

Options include:

- High efficiency air filter
- Fresh air intake kit
- Controls

FXFQ *Round Flow*

FXFQ (9/12/18/24/30/36/48)**P**VJU

(9,000 to 48,000 Btu/h)

Round Ceiling Cassette, 3’x3’ (33”x33”)

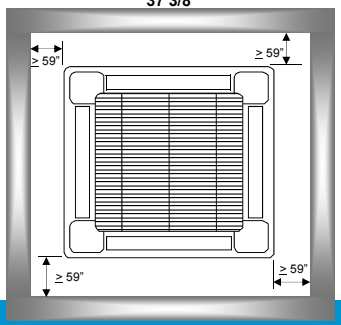
- 360° airflow for enhanced air distribution
- Space-saving above ceiling height of unit less than 12”
- Unit weight: 43lb. to 55lb.
- Service access through RA grille – washable filter
- Condensate lift pump max. 33”
- 3 selectable fan speeds
- 23 field configured air discharge patterns
- Fresh-Air inlet provision

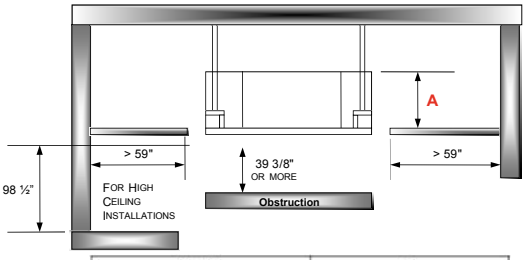
FXZQ

- FXZQ (7/9/12/18)MVJU– (7,000 to 18,000 Btu/h)
  - *2 x 2 4-Way Ceiling Cassette*
    - Sound pressure levels as low as 25dB(A)
    - Space-saving above ceiling height of unit less than 12”
    - Selectable auto-swing louver positions
    - Simple installation with easy-fit decorative panel
    - Service access through RA grille – washable filter
    - Condensate lift pump up to 22”
    - Field configured for 2 or 3 way air discharge
    - Fresh Air Inlet provision

      Options include:
      - Fresh air intake kit
      - Controls

FXFQ_M 3’ x 3’
Installation



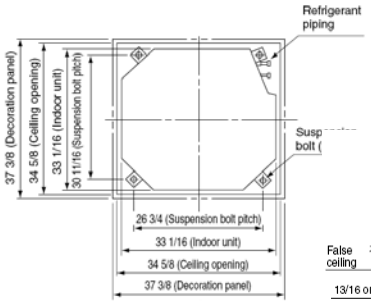


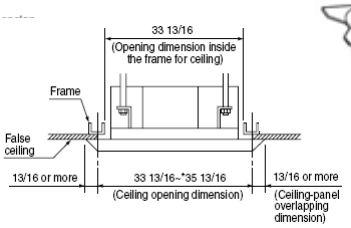
Model	H
FXFQ12, 18, 24MVJU	9 7/16” or more
FXFQ30, 36MVJU	11 3/4” or more

	07/09/12/18/24	30/36
A	9 1/8”	11 3/8”

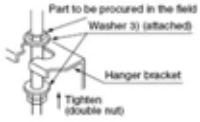
FXFQ
Installation

Use suspension bolts for installation. Check whether the ceiling is strong enough to support the weight of the unit or not. If there is a risk, reinforce the ceiling before installing the unit.





• Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.
The washer fixing plate 7) will prevent the washer from falling.

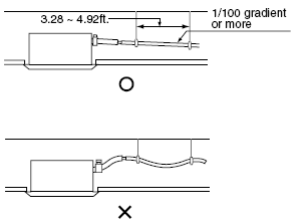


[Securing the hanger bracket]

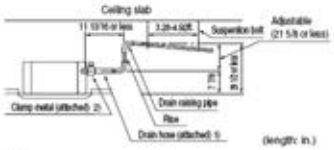
[Securing the washer]

FXFQ_P
Installation

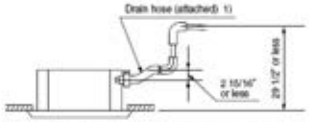
- Max. drain riser height: 33 1/2”
- Flexible, insulated drain coupling is included
- Max. riser pipe diameter from coil outlet: ¾” ID
  - Larger diameter pipe may generate an “AF” code
- Never connect drain piping to sewer vent



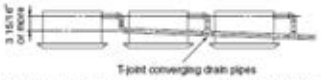
• Install the drain raising pipes at a height of less than 21 5/8".
• Install the drain raising pipes at a right angle to the indoor unit and no more than 11 13/16" from the unit.



NOTE
• The incline of attached drain hose 1) should be 2 15/16" or less so that the drain socket does not have to stand additional force.



• If converging multiple drain pipes, install according to the procedure shown below.



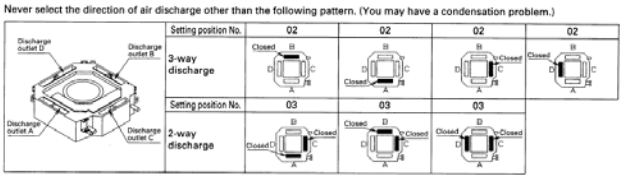
Select converging drain pipes whose gauge is suitable for the operating capacity of the unit.

FXFQ

Installation

Caution

Never select the direction of air discharge other than the following pattern. (You may have a condensation problem.)



It is required to make a local setting on the remote controller according to the installation of indoor unit.
The direction of air discharge should also be set by the remote controller.

- The 3 different kind of setting such as "Mode number", "The setting switch number" and "The setting position number" should be made by the remote controller.
- Refer to the item of "Local setting" on the operation manual of the remote controller for the setting procedure.

(1) Set according to the table of "The direction of air discharge and the installation of the sealing material". Check the setting position number corresponding to the direction of air discharge.
(2) Refer to the item of "Local setting" of the operation manual for the remote controller and change the setting according to the position determined by (1) as shown in the table below.

	Mode number	Setting switch number
Setting of the direction of air discharge	13 (23)	1

(Ceiling Height is reference value)

		~71 type			80~125 type			Ceiling height setting position number
		4-way air outlet	3-way air outlet	2-way air outlet	4-way air outlet	3-way air outlet	2-way air outlet	
Ceiling height	Standard	~2.7	~3	~3.5	~3.2	~3.6	~4.2	01
	Semi-high	2.7~3	3~3.3	3.5~3.8	3.2~3.6	3.6~4	~4.2	02
	High	3~3.5	3.3~3.5	——	3.6~4.2	4~4.2	——	03

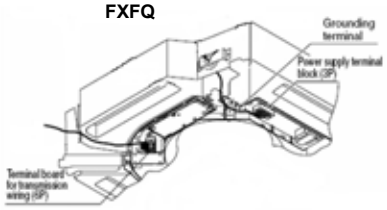
Caution

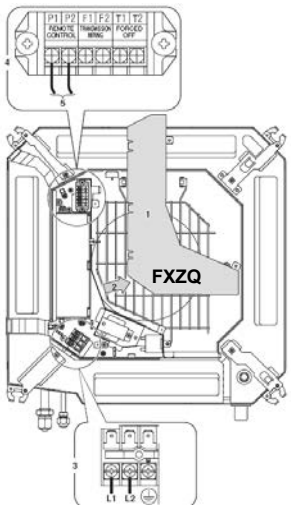
Refer to the table for the height of the ceiling for each direction of air outlet. (The setting of the ceiling height is also required.)

FXFQ/FXZQ

Electrical Installation

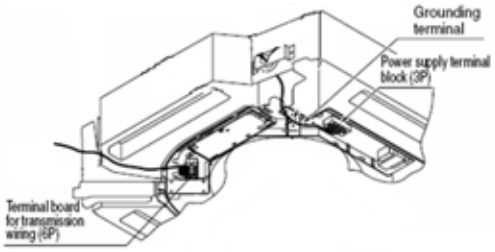
FXFQ





FXFQ
Installation

Electrical Specifications



Model	Power supply wiring		Transmission wiring	
	Field fuses	Size	Wire	Size
FXFQ12 MVJU FXFQ18MVJU FXFQ24MVJU FXFQ30MVJU FXFQ36MVJU	15A	Wire size must comply with local codes.	Sheathed wire (2 wire)	AWG 18-16

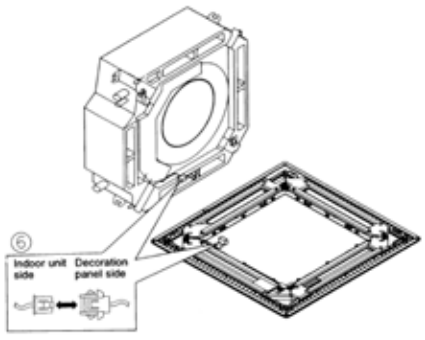
Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MFA	W	FLA
FXFQ12 MVJU	60	208-230V	Max. 253 Min. 187	0.6	15	45	0.5
FXFQ18 MVJU				0.7	15	45	0.6
FXFQ24MVJU				0.8	15	45	0.6
FXFQ30MVJU				1.2	15	90	1.0
FXFQ36MVJU				1.2	15	90	1.0

MCA: Min. Circuit Amps (A) MFA: Max. Fuse Amps (A)
kW: Fan Motor Rated Output (W) FLA: Full Load Amps (A)

FXFQ
Decoration Panel
Electrical Installation

Make sure that the swing flap motor lead wire is not caught between the indoor unit and the decoration panel.

NOTE: If power swing flap connectors from the decoration panel to the fan coil are not connected, an "A7" fault code is generated



FXFQ

Decoration Panel Installation

Mounting loop

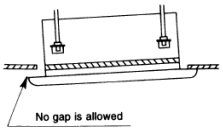
Mounting tab

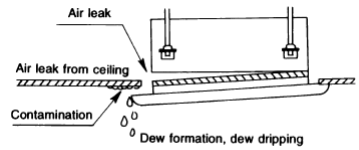
Adjustment Screw

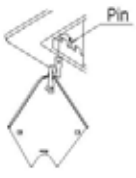
FXFQ

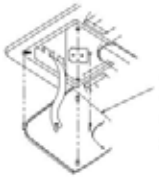
Face Plate Installation

- If gap is still left between the ceiling and the decoration panel after screwing the screws, readjust the indoor unit body height. (Refer to Fig.6)







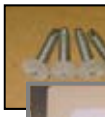


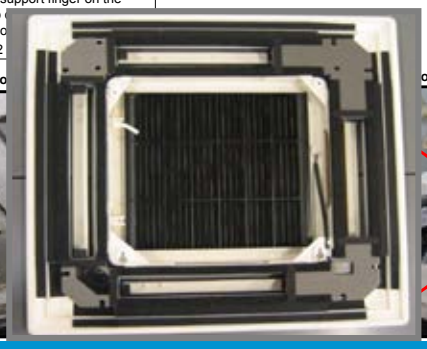
Install the service cover by sliding 4 latches to fit into the holes on the decoration panel.

FXZQ 2'x2' Ceiling Cassette

Decoration Panel Installation

- Install 2 of the 4 supplied mounting screws into the designated fan coil mounting straps
- Install the elongated mounting holes of the decoration panel onto these 2 screws to hold panel in place
- Rotate the swivel support finger on the
  er the tab
  e to suppo
  maining 2





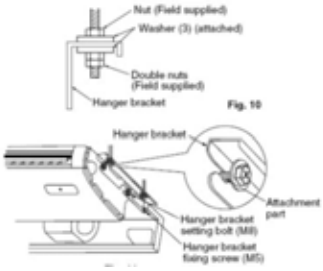
FXHQ

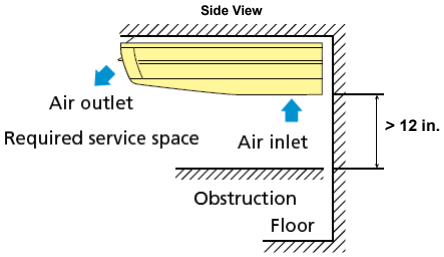
- FXHQ (12/24/36)MVJU – (12,000 to 36,000 Btu/h)
  - *Ceiling Suspended*
    - Slim design – less than 8" high
    - Wide air discharge outlet distributes a comfortable airflow throughout the entire space
    - Gravity condensate drain
    - Standard equipped with a washable, long-life, mildew-proof filter
    - Long Air Throw 15-20 ft
    - Direct Fresh Air Possible

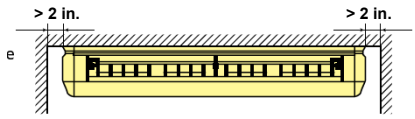
      Options Include:
      - Condensate Pump
      - Controls

FXHQ
Installation

- Max. ceiling height: 10.6 ft
- Fasten unit with 4 suspension bolts
- Insure building structure will support unit
- Hanger bolts and hardware field supplied
- Insure unit is installed level for proper condensate draining.



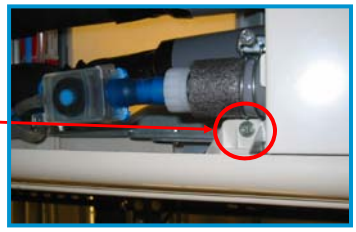




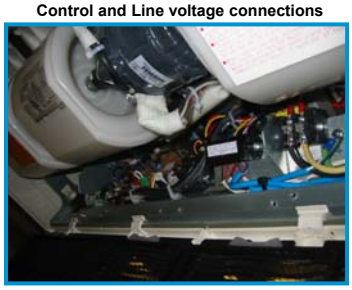
FXHQ
Installation

- **Easy side panel removal with a single screw**
- **Optional Condensate Pump**
- **PCB with Line and Control Voltage Terminals**

Unit Bottom View



Control and Line voltage connections

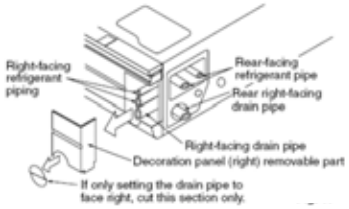


Unit Side View

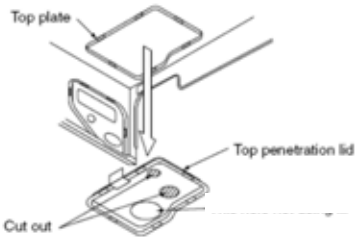
FXHQ Refrigerant & Condensate Lines

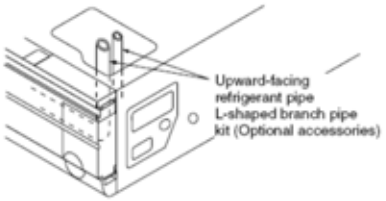
- Refrigerant lines may be run through the top access
- Refrigerant and condensate lines may be run through right rear or side of unit.

Refrigerant Lines & Drain through RH rear or side



Refrigerant Lines through top RH





FXLQ

- FXLQ (12/18/24)MVJU – (12,000 to 24,000 Btu/h)
  - *Floor Mounted*, Exposed
    - Unit requires minimal installation space
    - Standard equipped with a washable, long-life, mildew-proof filter
    - Space-saving unit can be mounted freestanding or secured directly to the wall
    - Gravity condensate drain
    - Optional Condensate Pump

FXNQ

- FXNQ (12/18/24)MVJU – (12,000 to 24,000 Btu/h)
  - *Floor Mounted*, Concealed
    - No panels for custom enclosure installation
    - Unit requires minimal installation space
    - Standard equipped with a washable, long-life, mildew-proof filter

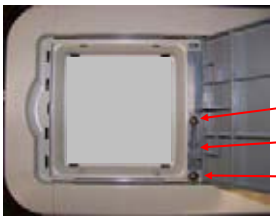
Options Include:

- Condensate Pump
- Controls

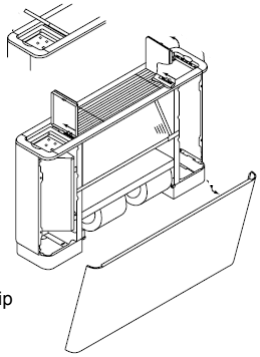
FXLQ

Remove and Replace Front Panel

- Open upper right and left access lids
- Remove the locking screw for each slide clip
- Loosen front slide clip screw – RH LH
- Move both right and left slide clips toward rear
- Lift the top grille panel
- Remove front panel – top forward
- Reverse procedure



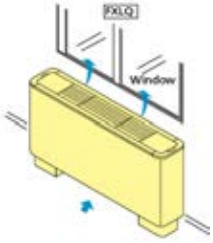
Top LH View

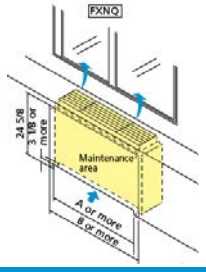


FXLQ/FXNQ

(1) Select an installation site where the following conditions are satisfied and that meets with your customer's approval.

- Where the floor is strong enough to bear the indoor unit weight.
- Where the floor is not significantly inclined.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where sufficient clearance for installation and maintenance can be ensured.
- Where optimum air distribution can be ensured.
- Where there is no risk of flammable gas leakage.
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual of the outdoor unit.)

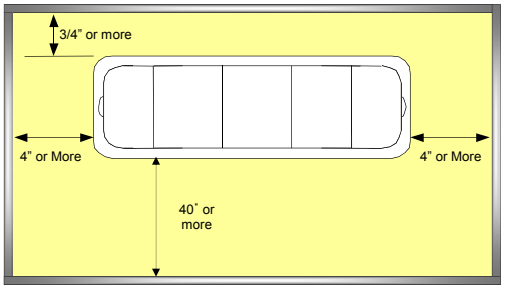


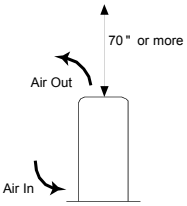


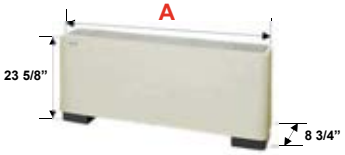
Model	A (in.)	B (in.)
FXNQ12MVJU	28	46
FXNQ18 · 24MVJU	39	57

FXLQ/FXNQ

Floor Mounted Clearances





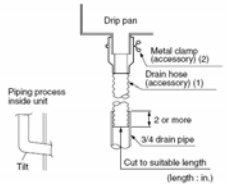


	12	18	24
A	44 7/8"	55 7/8"	55 7/8"

FXLQ/FXNQ Condensate Drain

Standard Gravity Condensate Drain

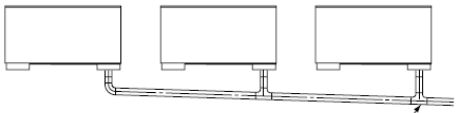
Connect the drain hose (1) using the attached hose and parts, as shown in the right drawing.



OR

Optional Self priming Condensate Pump Kit

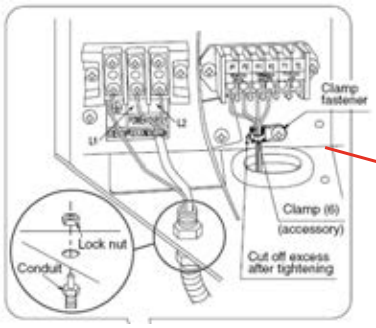
- If converging multiple drain pipes, install according to the procedure shown below.



Slope downwards at a gradient of at least 1/100

FXLQ/FXNQ

Wiring Connections & Electrical Specifications

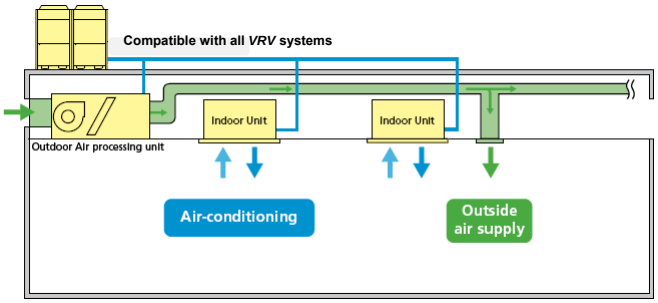


Slide out filter for cleaning

Model	Power supply wiring		Remote controller wiring Transmission wiring	
	Field fuses	Size	Wire	Size
FXLQ12 · 18 · 24 MVJU FXNQ12 · 18 · 24 MVJU	15A	Size must comply with local codes.	Sheathed wire (2 wire)	AWG 18-16

VRV 100% OA Processing Unit

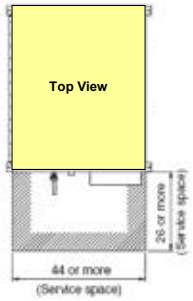
- FXMQ (48/72/96)MFVJU
  - *4, 6 & 8 Ton capacity models*
  - *ESP Max. 1.03" w.g.*

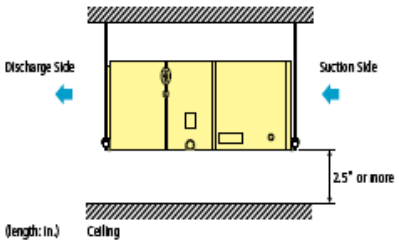


FXMQ_MFVJU

Dimensions and Clearances

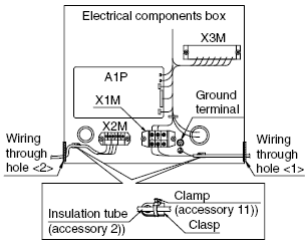
Capacity Model MBtu	48	72/96
Height	18 ½"	18 ½"
Depth	43 ½"	43 ½"
Width	29 ¼"	54 3/8"





FXMQ_MFVJU
Electrical

- Line and Control circuits
  - *Line voltage to X1M*
  - *Control voltage to X2M*



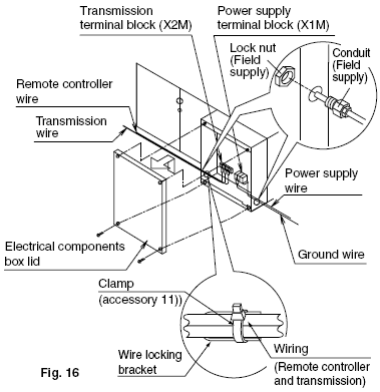


Fig. 16

FXMQ_MFVJU
Control

- Unit is controlled by a programmed Field Setting for Heat and Cool discharge air temperature

11-4 Setting air discharge temperature

- Change the SECOND CODE NO. according to Table 5 depending on user's need.
  (SECOND CODE NO. is set to "06" for cooling "08" for heating at factory set)

Table 5

		for cooling	for heating
Mode No.		14 (24)	14 (24)
FIRST CODE NO.		3	4
SECOND CODE NO.	01	55°F	64°F
	02	57°F	66°F
	03	59°F	68°F
	04	61°F	70°F
	05	63°F	72°F
	06	64°F	73°F
	07	66°F	75°F
	08	68°F	77°F
	09	70°F	79°F
	10	72°F	81°F
	11	73°F	82°F
	12	75°F	84°F
	13	77°F	86°F

NOTE

Air discharge temperature is not displayed on remote controller.

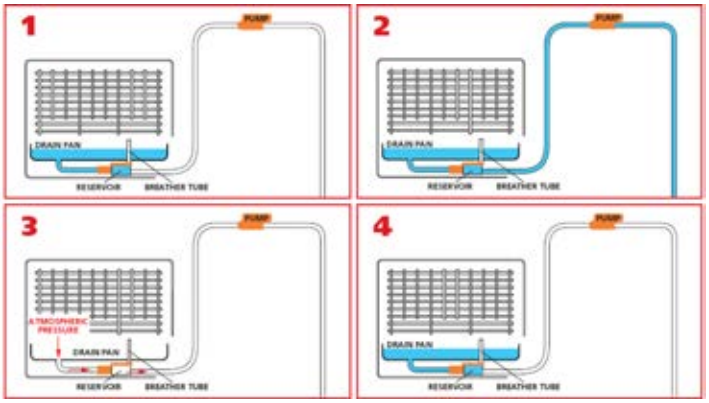
DACA CP1-1 & CP2-1 Condensate Pump

Installation Tips

- DACA condensate pumps must be installed properly to insure maximum performance and reliable service life
- DACA Condensate pumps do not include discharge tubing
- Condensate pump and float reservoir must be accessible for routine maintenance
- Connect float safety to **T1 T2** on fan coil terminal block

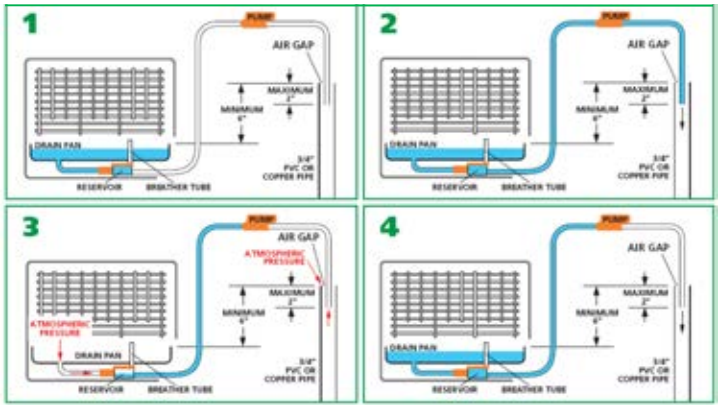
Incorrect Condensate Pump Installation

Incorrect Discharge pipe routing can create siphoning through pump motor causing dry start cycles



Correct Condensate Pump Installation

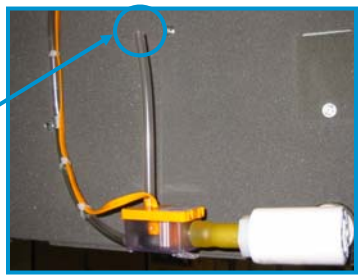
Discharge tubing must be terminated above the level of the condensate drain pan including an air gap when draining into a main drain line.



DACA CP1-1 & CP2-1 Condensate Pump

Installation Tips

- Insure that the float reservoir vent tube opens above the condensate drain pan
- The Float switch reservoir is a maintenance item and must be cleaned on a regular basis



VRVIII & VRV-WIII

BSVQ_PVJU Single Port Branch Selector Box

- 36, 60 & 96 capacity models
- Line voltage powered 208/230vac 1 Ph.
- Weight: 36/60: 26 lb. 96: 33 lb.
- Refrigerant Braze Connections
- BS Box must be installed level

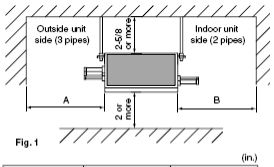
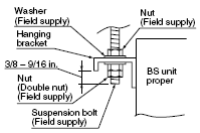
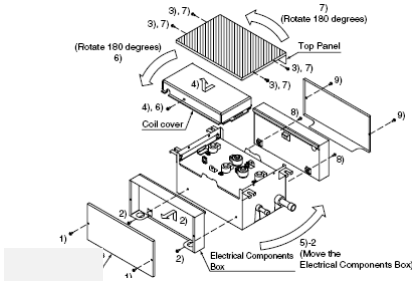


Fig.1

(in.)

BS Unit Name	A	B
BSVQ36P	10 or more	10 or more (*1)
BSVQ60P	10 or more (*2)	10 or more (*2)
BSVQ96P	12 or more (*3)	12 or more (*3)



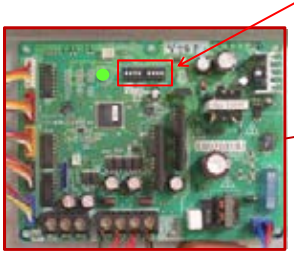


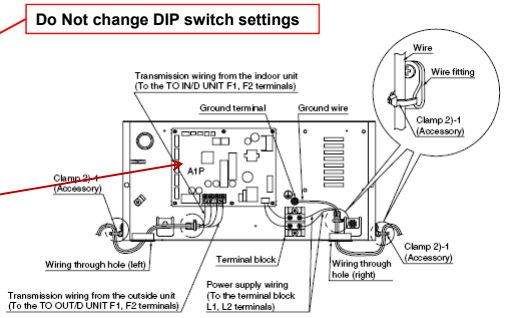
VRVIII & VRV-WIII

BSVQ_PVJU Branch Selector Box

- Branch Selector Box must be installed level
- Control circuit is daisy chain wired
- Field Reversible Electrical Box
- Green status LED

Do Not change DIP switch settings





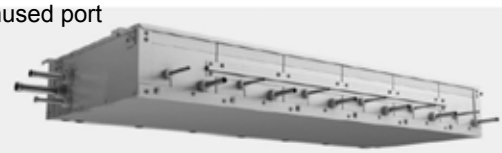
NOTE: All Expansion Valves close when power Is applied to the BS Box

BSV4/6Q36PVJU

Centralized 4-Port & 6-Port Branch Selector Box

BSV4Q36PVJU 4 - Port

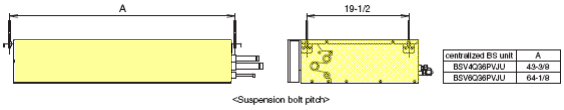
- BS box must be installed level
- Install unit with suspension bolts
- Line voltage powered 208/230vac 1 Ph.
  - MCA: .4/.6 amp
- BS Box shipped with all EEV's in open position
  - All EEV's close when line voltage power is applied
- All braze refrigerant connections
- "Closed Pipe Kit" is available for 1 unused port
- No condensate drain is required



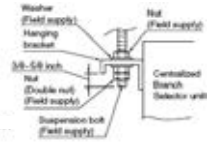
BSV6Q36PVJU 6 - Port

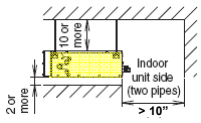
BSV4/6Q36PVJU

Installation



- Install the Centralized BS box right side up only and level
- Allow for proper service clearances
  - Suspend with 3/8" or 5/16" Suspension bolts
    - Secure bolts with nut and washer above and below each angle bracket
    - Allow a minimum of 10" clearance above BS box
    - Refer to Installation Manual for all clearances
  - Support refrigerant lines within 40" or less of BS box

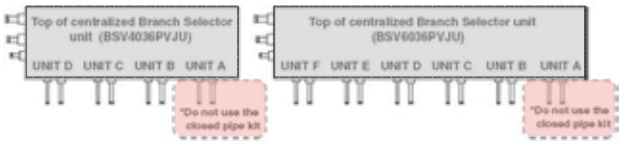




BSV4/6Q36PVJU
Installation

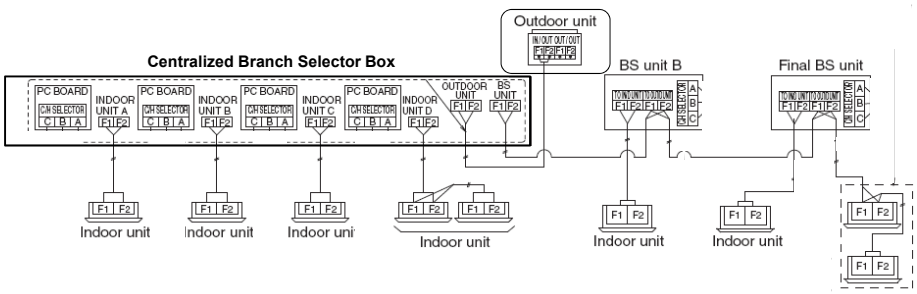
Optional KHFP26A100C “Closed Pipe Kit”

- A maximum of one closing kit per Branch Selector is allowed.
- A maximum of two closing kits per outdoor unit system are allowed.
- Do not use this closed pipe kit for the branch that is the furthest from the three-pipe side of the centralized Branch Selector unit.



BSV4/6Q36PVJU
Installation – Control Wiring

- Standard Daikin control wire specification



VRV *Local* Controls
Control Wiring

DAIKIN AC
absolute comfort

DAIKIN AC
absolute comfort

VRV Local Remote Controllers

BRC1E71

Navigation
Remote Controller

BRC2A71

Simplified

BRC7C/7E/4C

Wireless

KRCS01-1B (4B) Remote Sensor

- *VRV* Fan Coil Units incorporate a built-in return air thermistor temperature sensor as standard (excl. FXTQ)
  - KRCS01-1B Remote Sensor is offered to replace the return air thermistor when:
    - Outside fresh air is brought in to the fan coil return air
    - Ceiling height of fan coil return is 13ft or more
    - Above ceiling plenum return is used
  - Standard 39ft cable - Plenum Rated 40ft and 80ft cable optional (KRCS01-1B)

NOTE: **KRCS01-4B Remote Sensor Kit for FXMQ_P and FTQ/FXTQ Fan Coil Units**

VRV
Control Circuit Terminal Designations

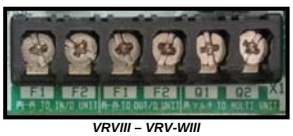
- Fan Coil Control Terminal Circuits
  - **P1 P2** – Fan Coil to Remote Controller
    - Remote Controller power supply and data transfer
  - **F1 F2** – Condenser to Fan Coil Communications
  - **T1 T2** – Forced Off (Default N.O.) External Contacts

All *VRV* Fan Coils

- Branch Selector Box
  - **F1 F2 Out** – BS Boxes to Condenser F1 F2 In
  - **F1 F2 In** – BS Box to Fan Coil F1 F2

BSVQ BS Box

- Condenser Control Terminal Circuits
  - **F1 F2 In** - Condenser to Fan Coil(s) or BS Boxes
  - **F1 F2 Out** – Centralized Controller
    - I-Touch
    - Gateway – Lon Works or BACnet
  - **Q1 Q2** – Manifolded Modules

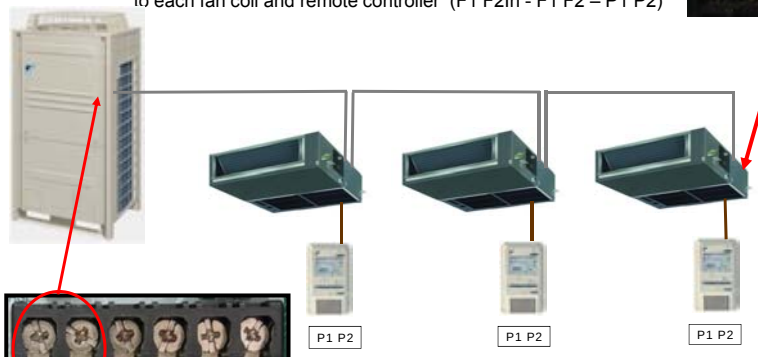


VRVIII – VRV-WIII

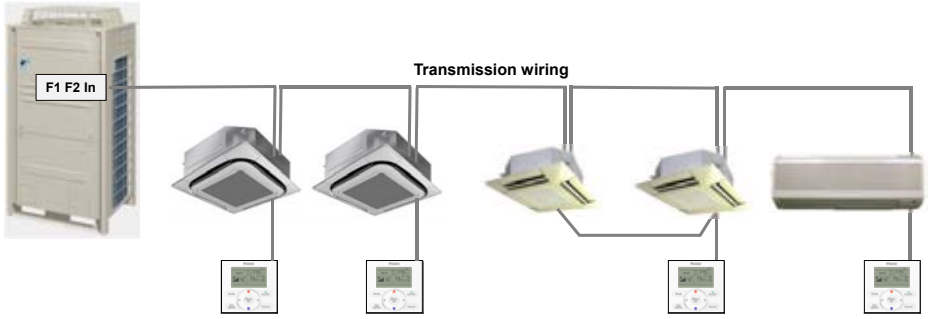
VRVIII-S

VRV Basic Control Wiring

- Control Wire
  - 18 AWG – 2-Conductor – Stranded - Non-Shielded
  - Daisy-chain wiring
  - Two conductor terminal connections from Outdoor unit to each fan coil and remote controller (F1 F2In - F1 F2 – P1 P2)

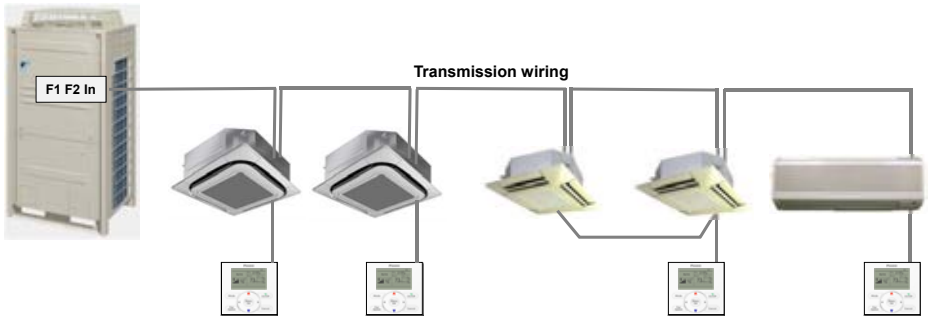


Daikin DIII-Net Communications



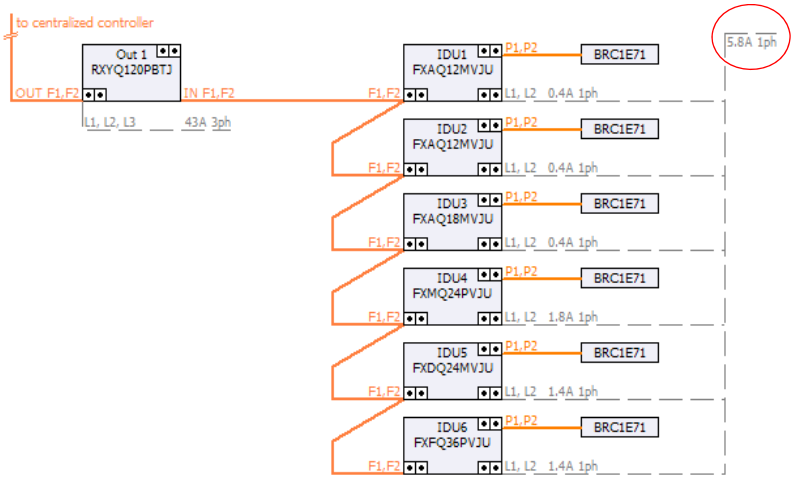
- Proprietary to *Daikin* ***VRV*** systems (single and three phase)
- Reliable 2-wire, 16vdc circuit
- Maximum control system wire length: 6,600 ft.
- Maximum single cable length: 3,300 ft
- Maximum cable length from Remote Controller to Fan Coil: 1,640 ft.

Daikin DIII-Net Basic Installation

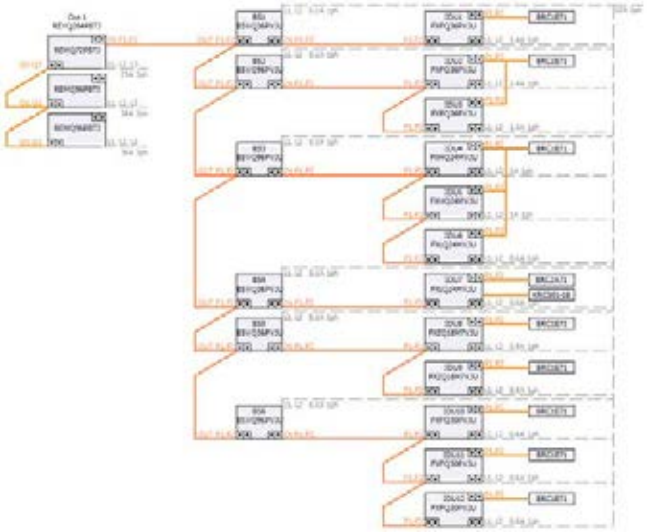


- Robust communications with no termination resistors or signal repeaters
- Avoid splices – no wire nut connections
- Do not strap control wiring to conduit with ac voltage or ac wiring (24 vac)
- Avoid “Star” or “Homerun” wiring
- Shield not required but if used, ground one end at every component

VRV Xpress HP Wiring Report

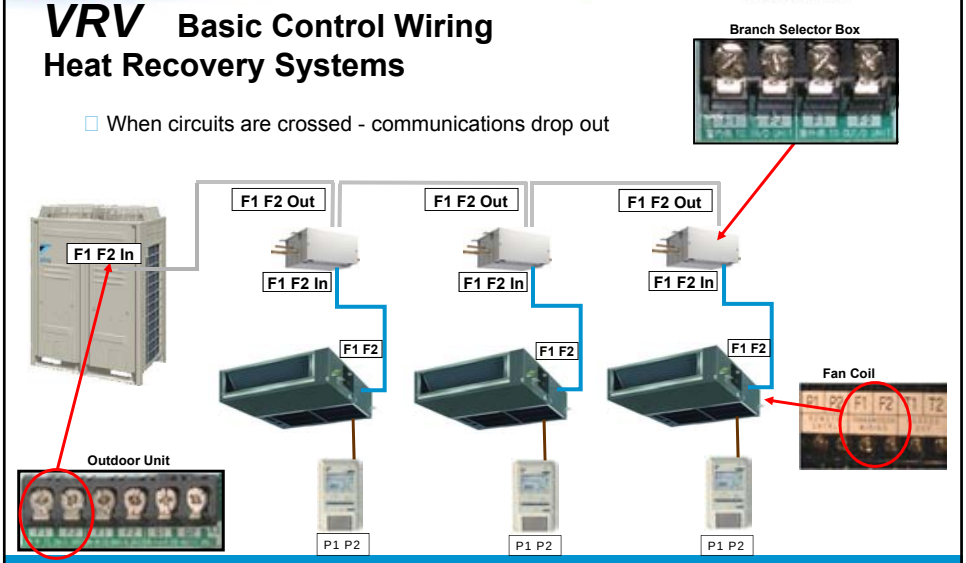


VRV Xpress
Heat Recovery Control Wiring Report



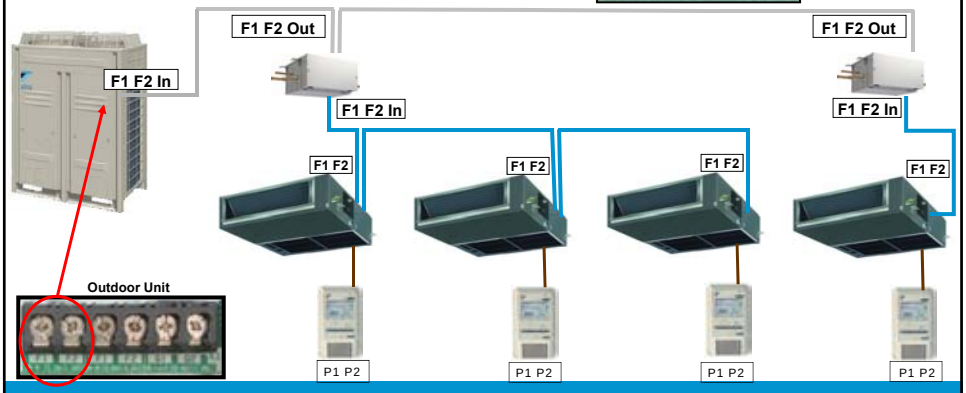
VRV Basic Control Wiring
Heat Recovery Systems

- When circuits are crossed - communications drop out



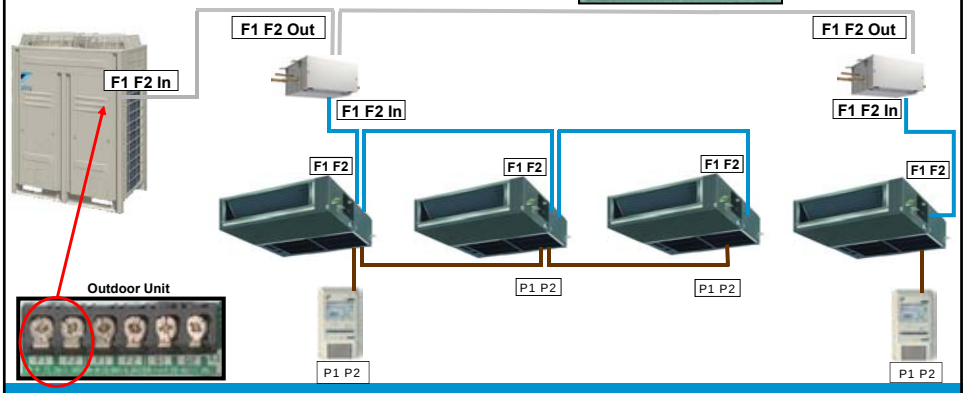
VRV Basic Control Wiring
Heat Recovery Systems

- BS Boxes will control multiple fan coils
  - Daisy chain wiring to connect all fan coils



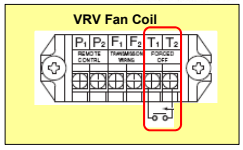
VRV Basic Control Wiring
Heat Recovery Systems

- Single Remote Controller on multiple fan coils
  - Daisy chain wiring to connect RC to all fan coils



VRV Basic Control Wiring
Fan Coil T1 T2 Forced Off

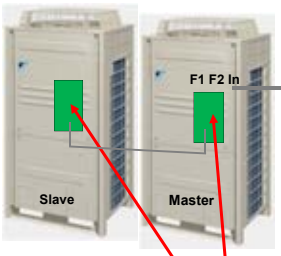
- ***VRV*** Fan Coil control includes selectable **Forced Off** operation from an outside safety device (dry contact) using the T1 T2 terminals
  - Optional Condensate Pump Float Switch
  - Motion Sensor or Door Switch
  - Card Key Remote Start/Stop
  - Fire Safety System
- Factory Default - Forced Off (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 /Condenser Stop – **AO** Fault Code on connected RC, other RC's indicate **U9** Fault Code
  - Auto reset on contact close

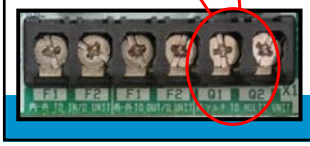


External Input	Mode No.	1st Code No.	2nd Code No.
Forced Off	12(22)	1	**01** - Default
ON/OFF Op	12(22)	1	02
Ext Protection Device	12(22)	1	03

VRV Basic Control Wiring
Manifolded Systems

- Q1 Q2 - Manifolded Modules – *VRVIII & VRV-WIII*
  - The unit in which **F1 F2 In** is connected from the Indoor fan coils or BS Boxes becomes the Master Unit
    - The Master Unit Control PCB is used for the commissioning procedures



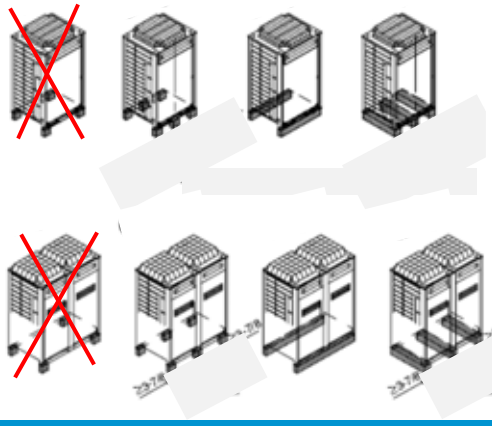


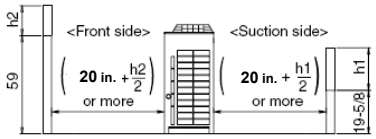
VRV Condenser
Basic Installation

absolute comfort

absolute comfort

VRVIII
Condenser Placement

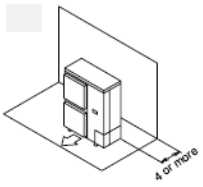


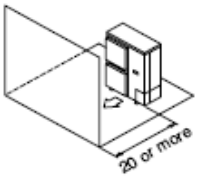


Refer to the *VRVIII* Heat Pump and Heat Recovery Installation Manuals for all clearance applications

VRVIII-S
Condenser Placement

- Condenser should be installed on a level base
  - The air inlet side requires a min. of 4” clearance to a wall
  - The air outlet should have a min. of 20” clearance
  - Refer to the Installation Manual for all clearance applications
  - Condenser should be installed above the snow line

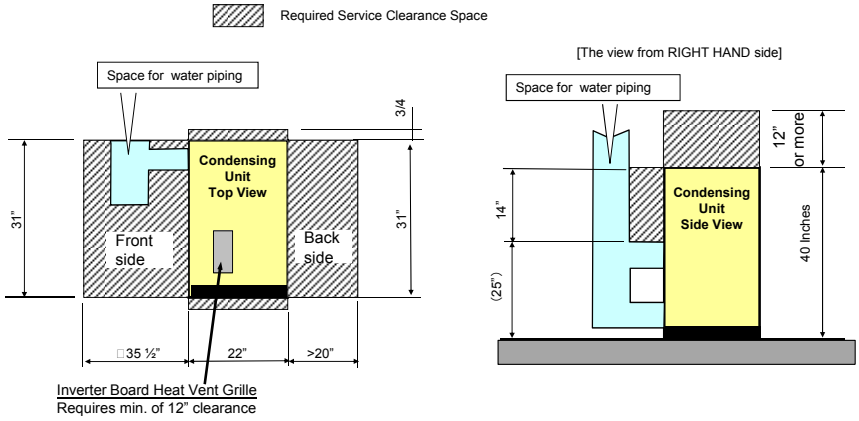




VRV-WIII Water cooled

Single Units RWEYQ72PTJU RWEYQ84PTJU	
	1 Unit = 6 or 7 Ton Master Station
Multi Units RWEYQ144PTJU RWEYQ168PTJU	
 	2 Units = 12 & 14 Ton Master Station Sub Station 1
Multi Units RWEYQ216PTJU RWEYQ252PTJU	
  	3 Units = 18 & 21 Ton Master Station Sub Station 1 Sub Station 2

VRV-WIII Service space



absolute comfort

Thank You

Basic *VRV* Remote Controller Installation & Configuration

RESIDENTIAL | LIGHT COMMERCIAL | COMMERCIAL

DAIKIN AC UNIVERSITY

Objectives

- Understand the Daikin *DIII-Net* control features & Installation requirements
- Identify the Daikin *DIII-Net* Remote Controllers and understand the features
- Explain the installation procedures for each Remote Controller
- Explain the basic programming procedures for each Remote Controller
- Understand the Field Settings and Group Address procedures

Daikin DIII-Net – The Basics

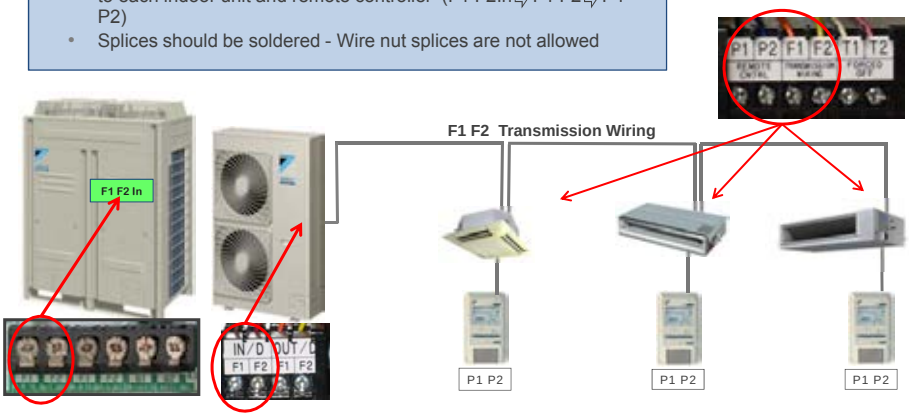
Integrated communications architecture sharing a common protocol	Proprietary to all Daikin VRV systems	Basic 2-conductor control wire design simplifies installation	Reliable daisy-chain communication wiring – 16vdc.

DIII-Net The Advantages

- The Daikin *DIII-Net* protocol is a system of bi-directional data packets that continuously move between the condenser and the indoor units
- Error checking insures accurate and reliable communications
- System auto-addressing as standard, simplifying commissioning
  - In the startup sequence, the condenser recognizes the number and type of indoor units
  - Assigns addresses for the *DIII-Net* communications
  - No manual Rotary or DIP switches are used for system component addressing
- Control system flexibility for simple to sophisticated applications

DIII-Net Basic Control Wiring

- Wire - 16/18 AWG ♦ 2-Conductor ♦ Stranded ♦ Non-Shielded
  - indoor unit PCB powers Remote Controller on 16 vdc circuit – P1 P2
  - Daisy-chain wiring
  - Two conductor terminal connections from Condenser unit to each indoor unit and remote controller (F1 F2In ⇨ F1 F2 ⇨ P1 P2)
  - Splices should be soldered - Wire nut splices are not allowed



DIII-Net Remote Controllers

BRC1E72

BRC2A71

BRC4C/7C/7E/7F

DIII-Net **Remote Controllers are compatible with all Daikin *VRV* and *SkyAir* RZQ/RZR systems**

BRC1E72

Navigation Remote Controller

BRC1E72 Basic Features

- Large Backlit LCD Display
- Display configurable to Detailed, Standard, and Simple
- Room temperature display – Day and Time
- Selectable display languages & °F or °C Temp
- Automatic Changeover Heat Pump & Heat Recovery
- Weekly Schedule
  - 7-Day ♦ 5-2 ♦ 5-1-1 ♦ 1 (Everyday) schedules
  - Up to 5 events per day
- Dual and Single Cool & Heat setpoints
  - 60 °F to 90 °F, 1 °F increments
  - Configurable Setpoint Range Limitations
- Independent Setback Setpoints
  - 40 °F to 95 °F, 1 °F increments
- Selectable 12/24 hour clock display
  - 48 hour backup power for clock & day
- Auto-adjustable Daylight Savings Time (DST)
- Max. 16 connectable indoor units
- Optional Face Decals to hide unnecessary or locked out buttons

BRC1E72 Basic Operation

- Display Backlight Function
  - First button pressed enables backlight only
  - All Function Buttons are then fully enabled
  - Backlight automatically turns off 30 seconds after the last button is pressed

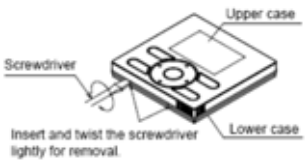
- Backlight must be illuminated for any of the function buttons to be enabled
  - When two remote controllers are used to control one indoor unit or a group of indoor units, only the first controller in use will have a functioning backlight.

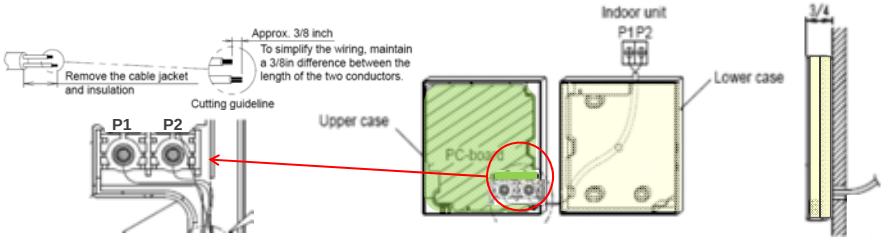
BRC1E72 Basic Installation & Configuration

- Installation
  - Wall Mounting
  - Control Wiring
- Function Button Layout
- Initial Settings – Main Menu
  - Display Mode
  - Language
  - Clock Format
  - Date & Time
  - Daylight Savings
  - Celsius / Fahrenheit
- Service Settings
  - Field Settings
  - Group Address

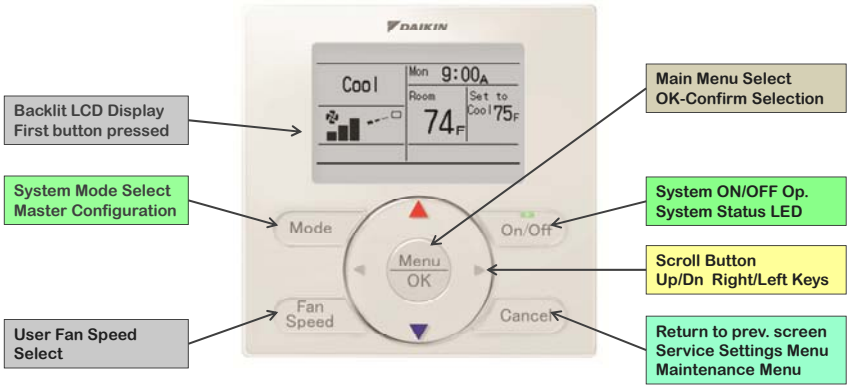
BRC1E72 Mounting & Wiring

- Determine the proper controller location
  - Avoid direct sunlight
  - Avoid outside walls
- Separate controller upper & lower case
- Install controller on a solid wall surface
  - Electrical box – 2x4 Single or 4x4 Double gang box
  - Screws and drywall anchors
- Cut control wire conductor lengths with a 3/8" difference – Remove 2" of outer jacket





BRC1E72 Function Button Layout



BRC1E72 LCD Display Menus

- There are 4 main display categories
  - Main Display
  - Main Menu
  - Service Settings Menu
  - Maintenance Menu
- Backlight must be ON before button functions are enabled
- Main Menu – Press Menu/OK one time
- Service Settings – Press & Hold Cancel (5 sec.)
- Maintenance Menu – Press & Hold Cancel while in Service Settings Menu (5 sec.)

BRC1E72 Configuration & Programming Menus

3 Menus for Settings, Configurations, and Status
- Menu Name and Number
- Selections
- Active Scroll Buttons ◀▲▼▶

Main Menu 1 / 2
Schedule
Off Timer
Celsius / Fahrenheit
Maintenance Information
Configuration
Current Settings
Setting

Main Menu 2 / 2
Clock & Calendar
Daylight Saving Time
Language
Setting

Service Settings 1 / 3
Test Operation
Maintenance Contract
Field Settings
Energy Saving Options
Prohibit Buttons
Minimum Setpoints Differential
Setting

Service Settings 2 / 3
Group Address
Indoor Unit AirNet Address
Error History
Indoor Unit Status
Outdoor Unit Status
Forced Fan On
Setting

Service Settings 3 / 3
Switch Main Sub Controller
Filter Indicator
Setting

Maintenance Menu 1 / 2
Model Name
Operation Hours
Indoor Unit Status
Outdoor Unit Status
Forced Defrost
Error Display
Setting

Maintenance Menu 2 / 2
Swap Unit No.
Addressed Sensor Value
Setting

NOTE: Group Address setting will only appear when system (*DIII-Net*) is connected to a Multi-zone controller or Gateway

BRC1E72 Power up – Initial Settings

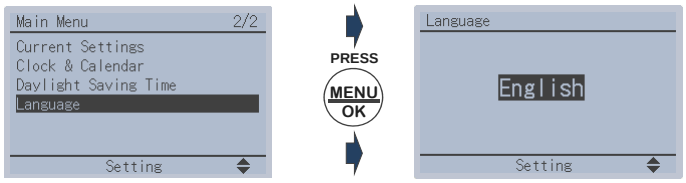
- Power is provided to the remote controller from the indoor unit PCB (16vdc – P1 P2)
- Upon Power Up of the indoor unit, the display on the Remote Controller will verify communications, and within 15 seconds the display will go into the “Standard” display mode.
- This Standard Display is very basic, and does not show the day of the week, current time, or space (room) ambient temperature.
- “Initial Settings” are required to configure a new BRC1E72 Remote Controller.
  - The “Initial Settings” are performed from the Main Menu

Standard Display - Factory Default

BRC1E72
Main Menu

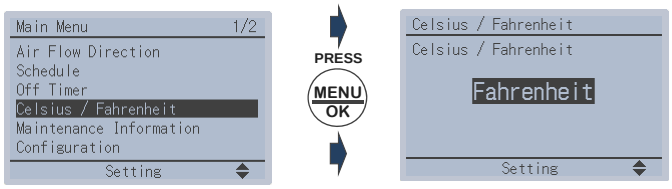
BRC1E72 Initial Setting – Language

- English (Default) - French / Spanish selectable
- Language: Main Menu ▸ Language



BRC1E72 Initial Setting – Fahrenheit to Celsius

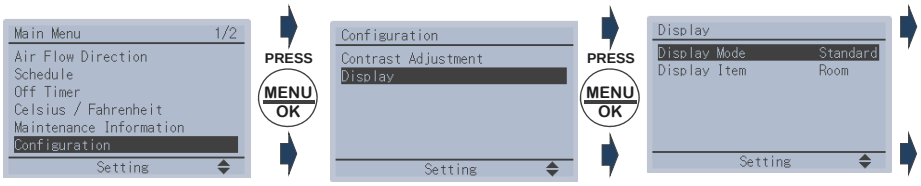
- Fahrenheit (default) – Celsius selectable
- Main Menu ▸ Fahrenheit to Celsius



BRC1E72 Initial Setting – Display Mode

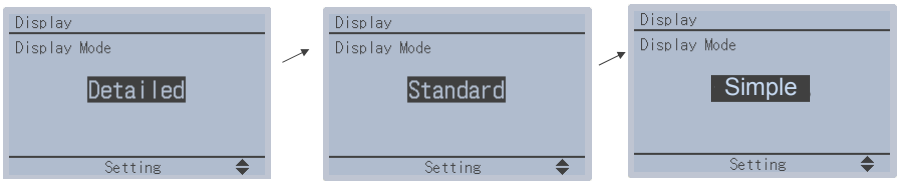
- To configure different display options, such as Room Temperature the **"Standard"** display can be changed to the **"Detailed"** or **"Simple"** display.
- Press any button to bring on the backlight
  - Press the **MENU/OK** button once for Main Menu
- Use DN arrow button to highlight Configuration
  - Press **MENU/OK** once
- Use DN arrow button to highlight Display
  - Press **MENU/OK** once
- Highlight is on Display Mode Standard
  Press **MENU/OK**

PRESS MENU OK



BRC1E72 Initial Setting – Display Mode

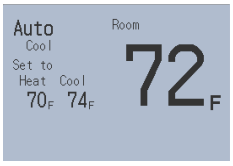
- Main Menu → Configuration → Display → Display Mode



Detailed

Standard

Simple



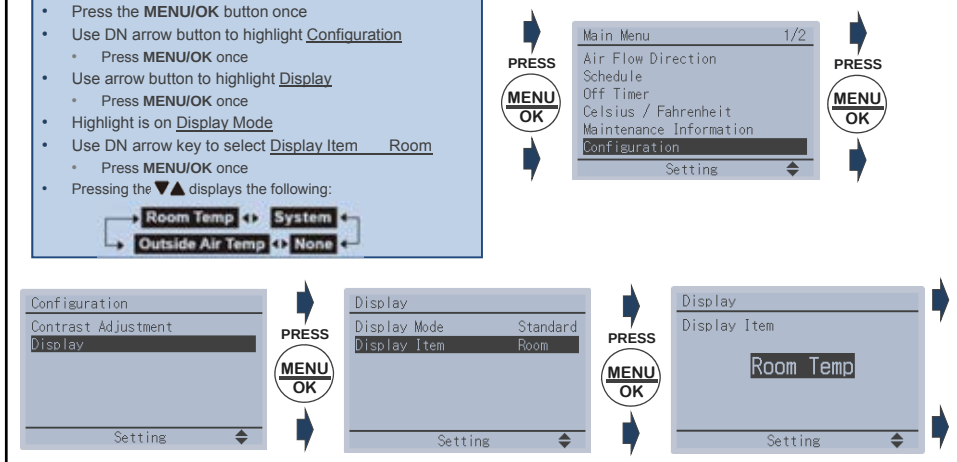
BRC1E72 Initial Setting – Display Item

DAIKIN AC absolute comfort

Room Temperature

- The Room Temperature display is the default setting
- Backlight must be ON
- Press the **MENU/OK** button once
- Use DN arrow button to highlight Configuration
  - Press **MENU/OK** once
- Use arrow button to highlight Display
  - Press **MENU/OK** once
- Highlight is on Display Mode
- Use DN arrow key to select Display Item Room
  - Press **MENU/OK** once
- Pressing the ▼▲ displays the following:

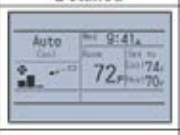
Room Temp ↔ System
Outside Air Temp ↔ None



BRC1E72 Display Overview

DAIKIN AC absolute comfort

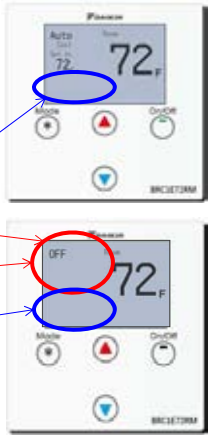
Configurable display mode – Detailed, Standard, and Simple New

Display Mode	Detailed	Standard	Simple New
Display image			
On/Off status on LED (LED blinks when an error is occured)	X	X	X
Mode	X *1	X *1	X *1
Setpoint (Dual/Single)	X *2	X *2	X *2
Room temperature	X		X
Fan speed	X *3	X *3	X *3
Air flow direction (when a louver is available)	X		
Day and Time	X *3		
Status icon	X *3	X *3	
Key lock icon	X	X	
Error massage	X	X	

*1. OFF can be displayed instead of the operation mode while the unit is turned off with the field setting NEW
*2. Can be removed from the display while the unit is turned off with a field setting NEW
*3. Can be removed from the display with a field setting Improved

BRC1E72 Initial Setting – Display Configurations

- Following display configurations are available through field settings
  - Applicable to all three display mode
  - Display OFF instead of Mode while the unit is off
    (1b-13-02)
  - No setpoint display while the unit is off
    (1b-12-02)
  - No Fan Speed display
    (1b-15-02)



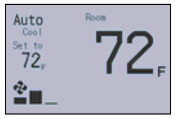
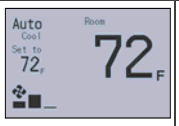
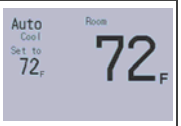
BRC1E72 Status Icon Elimination

- Status icon and other information on the display can be eliminated through Field Setting
  - e.g. “Central Control” icon is not necessary in hotel room

Item	Available Display mode			Field Setting	
	Detailed	Standard	Simple	Code	Choice
STSANDBY icon	X	X	X	1b-7	01: display in Defrost or Hot Start 02: Not display
Day/Clock	X			1b-11	01: display 02: Not display
CENTRAL CONTROL icons	X	X		1e-9	(MASTER CONTROL icon too) 01: display 02: Not display
Prohibit button message	X	X	X	1e-10	01: Key lock icon blinks for 5 sec (Key lock icon is not displayed in Simple display mode) 02: Message

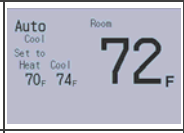
BRC1E72 Initial Setting – Single Setpoint Display Mode w/Face Decal

DAIKIN AC absolute comfort

	Theme	Everything	No Mode Change	Fan Speed Fixed
	LCD Display Image			
	Optional Face Decal Face Decal can be applied to Detailed and Standard display mode too.			
	M: Mandatory, O: Optional setting	BRC1E72RMF	BRC1E72RF	BRC1E72RM
M	Display mode - Simple (Main menu)	X	X	X
M	Display item - Room Temp (Main menu)	X	X	X
M	Single setpoint (Srv Menu → Min Setpoint Diff - Single SP)	X	X	X
M	Prohibit Menu/OK and Cancel buttons (Special sequence required)	X	X	X
M	Mode button prohibit (Srv menu → Prohibit functions → Prohibit button)		X	
M	Fan icon display off (Field Setting 1b-15-02) Fan button also prohibited			X
O	Off display instead of Mode while the unit is off (Field setting 1b-13-02)	X	X	X
O	Erase setpoint display while the unit is off (Field setting 1b-12-02)	X	X	X

BRC1E72 Initial Setting – Dual Setpoint Display Mode w/Face Decal Cont.

DAIKIN AC absolute comfort

	Theme	Everything	No Mode Change	Fan Speed Fixed
	LCD Display Image			
	Optional Face Decal Face Decal can be applied to Detailed and Standard display mode too.			
	M: Mandatory, O: Optional setting	BRC1E72RMF2	BRC1E72RF2	BRC1E72RM2
M	Display mode - Simple (Main menu)	X	X	X
M	Display item - Room Temp (Main menu)	X	X	X
M	Dual setpoint (Srv Menu → Min Setpoint Diff - 0 to 7F)	X	X	X
M	Prohibit Menu/OK and Cancel buttons (Special sequence required)	X	X	X
M	Mode button prohibit (Srv menu → Prohibit functions → Prohibit button)		X	
M	Fan icon display off (Field Setting 1b-15-02) Fan button also prohibited			X
O	Off display instead of Mode while the unit is off (Field setting 1b-13-02)	X	X	X
O	Erase setpoint display while the unit is off (Field setting 1b-12-02)	X	X	X

BRC1E72 Optional Face Decals

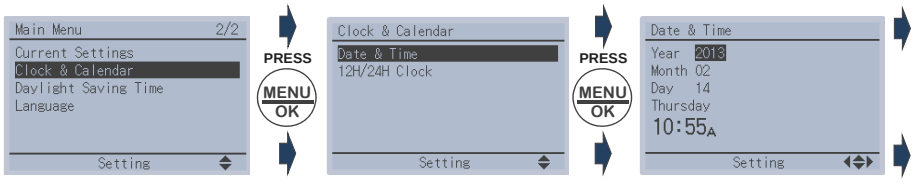
- Single Setpoint Face Decals

- Dual Setpoint Face Decals

BRC1E72 Initial Setting – Date & Time

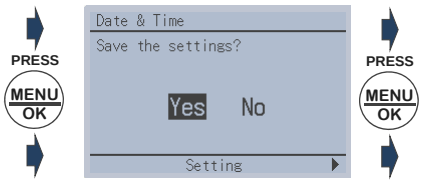
- **To display Day of the Week and Time**
- Backlight must be ON
  - Press the **MENU/OK** button once
- Use DN arrow button to highlight Clock & Calendar
  - Press **MENU/OK** once
- Use arrow button to highlight Date & Time
  - Press **MENU/OK** once
- Using the scroll arrows – set the Year, Month, Day, and current Time AM/PM

PRESS MENU/OK



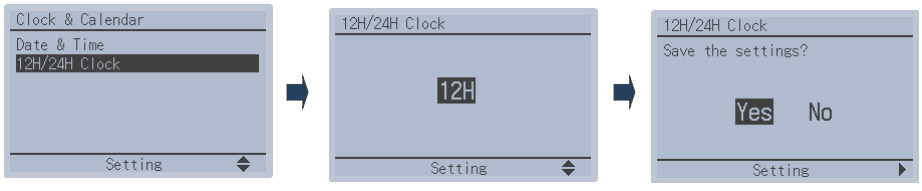
BRC1E72 Initial Setting – Date & Time Cont.

- Save the Date & Time settings: "**Yes**"
  - Press **MENU/OK** once
- Save the settings - Highlight **Yes**
  - Press **MENU/OK**
- Main Display should now be complete



BRC1E72 Initial Setting – Clock Format

- 12/24 Hour Clock Format Change
  - 12 hr. clock format is the default
  - 12 hr. is changed to 24 hr. through Clock & Calendar menu
  - Press the Menu/OK button after each screen selection



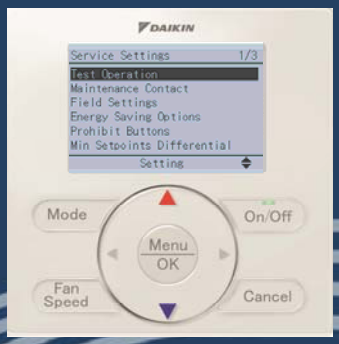
BRC1E72 Initial Setting – Enable Daylight Saving

- Main Menu ▸ Daylight Saving Time
  - Use the scroll buttons to select Enable/Disable. Press the Menu/OK button.
  - Use the scroll buttons to select Enable. Press the Menu/OK button.
  - Use the scroll buttons to select Yes. Press the Menu/OK button.

BRC1E72 Initial Setting – Set Daylight Saving Dates

- Main Menu ▸ Daylight Saving Time (Default is US DST dates)
  - Use the scroll buttons to select DST Dates. Press the Menu/OK button.
  - Use the scroll buttons to select a month from 12 months (January to December) for the Start and End month.
  - Use the scroll buttons to select a week from 5 weeks (1st Sunday to Last Sunday) for both Start and End.
  - Press the Menu/OK button.
  - Use the scroll buttons to scroll to Yes. Press the Menu/OK button.

BRC1E72
Service Settings



BRC1E72 Field Settings

- Field Settings provide unique features and functions to be programmed into the control system for each or all indoor units connected to a remote controller.
- Only those program codes that apply to the connected indoor unit(s) will appear in the Field Settings code display.
- To access the Field Settings mode, bring on the display backlight: press and hold the **CANCEL** button for 5 sec. to enter the **Service Settings Mode** and select **Field Settings**
- Press the **Menu/OK** button to confirm each display selection, and use scroll arrows to select the desired code numbers

BRC1E72 Indoor Unit Field Settings

- There are two Modes for each setting; “Group” & “Individual”
- The first set of 2-digit numbers refers to Group and Individual, Group is the first number & Individual is in the parenthesis
- “Group ##” is used if there is only one indoor unit per Remote Controller or the setting you chose is intended for all indoor units being controlled by the same Remote Controller
- “Individual (##)” is used when there is more than one indoor unit being controlled by one Remote Controller and the settings being programmed are intended for one of the indoor units in the group

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (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.	--
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above (Note 3)	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--
12(22)	0	KRP1B71 X1-X2 status output	Indoor unit Thermo-On/Off status	--	Indoor unit Operation On/Off status	Indoor unit Alarm status
	1	Indoor unit T1-T2 input	Forced Off Closed Contact-Indoor unit is forced off and Central Control icon is displayed. Unit cannot be turned on manually. Operation can be overridden by central control. Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.	On/Off Closed Contact-Indoor unit is turned on. Open Contact-Indoor unit is turned off. Unit responds to last command, i.e., unit can be turned on manually or by central control after circuit has opened. Operation is prohibited when remote controller On/Off control is restricted by a multizone controller.	External Protection Device Closed contact-Unit shall resume normal operation. Open contact-Unit shall shut down and generate an A0 error.	
	2	Thermo-On/Off deadband (Note 4)	2F (1C)	1F (0.5C)	--	--
	3	Fan Speed in Heating Thermo-Off	LL	User set	Off	--
	6	Fan Speed in Cooling Thermo-Off	LL	User set	Off	--
	8	Return air sensor offset	2C	None (for remote sensor)		

BRC1E72 Indoor Unit Field Settings

- Field Setting codes are comprised of 3 segments: [Example: 10 – 2 - 03]
  - Mode No. – Program Setting for 1 indoor unit or Group
  - First Code No. - Setting Contents
  - Second Code No. - Specific Operation or Setting
- Specific Field Setting codes for a particular indoor unit can be found in the Indoor Unit Installation Manual or Engineering Manual
  - Any Field Setting codes that do not apply to the particular indoor unit will not be configurable
- Field Settings are stored in the non-volatile memory in the Control PCB of the Indoor Unit or Remote Controller

EXAMPLE: Field Setting for assigning the room temperature sensor

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (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.	--
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above (Note 3)	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--

Field Setting Availability by Indoor Unit Type

DAIKIN AC absolute comfort

Availability of Indoor Unit Field Settings (Control Related)

As of 12/01/2012

Mode No.	10				12						
First Code No.	2		5	6	0	1	2 (***)	3		6	8
Second Code No.	01/02	03	01/02	01/02	01/03/04	01/02/03	01/02	01/02	03	01/02/03	01/02
FXSQ_MVJU	X	X**	X**	X	X	X	X (02)	X	X**	X*	n/a
FXMQ_MVJU	X	X*	X*	X	X	X	X (02)	X	X*	X*	n/a
FXMQ72/96MVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
FXMQ_PVJU FBQ_PVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
FXDQ_MVJU	X	X	X	X	X	X	X (02)	X	X	n/a	n/a
FXTQ_PVJU FTQ_PAVJU FTQ_PBVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
BEQ_MVJLR1 (FXOQ)	X	X	X	X	X	X	X (02)	X	X	X*	n/a
FXLQ_MVJU	X	X*	X*	X	X	X	X (02)	X	X*	X*	n/a
FXNQ_MVJU	X	X*	X*	X	X	X	X (02)	X	X*	X*	n/a
FXAQ_MVJU FAQ_MVJU FAQ_PVJU	X	X*	X*	X	n/a	X	X (01)	X	X*	n/a	n/a
FXAQ_PVJU	X	X	X	X	n/a	X	X (01)	X	X	n/a	n/a
FXZQ_M7VJU	X	X*	X*	X	X	X	X (01)	X	X*	X*	n/a
FXFQ_MVJU FCQ_MVJU FCQ_PVJU	X	n/a	n/a	n/a	X	X	X (01)	X	n/a	n/a	n/a
FXFQ_PVJU FCQ_PAVJU	X	X	X	X	X	X	X (01)	X	X	X	X
FXHQ_MVJU FHQ_MVJU FHQ_PVJU	X	n/a	n/a	n/a	X	X	X (01)	X	n/a	n/a	n/a

* Field settings highlighted in orange may not be available in units manufactured before 9/1/2009.
** Field settings highlighted in blue may not be available in units manufactured before 1/1/2007.
*** Factory default value is indicated in parenthesis.

Field Settings – Indoor unit

DAIKIN AC absolute comfort

Field Settings – Indoor Units (Control Related)

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (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.	--
	5	Room temperature value reported to multi-zone controllers	Return air thermistor	Thermistor designated by 10-2 above **(Note 3)**	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--
12(22)	0	KRP1B71 X1-X2 status output	Indoor unit Thermo-On/Off status	--	Indoor unit Operation On/Off status	Indoor unit Alarm status
	1	Indoor unit T1-T2 input	Forced Off Closed Contact-Indoor unit is forced off and Central Control icon is displayed. Unit cannot be turned on manually. Operation can be overridden by central control. Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.	On/Off Closed Contact-Indoor unit is turned on. Open Contact-Indoor unit is turned off. Unit responds to last command, i.e., unit can be turned on manually or by central control after circuit has opened. Operation is prohibited when remote controller On/Off control is restricted by a multi-zone controller.	External Protection Device Closed contact-Unit shall resume normal operation. Open contact-Unit shall shut down and generate an A0 error.	
	2	Thermo-On/Off deadband **(Note 4)**	2F (1C)	1F (0.5C)	--	--
	3	Fan Speed in Heating Thermo-Off	LL	User set	Off	--
	6	Fan Speed in Cooling Thermo-Off	LL	User set	Off	--
	8	Return air sensor offset	2C	None (for remote sensor)		

1. **Field settings are normally applied to the entire remote control group, however if individual indoor units in the remote control group require specific settings or for confirmation that settings have been established, utilize the mode number in parenthesis.**
2. **Any features not supported by the installed indoor unit will not be displayed.**
3. **When mode 10-2-01 is selected, only the return air temperature value is reported to the multi-zone controller.**
4. **The actual default deadband value will depend upon the indoor unit model.**

Field Settings – BRC1E72

Field Settings – BRC1E72 (Green highlighted items are new from BRC1E71)

Mode No.	First Code No.	Description	Second Code No. (Cells in bold are factory default settings)							
			01		02		03		04	
1b	7	STANDBY icon	Display in Defrost or Hot Start		Not Displayed					
	11	Day/Clock	Displayed		Not Displayed					
	12	Setpoint display while the unit is off	Displayed		Not Displayed					
	13	Mode display while the unit is off	Displayed		Display OFF instead of the mode					
	14	Fan Speed button configuration	Fan Speed		Fan ON/Auto (Fan LL in thermo-off) **(Applicable to SkyAir only)**		FAN ON/Auto (Fan Off in thermo-off) **(Applicable to SkyAir only)**			
	15	Fan icon display	Displayed		Not Displayed					
1c	1	Thermistor sensor used for Auto-changeover and Setback control	Return Air Thermistor– return air temperature displayed on controller as room temperature		Remote Controller Thermistor – remote controller temperature displayed on controller as room temperature		--		--	
	10	Temperature Sensor Offset	**01:** -5.4°F (-3.0°C)	**02:** -4.5°F (-2.5°C)	**03:** -3.6°F (-2.0°C)	**04:** -2.7°F (-1.5°C)	**05:** -1.8°F (-1.0°C)	**06:** -0.9°F (-0.5°C)	**07:** 0.0°F (0.0°C)	
			13: +5.4°F (+3.0°C)	**12:** +4.5°F (+2.5°C)	**11:** +3.6°F (+2.0°C)	**10:** +2.7°F (+1.5°C)	**09:** +1.8°F (+1.0°C)	**08:** +0.9°F (+0.5°C)		
1e	2	Setback availability	N/A		Heating mode only		Cooling mode only		Cooling/ Heating modes	
	4	Schedule and Auto-changeover enabled when multi-zone controller is detected **(Note 1)**	No		Yes		--		--	
	9	CENTRAL CONTROL icon	Not displayed		Displayed when under control by a multi-zone controller					
	10	Message when button pushed which has been prohibited by a multi-zone controller	Key lock icon blinks for 5 seconds		Message displayed on screen: "Under Centralized Control. Adjustments at the remote control are being restricted."					
	11	Auto changeover guard timer	15 min		30 min		60 min		90 min	
	12	Auto changeover point	0.9°F (0.5°C)		1.8°F (1.0°C)		2.7°F (1.5°C)		3.6°F (2.0°C)	
	13	Quick changeover point beyond the auto changeover point	0.9°F (0.5°C)		1.8°F (1.0°C)		2.7°F (1.5°C)		3.6°F (2.0°C)	

1. Native remote controller Schedule and Auto-changeover functions are disabled when a multi-zone controller is detected and a group address is assigned.

Factory Default Field Settings on BRC1E72

BRC1E72 Field Setting - Factory Default Values

- Do not change from the factory default value in the cells below highlighted in grey.
- This table would be referred to confirm the default value when you might have changed the unnecessary field setting accidentally.

First Code No. \ Mode No.	1b	1c	1e
0	02	02	--
1	02	02	02
2	--	02	01
3	--	01	--
4	04	02	01
5	01	01	02
6	01	01	02
7	01	02	02
8	05	01	02
9	01	01	02
10	--	07	02
11	01	07	03
12	01	--	01
13	01	--	01
14	01	--	--
15	01	--	--

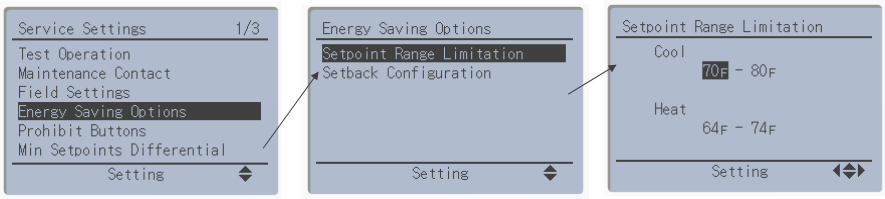
BRC1E72 Sensor - Field Settings

- To use only BRC1E72 sensor, set field settings as 10-2-03, 10-5-02, & 1C-1-02
- 10-2-03, 10-5-02 availability
  - always available: FXMQ_P, FXTQ_P, FXAQ_P, FXFQ_P, FBQ_P, FTQ_P, FCQ_PA
  - All _M series (except FXFQ, FXHQ, FCQ, FHQ)
    - Manufactured after 9/1/2009: always available
    - Manufactured before 9/1/2009: confirm if 10-2-03, 10-5-02 are available.
  - never available: FXFQ_MVJU, FXHQ_MVJU, FCQ_MVJU, FCQ_PVJU, FHQ_MVJU, FHQ_PVJU
    - Set 10-2-02 and use Remote sensor (or Return air sensor) only
- Field setting – 10-2, 10-5 and 1C-1 settings are necessary

Which single sensor is used?	For indoor unit control (Cool/Dry/Heat VRV and thermo-on/off control)	For BRC1E72 control (Auto changeover and setback control)	For Multi-zone Control	
BRC1E72	10-2-03	1C-1-02 (default)	10-5-02	**Recommended**
Remote sensor (or Return air sensor)	10-2-02 (it is always available)	1C-1-01	10-5-01 (default)	

Initial Setting – Setpoint Range

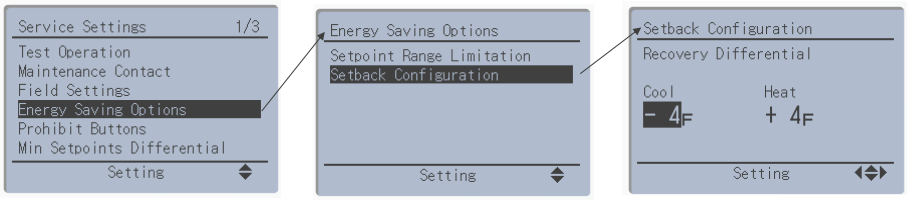
- Service Settings → Energy Saving Options → Setpoint Range Limitation



- User can change the setpoint within the range
- Setup setpoint is configurable between
  "Cool setpoint max + 2°F (1°C)" and "95°F"
- Setback setpoint is configurable between
  "Heat setpoint min – 2°F (1°C)" and "40°F"

Initial Setting – Setback Recovery Differential

- Service Settings → Energy Saving Options → Setback Configuration
  - Setback Configuration won't be available if you have not enabled the setback control (Field setting 1e-2-04 is necessary).
- Determine the point when unit is turned off again from the setback control (the unit is turned on by setback control when room temperature is above the setup setpoint or below the setback setpoint)
  - Setup setpoint - 4°F as default (2 - 10°F selectable)
  - Setback setpoint + 4°F as default (2 - 10°F selectable)



Initial Setting – Enable Setback

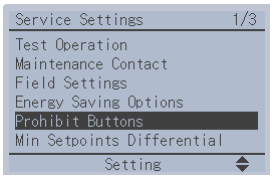
- Field setting is available in the Service Settings
  - Setback function is disabled (1e-2-01) by default
  - To enable it, set 1e-2-04

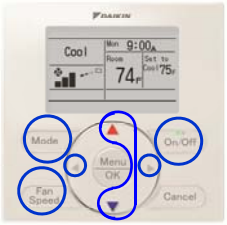
Mode No.	First Code No.	Description	Second Code No. (Cells in bold are factory default settings)			
			01	02	03	04
1e	2	Setback availability	N/A	Heating mode only	Cooling mode only	Cooling/ Heating modes

Default

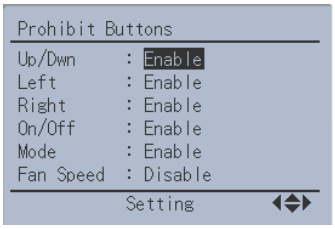
Initial Setting – Prohibit R/C buttons

- To configure which buttons to prohibit
  - Service Setting → Prohibit Functions → Prohibit Buttons
    - Enable = permit
    - Disable = prohibit
    - Disable in Off = prohibit only while the unit is off
- To enable Prohibit Buttons – see next slide





Operable buttons



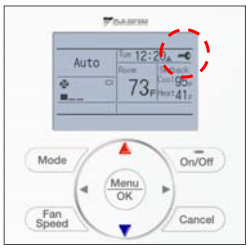
Menu/OK and Cancel button will be prohibited when any of the buttons are prohibited.

Enable/Disable Prohibit Buttons

- To enable Prohibit Buttons, holding Right arrow button, push Mode, Fan Speed and Cancel at the same time while the main screen is displayed
- To release it, same as above

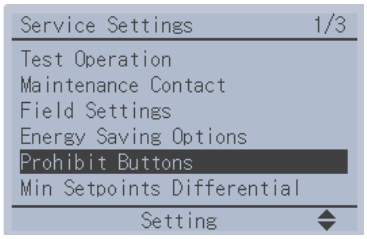
These buttons can be pressed from above the optional Face Decals to enable/disable prohibit buttons

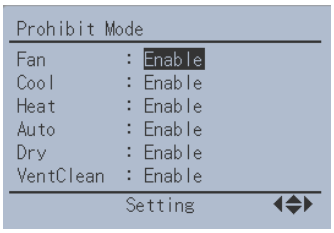
- Then if you push prohibited button, you will see a key icon blinking three times
  - Key icon is available in Detailed and Standard display mode only (In simple display mode Key icon is not displayed)



Initial Setting – Prohibit Mode

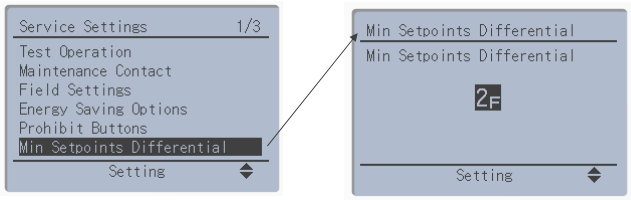
- To configure modes which cannot be selected by a user
  - Service Setting → Prohibit Functions → Prohibit Mode
  - Enable = selectable, Disable = not selectable





Initial Setting – Min. Setpoint Differential

- Service Settings → Min Setpoint Differential
- Configurable to 0 – 8°F (0 – 4°C), default is 2°F (1°C) for Dual SP or Single SP



- When the differential is set to 0 – 8F, Cool and Heat setpoints are maintained as
  - Cool setpoint ≥ Heat setpoint + Differential
- When Single SP is set, there is one setpoint for Cool and Heat
- When a multi-zone controller is connected, the differential is set to Single SP automatically.

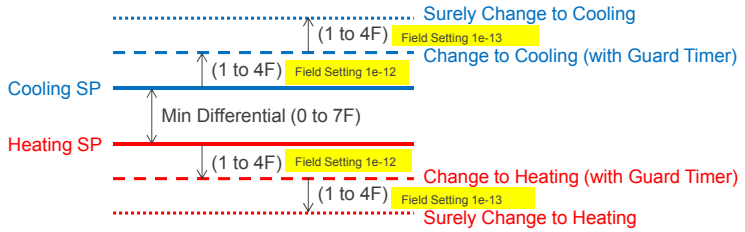
Schedule, Auto changeover disabled

- When a group address is assigned and a multi-zone controller is connected, Schedule and Auto changeover on BRC1E72 are disabled.
  - To prevent conflict between BRC1E72 and I-TC or BMS control
  - Min. setpoint differential would be set at Single SP
    - When setpoint is changed from a multi-zone controller, the both cooling and heating setpoints are overridden with the same value.
- Field setting 1e-4-02 re-enables BRC1E72 Schedule and Auto changeover. Make sure Schedule/Auto changeover is disabled in the I-TC/BMS to prevent conflict.

Mode No.	First Code No.	Description	Second Code No. (Cells in bold are factory default settings)			
			01	02	03	04
1e	4	Schedule and Auto-changeover enabled when multizone controller is detected (Note 1)	No Default	Yes	--	--

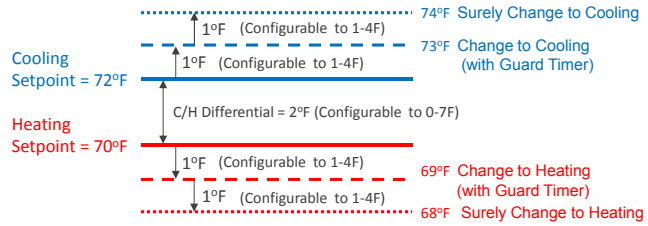
BRC1E72 - Auto-changeover

- Automatic changeover in Heat Pump and Heat Recovery Systems
  - At 1°F above cooling or 1°F below heating setpoint (default)
    - Configurable between 1°F – 4°F (improved) Field Setting 1e-12
  - Another 1°F above cooling or 1°F below heating changeover points immediate changeover ignoring guard timer (new)
    - Configurable between 1°F – 4°F (new) Field Setting 1e-13
  - Guard timer to prevent frequent mode change (improved)
    - 15, 30, 60 (default), or 90 minute guard timer settable Field Setting 1e-11

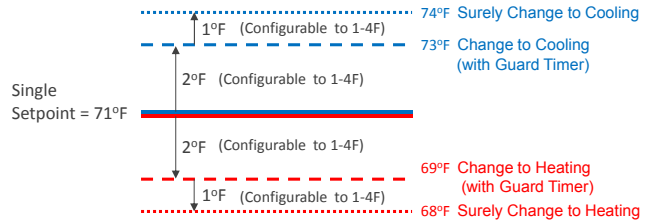


BRC1E72 - Auto-changeover

Example #1 = Dual Setpoints

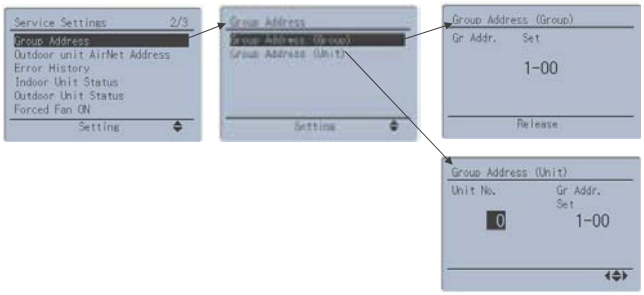


Example #2 = Single Setpoint



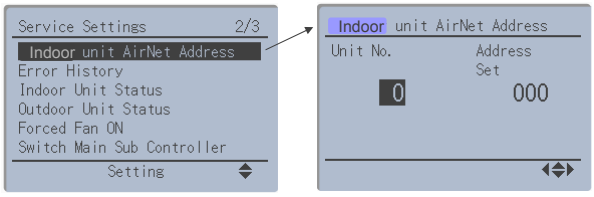
BRC1E72 Settings Group Address

- When a multi-zone controller such as the iTouch Controller, iTouch Manager, or BMS Gateways are connected, Group Address settings must be configured through the Service Settings mode.
- A Group consists of 1 to 16 indoor units connected to the same Remote Controller.
- There are 64 Group Addresses available
  - 1-00 to 1-15
  - 2-00 to 2-15
  - 3-00 to 3-15
  - 4-00 to 4-15



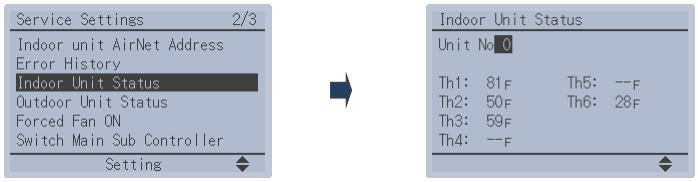
Set D-Net (AirNet) Address

- To Identify each indoor unit on the Service checker, D-Net (AirNet) address setting is available in Service Settings



BRC1E72 Indoor Unit Sensor Display

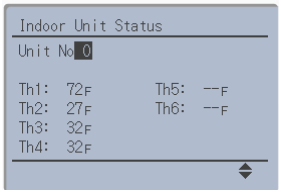
- The connected indoor unit(s) temperature sensors may also be displayed on the Nav. Remote screen by accessing the “Indoor Unit Status” mode in the Service Settings Menu
- To access the Service Settings Menu, press and hold the **CANCEL** button 5 seconds
  - Scroll down and select “Indoor Unit Status” on the 2nd screen
  - Sensor values are displayed in Fahrenheit
  - **Th1:** RA sensor (Remote Sensor) **Th2:** Liq. sensor **Th3:** Gas sensor **Th4:** Discharge
- Press the **CANCEL** button twice to return to the main display



NOTE: Service Settings “Indoor Unit Status” used for reading sensors on “P” series indoor units

Indoor Unit Temperatures

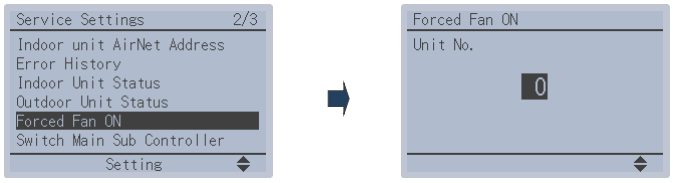
- Service Settings → Indoor Unit Status
  - Applicable for P-series indoor units (FXMQ_P, FXTQ_P)



Th #	Description
Th1	Return air sensor (Remote sensor) temperature
Th2	Liquid line temperature
Th3	Gas line temperature
Th4	Discharge air temperature (FXMQ_P only)
Th5	Remote controller sensor temperature
Th6	Temperature to be used for indoor unit control (See field setting 10(20) - 2)

BRC1E72 Indoor Unit Address ID

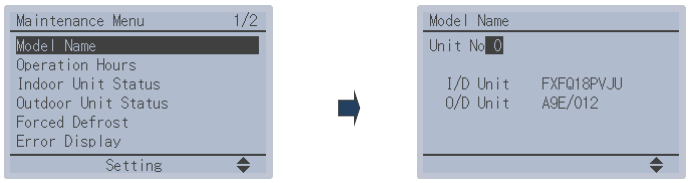
- To determine the group address and the unit number assigned to an indoor unit in a group, use the "Forced Fan ON" mode (indoor units must be turned OFF)
  - Press and hold the CANCEL button for 5 sec. - Service Settings
  - Scroll down to the second "Service Settings" screen and select Forced Fan On
- The "Forced Fan ON" screen appears with system address (Unit No.) "0"
  - Within several seconds the indoor unit assigned unit "0" will turn on
  - Use the scroll arrow to change the Unit No. from "0" to 1, 2, 3 etc. and the fans in those indoor units will energize in HH accordingly
- Press CANCEL button twice to de-energize the fan and return to Main Display



BRC1E72
Maintenance Menu

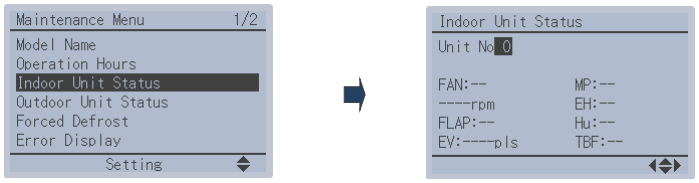
BRC1E72 Indoor Unit Model Display

- The connected indoor unit(s) model number ("P" series only) may be displayed on the Nav. Remote screen by accessing the Maintenance menu
  - Press and hold the **CANCEL** button for 5 sec. - Service Settings
  - Press and hold the **CANCEL** button a 2nd time for 5 sec. for the Maintenance Menu
    - Select Model Name (**MENU/OK**)
- Press CANCEL twice to go back to the main display



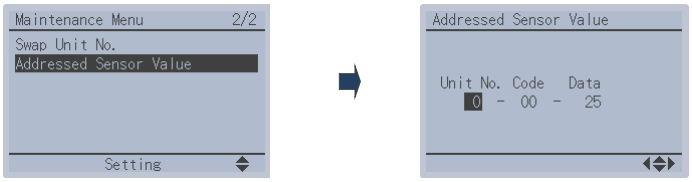
BRC1E72 Indoor Unit Operating Status

- The connected indoor unit(s) operating status may be displayed on the Nav. Remote screen by accessing the Maintenance menu
  - Press and hold the **CANCEL** button for 5 sec. twice for the Maintenance Menu
    - Select: **Indoor Unit Status** **MP:** Drain Pump ON/OFF **EH:** Elec. Htr. ON/OFF **Hu:** Humidifier ON/OFF
- Press CANCEL to go back to the main display



BRC1E72 Indoor Unit Sensor Display

- The connected indoor unit(s) temperature sensors may be displayed on the Nav. Remote screen by accessing the "Addressed Sensor Value" mode in the Maintenance Menu
- To access the Maintenance Menu, press and hold the **CANCEL** button 5 sec. to Service Settings
  - Press and hold the **CANCEL** button a 2nd time to the Maintenance Menu and scroll down to the second screen, then scroll and select "Addressed Sensor Value"
  - Scroll the to display each of 4 sensor codes - These sensor readings are in Celsius
    Sensor **"00"** = RC sensor **"01"** = RA sensor **"02"** = Liq. sensor **"03"** = Gas sensor
- Press the **CANCEL** button twice to return to the main display



NOTE: Maintenance Menu "Addressed Sensor Values" used for reading sensors on "M" series indoor units

BRC2A71

Simplified Remote Controller

BRC2A71 – Basic Features

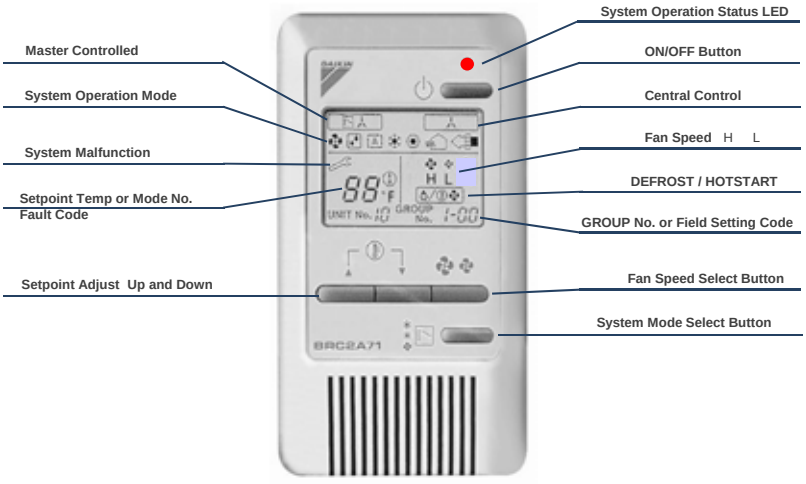
- English LCD Display
- System Operation Status LED
- System On/Off
- Operating Mode
  - (Cool, Dry, Heat, Fan, Auto*)
- Set-point (60-90F; 1F basis)
- Fan speed (H/L)
- Prohibit buttons with optional face plates
- Optional face plate to remove pictograms
- Fault Diagnosis (Error code)
- Field Settings
- Max. 16 connectable indoor units (Group)
- Internal mounting for remote temperature sensor**

*Auto mode is available in the heat recovery system only

** Optional remote temperature sensor is separate and requires wiring to the indoor unit PCB.

The Simplified Remote Controller does not have a sensor for measuring space temperature

BRC2A71 – Button Layout

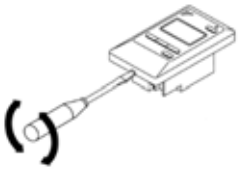


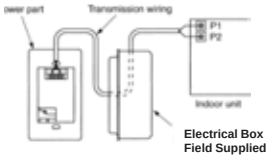
BRC2A71 – Basic Installation

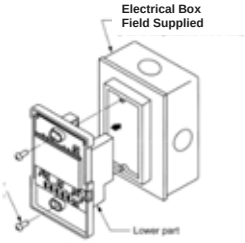
- Installation
  - Cable Routing
  - Wall Mounting
  - Power on
- Service Settings
  - Field Settings
  - Group Address

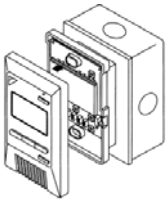
BRC2A71 – Mounting

- Separate and remove the upper part of the controller with a flat blade screwdriver
- Carefully route the control wire from the P1 P2 terminals
- Secure the Lower part of the controller to the electrical box with the screws provided
- Install cover onto the lower part and insure that all buttons operate.
- Cover must be removed for all Service Settings









BRC2A71 – Optional Face Plates

You can physically remove unnecessary buttons with optional face plates


BRC2A71RS


BRC2A71RU

BRC2A71R

INSTALLATION PROCEDURE

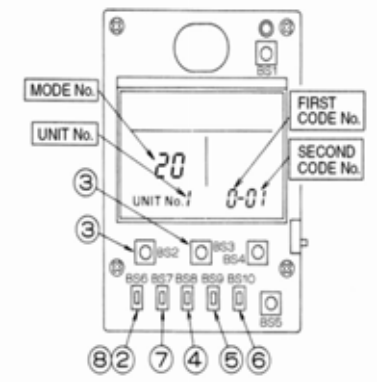
1. Remove the cover from the remote controller. Remove standard faceplate from the cover. Remove standard Mode button.

2. Remove film from adhesive backing on replacement faceplate. Affix new faceplate to the remote control cover.

3. Reattach cover to remote controller.

BRC2A71 – Field Settings

- Remove cover from the controller
- Press **BS6** Button to enter Field Settings
- Press **BS2** and **BS3** to select the Mode No.
  - With multiple indoor units press BS8 to change Unit No.
- Press **BS9** to select the First Code No.
- Press **BS10** for the Second Code No.
- Press **BS7** to Set the field Setting code
- Press **BS6** to confirm (88) and return to Normal Display



BRC2A71 – Group Address

- Press **BS6** to enter Group Address Mode
  - 00 display for Centralized Controller
  - 01 display for no Centralized Controller
- GROUP No. flashing with 1-00 Group Address displayed
  - Press **BS7** if Group No. is not flashing
- Press **BS9** & **BS10** to set desired address – Max. 64
  - 1-00 to 1-15
  - 2-00 to 2-15
  - 3-00 to 3-15
  - 4-00 to 4-15
- Press **BS7** to lock in selection
  - GROUP No. on solid
- Press **BS6** to exit to normal display

BRC2A71 – Air Flow Adjustment

Wired Remote Controller (Simplified)
BRC2A71

Air flow adjustment

- **The simplified remote controller does not provide for manual adjustment of the discharge louvers on indoor unit styles with louvers. This includes FXFQ, FXZQ, FXHQ and FXAQ unit types.**
- **In the cooling mode the louvers automatically adjust to discharge air in a horizontal pattern. (Factory default setting)**
- **In the heating mode the louvers automatically adjust to discharge air in a vertical pattern. (Factory default setting)**
- **An iTouch controller or Centralized Controller can set the louver action on indoor units. Additionally, a building automation system via the Daikin BACnet Interface can set the louver action. The LON Interface is excluded as there is no applicable network variable.**
- **A temporarily connected BRC1E72 remote controller can set the louver action on the indoor unit.**

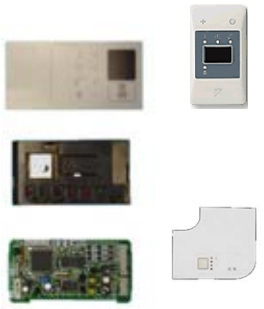
BRC4C/7C,E

Hand-Held Wireless Remote

© 2012 Daikin AC

BRC4C/7CE – Hand-Held Wireless

- Wireless Remote Controllers are provided as “kits”
- Temperature display is setpoint (H or C)
- Wireless Controllers only communicate with the indoor unit when they are pointed at the receiver and a button is pressed
- Listen for a “beep” or “beep beep” for confirmation



NOTE: The wireless IR receivers are provided for specific indoor unit models. Refer to the specific wireless kit Installation instructions for the receiver.

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

BRC4C/7CE – Field Settings

- To enter the Field Setting Mode press the **TEST** button for 5 sec. The display will change to “00”
- Press the **MODE** button until the desired first Code No. appears
- Press the **UP** button to set the first no.
- Press the **DOWN** button to set the second no.
- Press **RESERVE** button to lock in the field setting
- Listen for the “Beep Beep”
- Press **TEST** button twice

BRC4C/7CE – Group Address

- To set the Group Address press and hold the **TEST** button for 5 sec.
  - Display will change to “00”
- Press the **UP** button to set the first address no.
- Press the **DOWN** button to set the second address no.
  - Max 64 groups
- Press **RESERVE** to lock setting
  - “Beep Beep” to confirm
- Press **TEST** button to exit to normal display

BRC4C/7CE – System Malfunction Code

When the System Status LED on the wireless receiver is flashing, the Hand-Held Controller is used to identify the specific Fault Code by performing the following procedure:

- Press the **TEST** button once to display CODE “00”
  - UNIT No. “0” is flashing
- Press the **MODE** button – Displays flashing CODE “0” on left
  - Press **UP** or **DN** buttons repeatedly to change the left CODE numbers until receiver emits 2 beeps
- Press the **MODE** button - Displays flashing CODE “0” on right
  - Press **UP** or **DN** buttons repeatedly to change the right CODE numbers until receiver emits one long beep
  - The applicable fault code is now displayed
- Press the MODE button to return to the normal display

DIII-Net System Control

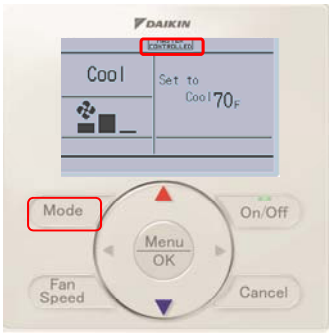
Setting the Changeover Master

A designated Remote Controller must be configured as the Changeover Master in a Heat Pump system, or in a Heat Recovery system where a Branch Selector Box is connected to multiple indoor units controlled by individual Remote Controllers.

DIII-Net – Configure Remote Controller Changeover Master

- To configure a **BRC1E72** (NAV Remote) as a Master on a new system:
  - Press any button to bring on the display back light
  - The MASTER CONTROLLER icon will be flashing on all NAV remote controllers
  - Press the **Mode** button once and the icon will disappear on the Master RC
  - All other NAV Remote Controllers (slaves) will display MASTER CONTROLLER solid
- To configure a **BRC2A71** (Simplified)
  - The Master Controller symbol will be flashing ("Changeover Under Control") on all Simplified RC's
  - Press the **Mode** button once and the symbol will disappear on the Master RC
  - All other "Simplified" Slave Remote Controllers will display symbol solid
- To change the Master, press & hold the **Mode** button for 5 sec. on the Master RC All RC's go into Master configuration mode with flashing icons

MASTER



BRC1E72 Navigation Remote Controller

MASTER

BRC2A71 Simplified Remote Controller

DIII-Net – Configure Wireless Hand-Held Remote Controller Changeover Master

- On power up of indoor units, all "Master Controlled" icons or symbols will be flashing on the wired Controllers ONLY. The wireless Controllers do not display an icon for Master
- Go to the wireless Controller you want set as the Changeover Master and while pointing the wireless Controller at the indoor unit receiver:
  - Press and hold the **MODE** button for approx. 4 seconds - you will hear "BEEP-BEEP" then a second "BEEP-BEEP"
  - Press the **MODE** button a second time and listen for a "BEEP-BEEP" again; this is the confirmation that you have configured this indoor unit Remote Controller as the system Master
- To change the Master to a different Remote Controller in the system
  - Press and HOLD the **MODE** button for 4 seconds until "BEEP-BEEP"
  - Go to the new Remote Controller and press the **MODE** button once to set the MASTER

Wireless Hand-Held Remote Controller

DIII-Net Remote Controller Additional Information

Refer to the specific Remote Controller model Installation and Operation Manuals for more information.

Indoor Unit Field Setting codes are found in both the specific indoor unit Installation Manuals, and Condenser Service Manuals - Indoor Unit sections.

All *VRV* and *SkyAir* system components must be correctly wired using the Daikin specified control wire and installation practices to insure reliable system communications and control operation.

Additional Controls Training: http//daikinuniversity.com
Controls Product & Application
Controls Installation & Commissioning
Controls Integrator


DAIKIN AC
absolute comfort
Thank You
PT-VRV-0113-PP0-01A
© 2012 Daikin AC

Field Settings for
Daikin VRV / SkyAir indoor unit and BRC1E72

Control Engineering, Daikin AC (Americas)
7/31/2013

Availability of Indoor Unit Field Settings (Control Related)

As of 7/31/2013

Mode No.	10				12						
First Code No.	2		5	6	0	1	2 (****)	3		6	8
Second Code No.	01/02	03	01/02	01/02	01/03/04	01/02/03	01/02	01/02	03	01/02/03	01/02
FXSQ_MVJU	X	X***	X***	X	X	X	X (02)	X	X***	X**	n/a
FXMQ_MVJU	X	X**	X**	X	X	X	X (02)	X	X**	X**	n/a
FXMQ72/96MVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
FXMQ_PVJU FBQ_PVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
FXDQ_MVJU	X	X	X	X	X	X	X (02)	X	X	X *	n/a
FXTQ_PVJU FTQ_PAVJU FTQ_PBVJU	X	X	X	X	X	X	X (02)	X	X	X	n/a
BEQ_MVJLR1 (FXOQ)	X	X	X	X	X	X	X (02)	X	X	X**	n/a
FXLQ_MVJU	X	X**	X**	X	X	X	X (02)	X	X**	X**	n/a
FXNQ_MVJU	X	X**	X**	X	X	X	X (02)	X	X**	X**	n/a
FXAQ_MVJU FAQ_MVJU FAQ_PVJU	X	X**	X**	X	n/a	X	X (01)	X	X**	n/a	n/a
FXAQ_PVJU	X	X	X	X	n/a	X	X (01)	X	X	n/a	n/a
FXZQ_M7VJU	X	X**	X**	X	X	X	X (01)	X	X**	X**	n/a
FXFQ_MVJU FCQ_MVJU FCQ_PVJU	X	n/a	n/a	n/a	X	X	X (01)	X	n/a	n/a	n/a
FXFQ_PVJU FCQ_PAVJU	X	X	X	X	X	X	X (01)	X	X	X	X
FXHQ_MVJU FHQ_MVJU FHQ_PVJU	X	n/a	n/a	n/a	X	X	X (01)	X	n/a	n/a	n/a

* Field settings highlighted in purple may not be available in units manufactured before 1/1/2013.
** Field settings highlighted in orange may not be available in units manufactured before 9/1/2009.
*** Field settings highlighted in blue may not be available in units manufactured before 1/1/2007.
**** Factory default value is indicated in parenthesis.

Field Settings – Indoor Units (Control Related)

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (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.	--
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above **(Note 3)**	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--
12(22)	**0**	KRP1B71 X1-X2 status output	Indoor unit Thermo-On/Off status	--	Indoor unit Operation On/Off status	Indoor unit Alarm status
	1	Indoor unit T1-T2 input	Forced Off Closed Contact-Indoor unit is forced off and Central Control icon is displayed. Unit cannot be turned on manually. Operation can be overridden by central control. Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.	On/Off Closed Contact-Indoor unit is turned on. Open Contact-Indoor unit is turned off. Unit responds to last command, i.e., unit can be turned on manually or by central control after circuit has opened. Operation is prohibited when remote controller On/Off control is restricted by a multizone controller.	External Protection Device Closed contact-Unit shall resume normal operation. Open contact-Unit shall shut down and generate an A0 error.	
	2	Thermo-On/Off deadband **(Note 4)**	2F (1C)	1F (0.5C)	--	--
	3	Fan Speed in Heating Thermo-Off	LL	User set	Off	--
	6	Fan Speed in Cooling Thermo-Off	LL	User set	Off	--
	8	Return air sensor offset	2C	None (for remote sensor)		

1. Field settings are normally applied to the entire remote control group, however if individual indoor units in the remote control group require specific settings or for confirmation that settings have been established, utilize the mode number in parenthesis.
2. Any features not supported by the installed indoor unit will not be displayed.
3. When mode 10-2-01 is selected, only the return air temperature value is reported to the multizone controller.
4. The actual default deadband value will depend upon the indoor unit model.

Field Settings – BRC1E72

(Green highlighted items are new from BRC1E71)

Mode No.	First Code No.	Description	Second Code No. (Cells in bold are factory default settings)			
			01	**02**	**03**	**04**
1b	**7**	STANDBY icon	Display in Defrost or Hot Start	Not Displayed		
	11	Day/Clock	Displayed	Not Displayed		
	12	Setpoint display while the unit is off	Displayed	Not Displayed		
	13	Mode display while the unit is off	Displayed	Display OFF instead of the mode		
	14	Fan Speed button configuration	Fan Speed	Fan ON/Auto (Fan LL in thermo-off) **(Applicable to SkyAir only)**	FAN ON/Auto (Fan Off in thermo-off) **(Applicable to SkyAir only)**	
	15	Fan icon display	Displayed	Not Displayed		
1c	**1**	Thermistor sensor used for Auto-changeover and Setback control	Return Air Thermistor–return air temperature displayed on controller as room temperature	Remote Controller Thermistor – remote controller temperature displayed on controller as room temperature	--	--
	10	Temperature Sensor Offset	**01:** -5.4°F (-3.0°C) / **02:** -4.5°F (-2.5°C) / **03:** -3.6°F (-2.0°C) / **04:** -2.7°F (-1.5°C) / **05:** -1.8°F (-1.0°C) / **06:** -0.9°F (-0.5°C) / **07:** 0.0°F (0.0°C) / **13:** +5.4°F (+3.0°C) / **12:** +4.5°F (+2.5°C) / **11:** +3.6°F (+2.0°C) / **10:** +2.7°F (+1.5°C) / **09:**+1.8°F (+1.0°C) / **08:**+0.9°F (+0.5°C)			
1e	**2**	Setback availability	N/A	Heating mode only	Cooling mode only	Cooling/ Heating modes
	4	Schedule and Auto-changeover enabled when multizone controller is detected **(Note 1)**	No	Yes	--	--
	9	CENTRAL CONTROL icon	Not displayed	Displayed when under control by a multizone controller		
	10	Message when button pushed which has been prohibited by a multizone controller	Key lock icon blinks for 5 seconds	Message displayed on screen: "Under Centralized Control. Adjustments at the remote control are being restricted."		
	11	Auto changeover guard timer	15 min	30 min	60 min	90 min
	12	Auto changeover point	0.9°F (0.5°C)	1.8°F (1.0°C)	2.7°F (1.5°C)	3.6°F (2.0°C)
	13	Quick changeover point beyond the auto changeover point	0.9°F (0.5°C)	1.8°F (1.0°C)	2.7°F (1.5°C)	3.6°F (2.0°C)

1. Native remote controller Schedule and Auto-changeover functions are disabled when a multizone controller is detected and a group address is assigned.

BRC1E72 Field Setting - Factory Default Values

- Do not change from the factory default value in the cells below highlighted in grey.
- This table would be referred to confirm the default value when you might have changed the unnecessary field setting accidentally.

Mode No. / First Code No.	1b	1c	1e
0	02	02	--
1	02	02	02
2	--	02	01
3	--	01	--
4	04	02	01
5	01	01	02
6	01	01	02
7	01	02	02
8	05	01	02
9	01	01	02
10	--	07	02
11	01	07	03
12	01	--	01
13	01	--	01
14	01	--	--
15	01	--	--

Daikin VRV Installation & Commissioning

Agenda
Training Modules
Training Materials
Simulator Exercises

- **Class Introduction**
  - Training Agenda & Handout Review
- ***VRV* Prod. & Tech Review** presentation
- **Basic *VRV* Installation** presentation
  - *VRVIII* Component Control Wiring Exercises
- **Basic *VRV* RC Installation & Configuration** presentation
  - Remote Controller Simulator Exercises
- ***VRVIII* Commissioning Guide** presentation
  - *VRVIII* Commissioning Exercises – PCB Simulator
- **Class wrap-up**
  - Training Surveys
- **Training End**

DAIKIN AC UNIVERSITY

Slide Presentation Modules

VRV Prod & Tech Intro Review
VRV Basic Installation
Basic *VRV* Remote Controller Installation & Configuration
VRVIII Commissioning Guide

Materials

Simulators

Remote Controller CD or DACA Controls Simulator Box
VRVIII Control PCB CD
Printed Handouts
VRVIII / *VRVIII-S* Service Manuals
VRV-WIII Service Manual (optional)
VRV RC Install & Config. Booklet
Basic *VRV* Installation
DIII-Net Wiring Quiz & Component Wiring Exercises
VRV Field Settings
VRVIII Commissioning Guide booklet
VRV-WIII Commissioning Guide booklet

Misc. Materials

Colored Pens or Pencils (Black – Blue – Red)
Extra *DIII-Net* Wiring Quiz & Component Wiring Exercises

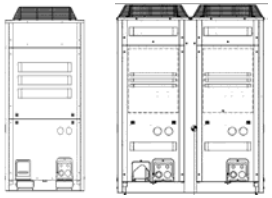
Exercise #1

Write in your answers

1. ***VRV DIII-Net*** **Control Wire Specification:**

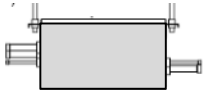
Indicate the *DIII-Net* Control Wire Specification

2. **Control Terminal Designations on *VRVIII* HP & HR Condensers:**



Indicate the Control Terminal Designations

3. **Control Terminal Designations on BSVQ Single Branch Selector Boxes:**



Indicate the Control Terminal Designations

4. **Control Terminal Designations on VRV Fan Coils:**

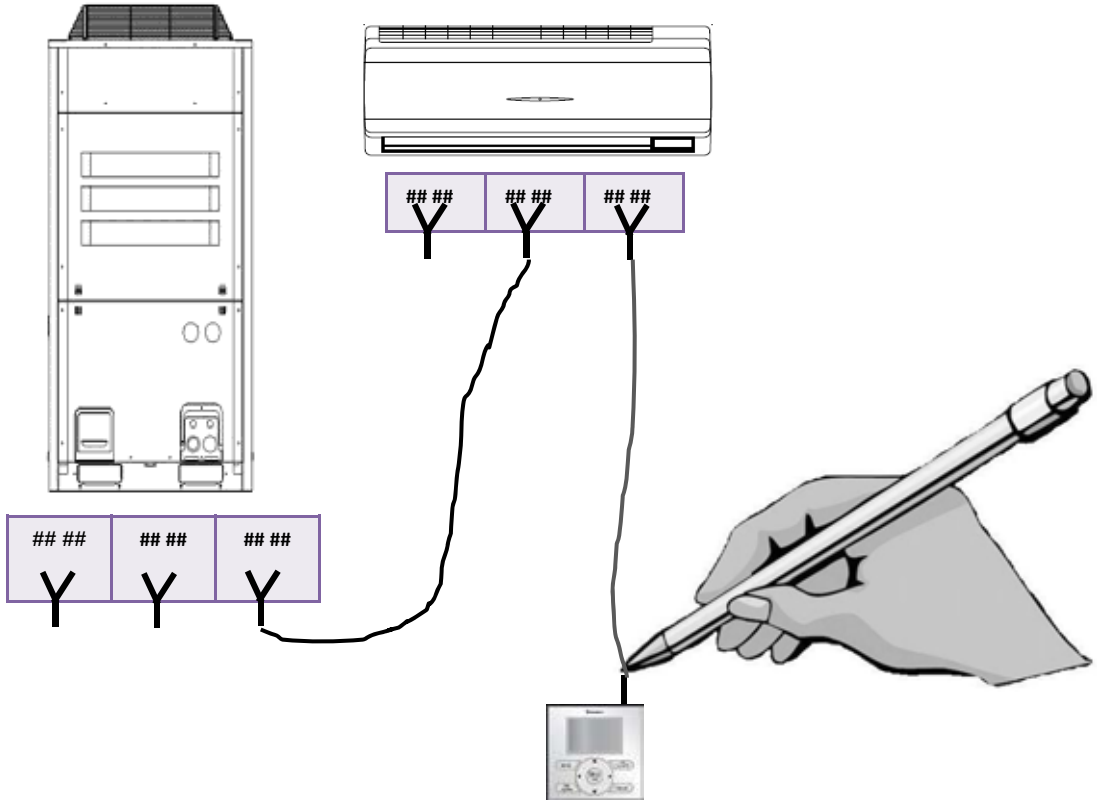
Indicate the Control Terminal Designations

5. **Control Terminal Designations on BRC1E71 and BRC2A71 Remote Controllers:**

Indicate the Control Terminal Designations

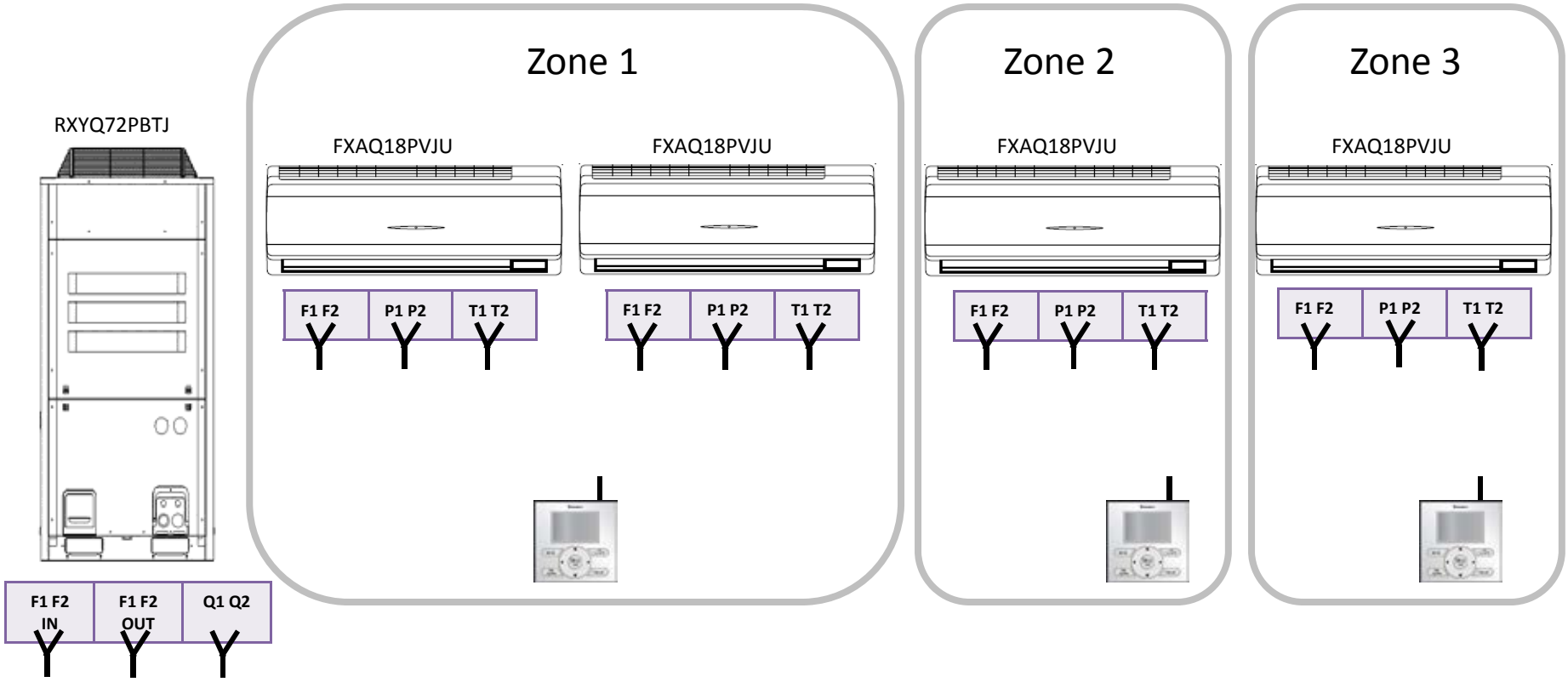
DIII-Net Wiring Exercise Example

Draw in each circuit using a different color pencil or pen from component terminal to component terminal to indicate each control circuit – Indicate the “Daisy-chain” wiring where required.



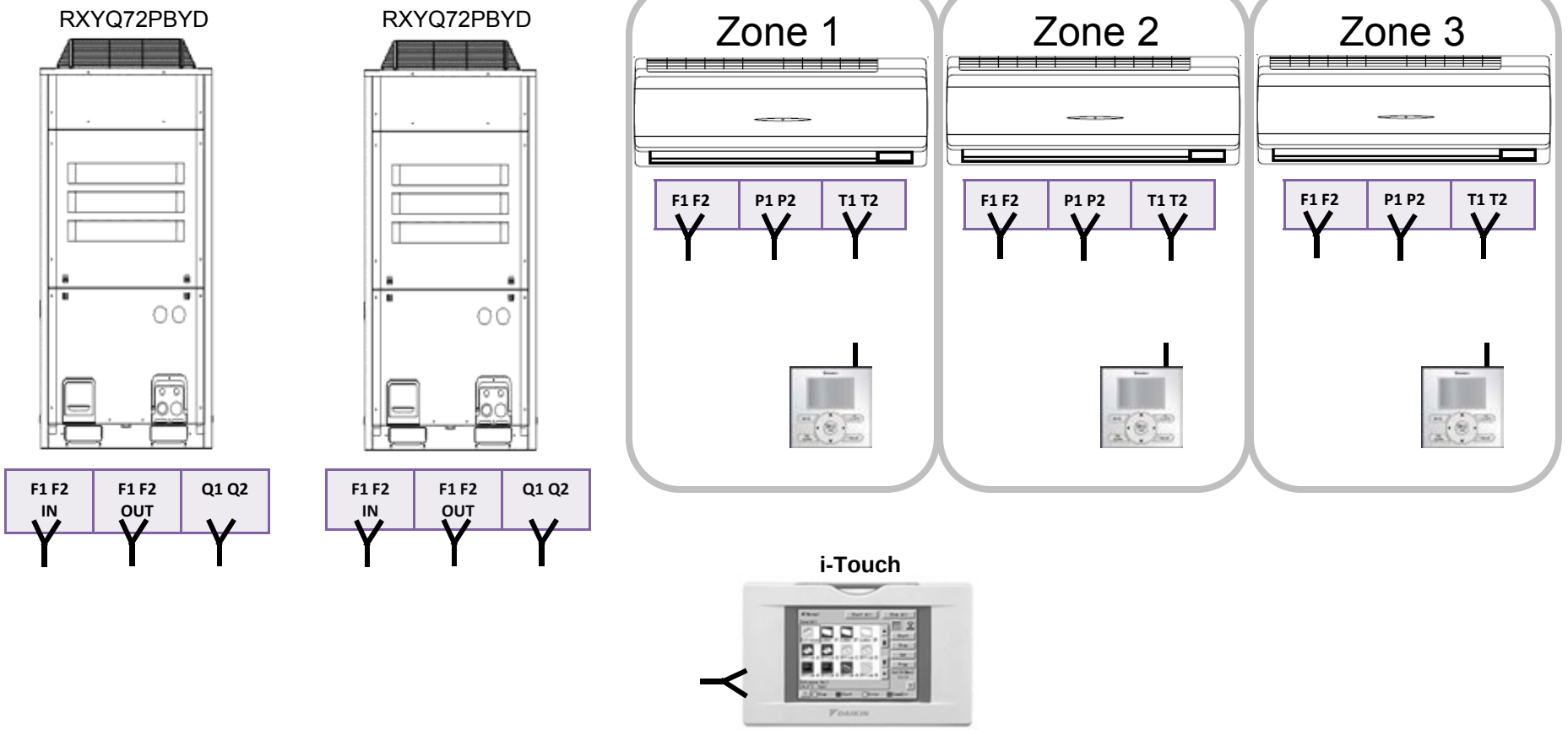
Exercise #2

6 Ton Heat Pump with 3 zones



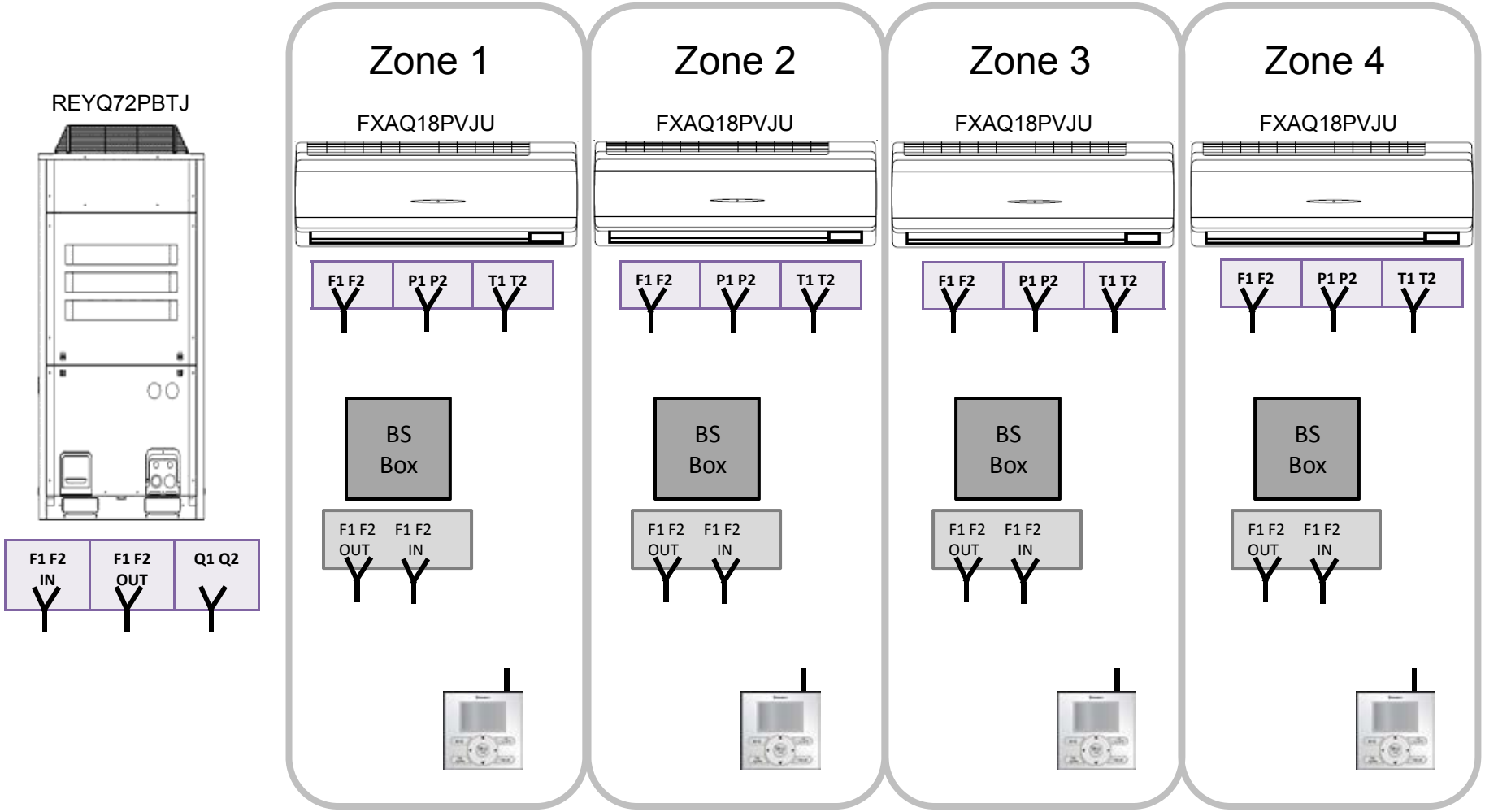
Exercise #3

12 Ton Manifolded Heat Pump with 3 zones and i-Touch Multi-Zone Controller



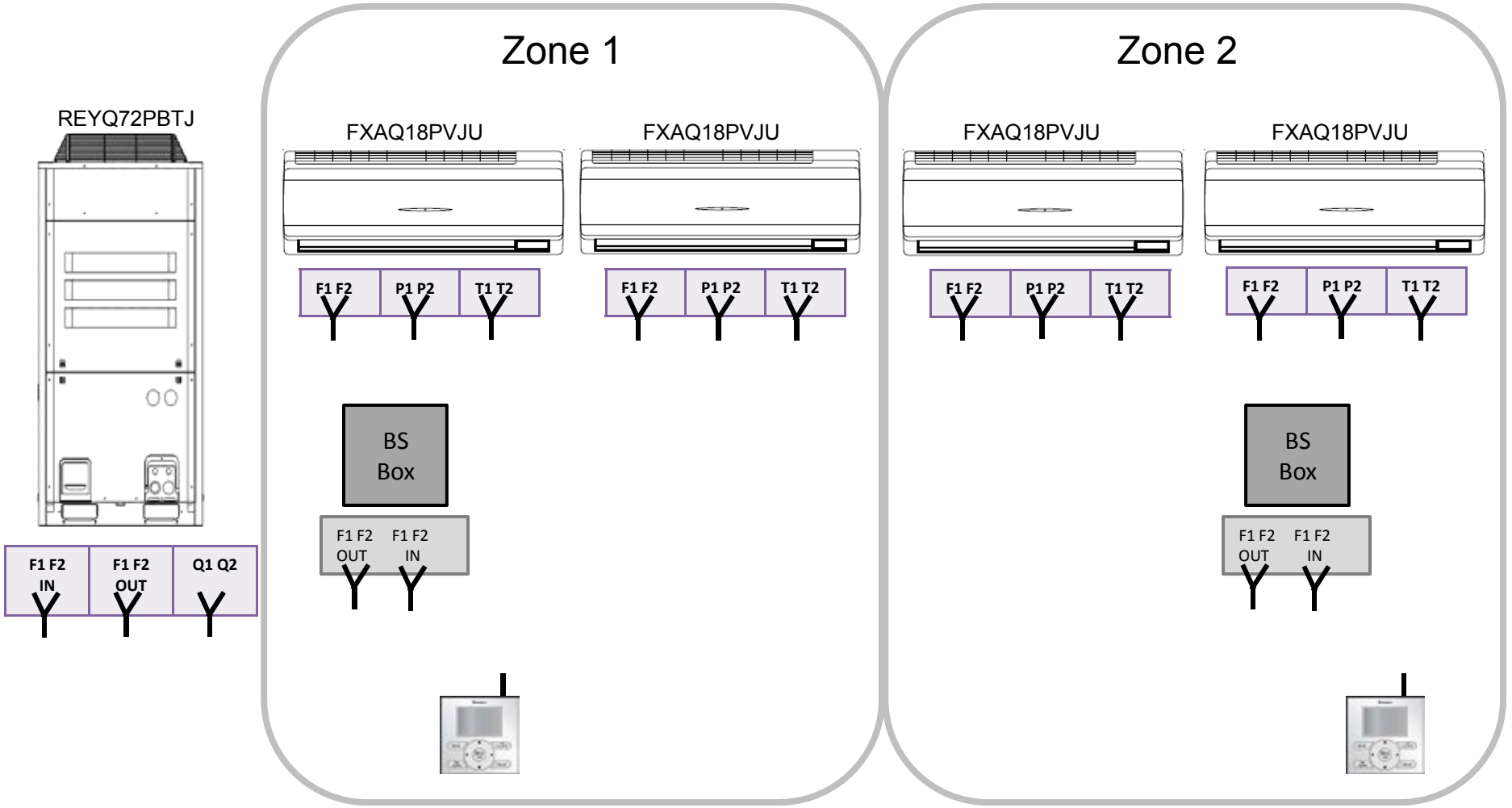
Exercise #4

6 Ton Heat Recovery with 4 zones



Exercise #5

6 Ton Heat Recovery with 2 Zones



BRC1E71 Remote Controller Simulator Exercises

- Turn Controller Simulator ON or load Controller Simulator CD
  - Verify the power-up sequence on the NAV Remote Controller
- Change the Main Display from “STANDARD” to “DETAILED”
  - Room Temp
  - Date & Time
  - Day of week

- Use the “Field Settings Table” handout sheet for the following exercises
  - Change the Field Setting for “Priority of thermistor sensors for space temperature control” **TO:**

    “Only the Return Air Thermistor will be used”

  - Change the “T1 T2” Field Setting **TO:** “ON/OFF” Operation
  - Verify Field Setting Changes

VRVIII PCB "CD" Simulator Commissioning

VRVIII Commissioning Guide

DAIKIN UNIVERSITY

Daikin
VRV
Commissioning Guide

Participant Guide

Preface

- This handbook is intended for use as an aid to Field Service Technicians with general technical knowledge and training on VRV equipment. If the Field Service Technician does not have any (or limited) technical knowledge and training on VRV or VRF equipment, do not attempt to install, commission or service any Daikin VRV product with this handbook. Instead, the Field Service Technician needs to complete training offered by Daikin AC (Americas), Inc. ("Daikin AC") before attempting any installation, commissioning or service of the VRV product.

- This reference handbook is available for Field Service Technicians as a simplistic reference guide for commissioning. It is not intended to be a substitute for the VRV Installation and Service Manuals or for training offered by Daikin AC.

- We assume the Field Service Technicians using this handbook are fully qualified to work on the VRV equipment.

- This handbook is intended as a demonstrative aid only. It is not intended as a substitute for training offered by Daikin AC. Anyone installing VRV equipment should first review the unit and inspect and evaluate the location where the unit is to be installed. Every installation varies in its individual circumstances and the Field Service Technician will have to use their professional judgment in each installation.

- Should you require further assistance contact our Technical Service Department.

- Every effort has been made to insure that the information and graphics included in this Commissioning Guide is as accurate as possible at the time of publication. DaikinAC Training Department shall not be held liable for any changes in procedures, specifications, or any system component information which are different from what is represented in this Guide.

Contributors:
Dale Kingma: Daikin Technical Trainer
Mark Harte: Daikin Sr. VRV Technician

Daikin AC University Locations

Daikin AC University
17570 Cartwright Road
Irvine, CA 92614
(949) 732-5000

Daikin AC University
1645 Wallace Rd
Carrollton, TX 75006
(972) 245-1510

Daikin AC University
43-24 21street Suite 203
Long Island City. NY. 11101
(718) 247-7757

Service Hotline: (866) 4-DAIKIN

http://DaikinUniversity.com

DAIKIN AC
absolute comfort

DAIKIN AC®
absolute comfort

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

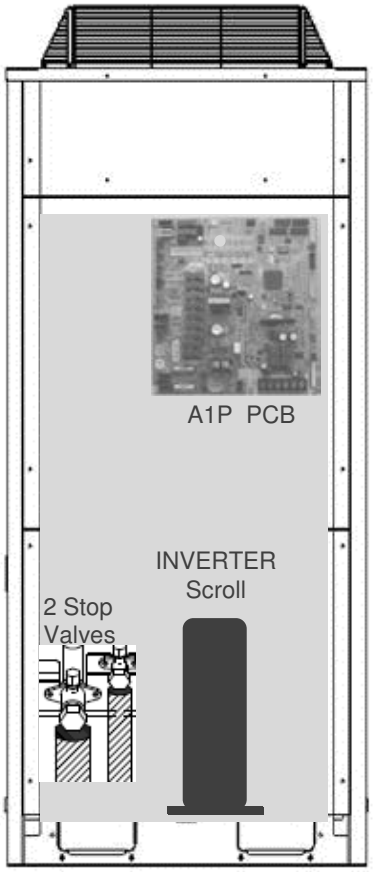
VRV® III System Components

Condensers – Fan Coils – Branch Selector Boxes- Local Remote Controllers

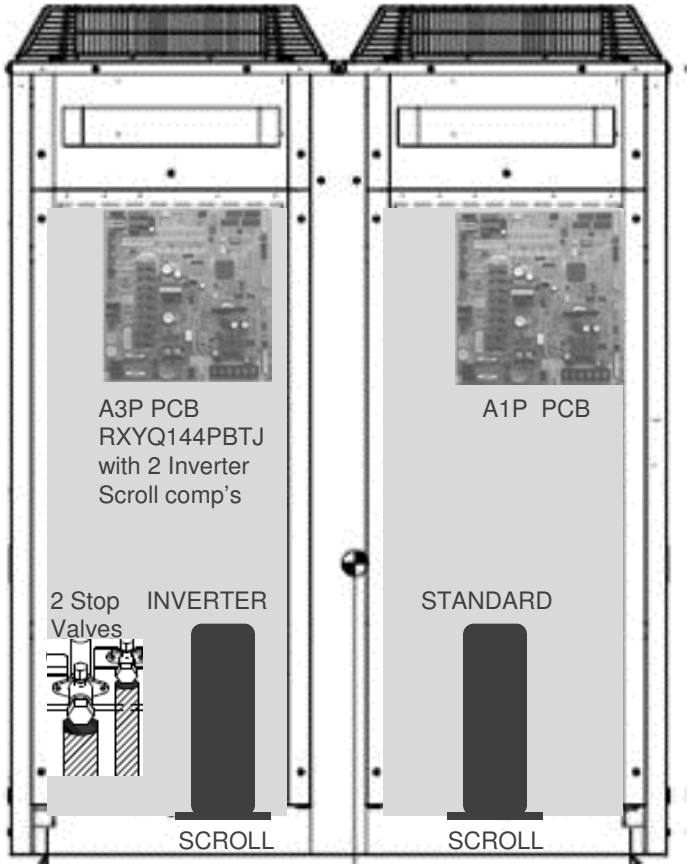



Heat Pump Condenser Styles

Base Single Modules



RXYQ72PB

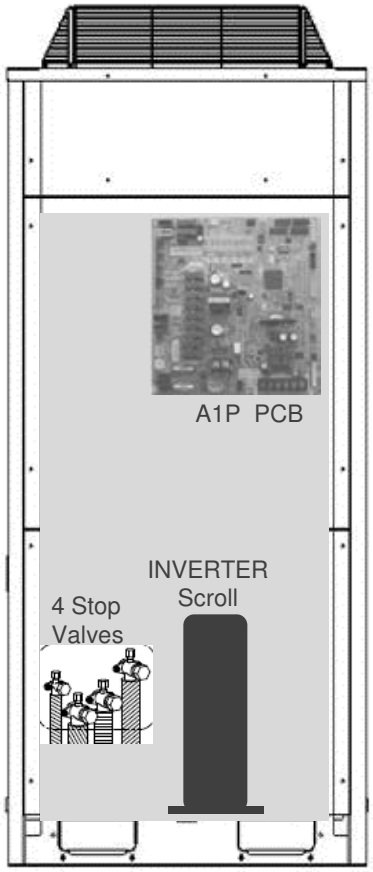


*RXYQ96,120,144PB

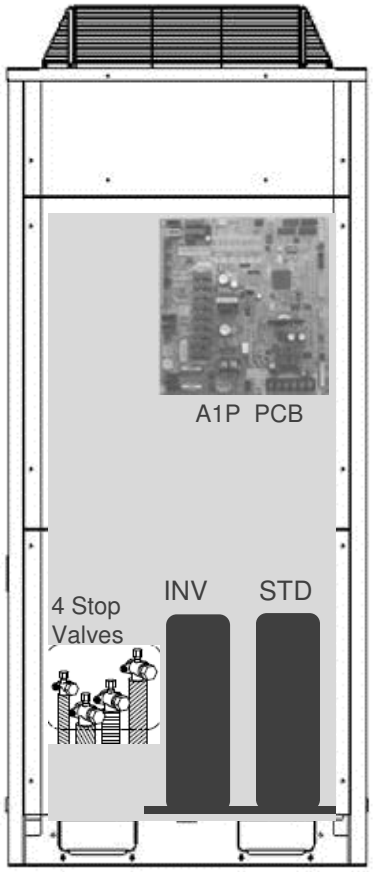
*NOTE: RXYQ144PBTJ (208/230vac.) Utilizes 2 Inverter Scroll Compressors – Dual Fan & 3 stop valves

Heat Recovery Condenser Styles

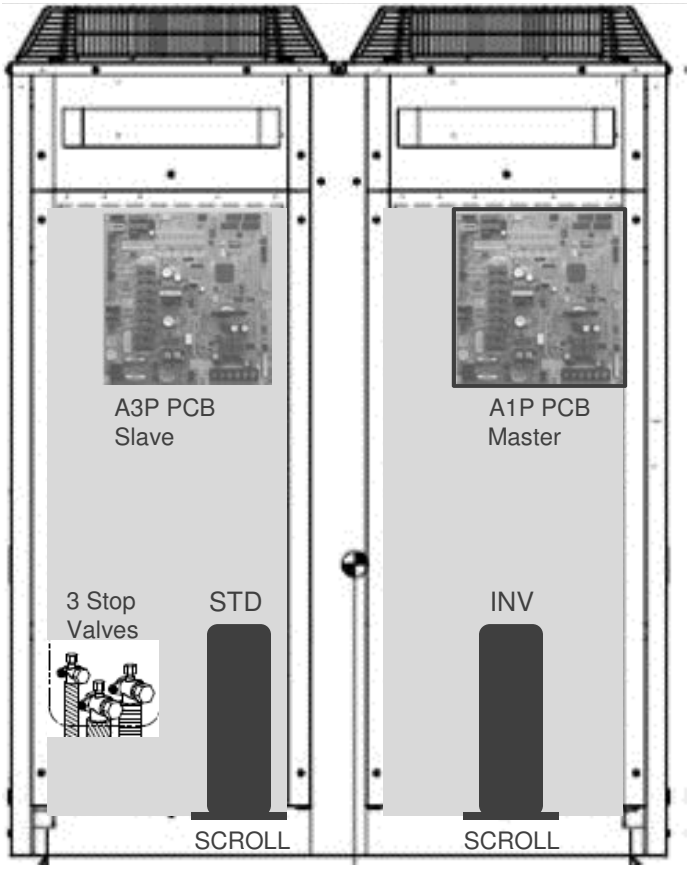
Single & Manifolded Modules



REMQ72PB



REMQ96/120PB



REYQ72,96,120,144PB

Heat Pump Systems

RXYQ_PBTJ (208/230vac 3Ph)

Single Module

6 Ton

8,10,12 Ton

Double Module

14 & 16 Ton

18 & 20 Ton

Triple Module

22,24,26 Ton

Triple Module

28 & 30 Ton

Heat Pump Systems

RXYQ_PBYD (460vac 3Ph)

Single Module

6 Ton 8 & 10 Ton

12 Ton

Double Module

14 & 16 Ton

18 & 20 Ton

Triple Module

22,24,26 Ton

28 & 30 Ton

Heat Recovery Systems

REYQ/REMQ_PBTJ (208/230vac 3Ph)

Single Module

6,8,10,12 Ton

Double Module

14,16,18,20 Ton

Triple Module

22,24,26,28 Ton

Heat Recovery Systems

REYQ/REMQ_PBYD (460vac 3Ph)

Single Module

6,8,10,12 Ton

Double Module

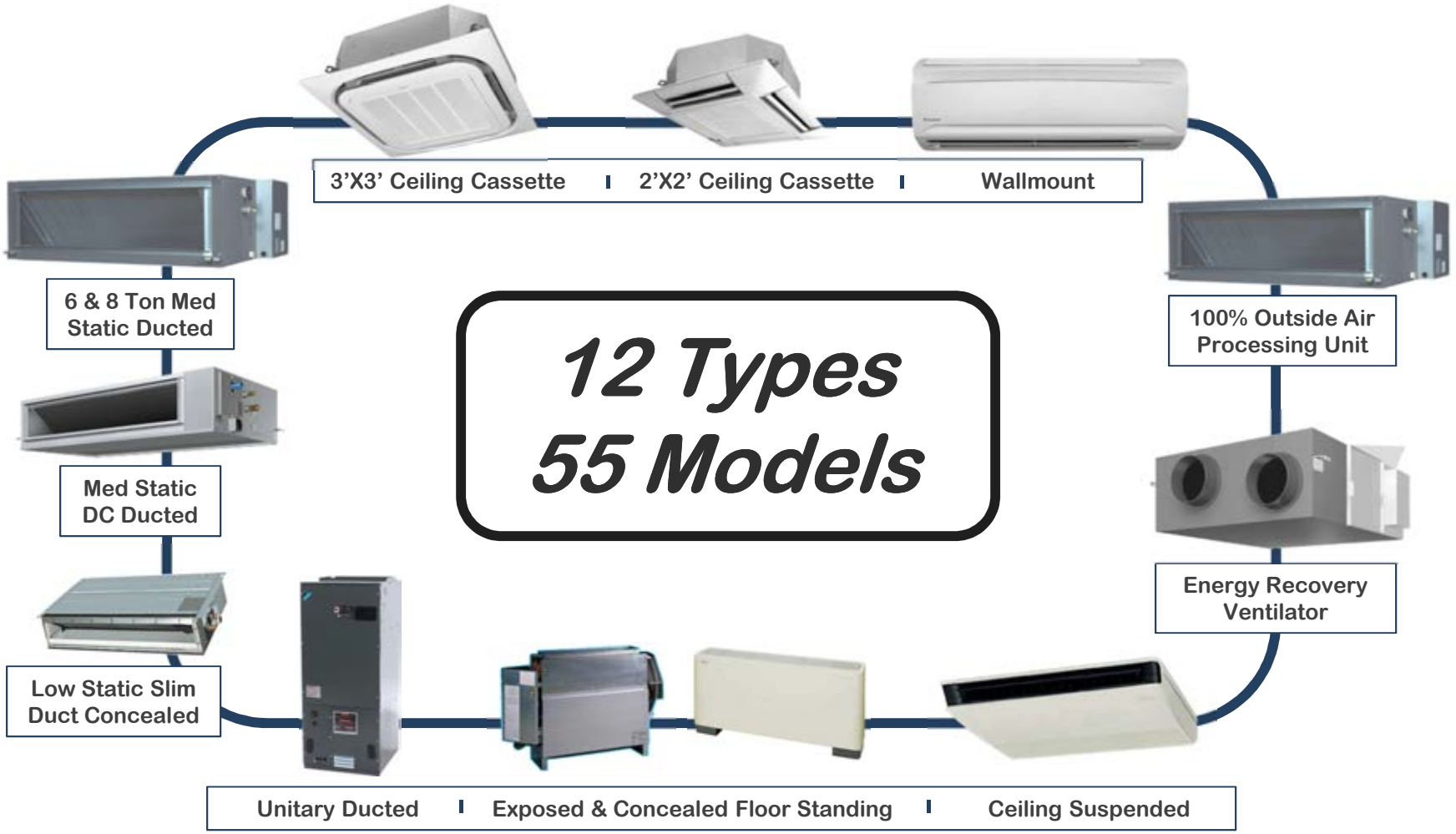
12,14,16,18,20 Ton

Triple Module

22,24,26,28 Ton

Indoor Units

VRVIII Models & Appearance – 208/230vac 1 Ph Indoor Units



VRVIII Models & Appearance – 208/230vac 1 Ph Branch Selector Boxes

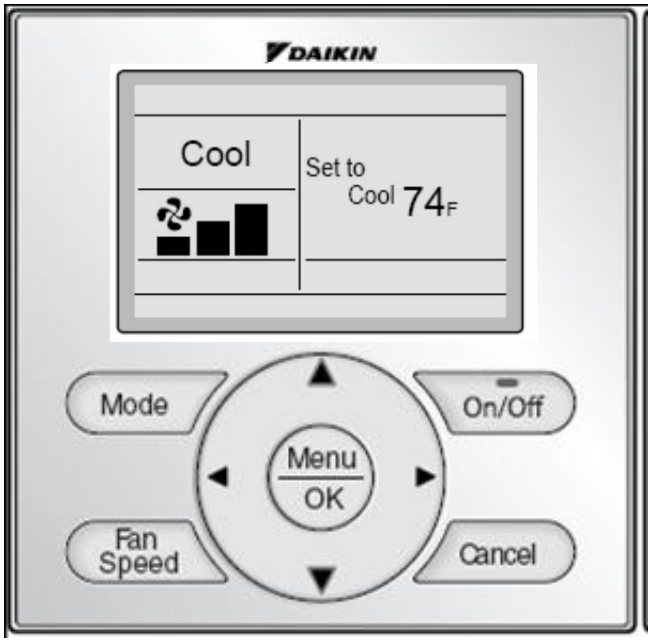
BSVQ36PVJU 36,000 Btu
BSVQ60PVJU 60,000 Btu
BSVQ96PVJU 96,000 Btu

BSV4Q36PVJU 4 - Port

BSV6Q36PVJU 6 - Port

Local Remote Controllers

BRC1E72



Navigation Remote Controller

BRC2A71

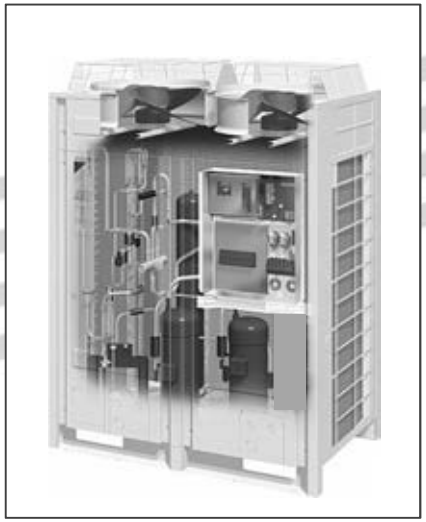
Simplified Remote Controller

BRC7C/7E/4C

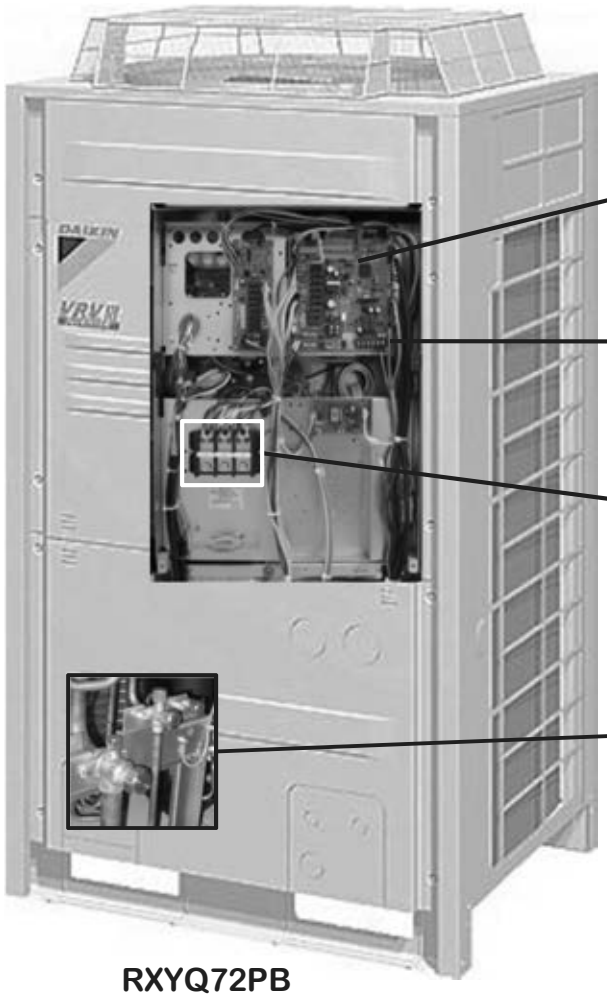
Hand-held Wireless Remote Controller

Condenser - Unit Layout

Line & Control Voltage – Stop Valves – Auto Charge Port – Control PCB



Single & Manifolded



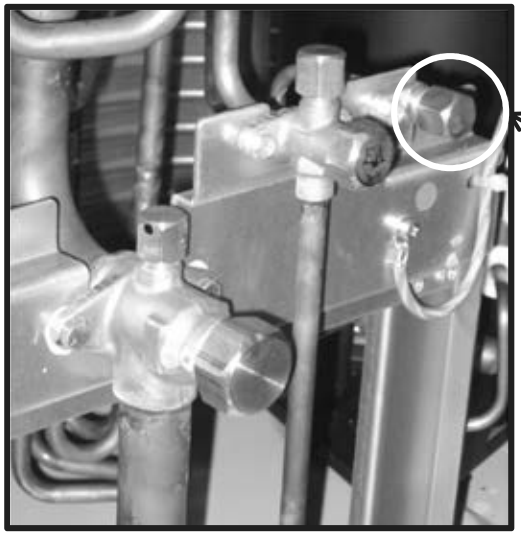
RXYQ72PB

Control PCB (A1P)

Control Voltage Connections

Line Voltage Connections

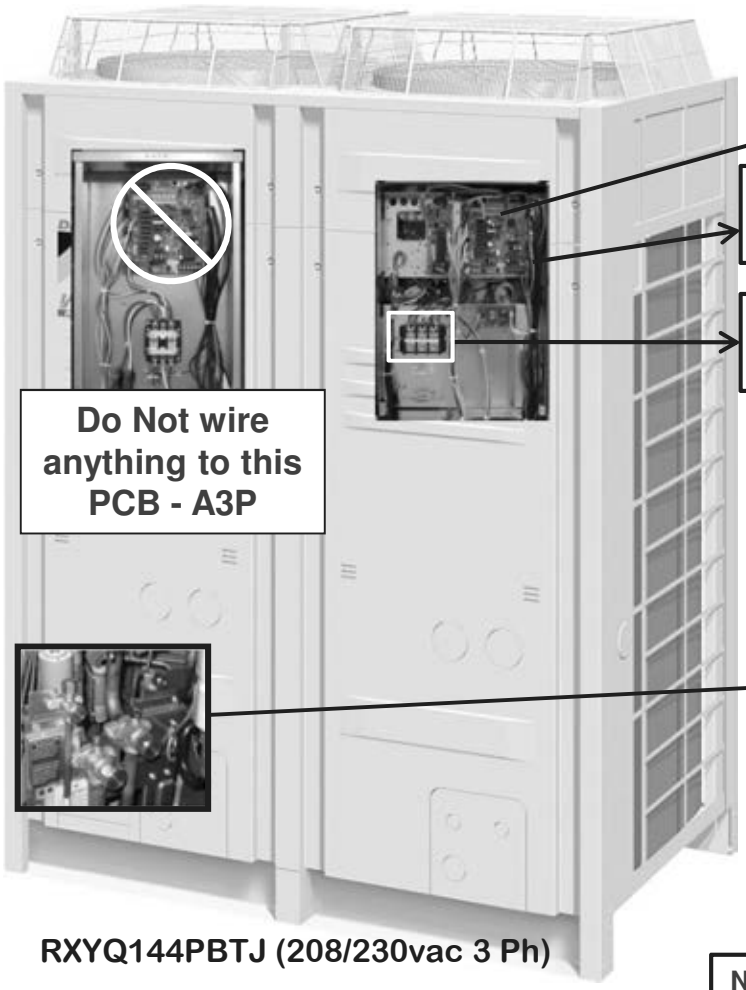
2 Stop Valves



Auto Charge Port

HP/LP Gas Liquid

Single Piped



Do Not wire anything to this PCB - A3P

Control Voltage Connections

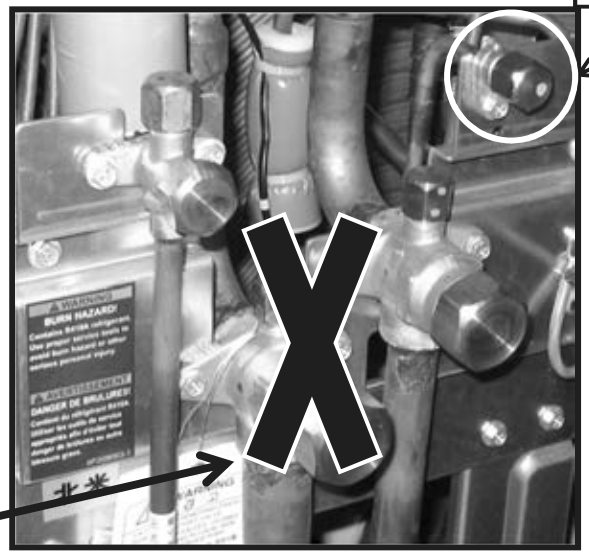
Line Voltage Connections

Control PCB (A1P)

RXYQ144PBTJ (208/230vac 3 Ph)

3 Stop Valves

Auto Charge Port

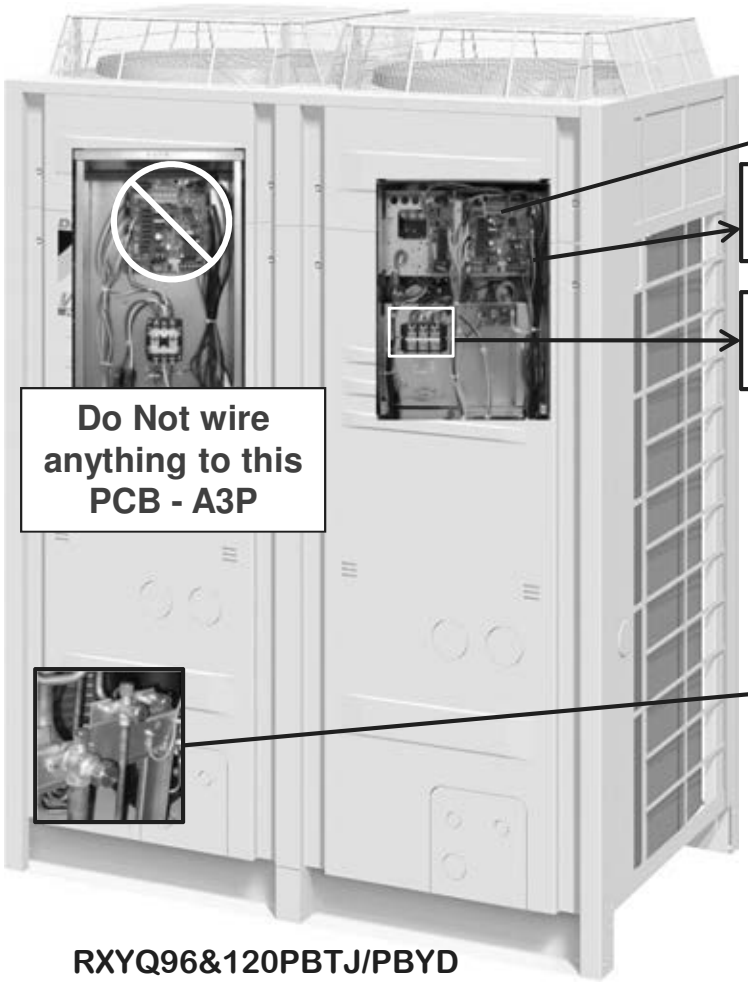


Not Used on this model

Liq. N/A HP/LP

NOTE: This model cannot be manifolded

Single & Manifolded



Do Not wire anything to this PCB - A3P

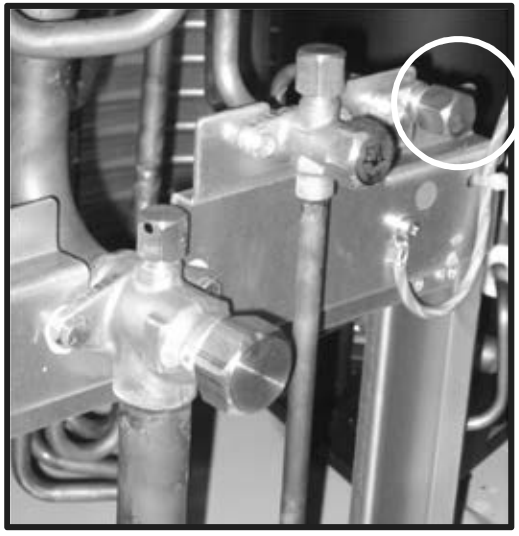
Control Voltage Connections

Line Voltage Connections

Control PCB (A1P)

Auto Charge Port

2 Stop Valves

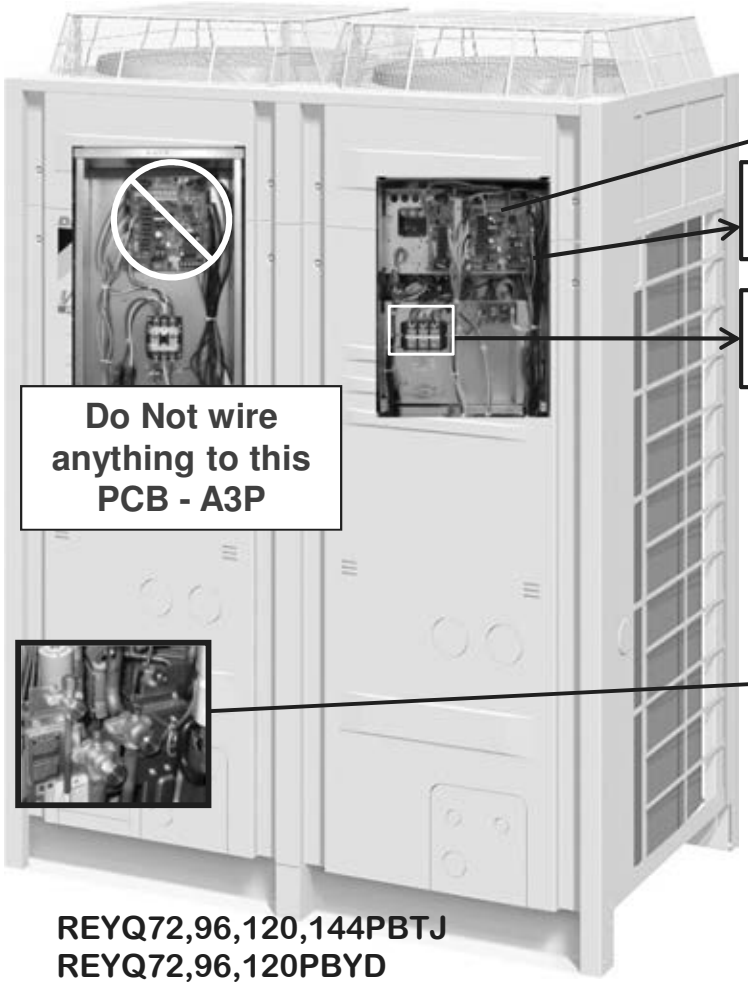


HP/LP Gas Liquid

RXYQ96&120PBTJ/PBYD

VRVIII Heat Recovery – REYQ

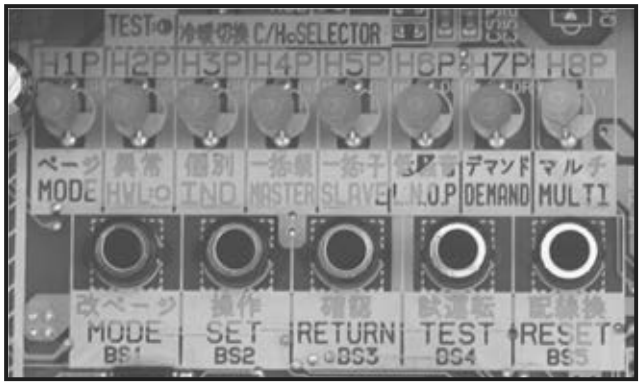
Single Piped



Do Not wire anything to this PCB - A3P

Control Voltage Connections

Line Voltage Connections

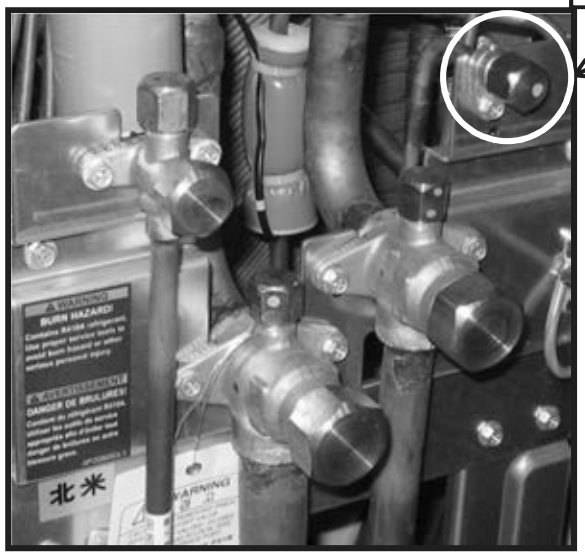


Control PCB (A1P)

REYQ72,96,120,144PBTJ
REYQ72,96,120PBYD

3 Stop Valves

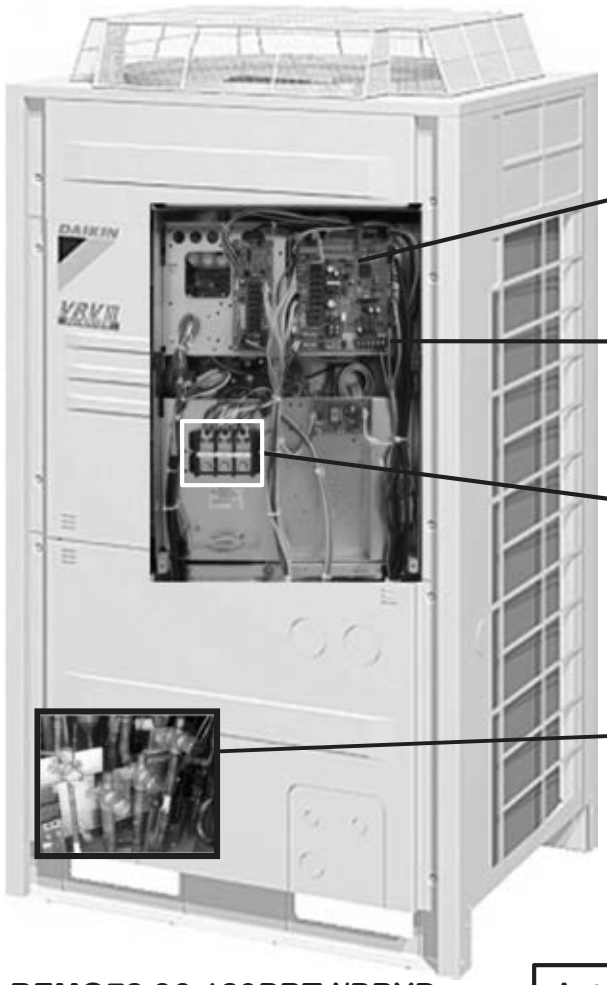
Auto Charge Port



Liq. Suction HP/LP

NOTE: These models cannot be manifolded

Manifolded Module

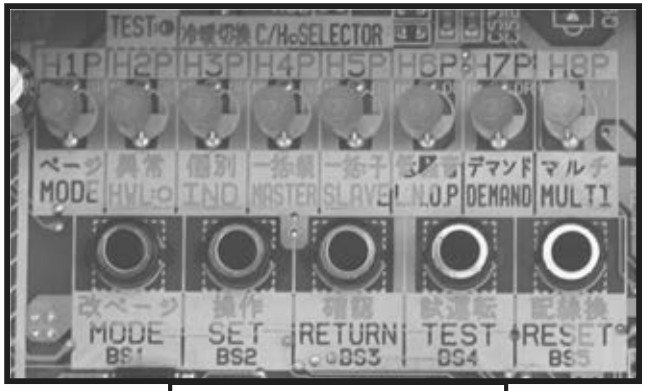


REMQ72,96,120PBTJ/PBYD

Control Voltage Connections

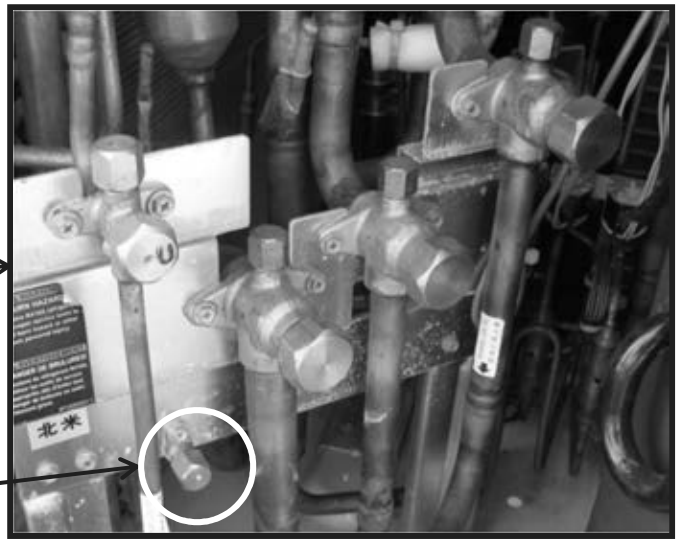
Line Voltage Connections

Auto Charge Port



Control PCB (A1P)

4 Stop Valves



Liquid - Suction-HP/LP-Equalization

System Commissioning

Pre-Commissioning Checks & Commissioning Steps

Pre-Commissioning Checks 1 - 10

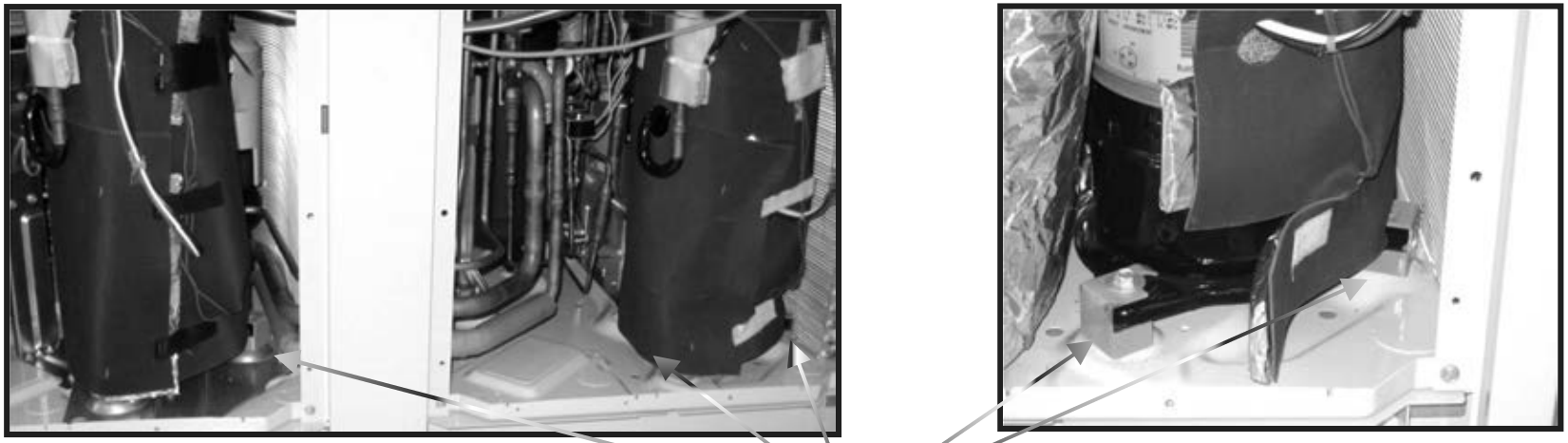
Pre-Commissioning Checks

1. Compressor shipping brackets removed
2. Stop Valves securely closed & field refrigerant piping pressure tested to 550 psi (450psi FXTQ) for 24 hours min. Include Pressure Equalization pipe on manifolded Heat Recovery systems (PB)
3. Triple evacuate to 500 microns or less; Include Pressure Equalization pipe on HR
4. All liquid lines are measured, "Additional Refrigerant Charge" is calculated and weighed into the system, breaking the final vacuum

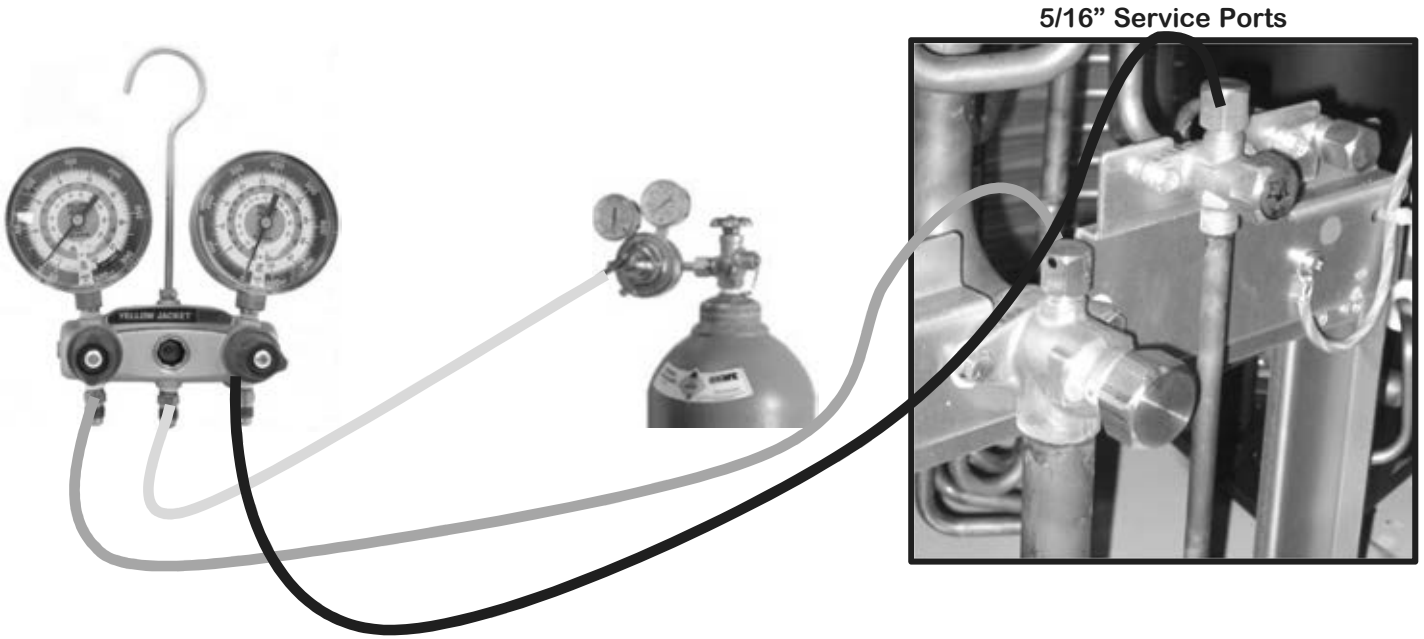
   Alternate: 50% (trim charge) of the calculated charge weighed in for "*Auto Charge*" operation
5. Stop Valves opened
6. All Remote Controllers installed and all control wiring is installed and properly connected at each terminal block
7. All condensate drain piping is connected, including fan coil tie-in, and insulated as required
8. Refrigerant lines (Pressure Equalization piping) are completely insulated including flare nut connections at Indoor Units
9. All ductwork is connected and air filters installed
10. Line Voltage is checked and verified to be within specified range for all system components

Compressor Shipping Brackets

- Compressor shipping brackets must be removed before system start up
- Each compressor is secured by 2 brackets, yellow in color, which are located under the compressor blankets
- Remove all of the brackets and retighten the compressor bolts
- Failure to remove the brackets can result in excessive noise during operation

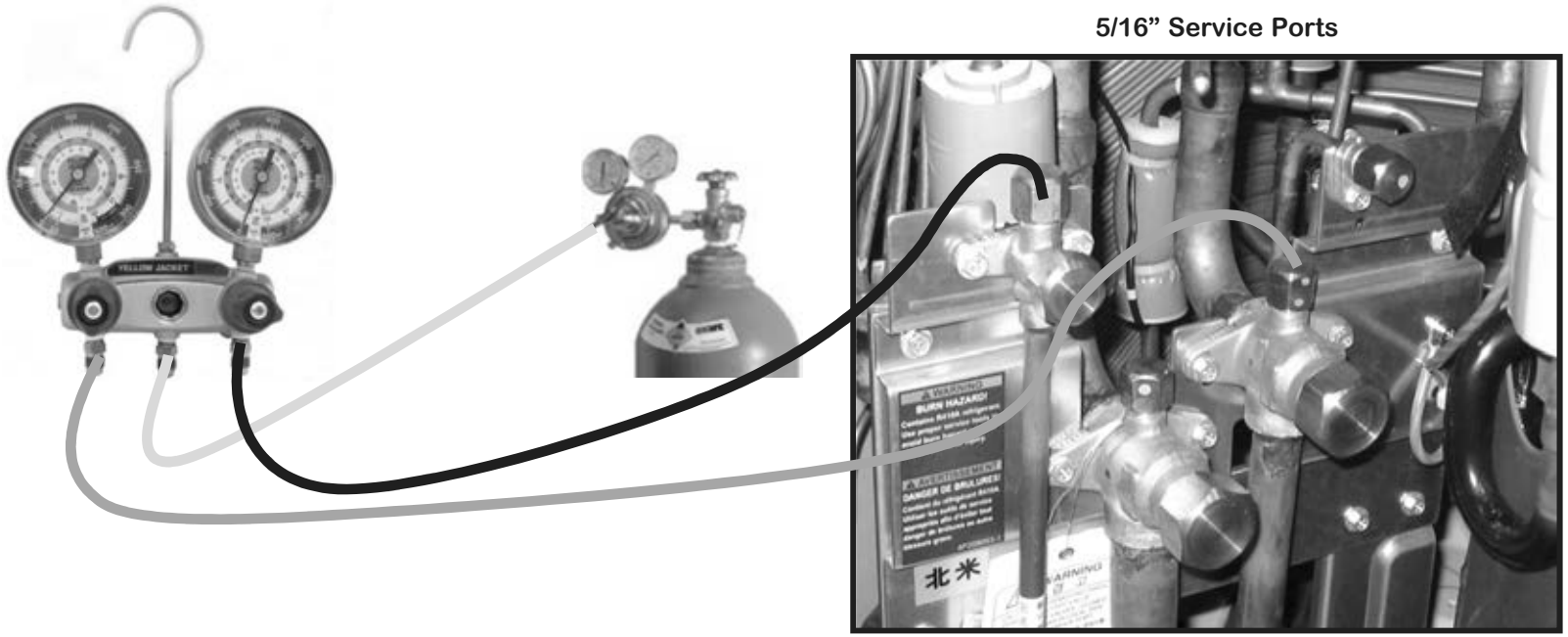


Pressure Test Connections
Heat Pump RXYQ - 2 Stop Valves



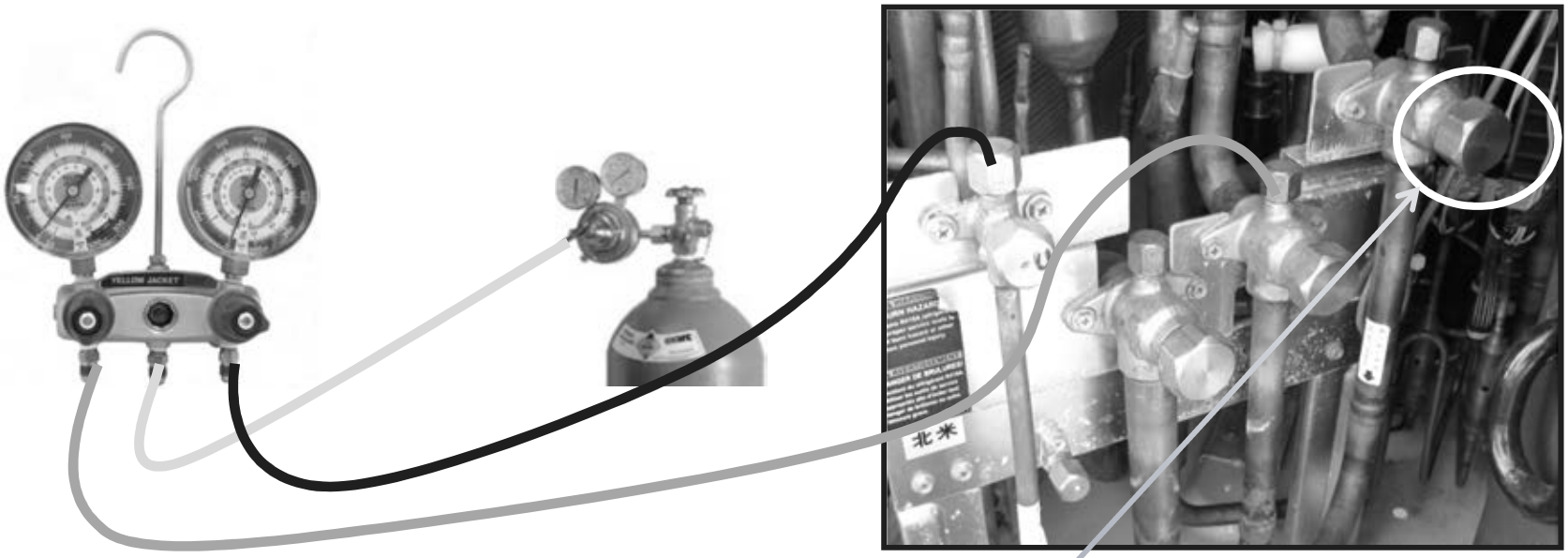
- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports
  - On Manifolded systems connect gauges to the main condenser
- Connect Nitrogen cylinder with regulator to manifold
- Do not energize the indoor units. Indoor unit EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Follow the Pressure Test procedure, and perform a system leak test.

Pressure Test Connections Heat Pump & Heat Recovery
3 Stop Valves RXYQ144PBTJ, REYQ72,96,120,144PBTJ & REYQ72,96,120PBYD



- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports
- Connect Nitrogen cylinder with regulator to manifold
- Do not energize the indoor units (or branch selector boxes for heat recovery). Indoor unit and branch selector box EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Follow the Pressure Test procedure, and perform a system leak test.

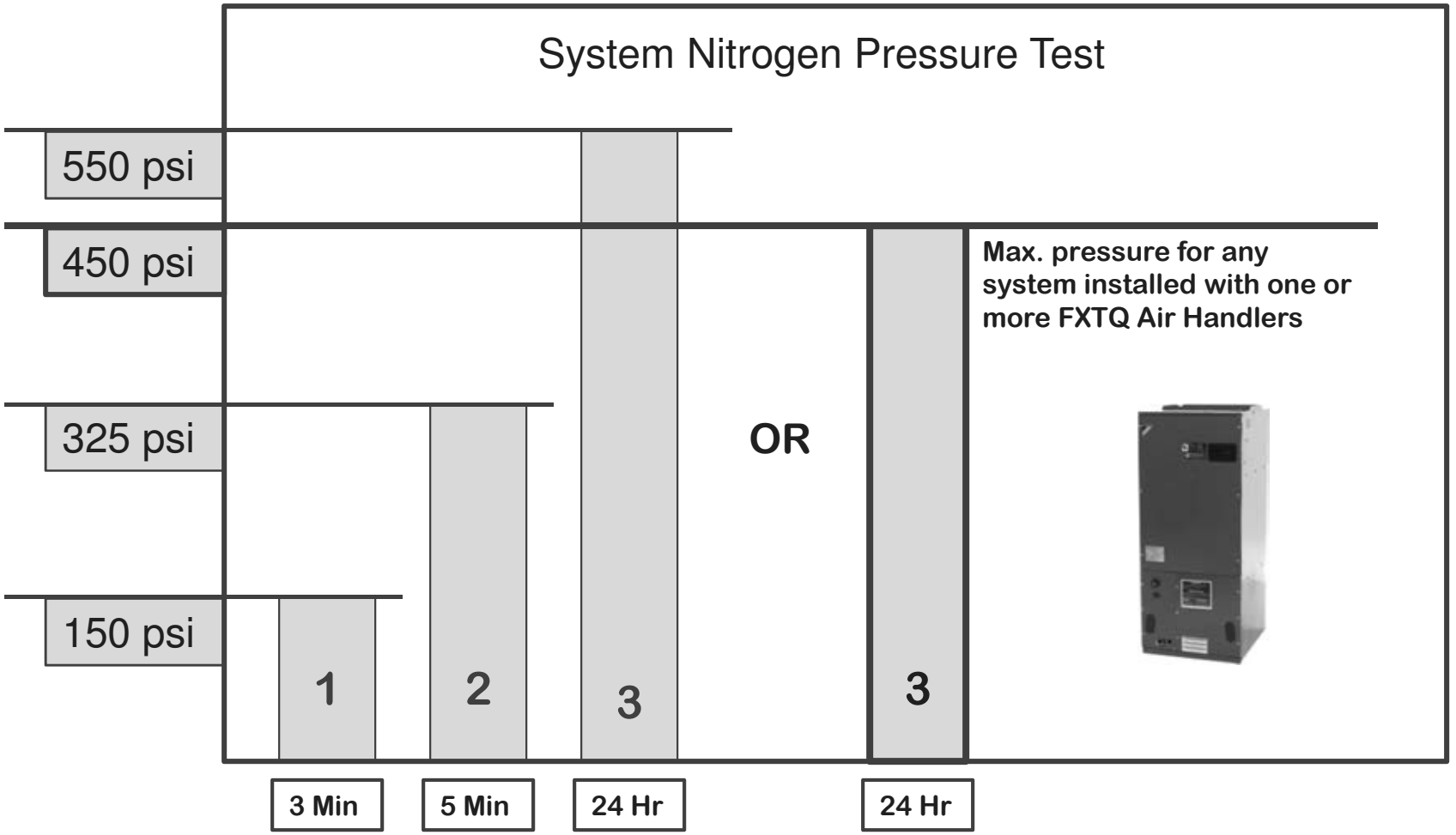
Pressure Test Connections
Heat Recovery REMQ 4 Stop Valves



5/16" Service Ports

- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports on the Main unit
  - Pressure test the Pressure Equalization Pipe separately
- Connect Nitrogen cylinder with regulator to manifold
- Do not energize the indoor units or branch selector boxes. Indoor unit and branch selector box EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Follow the Pressure Test procedure, and perform a system leak test.

3 Step System 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.

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 Triple Evacuation

- Minimum 6 cfm vacuum pump with check valve
- Digital Micron Gauge
- Insure Vacuum hoses are in good condition
- Indoor units (and branch selector boxes, heat recovery only) must not be energized to insure EEVs are open
    - Evacuate the refrigerant piping to 4,000 microns
    - Break the vacuum with Dry Nitrogen to a level of 2-3 PSIG
    - Evacuate the system to 1,500 microns
    - Break the vacuum with Dry Nitrogen to a level of 2-3 PSIG
    - Evacuate the system to 500 microns or less
        - Conduct a micron rise test; system should hold 500 microns for 1 hour
          Hold vacuum for liquid refrigerant charging – Do Not remove manifold gauges

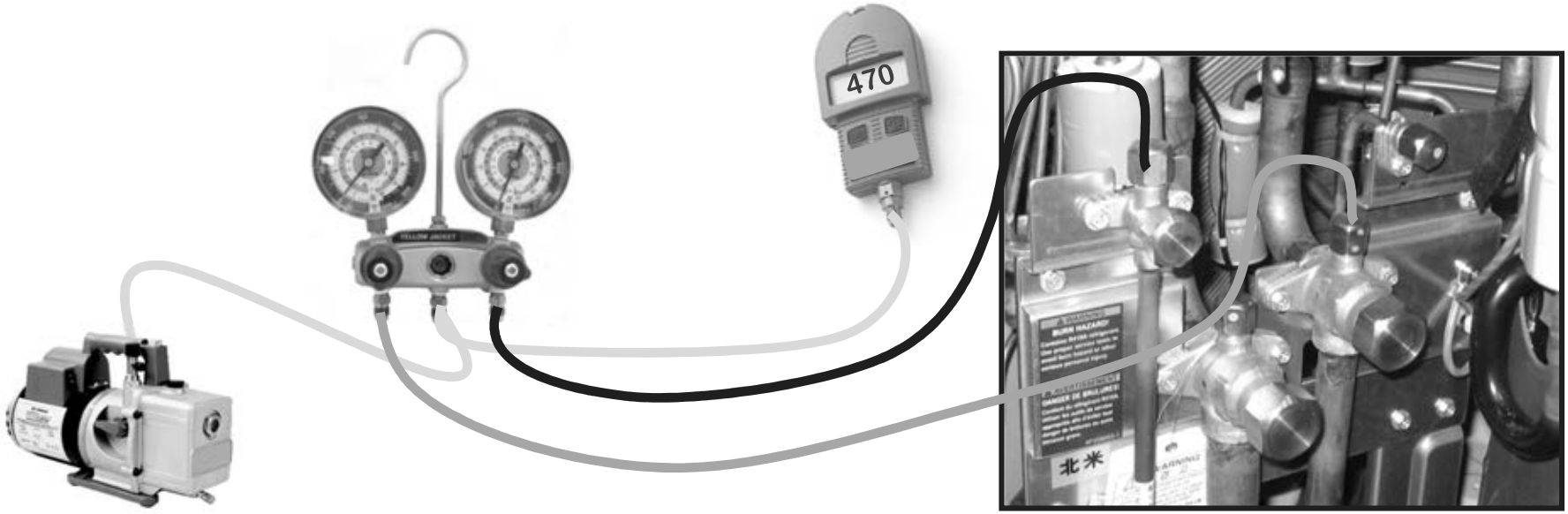
VRVIII Pre-Commissioning Check #3 Cont.

Evacuation Connections Heat Pump RXYQ
2 Stop Valves

- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports
  - On manifolded systems connect gauges to the main condenser
- Connect vacuum pump and micron gauge
- Do not energize the indoor units. Indoor unit EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Triple evacuation down to 500 microns or less using Dry Nitrogen to break vacuum
  - The final vacuum is used to draw in the calculated “Additional Refrigerant Charge” amount by weight

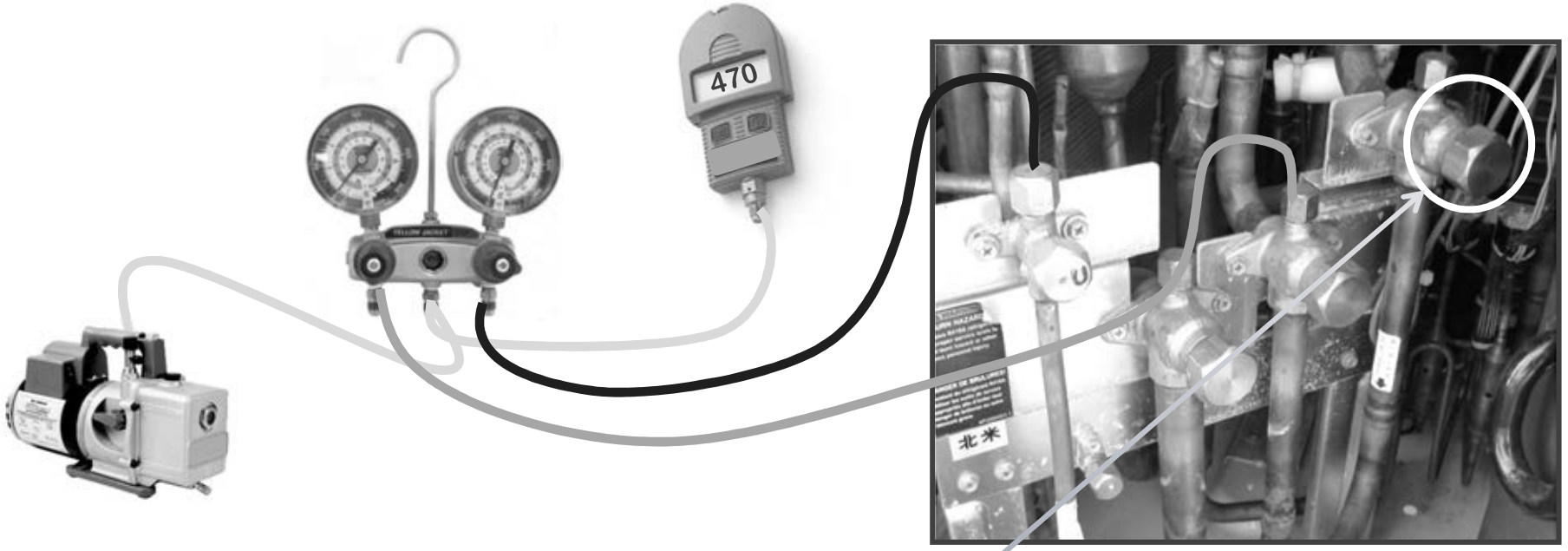
VRVIII Pre-Commissioning Check #3 Cont.

Evacuation Connections Heat Pump & Heat Recovery
3 Stop Valves RXYQ144PBTJ - REYQ72,96,120,144PBTJ & REYQ72,96,120PBYD



- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports
- Connect vacuum pump and micron gauge
- Do not energize the indoor units (or branch selector boxes for heat recovery). Indoor unit EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Triple evacuation down to 500 microns or less using Dry Nitrogen to break vacuum
  - The final vacuum is used to draw in the calculated "Additional Refrigerant Charge" amount by weight

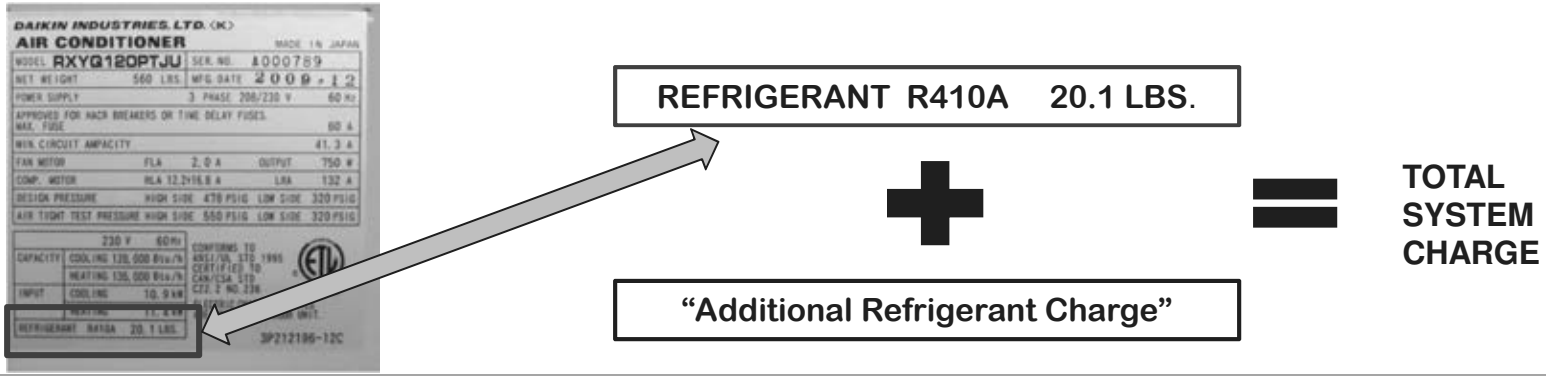
Evacuation Connections - Heat Recovery REMQ - 4 Stop Valves



- Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports on the Main unit
  - Pressure Equalization Pipe is evacuated separately
- Connect vacuum pump and micron gauge
- Do not energize the indoor units or branch selector boxes. Indoor unit and branch selector box EEVs close when power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs
- Triple evacuation down to 500 microns or less using Dry Nitrogen to break vacuum cycles
  - The final vacuum is used to draw in the calculated "Additional Refrigerant Charge" amount by weight

VRVIII System Refrigerant Charging Facts

- Accurate refrigerant charging is critical for optimum system performance
- *Daikin VRV* systems cannot be charged by refrigerant operating pressures, superheat or subcooling temperatures; refrigerant is weighed into the system
- All *VRVIII* condensers have a factory refrigerant charge based on the unit model
  - The *VRVIII* Condensers state the factory refrigerant charge on the unit ID Plate
- Proper *VRVIII* system charging requires an "Additional Refrigerant Charge" amount to be calculated which is based in part by the total actual length of the system Liquid lines.
- The total system refrigerant charge is comprised of the factory charge in the condenser(s), and the "Additional Refrigerant Charge" amount calculated for that system



VRVIII System Refrigerant Charge Procedures

- It is recommended that all *VRVIII* systems be manually charged based on the calculated "Additional Refrigerant Charge" for the system being commissioned
  - Measure the total linear footage of each Liquid line pipe size in the entire system
  - Calculate the "Additional Refrigerant Charge" based on the three part calculation 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 *See Commissioning Step #5*
    - If *Auto Charge* is to be used, use the final vacuum to charge the system with at least 50% of the calculated "Additional Refrigerant Charge" then using *Auto Charge* "Cool Mode" to complete the charging process. (See *Auto Charge* Limitations)
  - After the system receives the full or partial charge, all of the stop valves may be opened (Pre-Commissioning Step #5)

VRVIII "Additional Refrigerant Charge" Manual Calculation

The example system for this exercise is: **RXYQ144PBTJ** Heat Pump
System Connection Ratio is 105%
Connection ratio can be found in the VRV Xpress file.

Calculation A

Total length (ft) of 1/4" liquid line 254 X .015 lbs/ft = 3.81

+

Total length (ft) of 3/8" liquid line 173 X .040 lbs/ft = 6.92

+

Total length (ft) of 1/2" liquid line 78 X .081 lbs/ft = 6.31

+

Total length (ft) of 5/8" liquid line 52 X .121 lbs/ft = 6.29

+

Total length (ft) of 3/4" liquid line 0 X .175 lbs/ft = 0.00

+

Total length (ft) of 7/8" liquid line 0 X .249 lbs/ft = 0.00

Liquid Line Example Total: 23.33 Lbs

Heat Pump RXYQ - Add total amount from **Calculation A** to **Calculation B**

OR

If Heat Recovery REYQ_ Multiply **Calculation A Total** by: **1.02** and add amount to **Calculation B**

Calculation B

Heat Pump	
MODEL NAME	**Refrigerant Amount**
RXYQ 96, 120, 216, 240, 336, 360P	0.0 lb
RXYQ 72 , 168, 192, 264, 288, 312P	1.1 lb
RXYQ 144PBYD	2.2 lb
RXYQ 144PBTJ	7.9 lb

Heat Recovery	
MODEL NAME	**Refrigerant Amount**
REYQ 72 ~ 120PBYD REYQ 72 ~ 144PBTJ	7.9 lb
REYQ 144PBYD REYQ 168 ~ 192P	2.2 lb
REYQ 216 ~ 240P	3.3 lb
REYQ 264 ~ 288P	5.5 lb
REYQ 312 ~ 336P	6.6 lb

Calculation A + Calculation B

23.33 lbs. 7.9 lbs.

VRVIII Pre-Commissioning Check #4 Cont.

NOTE: For systems with Connection Ratio above 130%, contact Service Hotline

Calculation C

Heat Pump		
Connection Ratio	RXYQ 72 ~ 312PBYD RXYQ 72 ~ 312PBTJ	RXYQ 336 ~ 360PBYD RXYQ 336 ~ 360PBTJ
MORE THAN 100% AND LESS THAN 120%	1.1 LB	1.1 LB
MORE THAN 120% AND LESS THAN 130%	1.1 LB	2.2 LB

If system Connection Ratio is 100% or less, no additional refrigerant is required for Calculation C

Heat Recovery		
Connection Ratio	REYQ 72 ~ 120PBYD REYQ 72 ~ 120PBTJ REYQ 144 ~ 312PBYD REYQ 168 ~ 312PBTJ	REYQ 336PBYD REYQ 336PBTJ
MORE THAN 100% AND LESS THAN 120%	1.1 LB	1.1 LB
MORE THAN 120% AND LESS THAN 130%	1.1 LB	2.2 LB

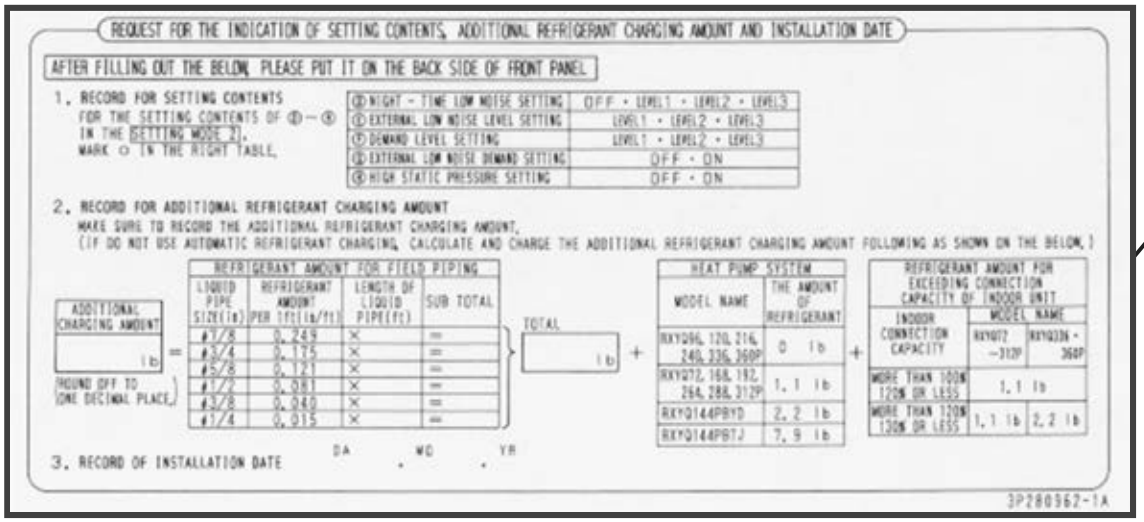
Calculation A + Calculation B + Calculation C = Total

23.33 lbs. 7.9 lbs. 1.1 lbs. 32.3 lbs. (32 lbs. 5 oz.)

NOTE: .1 lbs. = 1.6 oz. (round up)

VRVIII System Refrigerant Charge Procedures

- Refrigerant Charging Instructions are listed on a field installed label located in the clear plastic packet which is taped to the control box cover
- Remove the label backing and apply the clear label to the inside of the condenser's access panel.
- Enter all of the liquid line lengths, and the calculated Additional Refrigerant Charge. This information is crucial for future service work



REQUEST FOR THE INDICATION OF SETTING CONTENTS, ADDITIONAL REFRIGERANT CHARGING AMOUNT AND INSTALLATION DATE

AFTER FILLING OUT THE BELOW, PLEASE PUT IT ON THE BACK SIDE OF FRONT PANEL

1. RECORD FOR SETTING CONTENTS
FOR THE SETTING CONTENTS OF ⑫ – ⑯
IN THE SETTING MODE 2,
MARK ○ IN THE RIGHT TABLE.

⑫ NIGHT - TIME LOW NOISE SETTING	OFF・LEVEL1・LEVEL2・LEVEL3
⑬ EXTERNAL LOW NOISE LEVEL SETTING	LEVEL1・LEVEL2・LEVEL3
⑮ DEMAND LEVEL SETTING	LEVEL1・LEVEL2・LEVEL3
⑭ EXTERNAL LOW NOISE DEMAND SETTING	OFF・ON
⑯ HIGH STATIC PRESSURE SETTING	OFF・ON

2. RECORD FOR ADDITIONAL REFRIGERANT CHARGING AMOUNT
MAKE SURE TO RECORD THE ADDITIONAL REFRIGERANT CHARGING AMOUNT.
(IF DO NOT USE AUTOMATIC REFRIGERANT CHARGING, CALCULATE AND CHARGE THE ADDITIONAL REFRIGERANT CHARGING AMOUNT FOLLOWING AS SHOWN ON THE BELOW.)

ADDITIONAL CHARGING AMOUNT = ____ lb (ROUND OFF TO ONE DECIMAL PLACE.)

REFRIGERANT AMOUNT FOR FIELD PIPING

LIQUID PIPE SIZE(in)	REFRIGERANT AMOUNT PER 1ft(in) (lb/ft)	LENGTH OF LIQUID PIPE(ft)	SUB TOTAL
φ3/8	0.249	×	=
φ3/4	0.175	×	=
φ5/8	0.121	×	=
φ1/2	0.081	×	=
φ3/8	0.040	×	=
φ1/4	0.015	×	=

TOTAL ____ lb +

HEAT PUMP SYSTEM

MODEL NAME	THE AMOUNT OF REFRIGERANT
RXY096, 120, 216, 240, 336, 360P	0 lb
RXY072, 168, 192, 264, 288, 312P	1.1 lb
RXYQ144P8YD	2.2 lb
RXYQ144P8TJ	7.9 lb

+

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT

INDOOR CONNECTION CAPACITY	MODEL NAME RXYQ72 – 312P	MODEL NAME RXYQ336 – 360P
MORE THAN 100% 120% OR LESS	1.1 lb	
MORE THAN 120% 130% OR LESS	1.1 lb	2.2 lb

3. RECORD OF INSTALLATION DATE DA . MO . YR

3P280362-1A

VRVIII Pre-Commissioning Check #4 Cont.

Example System: RXYQ144PBTJ - Connection Ratio: 105%

REQUEST FOR THE INDICATION OF SETTING CONTENTS, ADDITIONAL REFRIGERANT CHARGING AMOUNT AND INSTALLATION DATE

AFTER FILLING OUT THE BELOW, PLEASE PUT IT ON THE BACK SIDE OF FRONT PANEL

1. RECORD FOR SETTING CONTENTS
FOR THE SETTING CONTENTS OF Ⓓ~Ⓗ IN THE [SETTING MODE 2], MARK ○ IN THE RIGHT TABLE.

Ⓓ NIGHT - TIME LOW NOISE SETTING	OFF · LEVEL1 · LEVEL2 · LEVEL3
Ⓔ EXTERNAL LOW NOISE LEVEL SETTING	LEVEL1 · LEVEL2 · LEVEL3
Ⓕ DEMAND LEVEL SETTING	LEVEL1 · LEVEL2 · LEVEL3
Ⓖ EXTERNAL LOW NOISE DEMAND SETTING	OFF · ON
Ⓗ HIGH STATIC PRESSURE SETTING	OFF · ON

2. RECORD FOR ADDITIONAL REFRIGERANT CHARGING AMOUNT
MAKE SURE TO RECORD THE ADDITIONAL REFRIGERANT CHARGING AMOUNT.
(IF DO NOT USE AUTOMATIC REFRIGERANT CHARGING, CALCULATE AND CHARGE THE ADDITIONAL REFRIGERANT CHARGING AMOUNT FOLLOWING AS SHOWN ON THE BELOW.)

ADDITIONAL CHARGING AMOUNT: **32.3** lb (ROUND OFF TO ONE DECIMAL PLACE.) =

REFRIGERANT AMOUNT FOR FIELD PIPING

LIQUID PIPE SIZE(in)	REFRIGERANT AMOUNT PER 1ft(lb/ft)		LENGTH OF LIQUID PIPE(ft)		SUB TOTAL
ϕ7/8	0.249	×		=	
ϕ3/4	0.175	×		=	
ϕ5/8	0.121	×	52	=	6.29
ϕ1/2	0.081	×	78	=	6.31
ϕ3/8	0.040	×	173	=	6.92
ϕ1/4	0.015	×	254	=	3.81

TOTAL: **23.33** lb +

HEAT PUMP SYSTEM

MODEL NAME	THE AMOUNT OF REFRIGERANT
RXYQ96, 120, 216, 240, 336, 360P	0 lb
RXYQ72, 168, 192, 264, 288, 312P	1.1 lb
RXYQ144PBYD	2.2 lb
RXYQ144PBTJ	7.9 lb

+

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT

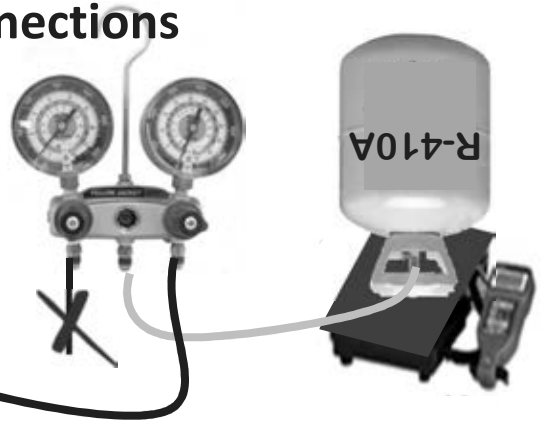
INDOOR CONNECTION CAPACITY	MODEL NAME: RXYQ72 ~312P	MODEL NAME: RXYQ336 · 360P
MORE THAN 100% 120% OR LESS	1.1 lb	
MORE THAN 120% 130% OR LESS	1.1 lb	2.2 lb

3. RECORD OF INSTALLATION DATE DA 29 · MO 07 · YR 2011

- Enter the piping lengths accurately for each liquid line diameter and multiply the charge factor
- Add the refrigerant amount for the model of the unit or system you are commissioning
- Add the refrigerant amount for the connection ratio your system has – If 100% or less, no add'l refrigerant amount required
- When charging the system manually, write in the total Additional Refrigerant Charge
- If *Auto Charge* COOL mode is used, write in the charge amount taken after *Auto Charge* is complete
- Write down the system commissioning date

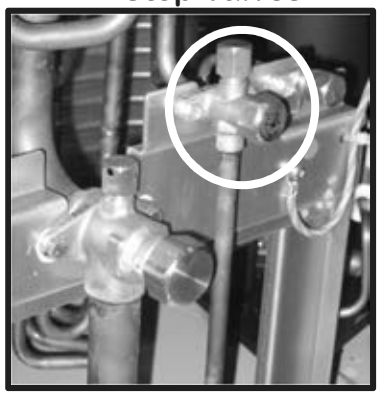
VRVIII Pre-Commissioning Check #4 Cont.

Manual Refrigerant Charging Connections

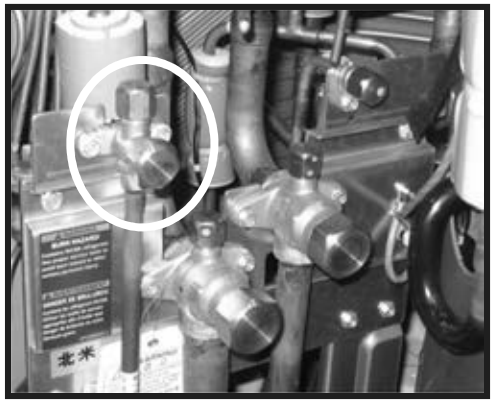


5/16" Liquid Port

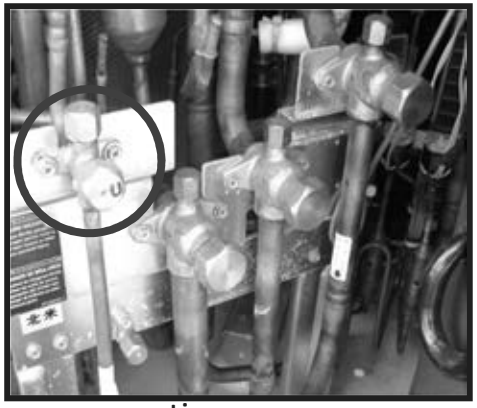
2 – Stop Valves



3 – Stop Valves



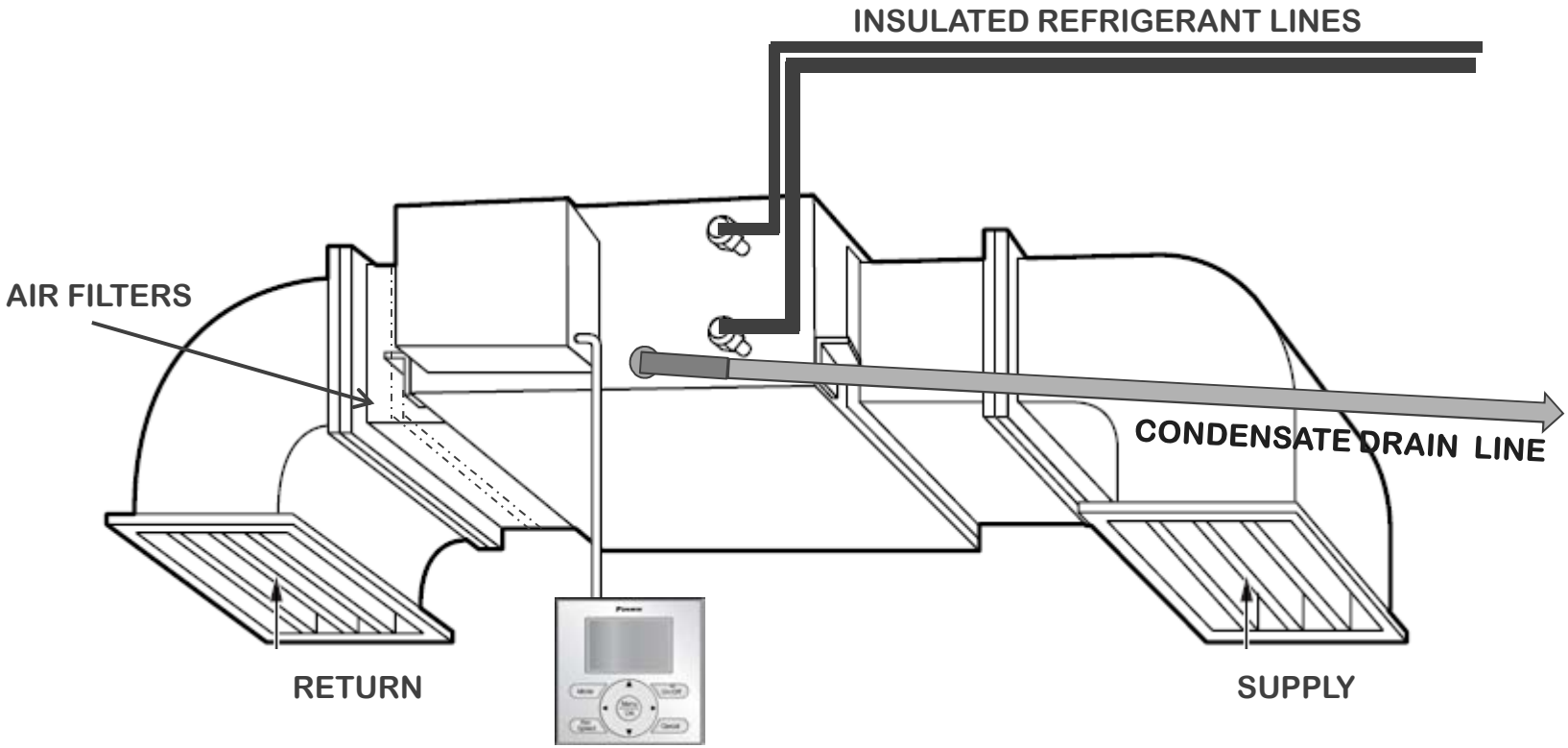
4– Stop Valves



- Low side manifold hose is not used for this procedure
- The high side manifold hose should still be connected to the Liquid service port, from evacuation
- Break the final vacuum by weighing in the entire calculated charge or as much as possible into the system
  - If there is not enough vacuum to draw in the calculated charge, use the "Additional Refrigerant Charge Mode" to complete
- When using *Auto Charge:* Weigh in, through the liquid port, at least 50% of the calculated "Additional Refrigerant Charge" amount to break the vacuum

VRVIII Pre-Commissioning Check #5 - #9

- All Stop Valves on the Condenser(s) are full open
- All Remote Controllers are installed and properly wired
- All condensate piping is installed on condenser(s) as required and all fan coils
- Refrigerant lines are completely insulated including fan coil flare nut connections
- All ductwork is installed and sealed; all air filters are installed



Verify Power Supply Voltage

- Before energizing any of the system components, use a Voltmeter to verify that the line voltage power supply to the Condenser(s) and all Indoor Units corresponds to the equipment nameplate, and within the stated range.
  - 208/230vac 1Ph & 3Ph = 187 – 253vac
  - 460vac 3Ph = 416 – 508vac
- Verify all 3 phase legs to each condenser are in balance within 2%
  - A **"U1"** error code with unit stop can be generated for excessive phase imbalance, dropped phase, or reverse phase
  - A **"U1" or "U7"** error code with unit stop can be generated in a manifolded system
- All indoor units, fan coils and "BS" boxes are shipped with EEV's open
  - EEV's motor closed when line voltage power is applied to unit

System Commissioning

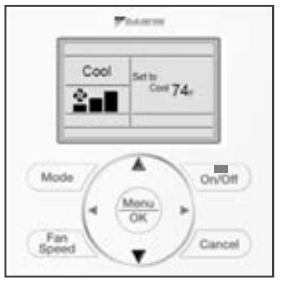
Commissioning Steps 1 - 9

Commissioning Steps

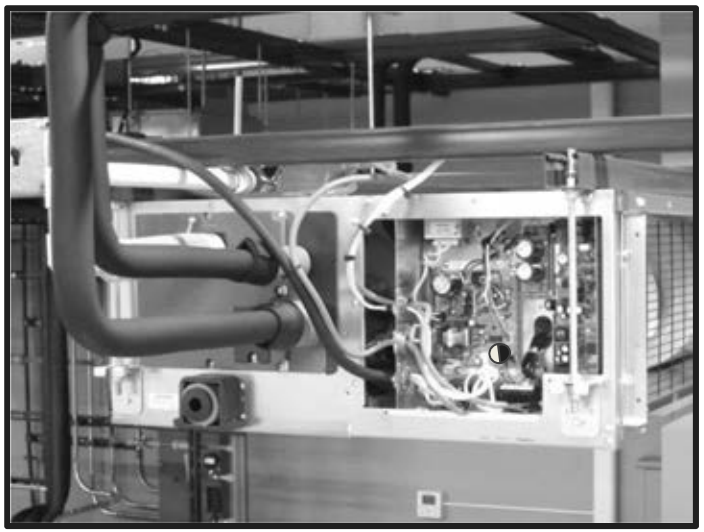
1. Power up all indoor units – Fan Coils and Branch Selector boxes (for heat recovery only)
2. Power up Condenser(s) to energize crankcase heaters (minimum 6 hrs) Initialization sequence starts and the system addresses are set – Setup Navigation Remote Controllers
3. Count Indoor Units: Branch Selector Boxes (for heat recovery only) and fan coil units
4. Selected Field Settings programmed at Remote Controllers (Static Pressure settings, etc.)
5. System refrigerant charge – "Manual" charge using the "Additional Refrigerant Charge Mode" or
   ALTERNATE: "Auto Charge" Cool Mode - Step #A5
6. *Check Operation* mode
7. Configure the Remote Controller *Changeover Master* for the Heat Pump systems and the heat pump zones in Heat Recovery systems
8. Remaining System Field Settings
9. Verify system operation in Cool & Heat mode as outside ambient temperature conditions allow (Heat mode is prohibited above 75.2°F outside air temperature)

Power up Indoor Units and Branch Selector Boxes

- Power up all Indoor Units and Branch Selector Boxes (Heat Recover only) **First**
  - Verify the Fan Coil and Branch Selector box 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 LED's (Green or Red) are OFF



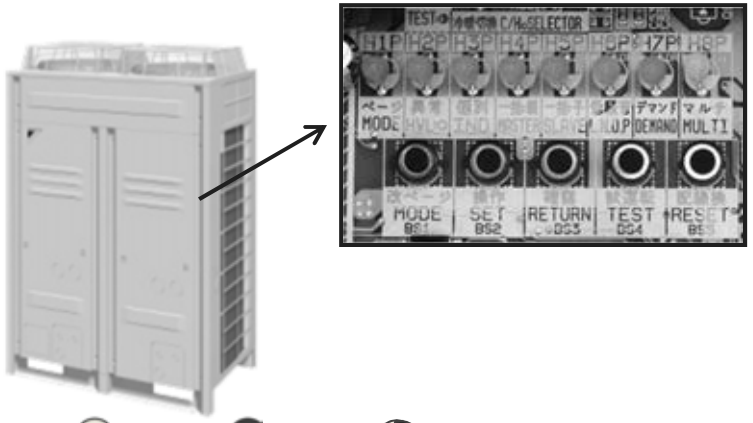
Fan Coil Control PCB



Branch Selector Box PCB

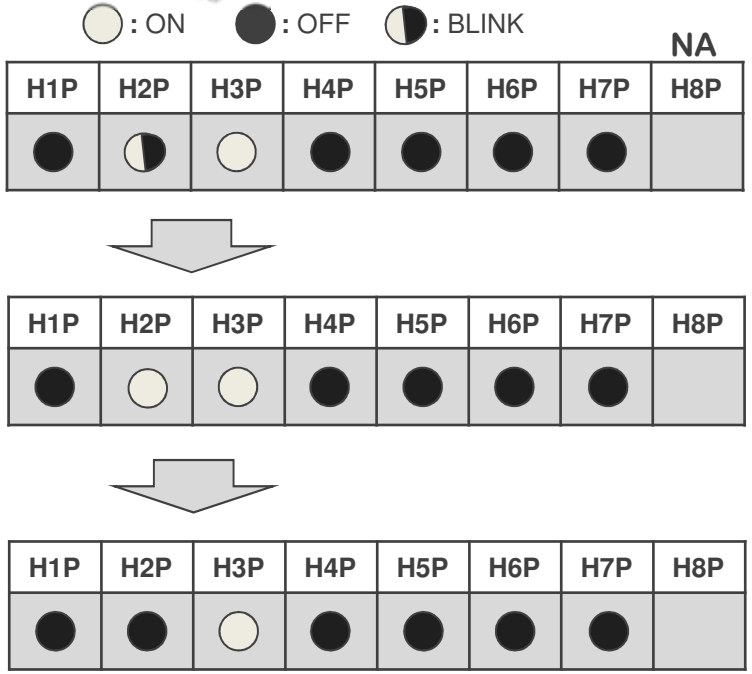
Condenser Power up

Condenser(s) are powered up after the Indoor Units and must not be operated for a period of 6 hours to insure crankcase heaters eliminate any liquid refrigerant in compressor(s). During this time, all of the Navigation Remote Controllers (BRC1E72) can be setup.



Initialization

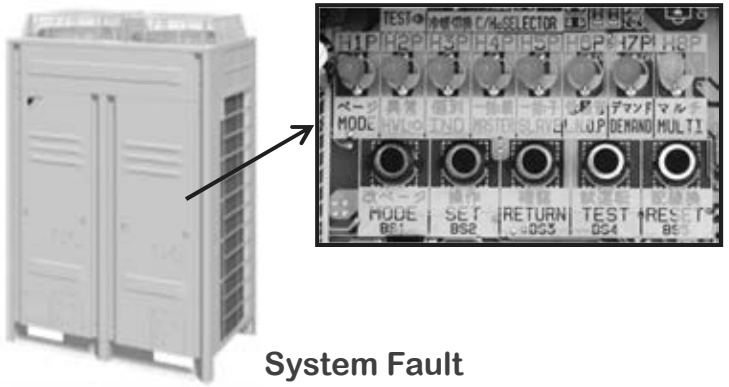
- Upon power up of the condenser(s), the control PCB will perform the Initialization Operation for approximately 15 minutes. During this operation the addresses are assigned to the indoor units
- This mode is identified by **H2P** blinking and **H3P** solid
  - MASTER PCB on Manifolded systems
- Near completion of Initialization, **H2P** will change from blinking to solid
- When the Initialization Operation is completed **H2P** goes off and **H3P** stays on solid



Initialization Complete
Normal System Status

Condenser Power up

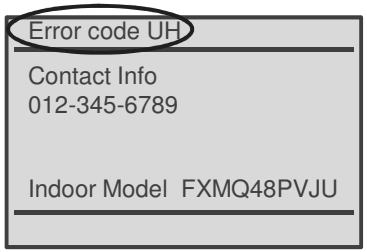
Error During Initialization



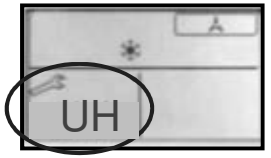
System Fault

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	○	○	●	●	●	●	

- If after 25 minutes **H2P** remains on solid, there is an error in the system
  - Turn on one of the Remote Controllers and verify the error code and resolve the fault
  - Recycle power on the Condenser (Master) press and hold the **RESET** button for 5 seconds to restart Initialization Operation
- When Initialization operation is complete with no errors, the **H2P** LED goes out and **H3P** LED will be on solid



BRC1E72



BRC2A71

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	

Normal System Status

BRC1E72 Navigation Remote Controller Initial Settings

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

Standard

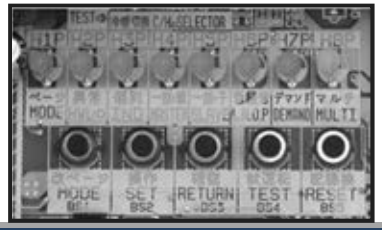
Detailed

Simple

Condenser A1P Control PCB - Status LED Sequence

- Upon completion of the **Initialization** operation, the LED sequence on the single piped *VRVIII* condenser will have a solid H3P Note: On single piped dual fan units with 2 control PCB's, the A1P PCB will indicate H3P & H8P on solid

- Upon completion of **Initialization** on *VRVIII* manifolded modules, the following LED sequences will appear on the control PCB's
  - The Master A1P PCB is connected to the indoor units on **F1F2 IN**
  - Master PCB's display a solid H3P & H8P LED's to indicate normal status



○ : ON ● : OFF ◑ : BLINK

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	●

Single Piped Condenser

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	○

Manifolded Module Master Condenser

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	●	●	●	●	●	◑

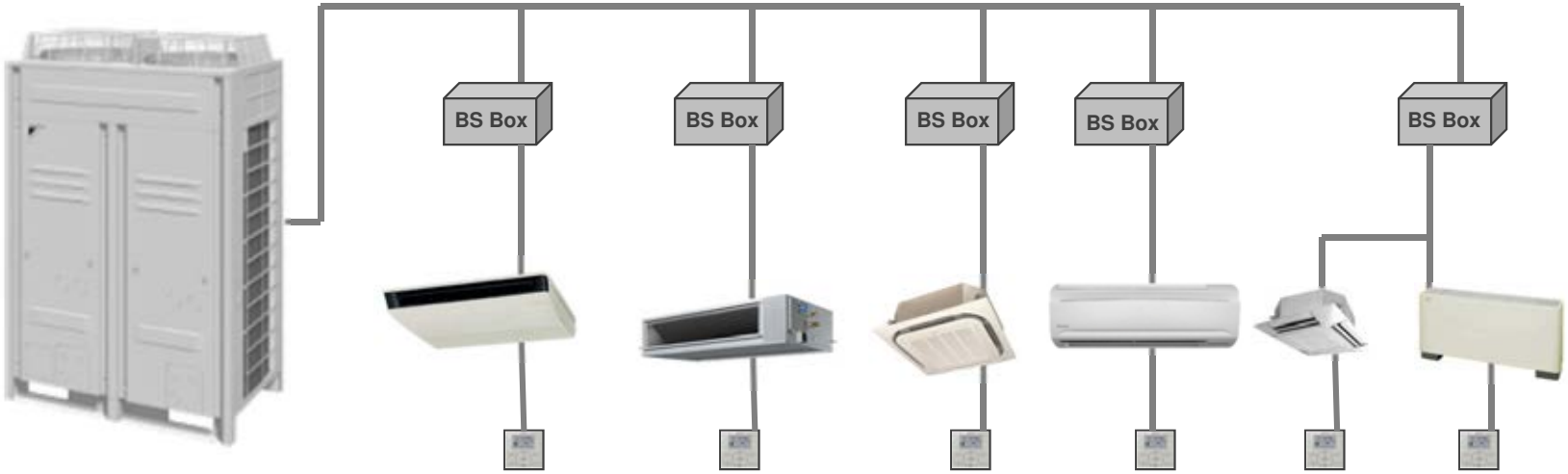
Manifolded Module Slave 1 Condenser

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	●	●	●	●	●	●

Manifolded Module Slave 2 Condenser

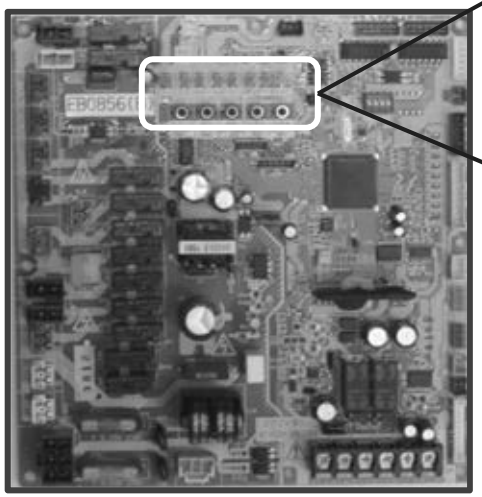
Verify System Control Communications

- When the **Initialization** operation has been completed the system must be checked to insure that all indoor units in the system are addressed and communicating.
- All system indoor units must communicate with the control system
- Using Monitor Mode 1 on the Master Control PCB on the Condenser, the Fan Coils and Branch Selector boxes in the system can be counted, verifying system communications
  - On a manifolded system, the indoor units are counted from the Control PCB on the Master Condenser



Binary Code Key for Counting Indoor Units (Example)

- Using the Condenser Control PCB status LED's, 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 and outdoor units is enabled, the blinking LED's represent the number of units recognized in the control system



Example of binary value indications

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
0	32	16	8	4	2	1	N/A

● : OFF ◑ : BLINK

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	●	●	●	

Value of "0"

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	●	◑	●	

Value of "2"

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	◑	◑	◑	

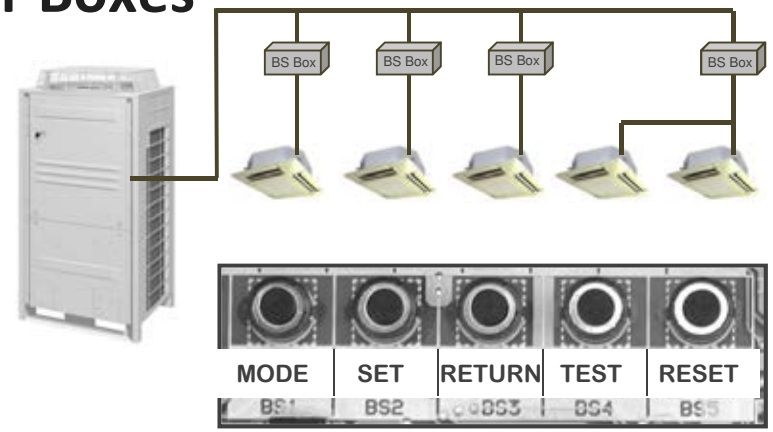
Value of "7"

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	◑	◑	●	●	

Value of "12"

Counting Branch Selector Boxes

- System Monitor Mode 1 is accessed by pressing the "**MODE"** button one time – **H1P** LED 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



- Press **"MODE"** once
  H1P blinking →

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	●	●	●	

- Press **"SET"** 6 times →

	0	32	16	8	4	2	1	N/A
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P	
◑	●	●	●	○	○	●		

- Press **"RETURN"** once
  Count up the blinking LED's →

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	◑	●	●	

- Press **"MODE"** once
  return to normal status: **H3P** solid →

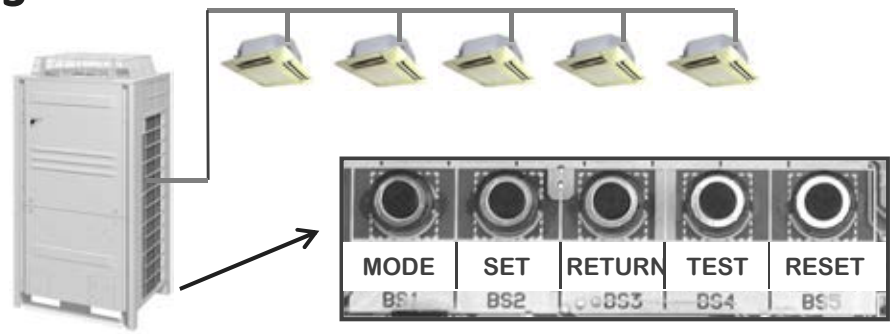
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	

Indoor Fan Coil & BS Box - Communication Troubleshooting Tips

- NOTE: If a branch selector box is not communicating in the DIII-Net system, the connected fan coil(s) will also not communicate
- Verify correct power supply voltage is present at Fan Coil and Branch Selector
  - PCB status: Green LED blinking
- Verify that all Remote Controllers have a display. This will also tell you that power is applied to the indoor units
- If there are Remote Controllers controlling more than one indoor unit, you must check the green LED on each PCB to see if it is flashing green. This will tell you that power is applied to the Indoor unit or BS box. Another method is to use your meter to check for voltage
- Turn on each Remote Controller one at a time. When you turn them on, note the error code if any appears on the display
- After you have turned them all on, you should see a pattern of the error codes. The pattern should show a few of the controllers with different error codes. The remote(s) with a different code is a good place to start checking your control wiring
- Check the control wiring to insure the conductors are connected to the correct terminals and 16vdc is measured
- On installations which have multiple *VRV-WIII* Heat Pump and Heat Recovery systems, Branch Selector boxes should be counted on the Heat Pump systems to verify correct system control wiring with no crossover
- After the issues are corrected, recycle power to the (Master) Condenser (Initialization mode starts) and press and hold the **"RESET"** button for 5 seconds on the Control PCB. This will enable the indoor unit or BS box to have an address assigned.

Counting Indoor Fan Coils

- System Monitor Mode 1 is accessed by pressing the "**MODE**" button one time – **H1P** LED blinking
- 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



- Press "**MODE**" once
  H1P blinking

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	●	●	●	

- Press "**SET**" 5 times

0	32	16	8	4	2	1	N/A
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	○	●	○	

- Press "**RETURN**" once
  Count up the blinking LED's

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	●	●	●	◑	●	◑	

- Press "**MODE**" once
  return to normal status: **H3P** solid

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	

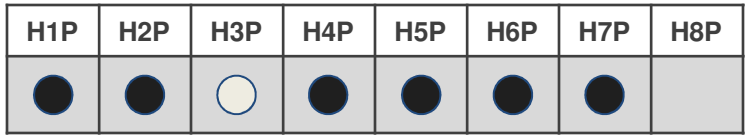
Fan Coil – Forced Fan On Mode

- A very effective procedure to help troubleshoot missing indoor Fan Coil units is to force the fan coil blowers to “ON”. By forcing the fans on, you will see what indoor units are communicating with that particular system.
- In jobs where you have multiple systems being installed, during the installation occasionally one indoor unit will get wired to the wrong outdoor unit. Using the “Forced Fan On” procedure, you will quickly see what units are connected by which fans turn on
- Using the Forced Fan ON operation, enables the control system to put the Fan Coil fan motor in High fan speed
- The fan coils that do not respond by switching on the fan motor are the units not communicating with the control system
- Use the following page to put the fan coil fan motors into this mode

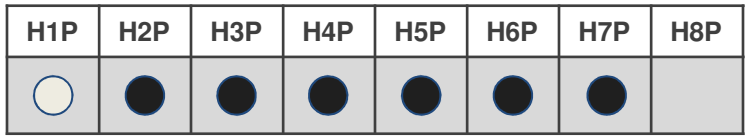
Forced Fan ON Procedure

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

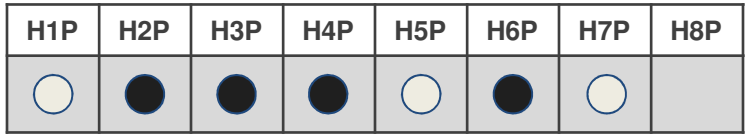
  SERVICE MODE 2



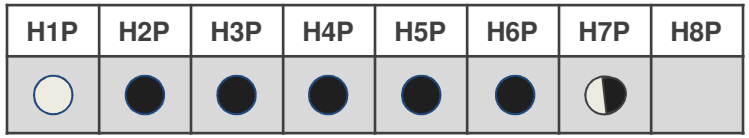
- Press and Hold the **"MODE"** button for approx 5 seconds until you see the H1P LED on solid



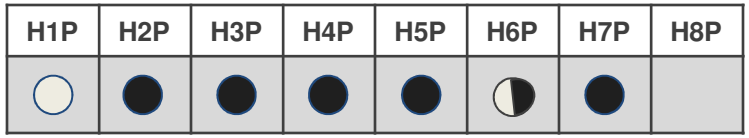
- Press the **"SET"** button 5 times H1P-H7P LEDs will indicate the binary number for each press of the **"SET"** button



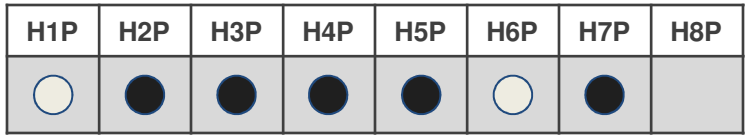
- Press the **"RETURN"** button once H7P flashing – This operation status: OFF



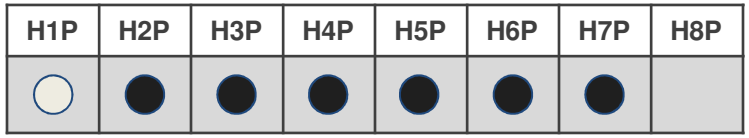
- Press the **"SET"** button once H6P flashing - Turn operation ON



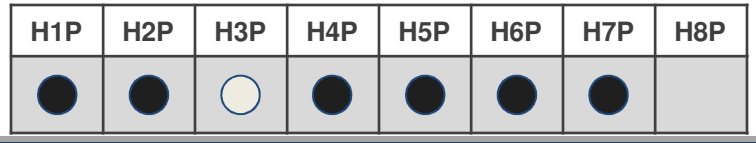
- Press the **"RETURN"** button once H6P solid - Lock the setting



- Press the **"RETURN"** button once H6P Off - Activate the setting
  - **STOP** - ***Check all the fan coils for the blower(s) that are not running***



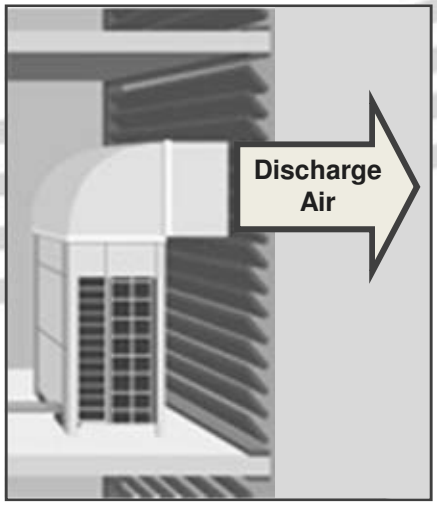
- Press the **"MODE"** button once H3P solid - Normal Operation



System Commissioning

Selected Condenser Field Setting - Commissioning Step #4

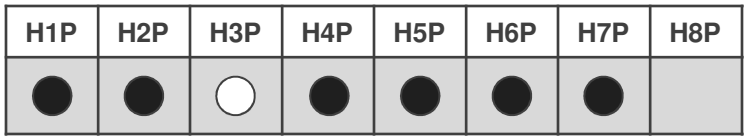
Outdoor Fan High Static Setting



Required for interior condenser installations where the discharge air is ducted to outside of the building

Condenser "Fan High Static Setting"

- **START** - H3P solid - Normal Status



- Press and HOLD the **"MODE"** button for 5 sec. until H1P LED is Solid

- Press the **"SET"** button 18 times
  - LEDs will indicate binary number for every press of the "SET" button 0+16+2

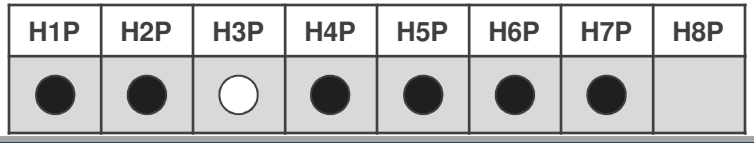
- Press the **"RETURN"** button once H7P flashing – This operation is OFF

- Press the **"SET"** button once H6P flashing – Turn operation ON

- Press the **"RETURN"** button once H6P solid – Lock the setting

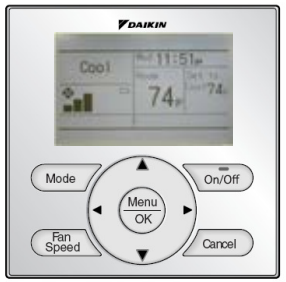
- Press the **"RETURN"** button once H1P solid – High Static Fan has been activated
  - *Outdoor Fans now operating at .32" wg. No relays actuate, just go right to next step.*

- Press the **"MODE"** button to return to Normal mode, H3P will be on solid



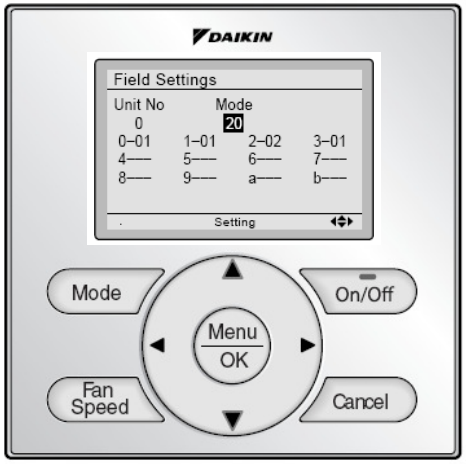
System Commissioning

Selected Indoor Unit Field Settings - Commissioning Step #4

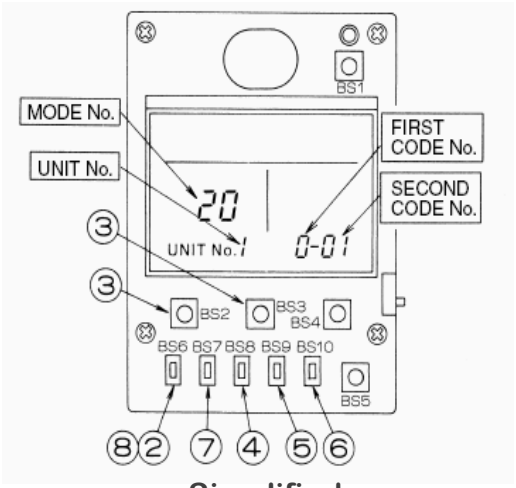


Fan Coil Field Settings

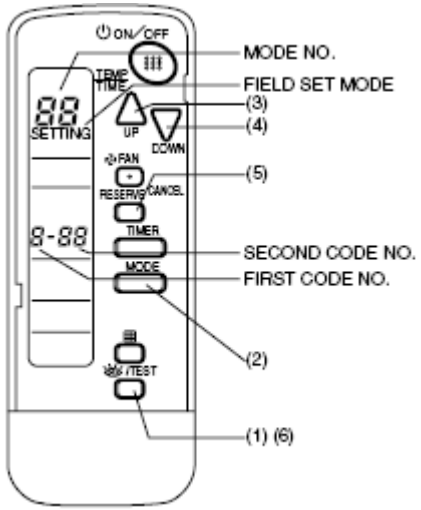
- System communications is now verified and fully operational
- All ductwork is connected and all air filters are installed
- Fan coil Field Settings related to airflow static pressure adjustments can now be programmed at the Remote Controllers, before Check Operation is enabled
  - Ducted fan coils may require the static pressure be adjusted or programmed
  - Ceiling Cassette fan coils 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 fan coil are listed in the unit Installation Manual



Navigation Remote



Simplified



Wireless

Fan Coil Field Settings

- Field settings provide unique features and functions to be programmed into the control system for selected fan coil(s) connected to a remote controller.
- Only those program codes that apply to the connected fan coil(s) will appear in the Field Settings code display on the Remote Controller.
- There are two Modes for each setting; “Group” & “Individual”
- The first set of 2-digit numbers refers to **Group** and **Individual**, Group is the first number & Individual is in the parenthesis
- **“Group ##”** is used if there is only one indoor unit per Remote Control or the setting you chose is intended for all indoor units being controlled by the connected Remote Controller
- **“Individual (##)”** is used when there is more than one indoor unit being controlled by one Remote Control and the settings being programmed are intended for one of the indoor units in the group

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (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.	--
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above **(Note 3)**	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--
12(22)	0	KRP1B71 X1-X2 status output	Indoor unit Thermo-On/Off status	--	Indoor unit Operation On/Off status	Indoor unit Alarm status
	1	Indoor unit T1-T2 input	Forced Off Closed Contact-Indoor unit is forced off and Central Control icon is displayed. Unit cannot be turned on manually. Operation can be overridden by central control. Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.	On/Off Closed Contact-Indoor unit is turned on. Open Contact-Indoor unit is turned off. Unit responds to last command, i.e., unit can be turned on manually or by central control after circuit has opened. Operation is prohibited when remote controller On/Off control is restricted by a multizone controller.	External Protection Device Closed contact-Unit shall resume normal operation. Open contact-Unit shall shut down and generate an A0 error.	
	2	Thermo-On/Off deadband **(Note 4)**	2F (1C)	1F (0.5C)	--	--
	3	Fan Speed in Heating Thermo-Off	LL	User set	Off	--
	6	Fan Speed in Cooling Thermo-Off	LL	User set	Off	--
	8	Return air sensor offset	2C	None (for remote sensor)		

Fan Coil Field Settings

- Field Setting codes are comprised of 3 segments: Example: **12 -1- 03**
  - **Mode No. –** Program Setting for 1 fan coil or Group of fan coils within Setting Contents
  - **First Code No.** - Setting Contents
  - **Second Code No.** - Specific Operation or Setting
- Specific Field Setting codes for a particular fan coil can be found in the Fan Coil Installation Manual or Engineering Manual
  - Any Field Setting codes that do not apply to the particular fan coil will not appear or be selectable
- Field Settings are programmed to permanent memory in the Fan Coil(s) Control PCB

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

Mode No.	First Code No.	Setting Contents	Second Code No 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)

Fan Coil Field Settings – FXMQ_P Auto Static Adjust

- Enter the Field Setting into the Remote Controller
  - **11(21) 7-03 Start Auto Adjust**
- Save Field Setting and exit to main display
- Select FAN mode
- Place Remote Controller into the ON operation with solid status LED
- Fan Coil will go into the Auto Adjust mode and run the blower for 8 to 10 mins.
- On completion of the operation, fan will shut down and status LED on the Remote Controller will go Off.
- After unit shuts down check to see that Field Setting 11(21) 7-03 has changed to 11(21) 7-02, this indicates successful completion of Auto Airflow Adjustment

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

Fan Coil Field Settings – FXMQ_P Manual Static Pressure Adjust

- Specific static pressure can be programmed based on the static pressure codes provided for the specific FXMQ_P capacity model
  - Static pressure codes are listed in the Installation Manual
  - Codes which do not apply to a specific capacity model are not selectable
- Field Setting Code: **13(23) 06- ##**
- "Auto Adjust" 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

Fan Coil Field Settings – FXDQ Static Pressure Change

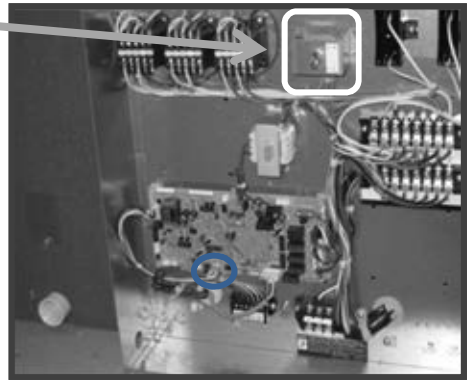
- To change static from “Standard” to “High”, a field setting must be programmed at the remote controller
- Change Field Setting **13(23) 5 – <u>01</u>** to **<u>02</u>**
- This static pressure change to HIGH is recommended for all FXDQ ducted applications

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	—	—

FXMQ72/96MVJU Static Pressure Change

- The FXMQ72 and 96 fan coils have a manual toggle switch to increase static pressure from “LO” to “HI”
- The fan speed is user selectable from the Remote Controller for Lo or Hi air flow

NOTE: See Engineering Manual for fan performance specifications



Fan Coil Field Settings – FXFQ Ceiling Height Setting

- To insure proper air flow delivery, it is recommended to set the actual ceiling height field setting code
- To change setting from “Standard” to “High 1” or “High 2”, a field setting must be programmed at the remote controller
- Go to Field Setting 13(23) 0 - ##
- Second Code: 01 = Standard, 02 = High 1, 03 = High 2

		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

Fan Coil Field Settings – FXFQ_P & FXZQ_M7 Air Discharge Settings

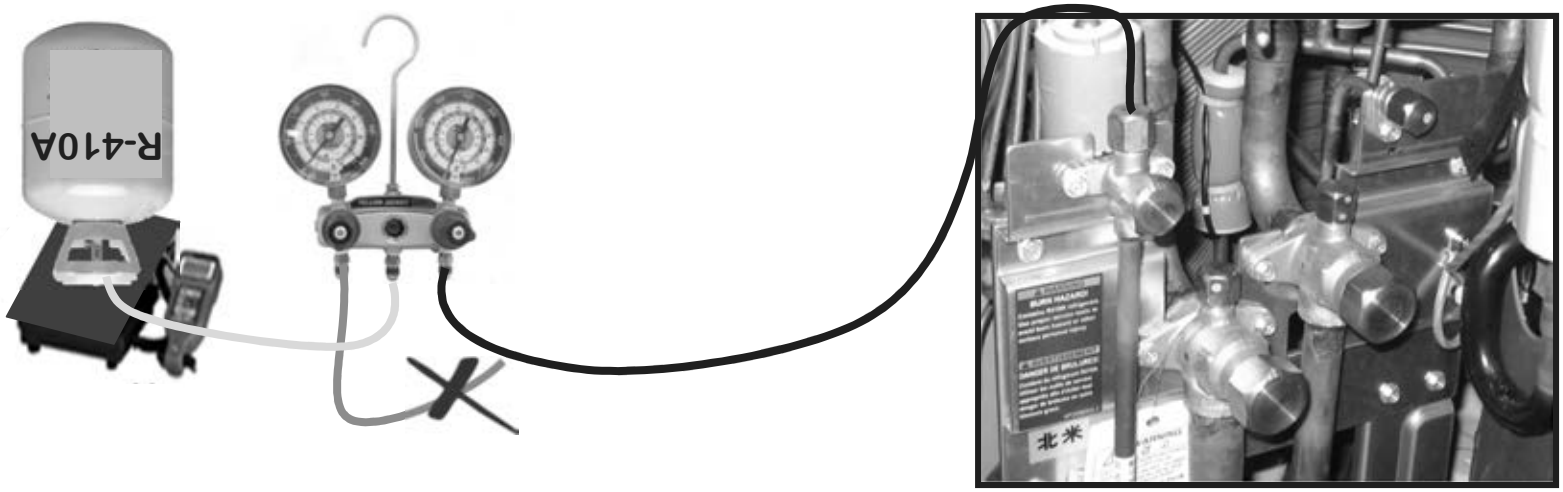
- When the 4-way ceiling cassettes require changes to the discharge positions to 2-way or 3-way, a field setting change is required along with the blank-off kit
- To change setting from the factory default of 4-way discharge 13(23) 1-01, the change must be programmed at the remote controller
- Go to Field Setting 13(23) 1, and change the second code:
- Second Code: 02 = 3-way, 03 = 2-way

	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)	-

System Commissioning

Manual System Refrigerant Charging - Commissioning Step #5

VRVIII Refrigerant Charging – "Additional Refrigerant Charge Mode"

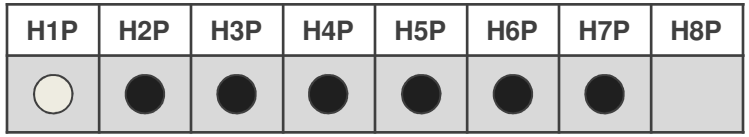


- The "Additional Refrigerant Charge Mode" is used when there is not enough system vacuum from the final evacuation cycle to completely charge the system
- Close the Liquid Stop Valve – Gas Stop Valve(s) are open
- Connect the high side manifold hose to the Liquid service port, and bleed the hose
  - Low side manifold hose is not used for this procedure
  - On manifolded systems, close all liquid stop valves and connect high side hose to the Master condenser only
  - Refer to the weight of refrigerant taken on the last cycle of the triple evacuation operation
- Initiate the "Additional Refrigerant Charge Mode" at the condenser Control PCB
  - When the total calculated refrigerant charge is taken based on the scale reading, close off the High side gauge
  - Press the **"MODE"** button to terminate the operation
  - Close off the refrigerant bottle valve and remove the hose
  - Open the Liquid Stop Valve

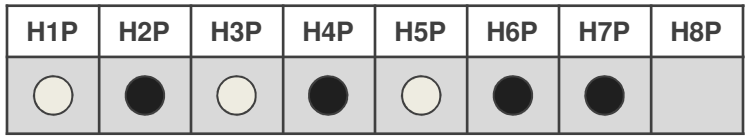
"Additional Refrigerant Charge Mode"

- **START** - H3P solid - Normal Status →

- Press and HOLD **"MODE"** button for 5 sec. until H1P is solid →

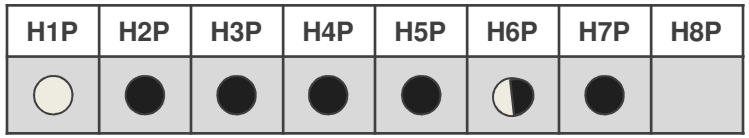


- Press the **"SET"** button 20 times
  LED will indicate binary number for every press of the "SET" button 0+16+4 →

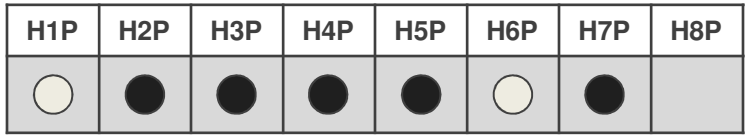


- Press the **"RETURN"** button once
  H7P flashing – This operation is OFF →

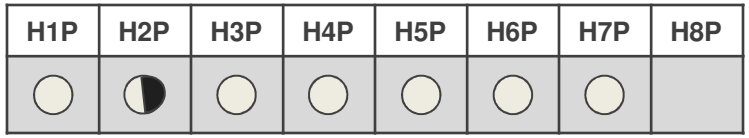
- Press the **"SET"** button once
  H6P flashing - Turn operation ON →



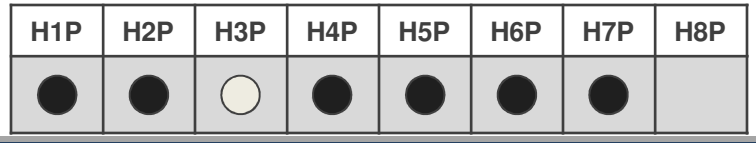
- Press the **"RETURN"** button once
  H6P solid - Lock the setting →



- Press the **"RETURN"** button once
  to activate the setting →
  - ***Add Liquid Refrigerant now thru Liq. Service port, and watch scale for correct amount of refrigerant to add. When complete, close manifold valve.***



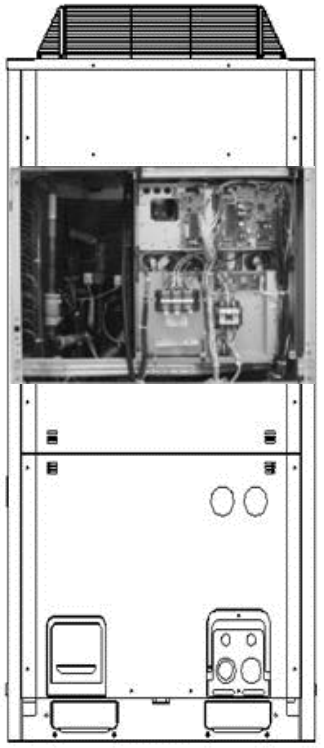
- Press the **"MODE"** button once
  H3P solid - Normal mode →



Note: If a **"U1"** or **"U7"** error code is generated see next page

Condenser Power Supply Error

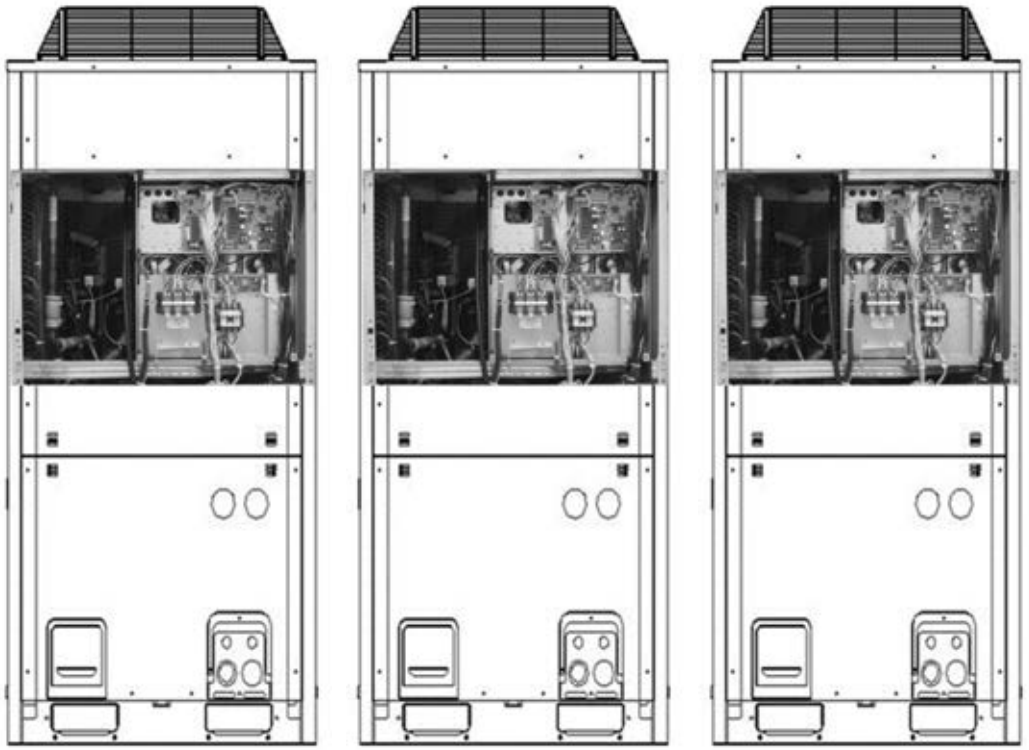
- When a Single module condenser is in "unit stop" due to a **"U1"** fault code, the main causes are Reversed Phase or Open Phase
- With a **"U1"** fault code, the compressor(s) in the condenser will not operate.
- To correct a Reversed Phase condition on a single module, reverse the wire connections on the line voltage terminals
- Restart condenser
- **"U1"** or **"U7"** error code displayed on a Manifolded system see next page



NOTE: The "**U1**" fault code refers to Power Supply Reverse Phase – Open Phase – Phase out of Balance

Verify "U1" or "U7" 3 Phase Error – Manifolded Systems

- When a Manifolded System (Dual or Triple modules) is in a "unit stop" due to a **"U1"** or **"U7"** fault code, "Monitor Mode 14" on the Master PCB can be used to determine the condenser module(s) at fault.
  (refer to Service Manual SiUS341012_A, pages 329-332 for Monitor mode).
- With a "U1" or "U7" fault code, the compressors will not operate.
- Status LED on all Remote Controllers will be flashing with "U1" or "U7" error code indicated on displays
- See next pages

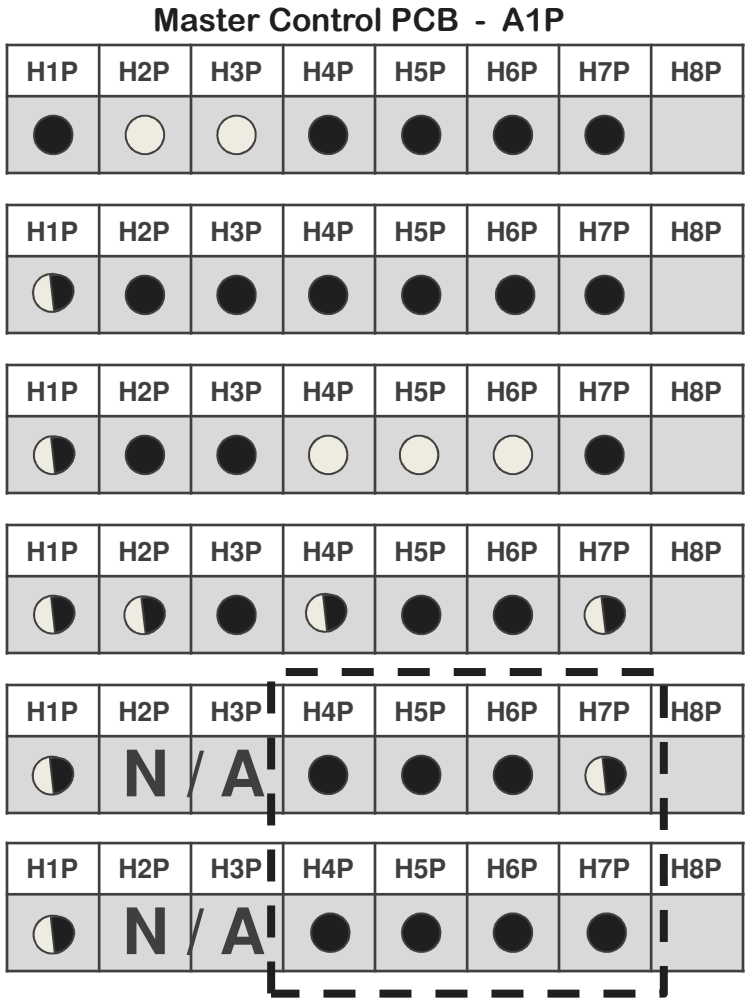


NOTE: The "**U1**" fault code refers to Power Supply Reverse Phase – Open Phase – Phase out of Balance
"**U7**" error code refers to communication problem between manifolded modules

Verify "U1" 3 Phase Error – Manifolded Systems

Monitor "Mode 14" to determine condenser(s) with "U1" fault

- LED status on condenser power up
- Press **"MODE"** button once
- Press **"SET"** button 14 times
- **Confirmation 1** – Press **"RETURN"** once
  "First Digit" = **"U"**
- **Confirmation 2** – Press **"SET"** once
  "Second Digit" = **"1"**
- **Confirmation 3** – Press **"SET"** button once
  Display error location

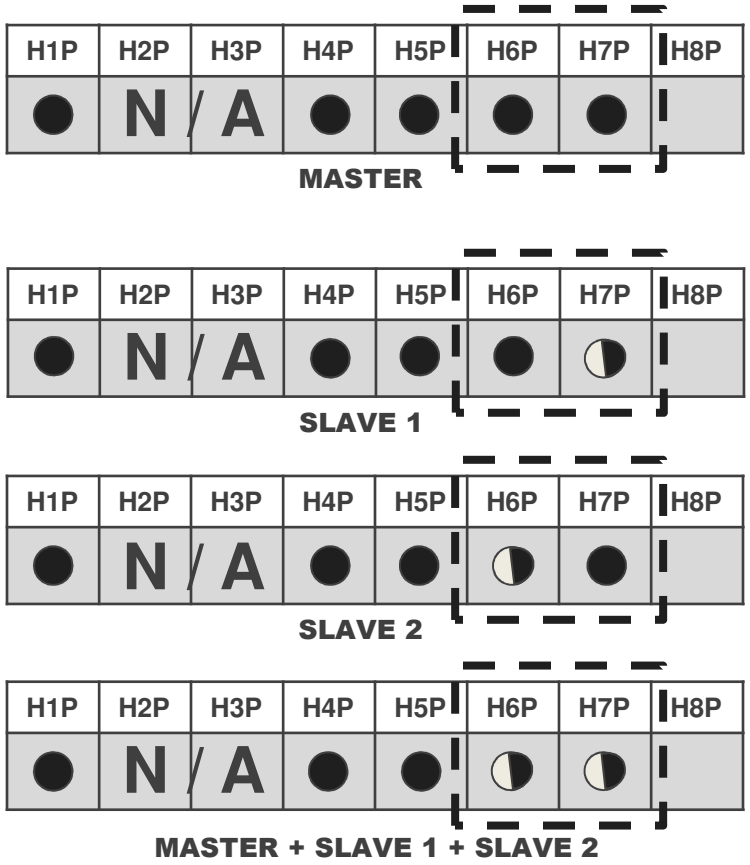


Next page

Verify "U1" 3 Phase Error – Manifolded Systems

"Monitor Mode 14" to Determine Condenser(s) with Fault Continued

- **Confirmation 4** – Press "**SET**" button once
  Display Condenser ID - **H6P** + **H7P**
  Master/Slave1/Slave 2



Next page

Verify "U1" 3 Phase Error – Manifolded Systems Continued

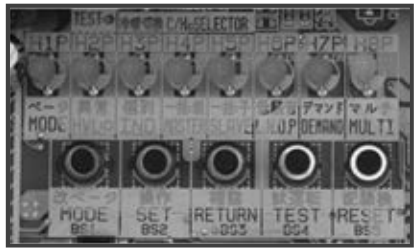
- Press **"RETURN"** button once "Monitor Mode" initial status

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	◑	●	◑	●	●	◑	N/A

- Press **"MODE"** once to return to the original power up display with error.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	○	○	●	●	●	●	N/A

- Power down the condensers and reverse any two line voltage terminals
- Restart all Condensers with no **"U1"** errors



H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	○

Normal Status
Master PCB

System Commissioning

Alternate System Refrigerant Charging "Auto Charge"

Commissioning Step #A5

Auto Charge Mode

NOTE: *Auto Charge* cannot be used on systems that include the FXTQ Air Handlers or the FXMQ_MF O.A. Processors

- The *Auto Charge* feature may be used as an alternative means of system refrigerant charging, however certain restrictions and limitations apply
- During *Auto Charge* Mode, the system will automatically select Cooling or Heating mode based on the following temperatures

Outdoor Temp: 32°F DB ~ 109°F DB Indoor Temp: 50°F DB ~ 90°F DB	}	Cool Mode
Below 32°F OD Temp / 50°F Ind. Temp	}	Heat Mode

- Cool Mode: *Auto Charge* will charge the system and shut off automatically
- Heat Mode: *Auto Charge* must be manually terminated when the full calculated "Additional Refrigerant Charge" amount is weighed into the system
- LED light combinations will indicate which mode is chosen

NOTE: *Auto Charge* does not display the amount of refrigerant charged

VRVIII Auto Charge Limitations

Connection Ratio Limitations When Using Auto Charge

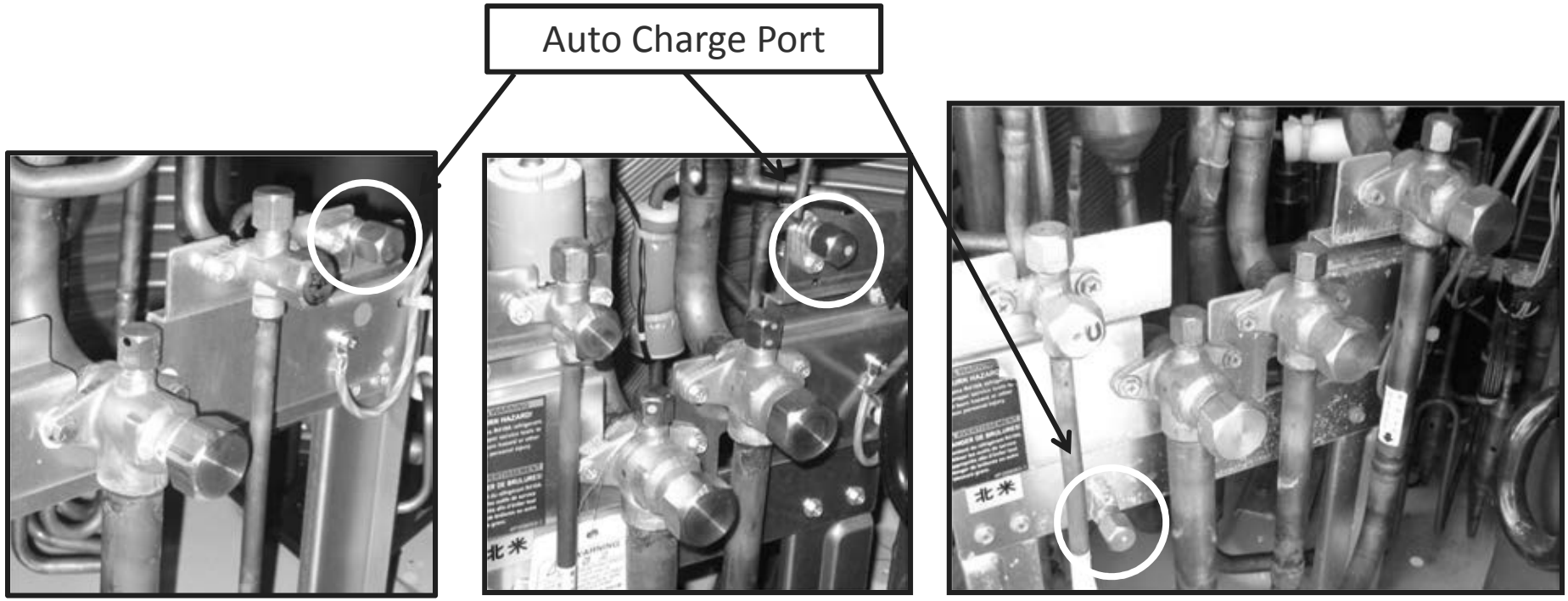
Connection Ratio limitations are determined by the vertical separation between the Condenser and Indoor Fan Coils and the type of connected fan coils in the system
Example: FXMQ_M with 210ft vertical separation - Condenser above Fan Coil

Vertical Separation Connection Ratio between Condenser and Indoor Units

	CU Located Below FC										CU Located Above FC			
	0-133ft		134-200ft		201-216ft		217-266ft		267-295ft		0-164ft		165-295ft	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FXFQ														
FXMQ_M														
FXHQ FXL/NQ FXZQ	60%	130%	80%	130%	90%	130%	100%	130%	110%	130%	60%	130%	80%	130%
FXDQ FXMQ_P FXAQ	60%	200%	80%	200%	90%	200%	100%	200%	110%	200%	60%	200%	80%	200%

Auto Charge Mode – Step 1 Charging Connection

- Connect high side gauge hose to the *Auto Charge* port (5/16”) – Bleed hose
- Connect R-410A refrigerant bottle and purge the hoses
- Set refrigerant bottle on a digital scale to charge liquid only
- Install condenser front panels but leave area open to see the PCB status LEDs and access to the programming buttons

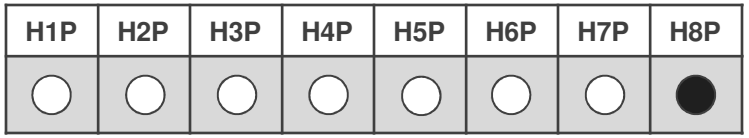


RXYQ 2-Stop Valves | RXYQ-REYQ 3-Stop Valves | REMQ 4-Stop Valves

Auto Charge Mode – Step 2 Start Auto Charge Operation

- Verify that all Remote Controllers are in the "OFF" mode before starting Auto Charge

- To begin the *Auto Charge* operation Press the **"TEST"** button once, H1P to H7P go on solid



JUDGEMENT Mode

- Press and HOLD the **"TEST"** button for 5 sec. until LEDs change to H2P flashing

- The **NAV** Remote Controllers will indicate CENTRAL CONTROL and "Test Operation" with system status LEDs ON solid
- The **Simplified** remote Controllers will indicate the Central Control symbol with the status LED on solid
- All function buttons are disabled

BRC1E72

BRC2A71

Auto Charge Mode – Step 3 "Judgment Mode"

- *Auto Charge* will bring on all indoor & Outdoor fans, then compressor - When Indoor and Outdoor temps are verified to be within the temperature ranges (approx 15 mins.)
- *Auto Charge* will select the **Cool** mode & automatically stop when charging is complete

Outdoor Temp 32°F DB – 109°F DB
Indoor Temp 50°F DB – 90°F DB

COOL Mode

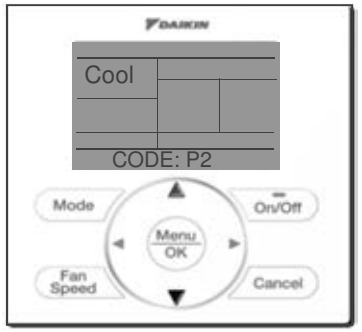
H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	◑	◑	●	○	●	○	●

- If the Indoor/Outdoor temperatures are below the stated ranges, **Heat** mode will be selected for manual charging

HEAT Mode

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	◑	●	●	○	●	○	●

- When either of these LED light patterns appear, the **"TEST"** button must be pressed within 5 mins.
  - **"P2"** error code will appear on Remote Controllers if "TEST" button is not pressed before timeout. Operation will stop and require restarting



Auto Charge Mode – Step 4 Charging System in Cool Mode

- When LED light pattern indicates charging in the COOL mode, press the **"TEST"** button within 5 min.
- After the **"TEST"** button is pressed, open refrigerant gauge to the *Auto Charge* port to allow liquid refrigerant to flow into the system

COOL Mode

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	◑	◑	●	○	●	○	●

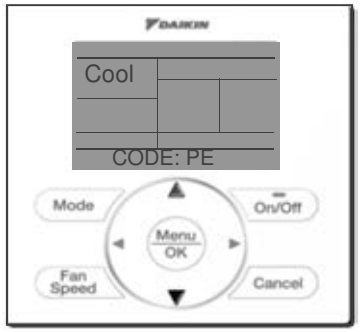
→

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
○	◑	◑	●	○	●	○	●

- When the LED light pattern changes to this sequence, a "PE" code will appear on the Remote Controllers. Charging is almost complete

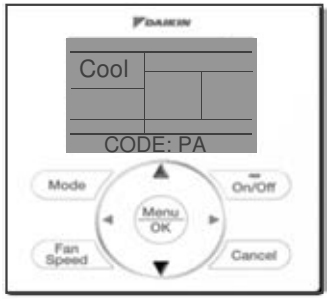
→

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
◑	◑	◑	●	○	○	○	●

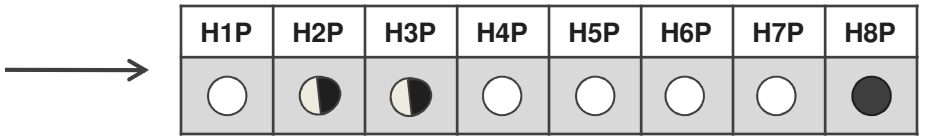


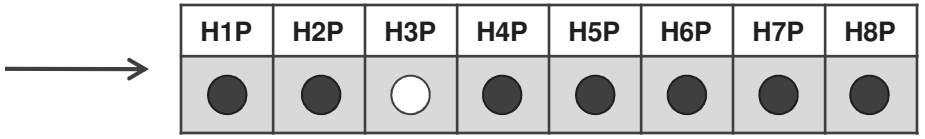
Auto Charge Mode – Step 5 Charging System in Cool Mode

- If during the charging process the refrigerant bottle becomes empty, Auto Charge will go into a 5 min. standby to change bottles and a “PA” code will appear on the Remote Controllers
- If the 5 min time frame lapses before the bottle is replaced, Auto Charge will stop and a “P2” code will appear requiring an operation restart.



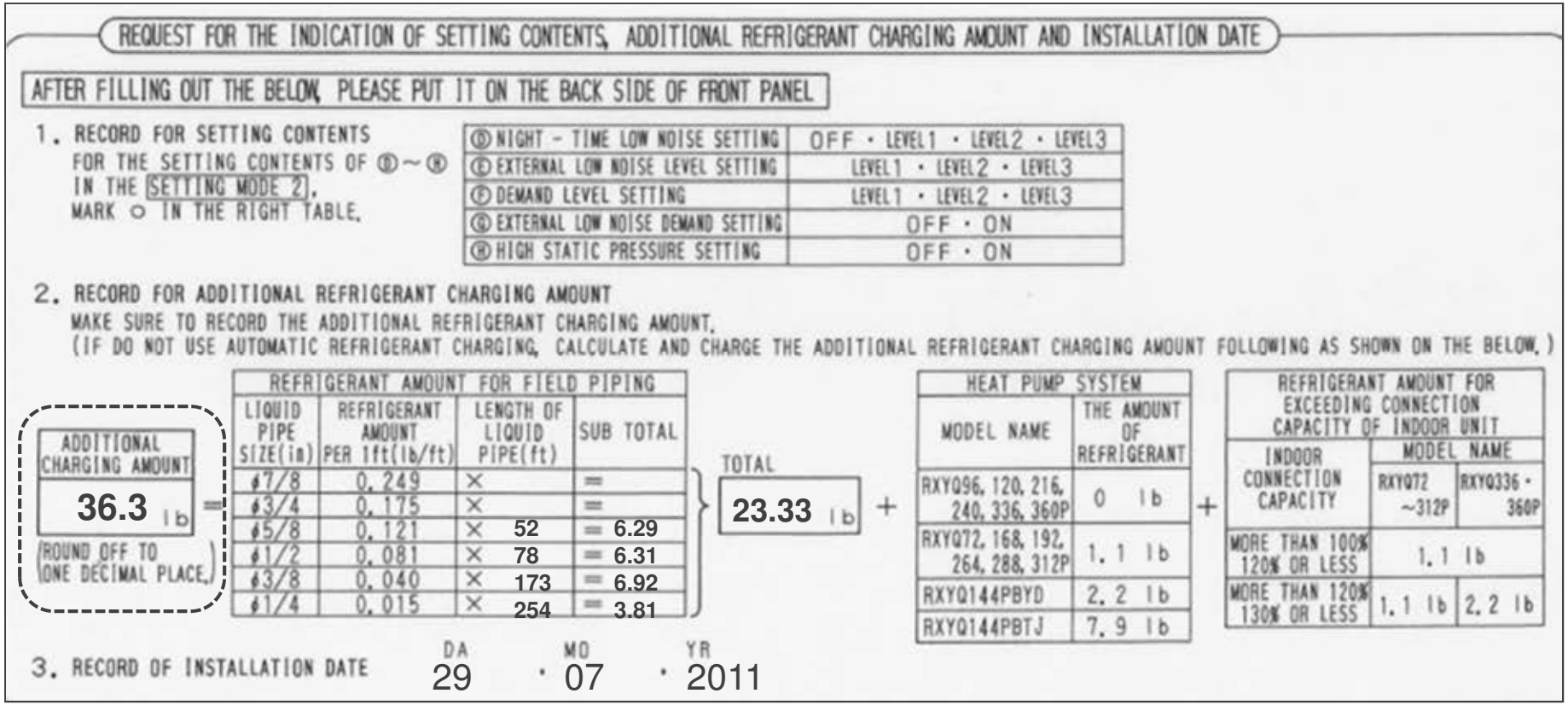
- When this LED light pattern appears, charging is complete, *Auto Charge* will stop the refrigerant flow and a “P9” code will appear on the Remote Controllers
- Press the **“MODE”** button to terminate *Auto Charge* operation
  - Close off the refrigerant bottle and manifold gauge: remove charging hose
  - Document the weight of refrigerant charged from the scale
  - Remote Controllers are back to OFF mode





Auto Charge Mode – Step 6 Record the TOTAL Additional Charge

- When Auto Charge is complete, record the amount of the refrigerant charge from the scale including the "Additional Charge" amount in the box on the access panel label
  - It is possible for Auto Charge to draw in a slightly higher or slightly lower amount of refrigerant than the manual calculation
- Enter the system commissioning date



REQUEST FOR THE INDICATION OF SETTING CONTENTS, ADDITIONAL REFRIGERANT CHARGING AMOUNT AND INSTALLATION DATE

AFTER FILLING OUT THE BELOW, PLEASE PUT IT ON THE BACK SIDE OF FRONT PANEL

1. RECORD FOR SETTING CONTENTS
FOR THE SETTING CONTENTS OF Ⓓ~Ⓗ IN THE [SETTING MODE 2], MARK ○ IN THE RIGHT TABLE.

Ⓓ NIGHT - TIME LOW NOISE SETTING	OFF · LEVEL1 · LEVEL2 · LEVEL3
Ⓔ EXTERNAL LOW NOISE LEVEL SETTING	LEVEL1 · LEVEL2 · LEVEL3
Ⓕ DEMAND LEVEL SETTING	LEVEL1 · LEVEL2 · LEVEL3
Ⓖ EXTERNAL LOW NOISE DEMAND SETTING	OFF · ON
Ⓗ HIGH STATIC PRESSURE SETTING	OFF · ON

2. RECORD FOR ADDITIONAL REFRIGERANT CHARGING AMOUNT
MAKE SURE TO RECORD THE ADDITIONAL REFRIGERANT CHARGING AMOUNT.
(IF DO NOT USE AUTOMATIC REFRIGERANT CHARGING, CALCULATE AND CHARGE THE ADDITIONAL REFRIGERANT CHARGING AMOUNT FOLLOWING AS SHOWN ON THE BELOW.)

ADDITIONAL CHARGING AMOUNT: **36.3** lb (ROUND OFF TO ONE DECIMAL PLACE.) =

REFRIGERANT AMOUNT FOR FIELD PIPING				
LIQUID PIPE SIZE(in)	REFRIGERANT AMOUNT PER 1ft(lb/ft)	LENGTH OF LIQUID PIPE(ft)		SUB TOTAL
φ7/8	0.249	×		=
φ3/4	0.175	×		=
φ5/8	0.121	×	52	= 6.29
φ1/2	0.081	×	78	= 6.31
φ3/8	0.040	×	173	= 6.92
φ1/4	0.015	×	254	= 3.81

TOTAL **23.33** lb +

HEAT PUMP SYSTEM	
MODEL NAME	THE AMOUNT OF REFRIGERANT
RXYQ96, 120, 216, 240, 336, 360P	0 lb
RXYQ72, 168, 192, 264, 288, 312P	1.1 lb
RXYQ144PBYD	2.2 lb
RXYQ144PBTJ	7.9 lb

+

REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT		
INDOOR CONNECTION CAPACITY	MODEL NAME	
	RXYQ72 ~312P	RXYQ336 · 360P
MORE THAN 100% 120% OR LESS	1.1 lb	
MORE THAN 120% 130% OR LESS	1.1 lb	2.2 lb

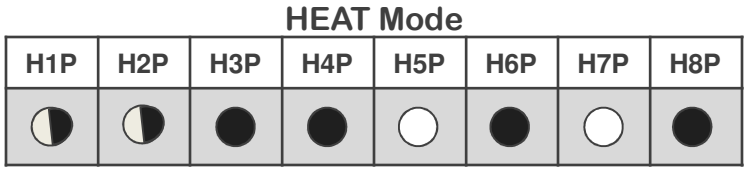
3. RECORD OF INSTALLATION DATE DA 29 · MO 07 · YR 2011

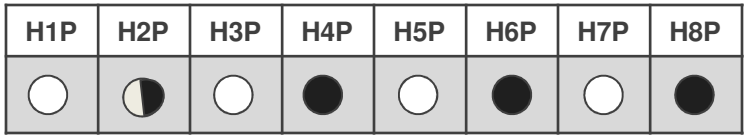
Auto Charge COOL Mode Status Codes

PE	**Charging is almost complete. Get ready to close refrigeration gauges.**	
PA	**The refrigeration tank is empty. Close refrigeration gauges and replace with full tank. Once tank is replaced and hose is purged, open refrigeration gauges again.**	
PH	**Fan does not stop running and the outdoor unit does not stop running.**	
P8	**Close refrigeration gauges and restart the Auto Charge procedure.**	
P2	**Operation is interrupted. Close refrigeration gauges and check below items.** **• Check to see if all stop valves are open.** **• Check that the refrigerant tank is connected and open.** **• Check indoor units for blockage of air inlet and outlet.**	**After correcting the abnormality, restart the Auto Charge from the beginning.**
P9	**Charging is complete. Push "MODE" button (BS1). Close refrigeration gauges and disconnect tank from system.**	

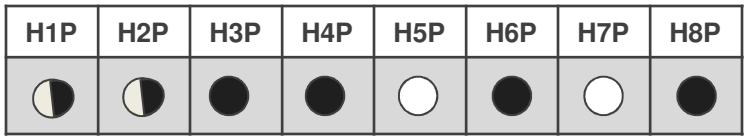
Auto Charge –Charging System in Heat Mode

- When LED light pattern indicates charging in the HEAT mode H1P-H2P Flashing - Press the **"TEST"** button within 5 min.
- After the **"TEST"** button is pressed, open refrigerant gauge to the *Auto Charge* port to allow liquid refrigerant to flow into the system





- Manually weigh in the balance of the calculated "Additional Refrigerant Charge"
- When the total amount of refrigerant is charged, close off the manifold gauge and refrigerant bottle – Remove hose



- Press the **"RETURN"** button to stop *Auto Charge*

Auto Charge Mode –Charging System in HEAT Mode

- Press the **"MODE" button** to terminate *Auto Charge* Heat operation
  - Close off the refrigerant bottle and manifoldld gauge: remove charging hose
  - Document the weight of refrigerant charged from the scale
  - The Remote Controllers return to normal display and OFF

Heat Mode Status Codes

P8	**Close refrigeration gauges and push "TEST" button (BS4) once. Restart the Auto Charge procedure.**
P2	**Operation is interrupted. Close refrigeration gauges and check below items.** • **Check to see if all stop valves are open.** • **Check that the refrigerant tank is connected and open.** • **Check indoor units for blockage of air inlet and outlet.**

System Commissioning

Check Operation Mode - Commissioning Step #6

Check Operation Mode

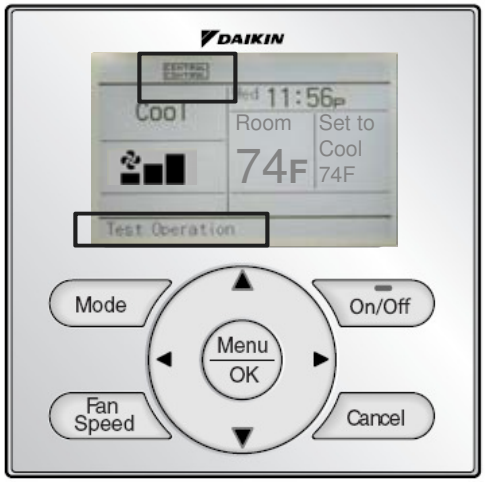
- Verify that all Remote Controllers are "OFF" before starting the Check Operation mode or "U3" error will occur
- To start "Check Operation Mode" Press and HOLD the **"TEST"** button for 5 sec. until LED light sequence changes to H2P flashing & H7P solid

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	

→

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	◑	●	●	●	●	○	

- Check Operation will take approximately 15 to 40 mins. to complete depending on the size of the system and number of indoor units
- Remote Controllers will indicate "Central Control" with Status LED's on solid
- Check Operation always runs in the COOL mode

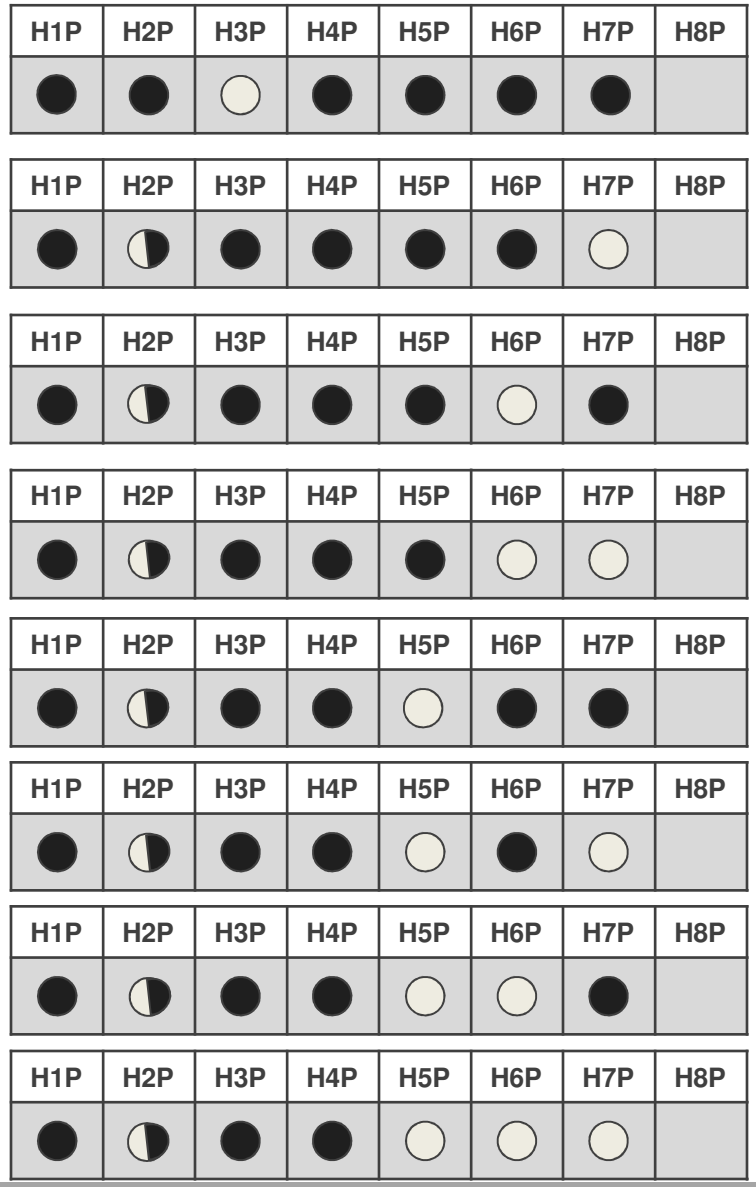


Note: If a **"U1"** or **"U7"** error code is generated see slides 73 - 77

Check Operation Mode Sequence

- **START** - Normal Status
  Press and HOLD **"TEST"** button
  5 sec.
- **STEP 1** - Pressure Equalization
  Time: 10 sec. to 10 mins.
- **STEP 2** - Cooling Start Control
  Time: 3 – 5 mins.
- **STEP 3** - Stability waiting operation
  Time: 10 mins.
- **STEP 4 to 6** - Judgement Function
  - Stop valve close check
  - Wrong Wiring check
  - Refrigerant over-charge check
  - Piping Length Check

  Time: 3 mins.



NEXT PAGE

Check Operation Mode Sequence Continued

- **STEP 7** - Pump down residual operation
  Time: 10 sec. – 5 mins.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	◑	●	○	●	●	●	

- **STEP 8** - Standby for restarting
  Time: 5 mins.

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	◑	●	○	●	●	○	

- Check Operation Completed
  Return to Normal status

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
●	●	○	●	●	●	●	

- Remote Controllers revert back to OFF mode with normal display

Listing of potential error codes which could occur during Check Operation Mode

Error Code	Installation Error	Remedial Action
E3, E4, F3, F6, UF	The stop valve of an outside unit is left closed.	Open stop valve.
U1 (see pages 84 ~85 for additional help)	The phases of the power to the outside unit(s) are reversed.	Exchange two of the three phases (L1, L2, L3). Swap L2 & L3
U1, U4, LC	No power is supplied to an outdoor , BS or indoor unit (including phase interruption).	Check if the power wiring for the outside , BS or inside units are connected correctly.
UF	There is a conflict on the connection of transmission wiring in the system.	Check if the refrigerant piping line and the unit transmission wiring are consistent with each other.
E3, F6, UF	Refrigerant overcharge.	Recalculate the required amount of refrigerant from piping length and correct the refrigerant charge level by refrigerant recovery machine.
E4, F3	Insufficient refrigerant.	Check to see if additional refrigerant charge has been finished correctly. Recalculate the required amount of refrigerant from piping length and then add the adequate amount of refrigerant.
U3	The check operation has not been preformed.	Perform the check operation.
U7, U4, UF, UH	Field wiring is connected to Q1-Q2 terminals on outside unit PC-board when the system is one outdoor system.	Remove the wire from the Q1-Q2 terminals.

System Commissioning

Configure the Remote Controller *Changeover Master* - Step #7

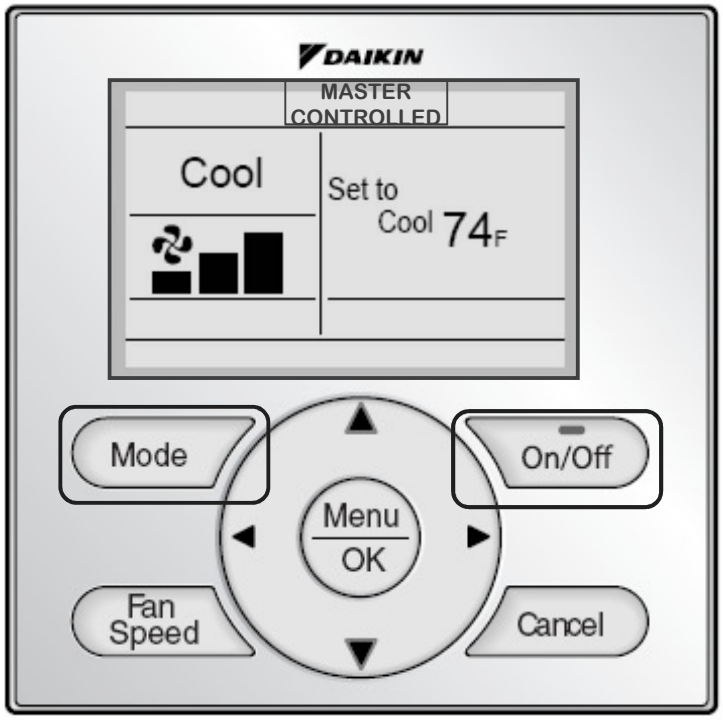
Additional Field Settings - Step #8

Configure Remote Controller *Changeover Master* for Heat Pump Applications

- A designated Remote Controller must be configured as the Master in a Heat Pump system, or Heat Recovery where a Branch Selector Box is connected to multiple fan coils with individual Remote Controllers.
- To configure a **BRC1E72** (NAV Remote) as a 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 configure a **BRC2A71** (Simplified)
  - The Master Controlled symbol will be flashing ("Changeover Under Control") on all Simplified RC's
  - Press the **"Mode"** button once and the symbol will disappear on the Master
  - All other "Simplified" Slave Remote Controllers will display solid
- To change the Master, press & hold the **"Mode"** button for 5 sec. on the Master RC All RCs go into Master configuration mode

MASTER

BRC1E72 NAV Remote



MASTER

BRC2A71 Simplified

Configure Wireless Remote Controller *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 fan coil
- 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 for Commissioning

- Any remaining system field settings can now be programmed
- Field Settings are listed in the Indoor Unit Installation Manuals and the *VRVIII* Service Manual
- Indoor Units (Suggested Examples)
  - T1 T2 Forced OFF configurations – ON/OFF – External Protection Device N.C.
  - Power Louvers Operation (see fan coil 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 fan coils only)
  - Set Point ranges
  - Air Filter Alert

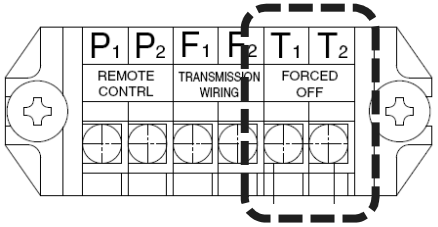
Fan Coil Field Settings – T1 T2 Forced Off – External Protection Device

- Any fan coils utilizing the optional condensate pumps must have the "Forced Off" field setting changed to accommodate the safety float switch operation (External Protection Device N.C.)
  - T1 T2 Forced Off has a factory default of N.O. Code 01
  - NOTE: When the float switch is connected to T1 T2, the Remote Controller will display
  - CENTRAL CONTROL or  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 fan coil 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)

Indoor Unit Field Settings – 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

Indoor Unit Field Settings – 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	Second Code No. (Note 2) (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.	--

Indoor Unit Field Settings – 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.	--

Indoor Unit Field Settings – FXMQ_MF O.A. Processor Discharge Temperature Setting

- A dedicated BRC1E72 Remote Controller is required to control the O.A. Processor Unit
  - A field Setting programs the operating discharge temperature for Heat and Cool
  - Mode No. 14 (24)
  - First Code No. 3 – Cooling 4 – Heating
  - Second Code No. Heat Discharge Temp
  - Cool Discharge Temp

NOTE: The discharge air temperature is not displayed on the Remote Controller

		for cooling	for heating
Mode No.		14 (24)	14 (24)
FIRST CODE NO.		3	4
SECOND CODE NO.	01	55°F	64°F
	02	57°F	66°F
	03	59°F	68°F
	04	61°F	70°F
	05	63°F	72°F
	06	64°F	73°F
	07	66°F	75°F
	08	68°F	77°F
	09	70°F	79°F
	10	72°F	81°F
	11	73°F	82°F
	12	75°F	84°F
	13	77°F	86°F

Indoor Unit Field Settings – VRV Fan "AUTO" Configuration

- **The VRV fan coils operate with constant fan operation in the Thermo-off mode (zone satisfied)**
  - Heat mode fan speed operates in LL speed
  - Cool mode fan speed operates on user selected speed: LL – H – HH
- **Fan operation in the Thermo-off mode may be reprogrammed by changing the field setting for Heat or Cool modes**

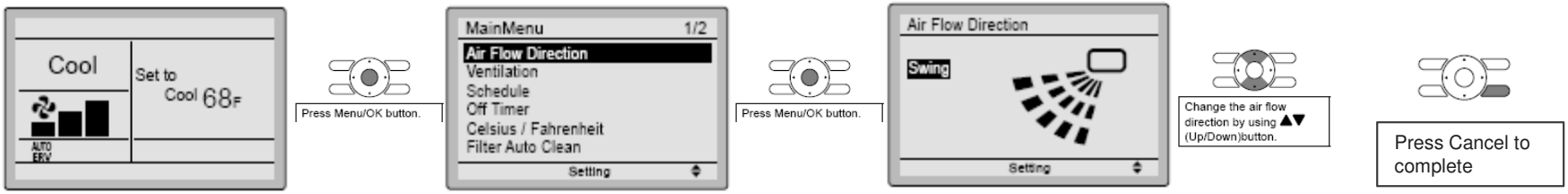
Fan Auto Configuration	Fan Speed **LL**	Fan Speed **User Set**	Fan Speed **OFF**
Fan Speed **Heat** Thermo-off	**12(22)-3-01 Default**	**12(22)-3-02**	**12(22)-3-03**
Fan Speed **Cool** Thermo-off	**12(22)-6-01**	**12(22)-6-02 Default**	**12(22)-6-03**

NOTE: Fan Auto Configuration is not available for the FXFQ_MVJU or FXHQ_MVJU fan coils

Indoor Unit Field Settings – Power Louver Operation




- The VRV fan coils 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 fan coil is ON
  - From the Main Menu on the BRC1E72 Remote Controller, the louvers can be programmed to a selected angle when the fan coil is ON



System Commissioning

Selected Field Settings - Condensers

Selected Condenser Field Settings

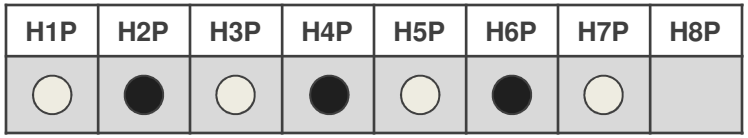
- If during the course of system installation before commissioning, line voltage power was applied to the Fan Coils and Branch Selector Boxes, the *electronic expansion valves* will close. This will impede the pressure testing and evacuation procedures required to prepare the system for commissioning. Under these conditions, a service setting at the master condenser PCB for **"Refrigerant Recovery & Evacuation Mode"** can be used to re-open all of the system *electronic expansion valves*.
  - Note: For "Refrigerant Recovery & Evacuation" mode to operate correctly, all indoor units (BS Boxes & Fan Coil units) must communicate with the DIII-Net control system. Follow Commissioning Steps 1, 2 & 3.
- When a system is to be manually charged with refrigerant, a service setting at the master condenser PCB for **"Additional Refrigerant Charge Mode"** can be used to manually draw in liquid refrigerant using the compressor.
  - All Remote Controllers are Off. The Liquid Stop Valve(s) must be closed, leaving the Gas Stop Valve(s) Open. Liquid refrigerant will be manually charged through the Liquid Service Port on the indoor unit side of the refrigerant circuit.
- Use "Monitor Mode 14" to display all error codes related to the system Condenser(s)

"Refrigerant Recovery & Evacuation Mode"

- **START** - Normal Status

- Press and HOLD **"MODE"** button 5 sec. (Service Mode 2) H1P Solid

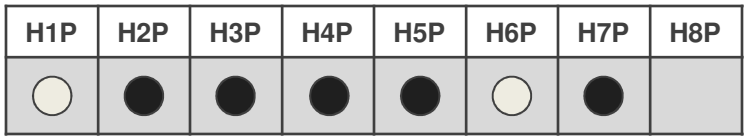
- Press the **"SET"** button 21 times
  - LED will indicate binary number for every press of the "SET" button 16+4+1



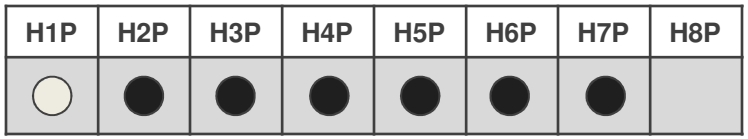
- Press the **"RETURN"** button once

- Press the **"SET"** button once to turn ON

- Press the **"RETURN"** button once to lock on



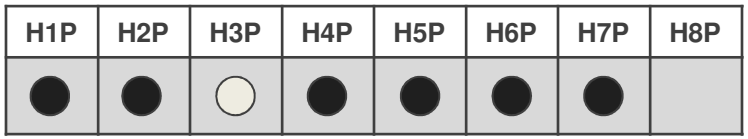
- Press the **"RETURN"** button once to activate the setting
- **Pressurize, Evacuate, or Recover now**



- Press the **"MODE"** button to return to Normal mode

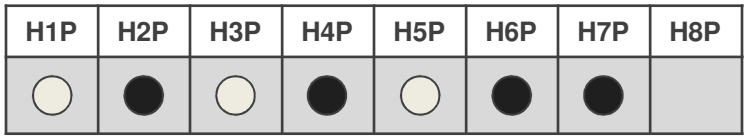
"Additional Refrigerant Charge Mode"

- **START** - Normal Status



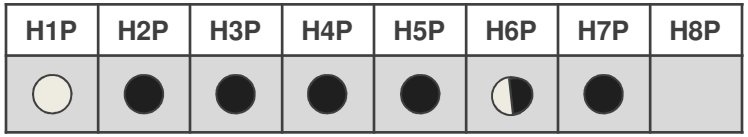
- Press and HOLD **"MODE"** button (Service Mode 2) H1P Solid

- Press the **"SET"** button 20 times
  - LED will indicate binary number for every press of the "SET" button 0+16+4



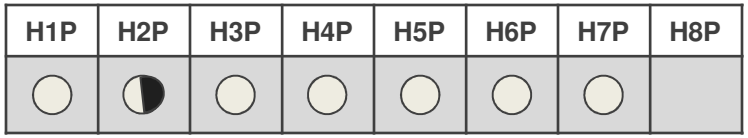
- Press the **"RETURN"** button once

- Press the **"SET"** button once to turn ON



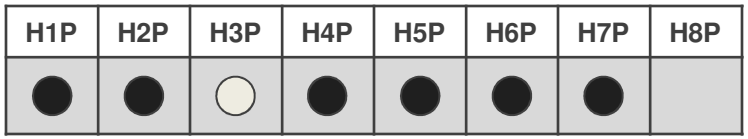
- Press the **"RETURN"** button once to lock on

- Press the **"RETURN"** button once to activate the setting
- Close Liq. Stop valve – HP/LP Gas stop valve(s) open. Add Liquid Refrigerant now thru Liq. Service port
- Press the **"MODE"** button to return to Normal mode



Manifolded Systems "Monitor Mode 14" to determine Condenser(s) with error code

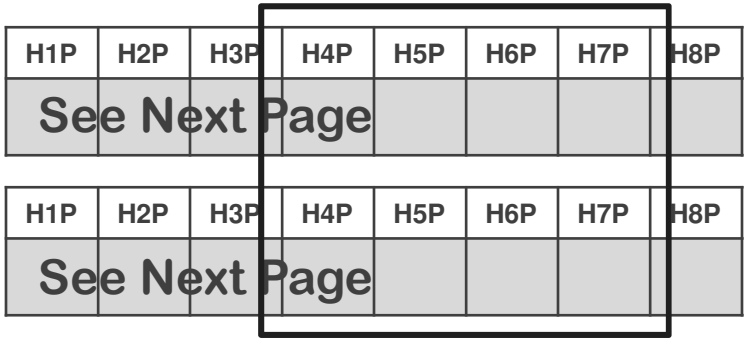
- LED status on condenser



- Press "MODE" button once

- Press "SET" button 14 times

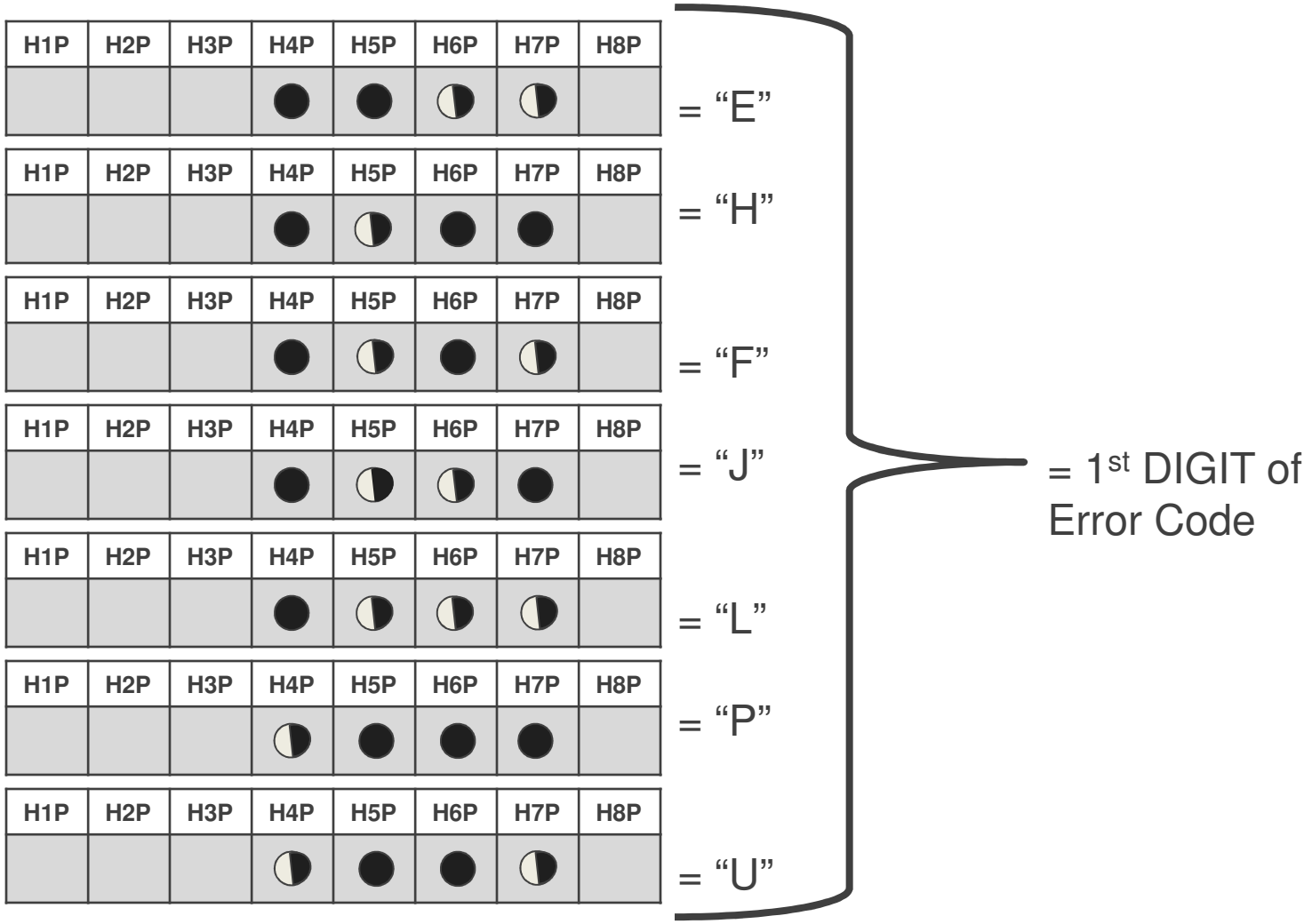
- Confirmation 1 – Press "RETURN" once "First Digit" SEE Page 90



- Confirmation 2 – Press "SET" once "Second Digit" SEE Page 91

NOTE: This must be used along with the *VRVIII* Service Manual so as to accurately determine and interpret the error code. See pgs. 329 - 332

Monitor Mode 1 LED Sequence to Error Code "Confirmation 1"- "RETURN" = 1st Digit of Error Code



Continue to next page for 2nd Digit of Error Code

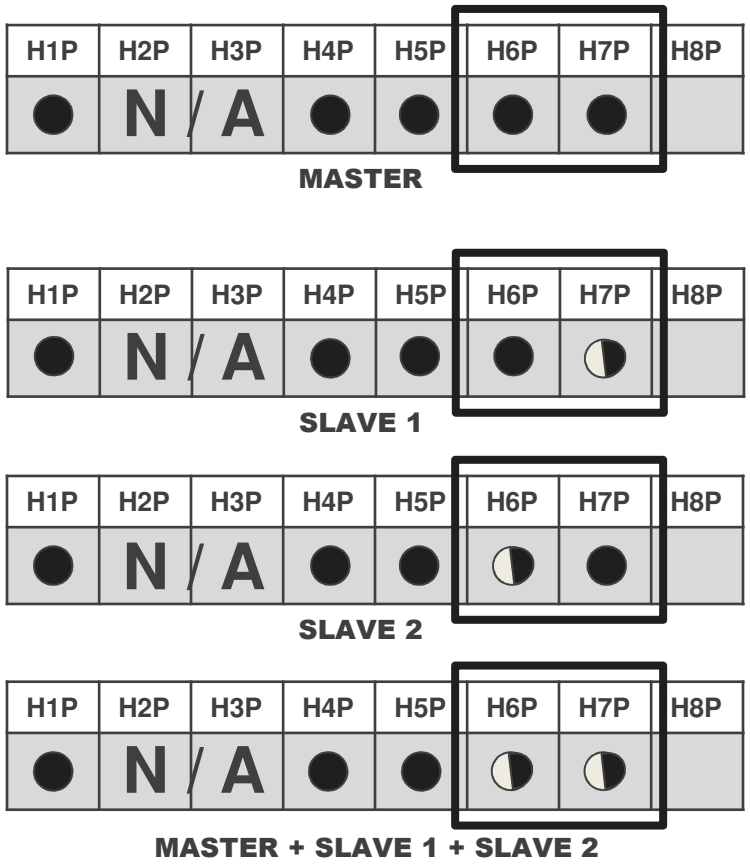
Monitor Mode 1 LED Sequence
to Error Code "Confirmation 2" - "SET" = 2nd Digit of Error Code

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P	
			●	●	●	◑		= "1"
			●	●	◑	●		= "2"
			●	●	◑	◑		= "3"
			●	◑	●	●		= "4"
			●	◑	●	◑		= "5"
			●	◑	◑	●		= "6"
			●	◑	◑	◑		= "7"

H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P	
			◑	●	●	●		= "8"
			◑	●	●	◑		= "9"
			◑	●	◑	●		= "A"
			◑	◑	●	●		= "C"
			◑	◑	◑	◑		= "F"
			◑	●	◑	◑		= "H"
			◑	◑	●	◑		= "J"

Manifolded Systems
Monitor Mode 1 to Determine Condenser(s) with Fault Continued

- **Confirmation 4** – Press **"SET"** button once → Display Condenser ID - **H6P** + **H7P** Master/Slave1/Slave 2



Next page

Manifolded Systems "Monitor Mode 1" to Determine Condenser(s) with Error Code Continued

- **Press "RETURN" button once**
  "Monitor Mode" initial status

- **Press "MODE" to return to the original power up display with error.**

- **Power down the condensers and correct the error issues**
- **Restart all Condensers**

Commissioning Completion

- Before any *VRV* installation is considered complete, the *VRVIII* system should be operated in the cool mode and the heat mode to insure proper operation, depending on the outside ambient temperature limitations.
- On Heat Recovery systems, every zone should be cycled to verify that the Branch Selector Boxes are functioning properly.
- Centralized control systems should be configured and programmed after the *VRVIII* system or systems are fully operational.
- Copies of the *VRV* IOM's should be kept by the installing contractor and on the job site with the end user for future reference.

Daikin eQuip App

***Daikin* eQuip is designed for both smart phones and tablets, placing information in your hands quickly and easily**

Technical Data

Product Manuals

Marketing Flyers

Repair Parts

And so much more *!*

A *DaikinAC*® Exclusive*!*

Professionally developed curriculum – Log on to DaikinUniversity.com

DAIKIN AC®

UNIVERSITY

For more detailed information, refer to the Daikin *VRVIII* Service, Installation and Engineering Manuals. These materials are available as electronic copies through www.daikinac.com , TRL and *Daikin* eQuip App.