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# BACnet Gateway

## V0CTRL86P-3

### Lennox VRF

### VRB & VPB Systems

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THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE

### Equipment List

Package 1 of 1 consists of:

- 1 - BACnet gateway
- 1 - DIN rail
- 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. Setup can be accomplished through the use of a web browser and PC with a network port.

### 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: 123456

### Specifications

Function	Description
Input Supply Power	24VAC
BACnet Connection	BACnet/IP
I/O	4 port 485 interface
Operating Temperature Range	32°F ~ 104°F (0°C ~ 40°C)
Operating Humidity Range (Rh)	25% ~ 90%
Dimensions	10-1/2 in. X 10 in. X 2-3/8 in. (26 cm X 25 cm X 6 cm)
DIN Mounted	

The V0CTRL86P-3 Lennox BACnet gateway 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.

All Lennox VRF P3 outdoor and indoor units can be connected to the V0CTRL86P-3 Lennox BACnet gateway.

See the LVM and BACnet Gateway installation manual (507897) for instructions for detailed connection information.

## System Connections

The BACnet address 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 (0-3)	Unit Type 0 Indoor Unit 1 Outdoor Unit	Unit Address (Indoor Unit 0-63) (Outdoor Unit 0-31)	

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

Direct connect with PC from PC network port to the gateway Ethernet connection - Configure PC network port with the proper settings and use a web browser to connect - enter the IP address 192.168.1.8 and you will be prompted to enter name/password. once connected you will see the options for setting up the Gateway to reside on your bacnet network. Once connected you will see the options for setting up the Gateway to reside on your bacnet network.

User name = admin

User Password = 123456

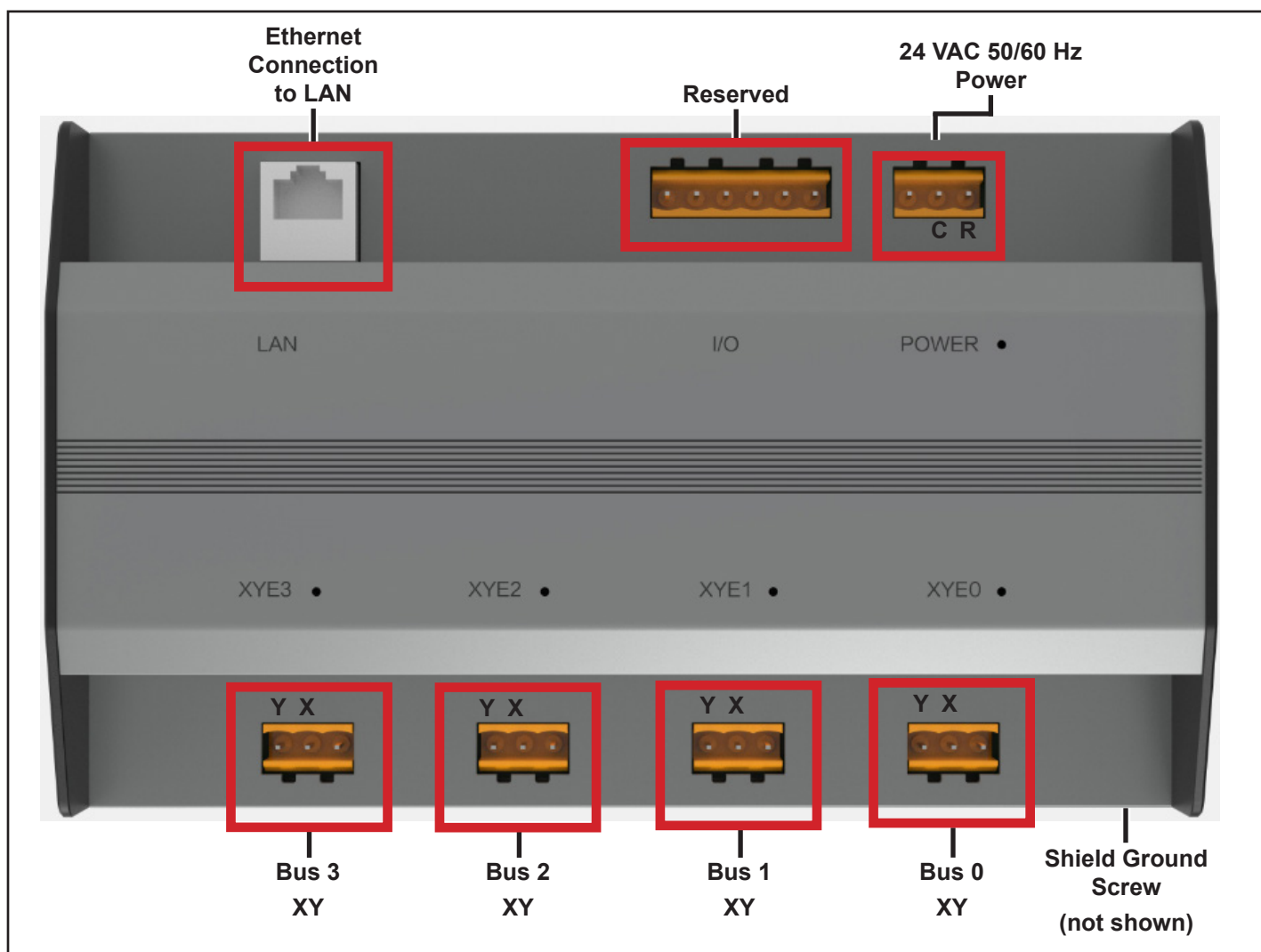


Figure 1. VRF BACnet Gateway Connection Points

<b>Object Type</b>	<b>Abbreviation</b>
Analog Input	AI
Analog Output	AO
Analog Value	AV
Binary Input	BI
Binary Output	BO
Binary Value	BV
Multi-state Input	MI
Multi-state Output	MO
Multi-state Value	MV

## BACnet Object Points List

### Indoor Units Points List

Object ID	Object Name	Value	R/W	Description
BV 1	On/Off Setting	"0-OFF 1-ON"	R/W	Indoor unit ON/OFF setting
MV 1	Mode Setting	"1-OFF 2-Fan 3-Cooling 4-Heating 5-Auto 6-Dry"	R/W	Indoor unit mode setting
MV 2	Fan Speed Setting	"1/2-Low 3/4-Medium 5/6/7-High 8-Auto 9-OFF"	R/W	Indoor unit fan speed setting
AV 1	Temperature Setting	62~86F(17~30C)	R/W	Indoor unit setpoint for cooling, heating and dry mode
AV 2	Dual Point (Cooling) Setting	62~86F(17~30C)	R/W	Indoor unit auto mode cooling setpoint setting
AV 3	Dual Point (Heating) Setting	62~86F(17~30C)	R/W	Indoor unit auto mode heating setpoint setting
AV 4	Cool Temperature Limit Setting	62~86F(17~30C)	R/W	Indoor unit low limit of cooling, auto cooling and dry setpoint
AV 5	Heat Temperature Limit Setting	62~86F(17~30C)	R/W	Indoor unit up limit of heating and auto heating setpoint
MV 3	Mode Limit Setting	"0-Unlock 1-Locked in cooling mode 2-Locked in heating mode"	R/W	Indoor unit mode lock/unlock setting
MV 5	Fan Lock/Unlock Setting	"1/2-Locked in low speed 3/4-Locked in medium speed 5/6/7-Locked in high speed 8-Unlock"	R/W	Indoor unit fan speed lock/unlock setting
BV 4	Remote Control Lock Setting	"0-Unlock 1-Wireless control locked"	R/W	Wireless controller lock/unlock setting
BV 5	Controller Lock Setting	"0-Unlock 1-Wired control locked"	R/W	Wired controller lock/unlock setting
AI 1	Room Temperature	Actual value	R	Indoor unit room temperature sensor value
BI 2	Alarm Indication	"0-No malfunction code 1-Malfunciton code"	R	If there is error code for indoor unit

AI7	Equipment Displayed Error and Associated Description	95	FE No address	R	Indoor unit error code
		61	E0 Mode conflict		
		62	E1 Communication error between indoor and main outdoor unit		
		63	E2 T1 (Room temperature sensor) malfunction		
		64	E3 T2 (Middle of evaporator sensor) malfunction		
		65	E4 T2B (Outlet of evaporator sensor) malfunction		
		66	E5 T2A (Inlet of evaporator sensor) malfunction		
		67	E6 DC fan motor error		
		68	E7 EEPROM failure		
		72	Eb EXV malfunction		
		74	Ed Outdoor unit Fault		
		75	EE High Water Alarm		
		1	A0 Emergency stop		
AI 9	EXV Opening	Actual value	R	Indoor unit EEV opening	
AI 10	Software Version	Actual value	R	Indoor unit software version	
AI 11	Indoor type	"1-(V33B)Four-way cassette 2-(VWMB)Wall mounted 3-(VMDB)Medium static pressure duct 5-(VVCB)Vertical air handler 6-(VHIB)High static pressure duct 7-(V22B)Compact four-way cassette 8-(VCFB)Ceiling/Floor 11-(VOSB)Dedicated outside air duct 14-(VOWA)One way cassette 21-AHU control kit"	R	Indoor unit series name	
AI 12	Indoor Capacity	"8-7Kbtu/h 10-9Kbtu/h 12-12Kbtu/h 17-15Kbtu/h 20-18Kbtu/h 25-24Kbtu/h 32-30Kbtu/h 40-36Kbtu/h 50-48Kbtu/h 60-54Kbtu/h 65-60Kbtu/h 80-72Kbtu/h 100-96Kbtu/h"	R	Indoor unit capacity	

### Outdoor Units Points List

Object ID	Object Name	Value	R/W	Description
MI 1	Mode Status	"1-OFF 2-Reserved 3-Cooling 4-Heating 5-Cooling test 6-Mix Cooling 7-Mix Heating 8-Heating test"	R	Outdoor unit operation mode status.
BI 1	On/Off Status	"0-OFF 1-ON"	R	Outdoor unit ON/OFF status
AI 1	Ambient Temperature	Actual value	R	Outdoor unit ambient temperature
AI 2	Compressor 1 Freq.	Actual value	R	Outdoor unit main compressor frequency(Hz)
AI 3	Compressor 2 Freq.	Actual value	R	Outdoor unit sub compressor frequency(Hz)
AI 4	Compressor 1 Discharge Temp.	Actual value	R	Outdoor unit main compressor discharge temperature
AI 5	Compressor 2 Discharge Temp.	Actual value	R	Outdoor unit sub compressor discharge temperature
AI 6	High Pressure	Actual value	R	Outdoor unit discharge pressure (psi)
AI 7	Low Pressure	Actual value	R	Outdoor unit suction pressure (psi)
AI 9	Fan 1 Speed	Actual value	R	Outdoor unit Fan-1 speed step, not the actual RPM

A18	Equipment Displayed Error and Associated Description	61	E0 Communication error between outdoor units	R	Outdoor unit error code
		62	E1 Power phase loss error		
		63	E2 Communication error between indoor and main outdoor unit		
		65	E4 Outdoor ambient temperature sensor (T4/T10) and condenser pipe temperature sensor (T3A/T3B) error		
		66	E5 Voltage error		
		67	E6 Inverter module temperature sensor error		
		68	E7 Discharge temp sensor error		
		69	E8 Incorrect ENC 1 Main - Sub Configuration		
		70	E9 Compressor driver error		
		101	H0 Communication error between main control chip and inverter driver chip		
		103	H2 Quantity of outdoor unit decreased		
		104	H3 Quantity of outdoor unit increased		
		105	H4 Compressor inverter module protection appears three times in 60 minutes, X stands for corresponding module		
		106	H5 Low pressure protection lock out (P2 3X in 60 minutes)		
		107	H6 Compressor Discharge Temperature Protection ( P4 3X in 100 minutes)		
		108	H7 Quantity of indoor unit decreased		
		109	H8 High pressure sensor error		
		110	H9 DC Fan Module Protection ( P9 10X in 120 minutes)		
112	Hb Low pressure sensor error				
114	Hd Sub ODU error (Y will be 1 or 2, stands for sub 1 or sub 2 ODU)				



		48	C7 Inverter Module Temperature Protection ( 1PL / 2PL 3X in 100 minutes)		
		82	F1 PTC of filter board error		
		84	F3 Outdoor unit Subcooler Outlet Temperature sensor error		
		86	F5 Outdoor unit Subcooler Inlet Temperature sensor error		
		87	F6 EEV A/B/C error (Y will be 1, 2 or 3, stands for A, B, C)		
		90	F9 Communication error between low ambient cooling kit(LAC kit) and outdoor unit PCB		
		182	P1 High Pressure Protection, CI/CO = 4.4/3.2 Mpa or 638/464 psig		
		183	P2 Low Pressure Protection, CI/CO = .05/.15 Mpa or 7.25/21.8 psig		
		184	P3 Over current protection of inverter compressor		
		185	P4 Compressor discharge temp protection, CI/CO = 120/90°C or 248/194°F		
		186	P5 Condenser high temp protection, CI/CO = 65/55°C or 149/131°F		
		190	P9 Fan module protection		
		198	PL Temperature protection of inverter module, CI/CO = 80/60°C or 176/140°F		
AI 10	Fan 2 Speed	Actual value		R	Outdoor unit Fan-2 speed step, not the actual RPM
BI 2	Alarm Indication	"0-No malfunction code 1-Malfunciton code"		R	If there is an error code for outdoor unit.
AI 11	T3	Actual temperature		R	Outdoor left condenser temperature
AI 12	T3B	Actual temperature		R	Outdoor right condenser temperature

BI 4	SV2	"0-OFF 1-ON"	R	Outdoor SV2(Solenoid valve) status
BI 6	SV4	"0-OFF 1-ON"	R	Outdoor SV4(Solenoid valve) status
BI 11	ST1	"0-Not energized 1-Energized"	R	Outdoor ST1(Reverse valve) status
BI 12	ST2	"0-Not energized 1-Energized"	R	Outdoor ST2(Reverse valve) status
AI 13	Version	Actual value	R	Outdoor unit main PCB software version
AI 14	Outdoor type	"0-Mini VRF 1-VRF"	R	Outdoor unit type
AI 15	Outdoor horses	Actual value	R	Outdoor unit capacity (Ton)
AI 16	Exv1 opening	Actual value	R	Outdoor EEV A opening (pulse)
AI 17	Exv2 opening	Actual value	R	Outdoor EEV B opening (pulse)
BV 1	Emergency Stop	"0-None 1-Energy stop command"	W	Emergency stop command



**Technical Support**

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