Installation and Application Guide

# BACnet Gateway

## V0CTRL86P

## Lennox VRF, Mini-VRF and Mini-Split

CONTROLS
507594-04
03/2017

**THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE**

## Equipment List

**Package 1 of 1 consists of:**
1 - BACnet gateway
1 - Instruction and Application Guide

## General

The Lennox VRF, Mini-VRF and Mini-Split BACnet Gateway allows connection of those systems to a building management system (BMS) using BACnet protocols.

**Contents**



**⚠ WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

**⚠ WARNING**

**Do not operate device with wet hands.**

**⚠ CAUTION**

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

**⚠ CAUTION**

**Do not install device in areas where heavy oil, vapor, or gases containing sulfur may exist or the controller may be damaged.**

**⚠ CAUTION**

**Clean device using a clean, damp cloth. Do not spray cleanser on or around device.**

**⚠ 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.

## Network Setting

There is an Ethernet interface in the device (Eth0). The factory-set device address is 192.168.1.8.

## Security

Default Admin User Name: admin
Default Admin Password: 12345

## Specifications

| Function | Description |
|---|---|
| Input Supply Power | 24VAC |
| BACnet Connection | BACnet/IP |
| I/O | 4 port 485 interface |
| Operating Temperature Range | 32°F ~ 122°F<br>(0°C ~ 50°C) |
| Operating Humidity Range (Rh) | 25% ~ 90% |
| Dimensions | 10-1/2 in. X 10 in. X 2-3/8 in.<br>(26 cm X 25 cm X 6 cm) |

***NOTE -*** *Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

## System Connections

The BACnet instance number is a four-digit number that identifies the BACnet gateway bus (port), the type of unit (indoor unit or outdoor unit) and the unit's address. Device ID = XXXX

| X | X | X X |
|---|---|---|
| BACnet Bus (Port) Number<br><br>(0-3) | Unit Type<br>0 Indoor Unit<br>1 Outdoor Unit | Unit Address<br>(Indoor Unit 0-63)<br>(Outdoor Unit 0-31) |

**Example -** 0001 indicates BACnet device number 0, indoor unit type, indoor unit number 01.

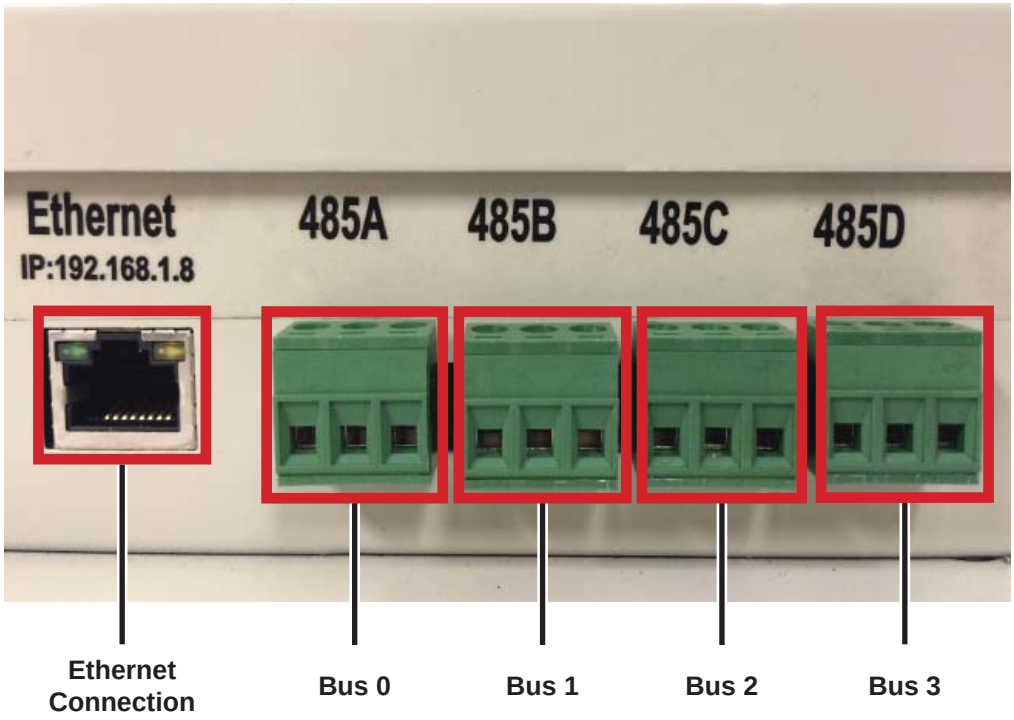



**Figure 1. VRF BACnet Gateway Connection Points**

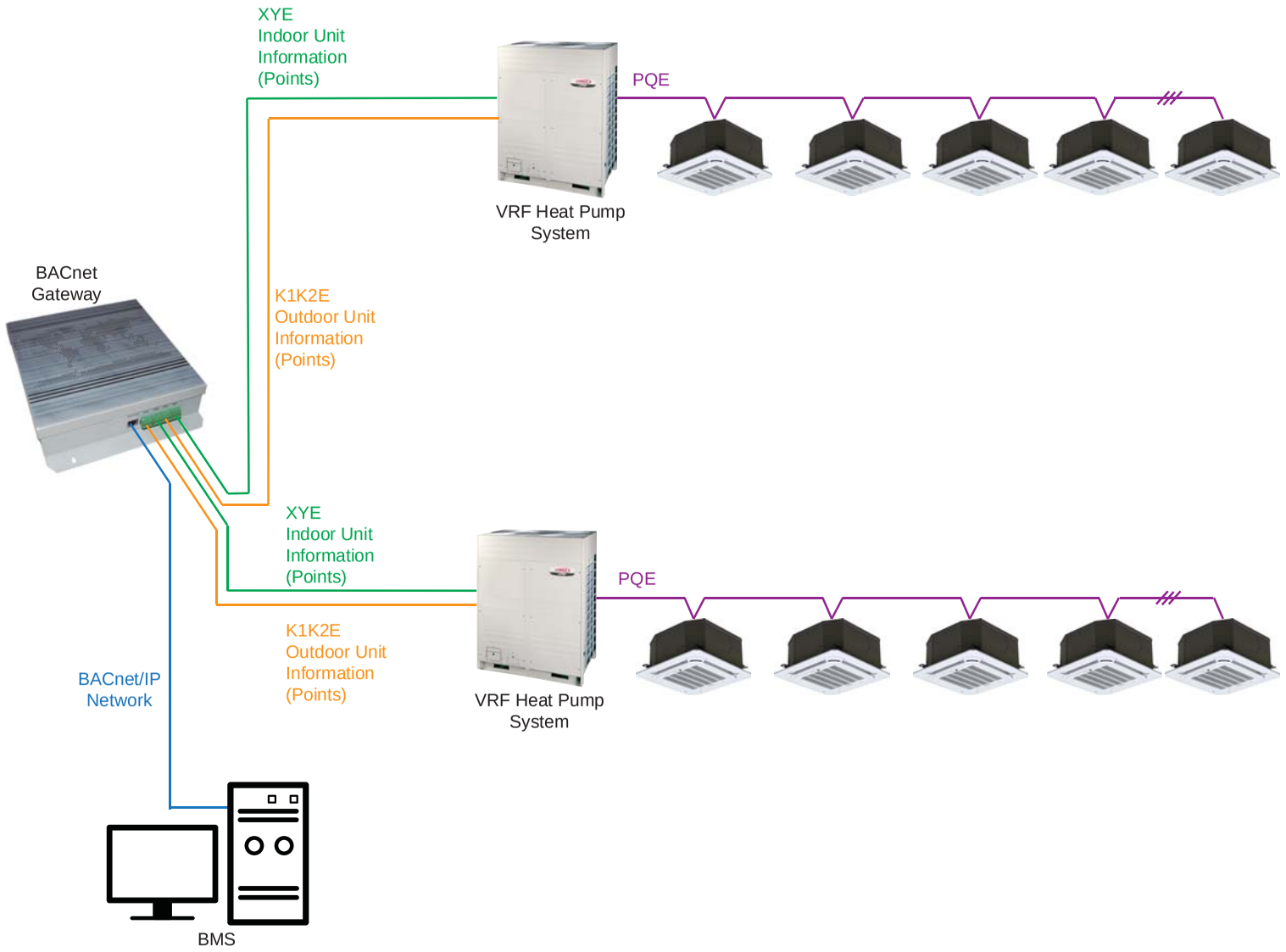



**Figure 2. VRF System Indoor and Outdoor Unit Monitoring**

***NOTE -*** *Maximum 96 outdoor units per device. Up to 24 ODUs (K1K2E connection required) per bus. (VRF & Mini-VRF Systems only) Maximum 256 indoor units per device. Up to 64 IDUs per bus. (All Systems)*

***NOTE -*** *Field-supplied communication wiring - 18 GA., stranded, 3-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal, not to E.*

***NOTE -*** *VRF Heat Pump PQE wiring configuration shown. XYE wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.*

***NOTE -*** *Each VRF Refrigerant system is limited to 63 IDUs.*

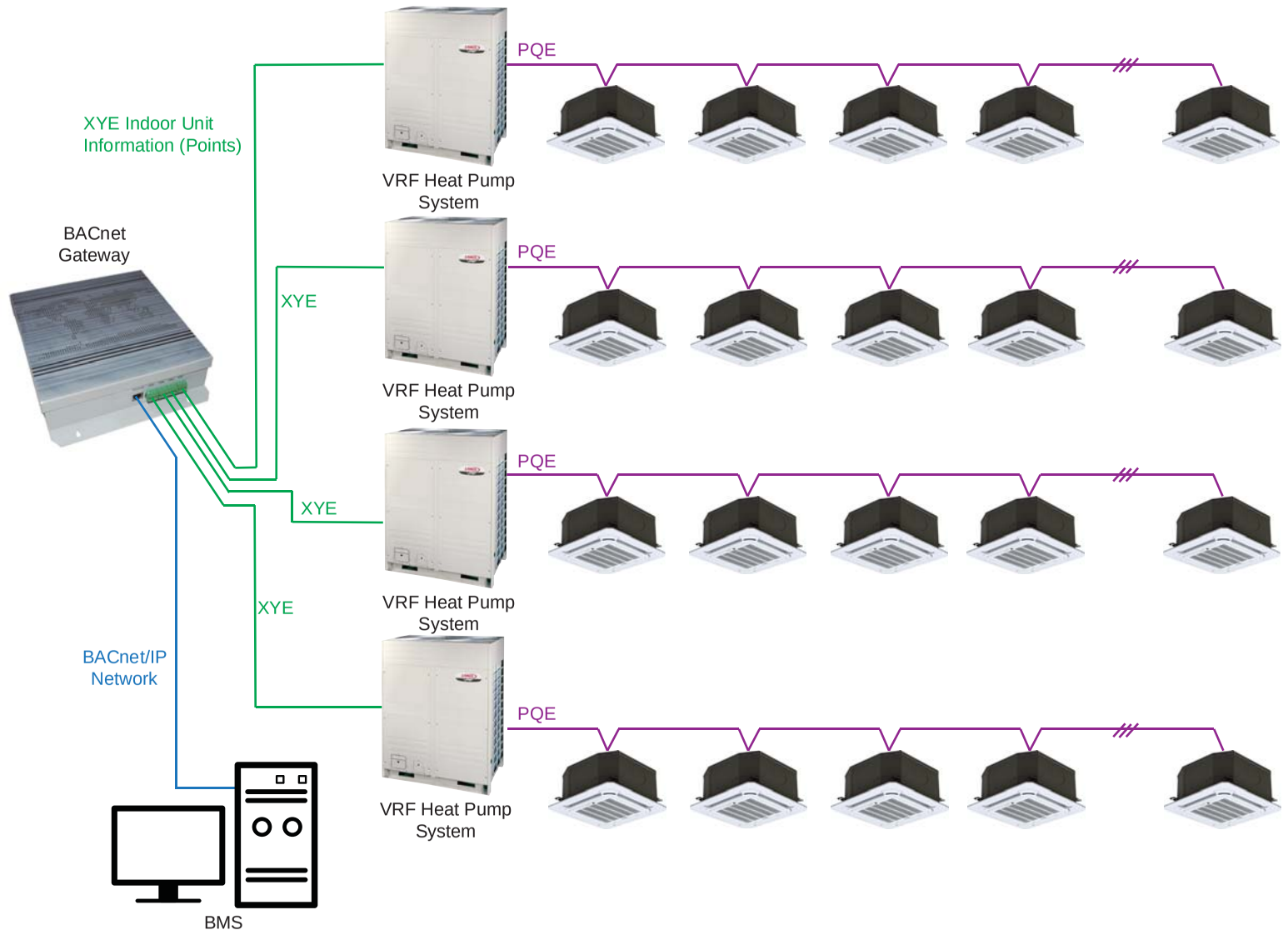



**Figure 3. VRF System Indoor Unit Only Monitoring**

***NOTE -*** *Maximum 96 outdoor units per device. Up to 24 ODUs (K1K2E connection required) per bus. (VRF & Mini-VRF Systems only) Maximum 256 indoor units per device. Up to 64 IDUs per bus. (All Systems)*

***NOTE -*** *Field-supplied communication wiring - 18 GA., stranded, 3-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal, not to E.*

***NOTE -*** *VRF Heat Pump PQE wiring configuration shown. XYE wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.*

***NOTE -*** *Each VRF Refrigerant system is limited to 63 IDUs.*

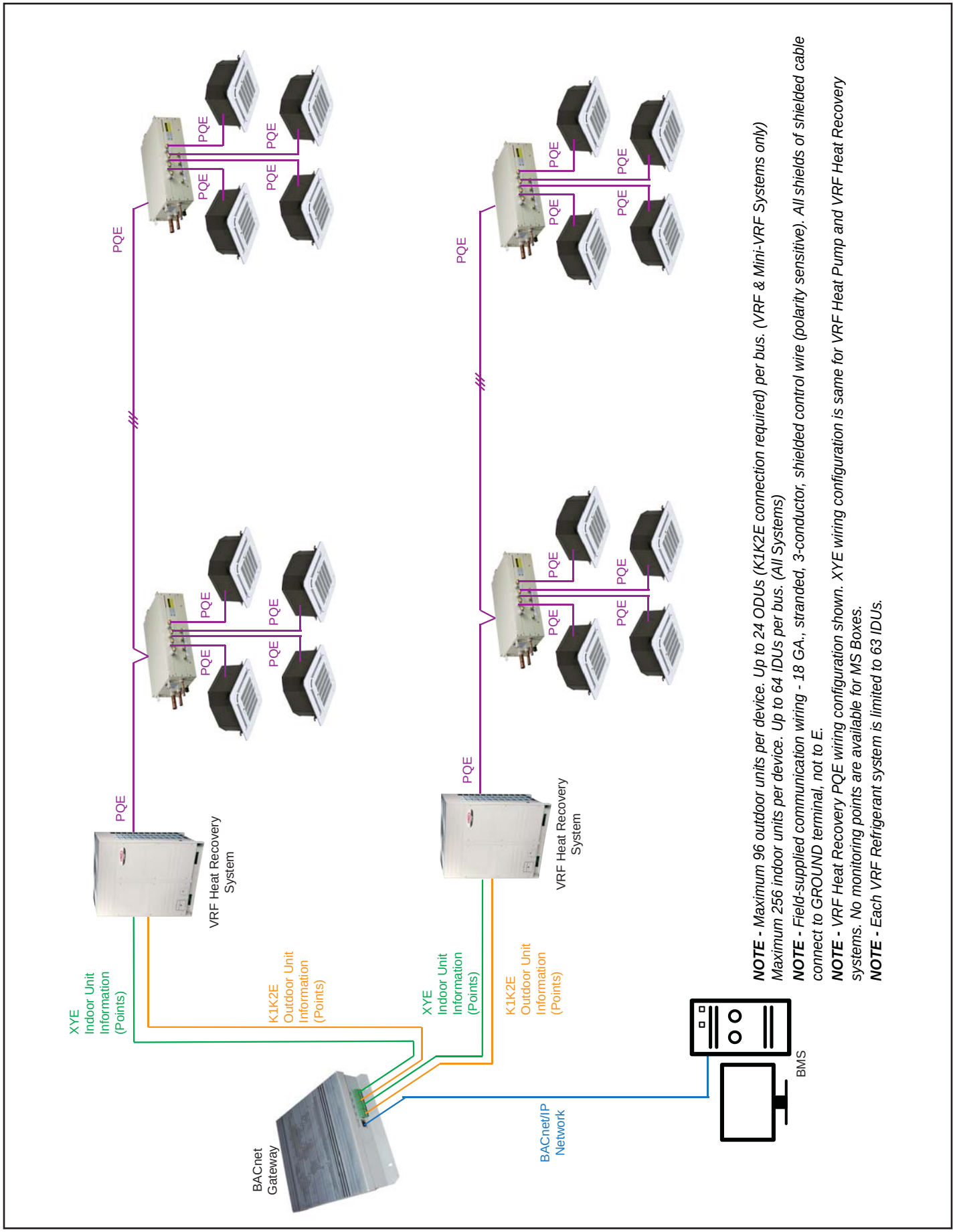



**Figure 4. VRF Heat Recovery System Indoor and Outdoor Unit Monitoring**

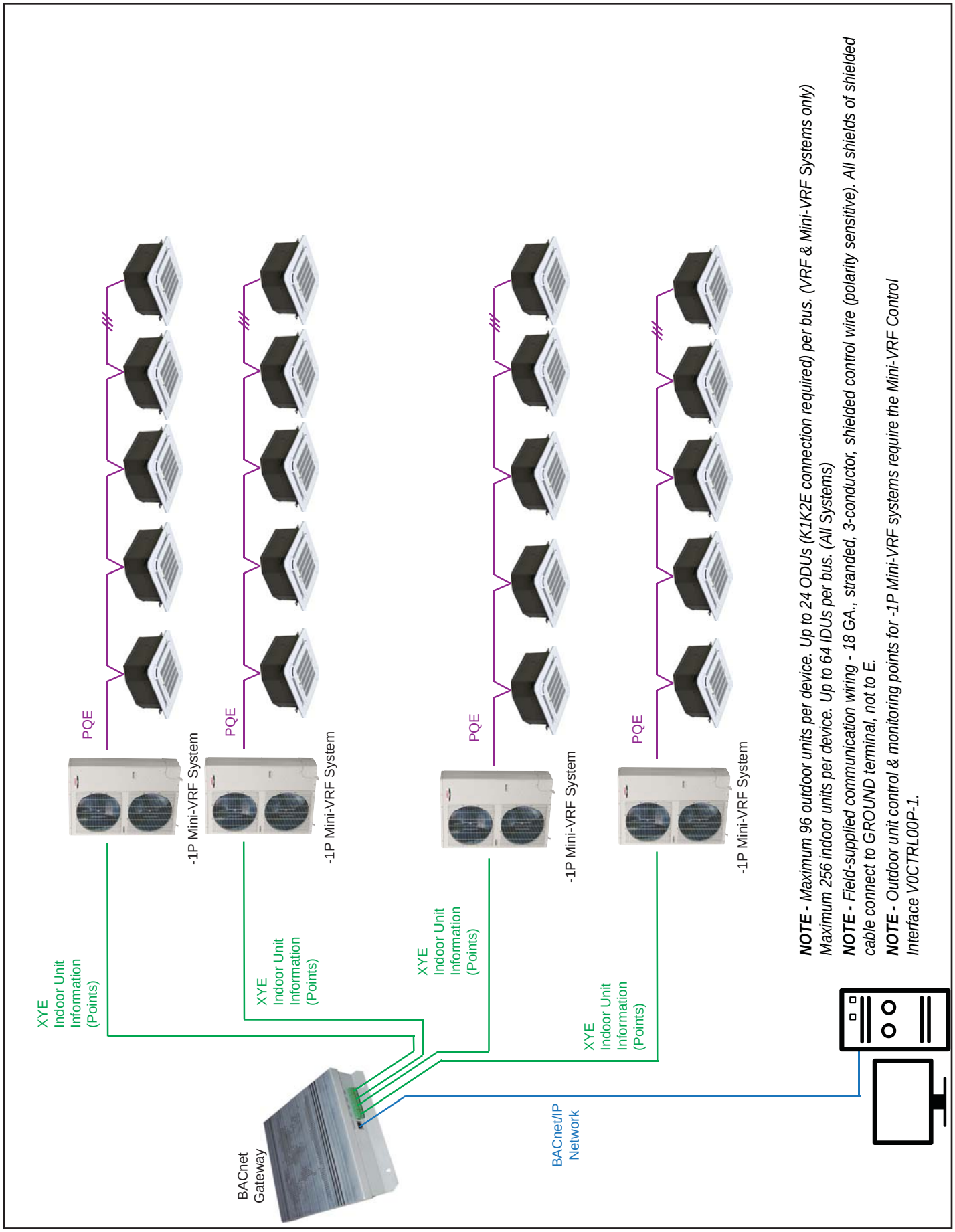



**Figure 5. -1P or -2P Mini-VRF System Indoor Unit Only Monitoring**

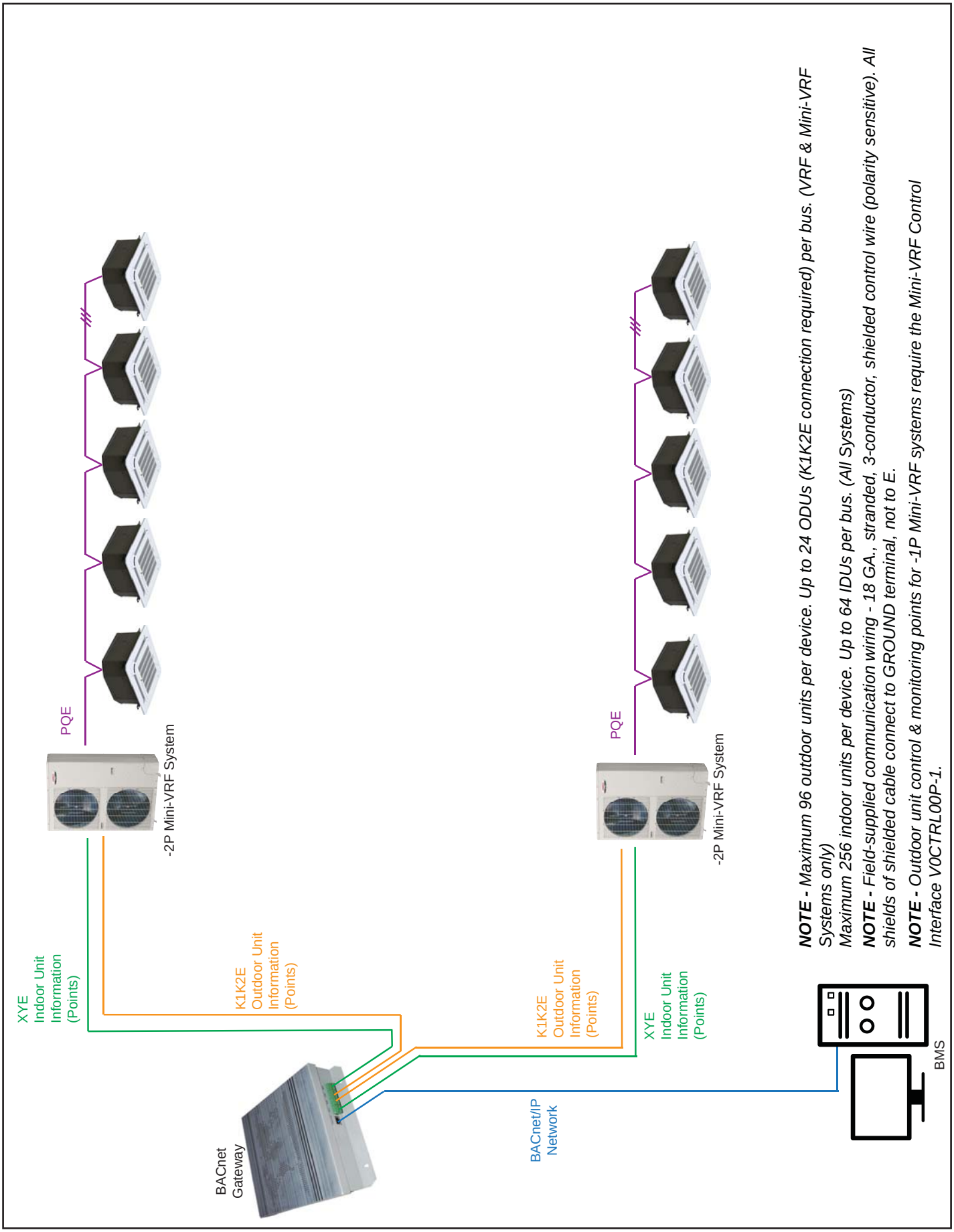



**Figure 6. -2P Mini-VRF System Indoor and Outdoor Unit Monitoring**

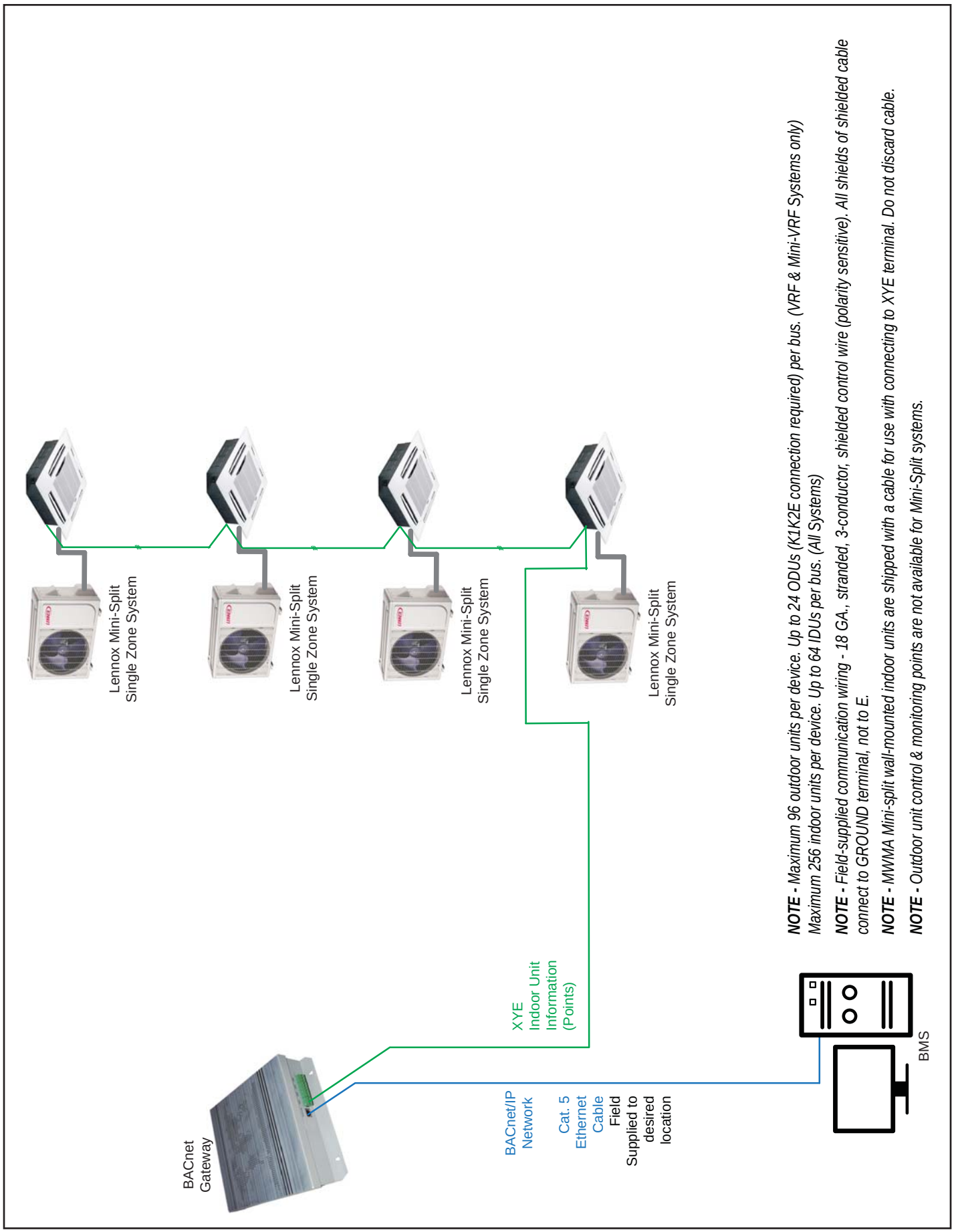



**Figure 6. Mini-Split Single Zone System Indoor Unit Only Monitoring**

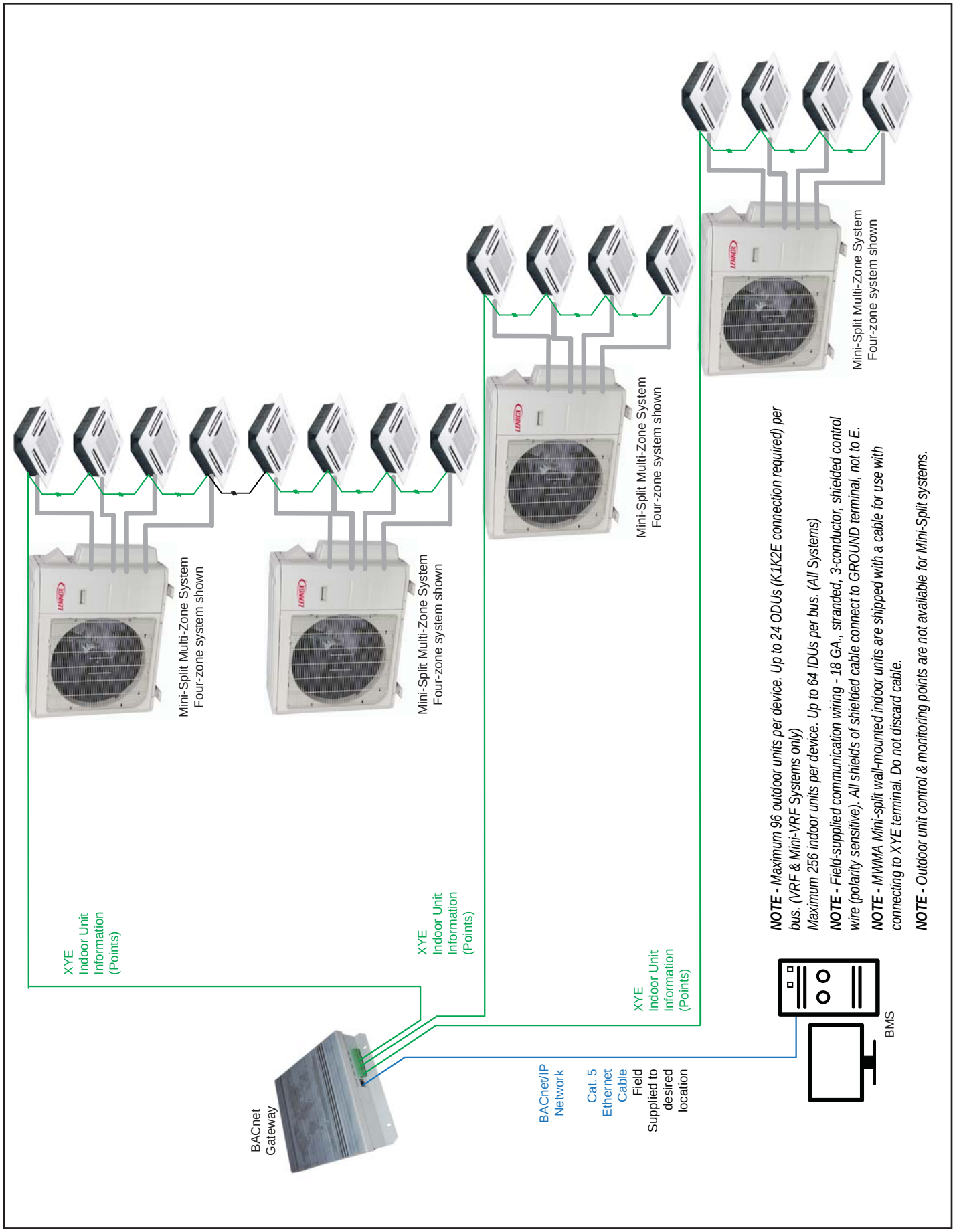
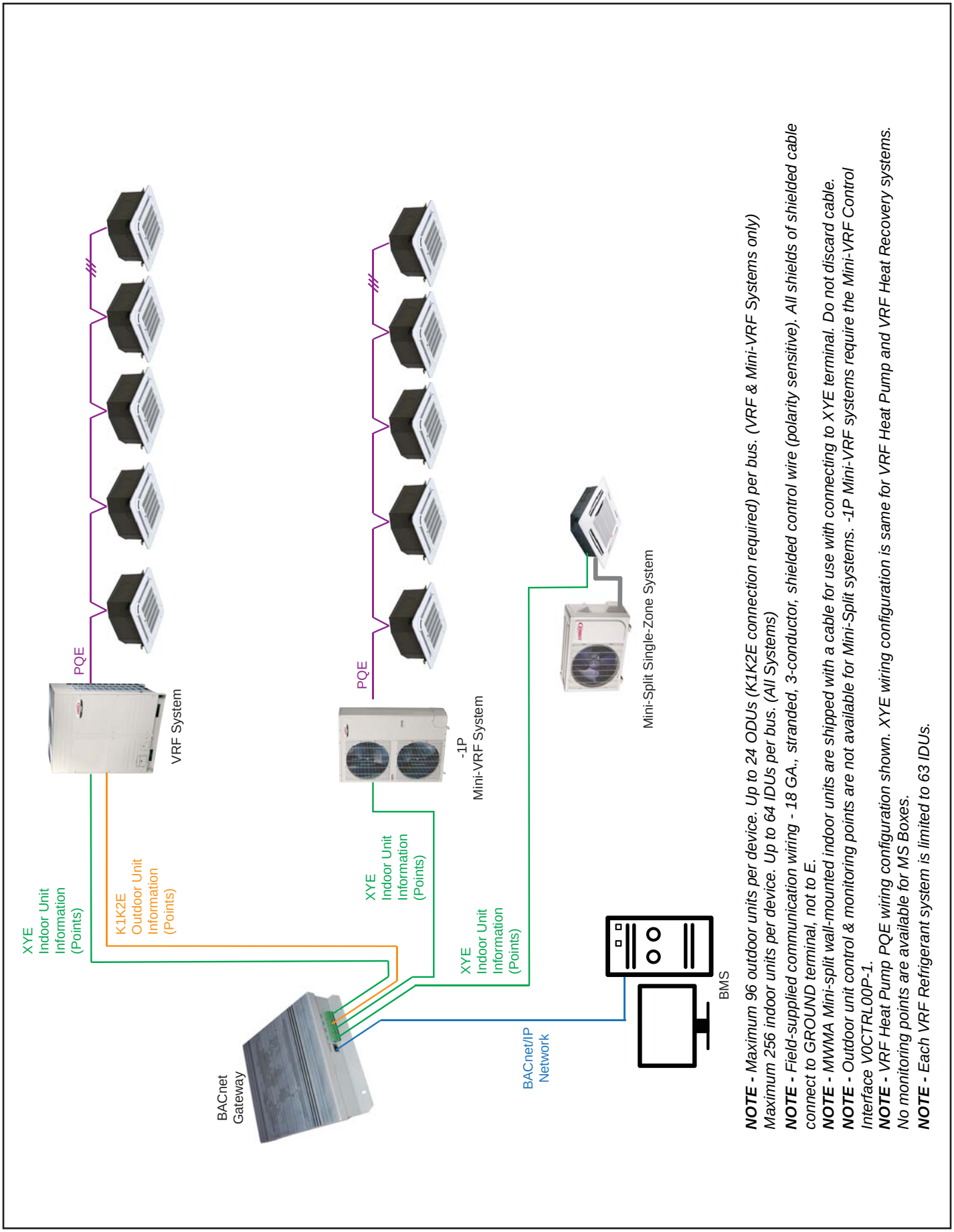



**Figure 7. Mini-Split Multi-Zone System Indoor Unit Only Monitoring**




***NOTE** - Maximum 96 outdoor units per device. Up to 24 ODUs (K1K2E connection required) per bus. (VRF & Mini-VRF Systems only) Maximum 256 indoor units per device. Up to 64 IDUs per bus. (All Systems)*

***NOTE** - Field-supplied communication wiring - 18 GA., stranded, 3-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal, not to E.*

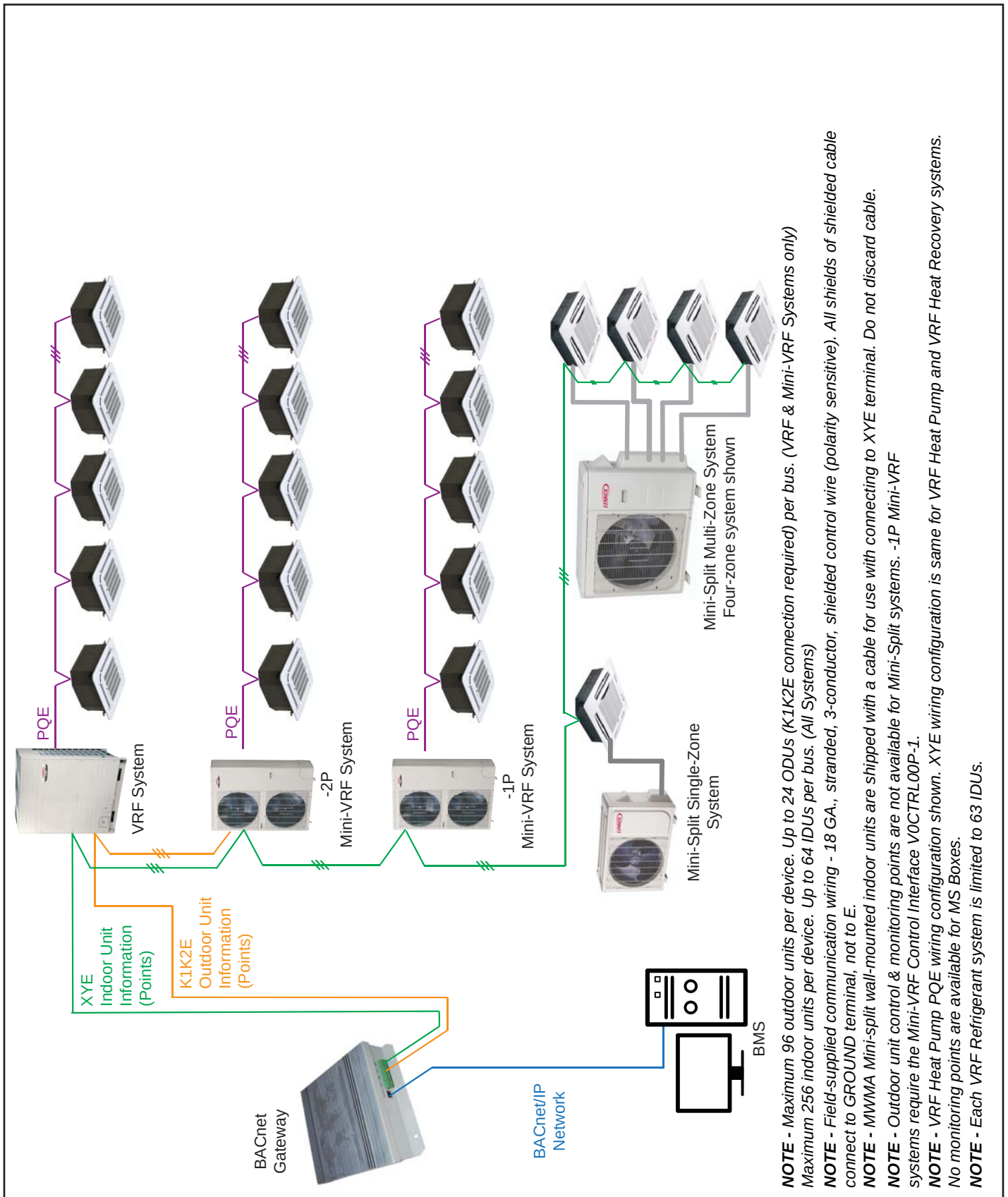
***NOTE** - MWMA Mini-split wall-mounted indoor units are shipped with a cable for use with connecting to XYE terminal. Do not discard cable.*

***NOTE** - Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

***NOTE** - VRF Heat Pump PQE wiring configuration shown. XYE wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.*

***NOTE** - Each VRF Refrigerant system is limited to 63 IDUs.*

**Figure 8. Multiple Lennox System Types Using One BACnet Gateway Device**




***NOTE** - Maximum 96 outdoor units per device. Up to 24 ODUs (K1K2E connection required) per bus. (VRF & Mini-VRF Systems only) Maximum 256 indoor units per device. Up to 64 IDUs per bus. (All Systems)*

***NOTE** - Field-supplied communication wiring - 18 GA., stranded, 3-conductor, shielded control wire (polarity sensitive). All shields of shielded cable connect to GROUND terminal, not to E.*

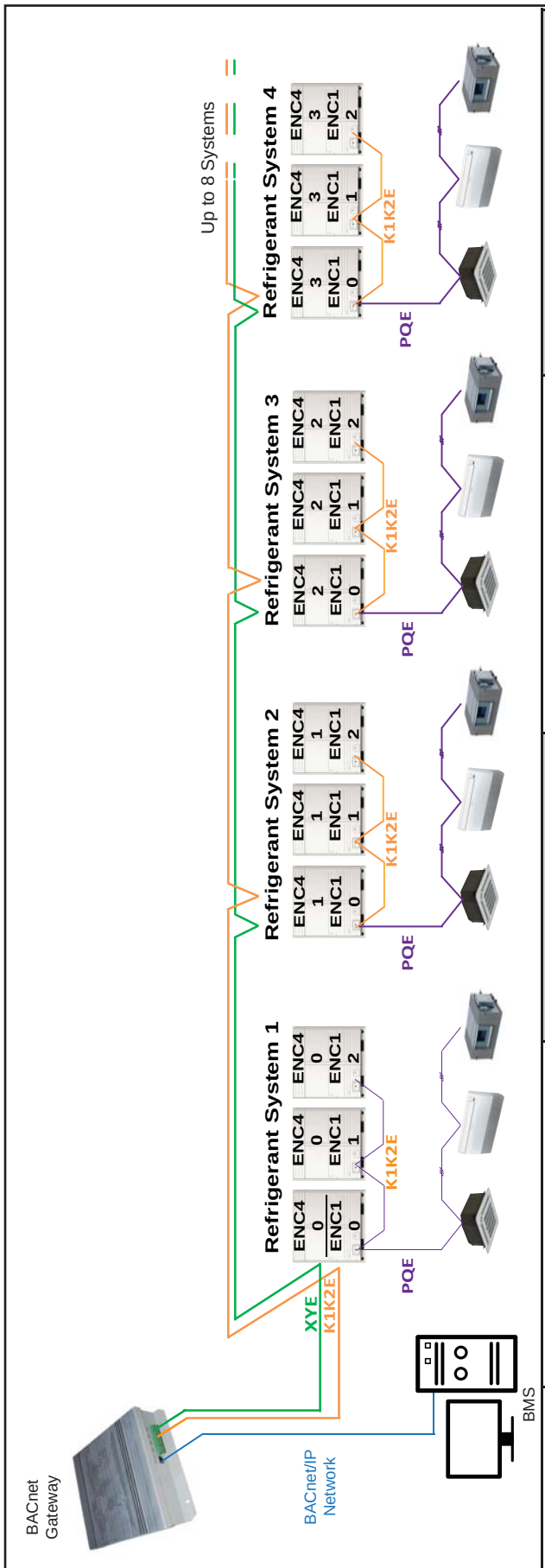
***NOTE** - MWMA Mini-split wall-mounted indoor units are shipped with a cable for use with connecting to XYE terminal. Do not discard cable.*

***NOTE** - Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

***NOTE** - VRF Heat Pump PQE wiring configuration shown. XYE wiring configuration is same for VRF Heat Pump and VRF Heat Recovery systems. No monitoring points are available for MS Boxes.*

***NOTE** - Each VRF Refrigerant system is limited to 63 IDUs.*

**Figure 9. Multiple Lennox System Types Daisy Chained Together (Two Bus Used)**




| Outdoor unit address setting under one EXE/ K1K2E port | Refrigerant System 1 | | | Refrigerant System 2 | | | Refrigerant System 3 | | | Refrigerant System 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 10. Outdoor Unit Addressing ENC Setting Example**

## BACnet Object Points List

| Indoor Unit Point List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Item** | **Function Identifier** | **Object Name** | **Object Type** | **Possible Options** | | | | |
| 1 | Mode | AC_OModeSetting | MO | Heating | Cooling | Dehumidify (Dry) | Fan only | OFF |
| 2 | Mode Status | AC_QueryMode | MI | Heating | Cooling | Dehumidify (Dry) | Fan only | OFF |
| 3 | Fan Speed | AC_OFANSpeed | MO | High | Medium | Low | Stop | --- |
| 4 | Fan Speed Status | AC_QueryFANSpeed | MI | High | Medium | Low | Stop | OFF |
| 5 | Setpoint | AC_OTempSetting | AO | °F | --- | --- | --- | --- |
| 6 | Setpoint Status | AC_QueryTempSetting | AI | °F | --- | --- | --- | --- |
| 7 | Room Temperature | AC_ITempIndoor | AI | °F | --- | --- | --- | --- |
| 8 | Swing | AC_OSwing | BO | Inactive | | Active | | |
| 9 | Error Code | AC_IMalfunction | MI | See "Indoor Unit Table 9. Error Code" on page 18 | | | | |
| 10 | Protection Code | AC_IProtect | MI | See "Indoor Unit Table 10. Protection Code" on page 19 | | | | |
| 11 | Remote Control Lock | Remote_Control_lock | BO | Inactive | | Active | | |
| 12 | Turn Indoor Unit ON/OFF | AC_TurnOnOff | BO | Inactive | | Active | | |
| 13 | Turn All Indoor Units ON/OFF | ALL_AC_OnOff | BO | --- | | Active | | |

| Outdoor Unit Point List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Item** | **Function Identifier** | **Object Name** | **Object Type** | **Possible Options** | | | | |
| 1 | Operation Mode | AC_IOperationMode | MI | Heating | Cooling | Stop | --- | --- |
| 2 | Condenser Fan Speed | AC_IFANSpeed | MI | High | Medium | Low | --- | --- |
| 3 | Ambient Temperature | AC_ITempOutdoor | AI | °F | --- | --- | --- | --- |
| 4 | Indoor Quantity | AC_ITotalACs | AI | Number of indoor units | | | | |
| 5 | Compressor 1 | AC_ICom1Current | AI | Current in Amps | | | | |
| 6 | Compressor 2 | AC_ICom2Current | AI | Current in Amps | | | | |
| 7 | Compressor 3 | AC_ICom3Current | AI | Current in Amps | | | | |
| 8 | Error Code | AC_IMalfunction | MI | See "Outdoor Unit Table 8. Error Code" on page 25 | | | | |
| 9 | Protection Code | AC_IProtect | MI | See "Outdoor Unit Table 9. Protection Code" on page 26 | | | | |

***NOTE -*** *Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

| Port No. | Indoor unit address | Parent Object | Sub Ojbects | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Device* | analog-input,1 | analog-input,2 | analog-input,3 | analog-input,4 | analog-output,1 | binary-output,1 | binary-output,2 | multi-state-input,1 | multi-state-input,2 | multi-state-input,3 | multi-state-input,4 | multi-state-output,1 | multi-state-output,2 |
| Port 1 | 00 | indoor_0_0 | 190000 | AC_ ITempIndoor | AC_ IOnTime | AC_ IOffTime | AC_ QueryTempSetting | AC_ OTempSetting | AC_ Oswing | AC_ OElecHeat | AC_ Imalfunction | AC_Iprotect | AC_ QueryMode | AC_ QueryFanSpeed | AC_ OModeSetting | AC_ OFanSpeed |
| | 01 | indoor_0_1 | 190001 | | | | | | | | | | | | | |
| | … | … | … | | | | | | | | | | | | | |
| | 63 | indoor_1_63 | 190063 | | | | | | | | | | | | | |
| Port 2 | 00 | indoor_1_0 | 191000 | AC_ ITempIndoor | AC_ IOnTime | AC_ IOffTime | AC_ QueryTempSetting | AC_ OTempSetting | AC_ Oswing | AC_ OElecHeat | AC_ Imalfunction | AC_Iprotect | AC_ QueryMode | AC_ QueryFanSpeed | AC_ OModeSetting | AC_ OFanSpeed |
| | 01 | indoor_1_1 | 191001 | | | | | | | | | | | | | |
| | … | … | … | | | | | | | | | | | | | |
| | 63 | indoor_1_63 | 191063 | | | | | | | | | | | | | |
| Port 3 | 00 | indoor_2_0 | 192000 | AC_ ITempIndoor | AC_ IOnTime | AC_ IOffTime | AC_ QueryTempSetting | AC_ OTempSetting | AC_ Oswing | AC_ OElecHeat | AC_ Imalfunction | AC_Iprotect | AC_ QueryMode | AC_ QueryFanSpeed | AC_ OModeSetting | AC_ OFanSpeed |
| | 01 | indoor_2_1 | 192001 | | | | | | | | | | | | | |
| | … | … | … | | | | | | | | | | | | | |
| | 63 | indoor_2_63 | 192063 | | | | | | | | | | | | | |
| Port 4 | 00 | indoor_3_0 | 193000 | AC_ ITempIndoor | AC_ IOnTime | AC_ IOffTime | AC_ QueryTempSetting | AC_ OTempSetting | AC_ Oswing | AC_ OElecHeat | AC_ Imalfunction | AC_Iprotect | AC_ QueryMode | AC_ QueryFanSpeed | AC_ OModeSetting | AC_ OFanSpeed |
| | 01 | indoor_3_1 | 193001 | | | | | | | | | | | | | |
| | … | … | … | | | | | | | | | | | | | |
| | 63 | indoor_3_63 | 193063 | | | | | | | | | | | | | |

"* - Left two digits
Virtual BACnet Network number = 19(default), can be changed on configuration web page.
Right four digits
Device ID=""BTXX"";.
""B"" is the bus Number 0-3;
""T"" means type 0-indoor unit,1-outdoor unit;
""XX"" is the indoor unit Number 0-63 or Outdoor unit actual network address 0-31(outdoor unit address + outdoor unit network address * 4);"

## Indoor Unit Points

**Indoor Unit Table 1. Mode**

| Attribute Identifier | Data Type | Attribute value | Meaning | Read/Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-output 1 | - | R |
| Object Name | CharacterString | AC_OModeSetting | - | R |
| Object Type | BACnetObjectType | MultiState-output | - | R/W |
| Description | CharacterString | Operation mode setting | - | O |
| Options | Integer | 1<br>2<br>3<br>4 | Heat<br>Cool<br>Dry<br>Fan | O |

**Indoor Unit Table 2. Mode Status**

| Attribute identifier | Data type | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 3 | R |
| Object Name | CharacterString | AC_QueryMode | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | QueryMode | O |
| Status Text | BACnet ARRAY[N]<br>CharacterString | {“Heat”,”Cool”,”Dry”, “Fan only”, Stop”} | O |

**Indoor Unit Table 3. Fan Speed**

| Attribute Identifier | Data type | Attribute value | Meaning | Read/ Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-output 2 | - | R |
| Object Name | CharacterString | AC_OFanSpeed | - | R |
| Object Type | BACnetObjectType | MultiState-output | - | R/W |
| Description | CharacterString | Fan Speed Setting | - | O |
| Options | Integer | 1<br>2<br>3 | High<br>Medium<br>Low | O |

**Indoor Unit Table 4. Fan Speed Status**

| Attribute identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 4 | R |
| Object Name | CharacterString | AC_QueryFanSpeed | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | QueryFanSpeed | O |
| Status Text | BACnet ARRAY[N]<br>CharacterString | {"High","Middle","Low", “Stop”} | O |

**Indoor Unit Table 5. Setpoint**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-output 1 | R |
| Object Name | CharacterString | AC_OTempSetting | R |
| Object Type | BACnetObjectType | Analog-output | R/W |
| Description | CharacterString | Setpoint | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |

***NOTE -*** All values are degrees Fahrenheit (°F). You must send degrees Fahrenheit (°F) values and you will receive degrees Fahrenheit (°F). Range: 61°F - 90°F (16°C - 32°C).

**Indoor Unit Table 6. Setpoint Status**

| Attribute identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object identifier | BACnetObjectIdentifier | Analog-input 4 | R |
| Object name | CharacterString | AC_QueryTempSetting | R |
| Object type | BACnetObjectType | Analog-input | R |
| Current value | REAL | 0 | R |
| Description | CharacterString | QueryTempsetting | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |

***NOTE -*** The sent value is degrees Fahrenheit (°F).

**Indoor Unit Table 7. Room Temperature**

| Attribute Identifier | Data Mode | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 1 | R |
| Object Name | CharacterString | AC_ITempIndoor | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Description | CharacterString | Indoor Temperature | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |

***NOTE -*** The received value is degrees Fahrenheit (°F).

**Indoor Unit Table 8. Swing**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 1 | R |
| Object Name | CharacterString | AC_OSwing | R |
| Object Type | BACnetObjectType | Binary-output | R/W |
| Description | CharacterString | Swing Setting | O |
| Inactive Text | CharacterString | Turn off | O |
| Active Text | CharacterString | Turn on | O |

***NOTE -*** inactive means swing OFF, active means swing ON.

**Indoor Unit Table 9. Error Code**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 1 | R |
| Object Name | CharacterString | AC_IMalfunction | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Malfunction Status | O |
| Status Text | BACnet ARRAY[N] CharacterString | E0 | O |
| | | E1 | |
| | | E2 | |
| | | E3 | |
| | | E4 | |
| | | E5 | |
| | | E6 | |
| | | E7 | |
| | | E8 | |
| | | E9 | |
| | | EA | |
| | | EB | |
| | | EC | |
| | | ED | |
| | | EE | |
| | | EF | |
| | | No | |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Indoor Unit Table 10. Protection Code**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 2 | R |
| Object Name | CharacterString | AC_IProtect | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Protection Status | O |
| Status text | BACnet ARRAY[N] CharacterString | P0 | O |
| | | P1 | |
| | | P2 | |
| | | P3 | |
| | | P4 | |
| | | P5 | |
| | | P6 | |
| | | P7 | |
| | | P8 | |
| | | PF | |
| | | No | |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Indoor Unit Table 11. Remote Control Lock**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 4 | R/W |
| Object Name | CharacterString | Remote_Control_lock | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Description | CharacterString | Lock/Unlock remote control | O |
| Inactive text | CharacterString | unlock remote control | O |
| Active text | CharacterString | lock remote control | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

***NOTE -*** *Lock All Functions of Wireless Remote Controller V0STAT52P-1.*

**Indoor Unit Table 12. Turn Indoor Unit ON/OFF**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 3 | R/W |
| Object Name | CharacterString | AC_TurnOnOff | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Description | CharacterString | Turn On/Off the AC | O |
| Inactive text | CharacterString | Turn off | O |
| Active text | CharacterString | Turn on | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Indoor Unit Table 13. Turn All Indoor Units ON/OFF**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 5 | R/W |
| Object Name | CharacterString | ALL_AC_OnOff | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Description | CharacterString | turn on/turn off ac all the bus | O |
| Inactive text | CharacterString | | O |
| Active text | CharacterString | turn off ac all the bus | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

| Port No. | Refrigerant system | Outdoor unit address (Dip switch on outdoor unit board) | Outdoor unit network address(Dip switch on outdoor unit board) | Outdoor unit actual network address | Parent Object | Device* | Sub Objects | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Multistate-input,1 | Multistate-iutput,2 | Analog-iutput,1 | Analog-iutput,2 | Analog-iutput,3 | Analog-iutput,4 | Analog-iutput,5 | Multistate-input,3 | Multistate-input,4 |
| Port 1 | Sys 1 | 00 | 00 | 00+00*4=0 | outdoor_0_0_0 | 190100 | AC_ IOperationMode | AC_ IFanSpeed | AC_ ITempOutoor | AC_ ITotalACs | AC_ ICom1Current | AC_ ICom2Current | AC_ ICom3Current | AC _ Ioutmalfunction | AC _IOutprotect |
| | | 01 | 00 | 01+00*4=1 | outdoor_0_0_1 | 190101 | | | | | | | | | |
| | | 02 | 00 | 02+00*4=2 | outdoor_0_0_2 | 190102 | | | | | | | | | |
| | Sys 2 | 00 | 01 | 00+01*4=4 | outdoor_0_1_0 | 190104 | | | | | | | | | |
| | | 01 | 01 | 01+01*4=5 | outdoor_0_1_1 | 190105 | | | | | | | | | |
| | | 02 | 01 | 02+01*4=6 | outdoor_0_1_2 | 190106 | | | | | | | | | |
| | ... | ... | ... | ... | ... | ... | | | | | | | | | |
| | Sys 8 | 00 | 07 | 00+07*4=28 | outdoor_0_7_0 | 190128 | | | | | | | | | |
| | | 01 | 07 | 01+07*4=28 | outdoor_0_7_1 | 190129 | | | | | | | | | |
| | | 02 | 07 | 02+07*4=30 | outdoor_0_7_2 | 190130 | | | | | | | | | |
| Port 2 | Sys 1 | 00 | 00 | 00+00*4=0 | outdoor_1_0_0 | 191100 | AC_ IOperationMode | AC_ IFanSpeed | AC_ ITempOutoor | AC_ ITotalACs | AC_ ICom1Current | AC_ ICom2Current | AC_ ICom3Current | AC _ Ioutmalfunction | AC _IOutprotect |
| | | 01 | 00 | 01+00*4=1 | outdoor_1_0_1 | 191101 | | | | | | | | | |
| | | 02 | 00 | 02+00*4=2 | outdoor_1_0_2 | 191102 | | | | | | | | | |
| | Sys 2 | 00 | 01 | 00+01*4=4 | outdoor_1_1_0 | 191104 | | | | | | | | | |
| | | 01 | 01 | 01+01*4=5 | outdoor_1_1_1 | 191105 | | | | | | | | | |
| | | 02 | 01 | 02+01*4=6 | outdoor_1_1_2 | 191106 | | | | | | | | | |
| | ... | ... | ... | ... | ... | ... | | | | | | | | | |
| | Sys 8 | 00 | 07 | 00+07*4=28 | outdoor_1_7_0 | 191128 | | | | | | | | | |
| | | 01 | 07 | 01+07*4=28 | outdoor_1_7_1 | 191129 | | | | | | | | | |
| | | 02 | 07 | 02+07*4=30 | outdoor_1_7_2 | 191130 | | | | | | | | | |

"* - Left two digits
Virtual BACnet Network number = 19(default), can be changed on configuration web page.
Right four digits
Device ID=""BTXX"";.
""B"" is the bus Number 0-3;
""T"" means type 0-indoor unit,1-outdoor unit;
""XX"" is the indoor unit Number 0-63 or Outdoor unit actual network address 0-31(outdoor unit address + outdoor unit network address * 4);"

| Port No. | Refrigerant system | Outdoor unit address (Dip switch on outdoor unit board) | Outdoor unit network address(Dip switch on outdoor unit board) | Outdoor unit actual network address | Parent Object | Device* | Sub Objects | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Multistate-input,1 | Multistate-iutput,2 | Analog-iutput,1 | Analog-iutput,2 | Analog-iutput,3 | Analog-iutput,4 | Analog-iutput,5 | Multistate-input,3 | Multistate-input,4 |
| Port 3 | Sys 1 | 00 | 00 | 00+00*4=0 | outdoor_2_0_0 | 192100 | AC_ IOperationMode | AC_ IFanSpeed | AC_ ITempOutoor | AC_ ITotalACs | AC_ ICom1Current | AC_ ICom2Current | AC_ ICom3Current | AC _ Ioutmalfunction | AC _IOutprotect |
| | | 01 | 00 | 01+00*4=1 | outdoor_2_0_1 | 192101 | | | | | | | | | |
| | | 02 | 00 | 02+00*4=2 | outdoor_2_0_2 | 192102 | | | | | | | | | |
| | Sys 2 | 00 | 01 | 00+01*4=4 | outdoor_2_1_0 | 192104 | | | | | | | | | |
| | | 01 | 01 | 01+01*4=5 | outdoor_2_1_1 | 192105 | | | | | | | | | |
| | | 02 | 01 | 02+01*4=6 | outdoor_2_1_2 | 192106 | | | | | | | | | |
| | ... | ... | ... | ... | ... | ... | | | | | | | | | |
| | Sys 8 | 00 | 07 | 00+07*4=28 | outdoor_2_7_0 | 192128 | | | | | | | | | |
| | | 01 | 07 | 01+07*4=28 | outdoor_2_7_1 | 192129 | | | | | | | | | |
| | | 02 | 07 | 02+07*4=30 | outdoor_2_7_2 | 192130 | | | | | | | | | |
| Port 4 | Sys 1 | 00 | 00 | 00+00*4=0 | outdoor_3_0_0 | 193100 | AC_ IOperationMode | AC_ IFanSpeed | AC_ ITempOutoor | AC_ ITotalACs | AC_ ICom1Current | AC_ ICom2Current | AC_ ICom3Current | AC _ Ioutmalfunction | AC _IOutprotect |
| | | 01 | 00 | 01+00*4=1 | outdoor_3_0_1 | 193101 | | | | | | | | | |
| | | 02 | 00 | 02+00*4=2 | outdoor_3_0_2 | 193102 | | | | | | | | | |
| | Sys 2 | 00 | 01 | 00+01*4=4 | outdoor_3_1_0 | 193104 | | | | | | | | | |
| | | 01 | 01 | 01+01*4=5 | outdoor_3_1_1 | 193105 | | | | | | | | | |
| | | 02 | 01 | 02+01*4=6 | outdoor_3_1_2 | 193106 | | | | | | | | | |
| | ... | ... | ... | ... | ... | ... | | | | | | | | | |
| | Sys 8 | 00 | 07 | 00+07*4=28 | outdoor_3_7_0 | 193128 | | | | | | | | | |
| | | 01 | 07 | 01+07*4=28 | outdoor_3_7_1 | 193129 | | | | | | | | | |
| | | 02 | 07 | 02+07*4=30 | outdoor_3_7_2 | 193130 | | | | | | | | | |

"* - Left two digits
Virtual BACnet Network number = 19(default), can be changed on configuration web page.
Right four digits
Device ID=""BTXX"";.
""B"" is the bus Number 0-3;
""T"" means type 0-indoor unit,1-outdoor unit;
""XX"" is the indoor unit Number 0-63 or Outdoor unit actual network address 0-31(outdoor unit address + outdoor unit network address * 4);"

## Outdoor Unit Points

***NOTE -*** *Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

**Outdoor Unit Table 1. Operation Mode**

| Attribute Identifier | Data Mode | Attribute value | Meaning | Read/Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 1 | | R |
| Object Name | CharacterString | AC_IOperationMode | | R |
| Object Type | BACnetObjectType | MultiState-input | | R |
| Description | CharacterString | Operation mode | | O |
| Status text | BACnet ARRAY [N]<br>CharacterString | 1<br>2<br>3 | Heat<br>Cool<br>Stop | O |

**Outdoor Unit Table 2. Condenser Fan Speed**

| Attribute Identifier | Data Mode | Attribute value | Meaning | Read/Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 2 | | R |
| Object Name | CharacterString | AC_IFanSpeed | | R |
| Object Type | BACnetObjectType | MultiState-input | | R |
| Description | CharacterString | Fan Speed | | O |
| Options | Integer | 1<br>2<br>3<br>4 | High<br>Medium<br>Low<br>Stop | O |

**Outdoor Unit Table 3. Ambient Temperature**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 1 | R |
| Object Name | CharacterString | AC_ITempOutoor | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Description | CharacterString | Outdoor Temperature | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |

***NOTE -*** The received value is degrees Fahrenheit (°F).

**Outdoor Unit Table 4. Indoor Quantity**

| Attribute Identifier | Data Mode | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 2 | R |
| Object Name | CharacterString | AC_ITotalACs | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Description | CharacterString | Indoor unit qty | O |
| Operation instruction | The CURRENT VALUE attribute of the selected object reflects the current INDOOR UNIT QUANTITY (Read only). | | |

**Outdoor Unit Table 5. Compressor 1**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 3 | R |
| Object Name | CharacterString | AC_ICom1Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Compressor 1 current | O |
| Unit | BACnetEngineering Units | Amperes | R |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 1 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 6. Compressor 2**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 4 | R |
| Object Name | CharacterString | AC_ICom2Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Compressor 2 current | O |
| Unit | BACnetEngineering Units | Amperes | R |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 2 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 7. Compressor 3**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 5 | R |
| Object Name | CharacterString | AC_ICom3Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Description | CharacterString | Compressor 3 current | O |
| Unit | BACnetEngineering Units | Amperes | R |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 3 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 8. Error Code**

| Attribute Identifier | Data type | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 3 | R |
| Object Name | CharacterString | AC_IMalfunction | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Malfunction Status | O |
| Status Text | BACnet ARRAY[N] CharacterString | E0 | O |
| | | E1 | |
| | | E2 | |
| | | E3 | |
| | | E4 | |
| | | E5 | |
| | | E6 | |
| | | E7 | |
| | | E8 | |
| | | E9 | |
| | | EA | |
| | | EB | |
| | | EC | |
| | | ED | |
| | | EE | |
| | | EF | |
| | | No | |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Outdoor Unit Table 9. Protection Code**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 4 | R |
| Object Name | CharacterString | AC_IProtect | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Protect Status | O |
| Status Text | BACnet ARRAY[N] CharacterString | P0 | O |
| | | P1 | |
| | | P2 | |
| | | P3 | |
| | | P4 | |
| | | P5 | |
| | | P6 | |
| | | P7 | |
| | | P8 | |
| | | P9 | |
| | | PA | |
| | | PB | |
| | | PC | |
| | | PD | |
| | | PE | |
| | | PF | |
| | | No | |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

## Appendix A. BACnet Protocol Observed

**Supportive Object Type**

| Object Type | Supported | Dynamic Established or Not | Dynamic Deleted or Not |
|---|---|---|---|
| Analog Input Object Type | X | X | X |
| Analog Output Object Type | X | X | X |
| Analog Value Object Type | X | X | X |
| Binary Input Object Type | X | X | X |
| Binary Output Object Type | X | X | X |
| Binary Value Object Type | X | X | X |
| Device Object Type | X | X | X |
| Multi-Status Input Object Type | X | X | X |
| Multi-Status Output Object Type | X | X | X |

**Application Services of Supplied BACnet**

| Application Services | Request Start | Request Preformed |
|---|---|---|
| Read Property | | X |
| Read Property Multiple | | X |
| Write Property | | X |
| Write Property Multiple | | X |
| Who-Has | X | X |
| Who-Is | | |
| I-Am | | X |

**Legend**

| Abbreviation | Meaning |
|---|---|
| R | Read |
| W | Write |
| R/W | Read/Write |
| I | Input |
| O | Output |
| BI | Binary Input |
| BO | Binary Output |
| AI | Analog Input |
| AO | Analog Output |
| MI | Multistate Input |
| MO | Multistate Output |

**Option of Data Link Layer**

| |
|---|
| ISO 8802-3,10BASE5 |
| ISO 8802-3,10BASE2 |
| ISO 8802-3,10BASET |

**Supportive Character Set**

| |
|---|
| ANSI X3.4 |
| IBMTM/Microsoft TM ISO |
| 10646(UCS2)T |

**Special Function**

| | Yes | No | |
|---|---|---|---|
| Subsection request support | X | | window size:1476 |
| Subsection respond support | X | | window size:1476 |

## Appendix B. Indoor Unit Detailed Points

**Indoor Unit Table 1. Mode**

| Attribute Identifier | Data type | Attribute value | Meaning | Read/Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-output 1 | | R |
| Object Name | CharacterString | AC_OModeSetting | | R |
| Object Type | BACnetObjectType | MultiState-output | | R |
| Description | CharacterString | Operation mode setting | | O |
| Current Value | REAL | 0 | | W |
| Status Flags | BACnetStatusFlags | F F F F | | R |
| Event Status | BACnet EventStatus | Normal | | R |
| Take Off Service | BOOLEAN | F | | R |
| Status Number | Unsigned | 6 | | R |
| Options | Integer | 1<br>2<br>3<br>4 | Heat<br>Cool<br>Dry<br>Fan | O |
| Priority Array | BACnetPriorityArra | NULL | | R |
| Release Default | Unsigned | 0 | | R |
| Publicly Type | Unsigned | 1701 | | O |
| Feedback Value | Unsigned | 6 | | |
| Event Enable | BACnetEventTransitionBits | T T T | | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | | O |
| Notify Type | BACnetNotifyType | Alarm | | O |

**Indoor Unit Table 2. Mode Status**

| Attribute identifier | Data type | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 3 | R |
| Object Name | CharacterString | AC_QueryMode | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | QueryMode | O |
| Status Text | BACnet ARRAY[N]<br>CharacterString | {“Heat”,”Cool”,”Dry”, “Fan only”, Stop”} | O |

**Indoor Unit Table 3. Fan Speed**

| Attribute Identifier | Data type | Attribute value | Meaning | Read/ Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-output 2 | | R |
| Object Name | CharacterString | AC_OFanSpeed | | R |
| Object Type | BACnetObjectType | MultiState-output | | R |
| Description | CharacterString | Fan Speed Setting | | O |
| Current Value | Unsigned | 0 | | W |
| Status Flags | BACnetStatusFlags | F F F F | | R |
| Event Status | BACnet EventStatus | Normal | | R |
| Take Off Service | BOOLEAN | F | | R |
| Status Number | Unsigned | 6 | | R |
| Options | Integer | 1<br>2<br>3 | High<br>Medium<br>Low | O |
| Priority Array | BACnetPriorityArra | NULL | | R |
| Release Default | Unsigned | 0 | | |
| Time Delay | Unsigned | 1 | | O |
| Publicly Type | Unsigned | 1701 | | O |
| Feedback Value | Unsigned | 6 | | |
| Event Enable | BACnetEventTransitionBits | T T T | | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | | O |
| Notify Type | BACnetNotifyType | event | | O |

**Indoor Unit Table 4. Fan Speed Status**

| Attribute identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 4 | R |
| Object Name | CharacterString | AC_QueryFanSpeed | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | QueryFanSpeed | O |
| Status Text | BACnet ARRAY[N]<br>CharacterString | {"High","Middle","Low", “Stop”} | O |

**Indoor Unit Table 5. Setpoint**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-output 1 | R |
| Object Name | CharacterString | AC_OTempSetting | R |
| Object Type | BACnetObjectType | Analog-output | R |
| Description | CharacterString | Setpoint | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Current value | REAL | Temperature Value | W |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |
| Minimum | REAL | 62°F (17°C) | O |
| Maximum | REAL | 86°F (30°C) | O |
| Distinguishability | REAL | 1 | O |
| Priority Array Value | BACnetPriorityArra | NULL | R |
| Default Release | REAL | 0 | R |
| Distinguishability | REAL | 1 | O |
| Cov Increment | REAL | 1 | O |
| Low Valve Value | REAL | 62°F (17°C) | O |
| High Valve Value | REAL | 86°F (30°C) | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | T T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |
| Publicly Type | Unsigned | 1701 | O |
| Time Delay | Unsigned | 1 | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |

***NOTE -*** All values are degrees Fahrenheit (°F). You must send degrees Fahrenheit (°F) values and you will receive degrees Fahrenheit (°F). Range: 61°F - 90°F (16°C - 32°C)..

**Indoor Unit Table 6. Setpoint Status**

| Attribute identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 4 | R |
| Object Name | CharacterString | AC_QueryTempSetting | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | QueryTempsetting | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |

***NOTE -*** The sent value is degrees Fahrenheit (°F).

**Indoor Unit Table 7. Room Temperature**

| Attribute Identifier | Data Mode | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 1 | R |
| Object Name | CharacterString | AC_ITempIndoor | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Indoor Temperature | O |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Reliablity | BACnetReliability | NO-FAULT-DETECTED | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |
| Minimum | REAL | 0°F (-18°C) | O |
| Maximum | REAL | 200°F (93°C) | O |
| Distinguishability | REAL | 1 | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0°F (-18°C) | O |
| High Valve Value | REAL | 200°F (93°C) | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | event | O |

***NOTE -*** The received value is degrees Fahrenheit (°F).

**Indoor Unit Table 8. Swing**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 1 | R |
| Object Name | CharacterString | AC_OSwing | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Current Value | BACnetBinaryPV | inactive | W |
| Description | CharacterString | Swing Setting | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Polarity | BACnetPolarity | Normal | R |
| Inactive Text | CharacterString | Turn off | O |
| Active Text | CharacterString | Turn on | O |
| Time Delay | Unsigned | 1 | O |
| Status Change Time | BACnetDateTime | | O |
| Status Change Times | Unsigned | | O |
| Change Time To 0 | BACnetDateTime | | O |
| Publicly Type | Unsigned | 1701 | O |
| Feedback Value | BACnetBinaryPV | inactive | O |
| Event Enable | BACnetEventTransitionBits | T T T | R |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Priority Array | BACnetPriorityArra | NULL | R |
| Default Release | BACnetBinaryPV | inactive | R |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Inactive means swing OFF, active means swing ON.

**Indoor Unit Table 9. Error Code**

| Attribute Identifier | Data Mode | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 1 | R |
| Object Name | CharacterString | AC_IMalfunction | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Malfunction Status | O |
| Current Value | Unsigned | 0 | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Status Number | Unsigned | 11 | R |
| Status Text | BACnet ARRAY[N] CharacterString | E0 | O |
| | | E1 | |
| | | E2 | |
| | | E3 | |
| | | E4 | |
| | | E5 | |
| | | E6 | |
| | | E7 | |
| | | E8 | |
| | | E9 | |
| | | EA | |
| | | EB | |
| | | EC | |
| | | ED | |
| | | EE | |
| | | EF | |
| | | No | |
| Time Delay | Unsigned | 1 | O |
| Publicity Type | Unsigned | 1701 | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Indoor Unit Table 10. Protection Code**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 2 | R |
| Object Name | CharacterString | AC_IProtect | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Protect Status | O |
| Current Value | Unsigned | 0 | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Status Number | Unsigned | 11 | R |
| Status Text | BACnet ARRAY[N] CharacterString | P0 | O |
| | | P1 | |
| | | P2 | |
| | | P3 | |
| | | P4 | |
| | | P5 | |
| | | P6 | |
| | | P7 | |
| | | P8 | |
| | | PF | |
| | | No | |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Indoor Unit Table 11. Remote Control Lock**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 4 | R/W |
| Object Name | CharacterString | Remote_Control_lock | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Current Value | BACnetBinaryPV | inactive | W |
| Description | CharacterString | Lock/Unlock remote control | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Polarity | BACnetPolarity | Normal | R |
| Inactive text | CharacterString | unlock remote control | O |
| Active text | CharacterString | lock remote control | O |
| Time Delay | Unsigned | 1 | O |
| Status Change Time | BACnetDateTime | | O |
| Status Change Times | Unsigned | | O |
| Change Time To 0 | BACnetDateTime | | O |
| Publicly Type | Unsigned | 1701 | O |
| Feedback Value | BACnetBinaryPV | inactive | O |
| Event Enable | BACnetEventTransitionBits | T T T | R |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Priority Array | BACnetPriorityArra | NULL | R |
| Default Release | BACnetBinaryPV | inactive | R |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

***NOTE -*** *Lock All Functions of Wireless Remote Controller V0STAT52P-1.*

***NOTE -*** Inactive means unlock remote control, active means lock remote control.

**Indoor Unit Table 12. Turn Indoor Unit ON/OFF**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 3 | R/W |
| Object Name | CharacterString | AC_TurnOnOff | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Current Value | BACnetBinaryPV | inactive | W |
| Description | CharacterString | Turn On/Off the AC | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Polarity | BACnetPolarity | Normal | R |
| Inactive text | CharacterString | Turn off | O |
| Active text | CharacterString | Turn on | O |
| Time Delay | Unsigned | 1 | O |
| Status Change Time | BACnetDateTime | | O |
| Status Change Times | Unsigned | | O |
| Change Time To 0 | BACnetDateTime | | O |
| Publicly Type | Unsigned | 1701 | O |
| Feedback Value | BACnetBinaryPV | inactive | O |
| Event Enable | BACnetEventTransitionBits | T T T | R |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Priority Array | BACnetPriorityArra | NULL | R |
| Default Release | BACnetBinaryPV | inactive | R |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

***NOTE -*** Inactive means indoor unit turned off, active means indoor unit turned on.

**Indoor Unit Table 13. Turn All Indoor Units ON/OFF**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Binary-output 5 | R/W |
| Object Name | CharacterString | ALL_AC_OnOff | R |
| Object Type | BACnetObjectType | Binary-output | R |
| Current Value | BACnetBinaryPV | inactive | W |
| Description | CharacterString | turn on/turn off ac all the bus | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Polarity | BACnetPolarity | Normal | R |
| Inactive text | CharacterString | | O |
| Active text | CharacterString | turn off ac all the bus | O |
| Time Delay | Unsigned | 1 | O |
| Status Change Time | BACnetDateTime | | O |
| Status Change Times | Unsigned | | O |
| Change Time To 0 | BACnetDateTime | | O |
| Publicly Type | Unsigned | 1701 | O |
| Feedback Value | BACnetBinaryPV | inactive | O |
| Event Enable | BACnetEventTransitionBits | T T T | R |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Priority Array | BACnetPriorityArra | NULL | R |
| Default Release | BACnetBinaryPV | inactive | R |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

***NOTE -*** Active means turn off all indoor units.

## Appendix C. Outdoor Unit Detailed Points

***NOTE -*** *Outdoor unit control & monitoring points are not available for Mini-Split systems. -1P Mini-VRF systems require the Mini-VRF Control Interface V0CTRL00P-1.*

**Outdoor Unit Table 1. Operation Mode**

| Attribute Identifier | Data Mode | Attribute value | Meaning | Read/ Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 1 | | R |
| Object Name | CharacterString | AC_IOperationMode | | R |
| Object Type | BACnetObjectType | MultiState-input | | R |
| Description | CharacterString | Operation mode | | O |
| Current Value | REAL | 0 | | R |
| Status Flags | BACnetStatusFlags | F F F F | | R |
| Event Status | BACnet EventStatus | Normal | | R |
| Take Off Service | BOOLEAN | F | | R |
| Status Number | Unsigned | 3 | | R |
| Status Text | BACnet ARRAY [N]<br>CharacterString | 1<br>2<br>3 | Heat<br>Cool<br>Stop | O |
| Time Delay | Unsigned | 1 | | O |
| Publicly Type | Unsigned | 1701 | | O |
| Event Enable | BACnetEventTransitionBits | T T T | | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | | O |
| Notify Type | BACnetNotifyType | Alarm | | O |

**Outdoor Unit Table 2. Condenser Fan Speed**

| Attribute Identifier | Data Mode | Attribute value | Meaning | Read/Write |
|---|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 2 | | R |
| Object Name | CharacterString | AC_IFanSpeed | | R |
| Object Type | BACnetObjectType | MultiState-input | | R |
| Description | CharacterString | Fan Speed | | O |
| Current Value | Unsigned | 0 | | R |
| Status Flags | BACnetStatusFlags | F F F F | | R |
| Event Status | BACnet EventStatus | Normal | | R |
| Take Off Service | serviceBOOLEAN | F | | R |
| Status Number | Unsigned | 4 | | R |
| Options | Integer | 1<br>2<br>3 | High<br>Medium<br>Low | O |
| Time Delay | Unsigned | 1 | | O |
| Publicly Type | Unsigned | 1701 | | O |
| Event Enable | BACnetEventTransitionBits | T T T | | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | | O |
| Notify Type | BACnetNotifyType | event | | O |

**Outdoor Unit Table 3. Ambient Temperature**

| Attribute Identifier | Data type | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 1 | R |
| Object Name | CharacterString | AC_ITempOutoor | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Outdoor Temperature | O |
| Status Flags | BACnetStatusFlags | F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Degree-Fahrenheit | R |
| Minimum | REAL | 0°F (-18°C) | O |
| Maximum | REAL | 200°F (93°C) | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0°F (-18°C) | O |
| High Valve Value | REAL | 200°F (93°C) | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | event | O |

***NOTE -*** The received value is degrees Fahrenheit (°F).

**Outdoor Unit Table 4. Indoor Quantity**

| Attribute Identifier | Data Mode | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 2 | R |
| Object Name | CharacterString | AC_ITotalACs | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Indoor unit qty | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | | R |
| Minimum | REAL | 0 | O |
| Maximum | REAL | 250 | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0 | O |
| High Valve Value | REAL | 250 | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the current INDOOR UNIT QUANTITY (it's read only). | | |

**Outdoor Unit Table 5. Error Code Compressor 1**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 3 | R |
| Object Name | CharacterString | AC_ICom1Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Compressor 1 current | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Amperes | R |
| Minimum | REAL | 0 | O |
| Maximum | REAL | 200 | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0 | O |
| High Valve Value | REAL | 200 | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Notify Type | BACnetNotifyType | Alarm | O |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 1 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 6. Error Code Compressor 2**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 4 | R |
| Object Name | CharacterString | AC_ICom2Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Current Value | REAL | 0 | R |
| Description | CharacterString | Compressor 2 current | O |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Amperes | R |
| Minimum | REAL | 0 | O |
| Maximum | REAL | 200 | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0 | O |
| High Valve Value | REAL | 200 | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 2 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 7. Error Code Compressor 3**

| Attribute Identifier | Data type | Attribute value | Read/Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | Analog-input 5 | R |
| Object Name | CharacterString | AC_ICom3Current | R |
| Object Type | BACnetObjectType | Analog-input | R |
| Description | CharacterString | Compressor 3 current | O |
| Current Value | REAL | 0 | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Unit | BACnetEngineering Units | Amperes | R |
| Minimum | REAL | 0 | O |
| Maximum | REAL | 200 | O |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Low Valve Value | REAL | 0 | O |
| High Valve Value | REAL | 200 | O |
| Width Valve Value | REAL | 1 | O |
| Enable Valve Value | BACnetLimitEnable | F T | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |
| Operation Instruction | The CURRENT VALUE attribute of the selected object reflects the COMPRESSOR 3 ELECTRIC CURRENT (Read only). | | |

**Outdoor Unit Table 8. Error Code**

| Attribute Identifier | Data type | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 3 | R |
| Object Name | CharacterString | AC_IMalfunction | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Malfunction Status | O |
| Current Value | Unsigned | 0 | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Status Number | Unsigned | 17 | R |
| Status Text | BACnet ARRAY[N] CharacterString | E0 | O |
| | | E1 | |
| | | E2 | |
| | | E3 | |
| | | E4 | |
| | | E5 | |
| | | E6 | |
| | | E7 | |
| | | E8 | |
| | | E9 | |
| | | EA | |
| | | EB | |
| | | EC | |
| | | ED | |
| | | EE | |
| | | EF | |
| | | No | |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Affirm Transform | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.

**Outdoor Unit Table 9. Protection Code**

| Attribute Identifier | Data Mode | Attribute value | Read/ Write |
|---|---|---|---|
| Object Identifier | BACnetObjectIdentifier | MultiState-input 4 | R |
| Object Name | CharacterString | AC_IProtect | R |
| Object Type | BACnetObjectType | MultiState-input | R |
| Description | CharacterString | Protect Status | O |
| Current value | Unsigned | 0 | R |
| Status Flags | BACnetStatusFlags | F F F F | R |
| Event Status | BACnet EventStatus | Normal | R |
| Take Off Service | BOOLEAN | F | R |
| Status Number | Unsigned | 17 | R |
| Status Text | BACnet ARRAY[N] CharacterString | P0 | O |
| | | P1 | |
| | | P2 | |
| | | P3 | |
| | | P4 | |
| | | P5 | |
| | | P6 | |
| | | P7 | |
| | | P8 | |
| | | P9 | |
| | | PA | |
| | | PB | |
| | | PC | |
| | | PD | |
| | | PE | |
| | | PF | |
| | | No | |
| Time Delay | Unsigned | 1 | O |
| Publicly Type | Unsigned | 1701 | O |
| Event Enable | BACnetEventTransitionBits | T T T | O |
| Affirm transform | BACnetEventTransitionBits | T T T | O |
| Notify Type | BACnetNotifyType | Alarm | O |

***NOTE -*** Refer to the Lennox VRF Mobile App for error code descriptions.