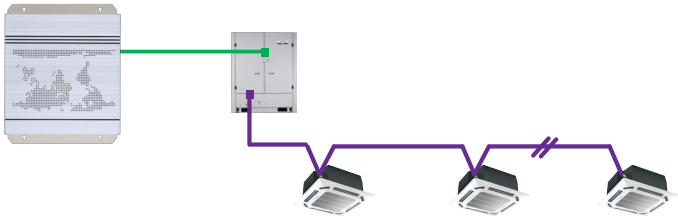
LENNOX VRF

INSTALLATION INSTRUCTIONS

LVM System & BACnet Gateway Installation

VRF Systems - LVM System & BACnet Gateway
507897-01
04/2019



⚠ 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 - V0CTRL95P-3 can control system can monitor and control 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 centralized 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.

On Site Requirements

1 - Touch Screen Centralized Controller V0CTRL15P-3 (15" screen) or Building Management System software
1 - LVM Hardware/BACnet Gateway Device - V0CTRL95P-3
1 - LVM software key dongle
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	32~122°F (0~50°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 Management System.

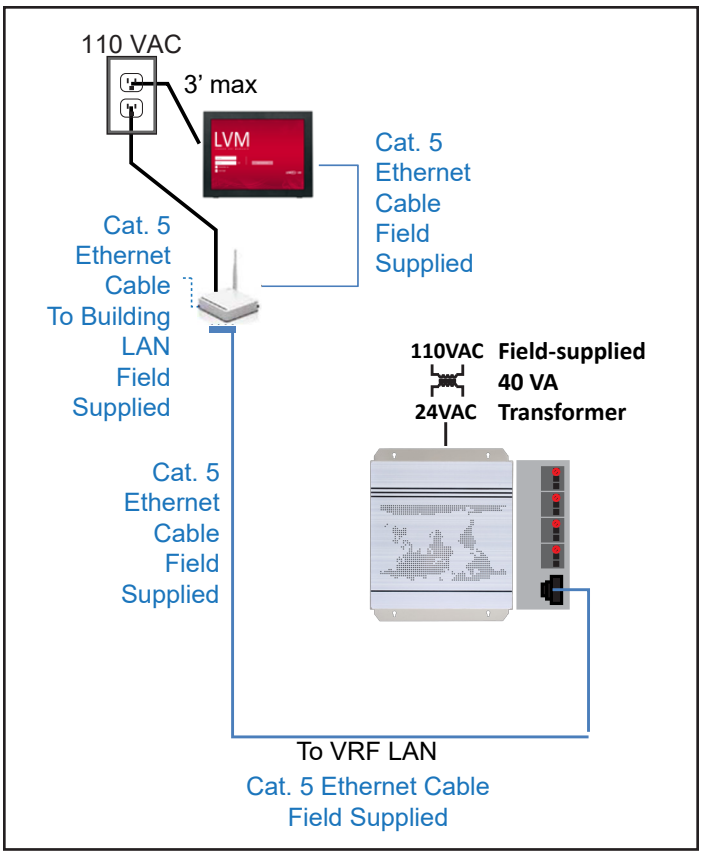


Figure 1. Connection to LVM Centralized Controller

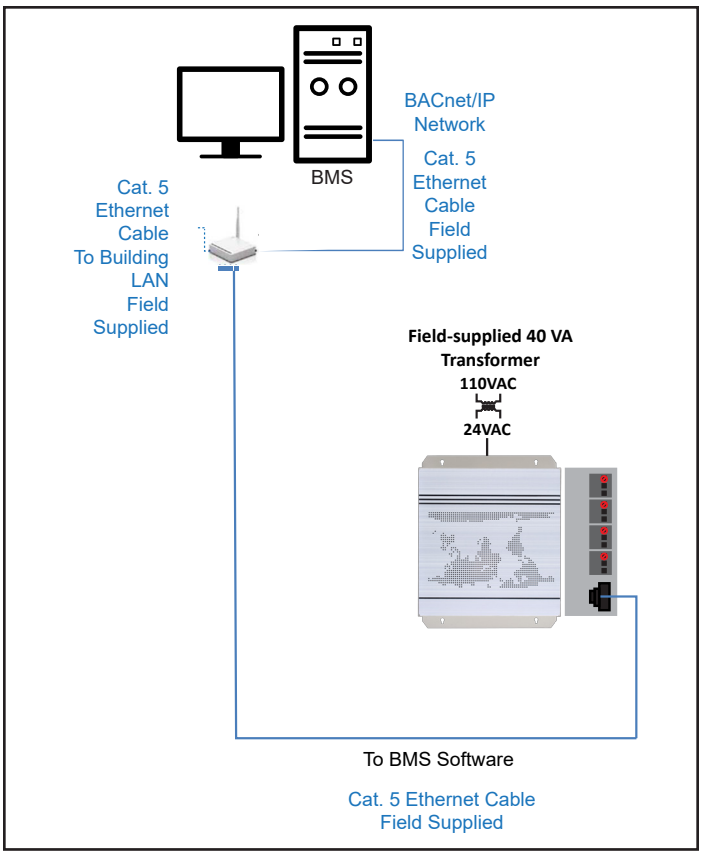


Figure 2. Connection to BACnet Gateway

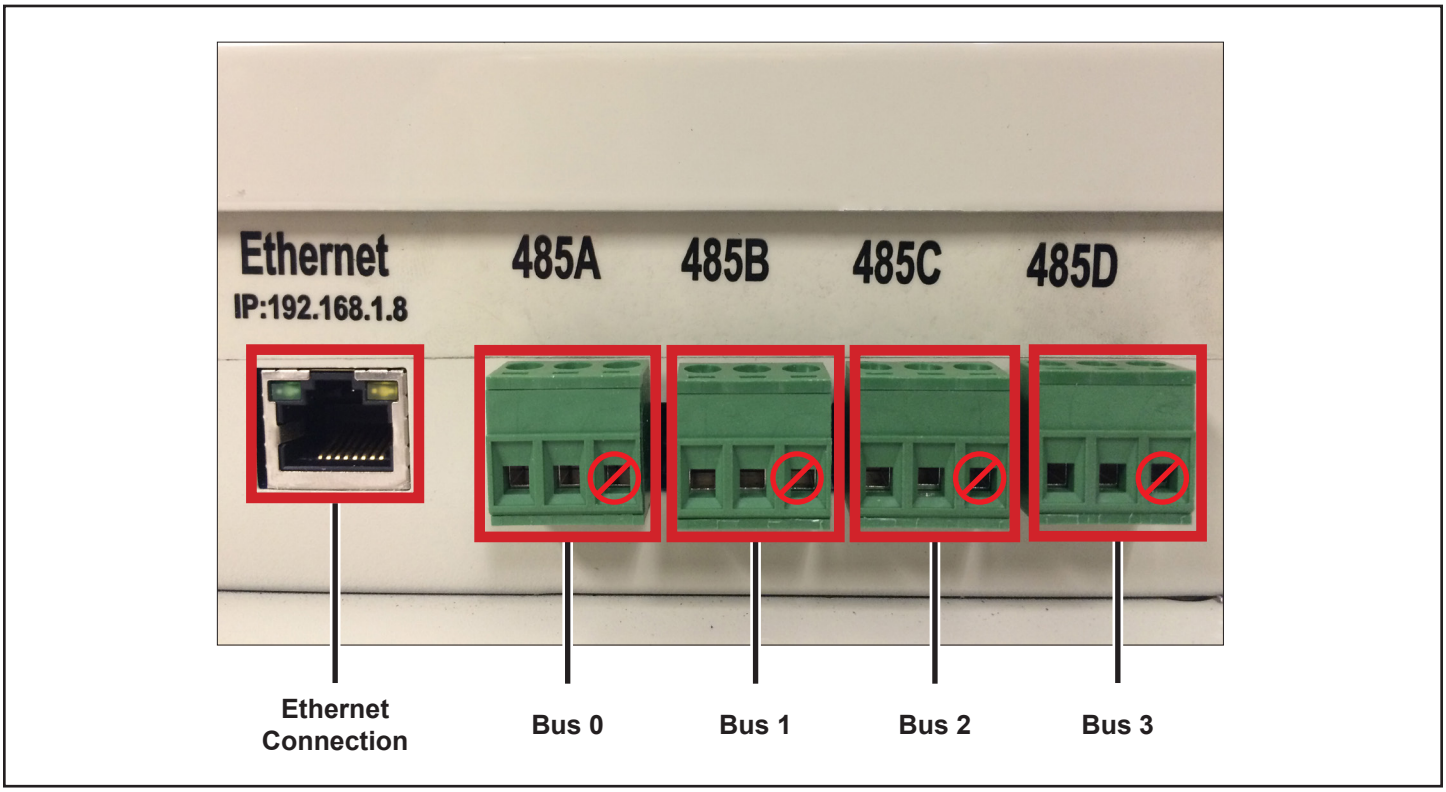
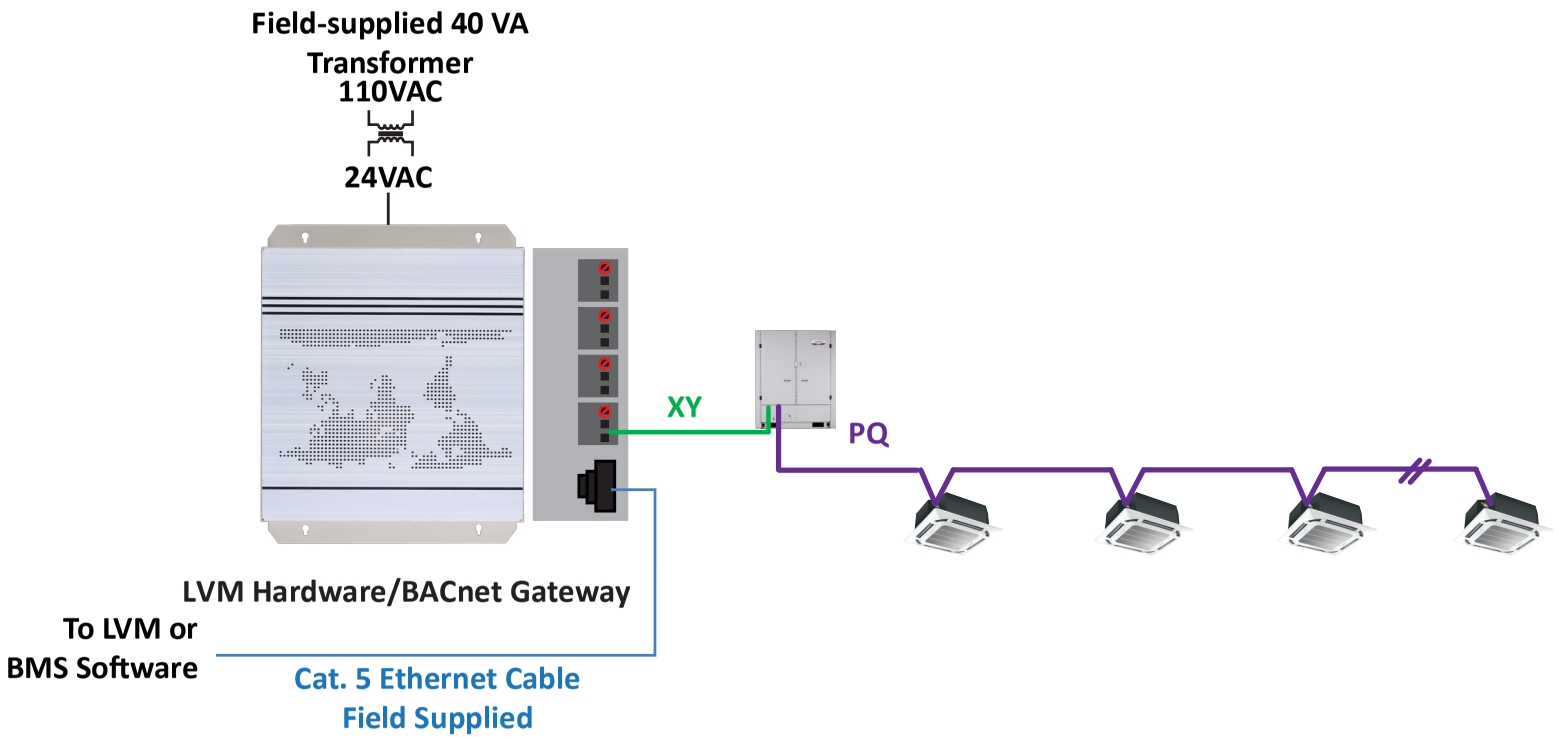


Figure 3. Device Connection Points



NOTE -

1. Maximum 96 outdoor units per device. Up to 24 ODUs per bus. Maximum 256 indoor units per device. Up to 64 IDUs per bus.

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

3. 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.

4. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 4. One Single Module VRF Heat Pump System

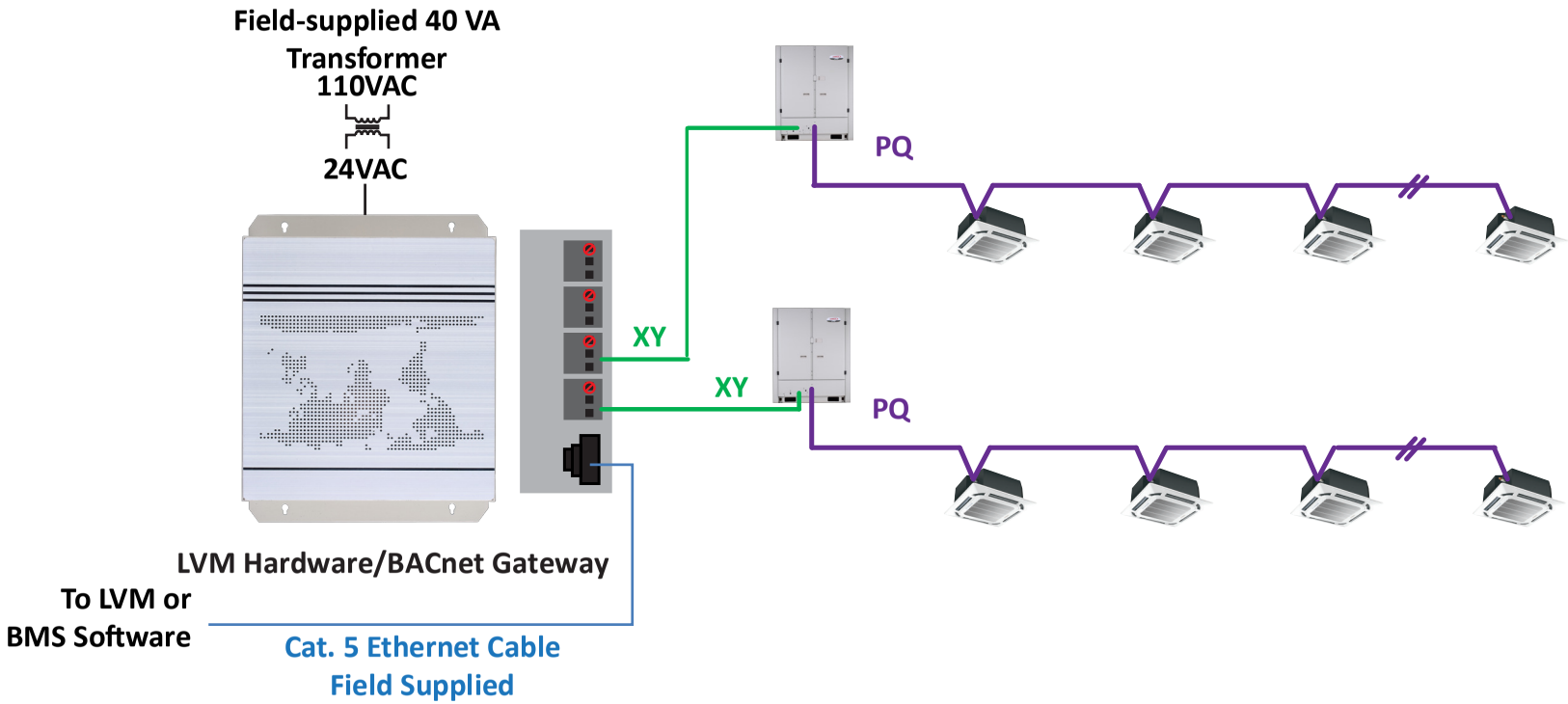


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Figure 5. Two Single Module VRF Heat Pump Systems

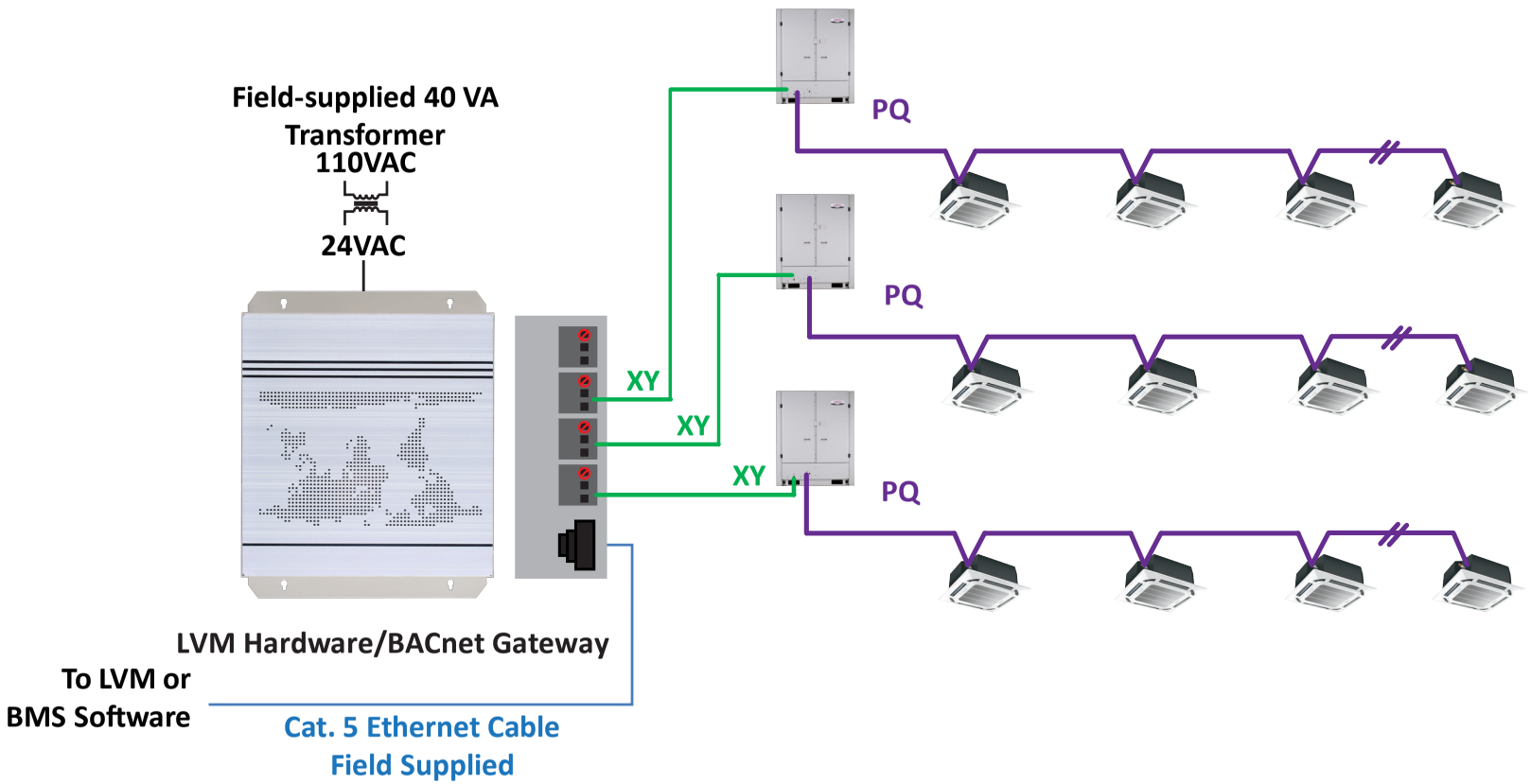

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Figure 6. Three Single Module VRF Heat Pump Systems

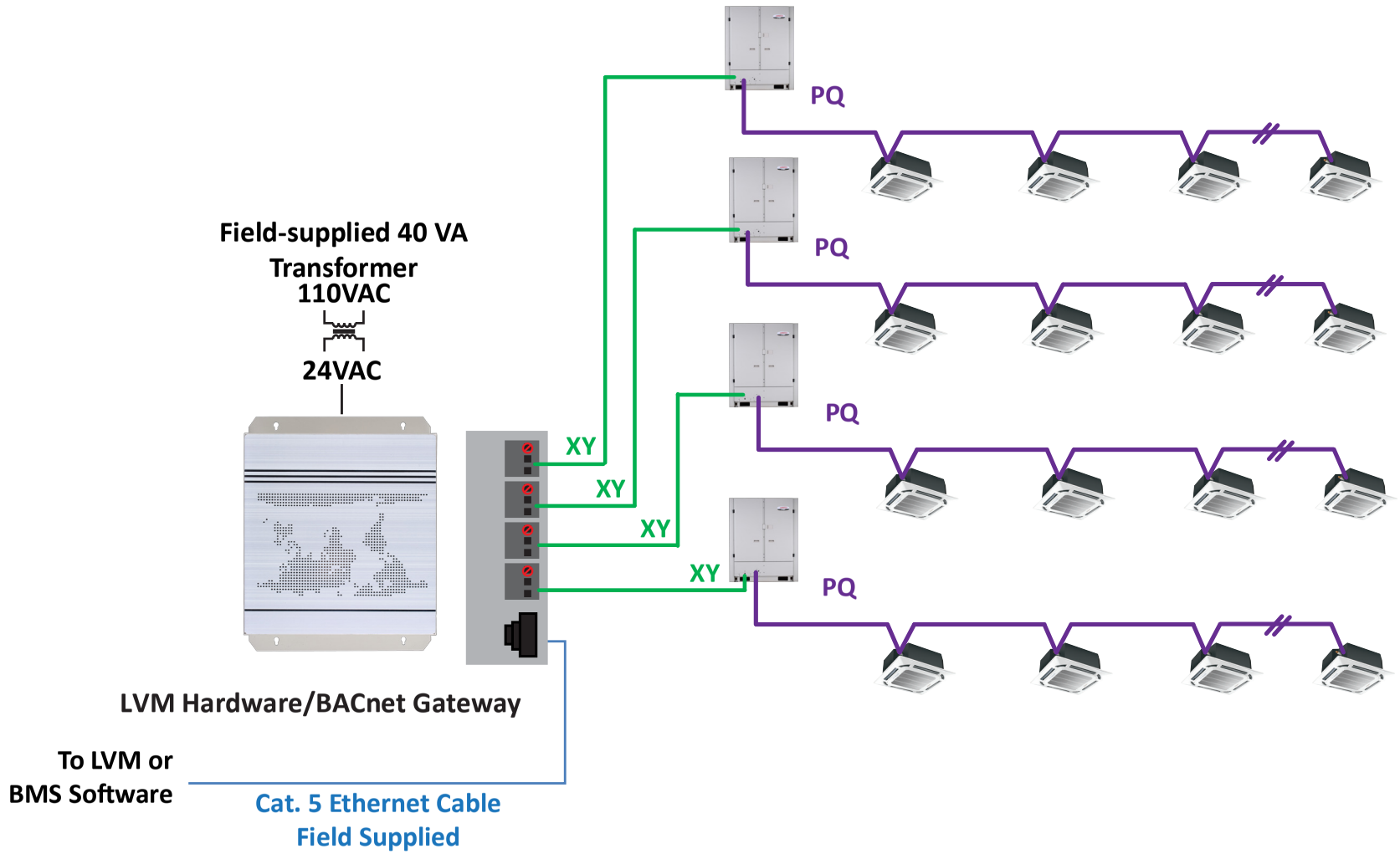

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Figure 7. Four Single Module VRF Heat Pump Systems

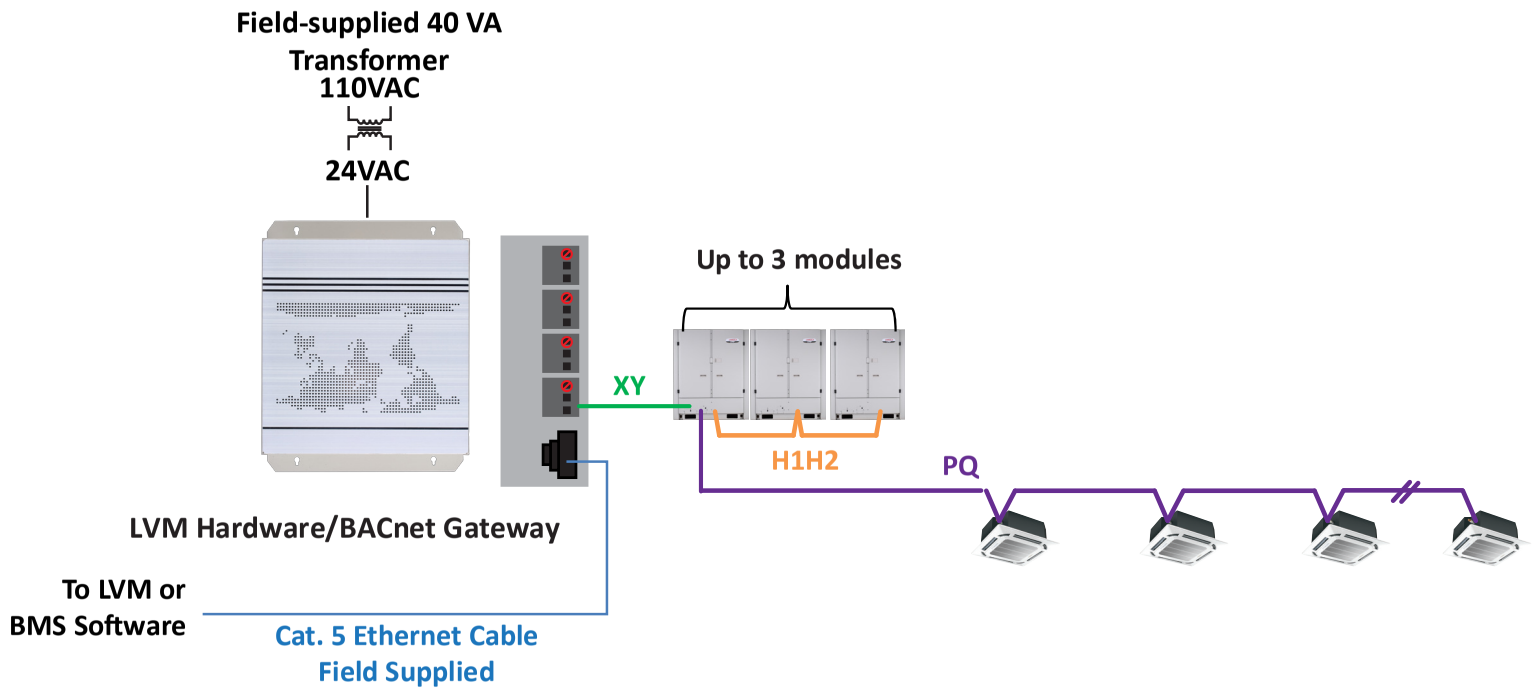

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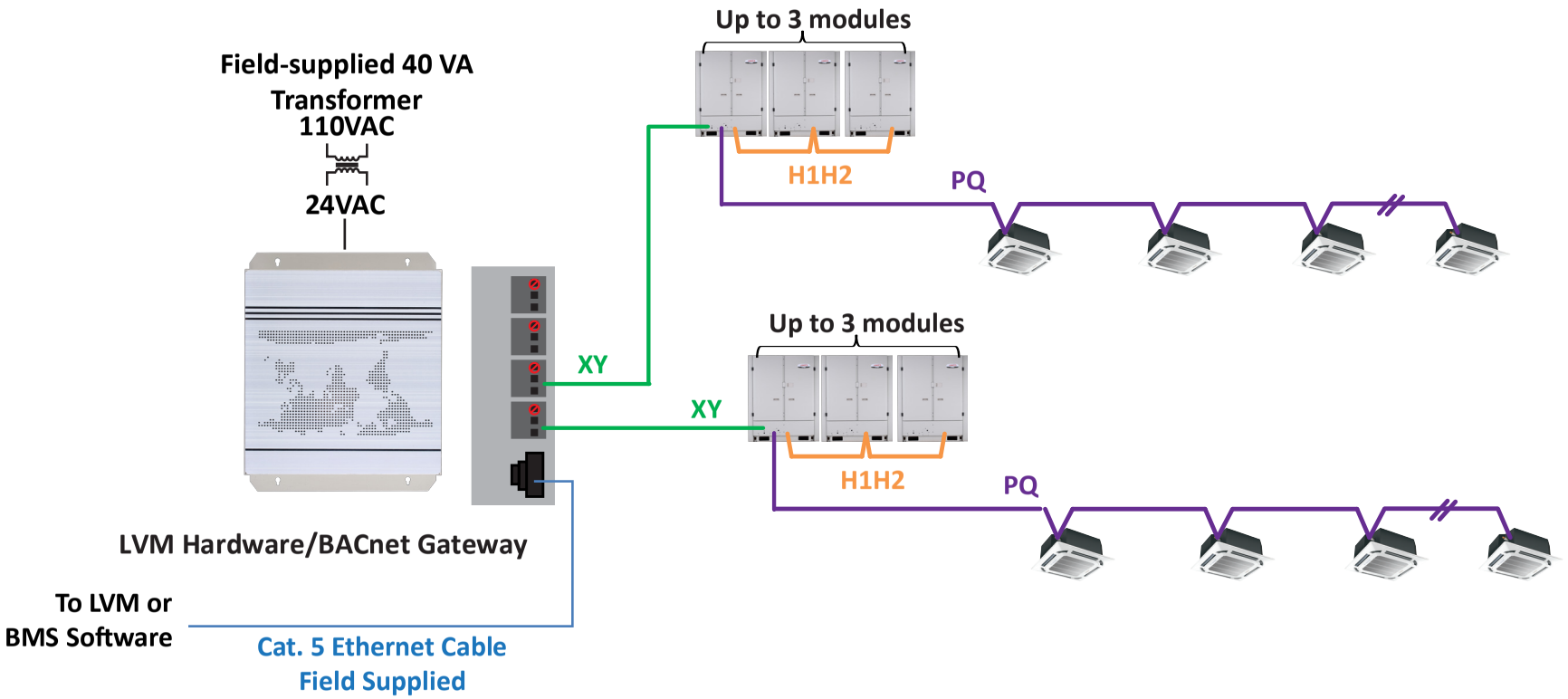
Figure 8. One Multi-Module VRF Heat Pump System



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3. 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.

4. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 9. Two Multi-Module VRF Heat Pump Systems

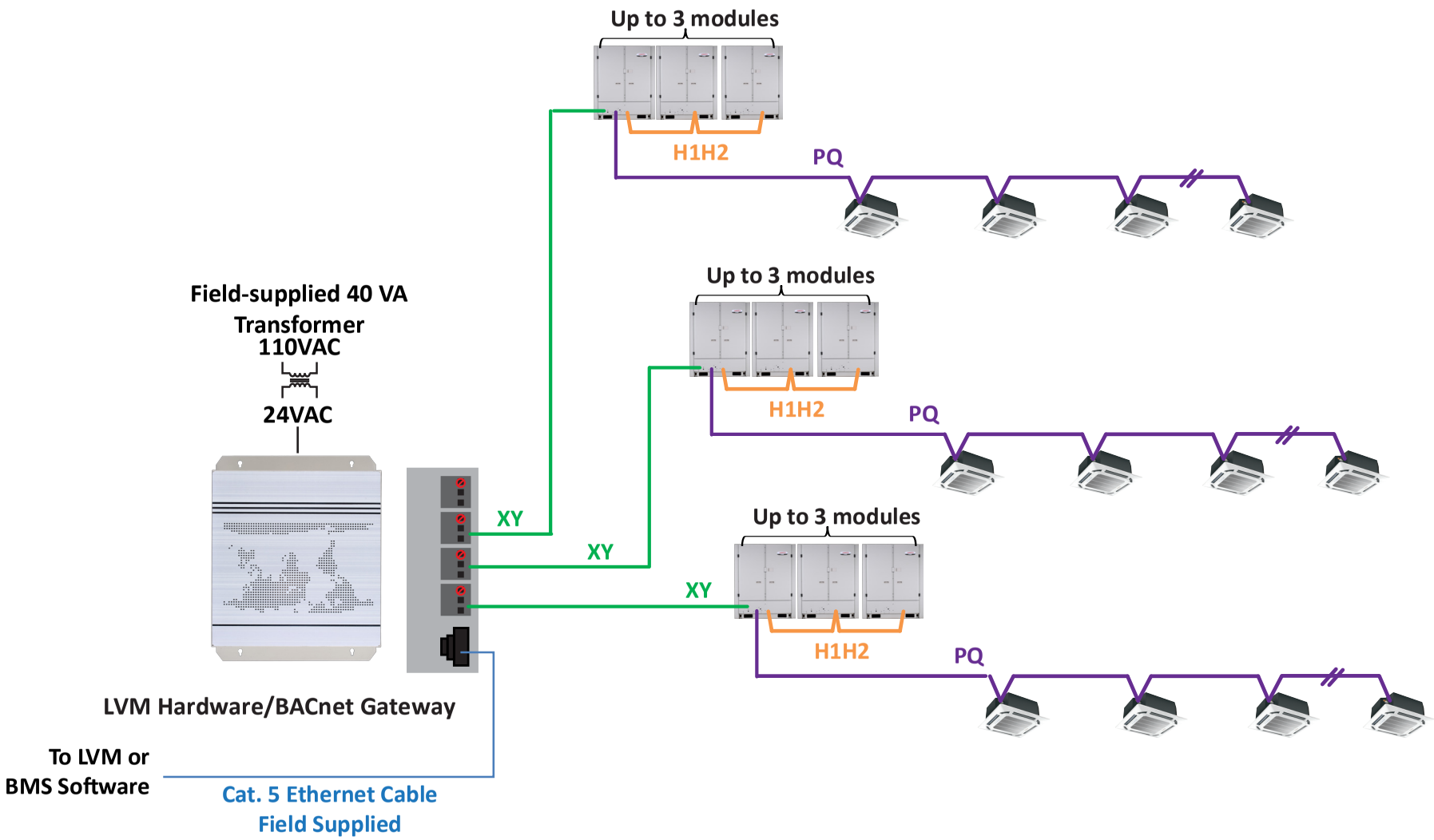

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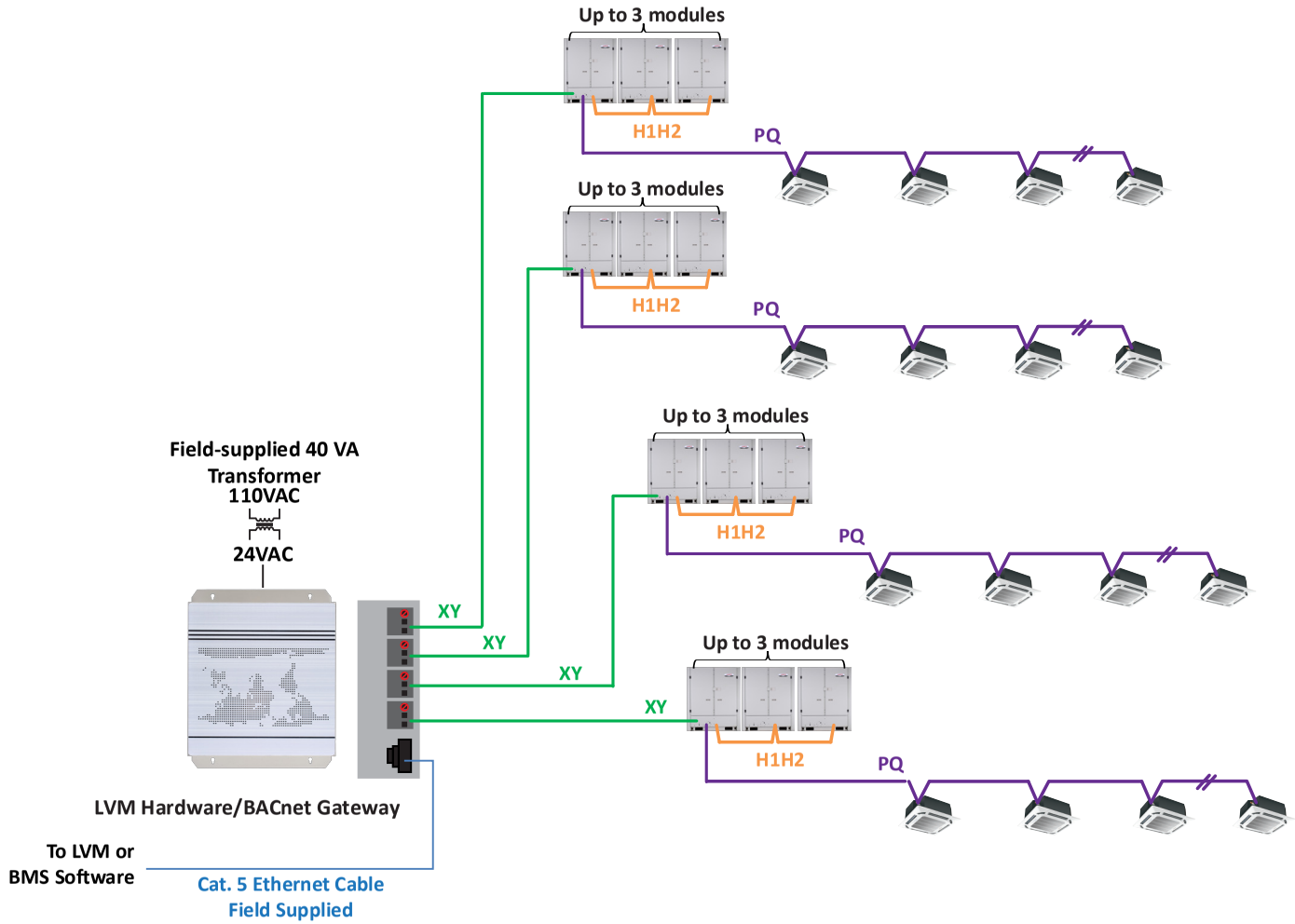
Figure 10. Three Multi-Module VRF Heat Pump Systems



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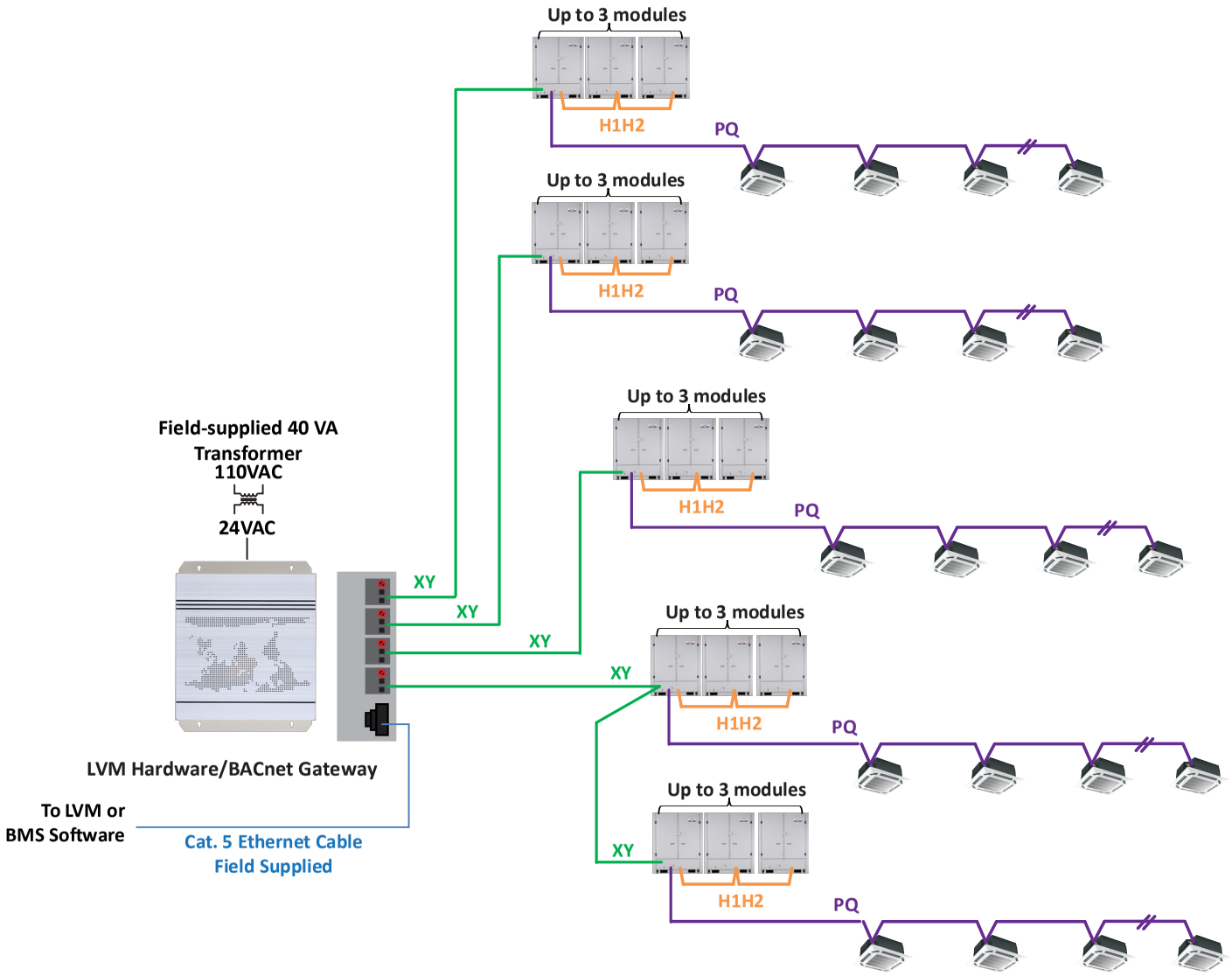
3. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.

4. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 11. Four Multi-Module VRF Heat Pump Systems



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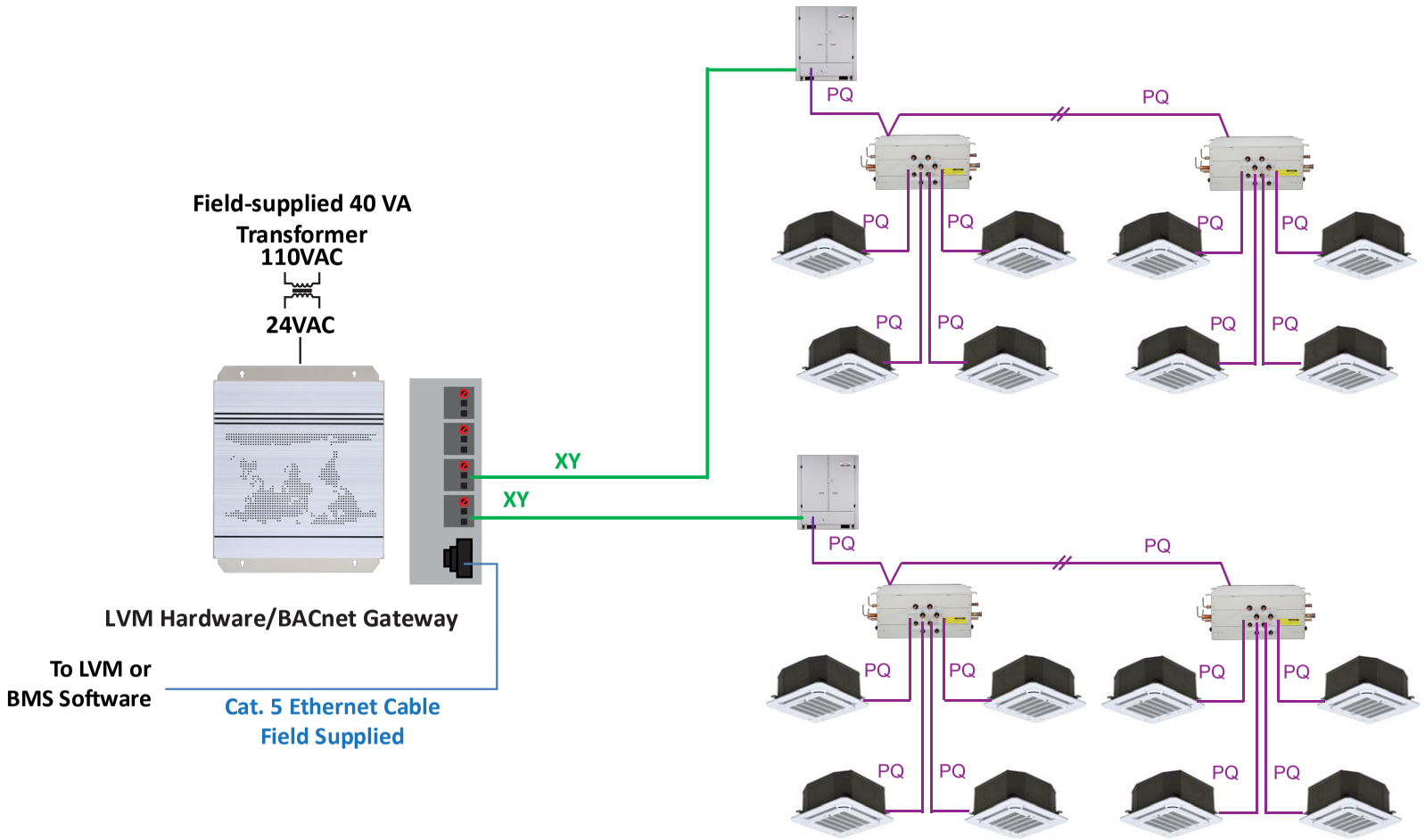
2. Field-supplied communication wiring - 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal.

3. 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.

4. Each VRF Refrigerant system is limited to 64 IDUs.

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



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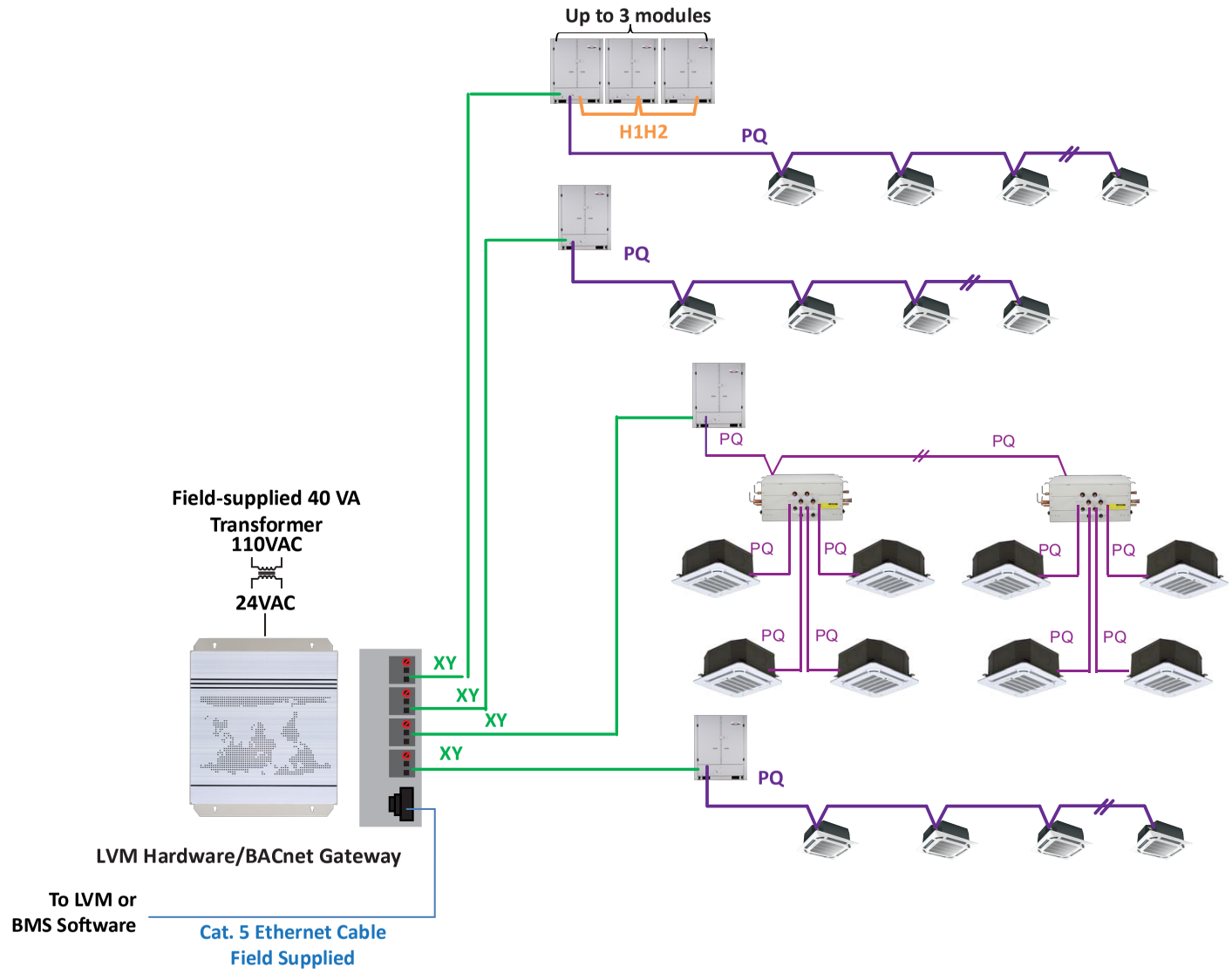
3. VRF Heat Pump PQ wiring configuration shown. XY wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.

4. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 13. Two Single Module VRF Heat Recovery Systems



NOTE -

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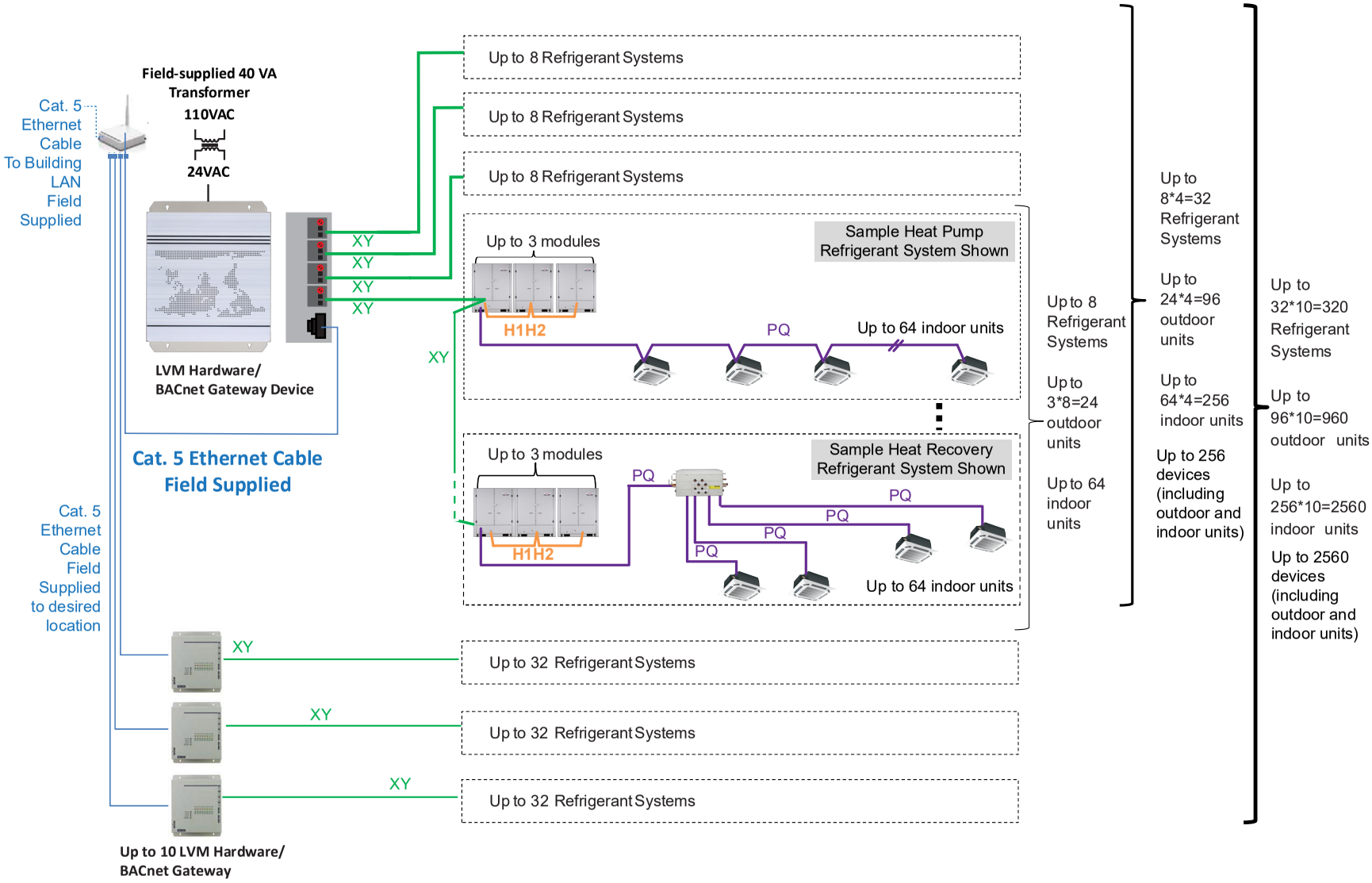
2. Field-supplied communication wiring - 18 GA., stranded, 2-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal.

3. 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.

4. Each VRF Refrigerant system is limited to 64 IDUs.

Figure 14. Heat Pump & Heat Recovery Systems 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 GROUND terminal.
3. VRF Heat Pump & Heat Reovery 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.
4. Each VRF Refrigerant system is limited to 64 IDUs.

Drawing for reference purposes only. Your application will vary.

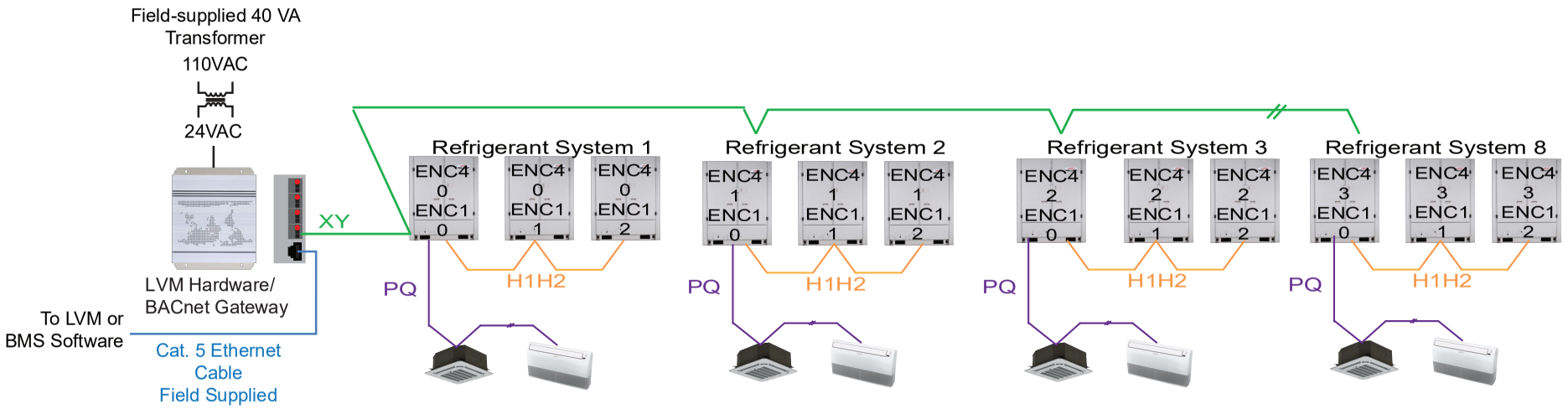
Figure 15. Up to Ten Devices

MULTIPLE SYSTEMS CONNECTED TO ONE PORT OF DEVICE (DAISY CHAIN)

VRF Heat Recovery And VRF Heat Pump Systems

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 14. ***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.*

1. 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.
2. 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.*



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.												

Figure 16. Outdoor Unit Addressing ENC Setting

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

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