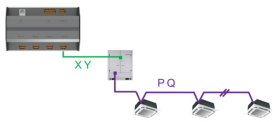
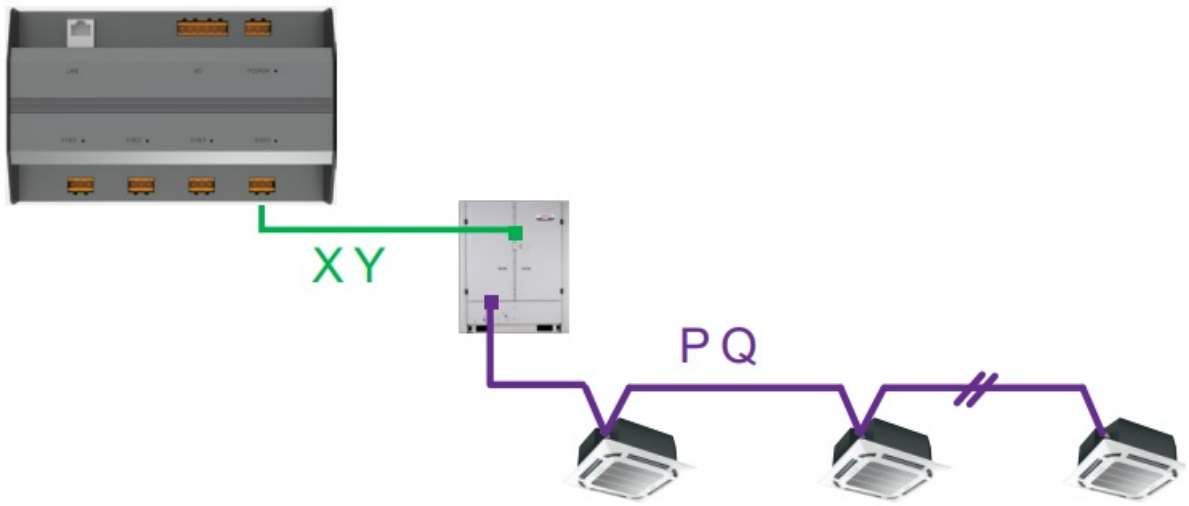


LENNOX V0CTRL95P-3 LVM Hardware BACnet Gateway Device Installation Guide

Contents

LENNOX V0CTRL95P-3 LVM Hardware BACnet Gateway Device



Product Information

The LVM Hardware/BACnet Gateway Device – V0CTRL95P-3 is a device that can control and monitor up to 320 VRB & VPB VRF systems with up to 960 VRF outdoor units and 2560 VRF indoor units. It consists of one touch screen LVM centralized controller or Building Management System connected with a minimum of one (maximum of ten) devices. The system requires a field-supplied router switch and communication wiring. All Lennox VRB & VPB outdoor and P3 indoor units can be connected to the device. The connected VRF systems will provide cooling and heating to the building at the direction of the LVM/BMS.

Product Usage Instructions

Before operating the LVM Hardware/BACnet Gateway Device, read all of the information in the manual provided with the device. The manual should be left with the owner for future reference.

Installation Instructions

The installation of the LVM System & BACnet Gateway requiresthe following components:

- Touch Screen Centralized Controller V0CTRL15P-3 (13G97) (15screen) or Building Management System software
- LVM Hardware/BACnet Gateway Device – V0CTRL95P-3 (17U39)
- LVM software key dongle (17U38)
- Router switch, wireless or wired (field-supplied)
- Cat. 5 ethernet cable (field-supplied)
- 40 VA step-down transformer (field-supplied)
- 18 GA, stranded, 2-conductor shielded control wire (polarity sensitive) (field supplied)
- 110V power supply(ies) (field supplied)
- Commissioned Lennox VRF system(s)

The installation process involves the following steps:

1. Determine the location of each equipment component.
2. Ensure that the proper power supply is provided. Refer to wiring diagrams.
3. Run wiring and cables. Refer to wiring diagrams.
4. Commission the Lennox VRF system(s).
5. Commission the LVM/Building Management System.

Connection Points

The LVM Hardware/BACnet Gateway Device can be connected to the LVM Centralized Controller or Building Management System using Cat. 5 Ethernet cable. The device requires a 110 VAC power supply and a 40 VA 24VAC transformer.

Figure 1. Connection to LVM Centralized Controller

Figure 2. Connection to BACnet Gateway

Figure 3. Device Connection Points

Figure 4. One Single Module VRF Heat Pump System

IMPORTANT
These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation. Read all of the information in this manual before operating this equipment.
THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE

General

- The LVM Hardware/BACnet Gateway Device – V0C-TRL95P-3 can control system can monitor and con-trol up to 320 VRB & VPB VRF systems with up to 960 VRF outdoor units and 2560 VRF indoor units. See Appendix A.
- The system consists of one touch screen LVM cen-tralized controller or Building Management System connected with a minimum of one (maximum of ten) devices.
- A field-supplied router switch and communication wiring is required.
- All Lennox VRB & VPB outdoor and P3 indoor units can be connected to the LVM Hardware/BACnet Gateway Device – V0CTRL95P-3.
- The connected VRF systems will provide cooling and heating to the building at the direction of the LVM/BMS. Refer to the individual unit's manuals for information about that specific unit.

LVM System & BACnet Gateway Installation

VRF Systems – LVM System & BACnet Gateway 507897-03
12/2022

On Site Requirements

- **1 –** Touch Screen Centralized Controller V0CTRL15P-3 (13G97) (15" screen) or Building Management System software
- **1 –** LVM Hardware/BACnet Gateway Device – V0C- TRL95P-3 (17U39)
- **1 –** LVM software key dongle (17U38)
- **1 –** Router switch, wireless or wired (field-supplied) 2 – Cat. 5 ethernet cable (field-supplied)
- **1 –** 40 VA step-down transformer (field-supplied) 18 GA, stranded, 2-conductor shielded control wire (polarity sensitive) (field supplied) 110V power supply(ies) (field supplied) Commissioned Lennox VRF system(s)

Specificiations

Input voltage	24 VAC
Ambient temperature	32°F ~ 104°F (0°C ~ 40°C)
Ambient humidity	RH25%~RH90%

Installation Points

Installation consists of determining the location of each component, supplying power to the devices as required and running electrical wires or cables.

1. Decide where to place each equipment component.
2. Ensure that the proper power supply is provided. See wiring diagrams.
3. Run wiring and cables. See wiring diagrams.
4. Commission the Lennox VRF system(s).
5. Commission the LVM/Building ManagementSystem.

Figure 1. Connection to LVM Centralized Controller

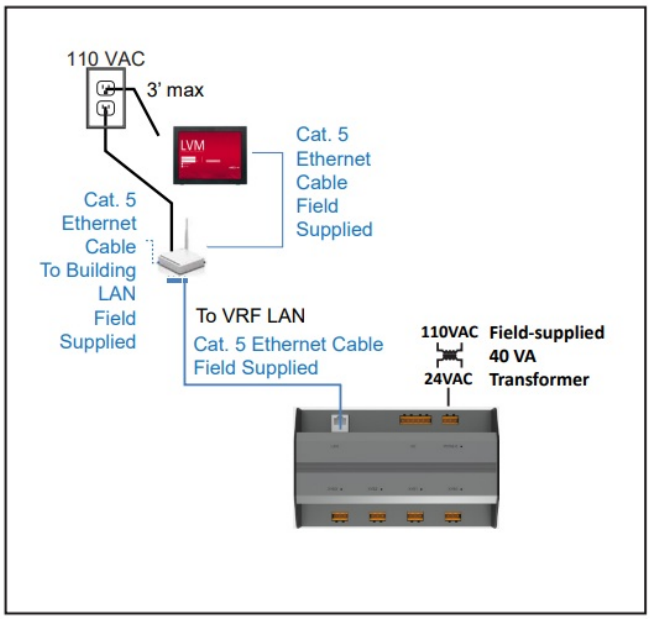


Figure 2. Connection to BACnet Gateway

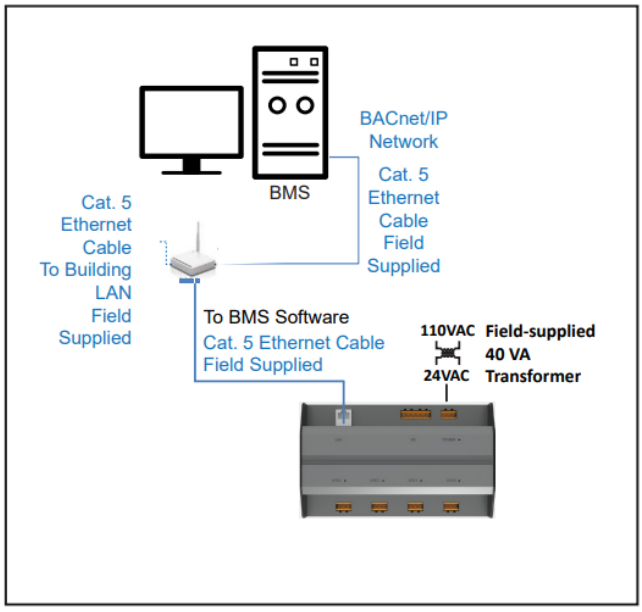


Figure 3. Device Connection Points

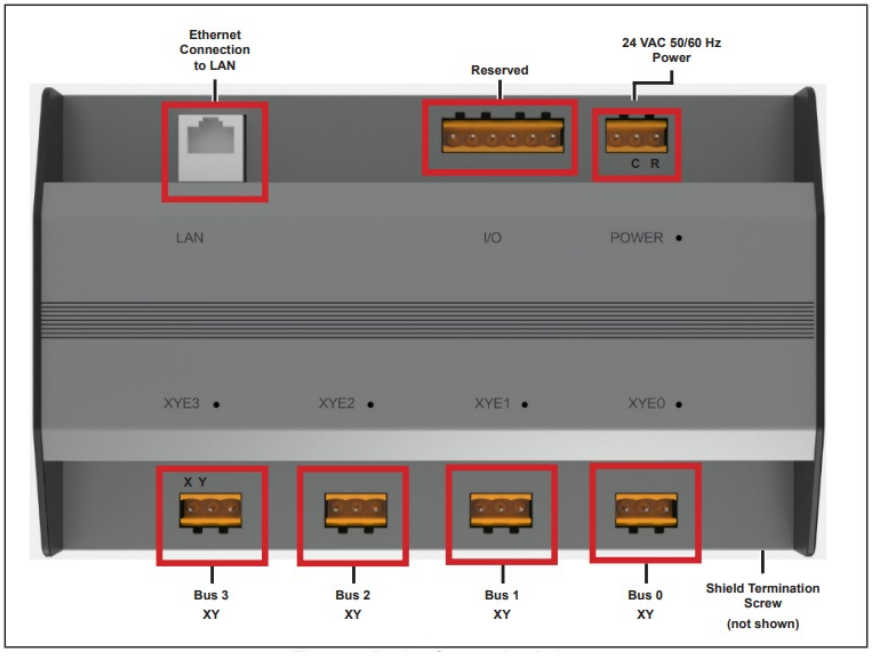
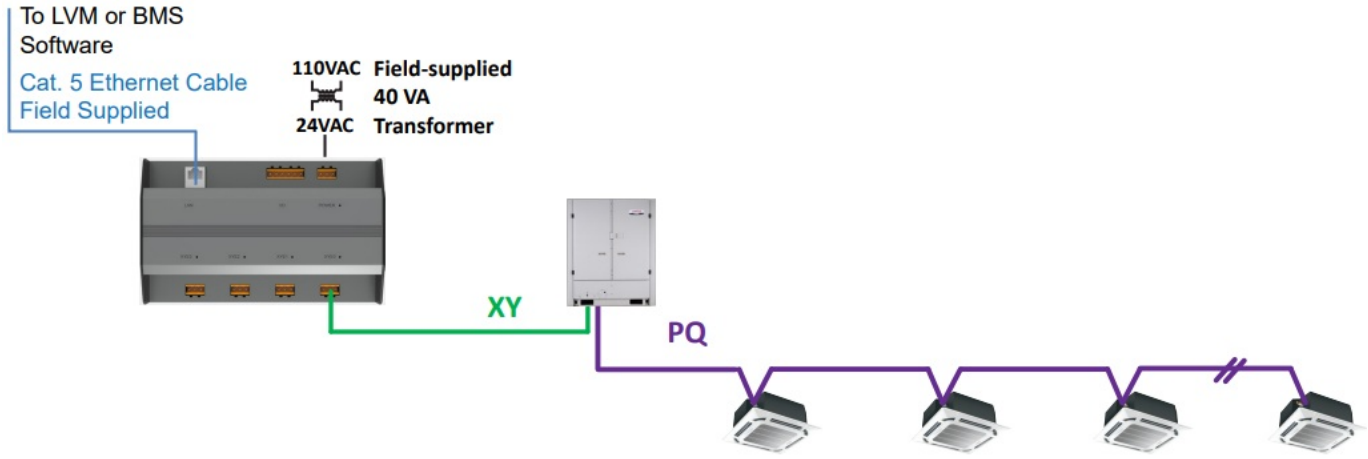


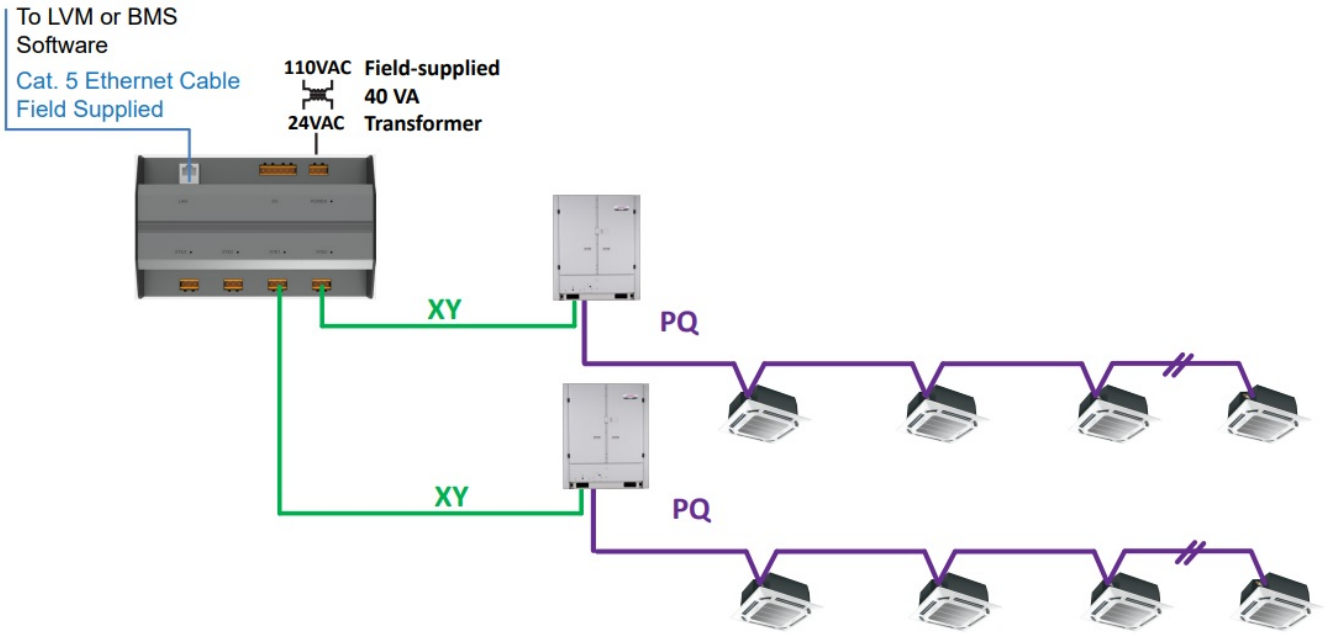
Figure 4. One Single Module VRF Heat Pump System



NOTE –

1. Maximum 96 outdoor units per device. Up to 24 ODUs per busss. Maximum 256 indoor units per device. Up to 64 IDUs per busss.
2. Field-supplied communication wiring – 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to shield termination screw.
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 5. Two Single Module VRF Heat Pump Systems



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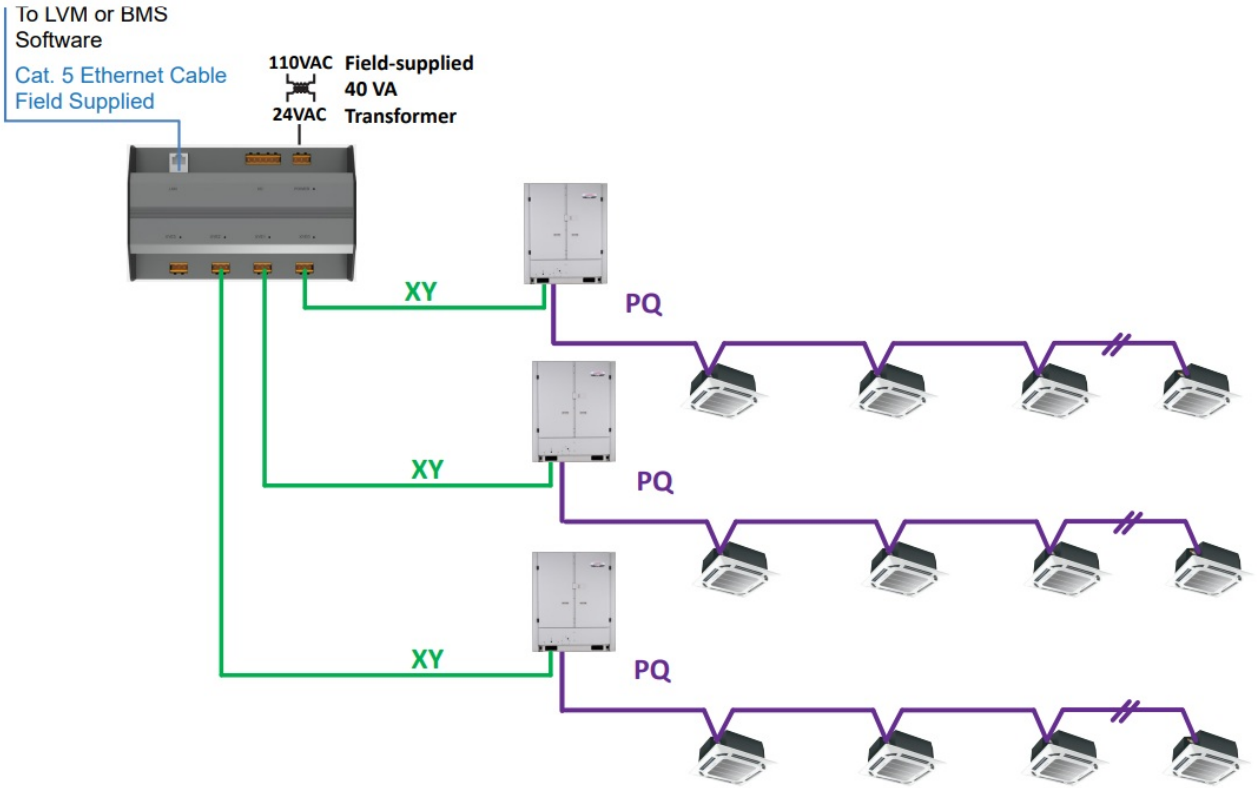
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 6. Three Single Module VRF Heat Pump Systems



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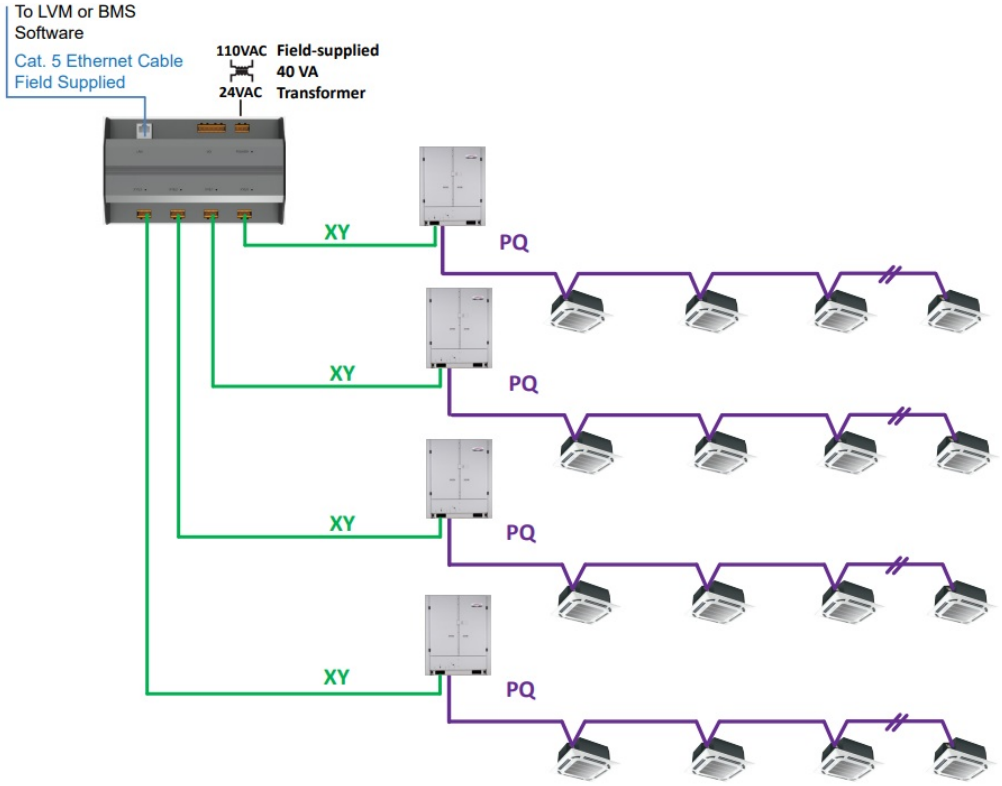
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 7. Four Single Module VRF Heat Pump Systems



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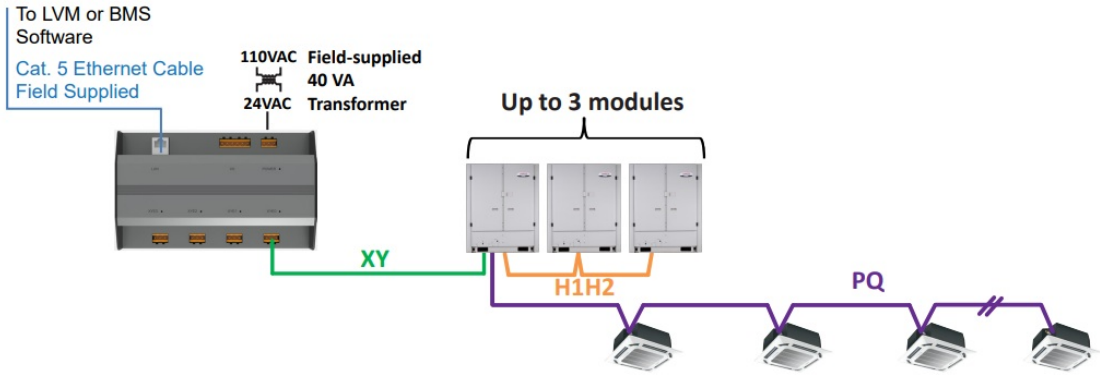
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 8. One Multi-Module VRF Heat Pump System



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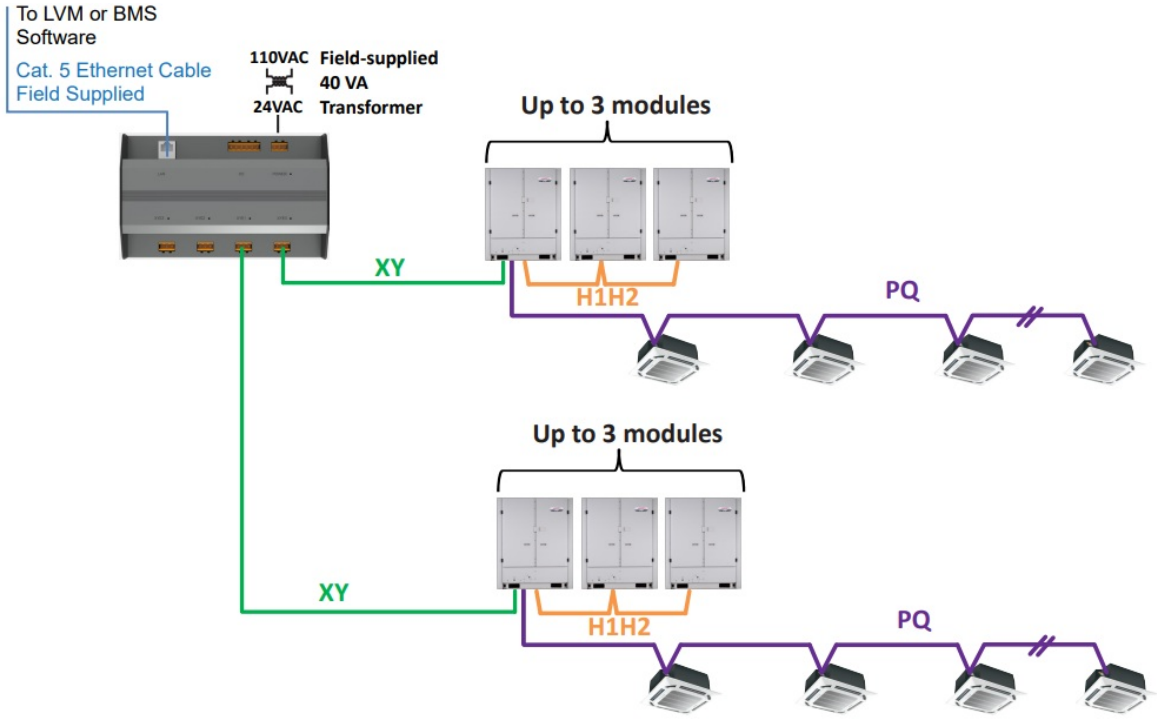
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 9. Two Multi-Module VRF Heat Pump Systems



NOTE –

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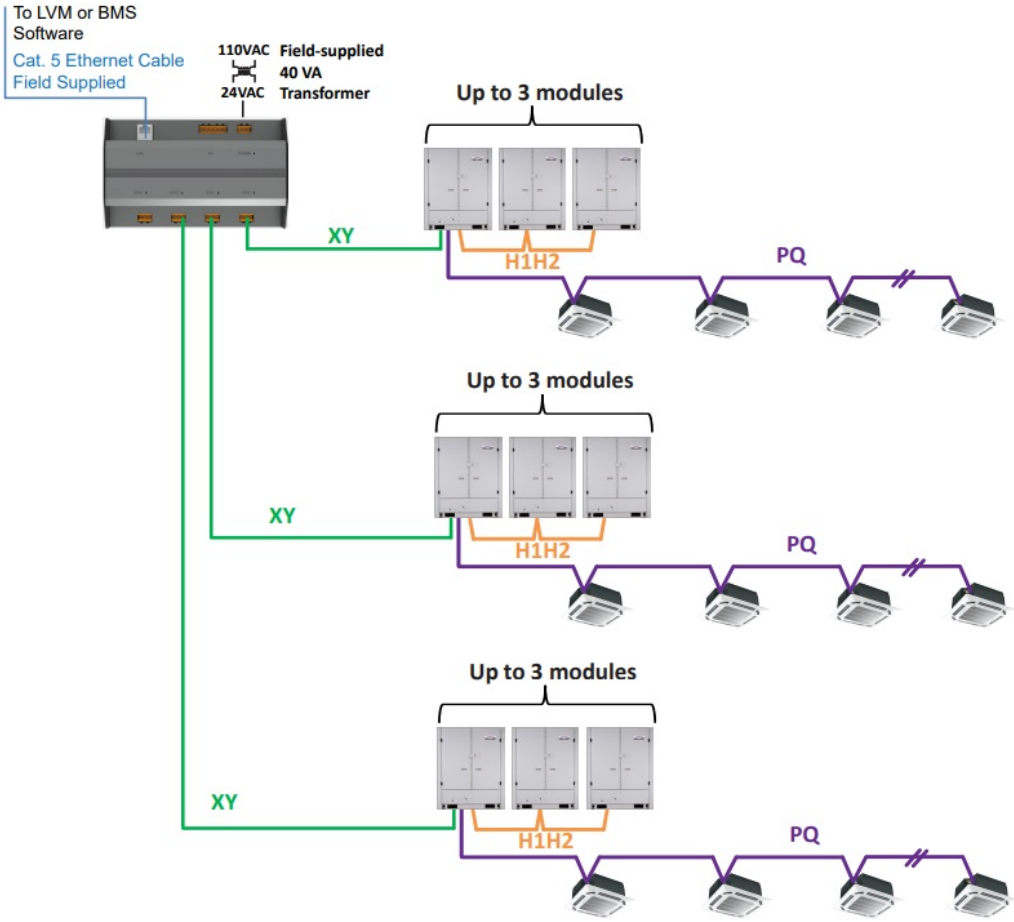
2. Field-supplied communication wiring – 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to shield termination screw.

3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 10. Three Multi-Module VRF Heat Pump Systems



NOTE –

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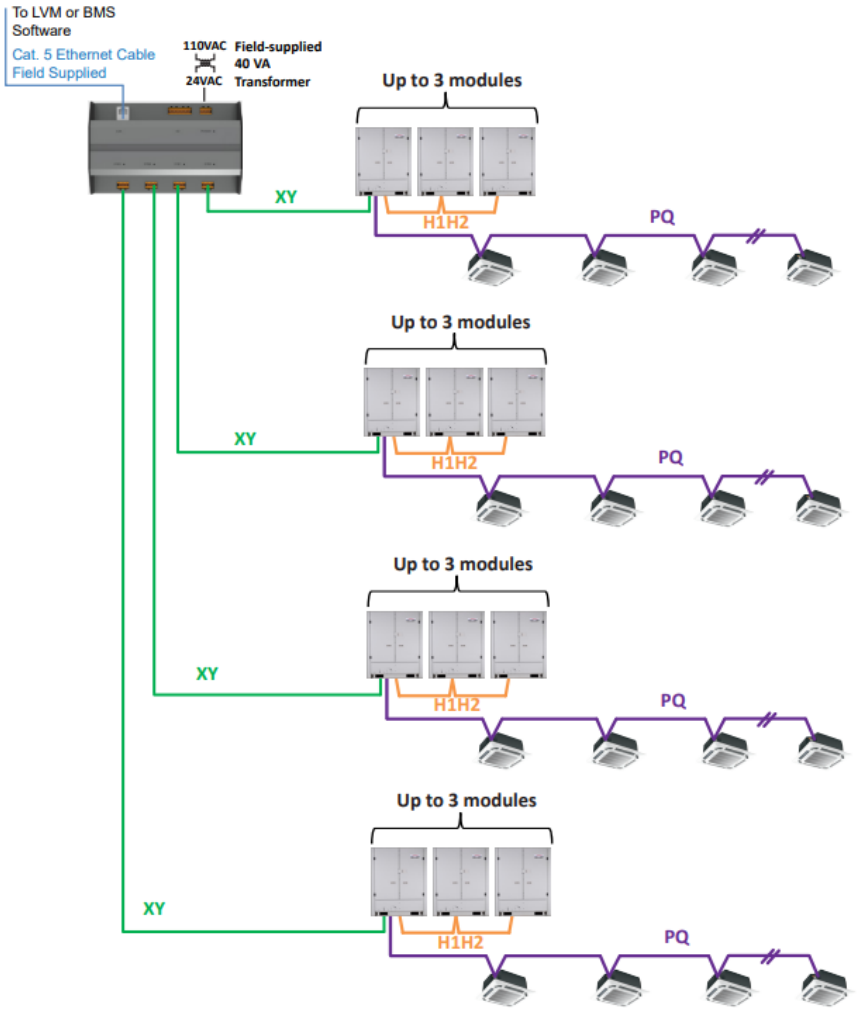
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

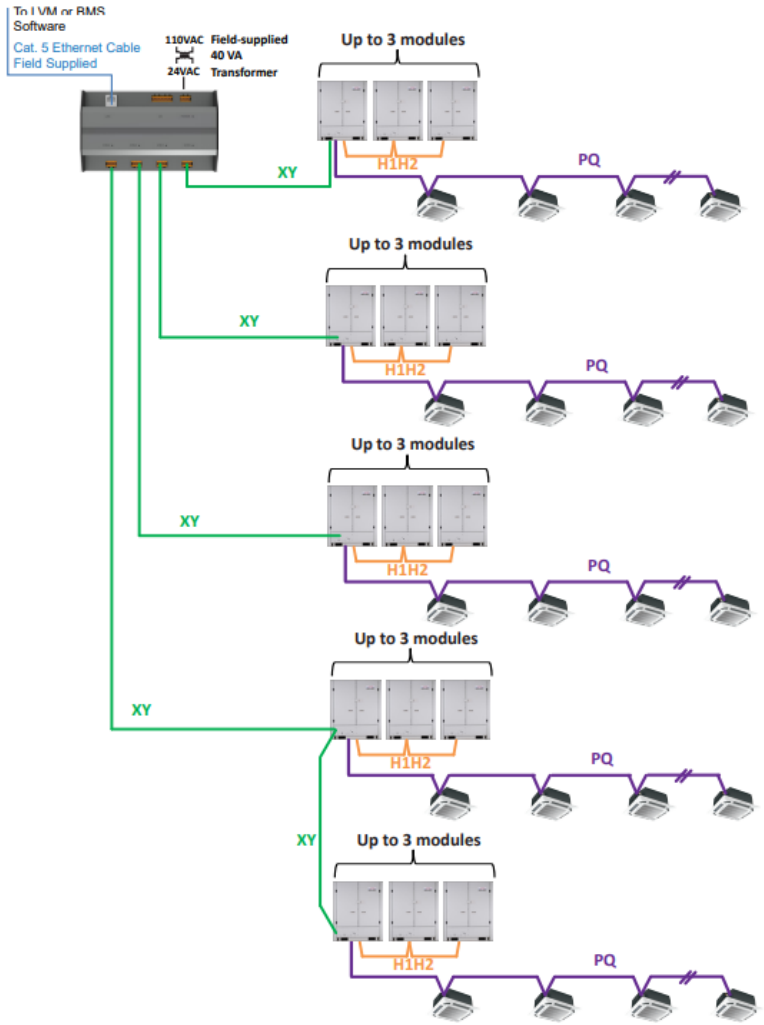
Figure 11. Four Multi-Module VRF Heat Pump Systems



NOTE –

1. Maximum 96 outdoor units per device. Up to 24 ODUs per busss. Maximum 256 indoor units per device. Up to 64 IDUs per busss.
2. Field-supplied communication wiring – 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to shield termination screw.
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 12. Daisy-Chain Fifth Multi-Module VRF Heat Pump System



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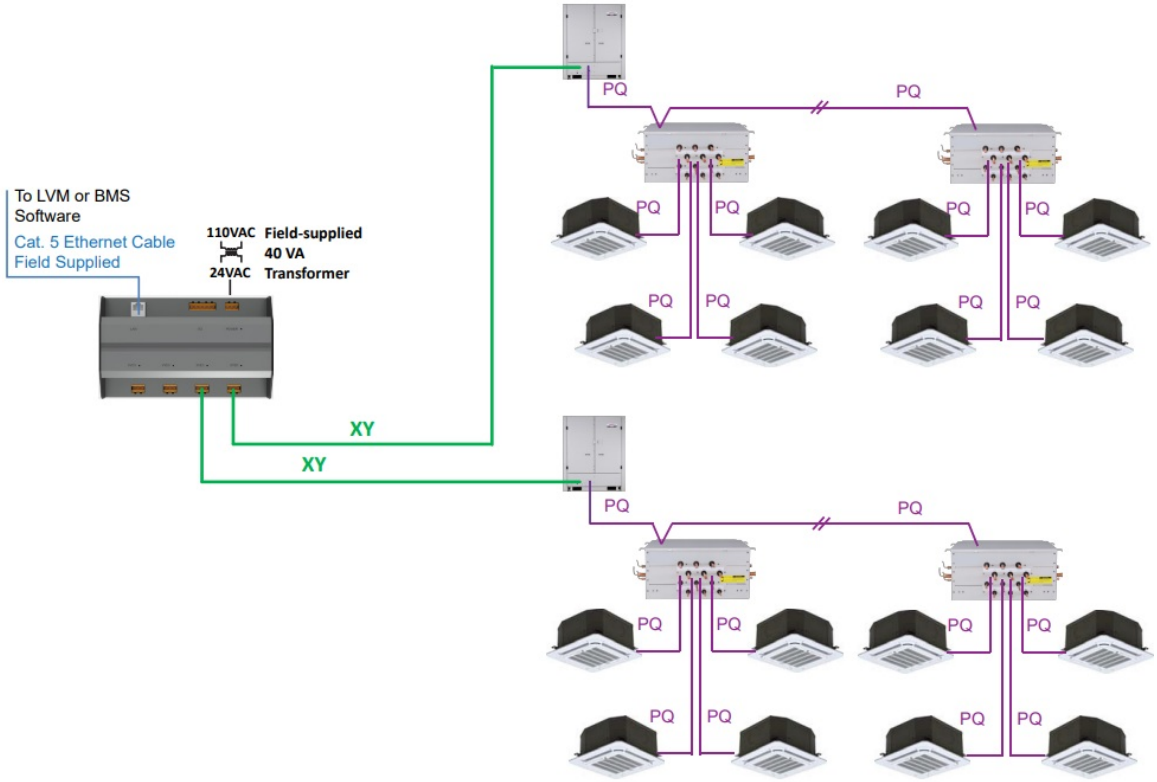
2. Field-supplied communication wiring – 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to shield termination screw.
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 13. Two Single Module VRF Heat Recovery Systems



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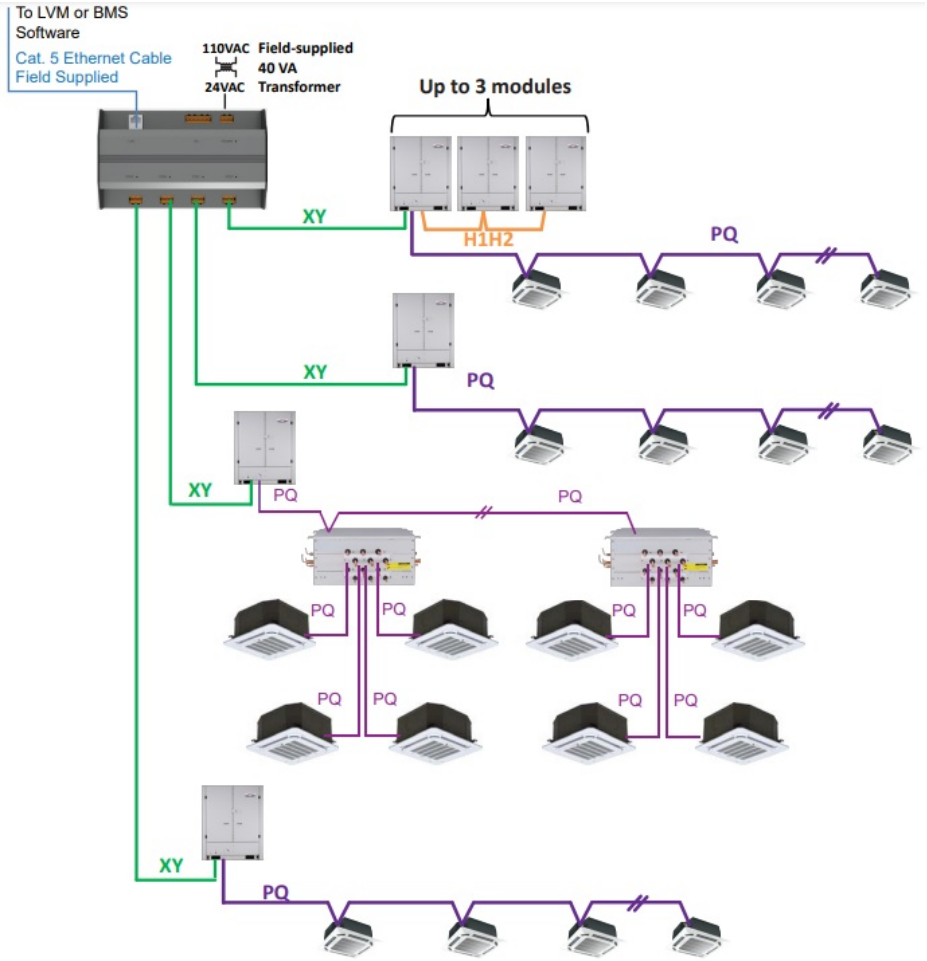
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 14. Heat Pump & Heat Recovery Systems Combined on one LVM



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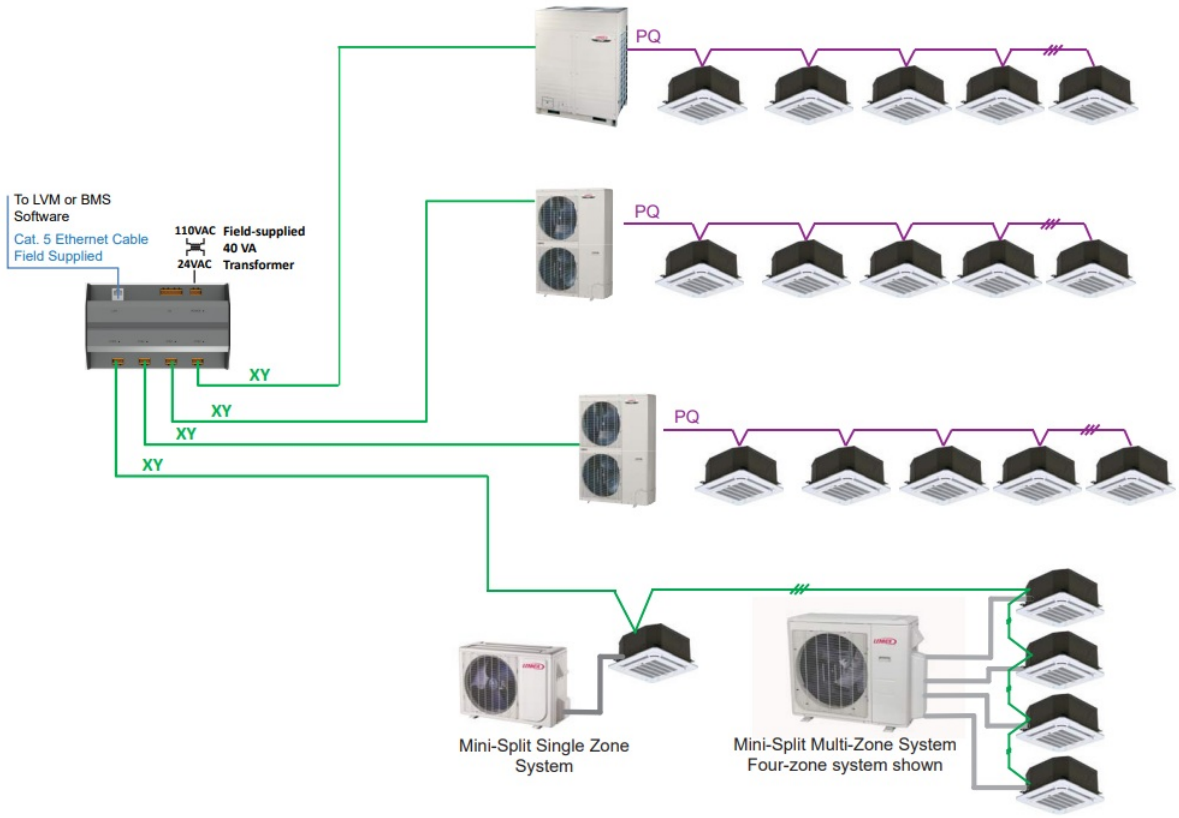
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 15. Multiple Lennox System Types Combined on one LVM



NOTE –

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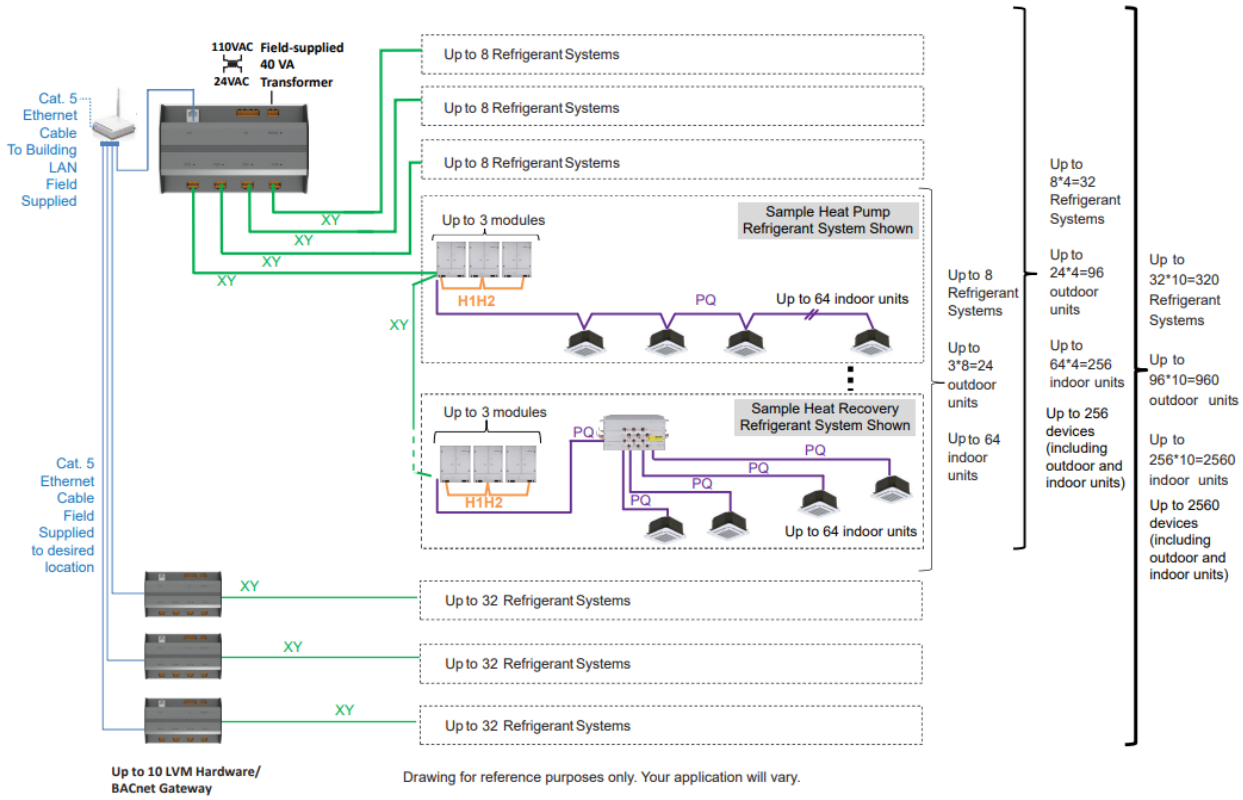
2. Field-supplied communication wiring – 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to shield termination screw.
3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 16. Up to Ten Devices



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3. If magnetic interference or other communication interfering factors are suspected, E terminal bonding should be used.
4. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.
5. Each VRF Refrigerant system is limited to 64 IDUs.

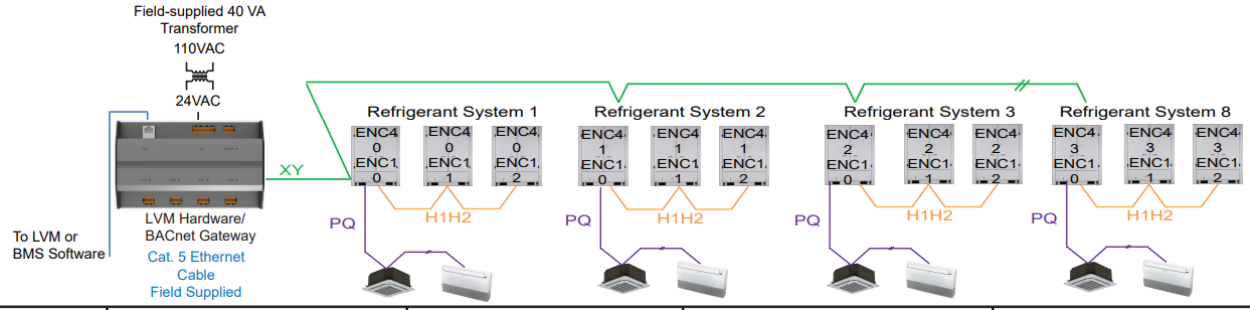
MULTIPLE SYSTEMS CONNECTED TO ONE PORT OF DEVICE (DAISY CHAIN

VRF Heat Recovery And VRF Heat Pump Systems

1. Provide every outdoor unit with a network address (ENC 4) starting from 0 up to 7. Maximum number of outdoor units per device is 96. See illustration on Page 15. NOTE – for Double and Triple Module Units – Sub units must NOT have the same network address (ENC 4) as the main unit it serves. ENC 4 must be unique for each refrigerant system on one XY port. Main/sub relationships are defined using ENC 1. See illustration on next page.
2. All Indoor units connected to a VPB outdoor unit are automatically addressed by default (256 total units per device). Use the outdoor unit LCD service console to automatically assign addresses to the indoor units.
3. XY shall connect from the main outdoor unit addressed as 0 (ENC 4), to all other main outdoor units connected to the LVM hardware. XY terminals must be connected to each main outdoor unit via daisy chain connection. NOTE – For Double and Triple Module Units – H1H2 terminals needs to be connected from the main outdoor

unit to each sub unit should sub units need to be seen from the LVM.

Figure 17. Outdoor Unit Addressing ENC Setting



Outdoor unit address setting under one XY port	Refrigerant System 1			Refrigerant System 2			Refrigerant System 3			Refrigerant System 8		
ENC1 (NUM_S) Valid range - 0 - 2	0	1	2	0	1	2	0	1	2	0	1	2
ENC4 (NET_ADDRESS) Valid range - 0 - 7	0	0	0	1	1	1	2	2	2	3	3	3
The actual network address of outdoor unit in LVM/BACnet*	0*4+0=0	0*4+1=1	0*4+2=2	0*4+4=4	0*4+5=5	0*4+6=6	0*4+8=8	0*4+9=9	0*4+10=10	0*4+12=12	0*4+13=13	0*4+14=14
*The actual network address of the outdoor unit in LVM/BACnet = ENC4*4 + ENC1.												

Appendix A

Maximum System Connections

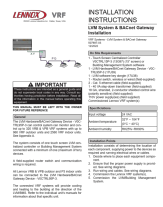
- Up to 320 VRF refrigerant systems
- Up to 960 VRF Outdoor units
- Up to 2560 VRF or Mini-Split indoor units
- Up to 2560 devices (including outdoor and indoor units)

NOTE – Refer to wiring diagrams for connection wiring details.

Technical Support

- 1-800-4LENNOX
- (1-800-453-6669)
- vrftechsupport@lennoxind.com
- www.LennoxCommercial.com
- Scan this QR code to download the Lennox VRF & Mini-Splits App
- from the Apple App Store or the Google Play store.
- The app contains technical literature and troubleshooting resources.

Documents / Resources

	LENNOX V0CTRL95P-3 LVM Hardware BACnet Gateway Device [pdf] Installation Guide V0CTRL95P-3, V0CTRL15P-3 13G97, V0CTRL95P-3 LVM Hardware BACnet Gateway Device, LVM Hardware BACnet Gateway Device, Hardware BACnet Gateway Device, BACnet Gateway Device, Gateway Device

References

- Commercial Air Conditioning & Heating Units | Lennox Commercial