Daikin VRV
Installation & Commissioning
Participant Guide
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
Training Modules and Materials

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**:

   [Diagram of VRV DIII-Net]

   Indicate the *DIII-Net Control Wire Specification*

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

   [Diagram of Condenser]

   Indicate the Control Terminal Designations

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

   [Diagram of BSVQ]

   Indicate the Control Terminal Designations

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

   [Diagram of Fan Coil]

   Indicate the Control Terminal Designations

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

   [Diagram of Remote Controllers]

   Indicate the Control Terminal Designations
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

DIII-Net Control Wiring Exercises
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

DIII-Net Control Wiring Exercises

DAIKIN AC UNIVERSITY
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

Pg. 44 Verify “Initialization” Operation
Pg. 56 Counting Indoor Fan Coil Units
Pg. 58 “Forced Fan On” Mode
Pg. 60 Counting Branch Selector Boxes
Pg. 75 “Additional Refrigerant Charge” Mode
Pg. 106 “Refrigerant Recovery/Evacuation” Mode
Pg. 91 Initiate “Check Operation” Mode
Introduction to Daikin
A History of Integrity, Quality, Growth, and Cutting Edge Technology
Learning Objectives

- Basic understanding of Daikin’s history
- Understand Daikin’s position in the global marketplace
- Understand Daikin’s commitment to the environment and the industry
- Know what other resources are available to you and how to use them to your advantage
- Understand where to go for sales and technical support

About Daikin
Introduction
About Daikin

Daikin is a comprehensive global HVAC manufacturer offering extensive products, including ducted and ductless air-conditioning and heat pump systems for residential and commercial applications as well as large-sized HVAC systems for buildings and factories.

History (1924 - Present)

- Akira Yamada founds Osaka Kinzoku Kogyosho Ltd. 1924
- Developed first packaged heat pump system 1958
- Developed Japan’s first VRV® system 1982
- Launched Altherma and 26-SEER Quaternity System 2009
- Begins research on fluorine refrigerants 1933
- Developed first multi-port mini-split system 1969
- Launched VRV® (VRV II & VRV-S) in North America 2006
- Acquired Goodman Manufacturing 2012
Daikin Quality

- Daikin is committed to providing homes, businesses and industry with the most efficient HVAC solutions to meet your cooling and heating needs, today and in the future.

- We are keenly aware of our responsibility to protect the environment in everything we do, and all our policies, practices and processes are developed and implemented with environmental sustainability at their heart. We conduct our business in accordance with green principles because it makes sound economical, as well as ecological sense.
Daikin Dedication

As the only company in the world dedicated to heating and air conditioning systems and refrigerants, almost 90% of Daikin’s core business is focused on HVAC-R. Daikin leads the way in energy efficiency, individualized comfort, and quality and is the #1 in HVAC manufacturing sales worldwide.

17 Billion USD
World Wide

Sales

- 10% HVAC-R
- 38% Fluoro-chemicals
- 3% Other
- 28% Europe, Middle East, & Africa
- 23% Japan
- 11% China, Southeast Asia, & Oceania
- 3% North, Central, & South America

Daikin’s Investments

Who has made the largest investment in the North American HVAC industry over the last 8 years? Daikin.
Trust & World-Class Support

- Recover – Recycle – Reclaim – Reuse
- Partnerships with AHRI, ASHRAE and others
Environment

Reduce CO₂ with Heat Pump Systems

![Graph showing CO₂ emissions comparison between Fossil Fuels and Heat Pumps. The graph indicates that Heat Pumps emit approximately 1/3 the CO₂ per kWh compared to Fossil Fuels.]

Daikin North America

Introduction
Our vision is to be the premier provider of the highest quality air conditioning products, systems, services, and solutions in North America by focusing on outstanding, long-term customer service.

To accomplish this, we will continue to hire the best people, always conduct our business easily and fairly, and operate with the highest degree of integrity in all business practices.

In order to attract and retain the best people, we are committed to providing the best training and creating an atmosphere of teamwork where we help each other grow.
Daikin North America
Western Regional Sales & Training Center
Irvine, CA

Daikin North America
Eastern Regional Sales & Training Center
Long Island City in Queens, NY
Daikin University Website

Daikin University: More than Just E-Learning!

Recent Announcements

Important Tips:

Dealers - Be sure to list your dealer number in your profile! Go to My Profile, Professional Tab to update.

Have questions?
Send an email to: training@daikinac.com

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Daikin North America Sales Regions

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Daikin North America Service Regions

CE: Central Region  
NE: North East Region  
SE: South East Region  
SO: Southern Region  
WC: West Coast

Daikin Support

- Literature
  - Brochures
  - Leaflets
  - Submittals
  - Manuals
    - Engineering
    - Service
    - Installation
- Website
  - www.Daikinac.com
- Daikin Representatives and Sales Support Network
Identification:

- Software Tools
  - VRV Xpress
  - Energy Calc
  - TRL Technical Reference Library
  - Spare Parts Bank
  - Dr. Daikin
  - Daikin eQuip App

- Training
  - Product & Applications by Product Line
  - Installation & Commissioning
  - Service & Troubleshooting
  - Sales Training
  - General Courses

- Technical Support
  - Email: techsupport@daikinac.com or servicerequest@daikinac.com

Identification:

- Daikin eQuip is designed for both smart phones and tablets. It places information in your hands quickly and easily for all of your on-the-go needs. Whether you’re a Daikin partner, dealer, engineer, or just interested in the Daikin product, you can:
  - SEARCH product information to quickly access and download your most referenced documents.
  - SEND key information via email or text message (SMS) for immediate sharing.
  - RETRIEVE instant updates for the most up-to-date news and information on Daikin AC.

Search for Daikin eQuip in the APP store or Android Market!
Learning Objectives

- Basic understanding of Daikin’s history
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- Understand where to go for sales and technical support
Piping & R-410A

Field Practices for Piping and Charging

Daikin Air Conditioning Equipment
Objectives

- Refrigerant recovery and the atmosphere
- Properties of R-410A
- PVE oil
- Identify line set components
- Daikin dedicated tools
- Flared connections

Objectives

- Brazing
- Standing pressure test and leak testing
- Triple evacuation process
- Pipe insulation
- Importance of liquid charging
Daikin Environmental Initiatives

Recover – Recycle – Reclaim - Reuse

*Daikin cares for our environment*

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R-410A
R-410A

- Developed since 1991
- Ozone friendly - No Chlorine
- Lower Significant ODP than R22
- Near Azeotrope
- 50/50 Mixture
- Temperature Glide .02° F
- Not compatible with mineral oils
- Generally non toxic, non flammable

R-410A

- Recovery cylinder must be rated for R-410A
- 400 PSIG Service Pressure Rated
- 800 PSIG Test Pressure Rated
- DOT BA400, DOT BW400

Store refrigerants in a clean, dry area out of direct sunlight. Never heat cylinders above 125°F (52°C).
R-410A Safety

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

Pressure Difference

Pressure is approximately 60% higher than with R-22
Adequate tools and service devices needed
Working with PVE Oil

Miscibility

R-410A & Mineral Oil

R-410A & PVE Oil
PolyVinylEther Oil (PVE)

- PVE oil is optimal for systems that do not use line set driers
- Compatible with all HFC Refrigerants
- Excellent anti-wear properties
- Better solubility with process fluids
- Superior Resistance to Cap tube blockage
- Better lubricity
- Optimal for non-drier systems
- Very Hygroscopic but with no hydrolysis
- Moisture easily removed

Refrigerant Lines
**Line Components**

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

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

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**Isolation Valves**

We do not recommend Isolation Valves be installed in Daikin systems; however, there are times when the specifications require them:

- Compatibility with R-410A and PVE (Polyvinylether) oil
- Temperature operation range of -40°F to 300°F
- Working pressure of 550 PSIG, capable of handling up to 700 PSIG
- Full flow valve with 0 pressure drop
- Bi-directional flow
- Brazed connections
- Service port in valve body
Pipe Expansion

100 °F x 100 ft x 12 in./ft. x 0.0000094 in./in./F = 1.128 in.

<table>
<thead>
<tr>
<th>Expected Expansion, inches</th>
<th>Radius “R”, inches, for Nominal or Standard Tube Sizes Shown</th>
<th>Length “L”, inches, for Nominal or Standard Tube Sizes Shown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>R 6  7  8  9  10  11  12  13  14  15  16  17  18  19</td>
<td>L 20 23 23 23 23 23 23 23 23 23 23 23 23 23 23</td>
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<td>R 9  10 11 12 13 14 15 16 17 18 19 20 21 22 23 24</td>
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<td>R 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</td>
<td>L 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40</td>
</tr>
</tbody>
</table>

Reference: The Copper Tube Handbook published by Copper.org - the #1 resource for technical and professional information regarding copper and copper alloys.
Refrigerant Line Insulation

Good Piping Practices

- Refrigerant piping must be maintained clean
- During the course of installation, the refrigerant lines should be occasionally blown out with dry nitrogen to drive out any particulate debris
- When the piping is not connected to the indoor and outdoor units, the ends must be properly sealed
**Insulating Pipe**

ALL pipe work must be insulated along its full run using 3/4” Wall Insulation minimum.

Take extra care to cover the flare nuts on the fan coils using the insulation provided or condensation will occur causing water leaks.

The liquid line must be insulated

Could cause excessive subcooling.

Always follow local codes

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**Insulating Hanging Pipe**

Copper pipe

Insulation

Metal support bracket

Insulation of support brackets
Keep copper ends sealed to prevent debris from settling in the piping.

When the refrigerant lines are not connected and dormant during construction there are two recommended methods of sealing the ends:

- < 30 days: cap or tape the ends
- > 30 days: pinch and braze the ends

Tools
R-410A Gauges

- All of our service connections are 5/16”
- Dedicated manifold
- R-410A Rated up to 550 and 800 PSIG
- 5/16” hose connections

Daikin Tools

- Deburring Tool
- Flaring Block
- Flare Size Gauge
- Tubing Cutter
## Daikin Tools

**Torque Wrench Kit**

Part No. TLTWSM

**Service Tool Kit**

DACA-99S TK-1

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## Vacuum Pump

- Pump capacity should be a minimum of 6 cfm
- Vacuum pump should have a check valve
- Pump must be kept properly maintained
- Change pump oil frequently
Digital Micron Gauge

- As driers are not used in VRV refrigerant lines it is imperative to properly evacuate the system to remove all moisture to insure a dry system.
- All Daikin systems must be triple evacuated down to 500 microns or less:
  - The moisture level can only be determined with an accurate micron gauge.
  - Never evacuate a refrigeration system using atmospheric pressure alone.

Digital Scale

- Daikin systems are charged with R-410A refrigerant by weight based on the length of the liquid lines:
  - All liquid lines should be measured as accurately as possible to insure optimum system performance.
  - Each liquid line diameter is multiplied by a factor per measured foot of piping length.
  - The refrigerant charge is designated as the “Additional Refrigerant Charge”.
- A good digital scale must be used to properly weigh in the liquid R-410A refrigerant.
Other Installation Tools

5/16” Valve Core Removal Tool w/side port

Nitrogen Regulator Rated 750-1000 PSIG

3/8”

Metric Hex Keys

1/4”

Flaring
Proper deburring is critical to a successful flare

**Pipe Flaring**

Go / No Go

Pipe Size | Dimension (mm) | Dimension (mm)
--- | --- | ---
1/4" | 9.1 | 1 mm
3/8" | 13.2 | 2 mm
1/2" | 16.6 | 2 mm
5/8" | 19.7 | 2 mm
3/4" | 24.0 | 2 mm

Go / No Go

Pipe Size | Dimension (mm) | Dimension (mm)
--- | --- | ---
1/4" | 1 mm | 1 mm
3/8" | 2 mm | 2 mm
1/2" | 2 mm | 2 mm
5/8" | 2 mm | 2 mm
3/4" | 2 mm | 2 mm

**Piping Flaring**

“B” depth for ¼” pipe

“B” depth for all other sizes

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Brazing

- Tape in Schrader Fitting
- Set Nitrogen regulator to 1.5 – 3 PSIG
- Leave other end of pipe open

Dry Nitrogen *MUST* be used during all brazing (Pressure regulated to 1.5 to 3 PSIG) to prevent oxidation formation.
Pressure Test & Evacuation

System Nitrogen Pressure Test

Verify all stop valves are securely closed before pressure test

- 550 psi
- 450 psi
- 325 psi
- 150 psi

Max. pressure for any system installed with one or more FXTQ Air Handlers

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Pressure Test

Use commercial liquid leak detector

Evacuation

What is a micron as a unit of measurement for a vacuum?
Daikin Recommends Triple Evacuation

- Evacuate the system to 4000 microns and hold for 15 minutes
- Break vacuum with dry nitrogen to a pressure of 2-3 PSIG and hold for 20 minutes
- Evacuate to 1500 microns and hold for 20 minutes
- Break vacuum with dry nitrogen to a pressure of 2-3 PSIG and hold for 20 minutes
- Evacuate below 500 microns and hold for 60 minutes
System Refrigerant Charging

Additional Refrigerant

Weigh in additional refrigerant with digital scales

- Calculate charge based on total line length x lb/ft of diameter.

- Check with each model for correct multiplier.
Wrap-up

- The ozone is only part of the equation in refrigerant containment and recycling.
- R-410A is a very efficient blended refrigerant but it requires knowledge and skills to be used correctly and safely.
- Daikin chose PVE as for its properties and easier system dehydration.
- Daikin does not require dryers, sight glasses, or oil traps on system installations.
- Expansion must be taken into consideration to prevent fractures or cracks in the gas lines due to temperature increases.
- Daikin recommends a dedicated tool set including gauges for working on Daikin equipment.

Wrap-up

- R-410A systems require a different flaring block for making flared connections.
- Dry nitrogen purge while brazing prevents oxidation inside of the lines.
- Pressure test and evacuation must be completed according to best practices in the industry.
- All lines must be insulated including the liquid and the condensate lines.
- Daikin requires R-410A to be charged as a liquid and a complete recovery and recharge in the event of a leak.
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 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

**Daikin VRV System Models**

VRVIII-S® VRVIII® VRV-WIII®

Condensers & Indoor Units
VRV Systems

208/230 vac Single Phase Heat Pump
3 Ton & 4 Ton Models
Up to 14.9 SEER / HSPF 9.1

VRV Nomenclature

VRVIII-S
Heat Pump

- RXY: Heat Pump
- M
- Q 36/48 P
- TJ
- U

UL listed for US market
Voltage: 208 - 230V 1ph 60Hz
Revision
Cooling Capacity
Refrigerant R410A
Trunk-shaped VRV system

VRV Systems

VRVIII-S

VRV Nomenclature
VRV Systems

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°F to 77°F

VRV Systems

208/230 & 460vac Three Phase
Heat Pump & Heat Recovery Models
6 to 30 Ton Systems
VRV Nomenclature

**VRVIII** Heat Pump

- **RXY**
- **Q**
- **PB**
- **TJ or YD**

- 460 vac 3ph 60Hz
- 208/230 vac 3ph 60Hz
- Revision
- Cooling Capacity
- Refrigerant R410A
- Air Cooled Heat Pump

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

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VRV Nomenclature

**VRVIII** Heat Recovery Single Piped

- **REY**
- **Q**
- **PB**
- **TJ or YD**

- 460 vac 3ph 60Hz
- 208/230 vac 3ph 60Hz
- Revision
- Cooling Capacity
- Refrigerant R410A
- Air Cooled Heat Recovery

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

VRVIII  Heat Recovery  Manifolded Module

REM  Q  ###  PB  TJ or YD

- 460vac 3ph 60Hz
- 208/230vac 3ph 60Hz
- Revision
- Cooling Capacity
- Refrigerant R410A
- Air Cooled Heat Recovery Manifolded Module

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

VRV Systems

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
**VRV Systems**

208/230 vac. 3 Phase  
460 vac. 3 Phase  
Heat Pump / Heat Recovery  
6 to 21 Ton Systems

**VRV Nomenclature**

```
VRV-WIII
```

- `RWEY`  
- `Q 72/84`  
- `P TJ YD U or N`

- 460vac 3ph 60Hz  
- 208/230vac 3ph 60Hz  
- Revision  
- Cooling Capacity  
- Refrigerant - R410A

Water-cooled type

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

**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

Field Configured Geothermal Operation

**VRV Systems**

**Indoor Units**

- 12 Types
- 55 Models

- 3'X3' Ceiling Cassette
- 2'X2' Ceiling Cassette
- Wallmount

- 6 & 8 Ton Med Static Ducted
- Med Static DC Ducted
- Low Static Slim Duct Concealed

- 100% Outside Air Processing Unit
- Energy Recovery Ventilator

Unitary Ducted | Exposed & Concealed Floor Standing | Ceiling Suspended

All 208/230vac 1 Phase powered
Local Remote Controllers

BRC1E71

BRC2A71

BRC7C/7E/4C

Navigation Remote Controller

Simplified

Hand-held Wireless

DIII – NET 16vdc digital control network
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

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DAIKIN VRV Product & Technology Introduction

VRV System Types

Heat Pump / Heat Recovery
VRV Heat Pump Systems

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

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
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.

Control Circuit Terminal Designations

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

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
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

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Indoor fan coil units operate in simultaneous Heat and Cool modes.
VRV Heat Recovery Systems

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

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

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

Branch Selector Control Circuits

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

VRV Refrigerant Piping Lengths
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

**VRV** Basic System Control Operations
**VRV Basic System Control**

### Compressor Capacity Control

- **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.

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

- **37 Applied Capacity Steps**

### Electronic Expansion Valve Control

- **VRV Basic System 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 Proportional, Integral & Derivative (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
  - TSET: Remote Controller Set Point

- **Main PCB**

- **R1T: Liquid pipe**
- **R2T: HP/LP Gas pipe**

- **Indoor Fan Coil Unit**
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

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**

**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**

**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

*NOTE: Automatic Charge is not available for this product*
DAIKIN VRV Product & Technology Introduction

VRV Multi-Zone Control Systems

VRV Multi-Zone Controls

Multi-Zone Control Systems

Centralized Controller
Unified On/Off
Schedule Timer
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)

DIII-Net bus

- Di Unit
  - 8 sets of
    - 8-Status input
    - 8-Alarm input
  - On/Off Status from any equipment

- Dio Unit
  - 4 sets of
    - 4-Output
    - 4-Status input
    - 4-Alarm input
    - Fan
    - Damper
    - Light
    - AHU etc

DEC101A51-US2
DEC102A51-US2

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

F1 F2 Circuit
KRP928B
VRV Basic System Installation

Training Department May 2011

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

VRV Heat Pump Refrigerant Piping

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

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.
One system provides simultaneous cooling and heating

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.

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

- 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
RefNet “Y” - Position vs. Flow Demonstration

Refrigerant flow demonstration
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

<table>
<thead>
<tr>
<th>RefNet “Y” Joint</th>
<th>Heat Recovery (3-Pipe)</th>
<th>RefNet Header</th>
<th>Heat Recovery (3-Pipe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KHRP26A22T</td>
<td>KHRP25A22T</td>
<td>KHRP26M22H(9)</td>
<td></td>
</tr>
<tr>
<td>KHRP26A33T</td>
<td>KHRP25A33T(9)</td>
<td>KHRP26M33H(9)</td>
<td>KHRP25M33H(9)</td>
</tr>
<tr>
<td>KHRP26M72TU(9)</td>
<td>KHRP25M72TU(9)</td>
<td>KHRP26M72H(9)</td>
<td>KHRP25M72H(9)</td>
</tr>
<tr>
<td>KHRP26M73TU(9)</td>
<td>KHRP25M73TU(9)</td>
<td>KHRP26M73HU(9)</td>
<td>KHRP25M73HU(9)</td>
</tr>
</tbody>
</table>

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.
Unnecessary Trap

Unnecessary Trap
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 \( \leq 130 \text{ft} \)

---

Maximum piping length from first REFNET to the furthest Indoor Coil

295 ft

a & b

**Application rules apply**
Piping Length

The Longest \((a+b)\) can be a maximum of 295 ft.

Only if Shortest \((c+f)\) = 165 ft or more

\[ (Longest - Shortest) \leq 130 \text{ ft} \]

Otherwise, 130 ft 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
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)

<table>
<thead>
<tr>
<th>Piping Size (O.D.)</th>
<th>One Size Up ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>1/2</td>
</tr>
<tr>
<td>1/2</td>
<td>5/8</td>
</tr>
<tr>
<td>5/8</td>
<td>3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>7/8</td>
</tr>
<tr>
<td>7/8</td>
<td>N/A</td>
</tr>
<tr>
<td>1-1/8</td>
<td>N/A</td>
</tr>
<tr>
<td>1-3/8</td>
<td>N/A</td>
</tr>
<tr>
<td>1-5/8</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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 + i (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 + H = 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

Xpress 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

Xpress piping report must be updated to insure system accuracy
VRV Xpress  Piping Report

VRV  Piping Installation
**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**

**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

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.

VRV III Heat Pump
Double & Triple Module Piping

Liquid Pipe
Dual Press Gas

Wrong
Right

15°

Multi Connection “Y” Branch
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

**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.

[Diagram showing outdoor units 1 and 2 with partial load operation and pressure equalizing pipe.]

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

---

**VRVIII Manifolded Systems**

Module Interconnecting Piping Lengths

Traps are installed on Gas line(s) only.

- Traps must have a minimum of an 8 in. rise.

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.

[Diagram showing manifolded systems with inverted oil traps and piping lengths.]
VRVIII Manifolded Systems
Module Interconnecting Piping Lengths

Multi Connection “Y” Branch

To indoor units

Inverted Trap height: 8” or more

Maximum height difference 16ft

VRVIII Manifolded Systems
Module Interconnecting Piping Lengths
VRV
Indoor Units
Fan Coil & BS Box
Basic Installation

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.

FXDQ Clearances
Return Configuration

Coil can be field configured for rear or bottom return.
**FXDQ** Slim Duct Built-in Concealed Installation Examples

Custom ducted applications for rectangular or round duct

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

For minimal ducted applications

10ft to 15ft maximum lengths

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

---

**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
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

FXDQ Line voltage and Control Voltage

- Wire only after removing the control box lid as shown in Fig. 14
- Connect electrical wiring, remote controller wiring, and transmission wiring (Refer to 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
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

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

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.
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

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

<table>
<thead>
<tr>
<th>Capacity Model MBtu</th>
<th>72</th>
<th>96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>18 1/8&quot;</td>
<td>18 1/8&quot;</td>
</tr>
<tr>
<td>Depth</td>
<td>43 5/16&quot;</td>
<td>43 5/16&quot;</td>
</tr>
<tr>
<td>Width</td>
<td>54 3/8&quot;</td>
<td>54 3/8&quot;</td>
</tr>
</tbody>
</table>

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

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.
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

PCB’s, Line voltage and Control voltage connections
Control transformer set for 240 vac
For 208 vac power supply change transformer primary tap
The FXTQ-PAVJU is not equipped with a return air sensor.

Temperature Control Options:
- BRC1E71 Remote Controller
- BRC2A71 Simplified with
- KRCS01-4B Remote Sensor
- KRCS01-4B Sensor Only

NEW - KRCS01-4B Remote Sensor is required

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

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

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 25kW

Install the Heater Element Module and Circuit Breakers

Remove Top Access Panel and Heater Element Cover

Electric strip heat module slot cover

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

---

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
**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

---

**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

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
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.

Rear of Wall Mount Unit - Right hand exit
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.

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

**Gravity Drain**

- Make sure the diameter of the extension drain piping is the same as the indoor unit drain hose (hard vinyl chloride, I.D. ¼” or ½”) or larger.
- In case of converging multiple drain pipes, install them referring to Fig. 18.
- Select diameter drain piping which adapts to the capacity of the unit connected.

*Fig. 18 (Slope of at least 1‰)*

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.
4. Install drain plug in right hand side where drain hose was connected.

**Condensate Pump Right Hand Exit**

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

Make sure there are no gaps.

Do not place lubricant (refrigerant oil) when inserting. This may cause deterioration and water leaks.

Insert using a hexagon wrench (4mm).
FXAQ Condensate Pump Right Hand Exit

Complete Drain & Pump Assembly

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

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.

Very, very tight when installed with line set.
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 tubing lengths before cutting. Lengths may vary depending on installation.

FXAQ

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.

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

X8A

FXLQ/FXHQ

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

X8A Jumper

X15A Jumper
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.

Wiring Connections
**FXFQ (7/9/12/18/24/30/36)MVJU**

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)PVJU**

(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

<table>
<thead>
<tr>
<th>Model</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXFQ18, 18, 24MVJU</td>
<td>9 7/16” or more</td>
</tr>
<tr>
<td>FXFQ30, 36MVJU</td>
<td>11 3/4” or more</td>
</tr>
</tbody>
</table>

Obstruction

Installation Specifications

- 

FOR HIGH CEILING INSTALLATIONS

Installation Dimensions

- 98 ½”
- 37 3/8”
- 33 1/8”
FXFQ
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
FXFQ Installation

Cautions
- Do not alter the direction of air discharge other than the following patterns. (This may have a considerable influence.)

- The direction of air discharge should be set according to the installation of indoor unit.
- The direction of air discharge should also be set for the remote controller.
- The direction of air discharge should be set for the remote controller.
- Refer to the item of "Local setting" on the operation manual of the remote controller for setting procedure.

1. Set the direction of air discharge in accordance with the instruction of the installation manual.
2. Set the setting position number corresponding to the direction of air discharge.
3. Check the setting position number corresponding to the direction of air discharge.

<table>
<thead>
<tr>
<th>Setting position number</th>
<th>Setting position number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

FXFQ/FXZQ Electrical Installation

Cautions
- Refer to the table for the height of the setting to each direction of air outlet. (The setting of the setting height is also required.)
**FXFQ Installation**

**Electrical Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Power supply wiring</th>
<th>Transmission wiring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ12MVJU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ18MVJU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ24MVJU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ30MVJU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ36MVJU</td>
<td>15A</td>
<td>Wire size must comply with local codes.</td>
</tr>
<tr>
<td></td>
<td>Steathene(2 wire)</td>
<td>AWG18-10</td>
</tr>
</tbody>
</table>

### Units

<table>
<thead>
<tr>
<th>Model</th>
<th>Hz</th>
<th>Volts</th>
<th>Voltage range</th>
<th>MCA</th>
<th>NFA</th>
<th>W</th>
<th>FLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXFQ12MVJU</td>
<td>60</td>
<td>200-230V</td>
<td>Max 250 Min 187</td>
<td>3.6</td>
<td>15</td>
<td>45</td>
<td>0.5</td>
</tr>
<tr>
<td>FXFQ18MVJU</td>
<td>5.7</td>
<td>15</td>
<td>45</td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ24MVJU</td>
<td>5.8</td>
<td>15</td>
<td>45</td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ30MVJU</td>
<td>1.2</td>
<td>15</td>
<td>90</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXFQ36MVJU</td>
<td>1.2</td>
<td>15</td>
<td>90</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**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 Electrical Installation**

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

*Air leak from ceiling*
*Contamination*
*Dew formation, dew dripping*
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 bracket to the back to support the panel.
- Install the remaining 2 screws to elude panel in place.

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.

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

Control and Line voltage connections
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.

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

---

*Remove this screw*
*Front panel release slide clip*
*Loosen this screw 1/8 turn*
(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.)

<table>
<thead>
<tr>
<th>Model</th>
<th>A (in.)</th>
<th>B (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXQN12MVPJ</td>
<td>28</td>
<td>46</td>
</tr>
<tr>
<td>FXQN18-24MVPJ</td>
<td>59</td>
<td>57</td>
</tr>
</tbody>
</table>
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.

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

Slope downwards at a gradient of at least 1/100

Optional Self priming Condensate Pump Kit

FXLQ/FXNQ Wiring Connections & Electrical Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Power supply wiring</th>
<th>Remote controller wiring</th>
<th>Transmission wiring</th>
</tr>
</thead>
<tbody>
<tr>
<td>FXLQ18</td>
<td>18/24 MVJU</td>
<td>15A</td>
<td>Size: S30 must comply with local codes</td>
</tr>
<tr>
<td>FXNQ12</td>
<td>18/24 MVJU</td>
<td></td>
<td>Wire: Stranded wire (2 wire)</td>
</tr>
</tbody>
</table>

Slide out filter for cleaning
VRV 100% OA Processing Unit

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

Compatible with all VRV systems

Dimensions and Clearances

<table>
<thead>
<tr>
<th>Capacity Model MBtu</th>
<th>48</th>
<th>72/96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>18 ½&quot;</td>
<td>18 ½&quot;</td>
</tr>
<tr>
<td>Depth</td>
<td>43 ½&quot;</td>
<td>43 ½&quot;</td>
</tr>
<tr>
<td>Width</td>
<td>29 ¼&quot;</td>
<td>54 3/8</td>
</tr>
</tbody>
</table>

FXMQ_MFVJU
Dimensions and Clearances
**FXMQ_MFVJU**

**Electrical**

Line and Control circuits

Line voltage to X1M

Control voltage to X2M

---

**FXMQ_MFVJU**

**Control**

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

11-1 Setting air discharge temperature

- Change the discharge outlet according to the table below depending on space needs.
- FOR COOLING, set to "HI" for cooling, "MT" for heating or factory set.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Cool</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>06 F</td>
<td>MT F</td>
</tr>
<tr>
<td>02</td>
<td>07 F</td>
<td>HI F</td>
</tr>
<tr>
<td>04</td>
<td>09 F</td>
<td>MT F</td>
</tr>
<tr>
<td>05</td>
<td>10 F</td>
<td>HI F</td>
</tr>
<tr>
<td>06</td>
<td>11 F</td>
<td>MT F</td>
</tr>
<tr>
<td>07</td>
<td>12 F</td>
<td>HI F</td>
</tr>
<tr>
<td>08</td>
<td>21 F</td>
<td>MT F</td>
</tr>
<tr>
<td>09</td>
<td>22 F</td>
<td>HI F</td>
</tr>
<tr>
<td>10</td>
<td>23 F</td>
<td>MT F</td>
</tr>
<tr>
<td>11</td>
<td>24 F</td>
<td>HI F</td>
</tr>
<tr>
<td>12</td>
<td>25 F</td>
<td>MT F</td>
</tr>
<tr>
<td>13</td>
<td>26 F</td>
<td>HI F</td>
</tr>
</tbody>
</table>

NOTE: Air discharge temperature is not displayed on remote controllers.
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

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

NOTE: All Expansion Valves close when power is applied to the BS Box
BSV4/6Q36PVJU
Centralized 4-Port & 6-Port Branch Selector Box

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

BSV4Q36PVJU  4 - Port
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

VRV Local Remote Controllers

- **Navigation Remote Controller**: BRC1E71
- **Simplified Remote Controller**: BRC2A71
- **Wireless Remote Controller**: BRC7C/7E/4C
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

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

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
**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 F2ln - 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

![Wiring Diagram]
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**

**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

<table>
<thead>
<tr>
<th>External Input</th>
<th>Mode No.</th>
<th>1st Code No.</th>
<th>2nd Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Off</td>
<td>19(20)</td>
<td>1</td>
<td>01 - Default</td>
</tr>
<tr>
<td>Open Off Op</td>
<td>12(22)</td>
<td>1</td>
<td>02</td>
</tr>
<tr>
<td>Ext Protection Device</td>
<td>12(22)</td>
<td>1</td>
<td>03</td>
</tr>
</tbody>
</table>

**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

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

<table>
<thead>
<tr>
<th>Single Units</th>
<th>Multi Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWEYQ72PTJU</td>
<td>RWEYQ144PTJU</td>
</tr>
<tr>
<td>1 Unit = 6 or 7 Ton</td>
<td></td>
</tr>
<tr>
<td>Master Station</td>
<td></td>
</tr>
<tr>
<td>RWEYQ84PTJU</td>
<td>RWEYQ168PTJU</td>
</tr>
<tr>
<td>Multi Units</td>
<td></td>
</tr>
<tr>
<td>RWEYQ216PTJU</td>
<td>RWEYQ252PTJU</td>
</tr>
<tr>
<td>2 Units = 12 &amp; 14 Ton</td>
<td></td>
</tr>
<tr>
<td>Master Station</td>
<td></td>
</tr>
<tr>
<td>Sub Station 1</td>
<td></td>
</tr>
<tr>
<td>3 Units = 18 &amp; 21 Ton</td>
<td></td>
</tr>
<tr>
<td>Master Station</td>
<td></td>
</tr>
<tr>
<td>Sub Station 1</td>
<td></td>
</tr>
<tr>
<td>Sub Station 2</td>
<td></td>
</tr>
</tbody>
</table>
VRV-WIII Service space

Required Service Clearance Space

[Diagram showing dimensions and clearance requirements for the VRV-WIII service space]

Space for water piping

Inverter Board Heat Vent Grille
Requires min. of 12" clearance

Condensing Unit Top View

Condensing Unit Side View

VRV-WIII Service space
Thank You
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 F2\text{In} 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**

- Backlit LCD Display
  - First button pressed
- System Mode Select
  - Master Configuration
- User Fan Speed Select
- Main Menu Select
  - OK-Confirm Selection
  - System Status LED
- Scroll Button
  - Up/Down Right/Left Keys
- Return to prev. screen
  - Service Settings Menu
  - Maintenance Menu
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.)
• 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.
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
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
- 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

Main Menu → Configuration → Display → Display Mode

- Detailed
- Standard
- Simple
**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 \( \downarrow \) displays the following:

**BRC1E72 Display Overview**

Configurable display mode – Detailed, Standard, and Simple

<table>
<thead>
<tr>
<th>Display Mode</th>
<th>Detailed</th>
<th>Standard</th>
<th>Simple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display image</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cnr/Off status</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>on LED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(LED blinks when an error occurs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>X *1</td>
<td>X *1</td>
<td>X *1</td>
</tr>
<tr>
<td>Setpoint</td>
<td>X *2</td>
<td>X *2</td>
<td>X *2</td>
</tr>
<tr>
<td>(Dual/Single)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room temperature</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan speed</td>
<td>X *3</td>
<td>X *3</td>
<td>X *3</td>
</tr>
<tr>
<td>Air flow direction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(when a heater is available)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day and Time</td>
<td>X *3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status icon</td>
<td>X *3</td>
<td>X *3</td>
<td></td>
</tr>
<tr>
<td>Key lock icon</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Error message</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

\*1: OFF can be displayed instead of the operation mode while the unit is turned off with the remote control.

\*2: Can be removed from the display while the unit is turned off with the field setting NEW.

\*3: Can be removed from the display with a field setting IMPROVED.
• 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)

• 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Available Display mode</th>
<th>Field Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>STSANDBY icon</td>
<td>X X X</td>
<td>Code: 1b-7</td>
</tr>
<tr>
<td>Day/Clock</td>
<td>X</td>
<td>Code: 1b-11</td>
</tr>
<tr>
<td>CENTRAL CONTROL icons</td>
<td>X X</td>
<td>Code: 1e-9 (MASTER CONTROL icon too)</td>
</tr>
<tr>
<td>Prohibit button message</td>
<td>X X X</td>
<td>Code: 1e-10</td>
</tr>
</tbody>
</table>
### BRC1E72 Initial Setting – Single Setpoint Display Mode w/Face Decal

<table>
<thead>
<tr>
<th>Theme</th>
<th>Everything</th>
<th>No Mode Change</th>
<th>Fan Speed Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD Display Image</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Optional Face Decal</td>
<td>Face Decal can be applied to Detailed and Standard display mode too.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M: Mandatory, O: Optional setting</th>
<th>BRC1E72RMF</th>
<th>BRC1E72RF</th>
<th>BRC1E72RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display mode - Simple (Main menu)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Display item - Room Temp (Main menu)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Single setpoint (Min Menu — Min Setpoint Diff — Single SP)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prohibit Menu/OK and Cancel buttons (Special sequence required)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mode button prohibit (Min menu — Prohibit functions — Prohibit button)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fan icon display off (Field Setting 1b-15-02) Fan button also prohibited</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Off display instead of Mode while the unit is off (Field setting 1b-13-02)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Erase setpoint display while the unit is off (Field setting 1b-12-02)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Theme</th>
<th>Everything</th>
<th>No Mode Change</th>
<th>Fan Speed Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD Display Image</td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>Optional Face Decal</td>
<td>Face Decal can be applied to Detailed and Standard display mode too.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M: Mandatory, O: Optional setting</th>
<th>BRC1E72RMF2</th>
<th>BRC1E72RF2</th>
<th>BRC1E72RM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display mode - Simple (Main menu)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Display item - Room Temp (Main menu)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dual setpoint (Min Menu — Min Setpoint Diff — no SP)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prohibit Menu/OK and Cancel buttons (Special sequence required)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mode button prohibit (Min menu — Prohibit functions — Prohibit button)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fan icon display off (Field Setting 1b-15-02) Fan button also prohibited</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Off display instead of Mode while the unit is off (Field setting 1b-13-02)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Erase setpoint display while the unit is off (Field setting 1b-12-02)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
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
  - Use 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
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

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.
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.

Example:
Field Setting for assigning the room temperature sensor

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
### Field Setting Availability by Indoor Unit Type

**Availability of Indoor Unit Field Settings (Control Related)**

As of 12/01/2012

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Code No.</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Second Code No.</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
<td>01/02</td>
</tr>
<tr>
<td>FXSQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXZQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXMQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXMQ72/96MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXMQ_PVJU</td>
<td>FBQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXDQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXTQ_PVJU</td>
<td>FTQ_PAVJU</td>
<td>FTQ_PBVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BEQ_MVJLR1</td>
<td>(FXOQ)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXLQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXNQ_MVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXAQ_MVJU</td>
<td>FAQ_MVJU</td>
<td>FAQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXAQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXZQ_M7VJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXFQ_MVJU</td>
<td>FCQ_MVJU</td>
<td>FCQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXFQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXHQ_MVJU</td>
<td>FHQ_MVJU</td>
<td>FHQ_PVJU</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

* 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)

#### (Note 1)

<table>
<thead>
<tr>
<th>Settings</th>
<th>Code No.</th>
<th>Description</th>
<th>Setting Code No.</th>
<th>Note 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority of thermistor sensors for space temperature control</td>
<td>10(20)</td>
<td>Return air thermistor</td>
<td>Thermistor designated by 10-2 above</td>
<td></td>
</tr>
<tr>
<td>Room temperature value reported to multi-zone controllers</td>
<td>5</td>
<td>Return air thermistor</td>
<td>Thermistor designated by 10-2 above</td>
<td></td>
</tr>
<tr>
<td>Fan Speed in Heating Thermo-Off</td>
<td>6</td>
<td>LL</td>
<td>User set</td>
<td></td>
</tr>
<tr>
<td>Fan Speed in Cooling Thermo-Off</td>
<td>8</td>
<td>LL</td>
<td>User set</td>
<td></td>
</tr>
<tr>
<td>Return air sensor offset</td>
<td>8C</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit Thermo-On/Off status</td>
<td>12(22)</td>
<td>X1-X2</td>
<td>Status output</td>
<td></td>
</tr>
<tr>
<td>Indoor unit Alarm status</td>
<td>12(22)</td>
<td>X1-X2</td>
<td>Status output</td>
<td></td>
</tr>
<tr>
<td>Indoor unit Monitoring</td>
<td>15(25)</td>
<td>X1-X2</td>
<td>Status output</td>
<td></td>
</tr>
<tr>
<td>Indoor unit Operation</td>
<td>3</td>
<td>X1-X2</td>
<td>Status output</td>
<td></td>
</tr>
<tr>
<td>External Protection Device</td>
<td>4</td>
<td>X1-X2</td>
<td>Status output</td>
<td></td>
</tr>
</tbody>
</table>

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 No. 12-01 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 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 – BRC1E72

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>01</td>
<td>Display in Defrost or Hot Start Not Displayed</td>
</tr>
<tr>
<td>02</td>
<td>01</td>
<td>Day/Clock Displayed Not Displayed</td>
</tr>
<tr>
<td>03</td>
<td>01</td>
<td>Setpoint display while the unit is off Displayed Not Displayed</td>
</tr>
<tr>
<td>04</td>
<td>01</td>
<td>Mode display while the unit is off Displayed Display OFF instead of the mode</td>
</tr>
<tr>
<td>05</td>
<td>01</td>
<td>Fan Speed button configuration Fan Speed Fan ON/Auto (Fan LL in thermo-off) (Applicable to SkyAir only)</td>
</tr>
<tr>
<td>06</td>
<td>01</td>
<td>Fan icon display Displayed Not Displayed</td>
</tr>
<tr>
<td>07</td>
<td>01</td>
<td>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 -- --</td>
</tr>
<tr>
<td>08</td>
<td>01</td>
<td>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) 08: +0.9°F (+0.5°C) 09: +1.8°F (+1.0°C) 10: +2.7°F (+1.5°C) 11: +3.6°F (+2.0°C) 12: +4.5°F (+2.5°C) 13: +5.4°F (+3.0°C)</td>
</tr>
<tr>
<td>09</td>
<td>01</td>
<td>Schedule and Auto-changeover enabled when multi-zone controller is detected No Yes -- --</td>
</tr>
<tr>
<td>10</td>
<td>01</td>
<td>CENTRAL CONTROL icon Not displayed Displayed when under control by a multi-zone controller</td>
</tr>
<tr>
<td>11</td>
<td>01</td>
<td>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.”</td>
</tr>
<tr>
<td>12</td>
<td>01</td>
<td>Auto changeover guard timer 15 min 30 min 60 min 90 min</td>
</tr>
<tr>
<td>13</td>
<td>01</td>
<td>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)</td>
</tr>
<tr>
<td>14</td>
<td>01</td>
<td>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)</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>1b</th>
<th>1c</th>
<th>1e</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>02</td>
<td>02</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>--</td>
<td>02</td>
<td>01</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>--</td>
<td>01</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>4</td>
<td>04</td>
<td>02</td>
<td>01</td>
<td>--</td>
</tr>
<tr>
<td>5</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>6</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>7</td>
<td>01</td>
<td>02</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>06</td>
<td>01</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>9</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>10</td>
<td>07</td>
<td>07</td>
<td>02</td>
<td>--</td>
</tr>
<tr>
<td>11</td>
<td>07</td>
<td>07</td>
<td>03</td>
<td>--</td>
</tr>
<tr>
<td>12</td>
<td>01</td>
<td>--</td>
<td>01</td>
<td>--</td>
</tr>
<tr>
<td>13</td>
<td>01</td>
<td>--</td>
<td>01</td>
<td>--</td>
</tr>
<tr>
<td>14</td>
<td>01</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>15</td>
<td>01</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
**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
    - 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

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

**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 + 2ºF (1ºC)” and “95ºF”
  - Setback setpoint is configurable between
    - “Heat setpoint min – 2ºF (1ºC)” and “40ºF”
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)

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

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
- 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)

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

### 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

---

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>Description</th>
<th>Second Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1e</td>
<td>4</td>
<td>Schedule and Auto-changeover enabled -fan multi-zone controller is selected (Note 1)</td>
<td>NO</td>
</tr>
</tbody>
</table>

Field Setting 1e-12

Field Setting 1e-13
**Example #1 = Dual Setpoints**

- **Cooling Setpoint = 72°F**
  - 1°F (Configurable to 1-4°F)
  - 74°F Surely Change to Cooling
  - 73°F Change to Cooling (with Guard Timer)
- **Heating Setpoint = 70°F**
  - 1°F (Configurable to 1-4°F)
  - 69°F Change to Heating (with Guard Timer)
  - 68°F Surely Change to Heating

**Example #2 = Single Setpoint**

- **Single Setpoint = 71°F**
  - 2°F (Configurable to 1-4°F)
  - 74°F Surely Change to Cooling
  - 73°F Change to Cooling (with Guard Timer)

**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

![Service Settings](image1)

**Indoor unit AirNet Address**
- Unit No.
- Address
- Set

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

**Indoor Unit Status**
- Unit No.
- Th1: 51°F  Th5: -F
- Th2: 50°F  Th6: 28°F
- Th3: 59°F
- Th4: -F

**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)

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

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 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**

- Master Controlled
- System Operation Mode
- System Malfunction
- Setpoint Temp or Mode No.
- Setpoint Adjust Up and Down
- System Operation Status LED
- ON/OFF Button
- Central Control
- Fan Speed H L
- DEFROST / HOTSTART
- GROUP No. or Field Setting Code
- Fan Speed Select Button
- System Mode Select Button

**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.

![Diagram of mounting process](image)

**BRC2A71 – Optional Face Plates**

You can physically remove unnecessary buttons with optional face plates.

- **BRC2A71RB**
- **BRC2A71RU**
- **BRC2A71R**

**INSTALLATION PROCEDURE**

1. Remove the cover from the remote controller. Remove standard faceplate from the cover. Remove standard P modes button.

2. Remove trim from adhesive-packing on replacement faceplate. Affix new faceplate to the remote control cover.

3. Re-attach 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 BS6 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
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
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

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

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

- To configure a **BRC2A71 (Simplified)**
  - The Master Controlled **master** 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 **master** 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
**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.

**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](http://daikinuniversity.com)
- Controls Product & Application
- Controls Installation & Commissioning
- Controls Integrator
Thank You
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

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>10</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Code No.</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Second Code No.</td>
<td>01/02</td>
<td>03</td>
</tr>
<tr>
<td>FXSQ_MVJU</td>
<td>X</td>
<td>X***</td>
</tr>
<tr>
<td>FXMQ_MVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FXMQ72/96MVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXMQ_PVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FBQ_PVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXDQ_MVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXTQ_PVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FTQ_PAVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FTQ_PBVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BEQ_MVJLR1</td>
<td>(FXOQ)</td>
<td>X</td>
</tr>
<tr>
<td>FXLQ_MVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FXNQ_MVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FXAQ_MVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FAQ_MVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FAQ_PVJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FXAQ_PVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXZQ_M7VJU</td>
<td>X</td>
<td>X**</td>
</tr>
<tr>
<td>FXFQ_MVJU</td>
<td>X</td>
<td>n/a</td>
</tr>
<tr>
<td>FCQ_MVJU</td>
<td>X</td>
<td>n/a</td>
</tr>
<tr>
<td>FCQ_PVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FXHQ_MVJU</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FHQ_MVJU</td>
<td>X</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* 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)

<table>
<thead>
<tr>
<th>Mode No. (Note 1)</th>
<th>First Code No.</th>
<th>Description</th>
<th>Second Code No. (Note 2)</th>
<th>(Cells in bold are factory default settings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10(20)</td>
<td>2</td>
<td>Priority of thermistor sensors for space temperature control</td>
<td>The return air thermistor is primary and the remote controller thermistor is secondary.</td>
<td>Only the return air thermistor will be utilized.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Room temperature value reported to multizone controllers</td>
<td>Room temperature value reported to multizone controllers</td>
<td>Only the return air thermistor will be utilized.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>The remote controller thermistor is used in Remote Controller Group</td>
<td>The remote controller thermistor is used in Remote Controller Group</td>
<td>The remote controller thermistor will be utilized.</td>
</tr>
<tr>
<td>12(22)</td>
<td>0</td>
<td>KRP1B71 X1-X2 status output</td>
<td>Indoor unit Thermo-Off status</td>
<td>Indoor unit Operation On/Off status</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Indoor unit T1-T2 input</td>
<td>Forced Off</td>
<td>On/Off</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td>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.</td>
<td>Closed Contact-Indoor unit is turned on.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.</td>
<td>Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.</td>
<td>Open Contact-Indoor unit is turned off.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Thermo-On/Off deadband (Note 4)</td>
<td>2F (1C)</td>
<td>1F (0.5C)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Fan Speed in Heating Thermo-Off</td>
<td>LL</td>
<td>User set</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Fan Speed in Cooling Thermo-Off</td>
<td>LL</td>
<td>User set</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Return air sensor offset</td>
<td>2C</td>
<td>None (for remote sensor)</td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>Description</th>
<th>Second Code No. (Cells in bold are factory default settings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1b</td>
<td>7</td>
<td>STANDBY icon</td>
<td>Display in Defrost or Hot Start Not Displayed</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Day/Clock</td>
<td>Displayed Not Displayed</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>Setpoint display while the unit is off</td>
<td>Displayed Not Displayed</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Mode display while the unit is off</td>
<td>Displayed Display OFF instead of the mode</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Fan Speed button configuration</td>
<td>Fan Speed Fan ON/Auto (Fan ON in thermo-off) (Applicable to SkyAir only)</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Fan icon display</td>
<td>Displayed Not Displayed</td>
</tr>
<tr>
<td>1c</td>
<td>1</td>
<td>Thermistor sensor used for Auto-changeover and Setback control</td>
<td>Remote Controller Thermistort return air temperature displayed on controller as room temperature</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Temperature Sensor Offset</td>
<td>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)</td>
</tr>
<tr>
<td>1e</td>
<td>2</td>
<td>Setback availability</td>
<td>N/A Heating mode only Cooling mode only Cooling/Heating modes</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Schedule and Auto-changeover enabled when multizone controller is detected (Note 1)</td>
<td>No Yes -- --</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>CENTRAL CONTROL icon</td>
<td>Not displayed Displayed when under control by a multizone controller</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Message when button pushed which has been prohibited by a multizone controller</td>
<td>Key lock icon blinks for 5 seconds Message displayed on screen: &quot;Under Central Control. Adjustments at the remote control are being restricted.&quot;</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Auto changeover guard timer</td>
<td>15 min 30 min 60 min 90 min</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Auto changeover point</td>
<td>0.9°F (0.5°C) 1.8°F (1.0°C) 2.7°F (1.5°C) 3.6°F (2.0°C)</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Quick changeover point beyond the auto changeover point</td>
<td>0.9°F (0.5°C) 1.8°F (1.0°C) 2.7°F (1.5°C) 3.6°F (2.0°C)</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Mode No.</th>
<th>First Code No.</th>
<th>1b</th>
<th>1c</th>
<th>1e</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>02</td>
<td>02</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>02</td>
<td>02</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>--</td>
<td>02</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>--</td>
<td>01</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>04</td>
<td>02</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>01</td>
<td>02</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>05</td>
<td>01</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>--</td>
<td>07</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>01</td>
<td>07</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>01</td>
<td>--</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>01</td>
<td>--</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>01</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>01</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>
• 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

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daikin AC University</td>
<td>17570 Cartwright Road</td>
<td>(949) 732-5000</td>
</tr>
<tr>
<td>Irvine, CA 92614</td>
<td>Carrollton, TX 75006</td>
<td>(972) 245-1510</td>
</tr>
<tr>
<td>Daikin AC University</td>
<td>1645 Wallace Rd</td>
<td>(972) 245-1510</td>
</tr>
<tr>
<td>Carrollton, TX 75006</td>
<td>Long Island City, NY 11101</td>
<td>(718) 247-7757</td>
</tr>
</tbody>
</table>

Service Hotline: (866) 4-DAIKIN
http://DaikinUniversity.com

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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

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

*RXYQ96,120,144PB

A3P PCB
RXYQ144PBTJ
with 2 Inverter Scroll comp’s
Heat Recovery Condenser Styles

Single & Manifolded Modules

- REMQ72PB: A1P PCB, 4 Stop Valves, Scroll
- REMQ96/120PB: A1P PCB, 4 Stop Valves, INV, STD
- REYQ72,96,120,144PB: A3P PCB Slave, A1P PCB Master, 3 Stop Valves, STD, SCROLL
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
  - 28 & 30 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

12 Types
55 Models
Branch Selector Boxes

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
VRVIII Heat Pump – RXYQ

Single & Manifolded

RXYQ72PB

Control Voltage Connections

Line Voltage Connections

2 Stop Valves

Control PCB (A1P)

Auto Charge Port

HP/LP Gas
Liquid

HP/LP Gas
Single Piped

**Control PCB (A1P)**

**Auto Charge Port**

**Line Voltage Connections**

**Control Voltage Connections**

**Do Not wire anything to this PCB - A3P**

**RXYQ144PBTJ (208/230vac 3 Ph)**

**3 Stop Valves**

**Liq. N/A HP/LP**

**NOTE: This model cannot be manifolded**

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VRVIII Heat Pump – RXYQ144PBTJ
VRVIII Heat Pump – RXYQ

Single & Manifolded

- Do Not wire anything to this PCB - A3P
- Control Voltage Connections
- Line Voltage Connections
- Control PCB (A1P)
- 2 Stop Valves
- Auto Charge Port
- HP/LP Gas
- Liquid

RXYQ96&120PBTJ/PBYD
Single Piped

- Control Voltage Connections
- Line Voltage Connections
- Control PCB (A1P)
- 3 Stop Valves
- Auto Charge Port
- Do Not wire anything to this PCB - A3P
- REYQ72,96,120,144PBTJ
- REYQ72,96,120PBYD

NOTE: These models cannot be manifolded
Manifolded Module

- Control Voltage Connections
- Line Voltage Connections
- 4 Stop Valves
- Auto Charge Port
- Liquid - Suction-HP/LP-Equalization

VRVIII Heat Recovery – REMQ

REMQ72,96,120PBTJ/PBYD

Control PCB (A1P)
System Commissioning

Pre-Commissioning Checks & Commissioning Steps

Pre-Commissioning Checks 1 - 10
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.
• 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.
• 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

System Nitrogen Pressure Test

<table>
<thead>
<tr>
<th>Pressure (psi)</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>550</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>450</td>
<td></td>
<td></td>
<td></td>
<td>Max. pressure for any system installed with one or more FXTQ Air Handlers</td>
</tr>
<tr>
<td>325</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>3 Min</td>
<td>5 Min</td>
<td>24 Hr</td>
<td>24 Hr</td>
</tr>
</tbody>
</table>
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 Temperature when the system is pressurized (TP)
Subtract the Temperature when the pressure is checked (TC)
Multiply by a factor of 0.80 to get the Pressure Drop (PD)

\[(TP - TC) \times 0.80 = \text{Pressure Drop}\]
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
• Connect manifold gauges to the Liquid and Dual Pressure Gas Service Ports
  • On manifoded 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
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
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.
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 \(254 \times 0.015 \text{ lbs/ft} = 3.81\)

+ Total length (ft) of 3/8” liquid line \(173 \times 0.040 \text{ lbs/ft} = 6.92\)

+ Total length (ft) of 1/2” liquid line \(78 \times 0.081 \text{ lbs/ft} = 6.31\)

+ Total length (ft) of 5/8” liquid line \(52 \times 0.121 \text{ lbs/ft} = 6.29\)

+ Total length (ft) of 3/4” liquid line \(0 \times 0.175 \text{ lbs/ft} = 0.00\)

+ Total length (ft) of 7/8” liquid line \(0 \times 0.249 \text{ lbs/ft} = 0.00\)

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

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>Refrigerant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXYQ 96, 120, 216, 240, 336, 360P</td>
<td>0.0 lb</td>
</tr>
<tr>
<td>RXYQ 72, 168, 192, 264, 288, 312P</td>
<td>1.1 lb</td>
</tr>
<tr>
<td>RXYQ 144PBYD</td>
<td>2.2 lb</td>
</tr>
<tr>
<td>RXYQ 144PBTJ</td>
<td>7.9 lb</td>
</tr>
</tbody>
</table>

#### Heat Recovery

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>Refrigerant Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>REYQ 72 ~ 120PBYD</td>
<td>7.9 lb</td>
</tr>
<tr>
<td>REYQ 72 ~ 144PBTJ</td>
<td></td>
</tr>
<tr>
<td>REYQ 144PBYD</td>
<td>2.2 lb</td>
</tr>
<tr>
<td>REYQ 168 ~ 192P</td>
<td></td>
</tr>
<tr>
<td>REYQ 216 ~ 240P</td>
<td>3.3 lb</td>
</tr>
<tr>
<td>REYQ 264 ~ 288P</td>
<td>5.5 lb</td>
</tr>
<tr>
<td>REYQ 312 ~ 336P</td>
<td>6.6 lb</td>
</tr>
</tbody>
</table>

### Calculation A + Calculation B

- **Calculation A**: 23.33 lbs.
- **Calculation B**: 7.9 lbs.
NOTE: For systems with Connection Ratio above 130%, contact Service Hotline

**Calculation C**

<table>
<thead>
<tr>
<th>Heat Pump</th>
<th>Connection Ratio</th>
<th>Heat Pump</th>
<th>Connection Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXYQ 72 ~ 312PBYD</td>
<td>RXYQ 336 ~ 360PBYD</td>
<td>RXYQ 72 ~ 312PBTJ</td>
<td>RXYQ 336 ~ 360PBTJ</td>
</tr>
<tr>
<td><strong>MORE THAN 100% AND LESS THAN 120%</strong></td>
<td><strong>1.1 LB</strong></td>
<td><strong>MORE THAN 100% AND LESS THAN 120%</strong></td>
<td><strong>1.1 LB</strong></td>
</tr>
<tr>
<td><strong>MORE THAN 120% AND LESS THAN 130%</strong></td>
<td><strong>1.1 LB</strong></td>
<td><strong>MORE THAN 120% AND LESS THAN 130%</strong></td>
<td><strong>2.2 LB</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Heat Recovery</th>
<th>Connection Ratio</th>
<th>Heat Recovery</th>
<th>Connection Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>REYQ 72 ~ 120PBYD</td>
<td>REYQ 336PBYD</td>
<td>REYQ 72 ~ 120PBTJ</td>
<td>REYQ 336PBTJ</td>
</tr>
<tr>
<td><strong>MORE THAN 100% AND LESS THAN 120%</strong></td>
<td><strong>1.1 LB</strong></td>
<td><strong>MORE THAN 100% AND LESS THAN 120%</strong></td>
<td><strong>1.1 LB</strong></td>
</tr>
<tr>
<td><strong>MORE THAN 120% AND LESS THAN 130%</strong></td>
<td><strong>1.1 LB</strong></td>
<td><strong>MORE THAN 120% AND LESS THAN 130%</strong></td>
<td><strong>2.2 LB</strong></td>
</tr>
</tbody>
</table>

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.
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
• 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
- 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)
VRVIII System Commissioning  Step #1

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
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
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
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.
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

- **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
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**.
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

<table>
<thead>
<tr>
<th></th>
<th>H1P</th>
<th>H2P</th>
<th>H3P</th>
<th>H4P</th>
<th>H5P</th>
<th>H6P</th>
<th>H7P</th>
<th>H8P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>32</td>
<td>16</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- **Value of “0”**
- **Value of “2”**
- **Value of “7”**
- **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

<table>
<thead>
<tr>
<th>MODE</th>
<th>SET</th>
<th>RETURN</th>
<th>TEST</th>
<th>RESET</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1P</td>
<td>H2P</td>
<td>H3P</td>
<td>H4P</td>
<td>H5P</td>
</tr>
<tr>
<td>H6P</td>
<td>H7P</td>
<td>H8P</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Press “MODE” once
- H1P blinking

- Press “SET” 6 times

- Press “RETURN” once
- Count up the blinking LED’s

- Press “MODE” once
- return to normal status: H3P solid
**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.
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

- Press “SET” 5 times

- Press “RETURN” once Count up the blinking LED’s

- Press “MODE” once return to normal status: H3P solid
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
- 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

Discharge Air

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
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
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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>Optional accessories output selection (field selection of output for adaptor for wiring)</td>
<td>Indoor unit turned ON by thermostat</td>
<td>(5)</td>
</tr>
<tr>
<td>12 (22)</td>
<td>1</td>
<td>ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)</td>
<td>Forced OFF</td>
<td>(6)</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>MODE NO.</th>
<th>FIRST CODE NO.</th>
<th>Setting contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 (21)</td>
<td>7</td>
<td>Airflow adjustment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECOND CODE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
</tr>
<tr>
<td>02</td>
</tr>
<tr>
<td>03</td>
</tr>
<tr>
<td>OFF</td>
</tr>
</tbody>
</table>

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
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

<table>
<thead>
<tr>
<th>External Static Pressure</th>
<th>MODE NO.</th>
<th>FIRST CODE NO.</th>
<th>SECOND CODE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.12 inWG (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.20 inWG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.24 inWG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.28 inWG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.32 inWG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.36 inWG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.40 inWG</td>
<td>13 (23)</td>
<td>06</td>
<td>07</td>
</tr>
<tr>
<td>0.44 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.48 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.52 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.56 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.60 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.64 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.72 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.80 inWG (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To change static from “Standard” to “High”, a field setting must be programmed at the remote controller.

Change Field Setting 13(23) 5 – 01 to 02

This static pressure change to HIGH is recommended for all FXDQ ducted applications.

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

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>01</td>
</tr>
<tr>
<td>13(23)</td>
<td>1</td>
<td>Selection of airflow direction</td>
<td>F (4 directions)</td>
</tr>
</tbody>
</table>
System Commissioning

Manual System Refrigerant Charging - Commissioning Step #5
• 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
**VRVIII System Commissioning**

### “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

---

**LED States Summary**

<table>
<thead>
<tr>
<th>Mode</th>
<th>H1P</th>
<th>H2P</th>
<th>H3P</th>
<th>H4P</th>
<th>H5P</th>
<th>H6P</th>
<th>H7P</th>
<th>H8P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Charge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⬤</td>
</tr>
<tr>
<td>Additional Charge</td>
<td></td>
<td>⬤</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⬤</td>
</tr>
<tr>
<td>Normal (Locked)</td>
<td></td>
<td>⬤</td>
<td></td>
<td></td>
<td></td>
<td>⬤</td>
<td></td>
<td>⬤</td>
</tr>
</tbody>
</table>

*Note: If a “U1” or “U7” error code is generated see next page*
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 – **Manifòled 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

<table>
<thead>
<tr>
<th>Master Control PCB - A1P</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1P</td>
</tr>
<tr>
<td><img src="image1" alt="Image" /></td>
</tr>
</tbody>
</table>

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/Slave 1/Slave 2

Next page
Verify “U1” 3 Phase Error – Manifolded Systems Continued

- Press “RETURN” button once “Monitor Mode” initial status

- Press “MODE” once to return to the original power up display with error.

- Power down the condensers and reverse any two line voltage terminals

- Restart all Condensers with no “U1” errors
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 FXMLQ_MFO. 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 | Cool Mode |
  | Indoor Temp: 50°F DB ~ 90°F DB   |            |
  | 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.
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

<table>
<thead>
<tr>
<th>Vertical Separation</th>
<th>CU Located Below FC</th>
<th>CU Located Above FC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-133ft</td>
<td>134-200ft</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>FXFQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXMQ_M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXHQ</td>
<td>60%</td>
<td>130%</td>
</tr>
<tr>
<td>FXL/NQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXZQ</td>
<td>60%</td>
<td>200%</td>
</tr>
<tr>
<td>FXDQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXMQ_P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FXAQ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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
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.

- 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 the status LED on solid.

- The Simplified remote Controllers will indicate the Central Control symbol with the status LED on solid.

- All function buttons are disabled.
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
- If the Indoor/Outdoor temperatures are below the stated ranges, **Heat** mode will be selected for manual charging
- 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
• 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.
• When the LED light pattern changes to this sequence, a “PE” code will appear on the Remote Controllers. Charging is almost complete.
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 indication of setting contents, additional refrigerant charging amount and installation date](image)
**Auto Charge COOL Mode Status Codes**

<table>
<thead>
<tr>
<th>PE</th>
<th>Charging is almost complete. Get ready to close refrigeration gauges.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>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.</td>
</tr>
<tr>
<td>PH</td>
<td>Fan does not stop running and the outdoor unit does not stop running.</td>
</tr>
<tr>
<td>P8</td>
<td>Close refrigeration gauges and restart the Auto Charge procedure.</td>
</tr>
<tr>
<td>P2</td>
<td>Operation is interrupted. Close refrigeration gauges and check below items.</td>
</tr>
<tr>
<td></td>
<td>• Check to see if all stop valves are open.</td>
</tr>
<tr>
<td></td>
<td>• Check that the refrigerant tank is connected and open.</td>
</tr>
<tr>
<td></td>
<td>• Check indoor units for blockage of air inlet and outlet.</td>
</tr>
<tr>
<td></td>
<td>After correcting the abnormality, restart the Auto Charge from the beginning.</td>
</tr>
<tr>
<td>P9</td>
<td>Charging is complete. Push “MODE” button (BS1). Close refrigeration gauges and disconnect tank from system.</td>
</tr>
</tbody>
</table>
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 manifold 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

<table>
<thead>
<tr>
<th>P8</th>
<th>Close refrigeration gauges and push “TEST” button (BS4) once. Restart the Auto Charge procedure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2</td>
<td>Operation is interrupted. Close refrigeration gauges and check below items.</td>
</tr>
<tr>
<td></td>
<td>• Check to see if all stop valves are open.</td>
</tr>
<tr>
<td></td>
<td>• Check that the refrigerant tank is connected and open.</td>
</tr>
<tr>
<td></td>
<td>• Check indoor units for blockage of air inlet and outlet.</td>
</tr>
</tbody>
</table>
System Commissioning

Check Operation Mode - Commissioning Step #6
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.

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.
Check Operation Mode Sequence  Continued

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

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

- Check Operation Completed
  Return to Normal status

- Remote Controllers revert back to OFF mode with normal display
## Listing of potential error codes which could occur during Check Operation Mode

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Installation Error</th>
<th>Remedial Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>E3, E4, F3, F6, UF</td>
<td>The stop valve of an outside unit is left closed.</td>
<td>Open stop valve.</td>
</tr>
<tr>
<td>U1 (see pages 84 ~85 for additional help)</td>
<td>The phases of the power to the outside unit(s) are reversed.</td>
<td>Exchange two of the three phases (L1, L2, L3). Swap L2 &amp; L3</td>
</tr>
<tr>
<td>U1, U4, LC</td>
<td>No power is supplied to an outdoor, BS or indoor unit (including phase interruption).</td>
<td>Check if the power wiring for the outside, BS or inside units are connected correctly.</td>
</tr>
<tr>
<td>UF</td>
<td>There is a conflict on the connection of transmission wiring in the system.</td>
<td>Check if the refrigerant piping line and the unit transmission wiring are consistent with each other.</td>
</tr>
<tr>
<td>E3, F6, UF</td>
<td>Refrigerant overcharge.</td>
<td>Recalculate the required amount of refrigerant from piping length and correct the refrigerant charge level by refrigerant recovery machine.</td>
</tr>
<tr>
<td>E4, F3</td>
<td>Insufficient refrigerant.</td>
<td>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.</td>
</tr>
<tr>
<td>U3</td>
<td>The check operation has not been preformed.</td>
<td>Perform the check operation.</td>
</tr>
<tr>
<td>U7, U4, UF, UH</td>
<td>Field wiring is connected to Q1-Q2 terminals on outside unit PC-board when the system is one outdoor system.</td>
<td>Remove the wire from the Q1-Q2 terminals.</td>
</tr>
</tbody>
</table>
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](image) 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](image) solid
- To configure a **BRC2A71** (Simplified)
  - The Master Controlled ![Master Controlled](image) 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 ![Master Controlled](image) solid
- To change the Master, press & hold the “Mode” button for 5 sec. on the Master RC. All RCs go into Master configuration mode
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.
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 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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indoor unit turned ON by thermostat</td>
<td>Operation output</td>
<td>Malfunction output</td>
</tr>
<tr>
<td>12 (22)</td>
<td>0</td>
<td>Optional accessories output selection (field selection of output for adaptor for wiring)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12 (22)</td>
<td>1</td>
<td>ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)</td>
<td>Forced OFF</td>
<td>External protection device input</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forced OFF</td>
<td>ON/OFF control</td>
<td>—</td>
</tr>
</tbody>
</table>
• 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)

<table>
<thead>
<tr>
<th>External Input</th>
<th>Mode No.</th>
<th>1st Code No.</th>
<th>2nd Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Off</td>
<td>12(22)</td>
<td>1</td>
<td>01 – Default Manual Reset</td>
</tr>
<tr>
<td>ON/OFF Op</td>
<td>12(22)</td>
<td>1</td>
<td>02</td>
</tr>
<tr>
<td>Ext Protection Device</td>
<td>12(22)</td>
<td>1</td>
<td>03 Auto Reset</td>
</tr>
</tbody>
</table>
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

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

<table>
<thead>
<tr>
<th>Mode No. (Note 1)</th>
<th>First Code No.</th>
<th>Description</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
</tr>
</thead>
<tbody>
<tr>
<td>10(20)</td>
<td>2</td>
<td>Priority of thermistor sensors for space temperature control</td>
<td>The return air thermistor is primary and the remote controller thermistor is secondary</td>
<td>Only the return air thermistor will be utilized.</td>
<td>Only the remote controller thermistor will be utilized.</td>
<td>--</td>
</tr>
</tbody>
</table>
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
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

<table>
<thead>
<tr>
<th>Fan Auto Configuration</th>
<th>Fan Speed LL</th>
<th>Fan Speed User Set</th>
<th>Fan Speed OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Speed <em>Heat</em> Thermo-off</td>
<td>12(22)-3-01 Default</td>
<td>12(22)-3-02</td>
<td>12(22)-3-03</td>
</tr>
<tr>
<td>Fan Speed <em>Cool</em> Thermo-off</td>
<td>12(22)-6-01</td>
<td>12(22)-6-02 Default</td>
<td>12(22)-6-03</td>
</tr>
</tbody>
</table>

NOTE: Fan Auto Configuration is not available for the FXFQ_MVJU or FXHQ_MVJU fan coils
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
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” = 1\textsuperscript{st} Digit of Error Code

<table>
<thead>
<tr>
<th>H1P</th>
<th>H2P</th>
<th>H3P</th>
<th>H4P</th>
<th>H5P</th>
<th>H6P</th>
<th>H7P</th>
<th>H8P</th>
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</tbody>
</table>

- H1P = “E”
- H2P = “H”
- H3P = “F”
- H4P = “J”
- H5P = “L”
- H6P = “P”
- H7P = “U”

= 1\textsuperscript{st} DIGIT of Error Code

Continue to next page for 2\textsuperscript{nd} Digit of Error Code
Monitor Mode 1 LED Sequence to Error Code “Confirmation 2” - “SET” = 2\textsuperscript{nd} Digit of Error Code

<table>
<thead>
<tr>
<th>H1P</th>
<th>H2P</th>
<th>H3P</th>
<th>H4P</th>
<th>H5P</th>
<th>H6P</th>
<th>H7P</th>
<th>H8P</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

= “1”

= “2”

= “3”

= “4”

= “5”

= “6”

= “7”

= “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

<table>
<thead>
<tr>
<th></th>
<th>H1P</th>
<th>H2P</th>
<th>H3P</th>
<th>H4P</th>
<th>H5P</th>
<th>H6P</th>
<th>H7P</th>
<th>H8P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MASTER</strong></td>
<td>○</td>
<td>N/A</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>SLAVE 1</strong></td>
<td>○</td>
<td>N/A</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>SLAVE 2</strong></td>
<td>○</td>
<td>N/A</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td><strong>MASTER + SLAVE 1 + SLAVE 2</strong></td>
<td>○</td>
<td>N/A</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

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
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.
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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.