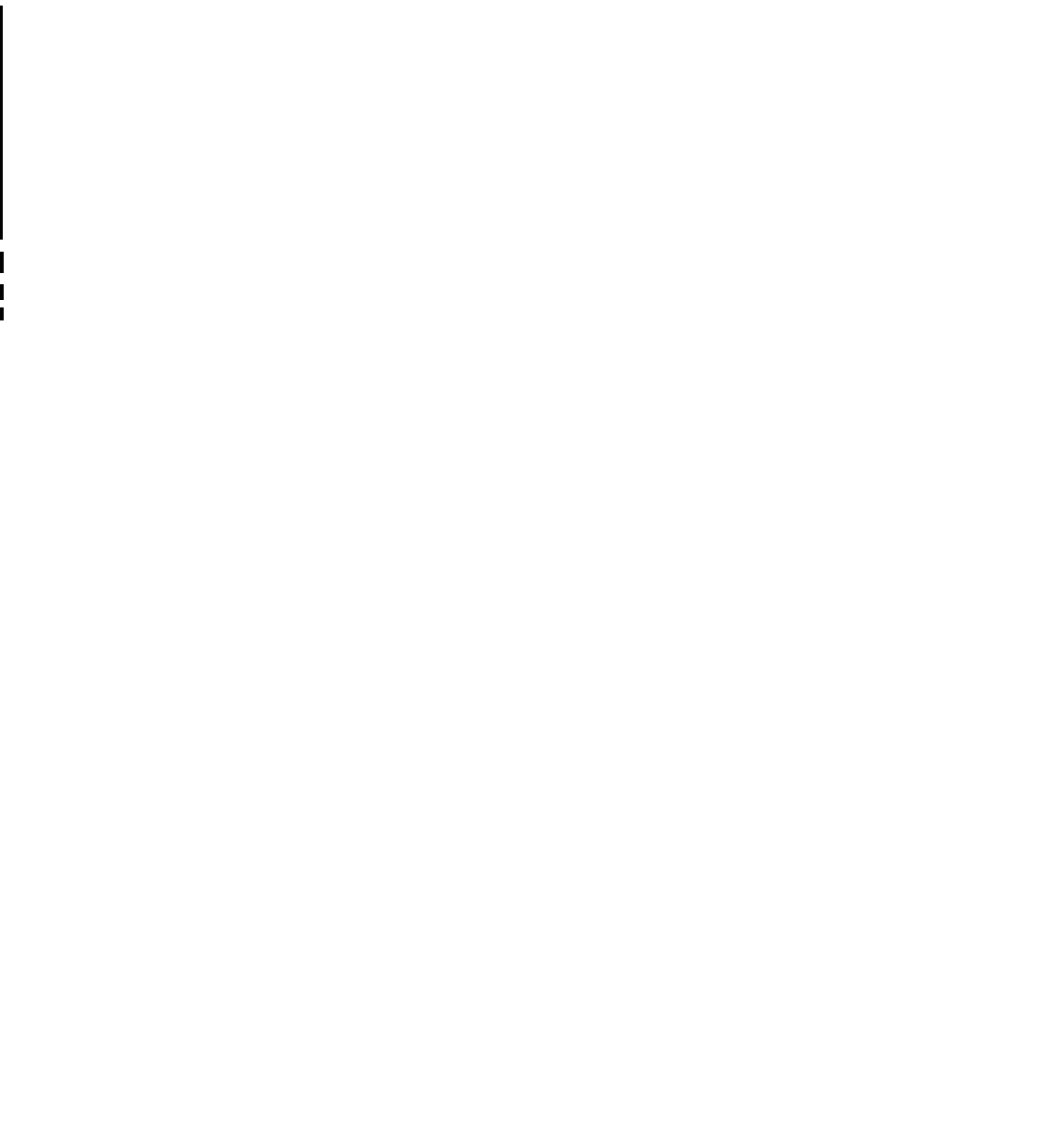


# **VRF UNIT LonWorks GATEWAY**

## **User Manual**

*Applicable Model: GW-LON(A)  
GW3-LON*

Thank you very much for purchasing our product.  
Read this manual carefully before using this product and keep it for future reference

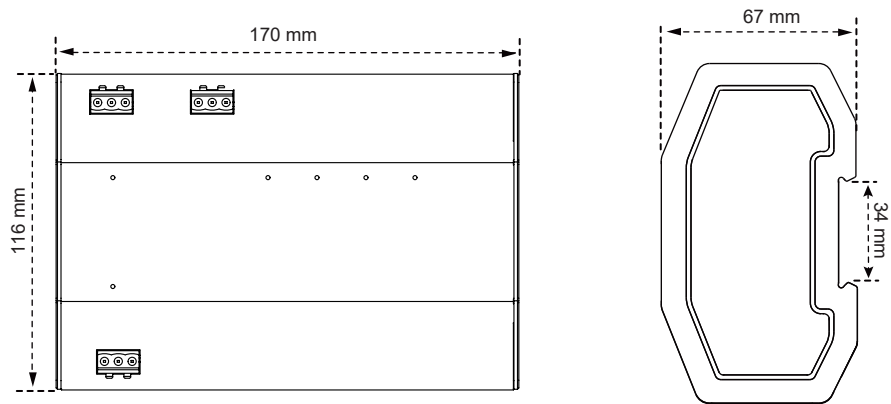


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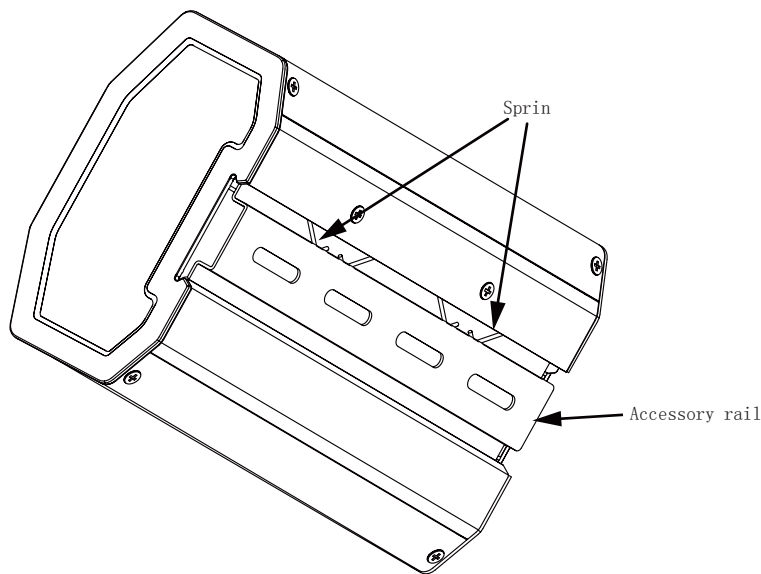
# I. Installation Diagram

## 1. Product Dimensions



## 2. Installation Diagram

The product uses the rail-type installation method: first secure the rail in the packing carton to the position where the product will be installed, and then fasten the spring of the gateway on the rail.



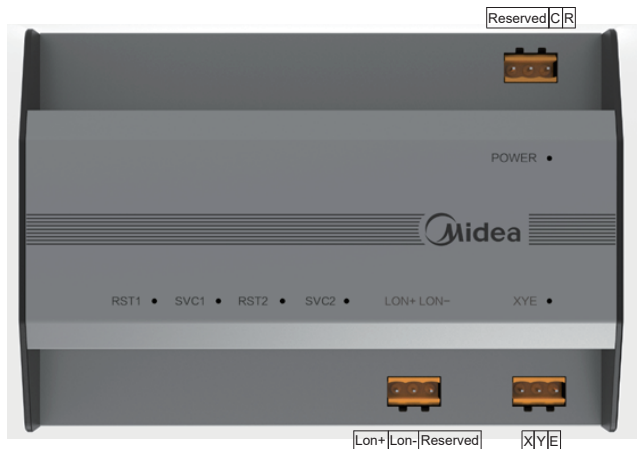
## II. Specifications

Input power voltage: 24 V AC;

Operating ambient temperature of modules: -10°C to 50°C;

Operating ambient humidity of modules: RH 25% to RH 90%.

## III. LonWorks Gateway Wiring



No.	Name	Remarks
1	POWER	24VAC, 50/60Hz, 200mA
2	XYE	To ODUXYE port
3	LON+ LON-	LON bus port to BMS
4	SVC1 SVC2	Service indicator light
5	RST1 RST2	Reset indicator light

The LonWorks gateway has one set of XYE communication ports, which can be connected to one XYE bus: up to 32 IDUs (address range: 0-31), and 32 ODUs (8 refrigeration systems, address range: 00-31).

The LonWorks gateway has one LON bus port, with the channel type TP/FT-10, and it is connected to the LonWorks BAS network using a free topology twisted pair.

The communication distance of the LON bus and the XYE bus is 800 meters in theory, but this is affected by the actual installation environment and other factors, so the actual communication distance may vary according to circumstances.

## IV. Functions of LonWorks Gateway

The LonWorks gateway is embedded with a LonWorks function module that supports the LonTalk protocol. The LonWorks gateway can transform 485 communication protocol into a standard LonTalk protocol, thus achieving integration between the central air conditioning system and LonWorks' BAS.

## V. LonWorks Communication Objects of LonWorks Gateway

### 1. Communication Objects

The new LonWorks gateway supports a total of 512 objects which can be connected to 32 IDUs and 32 ODU. The specific parameters are shown in the following table.

### 2. IDU LonWorks Objects

#### 2.1 Output Class Variable (Readable)

Output class variables are readable variables read by the LonWorks gateway from an IDU.

1) Operating mode

Variable name: nvo\_Op\_Mode

Parameter definition

Variable format:

Mode	0	Off
	1	Fan
	2	Cooling
	3	Heating
	4	Reserved
	5	Water heating
	6	Dry
	18	Automatic cooling
	19	Automatic heating
	30	Auto

In the variable format, values other than the mode are not defined, and 0 is always displayed.

When the IDU is offline, the value of the variable is 0.

Note: M represents the IDU address, nvo\_Op\_Mode\_1 represents the operating mode of IDU #0, and so on. Of these, nvo\_Op\_Mode\_1 to nvo\_Op\_Mode\_16 of the sub0 main board represent the operating modes of IDUs #0-15, and nvo\_Op\_Mode\_17 to nvo\_Op\_Mode\_32 of the sub1 main board represent the operating modes of IDUs #16-31.

## 2) Operating fan speed

Variable name: nvo\_Fan\_Speed

Parameter definition:

Fan speed	0	Fan off
	1	Fan speed 1
	2	Fan speed 2
	3	Fan speed 3
	4	Fan speed 4
	5	Fan speed 5
	6	Fan speed 6
	7	Fan speed 7
	20	Low
	21	Medium
	22	High
	30	Automatic

When the IDU is offline, the value of the variable is 0.

Note: M represents the IDU address, nvo\_Fan\_Speed\_1 represents the operating fan speed of IDU #0, and so on. Of these, nvo\_Fan\_Speed\_1 to nvo\_Fan\_Speed\_16 of the sub0 main board represent the operating fan speeds of IDUs #0-15, and nvo\_Fan\_Speed\_17 to nvo\_Fan\_Speed\_32 of the sub1 main board represent the operating fan speeds of IDUs #16-31.

## 3) Set temperature

Variable name: nvo\_Temp\_Set

Parameter definition: indicates the set temperature/automatic mode cooling set temperature/hydraulic module heating water temperature. For example, 17-80 indicates 17°C to 80°C.

When the IDU is offline, the value of the variable is 0.

## 4) Heating temperature

Variable name: nvo\_Heating\_Set

Parameter definition: indicates the automatic heating temperature/hydraulic module heating temperature. For example, 17-80 indicates 17°C to 80°C.

When the IDU is offline, the value of the variable is 0.

5) Room temperature (hydraulic module water tank temperature)

Variable name: nvo\_Room\_Set

Parameter definition: indicates the room temperature/hydraulic module water tank temperature. For example, -25-105°C indicates -25°C to +105°C.

When the IDU is offline, the value of the variable is 0.

6) Water outlet temperature (hydraulic module)

Variable name: nvo\_Water\_Set

Parameter definition: indicates the water outlet temperature (hydraulic module). For example, -25-105°C indicates -25°C to +105°C.

When the IDU is offline, the value of the variable is 0.

7) IDU error

Variable name: nvo\_Fault\_Code

Parameter definition: indicates the high/low byte of an error code.

When the IDU is offline, the value of the variable is 0.

Refer to the following list for error codes:

0: No error

1-20: A0-AF, AH, AL, AP, AU

21-40: b0-bF, bH, bL, bP, bU

41-60: C0-CF, CH, CL, CP, CU

61-80: E0-EF, EH, EL, EP, EU

81-100: F0-FF, FH, FL, FP, FU

101-120: H0-HF, HH, HL, HP, HU

121-140: L0-LF, LH, LL, LP, LU

141-160: J0-JF, JH, JL, JP, JU

161-180: n0-nF, nH, nL, nP, nU

181-200: P0-PF, PH, PL, PP, PU

201-220: r0-rF, rH, rL, rP, rU

221-240: t0-tF, tH, tL, tP, Tu

241-260: U0-UF, UH, UL, UP, UU

Others: reserved

The error displayed on certain models may not be consistent with the unit's actual error. In these cases, refer to the error on the unit. For the meaning of a specific error code, see the explanation provided in the service manual.

Error codes 121-140 are only used for the debugging function. Codes 141-240 indicate a reserved error, and 241-255 indicate reserved byte.



## 2.2 Input Class Variable (Writable)

There are four kinds of LonWorks objects in the IDU, which can be used by the host of the LonWorks BAS.

### 1) Setting the mode

Variable name: nvi\_Op\_Mode

Parameter definition:

Mode	0	Off (Heating/water heating off for European three-pipe models)
	1	Fan on
	2	Cooling on
	3	Heating on
	4	Reservation on
	5	Heating water on
	6	Dry on
	7	Heating/heating water on
	8	Heating off
	9	Heating water off
	30	Auto

Note: M represents the IDU address, nvi\_Op\_Mode \_1 represents the mode setting of IDU #0, and so on. Of these, nvi\_Op\_Mode \_1 to nvi\_Op\_Mode \_16 of the main board represent the mode settings of IDUs #0-15, and nvi\_Op\_Mode \_17 to nvi\_Op\_Mode \_32 of the sub main board represent the mode settings of IDUs #16-32.

By default, the mode setting is processed as mode + boot. If the upper computer sends a value that is not defined, mode setting is not performed by default.

### 2) Setting the fan speed

Variable name: nvi\_Fan\_Speed

Parameter definition:

Fan speed	0	Fan off
	1	Fan speed 1
	2	Fan speed 2
	3	Fan speed 3
	4	Fan speed 4
	5	Fan speed 5
	6	Fan speed 6
	7	Fan speed 7
	20	Low
	21	Medium
	22	High
	30	Automatic

Note: M represents the IDU address, nvi\_Fan\_Speed\_1 represents the fan speed setting of IDU #0, and so on. Of these, nvi\_Fan\_Speed\_1 to nvi\_Fan\_Speed\_16 of the sub0 main board represent the fan speed settings of IDUs #0-15 IDUs, and nvi\_Fan\_Speed\_16 to nvi\_Fan\_Speed\_32 of the sub1 main board represent the fan speed settings of IDUs #16-31.

If the upper computer sends a value that is not defined, the fan speed setting is not performed by default.

If nvi\_Op\_Mode\_M selects the Off or Dry mode, the set values of nvi\_Fan\_Speed\_M are invalid.

If nvi\_Op\_Mode\_M selects the Heating mode, the IDU may not be able to respond to medium/high speed commands due to the cold air protection function.

### 3) Setting the temperature

Set temperature/automatic mode cooling set temperature/hydraulic module heating water temperature(Common IDU: 17°C to 30°C; high-temperature hydraulic module: 25°C to 80°C)

Variable name: nvi\_TempSet\_M

Parameter definition:

Note: M represents the IDU address, nvi\_TempSet\_1 represents the temperature setting of IDU #0, and so on. Of these, nvi\_TempSet\_1 to nvi\_TempSet\_16 of the sub0 main board represent the temperature settings of IDUs #0-15, and nvi\_TempSet\_16 to nvi\_TempSet\_32 of the sub1 main board represent the temperature settings of IDUs #16-31.

When the upper computer sends a value other than the defined values, the minimum temperature is implemented if the value is below the minimum value, while the maximum temperature is implemented if the value is higher than the maximum temperature.

If the upper computer sends a temperature value with decimal places, only the integer is used. For example, 67.68°C is sent as 67°C.

If nvi\_TempSet\_M selects the Off or Fan mode, the set values of nvi\_TempSet\_M are invalid.

#### 4) Setting the heating temperature

Automatic heating temperature/hydraulic module heating temperature (Common IDU: 17°C to 30°C; high-temperature hydraulic module: 25°C to 80°C)

Variable name: nvi\_Heating\_Set\_M

Parameter definition:

Temperature (Celsius)	Value - LonMaker	Temperature (Celsius)	Value - LonMaker
17	17	25	25
18	18	26	26
19	19	27	27
20	20	28	28
21	21	29	29
22	22	30	30
23	23	...	...
24	24	80	80

Note: M represents the IDU address, nvi\_Heating\_Set\_1 represents the temperature setting of IDU #0, and so on. Of these, nvi\_Heating\_Set\_1 to nvi\_Heating\_Set\_16 of the sub0 main board represent the temperature settings of IDUs #0-15, and nvi\_Heating\_Set\_16 to nvi\_Heating\_Set\_32 of the sub1 main board represent the temperature settings of IDUs #16-31.

When the upper computer sends a value other than the defined values, the minimum temperature is implemented if the value is below the minimum value, while the maximum temperature is implemented if the value is higher than the maximum temperature.

If the upper computer sends a temperature value with decimal places, only the integer is used. For example, 67.68°C is sent as 67°C.

If nvi\_TempSet\_M selects the Off or Fan mode, the set values of nvi\_TempSet\_M are invalid.

### 2.3 IDU Information Output Class Variable (Readable) of Bus

1) Online status

Variable name: nvo\_Online\_Stat

Parameter definition: Each bit represents one IDU where "0" means the unit is offline, and "1" means the unit is online.

Notes: nvo\_Online\_Stat of the sub0 main board represents the online status of IDUs #0-15, and nvo\_Online\_Stat of the sub1 main board represents the online status of IDUs #16-31.

2) Operating status

Variable name: nvo\_Op\_Stat

Parameter definition: Each bit represents one IDU where "0" means the unit is OFF, and "1" means the unit is ON.

Notes: nvo\_Op\_Stat of the sub0 main board represents the operating status of IDUs #0-15, and nvo\_Op\_Stat of the sub1 main board represents the operating status of IDUs #16-31.

3) Error status

Variable name: nvo\_Fault\_Stat

Parameter definition: Each bit represents one IDU where "0" means the unit has no error, and "1" means the unit has an error.

Notes: nvo\_Fault\_Stat of the sub0 main board represents the error status of IDUs #0-15, and nvo\_Fault\_Stat of the sub1 main board represents the error status of IDUs #16-31.

### 2.4 IDU Group Input Class Variable (Writeable)

1) Setting group control power-off

Variable name: nvi\_GroupControl

Parameter definition:

Status	Value
Off	100.0 0

If the upper computer sends other values, the LonWorks gateway will not process them.

If the upper computer sends the variables of the sub0 main board, it will only send the group control power-off command to the IDU connected to the main board. If the upper computer sends the variables of the sub1 main board, it will only send the group control power-off command to the IDU connected to the sub main board.

## 3. ODU LonWorks Objects

### 3.1 Output Class Variable (Readable)

There is only one LonWorks object in the ODU, which can be used by the host of the LonWorks BAS.

1) ODU error codes

Variable name: `nvo_Fault_Code1`

Parameter definition:

0: no error

1–20: A0–AF, AH, AL, AP, AU

21–40: b0–bF, bH, bL, bP, bU

41–60: C0–CF, CH, CL, CP, CU

61–80: E0–EF, EH, EL, EP, EU

81–100: F0–FF, FH, FL, FP, FU

101–120: H0–HF, HH, HL, HP, HU

121–140: L0–LF, LH, LL, LP, LU

141–160: J0–JF, JH, JL, JP, JU

161–180: n0–nF, nH, nL, nP, nU

181–200: P0–PF, PH, PL, PP, PU

201–220: r0–rF, rH, rL, rP, rU

221–240: t0–tF, tH, tL, tP, tU

241–260: U0–UF, UH, UL, UP, UU

Others: reserved

For the meaning of a specific error code, see the explanation provided in the service manual.

When the ODU is offline, the value of the variable is 0.

Note: M represents the ODU address, `nvo_Fault_Code1_1` represents the error code of ODU #0, and so on. Of these, `nvo_Fault_Code1_1` to `nvo_Fault_Code1_16` of the sub0 main board represent the error codes of ODUs #0-15, and `nvo_Fault_Code1_1` to `nvo_Fault_Code1_32` of the sub1 main board represent the error codes of ODUs #16-31.

### 3.2 ODU Information Output Class Variable of Bus

1) Online status

Variable name: `nvo_Online_Stat1`

Parameter definition: Each bit represents one ODU where "0" means the unit is offline, and "1" means the unit is online.

Notes: `nvo_Online_Stat1` of the sub0 main board represents the online status of ODUs #0-15, and `nvo_Online_Stat1` of the sub1 main board represents the online status of ODUs #16-31.

## 2) Operating status

Variable name: nvo\_Op\_Stat1

Parameter definition: Each bit represents one ODU where "0" means the unit is OFF, and "1" means the unit is ON.

Notes: nvo\_Op\_Stat1 of the sub0 main board represents the operating status of ODUs #0-15, and nvo\_Op\_Stat1 of the sub1 main board represents the operating status of ODUs #16-31.

## 3) Error status

Variable name: nvo\_Fault\_Stat1

Parameter definition: Each bit represents one ODU where "0" means the unit has no error, and "1" means the unit has an error.

Notes: nvo\_Fault\_Stat1 of the sub0 main board represents the error status of ODUs #0-15, and nvo\_Fault\_Stat1 of the sub1 main board represents the error status of ODUs #16-31.

## **4. Other LonWorks Objects**

### **4.1 Version Information Output Class Variable**

Variable name: nvo\_Version

Parameter definition: displays the version of the current LON module.

### **4.2 Gateway ID Output Class Variable**

Variable name: nvo\_Gateway\_Id

Parameter definition: outputs the network variable nvo\_Gateway\_Id to display the ID (1 or 2) of the current gateway.

ID 1: manages IDU/ODU #0-15.

ID 2: manages IDU/ODU #16-31.

MD20U-011B-ZH



此页不做菲林，只做说明材料；双胶纸100g  
大小：210\*145  
黑白印刷，内容清晰

于2022年6月10号更新

- 1、使用型号增加GW3-LON。
- 2、修改温度范围为：-10℃-50℃。