VRV Commissioning

TC-5.6 Commissioning Guide

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Preface

- This *VRV* Commissioning Guide is designed and provided as a field guide for service technicians to perform a basic *VRV* system commissioning.
- This presentation is considered an onsite job aid to logically lay out the basic system commissioning processes. It is not, however, intended as an instructional replacement for the factory Installation and Operation Manuals provided with each *VRV* system component, or factory training.
- Daikin North America strongly recommends that any individual or company installing, commissioning or servicing any Daikin *VRV* system, should first receive comprehensive training at a factory training facility or other factory authorized training facility.
- Every effort has been made to ensure that the information and graphics included in this *VRV* Commissioning Guide are as accurate as possible at the time of publication. Daikin 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 publication.

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Agenda

- *VRV IV-X* & *VRV EMERION* System Components
- Outdoor Unit Layout
- Pre-commissioning Checks
- System Commissioning Steps
- Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs
- Additional Remote Controller Field Settings
- Selected Field Settings - Outdoor Units

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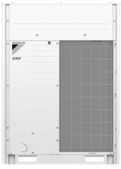
Heat Pump System Configurations *VRV IV-X*

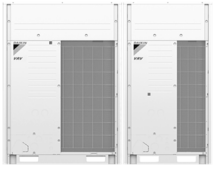
RXYQ Single & Manifolded Systems

- **RXYQ_XATJA** 208/230VAC 3Ph
- **RXYQ_XAYDA** 460VAC 3Ph

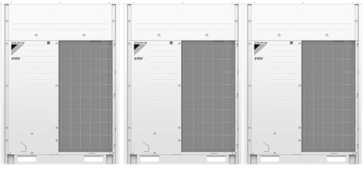
RXYQ72
6 Ton
Single Module



RXYQ96-168
8 to 14 Ton
Single Module



RXYQ192-336
16 to 28 Ton
Double Module



RXYQ384-408
30 to 34 Ton
Triple Module

NOTE: The images shown are to represent the basic configurations by system capacity - The individual Outdoor unit styles may be different from what is shown here

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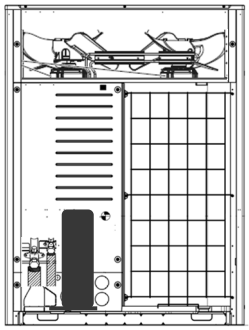
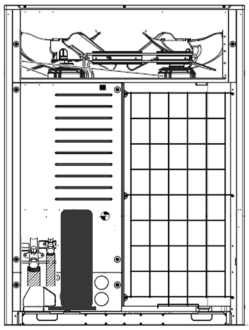
Heat Recovery Outdoor Unit Styles *VRV IV-X*

REYQ Single Modules

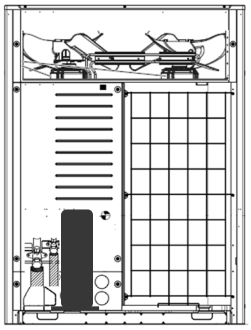
- **REYQ_XATJA** 208/230VAC 3Ph
- **REYQ_XAYDA** 460VAC 3Ph
- **REYQ_XAYCU** 575VAC 3Ph



REYQ72 6 Ton
Inverter Scroll
Vapor Injection



REYQ96-120 8&10 Ton
Inverter Scroll
Vapor Injection



REYQ144&168 12&14 Ton
Inverter Scroll
Vapor Injection

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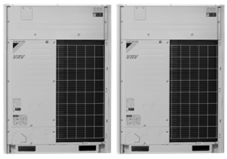
Heat Recovery System Configurations *VRV IV-X*

REYQ Single & Manifolded Systems

- **REYQ_XATJA** 208/230VAC 3Ph
- **REYQ_XAYDA** 460VAC 3Ph
- **REYQ_XAYCA** 575VAC 3Ph

REYQ72
6 Ton
Single Module

REYQ96-168
8 to 14 Ton
Single Module



REYQ192-336
16 to 28 Ton
Double Module

REYQ360-456
30 to 38 Ton
Triple Module

NOTE: The images shown are to represent the basic configurations by system capacity - The individual Outdoor unit styles may be different from what is shown here

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VRV IV-X Line up Heat Recovery

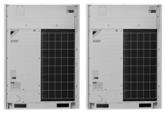
208-230V/ 460V/ 575V - AC 3 ph

Capacity (tons)																
6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38

Single

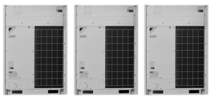
up to 14 Tons

Double



up to 28 Tons

Triple



up to 38 Tons

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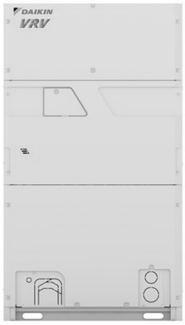
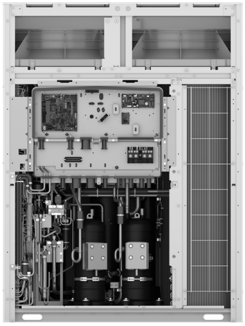
VRV EMERION Heat Recovery Outdoor Unit Styles

REYQ Single Modules

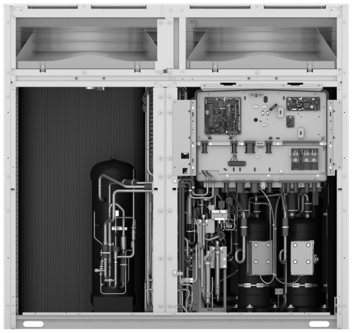
- **REYQ_AATJA**208/230VAC 3Ph
- **REYQ_AAYDA** 460VAC 3Ph



REYQ72 6 Ton Inverter Scroll



REYQ96-168 8 to 14 Ton Inverter Scroll



REYQ192-240 16 to 20 Ton Inverter Scroll

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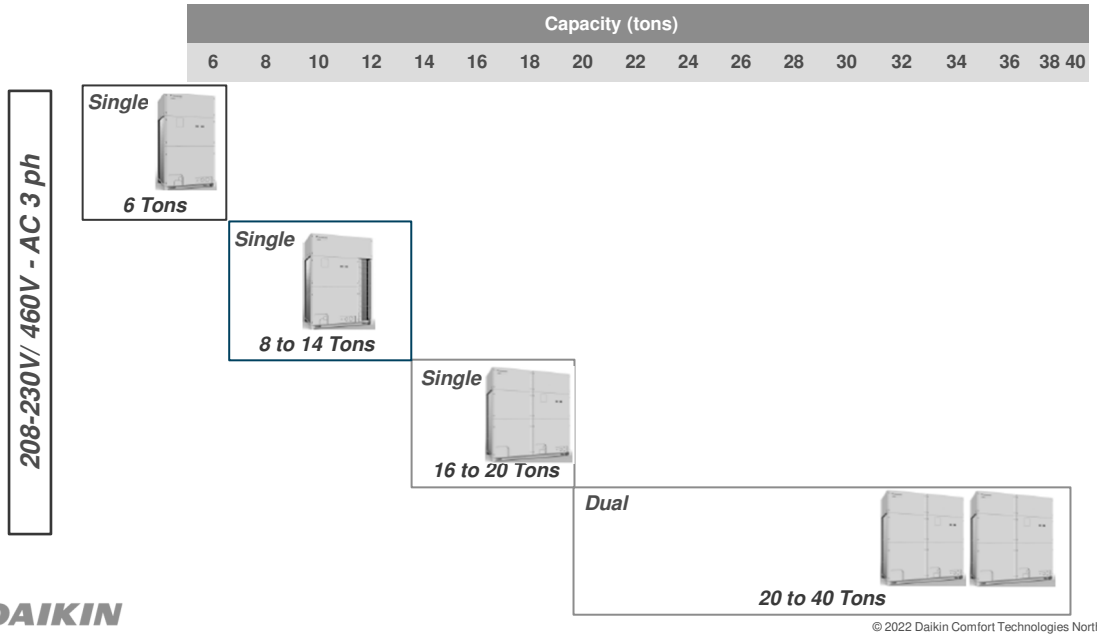
VRV EMERION Line up Heat Recovery



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Connection Ratio Mins & Max *VRV IV-X* Heat Recovery

$$\text{Connection Ratio} = \frac{\text{Total Capacity Index of the Indoor Units}}{\text{Capacity Index of the Outdoor Units}}$$

Type	Min. Connection Ratio	Maxim\um Connection Ratio				
		Types of Connected Indoor Units			Type of Connected Air Treatment Equipment	
					FXMQ-MF	
		When using only FXDQ, FXMQ-PB, FXAQ, FXSQ07-54TA	When using at least one FXZQ05TA, FXSQ05TA, FXFQ07/09	When using other indoor unit models	When FXMQ-MF is only connected	When FXMQ-MF and indoor units are connected
Single Outdoor Units	50% [1]	200% [2]	180% [2]	200% [2]	100%	100% [3]
Double Outdoor Units			160% [2]	160% [2]		
Triple Outdoor Units			130%	130%		

Notes:

1. **70% REYQ72X**
2. If the operational capacity of indoor units is more than 130%, low airflow operation is enforced in all the indoor units. Field setting now exists to configure this situation.
3. When outdoor-air processing units (FXMQ-MF) and standard indoor units are connected, the total connection capacity of the outdoor-air processing units (FXMQ-MF) must not exceed 30% of the capacity index of the outdoor units. The connection ratio must not exceed 100%.

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Connection Ratio Mins & Max *VRV EMERION* Heat Recovery

$$\text{Connection Ratio} = \frac{\text{Total Capacity Index of the Indoor Units}}{\text{Capacity Index of the Outdoor Units}}$$

Type		Minimum connection ratio	Maximum connection ratio				
			Types of connected indoor units			Types of connected air treatment equipment	
						FXMQ-MF	
			When using only FXDQ, FXMQ-PB, FXAQ, FXSQ07T	When using at least one FXFQ07/09, FXZQ05T, FXSQ05T	Other indoor unit models	When FXMQ-MF is only connected	When FXMQ-MF and indoor units are connected
Single outdoor units	6 -14 ton	50%	200% *1	180% *1	200% *1	100%	100% *2
	16-20 ton			180% *1	180% *1		
Double outdoor units				180% *1	160% *1		

Notes:

1. If the operational capacity of indoor units is more than 130%, low airflow operation is enforced in all the indoor units. Field setting now exists to configure this situation.
2. When outdoor-air processing units (FXMQ-MF) and standard indoor units are connected, the total connection capacity of the outdoor-air processing units (FXMQ-MF) must not exceed 30% of the capacity index of the outdoor units. The connection ratio must not exceed 100%.

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VRV Single Branch Selector Boxes

Single Port Box

- BSVQ36TVJ (3-ton and less) (5 fan coils max)
- BSVQ60TVJ (greater than 3-ton up to 5 tons) (8 fan coils max)
- BSVQ96TVJ (greater than 5-ton up to 8 tons) (8 fan coils max)

Outdoor unit side
(3 pipe)

Indoor unit side
(2 pipe)

Note: The values referring to the tonnage of the fan coil(s) downstream of the branch selector box and the number of fan coils allowed downstream of the BS box

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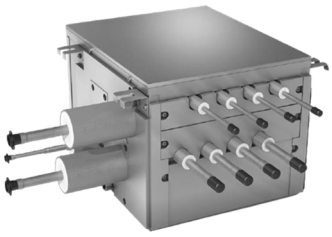
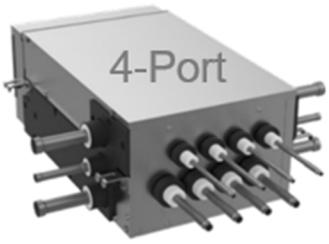
VRV Multi Branch Selector Boxes

- This BS unit is only for *VRV* models T series and PC series systems . It cannot be connected to systems for models M, PT, PA or PB series *VRV*.
- The total capacity and number of indoor units connectable to each branch connector are up to 54,000 btu's or 5 fan coils.
- When the total capacity of indoor units to be connected downstream is larger than 54 (MAX. 96), use a junction pipe kit (KHRP26A250T sold separately) to join two connections downstream from the BS unit.

BS4Q54TVJ BSF4Q54TVJ (4 Port)	BS6Q54TVJ BSF6Q54TVJ (6 Port)	BS8Q54TVJ BSF8Q54TVJ (8 Port)	BS10Q54TVJ (10 Port)	BS12Q54TVJ (12 Port)



Standard BS Box
BS4Q54TVJ
BS6Q54TVJ
BS8Q54TVJ
BS10Q54TVJ
BS12Q54TVJ



Flex BS Box
BSF4Q54TVJ
BSF6Q54TVJ
BSF8Q54TVJ

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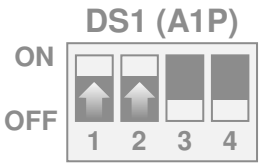
Electrical DIP Switch Settings BS_T Multi Unit

Setting for Branch Ports to Which No Indoor Unit is Connected

DIP Switch Setting		ON (Not Connected)				OFF (Factory Default)							
DIP Switch Number		DS1 (A1P)				DS1 (A2P)				DS1 (A3P)			
		1	2	3	4	1	2	3	4	1	2	3	4
BS4Q54TVJ BSF4Q54TVJ	Target Branch Port	Unit A	Unit B	Unit C	Unit D								
BS6Q54TVJ BSF6Q54TVJ						Unit E	Unit F						
BS8Q54TVJ BSF								Unit G	Unit H				
BS10Q54TVJ										Unit I	Unit J		
BS12Q54TVJ												Unit K	Unit L



Example 1
When not connecting the indoor unit to the A and B branch circuits

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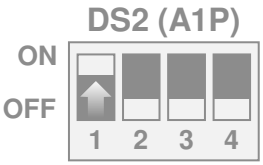
Electrical DIP Switch Settings BS_T Multi Unit

Setting When Joining Branch Ports

DIP Switch Setting		ON (Joined)		OFF (Factory Default)			
DIP Switch Number		DS2 (A1P)		DS2 (A2P)		DS2 (A3P)	
		1	2	1	2	1	2
BS4Q54TVJ BSF4Q54TVJ	Target Branch Port	A and B Units Joined	C and D Units Joined				
BS6Q54TVJ BSF6Q54TVJ				E and F Units Joined			
BS8Q54TVJ BSF8Q54TVJ					G and H Units Joined		
BS10Q54TVJ						I and J Units Joined	
BS12Q54TVJ							K and L Units Joined



Example 2
When joining the A and B branches

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Local Remote Controllers

Navigation BRC1E73	*Madoka* BRC1H71	Daikin *One*+ Smart Thermostat	Wireless BRC7C/7E/4C

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Agenda

VRV IV-X & *VRV EMERION* System Components

Outdoor Unit Layout

Pre-commissioning Checks

System Commissioning Steps

Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs

Additional Remote Controller Field Settings

Selected Field Settings - Outdoor Units

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VRV IV-X Heat Pump Outdoor Unit Layout

Control PCB (A1P) LED 3 segment display Control Push Buttons

Line Voltage Connections

2 Stop Valves

Liq. - Gas

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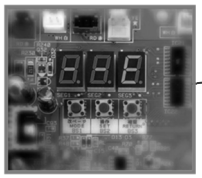
VRV IV-X Heat Recovery Outdoor Unit Layout

Control PCB (A1P) LED 3 segment display Control Push Buttons



Line Voltage Connections

3 Stop Valves

Liq.- Gas - HP/LP

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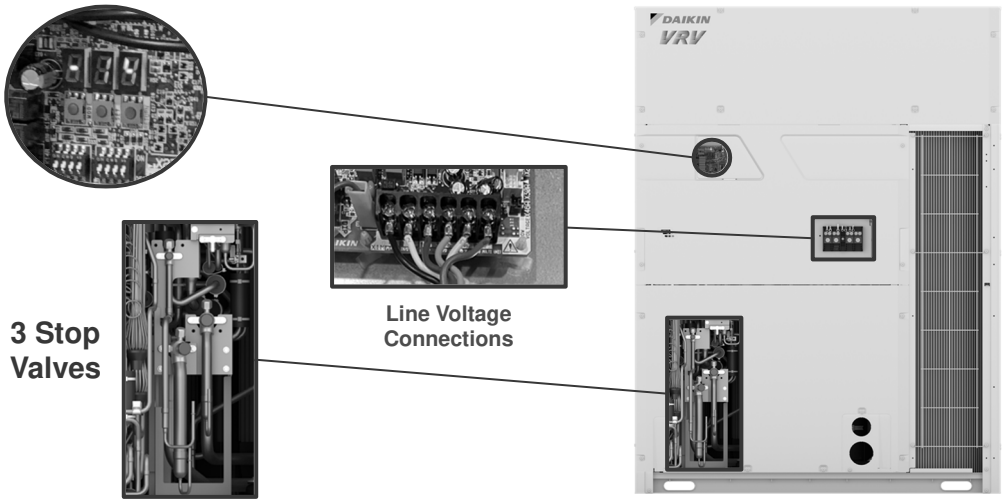
VRV EMERION Heat Recovery Outdoor Unit Layout

Control PCB (A1P) LED 3 segment display Control Push Buttons



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Agenda

- *VRV IV-X* & *VRV EMERION* System Components
- Outdoor Unit Layout
- **Pre-commissioning Checks**
- System Commissioning Steps
- Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs
- Additional Remote Controller Field Settings
- Selected Field Settings - Outdoor Units

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Pre-Commissioning Checks

- NOTE: Verify there is no DIII-net control wire connection on F1-F2 Out on the Master ODU (Certain commissioning steps apply when local remote controllers are not installed)
  1. Compressor shipping brackets removed
  2. Stop valves securely closed & field refrigerant piping pressure tested to 550 PSI (450 PSI FXTQ and CXTQ) for 24 hours min.
  3. Triple evacuate to 500 microns or less for 1 hour
  4. All liquid lines are measured, 'Additional Refrigerant Charge' is calculated and weighed into the system, breaking the final Vacuum
  5. Stop valves opened (If 3rd party shut off valves are used verify they are open)
  6. All remote controllers installed and correctly wired
  7. All condensate drain piping is connected, including fan coil tie-in, and insulated as required
  8. Refrigerant lines 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

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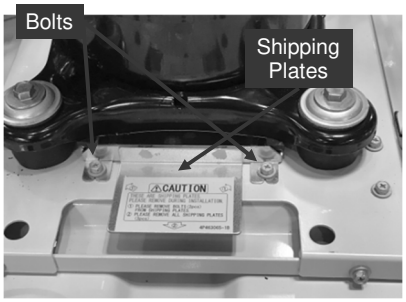
Shipping Brackets

Heat Pump

- Each compressor has 2 shipping brackets that need to be removed prior to start up.
- Be sure to tighten compressor bolts after removing plates (9.1 ft-lbs)
- If the unit is operated with the shipping plate still attached, abnormal vibration or noise may be generated.

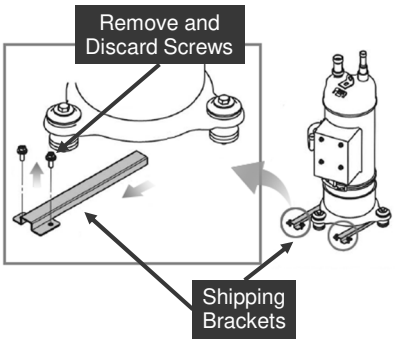
VRV IV-X Heat Recovery

- Remove bolts (2 Pcs) for fixing shipping plate.
- Remove all shipping plates (3 pcs)
- Be sure to re-attach and tighten the bolts to correct torque value.
- 6, 8 & 10 Ton Ship with no brackets.



VRV EMERION Heat Recovery

- Check if the compressor bracket is inside unit.
- If there is shipping bracket(s) loosen screws with a suitable tool and discard.
- Remove the shipping bracket(s) carefully.
- Don't open the compressor soundproofing.



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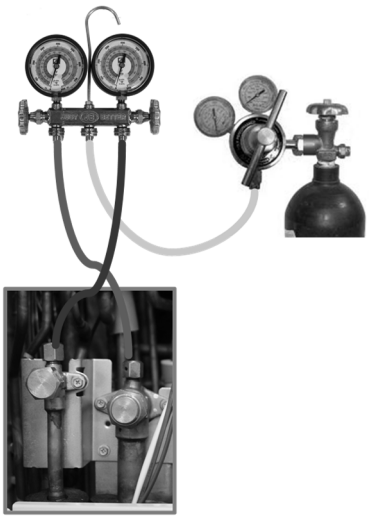
Pre-Commissioning Check #2

- Heat Pump Connections Pressure Test
- Connect manifold gauges to the liquid and dual pressure gas service ports
  - On manifolded systems connect gauges to the master outdoor unit
- Connect nitrogen cylinder with regulator to manifold
- Do not energize the indoor units, indoor unit EEVs close when line voltage power is applied
  - If EEVs are closed use Recovery/Evacuation Mode to reopen all EEVs
- Follow the Pressure Test procedure and perform a system leak test



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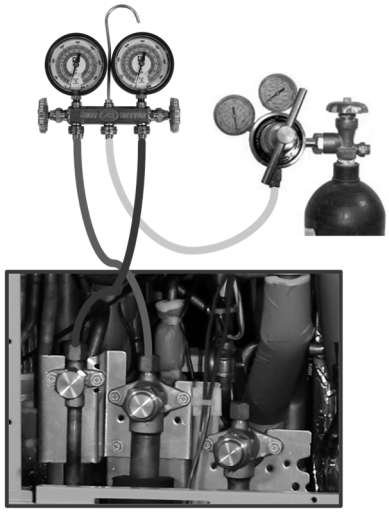
Pre-Commissioning Check #2 (Cont'd)

- Pressure Test Connections Heat Recovery
- Connect manifold gauges to the liquid and suction gas service ports
  - On manifolded systems connect gauges to the master outdoor unit
- Connect nitrogen cylinder with regulator to manifold
- Do not energize the indoor units or BS boxes, as the EEVs will close when line voltage power is applied
  - If EEVs have closed use Recovery/Evacuation Mode to reopen all EEVs Mode 2-21
- Follow the Pressure Test procedure and perform a system leak test



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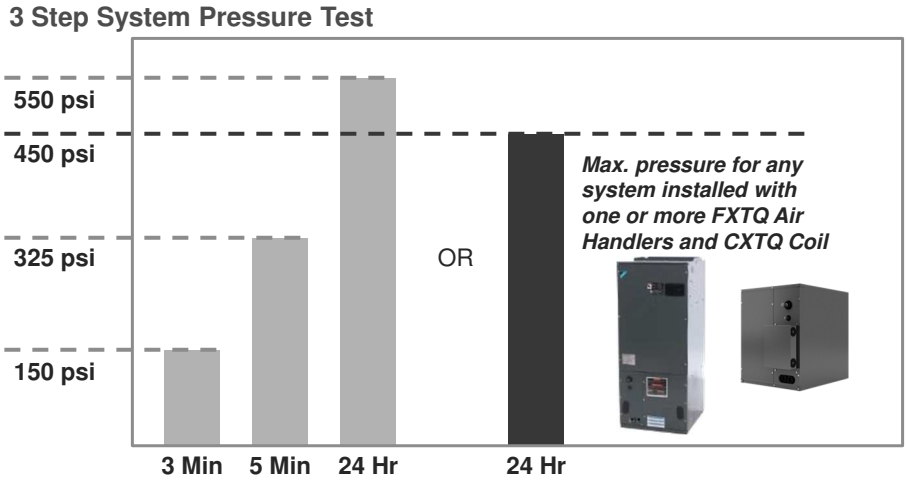
System Nitrogen Pressure Test



Verify all stop valves are securely closed before pressure test

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Pre-Commissioning Check #2 (Cont'd)

- 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 drop or rise from one day to the next when performing the 24 hour pressure test.
    - The following formula will determine system pressure drop or pressure rise caused by low or high ambient temperatures.

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

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

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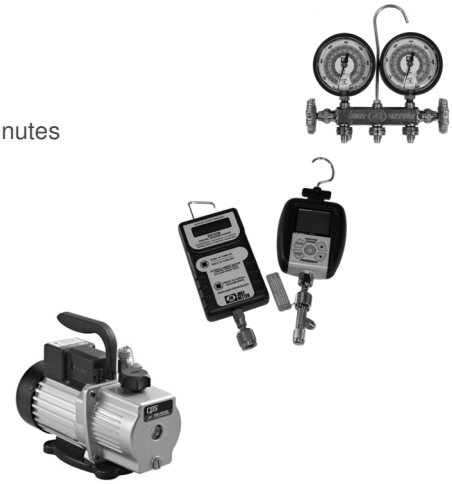
Pre-Commissioning Check #3

System Triple Evacuation

- Recommended min.6 CFM Vacuum pump with check valve
- Digital micron gauge
- Ensure Vacuum hoses are in good condition
  - Evacuate the refrigerant piping to 4,000 microns - hold for 15 minutes
  - Break the Vacuum with dry nitrogen to a pressure of 2-3 PSIG
  - Evacuate the system to 1,500 microns - hold for 20 minutes
  - Break the Vacuum with dry nitrogen to a pressure of 2-3 PSIG
  - Evacuate the system to 500 microns or less
    - Conduct a pressure rise test; system should hold less than 500 microns for 1 hour
    - Hold Vacuum for liquid refrigerant charging
    - Use Vacuum to draw in the calculated charge



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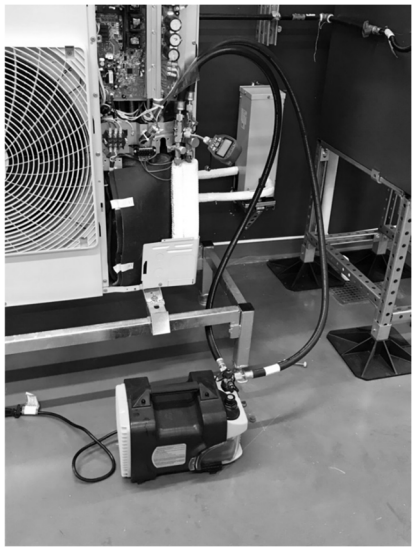
Evacuation Connections

- An alternative way to connect an evacuation pump to the system.
- Some pumps come with 3/8 or 1/2 inch hoses and connections on the pump.
- The use of a Schrader removal tool will speed up the evacuation by reducing restrictions.
- By connecting the larger hoses and removing the Schrader core, evacuation will be faster.
- Attach the micron gauge to the port on the core remover.
- With this connection no need for a manifold, less chance for leaks.



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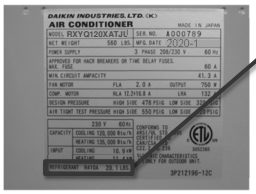
Pre-Commissioning Check #4

System Refrigerant Charging Facts

- Accurate refrigerant charging is critical for optimum system performance
- Daikin *VRV* systems cannot be charged by refrigerant operating pressures, superheat or sub cooling* temperatures; refrigerant is weighed into the system
- All *VRV* OD Units have a factory refrigerant charge based on the unit model
  - The *VRV* outdoor units display the factory refrigerant charge on the unit ID plate
- Proper system charging requires an 'Additional Refrigerant Charge' amount to be calculated
- The total system refrigerant charge is comprised of the factory charge in the outdoor unit(s), and the 'Additional Refrigerant Charge' amount calculated for that system



REFRIGERANT R410A 20.1 LBS.

+ 'Additional Refrigerant Charge' = **TOTAL SYSTEM CHARGE**

*(*VRV IV-X* only, charge can be adjusted by subcooling , refer to IOM)

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Pre-Commissioning Check #4 (Cont'd)

Activity

System Refrigerant Charging Procedures

- *VRV IV-X* & *VRV EMERION* systems can be manually charged using the Additional Refrigerant Charge Mode. 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

Note: On *VRV IV-X* only, sub cooling can be used to adjust the refrigerant charge. Refer to the installation manual that comes with the ODU for the proper procedure

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Pre-Commissioning Check #4 (Cont'd) - Heat Pump *VRV IV-X*

VRV IV-X 'Additional Refrigerant Charge' Manual Calculation

The example system for this exercise is:
RXYQ264XATJA Heat Pump (RXYQ120XATJA + RXYQ144XATJA)
System Connection Ratio is 116%
Connection ratio can be found in the Web *X*press documentation.

Total length (ft) of 1/4" liquid line 45 X .015 lbs/ft = .675
+
Total length (ft) of 3/8" liquid line 100 X .040 lbs/ft = 4.00
+
Total length (ft) of 1/2" liquid line 45 X .081 lbs/ft = 3.645
+
Total length (ft) of 5/8" liquid line 15 X .121 lbs/ft = 1.815
+
Total length (ft) of 3/4" liquid line 60 X .175 lbs/ft = 10.5
+
Total length (ft) of 7/8" liquid line 0 X .249 lbs/ft = 0.00

Liquid Line Example Totals: 265 ft. 20.64 Lbs

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Pre-Commissioning Check #4 (Cont'd) - Heat Pump

VRV IV-X 'Additional Refrigerant Charge' Manual Calculation

- Example System: **RXYQ264XATJA** (**1x RXYQ120XATJA** + **1x RXYQ144XATJA**)
- System Indoor Fan Coil Connection Ratio: 116%
- Calculate the refrigerant amounts for each Outdoor Unit in a manifolded system

Parameter A

Amount of refrigerant to add based on outdoor unit model	
RXYQ72-120X	0.0 lbs.
RXYQ144X	8.8 lbs.
RXYQ168X	9.9 lbs.

+

Parameter B

Refrigerant Piping from OD unit to farthest Fan Coil	Total indoor unit Connection Ratio	RXYQ__X	
		72X	96-168X
Piping Length ≤ 98 ft.	≤ 105%	0.0lbs	0.0lbs
	> 105%	1.10lbs.	1.10lbs.
Piping Length > 98 ft.	70% - 85%	.66 lbs.	1.10 lbs.
	86% - 105%	1.54 lbs.	2.20 lbs.
	>105%	2.65 lbs.	3.31 lbs.

Liquid Line Lengths	+	Parameter A OD Unit Model(s)	+	Parameter B Connection Ratio per each OD Unit	=	Total Additional Refrigerant Charge
20.64 lbs.		**0.0+8.8 lbs.**		**3.31+3.31 lbs.**		**36 lbs.**

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

VRV IV-X 'Additional Refrigerant Charge' Manual Calculation

The example system for this exercise is:
REYQ264XATJU Heat Recovery (REYQ120XATJU + REYQ144XATJU)
System Connection Ratio is 116%
Connection ratio can be found in the Web Xpress documentation.

Total length (ft) of 1/4" liquid line 45 X .015 lbs/ft = .675
+
Total length (ft) of 3/8" liquid line 100 X .040 lbs/ft = 4.00
+
Total length (ft) of 1/2" liquid line 45 X .081 lbs/ft = 3.645
+
Total length (ft) of 5/8" liquid line 15 X .121 lbs/ft = 1.815
+
Total length (ft) of 3/4" liquid line 60 X .175 lbs/ft = 10.5
+
Total length (ft) of 7/8" liquid line 0 X .249 lbs/ft = 0.00

Liquid Line Example Totals: 265 ft. 20.64 Lbs

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

- Once the total liquid line calculation is done on a Heat Recovery System that value is multiplied by 1.04.
  - Ex. 20.64lbs x 1.04 = 21.46lbs (Liquid Line amount)
- Then Additional refrigerant must be added for the amount and type of Branch Selector Boxes in the system. This will be called Parameter A.
- For this example, the system will have (4) BS4Q54T Boxes.
  - So .7lbs X 4 = 2.8lbs
- Add this to the 21.46 from the liquid line lengths and the total additional charge at this point will be 21.46lbs + 2.8lbs = 24.26lbs

Parameter [A] Refrigerant amount for BS units

BS unit model	Refrigerant amount
BS4Q54T	0.7 lbs/unit (0.3kg/unit)
BS6Q54T	0.9 lbs/unit (0.4kg/unit)
BS8Q54T	1.1 lbs/unit (0.5kg/unit)
BS10Q54T	1.5 lbs/unit (0.7kg/unit)
BS12Q54T	1.8 lbs/unit (0.8kg/unit)
BSQ36T	0.1 lbs/unit (0.05kg/unit)
BSQ60T	0.2 lbs/unit (0.1kg/unit)
BSQ96T	0.4 lbs/unit (0.2kg/unit)

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

- Additional refrigerant will also be added for the Model of the outdoor unit(s). This will be called Parameter B.
- For this example, the system is a REYQ120XATJU + REYQ144XATJU
- From the calculation for the line set lengths and the Branch selector boxes which is 24.26lbs we will add 8.6lbs and 9.0lbs which makes the total additional charge at this point 41.86lbs.
- 24.26lbs + 8.6lbs + 9.0lbs = 41.86lbs

***VRV IV-X* Condenser**

Parameter [B] Refrigerant amount for ODUs	
ODU capacity type	Refrigerant amount
REYQ72XA	9.7 lbs/unit (4.4 kg/unit)
REYQ96XA	8.2 lbs./unit (3.7 kg/unit)
REYQ120XA	8.6 lbs./unit (3.9 kg/unit)
REYQ144XA	9.0 lbs./unit (4.1 kg/unit)
REYQ168XA	9.5 lbs/unit (4.3 kg/unit)

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

- Now additional charge may or may not need to be added for the connection ratio and the total system pipe length. We know the connection ratio is 116% and the total line length is 265 ft. The outdoor unit model numbers combined are a REYQ264XATJU. This will be Parameter C
- Depending on what parameter D is the additional charge for parameter C will be either 6.61lbs or the value of D, whichever one is smaller
- Note: Total system pipe length will be from the Outdoor unit to the furthest fan coil

Parameter [C] Refrigerant amount by field piping length and indoor units capacity

Field piping length	Total IDU capacity connection ratio	Refrigerant amount Total ODU capacity type		
		REYQ72-144X	REYQ168-288X	REYQ312-456X
< 295.3 ft (90 m)	≤ 85%		0.0	
	> 85%	The smaller of [D] or 5.1 lbs (2.5 kg)	The smaller of [D] or 6.61 lbs (3.0 kg)	The smaller of [D] or 7.5 lbs (3.4 kg)
≥ 295.3 ft (90 m)	≤ 85%	0.0		
	> 85%	2.20 lbs (1.0 kg)		

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

- Parameter D is additional charge for the type of indoor units on the system.
- For this example, we have (5) FXMQ30, and (10) FXFQ24 fan coils.
  - 5 X .33lbs = 1.65lbs and 10 X .53lbs = 5.3lbs
- Parameter D is 1.65lbs + 5.3lbs = 6.95lbs
- Since Parameter D (6.95lbs) is more than Parameter C (6.61lbs), the amount for C will be used.

Parameter [D]

IDU capacity type	FXMQ type									
	07	09	12	15	18	24	30	36	48	54
Refrigerant amount (lbs(kg)/unit)	0.06 (0.03)	0.03 (0.014)	0.14 (0.06)	0.29 (0.13)	0.25 (0.11)	0.16 (0.07)	0.33 (0.15)	0.25 (0.11)	0.08 (0.04)	0.00 (0.00)

IDU capacity type	FXFQ type									
	07	09	12	15	18	24	30	36	48	Others*
Refrigerant amount (lbs(kg)/unit)	0.36 (0.16)	0.33 (0.15)	0.30 (0.14)	0.26 (0.12)	0.61 (0.28)	0.53 (0.24)	0.61 (0.28)	0.53 (0.24)	0.36 (0.16)	0.00 (0.00)

***Note: There is no additional charge for other types of fan coils just the FXMQ's and the FXFQ's**

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV IV-X*

- So, the total additional charge for this system will be:
- Line set length total **= 20.64lbs**
- Since it is a heat recovery system, we multiply that number by **1.04 = 21.46lbs**
- Then Parameters A,B,C, and D are added to that value
- **Parameter A – 2.8lbs** (Amount for Branch selector boxes)
- **Parameter B – 8.6lbs + 9.0lbs = 17.6lbs** (Amount for outdoor units)
- **Parameter C – 6.61lbs** (This value is less than D so this parameter will be used)
- **Parameter D – 6.95lbs** (This amount is larger than Parameter C so this value will not be used)

21.46lbs + 2.8lbs + 17.6lbs + 6.61lbs = 48.47lbs (Total Additional charge)
(A) (B) (C) *(D value not used in this calculation)*

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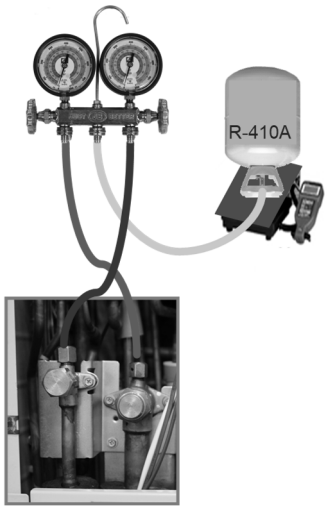
Pre-Commissioning Check #4 (Cont'd) – *VRV IV-X* Heat Pump

System Refrigerant Charging Procedures

1. 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 thru the liquid service port only
   - If there is not enough vacuum to draw in the total charge, use the Additional Refrigerant Charge Mode complete the system charging process
2. After the system receives the full or partial charge, open the liquid and gas stop valves and then remove the manifold hoses from both service valves (Pre-Commissioning Step #5)



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Pre-Commissioning Check #4 (Cont'd) – Heat Recovery

System Refrigerant Charging Procedures Cont.

- 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 thru the liquid service port only
  - If there is not enough Vacuum to draw in the total charge, use the 'Additional Refrigerant Charge Mode' to complete the system charging process
- After the system is fully charged, open the liquid and gas stop valves and then remove the manifold hoses from both service valves (Pre-Commissioning Step #5)
- If partially charged connect hoses to charging port to finish the charging process

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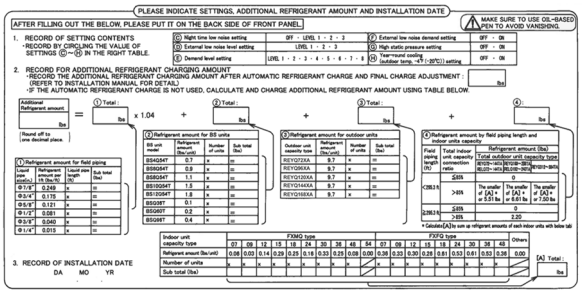
Pre-Commissioning Check #4 (Cont'd)

System Refrigerant Charge Procedures

- Refrigerant charging instructions are listed on a field installed label located in the clear plastic packet which is secured in the outdoor unit
- 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



PLEASE INDICATE SETTINGS, ADDITIONAL REFRIGERANT AMOUNT AND INSTALLATION DATE

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

MAKE SURE TO USE OIL-BASED PEN TO AVOID VANISHING.

1. RECORD OF SETTING CONTENTS
   ・RECORD BY CIRCLING THE VALUE OF SETTINGS Ⓒ～Ⓗ IN THE RIGHT TABLE.

Ⓒ Night time low noise setting	OFF ・ LEVEL 1 ・ 2 ・ 3	Ⓕ External low noise demand setting	OFF ・ ON
Ⓓ External low noise level setting	LEVEL 1 ・ 2 ・ 3	Ⓖ High static pressure setting	OFF ・ ON
Ⓔ Demand level setting	LEVEL 1 ・ 2 ・ 3 ・ 4 ・ 5 ・ 6 ・ 7 ・ 8	Ⓗ Year-round cooling (outdoor temp. -4℉ (-20℃)) setting	OFF ・ ON

2. RECORD FOR ADDITIONAL REFRIGERANT CHARGING AMOUNT
   ・RECORD THE ADDITIONAL REFRIGERANT CHARGING AMOUNT AFTER AUTOMATIC REFRIGERANT CHARGE AND FINAL CHARGE ADJUSTMENT : ___ lbs (REFER TO INSTALLATION MANUAL. FOR DETAIL)
   ・IF THE AUTOMATIC REFRIGERANT CHARGE IS NOT USED, CALCULATE AND CHARGE ADDITIONAL REFRIGERANT AMOUNT USING TABLE BELOW.

Additional Refrigerant amount ___ lbs (Round off to one decimal place.) = ① Total : ___ lbs x 1.04 + ② Total : ___ lbs + ③ Total : ___ lbs + ④: ___ lbs

① Refrigerant amount for field piping

Liquid pipe size(in.)	Refrigerant amount per 1ft (lbs/ft)	Liquid pipe length (ft)	Sub total (lbs)
Φ7/8"	0.249	x	=
Φ3/4"	0.175	x	=
Φ5/8"	0.121	x	=
Φ1/2"	0.081	x	=
Φ3/8"	0.040	x	=
Φ1/4"	0.015	x	=

② Refrigerant amount for BS units

BS unit model	Refrigerant amount (lbs/unit)	Number of units	Sub total (lbs)
BS4Q54T	0.7	x	=
BS6Q54T	0.9	x	=
BS8Q54T	1.1	x	=
BS10Q54T	1.5	x	=
BS12Q54T	1.8	x	=
BSQ36T	0.1	x	=
BSQ60T	0.2	x	=
BSQ96T	0.4	x	=

③ Refrigerant amount for outdoor units

Outdoor unit capacity type	Refrigerant amount (lbs/unit)	Number of units	Sub total (lbs)
REYQ72XA	9.7	x	=
REYQ96XA	9.7	x	=
REYQ120XA	9.7	x	=
REYQ144XA	9.7	x	=
REYQ168XA	9.7	x	=

④ Refrigerant amount by field piping length and indoor units capacity

Field piping length (ft)	Total indoor unit capacity connection ratio	Refrigerant amount (lbs) Total outdoor unit capacity type: REYQ72~144TA / REYQ168~288TA	REYQ72~144TA / REYQ192~288TA	REYQ312~384TA
<295.3 ft	≦85%	0		
	>85%	The smaller of [A] × or 5.51 lbs	The smaller of [A] × or 6.61 lbs	The smaller of [A] × or 7.50 lbs
≧295.3 ft	≦85%	0		
	>85%	2.20		

* Calculate [A] by sum up refrigerant amounts of each indoor units with below tab

Indoor unit capacity type	FXMQ type 07	09	12	15	18	24	30	36	48	54	FXFQ type 07	09	12	15	18	24	30	36	48	Others
Refrigerant amount (lbs/unit)	0.08	0.03	0.14	0.29	0.25	0.16	0.33	0.25	0.08	0.00	0.36	0.33	0.30	0.26	0.61	0.53	0.61	0.53	0.36	0.00
Number of units	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Sub total (lbs)																				

[A] Total : ___ lbs

3. RECORD OF INSTALLATION DATE
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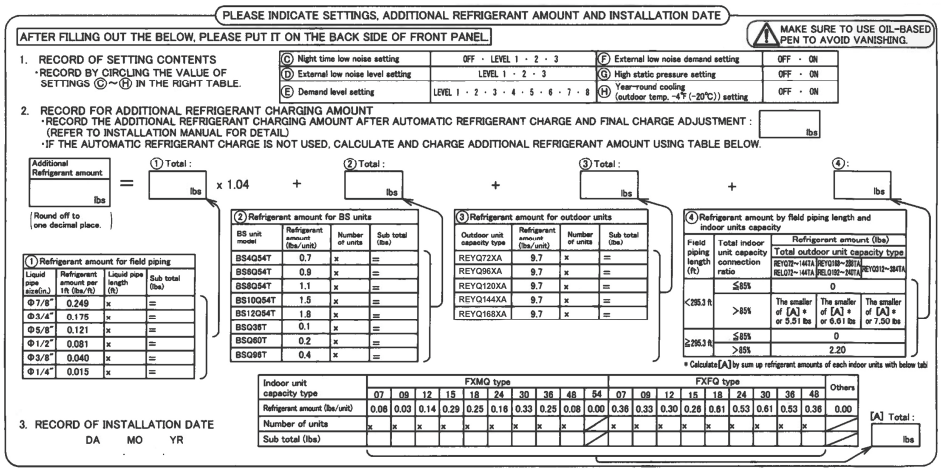
Pre-Commissioning Check #4 (Cont'd)

System Refrigerant Charge Procedures



PLEASE INDICATE SETTINGS, ADDITIONAL REFRIGERANT AMOUNT AND INSTALLATION DATE

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

MAKE SURE TO USE OIL-BASED PEN TO AVOID VANISHING.

1. RECORD OF SETTING CONTENTS
   ・RECORD BY CIRCLING THE VALUE OF SETTINGS Ⓒ～Ⓗ IN THE RIGHT TABLE.

Ⓒ Night time low noise setting	OFF ・ LEVEL 1 ・ 2 ・ 3	Ⓕ External low noise demand setting	OFF ・ ON
Ⓓ External low noise level setting	LEVEL 1 ・ 2 ・ 3	Ⓖ High static pressure setting	OFF ・ ON
Ⓔ Demand level setting	LEVEL 1 ・ 2 ・ 3 ・ 4 ・ 5 ・ 6 ・ 7 ・ 8	Ⓗ Year-round cooling (outdoor temp. -4℉ (-20℃)) setting	OFF ・ ON

2. RECORD FOR ADDITIONAL REFRIGERANT CHARGING AMOUNT
   ・RECORD THE ADDITIONAL REFRIGERANT CHARGING AMOUNT AFTER AUTOMATIC REFRIGERANT CHARGE AND FINAL CHARGE ADJUSTMENT : ___ lbs (REFER TO INSTALLATION MANUAL. FOR DETAIL)
   ・IF THE AUTOMATIC REFRIGERANT CHARGE IS NOT USED, CALCULATE AND CHARGE ADDITIONAL REFRIGERANT AMOUNT USING TABLE BELOW.

Additional Refrigerant amount ___ lbs (Round off to one decimal place.) = ① Total : ___ lbs x 1.04 + ② Total : ___ lbs + ③ Total : ___ lbs + ④: ___ lbs

① Refrigerant amount for field piping

Liquid pipe size(in.)	Refrigerant amount per 1ft (lbs/ft)	Liquid pipe length (ft)	Sub total (lbs)
Φ7/8"	0.249	x	=
Φ3/4"	0.175	x	=
Φ5/8"	0.121	x	=
Φ1/2"	0.081	x	=
Φ3/8"	0.040	x	=
Φ1/4"	0.015	x	=

② Refrigerant amount for BS units

BS unit model	Refrigerant amount (lbs/unit)	Number of units	Sub total (lbs)
BS4Q54T	0.7	x	=
BS6Q54T	0.9	x	=
BS8Q54T	1.1	x	=
BS10Q54T	1.5	x	=
BS12Q54T	1.8	x	=
BSQ36T	0.1	x	=
BSQ60T	0.2	x	=
BSQ96T	0.4	x	=

③ Refrigerant amount for outdoor units

Outdoor unit capacity type	Refrigerant amount (lbs/unit)	Number of units	Sub total (lbs)
REYQ72XA	9.7	x	=
REYQ96XA	9.7	x	=
REYQ120XA	9.7	x	=
REYQ144XA	9.7	x	=
REYQ168XA	9.7	x	=

④ Refrigerant amount by field piping length and indoor units capacity

Field piping length (ft)	Total indoor unit capacity connection ratio	Refrigerant amount (lbs) Total outdoor unit capacity type: REYQ72~144TA / REYQ72~144TA	REYQ192~288TA / REYQ192~240TA	REYQ312~384TA
<295.3 ft	≦85%	0		
	>85%	The smaller of [A] × or 5.51 lbs	The smaller of [A] × or 6.61 lbs	The smaller of [A] × or 7.50 lbs
≧295.3 ft	≦85%	0		
	>85%	2.20		

* Calculate [A] by sum up refrigerant amounts of each indoor units with below tab

Indoor unit capacity type	FXMQ type 07	09	12	15	18	24	30	36	48	54	FXFQ type 07	09	12	15	18	24	30	36	48	Others
Refrigerant amount (lbs/unit)	0.08	0.03	0.14	0.29	0.25	0.16	0.33	0.25	0.08	0.00	0.36	0.33	0.30	0.26	0.61	0.53	0.61	0.53	0.36	0.00
Number of units	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Sub total (lbs)																				

[A] Total : ___ lbs

3. RECORD OF INSTALLATION DATE
   DA MO YR

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

VRV EMERION 'Additional Refrigerant Charge' Manual Calculation

The example system for this exercise is:
REYQ320AATJU Heat Recovery (REYQ120AATJU + REYQ240AATJU)
System Connection Ratio is 116%
Connection ratio can be found in the Web Xpress documentation.

Total length (ft) of 1/4" liquid line 45 X .015 lbs/ft = .675
+
Total length (ft) of 3/8" liquid line 100 X .040 lbs/ft = 4.00
+
Total length (ft) of 1/2" liquid line 45 X .081 lbs/ft = 3.645
+
Total length (ft) of 5/8" liquid line 15 X .121 lbs/ft = 1.815
+
Total length (ft) of 3/4" liquid line 60 X .175 lbs/ft = 10.5
+
Total length (ft) of 7/8" liquid line 0 X .249 lbs/ft = 0.00

Liquid Line Example Totals: 265 ft. 20.64 Lbs

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

- Once the total liquid line calculation is done on a Heat Recovery System that value is multiplied by 1.04.
  - Ex. 20.64lbs x 1.04 = 21.46lbs (Liquid Line amount)
- Then Additional refrigerant must be added for the amount and type of Branch Selector Boxes in the system. This will be called Parameter A.
- For this example, the system will have (4) BS4Q54T Boxes.
  - So .7lbs X 4 = 2.8lbs
- Add this to the 21.46 from the liquid line lengths and the total additional charge at this point will be 21.46lbs + 2.8lbs = 24.26lbs

Parameter [A] Refrigerant amount for BS units

BS unit model	Refrigerant amount
BS4Q54T	0.7 lbs/unit (0.3kg/unit)
BS6Q54T	0.9 lbs/unit (0.4kg/unit)
BS8Q54T	1.1 lbs/unit (0.5kg/unit)
BS10Q54T	1.5 lbs/unit (0.7kg/unit)
BS12Q54T	1.8 lbs/unit (0.8kg/unit)
BSF4Q54T	1.4 lbs/unit (0.65kg/unit)
BSF6Q54T	1.9 lbs/unit (0.85kg/unit)
BSF8Q54T	2.2 lbs/unit (1.0kg/unit)
BSQ36T	0.1 lbs/unit (0.05kg/unit)
BSQ60T	0.2 lbs/unit (0.1kg/unit)
BSQ96T	0.4 lbs/unit (0.2kg/unit)

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

- Additional refrigerant will also be added for the Model of the outdoor unit(s). This will be called Parameter B.
- For this example, the system is a REYQ120AATJU + REYQ144AATJU
- From the calculation for the line set lengths and the Branch selector boxes which is 24.26lbs we will add 5.5 lbs and 12.6 lbs which makes the total additional charge at this point 41.86lbs.
- 24.26lbs + 5.5 lbs + 12.6 lbs = 42.36 lbs

***VRV EMERION* Condenser**

Parameter [B] Refrigerant amount for ODUs	
Outdoor Unit	**Refrigerant amount**
REYQ72A	**0.0 lbs/unit (0.0 kg/unit)**
REYQ96A	**5.1 lbs./unit (2.3 kg/unit)**
REYQ120A	**5.5 lbs./unit (2.5 kg/unit)**
REYQ144A	**12.6 lbs./unit (5.7 kg/unit)**
REYQ168A	**13.2 lbs/unit (6.0 kg/unit)**
REYQ192A	**32.0 lbs/unit (14.5 kg/unit)**
REYQ216A	**32.2 lbs/unit (14.6 kg/unit)**
REYQ240A	**32.4 lbs/unit (14.7 kg/unit)**

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

- Now additional charge may or may not need to be added for the connection ratio and the total system pipe length. We know the connection ratio is 116% and the total line length is 265 ft. The outdoor unit model numbers combined are a REYQ264AATJU. This will be Parameter C
- Depending on what parameter D is the additional charge for parameter C will be either 6.61lbs or the value of D, whichever one is smaller
- Note: Total system pipe length will be from the Outdoor unit to the furthest fan coil

Parameter [C] Refrigerant amount by equivalent field piping length and indoor units capacity				
Eqivalent field piping length	Total indoor unit capacity connection ratio	Refrigerant amount Total outdoor unit capacity type		
		REYQ72-144A	REYQ168-288A	REYQ312-480A
<295.3 ft. (90 m)	≤85%	0.0 lbs. (0.0 kg)		
	>85%	The smaller of [D] or 5.51 lbs. (2.5 kg)	The smaller of [D] or 6.61 lbs. (3.0 kg)	The smaller of [D] or 7.50 lbs. (3.4 kg)
≥295.3 ft. (90 m)	≤85%	0.0 lbs. (0.0 kg)		
	>85%	2.20 lbs. (1.0 kg)		

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

- Parameter D is additional charge for the type of indoor units on the system.
- For this example, we have (5) FXMQ30, and (10) FXFQ24 fan coils.
  - 5 X .33lbs = 1.65lbs and 10 X .53lbs = 5.3lbs
- Parameter D is 1.65lbs + 5.3lbs = 6.95lbs
- Since Parameter D (6.95lbs) is more than Parameter C (6.61lbs), the amount for C will be used.

Parameter [D]

IDU capacity type	FXMQ type									
	07	09	12	15	18	24	30	36	48	54
Refrigerant amount (lbs(kg)/unit)	0.06 (0.03)	0.03 (0.014)	0.14 (0.06)	0.29 (0.13)	0.25 (0.11)	0.16 (0.07)	0.33 (0.15)	0.25 (0.11)	0.08 (0.04)	0.00 (0.00)

IDU capacity type	FXFQ type									
	07	09	12	15	18	24	30	36	48	Others*
Refrigerant amount (lbs(kg)/unit)	0.36 (0.16)	0.33 (0.15)	0.30 (0.14)	0.26 (0.12)	0.61 (0.28)	0.53 (0.24)	0.61 (0.28)	0.53 (0.24)	0.36 (0.16)	0.00 (0.00)

***Note: There is no additional charge for other types of fan coils just the FXMQ's and the FXFQ's**

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Pre-Commissioning Check #4 (Cont'd) - Heat Recovery *VRV EMERION*

- So, the total additional charge for this system will be:
- Line set length total **= 20.64lbs**
- Since it is a heat recovery system, we multiply that number by **1.04 = 21.46lbs**
- Then Parameters A,B,C, and D are added to that value
- **Parameter A – 2.8lbs** (Amount for Branch selector boxes)
- **Parameter B – 5.5 lbs + 12.6 lbs = 18.1 lbs** (Amount for outdoor units)
- **Parameter C – 6.61lbs** (This value is less than D so this parameter will be used)
- **Parameter D – 6.95lbs** (This amount is larger than Parameter C so this value will not be used)

21.46lbs + 2.8lbs + 18.1lbs + 6.61lbs = 48.97lbs (Total Additional charge)

(A) (B) (C) *(D value not used in this calculation)*

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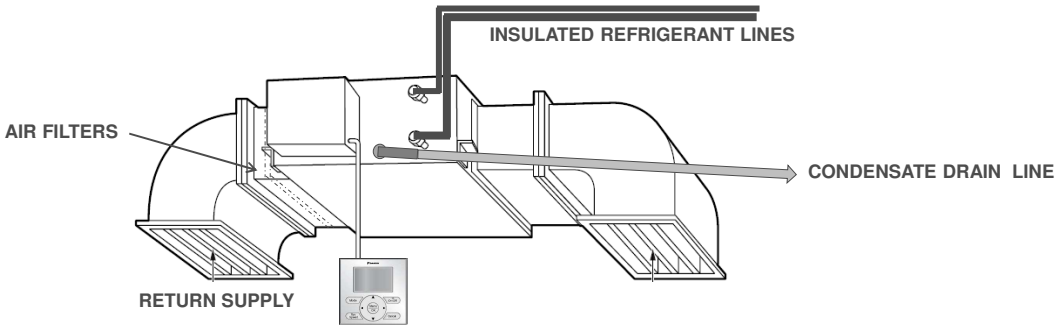
Pre-Commissioning Checks #5 thru #9

5. All Stop Valves on the outdoor unit(s) are full open (If 3rd party shut off valves are used make sure they are fully open)
6. All Remote Controllers are installed and properly wired
7. All condensate piping is installed
8. Refrigerant lines are completely insulated including fan coil flare nut connections
9. All ductwork is installed, sealed and all air filters are installed



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Pre-Commissioning Check #10

Verify Power Supply Voltage

- Before energizing any of the system components, use a voltmeter to verify that the line voltage power supply to the outdoor unit(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
- 575VAC 3Ph = 517 – 632VAC
- Verify all 3 phase legs to each outdoor unit are in balance within 2%
- A 'U1' error code with unit stop can be generated for excessive phase imbalance, or reverse phase
- A 'U1' or 'U7' error code with unit stop can be generated for a loss phase
- All indoor units are shipped with the EEVs full open
- The EEVs will motor to a closed position when line voltage power is applied to the indoor units

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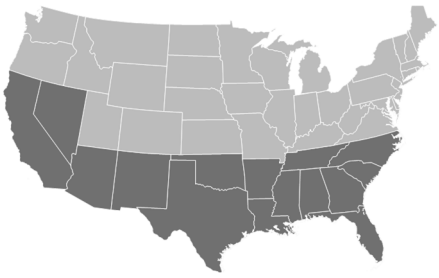
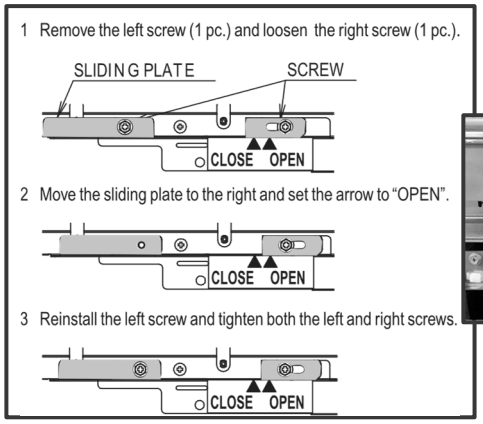
Control Panel Cooling Slide Plate *VRV IV-X* Only

- Method for opening the cooling slide plate.
- The sliding plate should be moved to the Open position in the following regions to minimize temperature rise in the main control box: CA, NV, AZ, NM, IK,TX, AR, LA, MS, AL, TN, GA, NC, SC, FL and Latin America





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Agenda

VRV IV-X & *VRV EMERION* System Components

Outdoor Unit Layout

Pre-commissioning Checks

System Commissioning Steps

Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs

Additional Remote Controller Field Settings

Selected Field Settings - Outdoor Units

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Commissioning Steps

1. Power up all indoor units (BS boxes if HR)
2. Power up outdoor unit(s) to energize crankcase heaters (minimum 6 hrs.)
   - Initialization sequence starts and the system addresses are set
   - Setup & configure all Navigation Remote Controllers
3. Count indoor units to confirm communications (BS boxes also if HR)
4. Selected field settings programmed at ODU and Remote Controllers (Static Pressure settings, etc.)
5. System refrigerant charge – 'Manual' charge using the 'Additional Refrigerant Charge Mode

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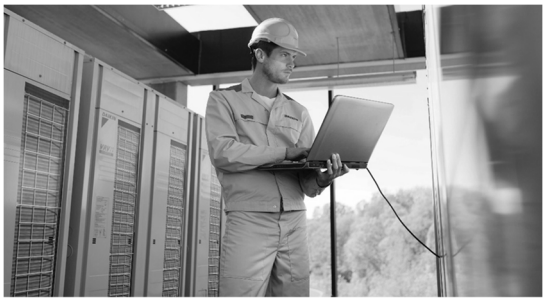
Commissioning Steps (Cont'd)

6. Test Operation Mode
7. Configure the remote controller changeover Master
8. Set field settings in the outdoor unit when applicable
9. Set any additional remote controller field settings
10. Verify system operation in cool & heat mode as outside ambient temperature conditions allow (Heat mode is prohibited above 82.4°F outside air temperature)



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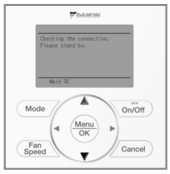
Commissioning Step #1

Power up Indoor Units

- Power up all indoor units and branch selector boxes (HR only) first
- Verify the fan coil control and branch selector PCBs indicate normal operation with the flashing Green status LED on the control PCB
- Verify all wired Remote Controllers have a display but the green status LEDs are OFF



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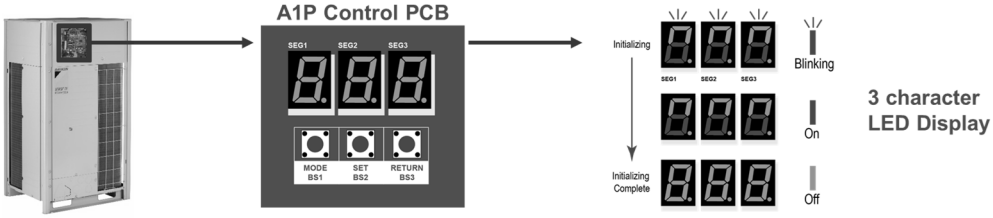
Commissioning Step #2

Outdoor Unit Power Up Initialization Operation

- Upon power up of outdoor unit(s), the outdoor Master PCB will perform an 8 to 10 minute Initialization operation where it assigns addresses to the outdoor unit(s) and all indoor units
- This mode is identified in the 3 character display with 3 flashing ▫s
- Near completion of Initialization, the 3 display ▫s go from flashing to solid On
- When the 3 character display goes blank, this will indicate the Initialization operation has successfully completed and the control system is in normal status



NOTE: Power up outdoor unit(s) for a period of 6 hours to ensure crankcase heaters eliminate any liquid refrigerant in compressors prior to commissioning. During this time, all of the Navigation Remote Controllers (BRC1E73) can be configured.

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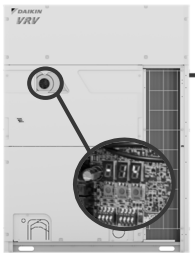
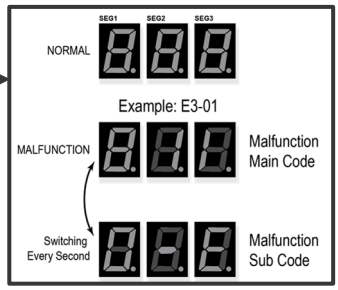
Commissioning Step #2 (Cont'd)

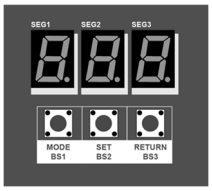
System Malfunction Detected During Initialization

- If after 15 minutes or more, there is an error code indicated - Initialization is not completed
  - Turn one of the Remote Controllers to ON and verify the error code status and location
  - Resolve the error issue
  - Recycle power on outdoor unit which will restart Initialization mode
  - Press and hold the BS3 'RETURN' button for 5 seconds
  - The 3 segment LED display should be OFF on successful completion of Initialization





Normal System Status



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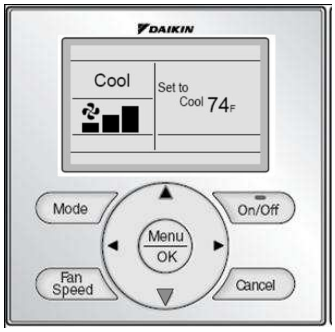
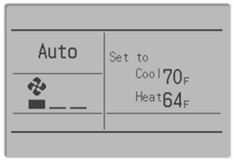
Commissioning Step #2 (Cont'd)

BRC1E73 Navigation Remote Controller Initial Settings

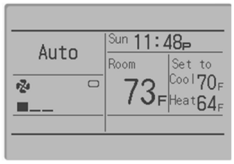
During the initial outdoor unit power up time, all of the system BRC1E73 Remote Controllers can be configured with the 'Initial Settings' that apply. Settings must be made with Controllers in the OFF mode.



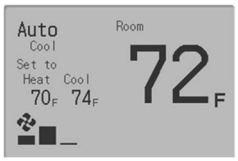
Standard



Detailed



Simple



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Commissioning with No Remote Controllers connected

- When commissioning a system with fan coils but no remote controllers, certain steps must be taken to avoid a communication error (U4)
- This is necessary if any fan coils in the system have no remote controller connected
- At least one remote controller will be needed during commissioning to group address fan coils for use with a Daikin Centralized Controller, and for individual field settings for fan coils
- Any Daikin remote controller can be used, Daikin's recommendation is to use the Navigation Controller (BRC1E73)
- The below options can be used in these situations
  - **Option 1:** Connect a Daikin remote controller to any fan coil that does not have a remote connected and begin commissioning
  - **Option 2:** Connect a Daikin Centralized Controller to the system and begin commissioning
  - **Option 3:** Connect the Daikin Service Checker to the system and begin commissioning

In the 'Appendix' options 2 and 3 will be discussed, and the process needed to be followed to have the system properly commissioned

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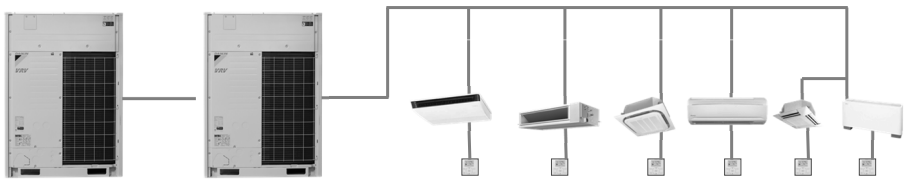
Commissioning Step #3 (Heat Pump)

Verify System Control Communications

- When the Initialization operation has been completed the system must be checked to ensure that all indoor units in the system are addressed and communicating
- Communications between manifolded modules is also set during Initialization
- Using Monitor Mode 1 on the Master Control PCB on the outdoor unit, the Fan Coils 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 outdoor unit
- The manifolded module identifications should also be verified



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Commissioning Step #3 (Heat Recovery)

Verify System Control Communications

- When the Initialization operation has been completed the system must be checked to ensure that all indoor units and branch selector boxes in the system are addressed and communicating.
- When counting the branch selector boxes from the Master control PCB (Multi Port Boxes) only the ports being utilized will show up in the count. For non-connected ports, a dip switch setting will need to be changed at the BS box.

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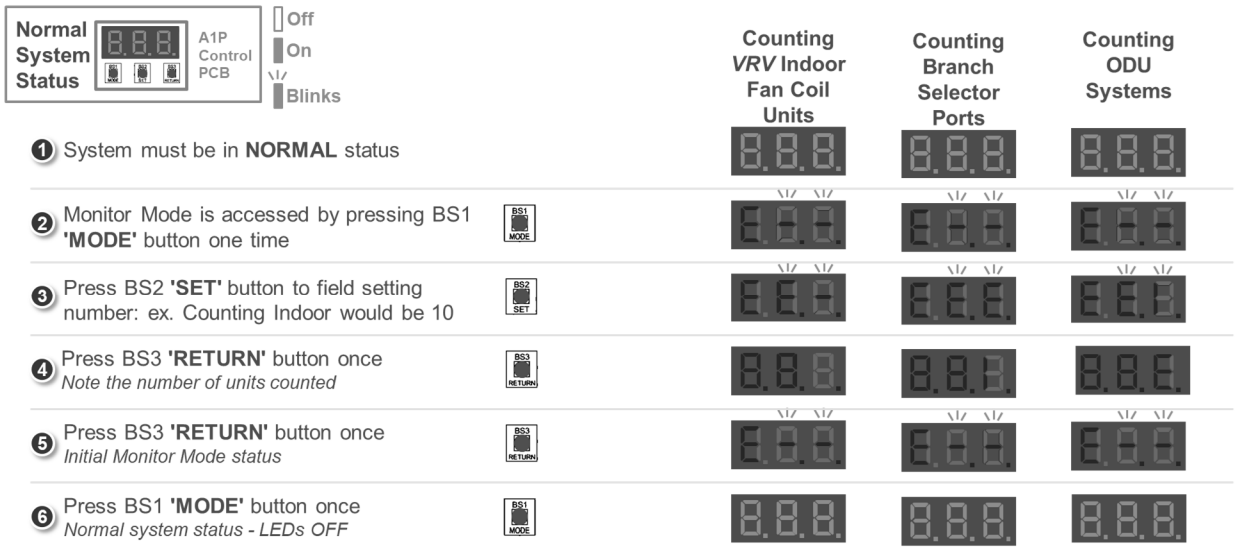
Commissioning Step #3 (Cont'd)



NOTE: On manifolded systems, this procedure is performed on the PCB of the Master outdoor unit only

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System Commissioning – Service Tip

Fan Coil – Forced Fan On Mode

- A very effective procedure to help troubleshoot missing indoor Fan Coil units is to force the fan coil blowers to 'ON'. By turning on the indoor blowers from the outdoor unit, you will see which indoor units are communicating within the system.
- At sites with multiple systems being installed, occasionally one indoor unit will get wired to the wrong outdoor unit. Using the 'Forced Fan On' procedure, you will quickly see which 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

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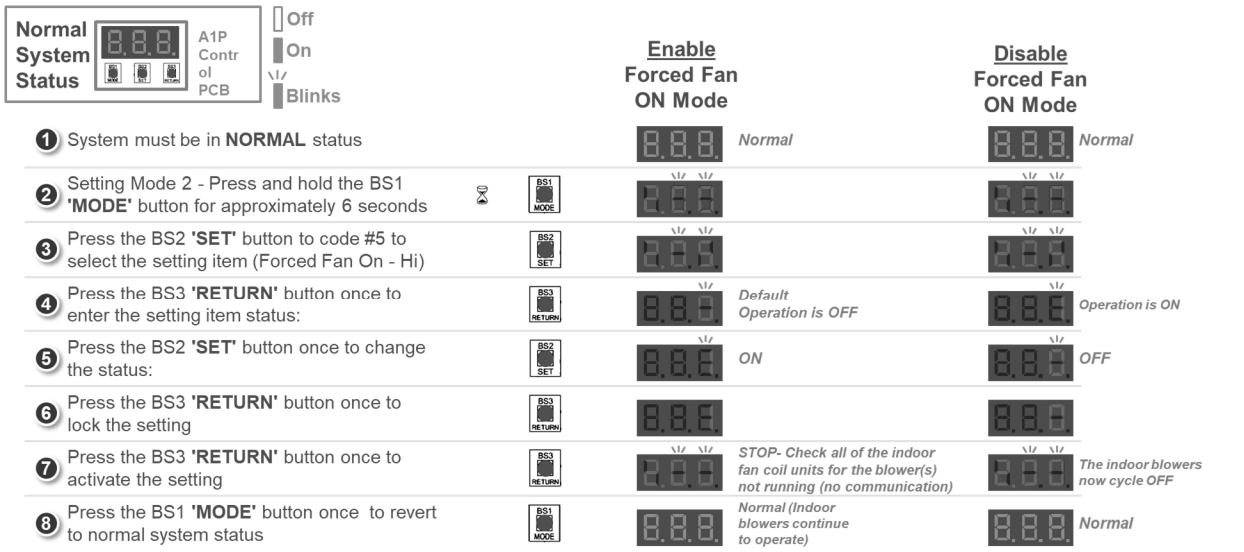
System Commissioning – Service Tip



Note: This setting must be manually disabled at outdoor unit.

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System Commissioning – Service Tip

Indoor Fan Coil – Communication Troubleshooting Tips

- Verify correct power supply voltage is present at Fan Coil
  - 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. Another method is to use your meter to check the 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 ensure the conductors are connected to the correct terminals and 16vdc is measured
- After the issues are corrected, recycle power to the (Master) ODU (Initialization mode starts) and press and hold the (BS3) 'RETURN' button for 5 seconds on the Control PCB. This will enable the indoor unit(s) that were not communicating to have an address assigned.

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Agenda

VRV IV-X & *VRV EMERION* System Components

Outdoor Unit Layout

Pre-commissioning Checks

System Commissioning Steps

Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs

Additional Remote Controller Field Settings

Selected Field Settings - Outdoor Units

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Commissioning Step #4

Normal System Status — A1P Control PCB

Off
On
Blinks

Fan High Static Setting

❶ System must be in **NORMAL** status		*Normal*
❷ Setting Mode 2 - Press and hold the BS1 **'MODE'** button for approximately 6 seconds	BS1 MODE	
❸ Press the BS2 **'SET'** button to code #18 to select the setting item (OD Fan High Static)	BS2 SET	
❹ Press the BS3 **'RETURN'** button once to enter the setting item status - '0' = OFF (Default)	BS3 RETURN	*Default*
❺ Press the BS2 **'SET'** button once to change the status from '0' = OFF to '1' = ON	BS2 SET	
❻ Press the BS3 **'RETURN'** button once to lock the setting	BS3 RETURN	
❼ Press the BS3 **'RETURN'** button once to activate the setting	BS3 RETURN	*Outdoor Fan(s) now operating at .32' wg.*
❽ Press the BS1 'MODE' button to terminate the operation and revert to normal system status	BS1 MODE	

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Commissioning Step #4 (Cont'd)

Fan Coil Field Settings

- System communications is now verified and operational
- At this point, all ductwork has been verified to be connected including all air filters installed
- This is to ensure maximum system performance, efficiency and accurate system refrigerant charging when Auto Charge is used
  - Ducted fan coils must have static pressure adjusted or programmed as required
  - Ceiling Cassette fan coils must be programmed for Supply Air distribution and ceiling height to properly set fan speed
- For Field Setting listings, refer to Fan Coil Installation Manuals

Navigation Remote

Madoka

Wireless

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Commissioning Step #4 (Cont'd)

Fan Coil Field Settings

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

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (Cells in bold are factory default settings) 01	02	03	04
10(20)	2	Priority of thermistor sensors for space temperature control	The return air thermistor is primary and the remote controller thermistor Is secondary	Only the return air thermistor will be utilized.	Only the remote controller thermistor will be utilized.	--
	5	Room temperature value reported to multizone controllers	Return air thermistor	Thermistor designated by 10-2 above **(Note 3)**	--	--
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	--	--
12(22)	0	KRP1B71 X1-X2 status output	Indoor unit Thermo-On/Off status	--	Indoor unit Operation On/Off status	Indoor unit Alarm status
	1	Indoor unit T1-T2 input	Forced Off Closed Contact-Indoor unit is forced off and Central Control icon is displayed. Unit cannot be turned on manually. Operation can be overridden by central control. Open Contact-Indoor unit can resume normal operation. Unit must be turned on manually or by central control.	On/Off Closed Contact-Indoor unit is turned on. Open Contact-Indoor unit is turned off. Unit responds to last command, i.e., unit can be turned on manually or by central control after circuit has opened. Operation is prohibited when remote controller On/Off control is restricted by a multizone controller.	External Protection Device Closed contact-Unit shall resume normal operation. Open contact-Unit shall shut down and generate an A0 error.	
	2	Thermo-On/Off deadband **(Note 4)**	2F (1C)	1F (0.5C)	--	--
	3	Fan Speed in Heating Thermo-Off	LL	User set	Off	--
	6	Fan Speed in Cooling Thermo-Off	LL	User set	Off	--
	8	Return air sensor offset	2C	None (for remote sensor)		

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Commissioning Step #4 (Cont'd)

- 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 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 Service 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

Mode No. (Note 1)	First Code No.	Description	Second Code No. (Note 2) (Cells shaded in grey are factory default settings) 01	02	03	04
10 (20)	2	Priority of thermistor sensors for space temperature control	The return air thermistor is primary and the remote controller thermistor is secondary	Only the return air thermistor will be utilized	Only the remote controller thermistor will be utilized	-
	5	Room temperature value reported to multizone controllers	Return Air thermistor	Thermistor designated by 10-2 above (Note 3)	-	-
	6	The remote controller thermistor is used in Remote Controller Group	No	Yes	-	-

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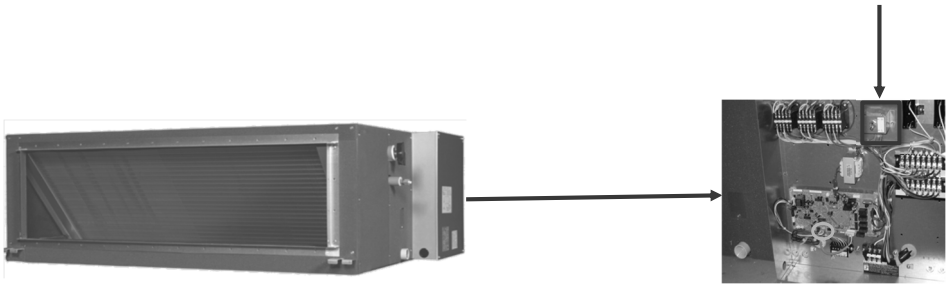
Commissioning Step #4 (Cont'd)

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 Low or High air flow



NOTE: See Engineering Manual for fan performance specifications

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Commissioning Step #4 (Cont'd)

FXMQ_P / FXSQ_TA '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 that Field Setting 11(21) 7-03 has changed to 11(21) 7-02, this indicates successful completion of Auto Airflow Adjustment

Mode No.	First Code No.	Setting contents
11 (21)	7	Airflow adjustment

Second Code No.		
01	02	03
OFF	Completion of airflow adjustment	Start of airflow adjustment

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

NOTE: All ductwork must be fully installed, sealed and air filters in place before initiating this field setting

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Commissioning Step #4 (Cont'd)

FXMQ_P 'Manual Static Adjust'

- Specific static pressure can be programmed based on the static pressure codes provided for the specific FXMQ_P capacity model
- Static pressure codes are listed in the Installation Manual
- Codes which do not apply to a specific capacity model are not selectable
- Field Setting Code: 13(23) 06 - ##
- 'Auto Adjust' must be OFF 11(21)7-01

External Static Pressure	Mode No.	First Code No.	Second Code No.
0.12" WG	13 (23)	06	01
0.20 " WG			02
0.24" WG			03
0.28" WG			04
0.32" WG			05
0.36" WG			06
0.40" WG			07
0.44" WG			08
0.48" WG			09
0.52" WG			10
0.56" WG			11
0.60" WG			12
0.64" WG			13
0.72" WG			14
0.80" WG			15

NOTE: Always refer to the fan coil Installation Manual for setting codes and any restrictions

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Commissioning Step #4 (Cont'd)

FXSQ_TA 'Manual Static Adjust' Models 05-54k BTU's

- Specific static pressure can be programmed based on the static pressure codes provided for the specific FXSQ_TA capacity model
- Static pressure codes are listed in the Installation Manual
- Codes which do not apply to a specific capacity model are not selectable
- Field Setting Code: 13(23) 06 - ##
- 'Auto Adjust' must be OFF 11(21)7-01

External Static Pressure	Mode No.	First Code No.	Second Code No.
0.12" WG	13 (23)	06	03
0.16 " WG			04
0.20" WG			05
0.24" WG			06
0.28" WG			07
0.32" WG			08
0.36" WG			09
0.40" WG			10
0.44" WG			11
0.48" WG			12
0.52" WG			13
0.56" WG			14
0.60" WG			15

NOTE: Always refer to the fan coil Installation Manual for setting codes and any restrictions

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Commissioning Step #4 (Cont'd)

FXDQ 'High Static Adjust'

- 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

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

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Commissioning Step #4 (Cont'd)

FXFQ_T& FXUQ_P 'Ceiling Height Setting'

- To ensure 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 ceiling 1, 03 = High ceiling 2

Setting	Ceiling height [ft (m)] FXFQ-TVJU 07-09-12-15-18-24 type	30-36-48 type	Mode No.	First Code No.	Second Code No.
Standard	≤ 8 - ¾ (≤ 2.7)	≤ 10 - ½ (≤ 3.2)	13 (23)	0	01
				0	01
High ceiling[1]	8 ¾ - 10 (2.7 - 3.0)	10 ½ - 12 (3.2 - 3.6)	13 (23)	0	02
				0	02
High ceiling[2]	10 - 11 ½ (3.0 - 3.5)	12 - 13 ¾ (3.6 - 4.2)	13 (23)	0	03
				0	03

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Commissioning Step #4 (Cont'd)

FXFQ_T, FXZQ_TA & FXUQ_ P Air Discharge Settings

- When the 4-way ceiling cassettes require changes to the discharge positions to 2-way or 3-way, a field setting change is required along with the blank-off kit (*FXFQ_T& FXUQ_P can only do 3 way position no 2 way position available)
- To change the factory default setting of 4-way discharge 13(23) 1-01, it must be programmed at the remote controller
- Go to Field Setting 13(23) 1, and change the second code: 02 = 3-way, 03 = 2-way
- On FXFQ_T & FXUQ_P to change Flap moving settings on swing mode from Two opposite flaps synchronized (factory default) to All 4 flaps synchronized , use field setting 13(23) 2-1.

Mode No.	First Code	Setting Contents	Second Code No.			
			01	02	03	04
13(23)	1	Selection of airflow direction	F (4 directions)	T (3 directions)	W (2 directions)	-
13 (23)	2	Flap moving in swing mode (FXFQ-T model only)	All 4 flaps synchronized	–	Two opposite flaps synchronized	-

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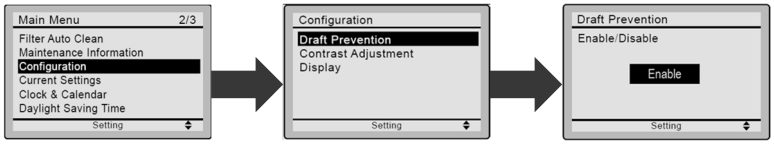
Commissioning Step #4 (Cont'd)

FXFQ_TVJU & FXUQ_PVJU Draft Prevention Settings

- When occupants are detected by the occupancy sensor, the Draft Prevention function prevents cool or hot air from being blown directly on them.
- To activate Draft Prevention:



- To Disable or change sensitivity of Occupancy sensor use the following field settings:

	Mode No.	First Code	Setting Contents	Second Code No.			
				01	02	03	04
	11(21)	6	Sensitivity of Occupancy sensor	High	Low	Standard	Sensor Doesn't Work

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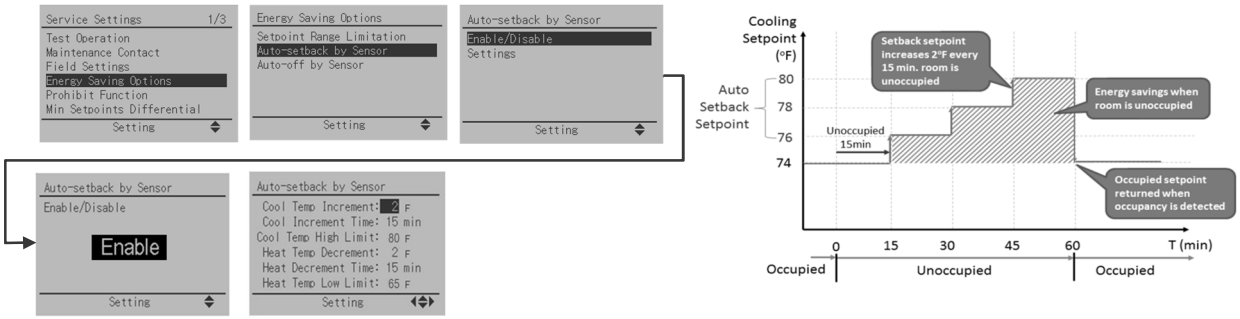
Commissioning Step #4 (Cont'd)

FXFQ_TVJU & FXUQ_PVJU Auto Setback Settings

- The Auto Setback by sensor function is designed to gradually relax the cooling and heating setpoints (configurable) internally when the room is determined to be unoccupied.
- To configure Auto Setback :



NOTE: The setpoint change will not be displayed on the BRC1E73 (Navigation R/C), (iTM), (iTC), (BACnet Interface) or (LonWorks Interface). The internal setpoint will return to the original setpoint when room occupancy is detected.

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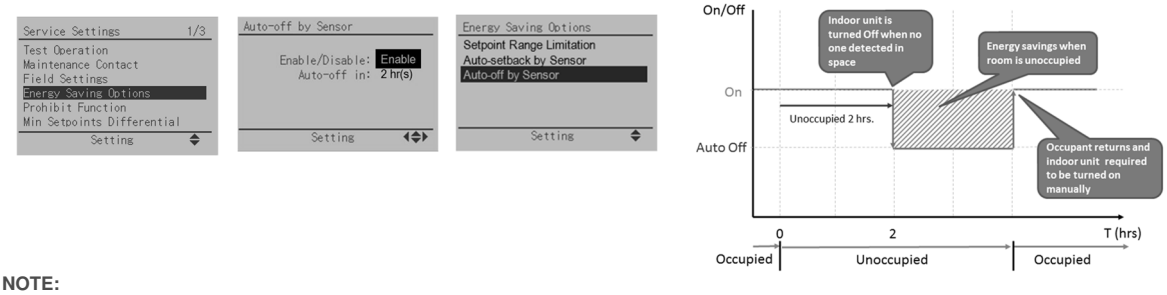
Commissioning Step #4 (Cont'd)

FXFQ_TVJU & FXUQ_PVJU Auto-off by Sensor

- The indoor unit will turn off when it is determined that the room is unoccupied after a specified time has elapsed. The indoor unit will have to be turned on manually when occupancy is detected.
- To configure Auto-off by sensor :



NOTE:

1. The Auto-Off by Sensor function may be used in conjunction with the Auto-setback by Sensor function.
2. The presence sensor senses every second to determine if the room is occupied.
   Example: An occupant is detected 13 times within 50 seconds , Sensitivity % = [13 / 50] x 100 = **26%**
3. To check Occupancy sensor value: Go to Maintenance menu /Addressed sensor value, sensor value displayed under data, use code: 22 (sensor 1) - 23 (sensor 2) -24 (sensor 3) -25 (sensor 4)

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Commissioning Step #4 (Cont'd)

FXFQ_TVJU & FXUQ_PVJU Floor Sensor Settings

- The Floor Temperature Sensor is used to maintain an even and comfortable temperature distribution from the floor to the ceiling.
- Recommended Floor Sensor Settings

#	Sensor used by Indoor unit to maintain the room temperature around the setpoint	To use selected sensor temp for Indoor unit control	To send selected sensor temp to ITM/ITC and BACnet/LON Interface	To display selected sensor temp on NAV
1	Return air sensor primary, NAV sensor secondary when return air temp is close to the setpoint	10(20)-2-01 11(21)-8-01 (Disable floor sensor)	10(20)-5-01/02 (Return air temp is always sent) 10(20)-8-01	1c-1-01 (Return air temp is always displayed)
2	Return air sensor	10(20)-2-02 11(21)-8-01 (Disable floor sensor)	10(20)-5-01/02 10(20)-8-01	1c-1-01
3	NAV sensor	10(20)-2-03 11(21)-8-01 (Disable floor sensor)	10(20)-5-02 10(20)-8-02 (Disable sensor offset)	1c-1-02
4	Compensation of temperature around human body (Weighted average between return air temp and floor temp)	11(21)-8-02/03/04 (Floor sensor is prioritized over 10(20)-2 setting)	10(20)-5-02 10(20)-8-01	1c-1-01

	Mode No.	First Code	Setting Contents	Second Code No.			
				01	02	03	04
	11(21)	8	Compensation of Temperature around human body	Floor Sensor doesn't work	Higher priority on return air temp	Standard	Higher priority on the floor temp

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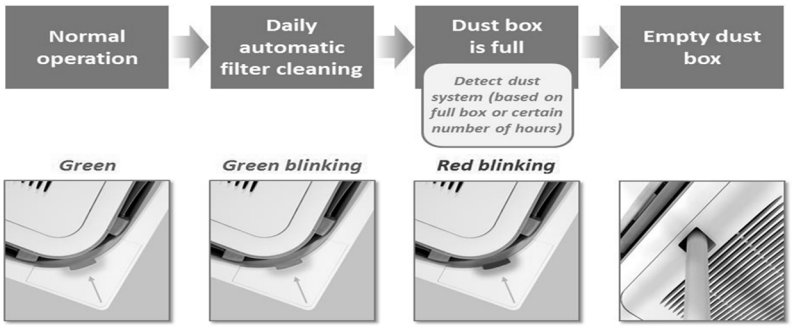
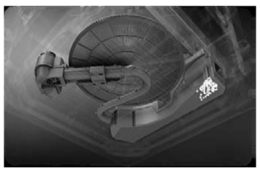
Commissioning Step #4 (Cont'd)

FXFQ_TVJU Self Cleaning Filter Panel (part# BYCQ125BGW1)

- To enable the Self-cleaning Filter function:
  - Ensure the clock on the BRC1E73 has been set.
  - From the Main Menu 'Filter Auto Clean' menu item.
  - Select the time period for operation (8 periods are available) of the Filter Auto Clean function, default period is 00:00 to 3:00.
- The panel indicator (LED) can display the following conditions
- Unit shuts off during cleaning





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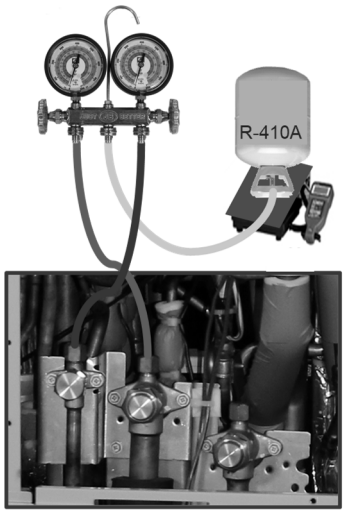
Commissioning Step #5

Additional Refrigerant Charge Mode

- The 'Additional Refrigerant Charge Mode' is used when there is not enough negative pressure from the final evacuation cycle to completely charge the system
- Initiate the 'Additional Refrigerant Charge Mode' at the OD Unit Control PCB
- Charge remainder through suction line with unit running in additional charge mode
  - Do not exceed 2.2 lbs/minute



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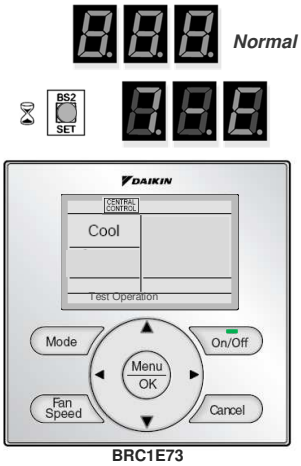
Commissioning Step #6

Test Operation Mode

- Every new *VRV* system must successfully complete Test Operation for normal system operation
- A U3 error code will be generated if Test Operation is not successfully completed
- All Remote Controllers must be switched off before initiating Test Operation mode or a U3 error code will be generated
- Press and hold the BS2 'SET' button for approximately 6 seconds to start Test Operation Mode
- The NAV Remote Controllers will indicate CENTRAL CONTROL and 'Test Operation' with system status LEDs ON solid
- All function buttons are disabled



BRC1E73

NOTE: Test Operation Mode runs in cooling only

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Commissioning Step #6 (Cont'd)

Test Operation Mode

Test Operation Start - Pressure Equalization

Cooling Start up

Cooling Operation Stabilized

Communications Check

Stop Valve Check

Refrigerant Piping Length Check

Refrigerant Charge Check

Test Operation Complete - Unit Stop

System Normal Status

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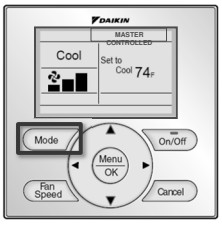
Commissioning Step #7

- Configure Remote Controller Changeover Master
  - 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 BRC1E73 (NAV Remote) as a Master
    - Press any button to bring on the display back light
    - The MASTER CONTROLLED icon will be flashing on all NAV remote controllers
    - Press the 'Mode' button once and the Icon will disappear on the Master
    - All other NAV Remote Controllers will display MASTER CONTROLLED solid
  - To configure a BRC1H71 (Madoka)
    - Follow QR Code instructions on the following slides!

MASTER

BRC1E73 NAV Remote



MASTER

BRC1H71 Madoka

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Daikin Madoka Remote Controller Technical Training

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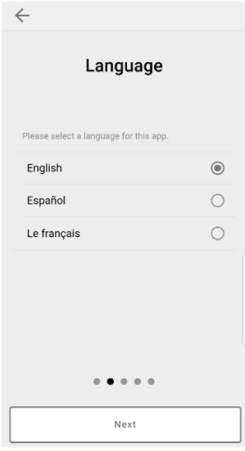
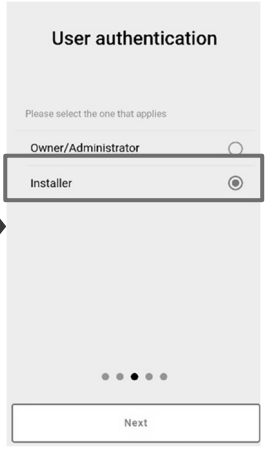
Commissioning – App Overview

- App Setup: Required at first time only:
  - Language
  - Set User Mode: Installer or Admin

Clear App Data from phone to reset the App to default so Installer or Admin access can be changed.





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Installer Access

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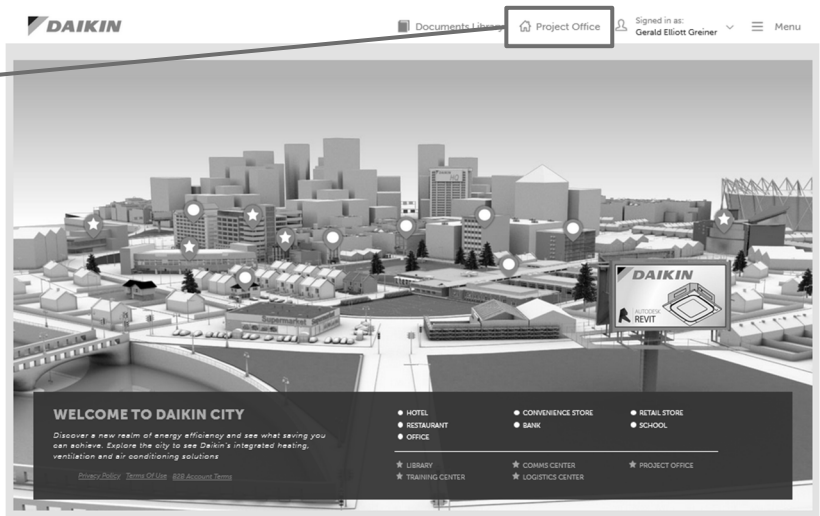
QR Code for Installer Mode

- Go to Daikin City (https://www.daikincity.com)
- Click Project Office



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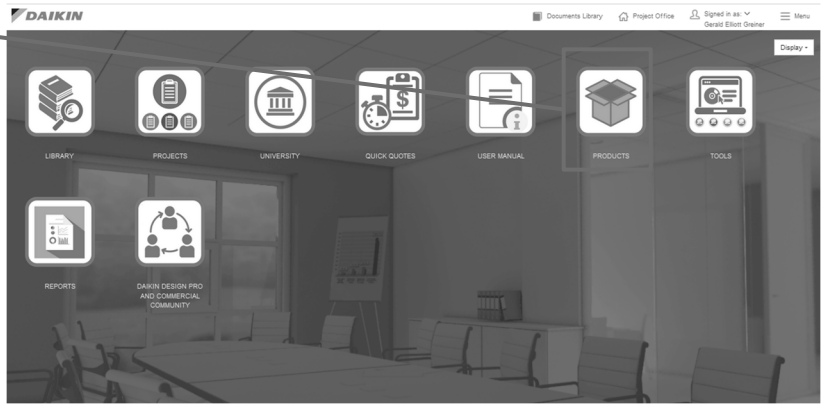
QR Code for Installer Mode

- Click the Products icon



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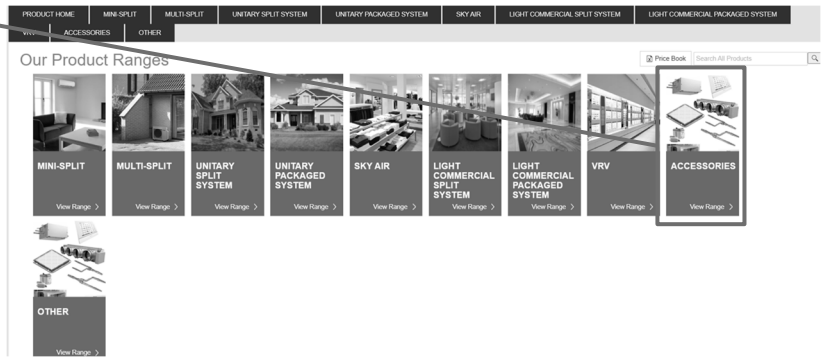
QR Code for Installer Mode

- Click the Accessories icon



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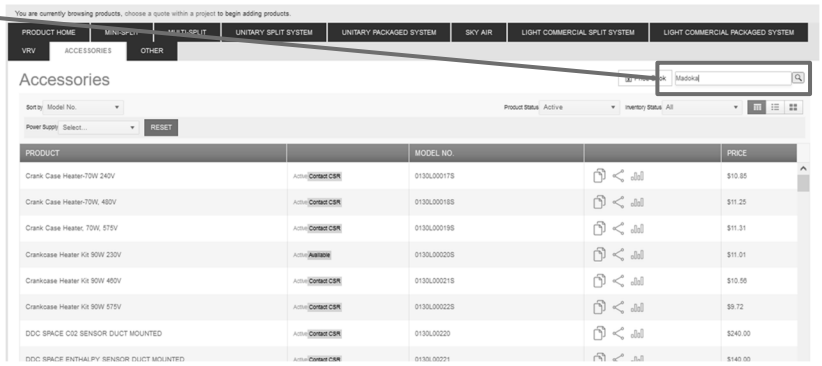
QR Code for Installer Mode

- Search for the term “Madoka”



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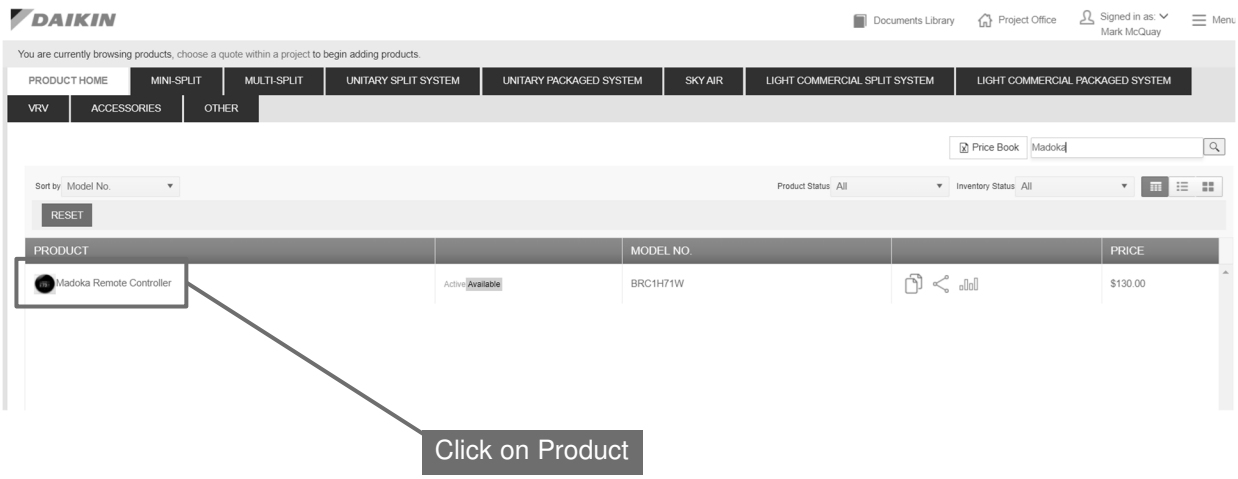
QR Code for Installer Mode



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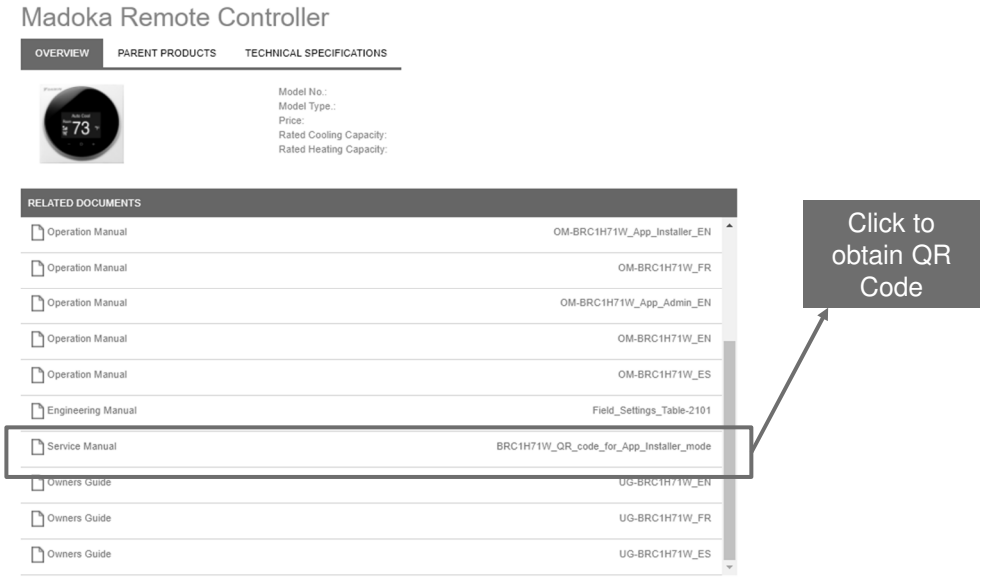
QR Code for Installer Mode



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QR Code for Installer Mode

- Clicking the link opens a PDF with the QR Code.

QR code for Installer mode of BRC1H61W/K, BRC1H71W App

Version	Authentication Code Character String
1.0.0	LdBizyJkCUKumU5XGxZpuEsAn2aboLizE4gdK9Hv

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Commissioning Step #7 (Cont'd)

Configure Hand-held Wireless Remote Controller Master

- On power up of indoor units, all 'Master Controlled' icons will be flashing on wired controllers ONLY. Wireless controllers will NOT display an icon
- Go to the wireless controller you want set as the Master and while pointing the wireless controller at the fan coil wireless receiver
  - Press and hold the 'MODE' button for approximately 4 seconds . You will hear 'BEEP BEEP' then another 'BEEP BEEP'
- To change the Master to different zone, go to the Master wireless controller and hold 'MODE' button for 4 seconds. Listen for the 'BEEP BEEP'
- Go to another remote and press 'MODE' button

Wireless Hand-Held Remote Controller

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Agenda

VRV IV-X & *VRV EMERION* System Components

Outdoor Unit Layout

Pre-commissioning Checks

System Commissioning Steps

Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs

Additional Remote Controller Field Settings

Selected Field Settings - Outdoor Units

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Commissioning Step #8

Additional Field Settings for Commissioning

- To complete the basic system commissioning procedures, any remaining field settings can now be programmed
- Indoor Fan Coil Units (Examples)
  - Navigation Remote Controller sensor priority
  - Navigation Remote Controller Auto-changeover enable
  - T1 T2 Forced Off
  - O.A. Processor H&C supply temperature set
  - Fan 'Auto' configuration (Ref: Field Setting compatibility chart)
  - Fan Coil power louver(s) position set
- Selected field settings for (Master) Outdoor Unit
  - Refrigerant Recovery & Evacuation Mode
  - Additional Refrigerant Charge Mode

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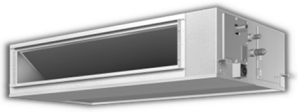
Commissioning Step #8 (Cont'd)

Indoor Temperature Sensor Priority

- The controlling sensor can be re-assigned from the factory default with a field setting to accommodate specific applications
  - Only the return air or remote sensor is used
  - Only the remote controller thermistor is used



Description	Mode No.	1st Code No.	2nd Code No.
Priority of thermistor sensors for space temperature control	10(20)	2	01 - The fan coil RA thermistor is primary and the remote controller thermistor is secondary (Default)
	10(20)	2	02 - Only the RA thermistor is used
	10(20)	2	03 - Only the remote controller thermistor will be utilized

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Commissioning Step #8 (Cont'd)

Remote Controller Auto-changeover Enabled

- For the BRC1E73 Navigation Remote Controller to control automatic changeover based on the selectable parameters, this function must be enabled with a field setting
  - Automatic changeover is controlled by the connected fan coil as a factory default
  - The fan coil-controlled auto changeover uses a fixed dead band of 9°
- To enable Auto-changeover in the BRC1E73 change the field setting from 1e 4-01 to 1e 4-02
- If a Centralized controller is applied, auto changeover should be configured by it

Description	Mode No.	1st Code No.	2nd Code No.
Schedule & Auto-changeover enabled when Multizone controller is detected	1e	4	01=NO Default 02=YES

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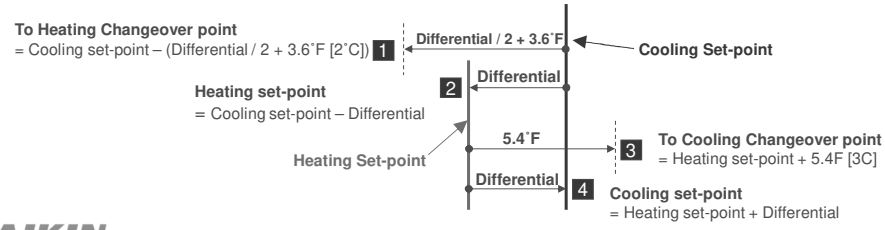
Sequence of Operation

Auto mode in Heat Recovery System

- Combination of Cooling and Heating mode operation
- Changeover is determined by the setpoint in the current mode and the differential
- The differential that can be set 0°F [0°C] to 12.6°F [7C] with 1.8°F [1°C] basis, and it is configured by indoor unit field setting, and 0F is set as a default.

1. In the Auto mode, the *VRV* indoor unit changes over its operation mode to the heating mode from the cooling mode when room temperature goes down Differential / 2 + 3.6°F [2°C] below the cooling set-point.
2. At that time, the heating setpoint is set at the cooling setpoint minus Differential.
3. It also changes over to the cooling mode from the heating mode when the room temperature goes up 5.4°F [3°C] above the heating setpoint.
4. And the cooling setpoint is set at the heating setpoint plus Differential.



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Gas Furnace test Operation from the Nav Controller

1. Complete installation process, including heat pump system, has been done.
2. Test operation of heat pump system has been successfully completed.
3. Turn off remote controller connected to CXTQ.
4. Change the setting according to the following table.
5. Turn on remote controller connected to CXTQ.

Mode No.	First Code Number	Second Code No.	Gas furnace test mode
14 (24)	11	01	OFF
		02	Low Heat
		03	High Heat

6. If running, the compressor will be forced to stop during this test. Shortly after the compressor stops, the gas furnace will begin test operation. The time between compressor shut-down and gas furnace startup can take up to 15 minutes depending on operational conditions of the compressor.
7. The gas furnace will operate with selected heat stage.
8. This test operation will stop automatically after 30 minutes or when the remote controller is turned off.

Note:
- Heat pump operation is not allowed during the test operation.
- When the heat pump is in service mode (test mode, pump down mode, refrigerant charge mode, etc.), this gas furnace test will not start.
- This setting will be returned to factory setting automatically after finishing test operation.

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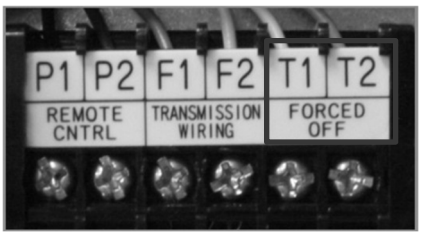
Commissioning Step #8 (Cont'd)

T1 T2 Forced Off - ON/OFF

- T1 T2 'Forced Off' is the factory default with dry contacts configured for N.O. - Manual Reset operation
- The dry contact configuration can be reconfigured with a field setting for
  - Motion sensor, etc. for Start-Stop operation
  - 2nd Code 02 = ON/OFF operation (Start-Stop)



External Input	Mode No.	1st Code No.	2nd Code No.
Forced Off (default)	12(22)	1	01 - Contacts N.O. Manual Reset
ON/OFF Operation	12(22)	1	02 - Contacts closed=ON Contacts open=OFF

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Commissioning Step #8 (Cont'd)

T1 T2 Forced Off – External Protection Device

- When any fan coil unit with an optional condensate pump is using T1-T2 for safety shut-down, a field setting is required to reconfigure the operation at that fan coil from 'Forced Off' to 'External Protection Device'
- The T1-T2 field setting 12(22) 1-01 must be changed to 12(22) 1-03 which changes the T1-T2 control configuration to N.C. contacts with 'auto reset'
- Connected remote controller generates an 'A0' error code with unit shut down and remaining fan coils in system generate a 'U9' error code with constant fan operation only
- If the T1-T2 field setting is not changed, the connected remote controller will indicate a CENTRAL CONTROL icon and cannot be turned on

Description	Mode No.	1st Code No.	2nd Code No.
Indoor unit T1-T2 input	12(22)	1	01=Forced Off (Default)
	12(22)	1	03=External Protection Device

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Commissioning Step #8 (Cont'd)

FXMQ_MF O.A. Processor Discharge Temperature Setting

- This unit is controlled from a dedicated BRC1E73 remote controller
- Field setting codes are provided to set specific Heat and Cool discharge temperatures
  - Default Heat: 77°F
  - Default Cool: 64°F

		for Cooling	for Heating
Mode No.		14 (24)	14 (24)
First Code No.		3	4
Second Code No.	01	55°F	64°F
	02	57°F	66°F
	03	59°F	68°F
	04	61°F	70°F
	05	63°F	72°F
	06	64°F	73°F
	07	66°F	75°F
	08	68°F	77°F
	09	70°F	79°F
	10	72°F	81°F
	11	73°F	82°F
	12	75°F	84°F
	13	77°F	86°F

NOTE: The remote controller will not display temperatures or fan speed

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Commissioning Step #8 (Cont'd)

VRV Fan 'AUTO' Configuration

- The *VRV* fan coils operate with constant fan operation in Thermo-ON and Thermo-OFF cycles (Default)
- Heat mode fan speed shifts to LL (low-low) in Thermo-OFF cycle
- Cool mode fan speed is user set for both Thermo-ON and Thermo-OFF cycles
- Fan operation in the Thermo-OFF cycle can be reprogrammed with a field setting depending on the fan coil model and manufacture date.
- See Indoor Unit Field Setting Availability Chart

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

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

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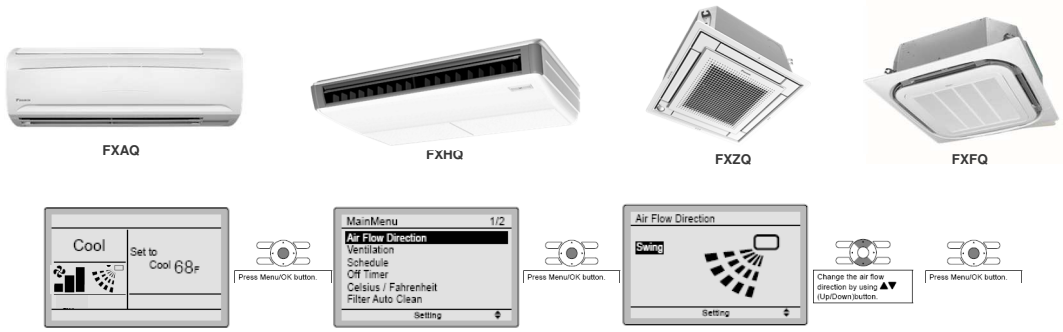
Commissioning Step #8 (Cont'd)

Power Louver Operation

- The *VRV* ductless fan coils with powered louvers can be programmed for discharge angle
  - Factory default operation: Louvers oscillate up and down when the fan coil is ON
  - Specific Louver angle can be set from the BRC1E73 remote controller or iTouch Manager
  - Louvers are programmed from the Main Menu when using the BRC1E73 Remote Controller



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Commissioning Step #9

Commissioning Completion

- Before any installation is considered complete, the *VRV IV-X* and *VRV EMERION* systems should be operated in the cool and heat modes, ambient temperature permitting, to insure proper operation from each zone in the system
- Any multi-zone control system should be configured and programmed after the *VRV IV-X* and *VRV EMERION* system(s) are fully operational with no errors
- Copies of the *VRV IV-X* and the *VRV EMERION* system IOM's should be available at the jobsite for future reference
- An updated copy of the *WebXpress* piping report should be made a part of the system 'As-built' documents

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Agenda

VRV IV-X & *VRV EMERION* System Components

Outdoor Unit Layout

Pre-commissioning Checks

System Commissioning Steps

Selected Field Settings - Outdoor Unit with Ducted Discharge Air & IDUs

Additional Remote Controller Field Settings

Selected Field Settings - Outdoor Units

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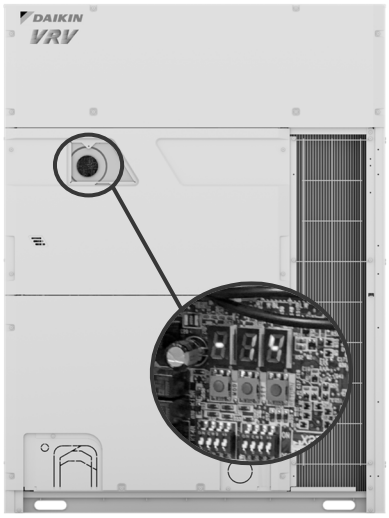
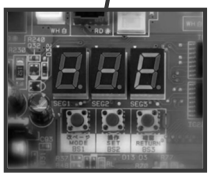
Ease of Service and Operational Checks *VRV EMERION* & *VRV IV-X*





- Easy service window access for commissioning and troubleshooting
- Eliminates need for removing entire panel
- Multi-functional display provides operating refrigerant pressures and temperatures
- No need to connect gauges for regular maintenance checks

Display item	Unit
Operation Pressure (High/Low)	psi
Expansion valve opening	pulse
Thermistor temperature (Suction, Discharge, Gas, Liquid and so on.)	°F

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Outdoor Unit Field Settings Mode 1

Please refer to Service Manual for complete settings

The following Mode 1 settings are new with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
1-0	Shows Whether the unit you are checking is Master or Slave 1
1-1	Shows the Status of Night-time Low Noise Operation
1-2	Shows the Status of Power Consumption Limitation Operation
1-5	Shows the Current Te Target Parameter Position
1-6	Shows the Current Tc Target Parameter Position
1-10	Shows the Total Number of Connected Indoor Units
1-13	Shows the Total Number of Connected Outdoor Units
1-17	Shows the Latest Error Code
1-18	Shows the Second Last Error Code

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Outdoor Unit Field Settings Mode 1 Please refer to Service Manual for complete settings

The following Mode 1 settings are new with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
1-19	Shows the third Last Error Code.
1-35	Shows the Latest Prediction Code. **New for *VRV EMERION***
1-36	Shows the Second Latest Prediction Code. **New for *VRV EMERION***
1-37	Shows the Third Latest Prediction Code. **New for *VRV EMERION***
1-40	Shows the current Cooing Comfort Setting.
1-41	Shows the current Heating Comfort Setting.
1-42	Shows the current High Pressure Sensor Value. (PSI)
1-43	Shows the current Low Pressure Sensor Value. (PSI)
1-44	Shows current compressor speed. (Hz)

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Outdoor Unit Field Settings Mode 1 Please refer to Service Manual for complete settings

The following Mode 1 settings are new with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
1-45	Shows the current EEV (Heat Exchanger Upper) opening (Pulse Multiplied by 10).
1-46	Shows the current EEV (Heat Exchanger Lower) opening (Pulse Multiplied by 10).
1-47	Shows the current Compressor #1 discharge thermistor Value (F°)
1-48	Shows the current Compressor #2 discharge thermistor Value (F°) **New for *VRV EMERION***
1-49	Show the current Compressor #1 body Thermistor Value (F°).
1-50	Shows the current Outdoor Air thermistor value (F°).
1-51	Shows the current Compressor Suction thermistor Value (F°).
1-52	Shows the Current Subcooling Gas Thermistor Value. (F°)
1-53	Shows the current Heat Exchanger Gas (Upper) thermistor value (F°).

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Outdoor Unit Field Settings Mode 1 Please refer to Service Manual for complete settings

The following Mode 1 settings are new with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
1-54	Shows the current Heat Exchanger Gas (Lower) thermistor value (F°).
1-55	Shows the current Deicer (Right) thermistor value (F°).
1-56	Shows the current compressor run time (Multiply by 100).
1-57	Show the current Sub-Cooling of (Heat Exchanger Right) (F°). **New for *VRV EMERION***
1-58	Shows the current EEV (Heat Exchanger Left) opening (Pulse Multiplied by 10) **New**
1-59	Shows the current subcooling of (Heat Exchanger Left) (F°) **New for *VRV EMERION***
1-60	Shows the current Compressor #2 Body thermistor value. (F°) **New for *VRV EMERION***
1-61	Shows the current subcooling liquid thermistor value (F°) **New for *VRV EMERION***

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Outdoor Unit Field Settings Mode 1 Please refer to Service Manual for complete settings

The following Mode 1 settings are **NEW** with the *VRV EMERION*

Mode	Description
1-62	Shows the current Suction Pipe thermistor value (F°).
1-63	Shows the current Receiver inlet thermistor value (F°).
1-64	Shows the current Heat Exchanger Liquid (Upper) thermistor value (F°).
1-65	Shows the current Heat Exchanger Liquid (Lower) thermistor value (F°).
1-66	Shows the current Heat Exchanger Liquid (Left) thermistor value (F°).
1-67	Shows the current Deicer (Left) thermistor value (F°).
1-68	Shows the current Heat Exchanger Gas (Left) thermistor value (F°).
1-69	Shows the Compressor Average Load.

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Outdoor Unit Field Settings Mode 1 Please refer to Service Manual for complete settings

The following Mode 1 settings are **NEW** with the *VRV EMERION*

Mode	Description
1-70	Shows the current Receiver Gas Purge thermistor Value (F°)
1-71	Shows the current Subcooling Injection thermistor Value (F°)
1-72	Shows the current Electrical Components Box thermistor Value (F°)
1-73	Shows the current Cooling Jacket Outlet thermistor value (F°)

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Outdoor Unit Field Settings Mode 2 Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-0	Heat / Cool Selection
2-2	Low Noise / Demand Address
2-5	Indoor Fan Forced High
2-6	Forced Thermostat
2-7	Eco Level Setting for Eco Mode Via External Control Adapter, **New for *VRV EMERION***
2-8	Te Setting (Cooling Operation)
2-9	Te Setting (Heating Operation)
2-10	The Heating Capacity cut offset temperature setting. **New for *VRV EMERION***

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Outdoor Unit Field Settings — Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-12	External Low Noise Setting / Demand Setting
2-13	Airnet Address Setting for outdoor unit
2-16	Heat Pump Lockout 1
2-18	High ESP setting Fan
2-19	Phased Installation Setting **New for *VRV EMERION***
2-20	Additional Charge Mode for *VRV*
2-20	Additional Charge Mode / Wrong wiring at BS Box. **New for *VRV EMERION***
2-21	Refrigerant Recovery Mode

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Outdoor Unit Field Settings — Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-22	Automatic Night-Time Low Noise Operation
2-25	External Low Noise Level
2-26	Automatic Night-time low Noise operation start
2-27	Automatic Night-time low Noise operation stop
2-28	Power Transistor Check
2-29	Intermittent Fan Operation **New for *VRV EMERION***
2-30	Demand 1 Setting
2-31	Demand 2 Setting

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Outdoor Unit Field Settings — Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-32	Normal Demand Setting
2-34	Indoor fan tap setting
2-35	Outdoor >40m (130ft) below indoor
2-37	Heat Pump Lockout 2
2-38	Emergency Operations Master
2-39	Emergency Operation Sub 1 *VRV IV-X* or Sub on *VRV EMERION*
2-40	Emergency Operation Sub 2 *VRV IV-X*
2-42	Outdoor Fan
2-45	Low Ambient Cooling

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Outdoor Unit Field Settings — Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-47	Te setting (Heat recovery operation)
2-49	Outdoor > 50 m (164 ft) above indoor / **110m (361 ft) for *VRV EMERION***
2-51	Sequence multi outdoor
2-60	Gas Furnace Setting
2-62	Cooling/Heating capacity learning control
2-64	Eco Mode Invalid setting **New for *VRV EMERION***
2-71	Branch Selector Switching Time
2-78	Heat Pump Lockout Temperature

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Outdoor Unit Field Settings

Please refer to Service Manual for complete settings

The following Mode 2 settings are available with the *VRV EMERION* & *VRV IV-X* systems

Mode	Description
2-79	Heat Pump Lockout Release Differential
2-81	Colling Comfort Setting
2-82	Heat Comfort Setting
2-89	Intermittent Fan *VRV IV-X*
2-90	Indoor Unit Without Power
2-92	Te Target Temperature Upper Limit
2-97	Auxiliary Heater Maximum Allowable Temperature
2-98	Auxiliary Heater Maximum Allowable Temperature Release Differential

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Outdoor Unit Field Settings

VRV IV-X Main Operation Modes: Auto Mode

- In this mode the refrigerant temperature is set depending on outdoor ambient conditions.
- The temperature is adjusted to match the required load.
  - As the outdoor temperature drops the refrigerant temperature will be increased in Cool mode.
  - In Heat mode as the outdoor temperature increases the refrigerant temperature will be lowered.
- The *VRV IV-X* is set to this mode from the factory. The settings will be 2-8-0 for Cool mode and 2-9-0 for Heat mode.

8	**Te setting**	Used to make setting of targeted evaporating temperature for cooling operation	2	0	8	**Auto (43-52°F) Default** Low level = 37°F Standard = 43°F High Sens. = 45°F High Sens. = 46°F High Sens. = 48°F High Sens. = 50°F High Sens. = 52°F	**0** 1 2 3 4 5 6 7
9	**Tc setting**	Used to make setting of targeted condensing temperature for heating operation	2	0	9	**Auto (100-120°F) Default** Low = 106°F Normal = 109°F High = 115°F	**0** 1 3 6

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Outdoor Unit Field Settings

VRV IV-X Main Operation Modes: Basic

- Same operation that is in *VRV-IV-X*. The refrigeration temperature is fixed and does not change depending on the situation.
- Operation is selected in Mode 2-8 for Cooling and Mode 2-9 for Heating.
  - Cooling Mode(Te): select 2-8-2 for Basic operation.
  - Heating Mode(Tc): select 2-9-6.

8	**Te setting**	Used to make setting of targeted evaporating temperature for cooling operation	2	0	8	Auto (43-52°F) Default Low level = 37°F **Standard = 43°F** High Sens. = 45°F High Sens. = 46°F High Sens. = 48°F High Sens. = 50°F High Sens. = 52°F	0 1 **2** 3 4 5 6 7
9	**Tc setting**	Used to make setting of targeted condensing temperature for heating operation	2	0	9	Auto (100-120°F) Default Low = 106°F Normal = 109°F **High = 115°F**	0 1 3 **6**

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Outdoor Unit Field Settings

VRV IV-X Main Operation Modes: Hi-Sensible/Economic Mode

- Refrigerant temperature is set higher/lower compared to the basic operation.
- Focus under high sensible mode is comfort level for the customer.
- When selecting indoor units that will use the high sensible mode, considerations must be taken into account as the available capacity is not the same as in basic mode.
- To select High sensible in Cooling use mode 2-8 3 thru 7.
- To select High sensible in Heating select mode 2-9-1 or 3.

8	**Te setting**	Used to make setting of targeted evaporating temperature for cooling operation	2	0	8	Auto (43-52°F) Default Low level = 37°F Standard = 43°F **High Sens. = 45°F** **High Sens. = 46°F** **High Sens. = 48°F** **High Sens. = 50°F** **High Sens. = 52°F**	0 1 2 **3** **4** **5** **6** **7**
9	**Tc setting**	Used to make setting of targeted condensing temperature for heating operation	2	0	9	Auto (100-120°F) Default **Low = 106°F** **Normal = 109°F** High = 115°F	0 **1** **3** 6

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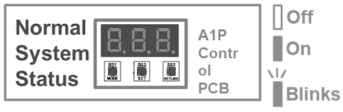
Outdoor Unit Field Settings



		Target Evaporator Te Setting	Target Condenser Tc Setting
1 Start with system in normal status display		Normal	
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE		
3 Press the BS2 **"SET"** button to select the correct setting: Te = **08**; Tc = **09**	BS2 SET		
4 Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = AUTO (**Te** 43-52ºF/**Tc** 100-120ºF) Defaults	BS3 RETURN	Default	
5 Press the BS2 **"SET"** button to change the Te temperature setting: Refer to temperature setting chart (Example "1")	BS2 SET		
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN		
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN		
8 Press the BS1 **"MODE"** button to terminate the operation and revert to normal system status	BS1 MODE	Normal	

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Outdoor Unit Field Settings

- With *VRV IV-X* and *VRV EMERION* there are also Comfort settings that can be made. These comfort settings will determine how quickly the system will achieve set temperature at the indoor units. There are 4 levels of Comfort settings:

Powerful | **Quick** | **Mild** | **Eco**

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Fan High Static Setting

1. System must be in **NORMAL** status — *Normal*
2. Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds
3. Press the BS2 **"SET"** button to code #18 to select the setting item (OD Fan High Static)
4. Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default) — *Default*
5. Press the BS2 **"SET"** button once to change the status from "0" = OFF to "1" = ON
6. Press the BS3 **"RETURN"** button once to lock the setting
7. Press the BS3 **"RETURN"** button once to activate the setting — *Outdoor Fan(s) now operating at .32" wg.*
8. Press the BS1 "MODE" button to terminate the operation and revert to normal system status

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

EMERION Phased Install Setting 2-19

1. System must be in **NORMAL** status — *Normal*
2. Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds
3. Press the BS2 **"SET"** button to code #19 to select the setting item (Phased installation setting)
4. Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default) — *Default*
5. Press the BS2 **"SET"** button once to change the status from "0" = OFF to "1" = ON
6. Press the BS3 **"RETURN"** button once to lock the setting
7. Press the BS3 **"RETURN"** button once to activate the setting
8. Press the BS1 "MODE" button to terminate the operation and revert to normal system status

00 – Normal Installation
01 – Single Module to Dual Module Installation

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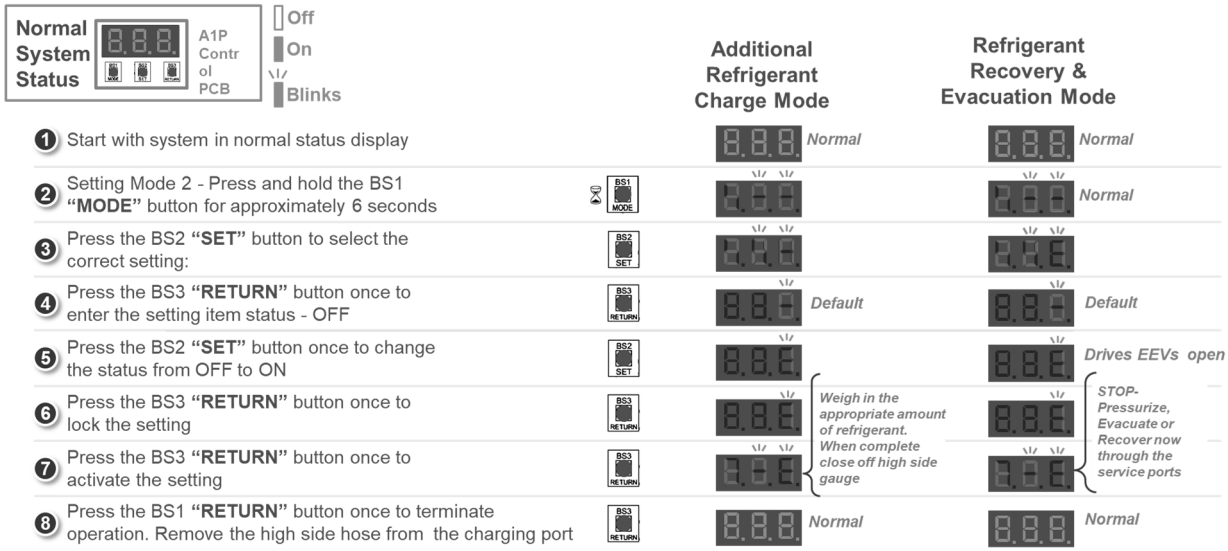
Outdoor Unit Field Settings Mode 2



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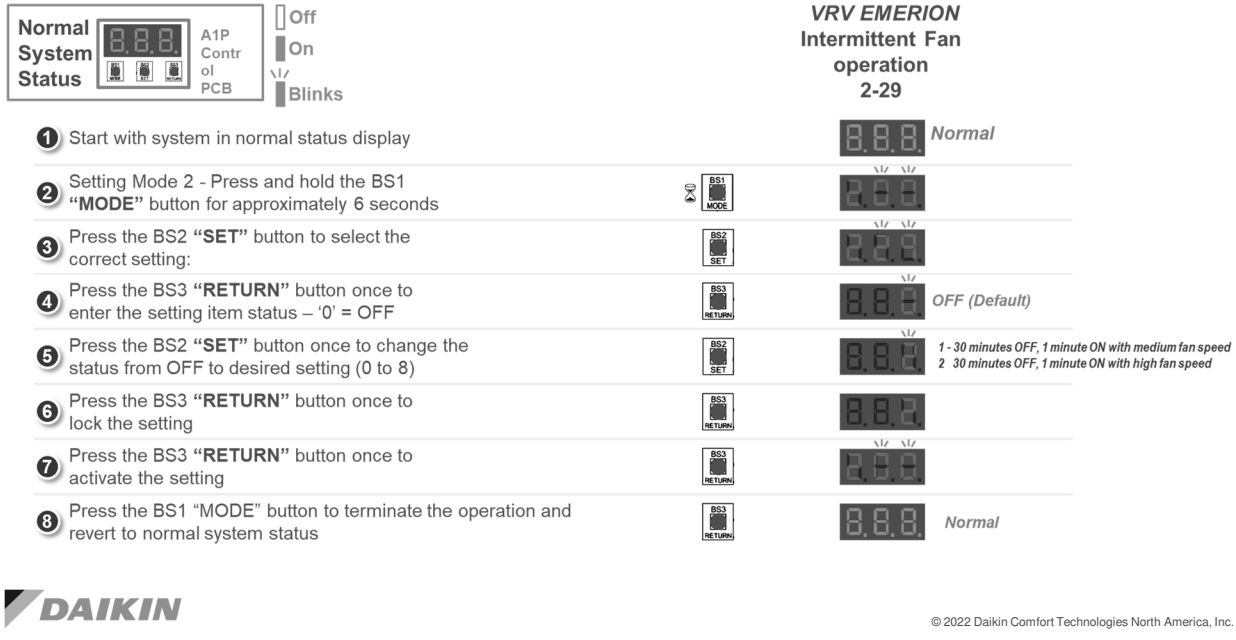
Outdoor Unit Field Settings Mode 2



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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

		Indoor Unit fan Speed - Connection Capacity
1 Start with system in normal status display		Normal
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3 Press the BS2 **"SET"** button to select the correct setting:	BS2 SET	
4 Press the BS3 **"RETURN"** button once to enter the setting item status – '0' = OFF	BS3 RETURN	OFF (Default)
5 Press the BS2 **"SET"** button once to change the status from OFF to desired setting (0 to 8)	BS2 SET	Example "2"
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	
8 Press the BS1 "MODE" button to terminate the operation and revert to normal system status	BS3 RETURN	Normal

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

		ODU Height Difference – ODU Below IDUs	ODU Height Difference – ODU Above IDUs
1 Start with system in normal status display		Normal	
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE		
3 Press the BS2 **"SET"** button to select the correct setting:	BS2 SET		
4 Press the BS3 **"RETURN"** button once to enter the setting item status:	BS3 RETURN		
5 Press the BS2 **"SET"** button to change the status code: "1" to "0" = ODU below IDUs; "0" to "1" = ODU above IDUs	BS2 SET		
6 Press the BS3 "**RETURN**" button once to lock the setting	BS3 RETURN		
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN		
8 Press the BS1 **"MODE"** button to revert to normal system status	BS1 MODE	Normal	

Note: Setting 35 only applies if separation exceeds 131 feet and Setting 49 only applies if separation exceeds 164 ft, or 361 ft for *VRV EMERION.*

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Gas Furnace Setting 2-60

1	System must be in **NORMAL** status		*Normal*
2	Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3	Press the BS2 **"SET"** button to code #60 to select the setting item (Gas Furnace Setting)	BS2 SET	
4	Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default)	BS3 RETURN	*Default*
5	Press the BS2 **"SET"** button once to change the status from "0" = OFF to "1" = ON	BS2 SET	*Changing to 1 tells the unit gas furnaces are connected*
6	Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7	Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	*Gas furnaces will not operate above outdoor amb. Temp that was set in field setting 2-97*
8	Press the BS1 "MODE" button to terminate the operation and revert to normal system status	BS1 MODE	

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Cooling and Heating Capacity Learning Control 2-62

1	System must be in **NORMAL** status		*Normal*
2	Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3	Press the BS2 **"SET"** button to code #62 to select the setting item (Cooling and Heating Capacity Learning Control)	BS2 SET	
4	Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default)	BS3 RETURN	*Default*
5	Press the BS2 **"SET"** button once to change the status from "0" = OFF to "desired setting	BS2 SET	*Cooling Adjustment 1* *Heating Adjustment 2* *Cooling and Heating Adjustment 3*
6	Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7	Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	*Capacity Learning Adjustment is now locked in.*
8	Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status	BS1 MODE	

Learning resets with power interruption or ± 5.4ºF from set point.

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Outdoor Unit Field Settings

Normal System Status — A1P Control PCB

Off
On
Blinks

		VRV IV-X Phased Installation Field Mode 2-64	VRV EMERION Eco mode invalid Field Mode 2-64
1 System must be in **NORMAL** status		Normal	Normal
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE		
3 Press the BS2 **"SET"** button to code #64 to select the setting item (Phased Installation)	BS2 SET		
4 Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default)	BS3 RETURN	Default	Default
5 Press the BS2 **"SET"** button once to change the status from "0" = Default; "1" = Single to Dual; 2 = Dual to Triple	BS2 SET	0 Normal Installation 1 Single module to dual module installation 2 Dual module to triple module installation	0 Eco Mode active 1 Te fix control 2 Tc fix control 3 Te & Tc fix control
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN		
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN		
8 Press the BS1 "MODE" button to terminate the operation and revert to normal system status	BS1 MODE		

This is only used for Phased installation (refer to WebXpress)

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

		Heat Pump Lockout Temperature Mode 2-78
1 System must be in **NORMAL** status		Normal
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3 Press the BS2 **"SET"** button to code #78 to select the setting item (Heat Pump Lockout Temp)	BS2 SET	
4 Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = minus 15°F default	BS3 RETURN	Default
5 Press the BS2 **"SET"** button the required number of times for the desired temperature setting	BS2 SET	
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	Heat pump lockout temp now set.
8 Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status	BS1 MODE	

-15°F (-26.1°C)	0
-10F (-23.3°C)	1
-5°F (-20.5°C)	2
0°F (-17.7°C)	3
5°F (-15°C)	4
10°F (-12.2°C)	5
15°F (-9.4°C)	6
20°F (-6.6°C)	7
25°F (-3.8°C)	8
30°F (-1.1°C)	9
35°F (1.6°C)	10
40°F (4.4°C)	11
45°F (7.2°C)	12
50°F (10°C)	13
Forced Heat Pump Lockout	14

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Heat Pump Lockout Release Diff. Mode 2-79

1. System must be in **NORMAL** status — *Normal*
2. Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds
3. Press the BS2 **"SET"** button to code #79 to select the setting item (Heat Pump Lockout Release Differential)
4. Press the BS3 **"RETURN"** button once to enter the setting item status - "1" = 10°F (Default) — *Default*
5. Press the BS2 **"SET"** button once to change the status from "1" = 10°F to "2" = 15°F to "0" = 5°F — *5°F (2.8°C) = 0*, *10°F (5.6°C) = 1*, *15°F (8.3°C) = 2*
6. Press the BS3 "RETURN" button once to lock the setting
7. Press the BS3 **"RETURN"** button once to activate the setting — *Heat Pump Lockout Diff. is now set.*
8. Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status

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Mode 2 Field Settings for Auxiliary Heater

Type		Description	Actions					
			Field Setting	Shorted Between	Heating Thermo-on		Heating Thermo-off	
					Aux Heater	Indoor Fan	Aux Heater	Indoor Fan
.		Heat Pump is always locked out	2-16=ON	–	ON	ON (H/L)	OFF	LL
II	Mode 1	Lockout is controlled by ABC terminals	2-37 = Mode 1	A-C	ON	ON (H/L)	OFF	LL
				B-C				OFF
	Mode 2 (for a heater which doesn't need airflow)		2-37 = Mode 2	A-C		LL		LL
				B-C		OFF		OFF
	Mode 3	Lockout is controlled by the outdoor ambient temperature and setpoint which is configured by the field setting 2-789 and 2-79	2-37 = Mode 3	Same as 2-37 = Mode 1 & A-C shorted				
	Mode 4		2-37 = Mode 4	Same as 2-37 = Mode 1 & B-C shorted				
	Mode 5		2-37 = Mode 5	Same as 2-37 = Mode 2 & A-C shorted				
	Mode 6		2-37 = Mode 6	Same as 2-37 = Mode 2 & B-C shorted				

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Comfort Level Setting Cooling Mode 2-81

1 System must be in **NORMAL** status		*Normal*
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3 Press the BS2 **"SET"** button to code #81 to select the setting item (Comfort Level Setting Cooling)	BS2 SET	
4 Press the BS3 **"RETURN"** button once to enter the setting item status - "1" = Mild (Default)	BS3 RETURN	
5 Press the BS2 **"SET"** button once to change the status from "1" = Mild to "2" = Quick to "3" = Powerful to "0" = Eco	BS2 SET	*Eco = 0* *Mild (Default) = 1* *Quick =2* *Powerful = 3*
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	
8 Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status	BS1 MODE	

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Outdoor Unit Field Settings Mode 2

Normal System Status — A1P Control PCB

Off
On
Blinks

Comfort Level Setting Heating Mode 2-82

1 System must be in **NORMAL** status		*Normal*
2 Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
3 Press the BS2 **"SET"** button to code #82 to select the setting item (Comfort Level Setting Heating)	BS2 SET	
4 Press the BS3 **"RETURN"** button once to enter the setting item status - "1" = Mild (Default)	BS3 RETURN	
5 Press the BS2 **"SET"** button once to change the status from "1" = Mild to "2" = Quick to "3" = Powerful to "0" = Eco	BS2 SET	*Eco = 0* *Mild (Default) = 1* *Quick =2* *Powerful = 3*
6 Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
7 Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	
8 Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status	BS1 MODE	

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Outdoor Unit Field Settings

Comfort Setting Level: Eco

- In this mode the original refrigerant temperature is kept, the one defined by the selected mode (Basic, Auto, or Hi-sensible).
- This mode will not affect any overshooting or undershooting of the refrigerant temperatures.
- For Cool mode select 2-81-0, for Heat mode select 2-82-0.

Value (2-81)	Cooling Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

Value (2-82)	Heating Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

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Outdoor Unit Field Settings

Comfort Setting Level: Mild

- This mode operates basically the same as Quick mode, controls to the same indoor coil temperatures, 43°F in Cool mode, 115°F in heat mode.
- The Mild mode will not engage as soon as the Powerful and Quick modes do. So, when the system first starts up it will operate in the mode set (Auto, Basic, and Hi-sensible) then perform the Mild function.
- The difference between Quick and Mild is when the operation begins. For Mild in cool mode select 2-81-1, for Heat mode select 2-82-1.
- The *VRV IV-X* systems come set in this mode as default.

Value (2-81)	Cooling Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

Value (2-82)	Heating Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

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Outdoor Unit Field Settings

Comfort Setting Level: Quick

- This mode performs the same as powerful mode but the refrigerant temperatures that the system will shoot for during Quick operation are 43°F for Cool mode and 115°F for Heat mode on the temporary basis.
- Just Like Powerful, when the difference between the room temperature and the set temperature are more moderate the system will begin to operate in whichever mode was selected (Auto, Basic, or Hi-sensible).
- For cooling mode select 2-81-2 and for Heating mode select 2-82-2

Value (2-81)	Cooling Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

Value (2-82)	Heating Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

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Outdoor Unit Field Settings

Comfort Setting Level: Powerful

- Allows an overshoot of refrigerant temperature in Heating mode and an undershoot of refrigerant temperature in Cool mode.
- When the system first starts up in cool mode the system will shoot for a 37°F evaporator refrigerant temperature on a temporary basis. In Heat mode the system will aim for a 120°F condenser refrigeration temperature.
- When the difference between the set temperature and the actual room temperature is more moderate the system will operate in whichever Operation mode was set (Basic, Auto, or High sensible).
- For Cooling Comfort settings select 2-81-3, in Heat Comfort settings select 2-82-3.

Value (2-81)	Cooling Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

Value (2-82)	Heating Comfort Setting
0	Eco
1	Mild (Default)
2	Quick
3	Powerful

Note: Powerful not used with Basic

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Outdoor Unit Field Settings

Normal System Status — A1P Control PCB

Off
On
Blinks

VRV IV-X
Intermittent Fan Operation for Snow Removal Mode 2-89

1. System must be in **NORMAL** status — *Normal*
2. Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds
3. Press the BS2 **"SET"** button to code #89 to select the setting item (Intermittent Fan Operation for Snow Removal)
4. Press the BS3 **"RETURN"** button once to enter the setting item status - "0" = OFF (Default)
5. Press the BS2 **"SET"** button once to change the status from "0" = OFF to "1" = Medium Speed to '2" = High Speed — *Off = 0; 30 minutes Off, 1 minute on at Med. Speed = 1; 30 minutes Off, 1 minute on at High Speed = 2*
6. Press the BS3 **"RETURN"** button once to lock the setting
7. Press the BS3 **"RETURN"** button once to activate the setting — *Intermittent fan operation is locked in.*
8. Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status

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Outdoor Unit Field Settings

Normal System Status — A1P Control PCB

Off
On
Blinks

Te target temperature upper limit Mode 2-92

1. System must be in **NORMAL** status — *Normal*
2. Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds
3. Press the BS2 **"SET"** button to code #92 to select the setting item (Te target temperature upper limit)
4. Press the BS3 **"RETURN"** button once to enter the setting item status - "1" = M (Default)
5. Press the BS2 **"SET"** button once to change the status from "1" = M to "2" = H to "0" = L — *L = 0; M = 1; H = 2*
6. Press the BS3 **"RETURN"** button once to lock the setting
7. Press the BS3 **"RETURN"** button once to activate the setting — *Te temp is now locked in.*
8. Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status

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VRT and Upper Limit Te Setting

- If set to Auto VRT this setting can be used to address different load profiles.
- If the frequent operation is at lower system load, then use a higher setting under [2-92].

Value [2-92]	Te Target Temperature Upper Limit
0	L
1	M
2	H

Note: In high humid areas, it is recommended to keep this setting to 0 or 1

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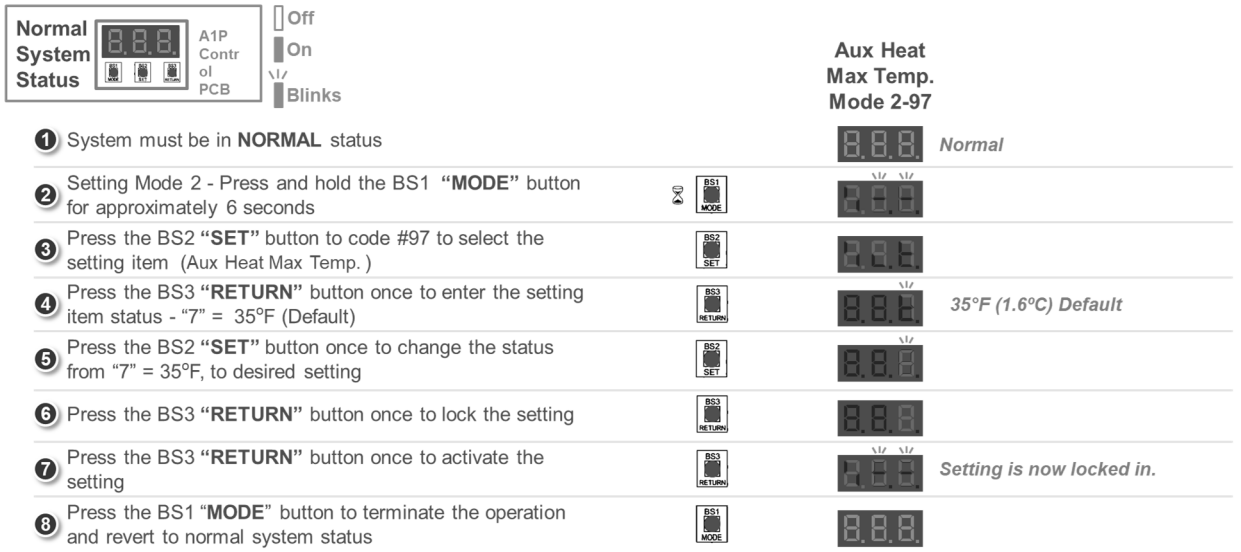
Outdoor Unit Field Settings



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Outdoor Unit Field Settings

Normal System Status — A1P Control PCB

Off
On
Blinks

Aux Heat Release Temp. Diff. 2-98

❶ System must be in **NORMAL** status		*Normal*
❷ Setting Mode 2 - Press and hold the BS1 **"MODE"** button for approximately 6 seconds	BS1 MODE	
❸ Press the BS2 **"SET"** button to code #98 to select the setting item (Aux Heat Release Temp. Diff.)	BS2 SET	
❹ Press the BS3 **"RETURN"** button once to enter the setting item status - "1" = 10°F (Default)	BS3 RETURN	
❺ Press the BS2 **"SET"** button once to change the status from "1" = 10°F to "2" = 15°F to "0" = 5°F	BS2 SET	*5°F (2.8°C) = 0* *10°F (5.6°C) = 1* *15°F (8.3°C) = 2*
❻ Press the BS3 **"RETURN"** button once to lock the setting	BS3 RETURN	
❼ Press the BS3 **"RETURN"** button once to activate the setting	BS3 RETURN	*Release Temp Diff. now Set.*
❽ Press the BS1 "**MODE**" button to terminate the operation and revert to normal system status	BS1 MODE	

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Commissioning (With no remote controllers)

1 When using the Intelligent Touch Controller (iTC):

- The iTC will need 24VAC power (field supplied)
- The DIII-net wiring will need to be connected to the iTC and the system(s) it is going to control (low voltage wiring)
- All wiring between indoor units and outdoor units will need to be completed
- Power will need to be applied to all indoor units, BP boxes, BS boxes(If applicable), and outdoor units
- Power is then applied to the iTC
- Follow the directions on the screen of the iTC for the next steps

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Commissioning (With no remote controllers)

Apply 24VAC to the iTC

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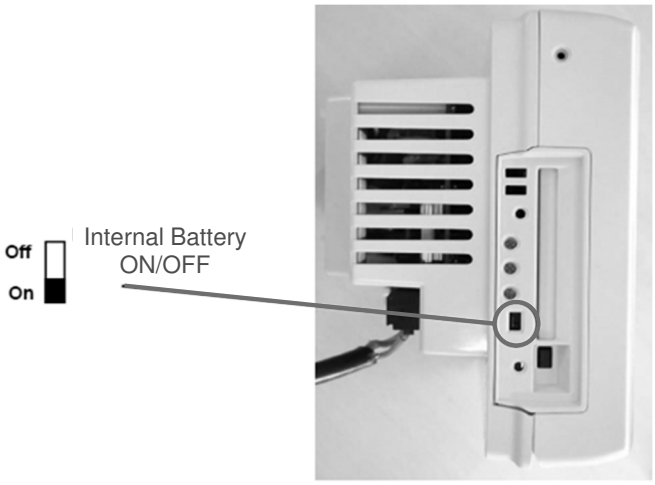
Commissioning (With no remote controllers)

- Turn on the Battery backup switch on the side of the iTC.
- If this is not turned on a screen will pop up asking for the switch to be turned on



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Commissioning (With no remote controllers)

Language Selection

- Select the appropriate language and hit the OK button

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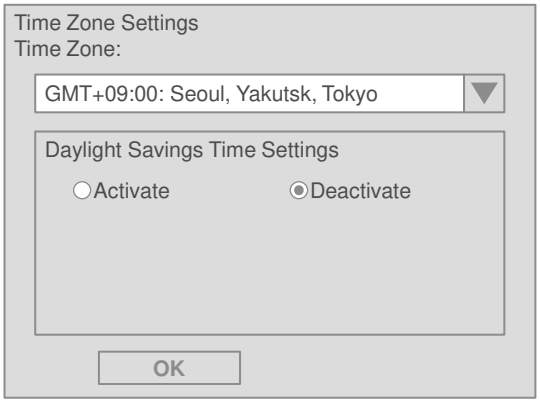
Commissioning (With no remote controllers)

Set Daylight Savings

- Click Activate and select the appropriate dates/time zone and then hit the OK button.
- If Daylight savings is not used in your area, then just hit the OK button.
- The setting will come Deactivated as default



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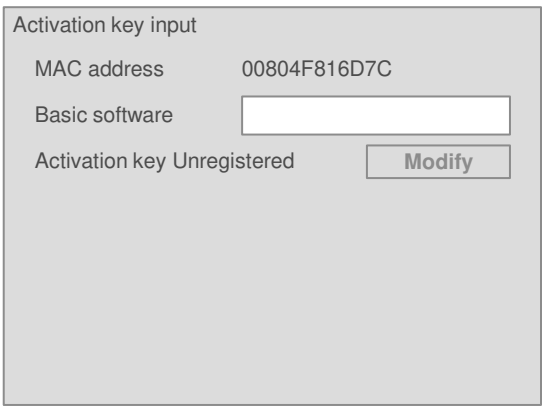
Commissioning (With no remote controllers)

Activation Key Request

- The next screen will request the Activation Key for the iTC.
- This key is requested thru Daikin Technical Services. The Mac Address and the Software ID of the iTC will be needed to get the Activation Key.
- There is a Activation Key request form that will need to be filled out and submitted to get the activation key. To input the Activation Key hit the Modify button.



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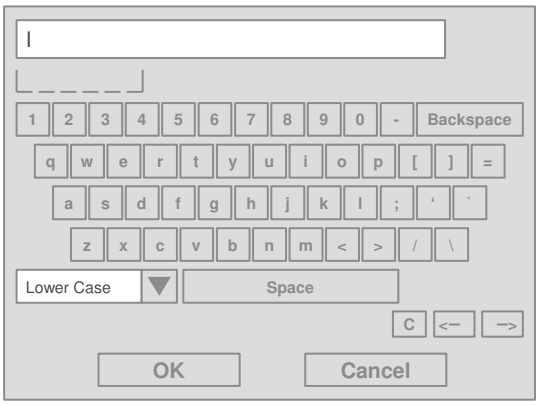
Commissioning (With no remote controllers)

Input Activation Key

- The Activation Key is case sensitive so enter it the exact way it is given.
- To change from lower case to upper case hit the drop down arrow and select the selection you need.
- Once key is entered, double check it before hitting the OK button.
- If entered incorrectly then you will have to enter the entire key in again.



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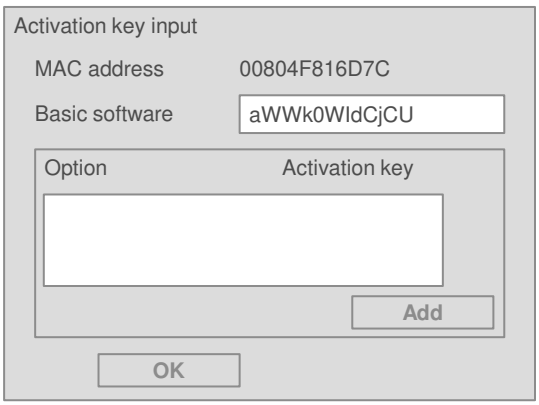
Commissioning (With no remote controllers)

Input Option Keys

- Once the Key is inputted correctly the below screen will be displayed.
- If you have other Option keys, like Web Browser, HTTP, or PPD they can be inputted at this time by hitting the Add key.
- Follow the same procedure as the Basic Key input.
- Once completed then hit the OK button.



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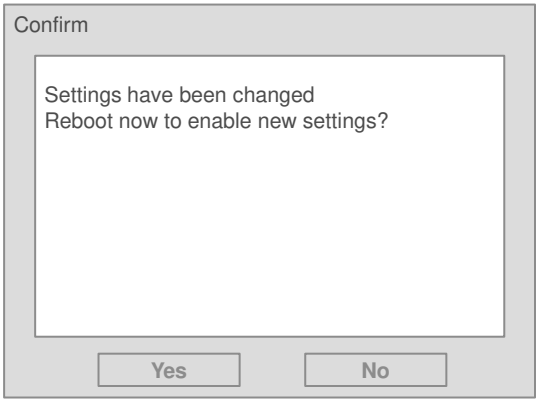
Commissioning (With no remote controllers)

Confirmation

- The next screen will be displayed.
- Hit the Yes button.



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Commissioning (With no remote controllers)

Reboot

- The screen will go blank for about 10 seconds. Just wait till it displays the next setting.

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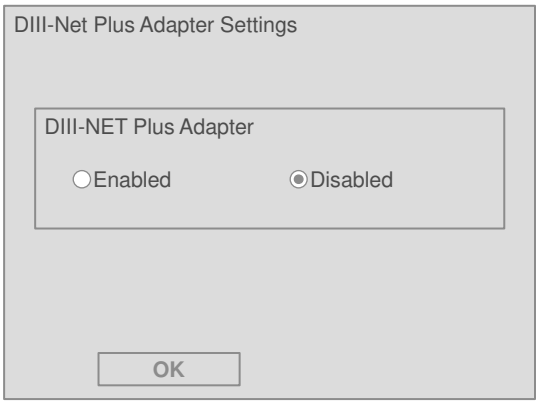
Commissioning (With no remote controllers)

DIII-net Plus Adapter Board Settings

- The next screen will involve the use of the DIII-net Adapter Board. This board will be used when the number of Group addresses is over 64, as the iTC alone can only accommodate 64 Group addresses.
- If it is being utilized, check the Enabled button and hit OK, if not then leave Disabled and hit OK.



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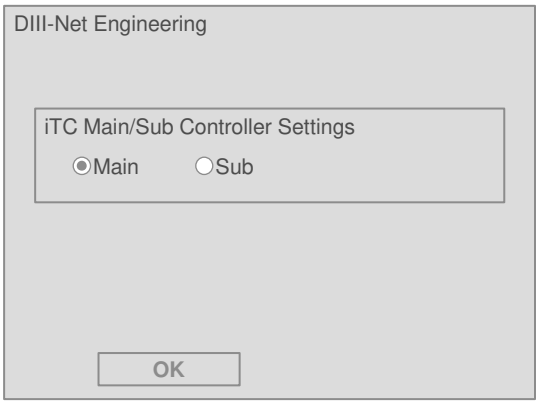
Commissioning (With no remote controllers)

Selecting the Main or Sub iTC

- Only be utilized when there are 2 iTC's on the same DIII-net line (low voltage circuit).
- This is a rare occasion when this application is used, if so then 1 iTC will be selected as the Sub, and 1 as the Main.
- If only 1 iTC then leave as Main and hit the OK button.



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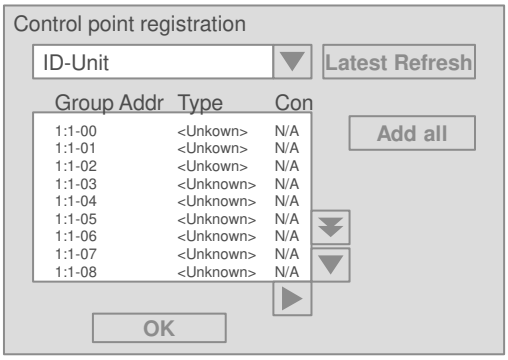
Commissioning (With no remote controllers)

Control Point Registration

- At this time the indoor fan coils can be group addressed.
- Once addressed press the add all button
- The indoor units will need to be group addressees so that the commissioning can be done properly.
- There is no need to go any further with the set up of the iTC at this time.



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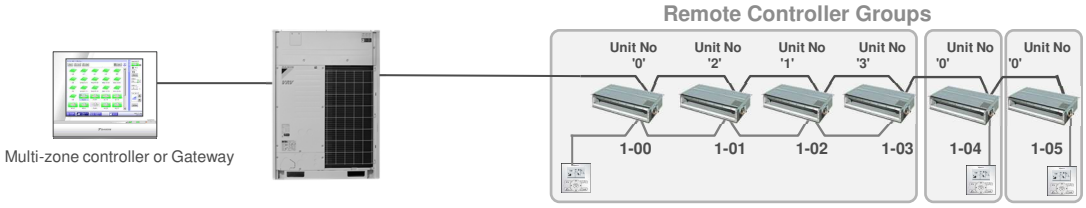
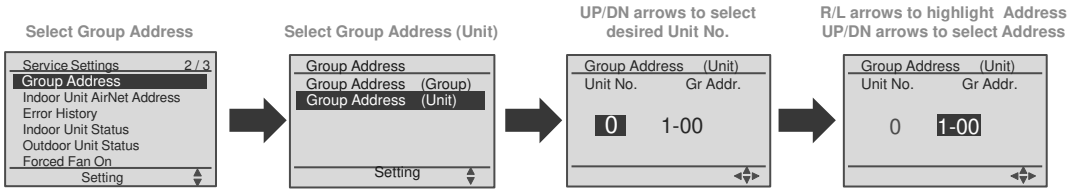
BRC1E73 Setting Group Address

Setting the Group Address for remote controller 'Unit'



- Group Address (Unit)= 1 Group Address for each fan coil in a group of multiple fan coils controlled by the same remote controller.
- Press and hold the Cancel button for 5 sec. to enter Service Settings



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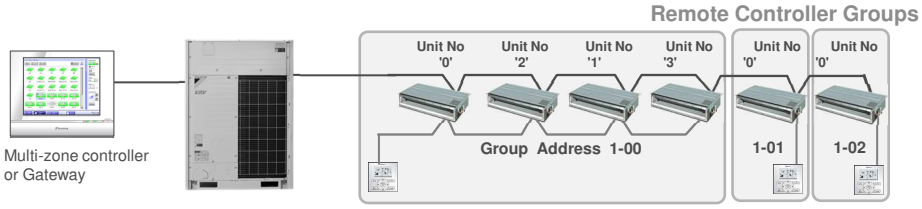
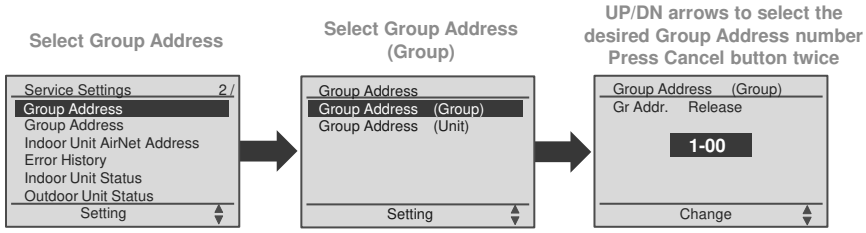
BRC1E73 Setting Group Address

Setting the Group Address for remote controller 'Group'



Press and hold the Cancel button for 5 sec. to enter Service Settings



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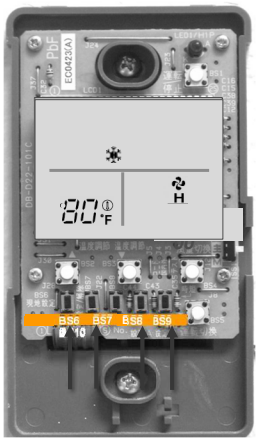
BRC2A71 Setting Group Address

- Press BS6 to enter the Group Address Mode
- Mode '00' is displayed with 'Group No.' flashing and '1-00' solid (new system)
  - If the Mode '01' is displayed there is no communication with the centralized controller
  - Mode '00' but 'Group No.' not flashing - press BS7
- Press BS9 or BS10 to set the desired Group Address
- Press BS7 to lock the selected address
- Press BS6 to write the address confirmed with '88' followed by the normal main display



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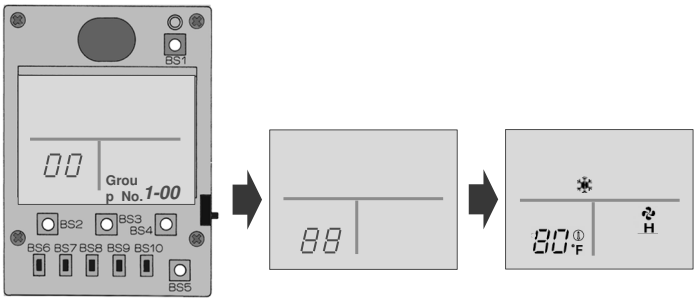
BRC2A71 Setting Group Address

- Press BS6 to enter the Group Address Mode
- Mode '00' is displayed with 'Group No.' flashing and '1-00' solid (new system)
  - If the Mode '01' is displayed there is no communication with the centralized controller
  - Mode '00' but 'Group No.' not flashing - press BS7
- Press BS9 or BS10 to set the desired Group Address
- Press BS7 to lock the selected address
- Press BS6 to write the address confirmed with '88' followed by the normal main display



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Commissioning (With no Remote Controllers)

2 When using an Intelligent Touch Manager (iTM)

- The iTM will need 24VAC power (field supplied)
- The DIII-net wiring will need to be connected to the iTM and the system(s) it is going to control (low voltage wiring)
- All wiring between indoor units and outdoor units will need to be completed
- Power will need to be applied to all indoor units, BP and BS boxes (if applicable), and outdoor units
- Power is then applied to the iTM
- Follow the directions on the screen of the iTM for the next step

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Commissioning (With no remote controllers)

- On the front of the iTM you will have a door that slides down. Under that door will be the battery back up switch.
- Turn this switch on.

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Commissioning (With no remote controllers)

- When power is first applied to the iTM the below screen will be displayed

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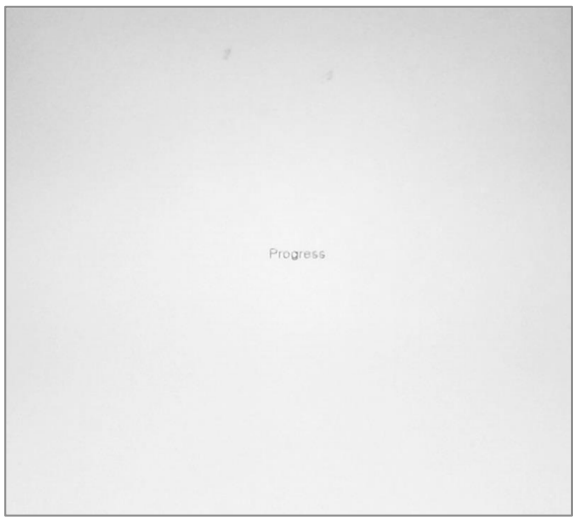
Commissioning (With no remote controllers)

- You will then see a screen displayed that says 'Progress'.



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Commissioning (With no remote controllers)

- The next screen displayed will be 'Ready to set up A/C centralized address'.
- At this point you can group address the fan coils without going any further with the set up of the iTM.

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Commissioning (With no remote controllers)

3 When using a LonWorks/BACnet Gateway

- The BACnet/LonWork will need 24VAC power (field supplied)
- The DIII-net wiring will need to be connected to the BACnet/LonWork and the system(s) it is going to control (low voltage wiring)
- All wiring between indoor units and outdoor units will need to be completed
- Power will need to be applied to all indoor units, BP and BS boxes (if applicable), and outdoor units
- Power is then applied to the BACnet/LonWork
- Follow the below steps for the BACnet/LonWork set up

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Commissioning (With no remote controllers)

- The battery backup switch needs to be turned on in the LonWork Gateway.
- You will need to remove the front cover to turn the switch on.

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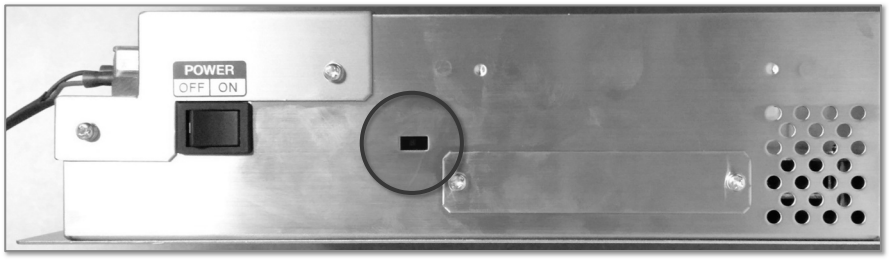
Commissioning (With no remote controllers)

- On the side of the BACnet there is a slot with which the switch can be turned on.
- A very small screwdriver can be used to switch it on or the front cover can be removed and the switch can be turned on.



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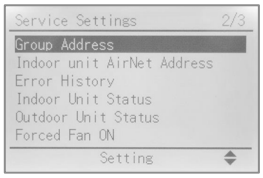
Commissioning (With no remote controllers)

- After the power is applied to the BACnet/LonWork and the battery back up switch is turned on wait for 2 minutes. Then proceed to the remote controllers and check to see if the Group Address selection is available.
- If the BACnet/LonWork is communicating with the indoor units then group address can now be set. If the group address selection is not available at the controllers then the BACnet/LonWork is not communicating.
- If not available check low voltage wiring, power to all equipment, power to BACnet/LonWork, battery back up is turned on. If you can select group address at the remotes then proceed and group address all fan coils.



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Commissioning (With no remote controllers)

4 When using a Daikin Service Checker

- The service checker will need to be connected to a laptop. The laptop will need the most current Service Checker software installed
- The DIII-net wiring will need to be connected to the Service Checker and the system(s) it is going to control (low voltage wiring)
- All wiring between indoor units and outdoor units will need to be completed
- Power will need to be applied to all indoor units, BP and BS boxes (if applicable), and outdoor units
- Power is then applied to the Service Checker
- The Service checker software program will need to be opened
- Follow the steps to connect the Service Checker and open the Service checker program
- Contact 'daikincomfort.com' tech support

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Commissioning (With no remote controllers)

Cautions When Using the Service Checker

- Be sure to connect the cable to the transmission terminal board (F1, F2) of the air conditioner (outdoor unit or indoor unit). If wrongly connected to power terminals of centralized equipment and the like, it may cause fatal injuries by electrical shock to human bodies and failures of equipment.
- When using the Service Checker TYPE-IV outdoors, be sure to protect it from rain so that it becomes free from the danger of electric shock and fires, abnormal corrosion of components.
- Be sure to connect AC adapter or the Charger for the battery to 120VAC.

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Commissioning (With no remote controllers)

Serial Port Adapters

- If your laptop does not have a serial port connection you will need to purchase a USB to serial port adapter.
- This can be purchased at most computer stores.
- You will need to match up your com port that the serial port adapter is connected to with the service checker software.

The following will explain how:

- You will need to go to the device manager on your laptop. Make sure the service checker is connected and powered up.
- In device manager you will have a selection that called hardware.
- Expand the hardware list and you see the list of the hardware on your laptop.
- Select com ports
- This and it will tell you what com port your USB adapter (service checker) is using.
- Once you have found what com port your USB connector is using then go back into the service checker program and select that com port.
- If you fail to match these up then you will not be able to communicate with the service checker.

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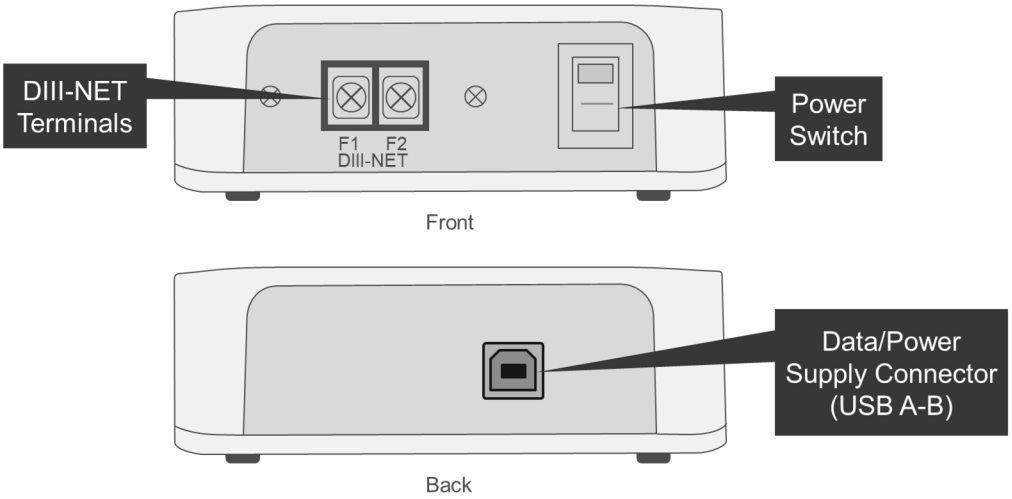
Commissioning (With no remote controllers)

Interface



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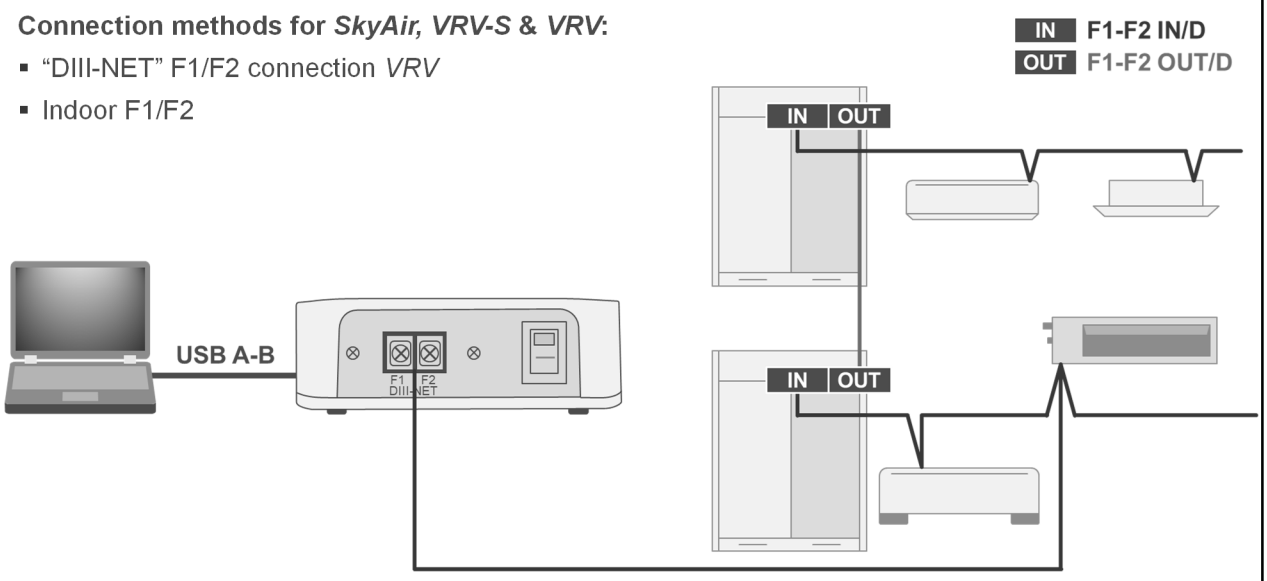
Commissioning (With no remote controllers)

Connection methods for *SkyAir, VRV-S* & *VRV*:

- "DIII-NET" F1/F2 connection *VRV*
- Indoor F1/F2



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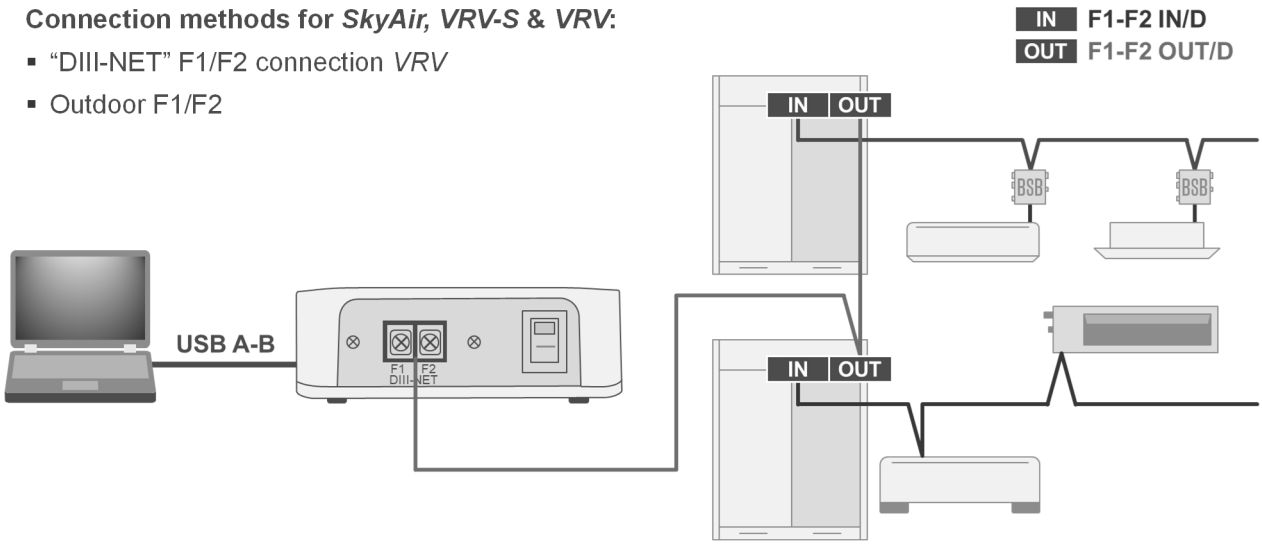
Commissioning (With no remote controllers)

Connection methods for *SkyAir, VRV-S* & *VRV*:

- "DIII-NET" F1/F2 connection *VRV*
- Outdoor F1/F2



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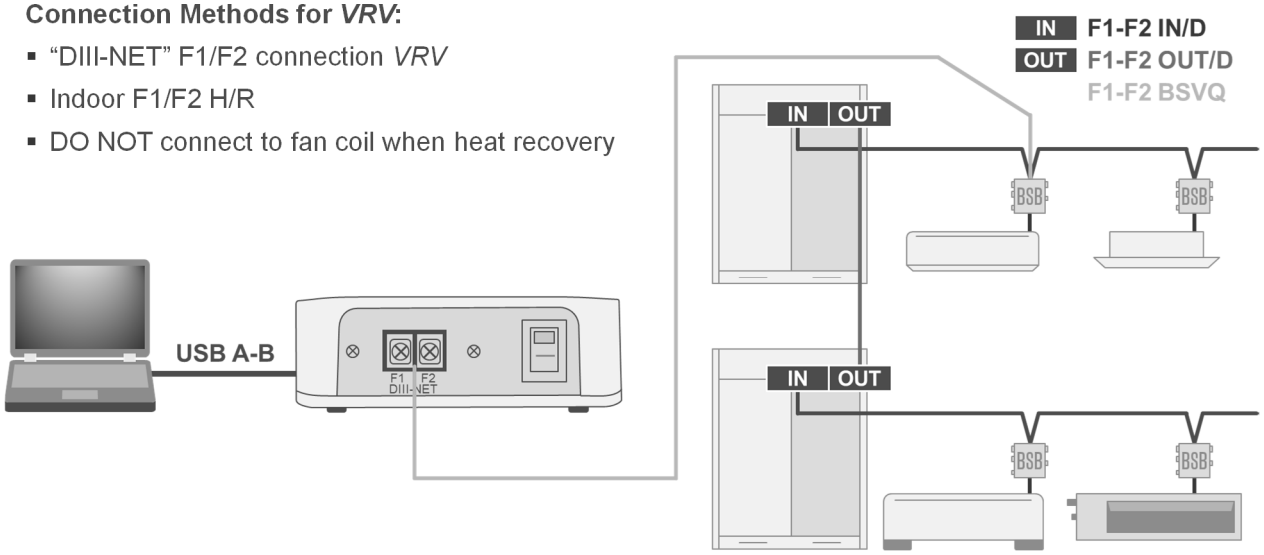
Commissioning (With no remote controllers)

Connection Methods for *VRV*:

- "DIII-NET" F1/F2 connection *VRV*
- Indoor F1/F2 H/R
- DO NOT connect to fan coil when heat recovery



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Commissioning (With no remote controllers)

- Latest Version of Software will be available thru the Local Daikin Rep, Distributor, or Technical Support.
- Your local Daikin FSM can also be contacted for the latest version of the software. This software can be emailed to you.
- Do not install Service Checker in program files.

Type4CheckerGlobal_Ver1.2.1.2

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Commissioning (With no remote controllers)

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Commissioning (With no remote controllers)

- COM Port Verification
  - You will need to go to the device manager in your laptop. Make sure your connecter is plugged in.
  - In device manager you will have a selection labelled hardware.
  - In hardware you will see a list of the hardware on your laptop.
  - You will see com ports.
  - Open this and it will tell you what com port your USB connector is using.

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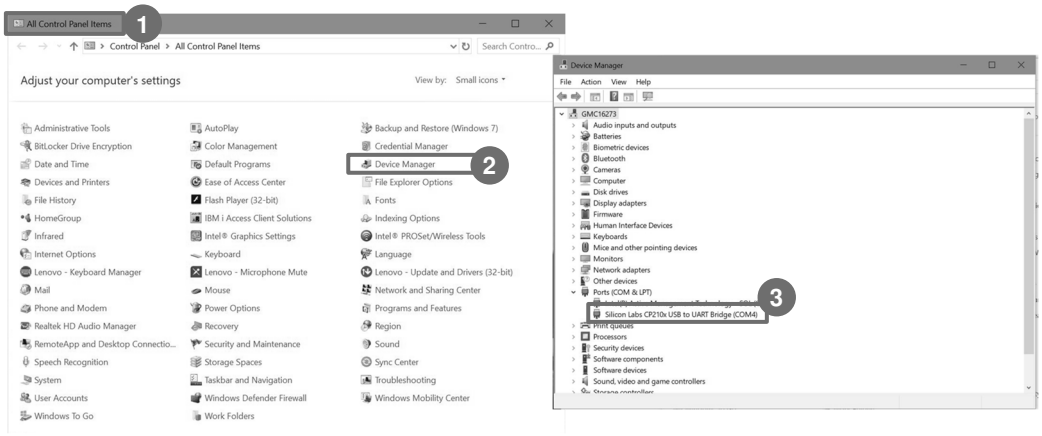
Commissioning (With no remote controllers)

After installing driver of USB to Serial Adapter, proceed with the following steps:



Applicable for Windows 7 only , contact your IT for more support.

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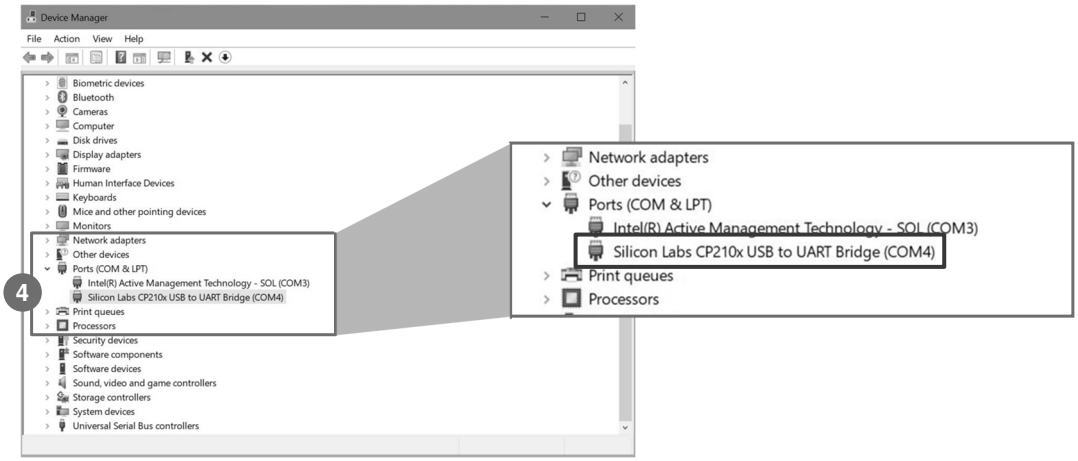
Commissioning (With no remote controllers)

COM Port Verification When Using USB-to-serial Adapter (cont'd)

Scroll down to Ports and verify COM number



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Commissioning (With no remote controllers)

- Communications Verification
  - Once you have discovered which com port your USB connector is using then return to the service checker program and select that com port.
  - If you fail to match these then you will not be able to communicate with the service checker.

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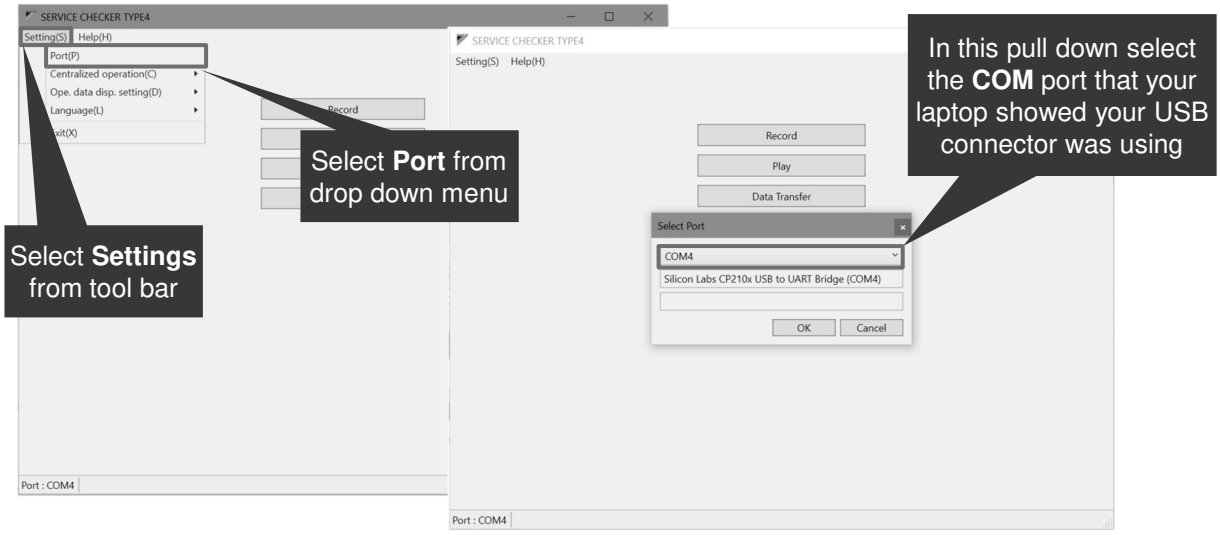
Commissioning (With no remote controllers) - Comm Verification



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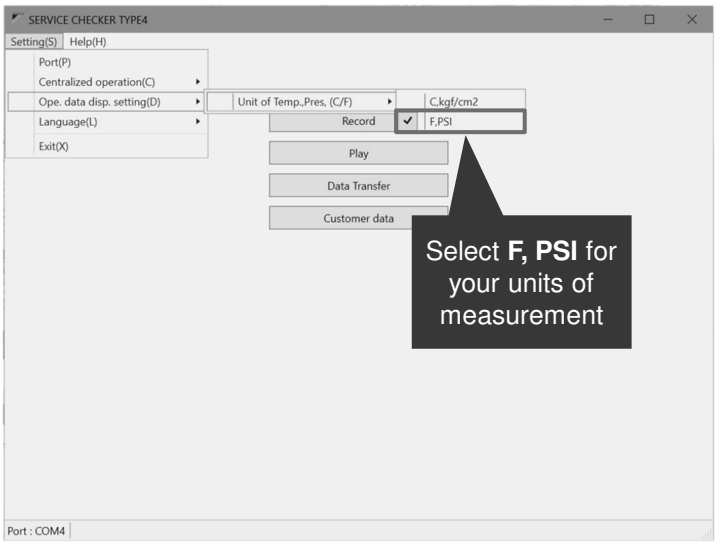
Commissioning (With no remote controllers)-Selecting Measurement Units



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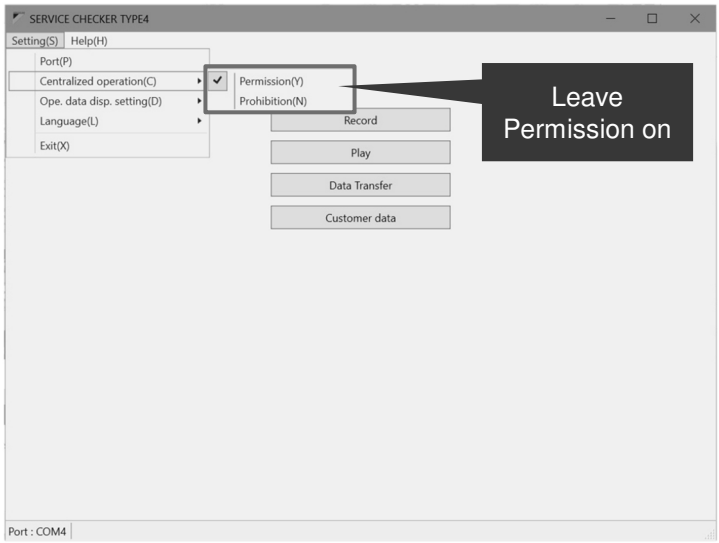
Commissioning (With no remote controllers) - Central Operation



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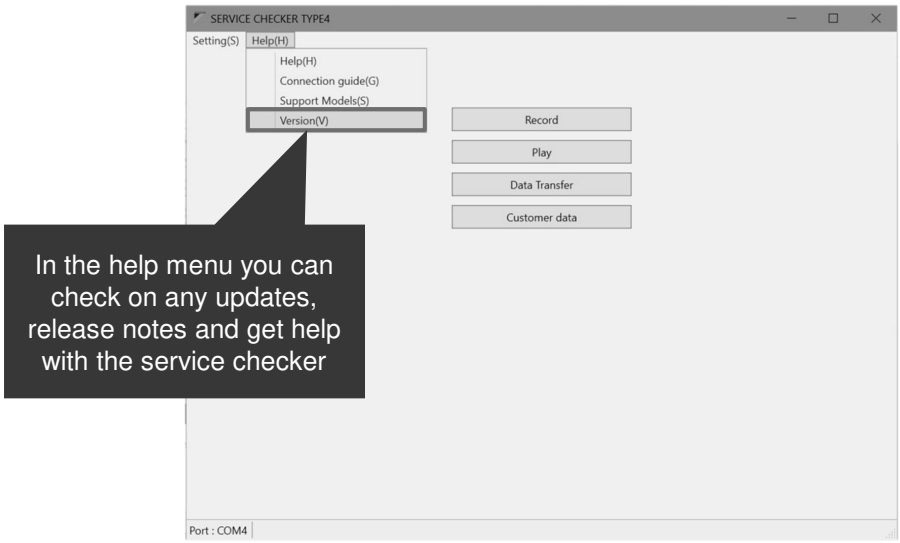
Commissioning (With no remote controllers) - Help Menu



In the help menu you can check on any updates, release notes and get help with the service checker

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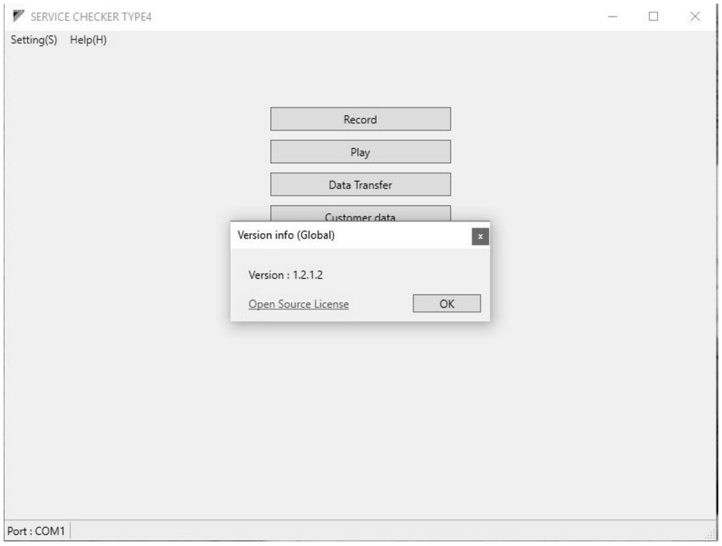
Commissioning (With no remote controllers) - Version Info



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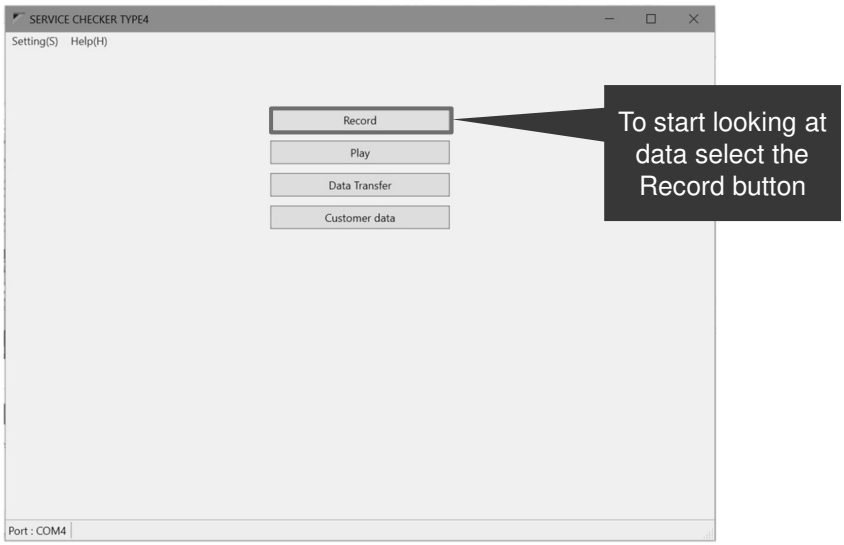
Commissioning (With no remote controllers) - Observing Data



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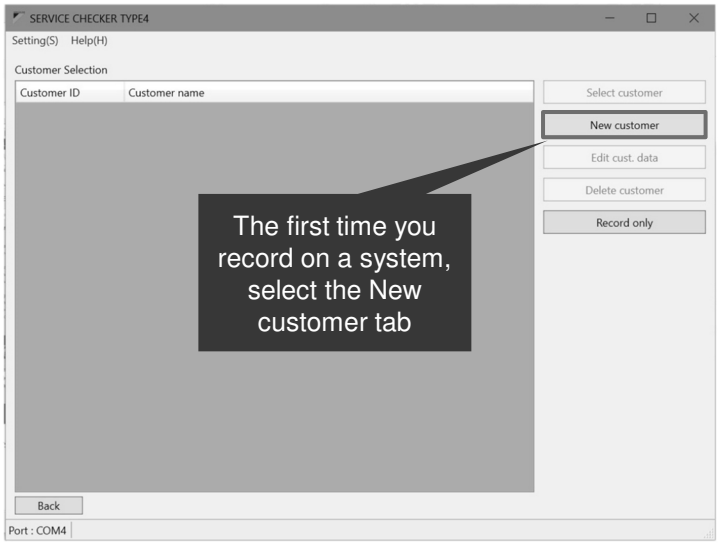
Commissioning (With no remote controllers) - Observing Data



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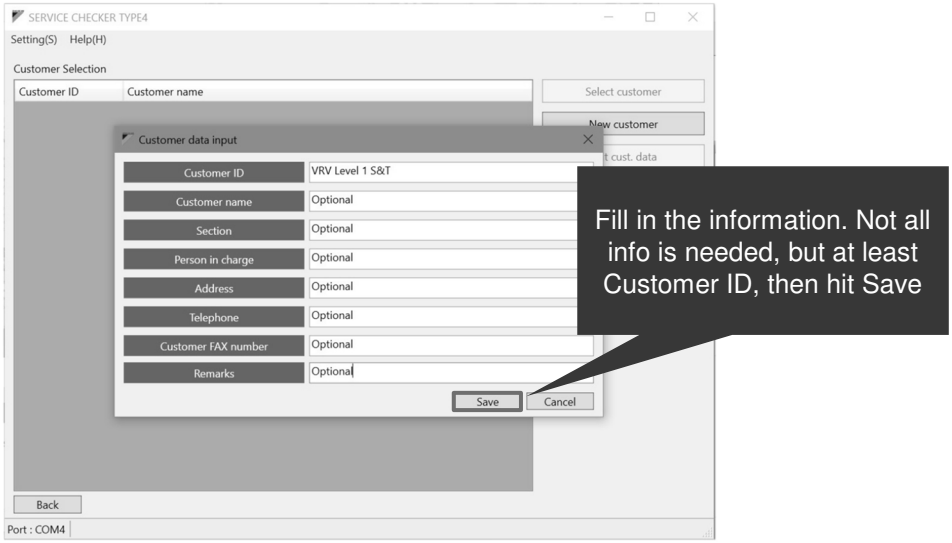
Commissioning (With no remote controllers) - Observing Data



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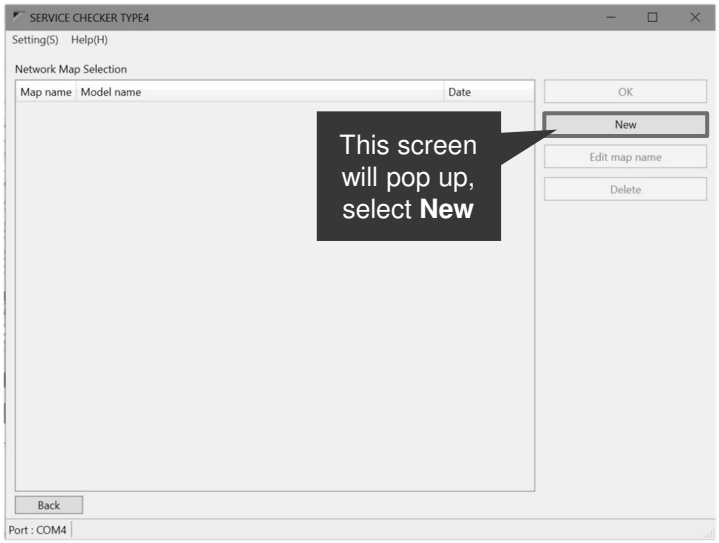
Commissioning (With no remote controllers) - Observing Data



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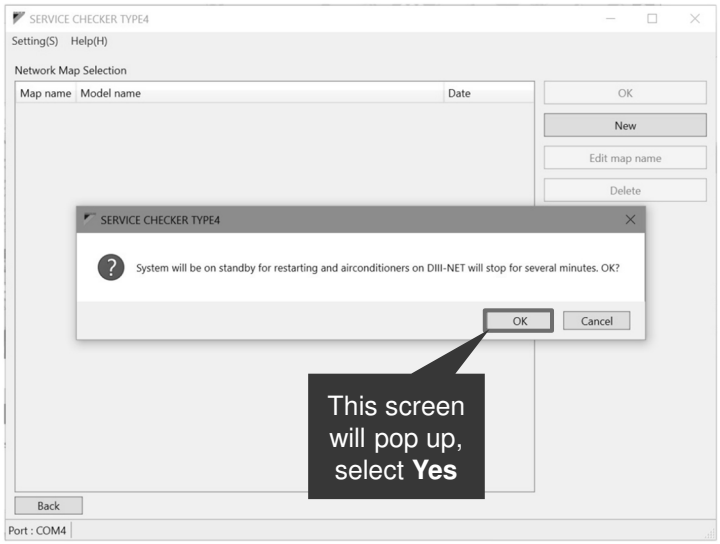
Commissioning (With no remote controllers) - Observing Data



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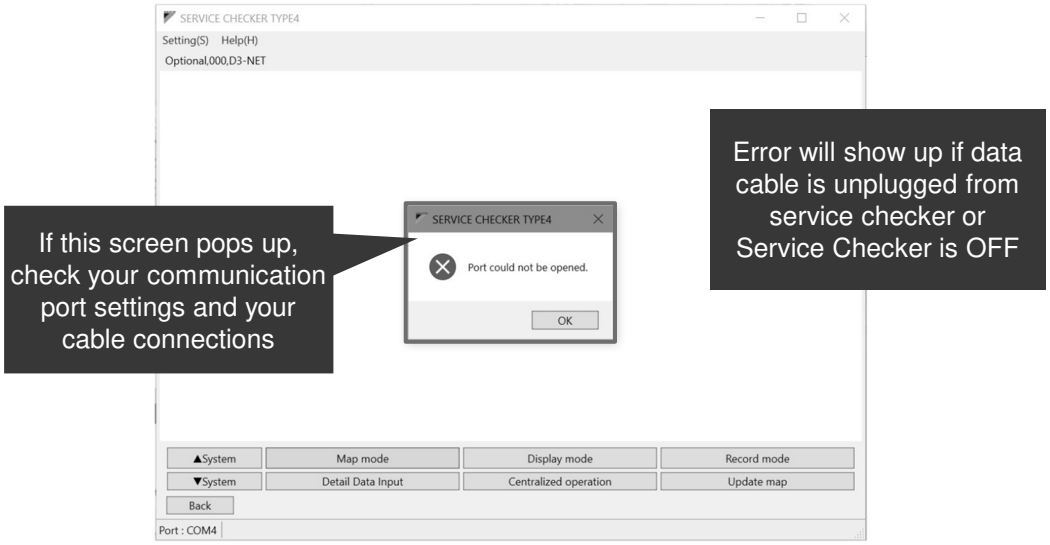
Commissioning (With no remote controllers) - Communications Error



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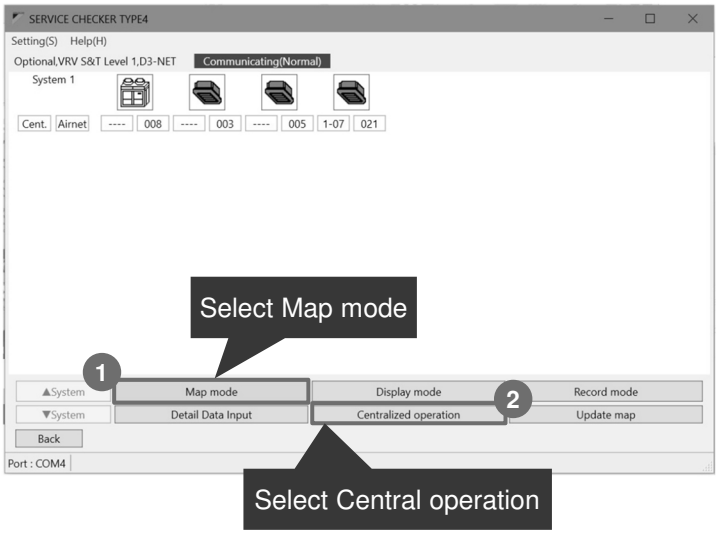
Commissioning (With no remote controllers) - Map Mode



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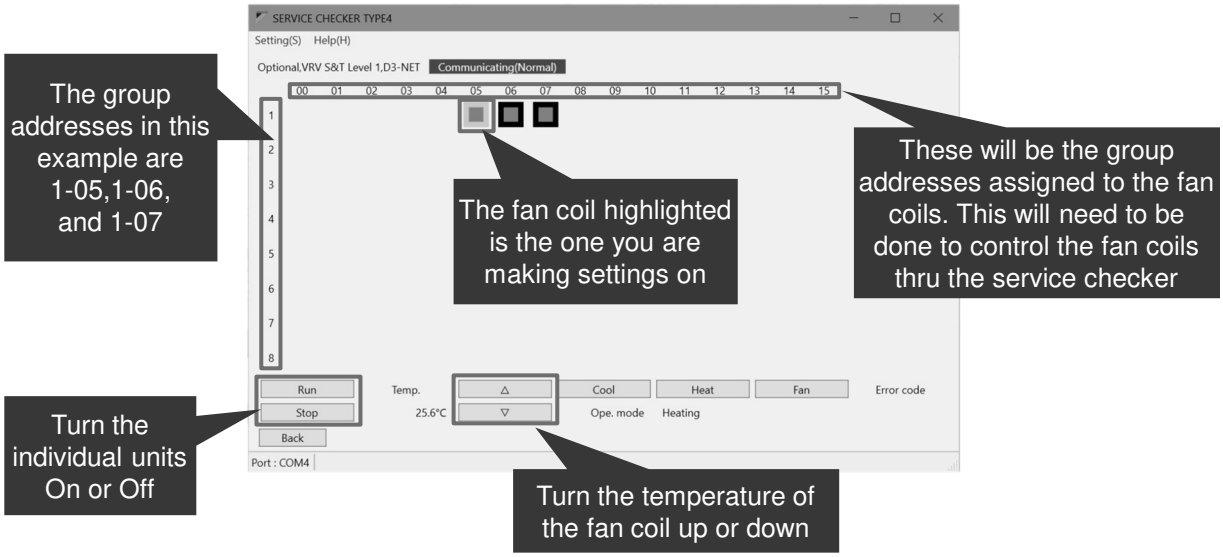
Commissioning (With no remote controllers) - Map Mode



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Assessment

1. Considering Multi-Port selector boxes, the total capacity of indoor units to be connected downstream from a single port may not exceed 54,000 btu's.
   a) True
   b) False

2. Why is it necessary to remove the compressor's shipping brackets?
   a) Compressor won't be properly grounded
   b) To prevent excessive noise and potential compressor damage during operation
   c) Compressor mounting will be too rigid
   d) All of the above

3. Electronic expansion valves are driven closed when power is applied to the indoor unit.
   a) True
   b) False

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Assessment

4. Select the pressures for proper three step system pressure test.
   a) 100psi, 200psi, 300psi
   b) 150psi, 250psi, 350psi
   c) 150psi, 325psi, 550psi
   d) 100psi, 325psi, 550psi

5. During the pressure test, it is important to account for any changes in temperature from when the system was pressurized to when you check the pressure.
   a) True
   b) False

6. If the electronic expansion valves have been closed, how may you drive them open?
   a) Enter the Recovery/Evacuation Mode
   b) Enter the Auto-Charge Mode
   c) Enter the Shutdown Mode
   d) Enter the Oil Return Mode

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Assessment

7. What indicates the system is properly evacuated?
   a) During the pressure rise test, the pressure rises and levels off above 500 microns and holds for one hour and holds for 30 minutes.
   b) During the pressure rise test, the pressure rises and levels off below 500 microns and holds for one hour.
   c) During the pressure rise test, the pressure rises and levels off above 500 microns and holds for 30 minutes.
   d) During the pressure rise test, the pressure rises and levels off above 500 microns and holds for 30 minutes.
8. Daikin VRV systems can be charged by:
   a) Evaluating refrigerant operating pressures
   b) Calculating system superheat
   c) Calculating system sub-cooling
   d) Weighing refrigerant into the system

9. The total system refrigerant charge is comprised solely of the factory charge in the outdoor unit(s).
   a) True
   b) False

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Assessment

10. What is an acceptable voltage unbalance at the compressor terminals?
    a) Less than 1%
    b) Less than 2%
    c) Less than 3%
    d) Less than 4%

11. What is the minimum number of hours the crankcase heaters must be energized before starting a compressor?
    a) 4 hours
    b) 6 hours
    c) 12 hours
    d) 24 hours

12. Outdoor Unit initialization operation is shown successful and completed when;
    a) After the 8 to 10 minute initialization the 3 character LED display will begin flashing.
    b) After the 8 to 10 minute initialization the 3 character LED display will go from flashing to solid on.
    c) After the 8 to 10 minute initialization the 3 character LED display will go from solid on to blank.
    d) None of the above

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Assessment

13. During the initial outdoor unit power up time, BRC1E73 Remote Controllers can be configured in the OFF mode with any “Initial Settings” that apply.
    a) True
    b) False

14. On a manifolded system, the indoor units are counted from the
    a) Service Checker
    b) BAS
    c) Control PCB on one of the Sub outdoor units
    d) Control PCB on the Master outdoor unit

15. An effective procedure to help troubleshoot non-communicating indoor Fan Coil units is to enable the “Forced Fan On” mode from the
    a) Sub outdoor unit printed circuit board
    b) Master outdoor unit printed circuit board
    c) Nav controller
    d) Service Checker

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Assessment

16. Fan Coil Field Setting codes are comprised of the following three segments:
    a) Mode number, first and second Code numbers
    b) Mode number, Group number, Code number
    c) Program number, Group number, Code number
    d) Program number, Mode number, Code number

17. Test Operation mode will run in either heat or cool modes.
    a) True
    b) False

18. When the T1-T2 terminals are configured for “forced off” operation, which of the following is true?
    a) Contacts are normally closed and operation is manual reset
    b) Contacts are normally open and operation is manual reset
    c) Contacts are normally closed and operation is automatic reset
    d) Contacts are normally open and operation is automatic reset

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Assessment

19. When the T1-T2 terminals are configured for “External Protection Device” operation, which of the following is true?
    a) Contacts are normally closed and operation is manual reset
    b) Contacts are normally open and operation is manual reset
    c) Contacts are normally closed and operation is automatic reset
    d) Contacts are normally open and operation is automatic reset

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