VRF UNIT LonWorks GATEWAY

User Manual

Applcable Model:GW-LON(A)
GW3-LON

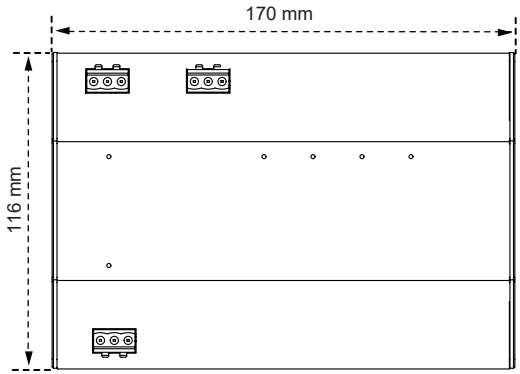
Thank you very much for purchasing our product.
Read this manual carefully before using this product and keep it for future reference

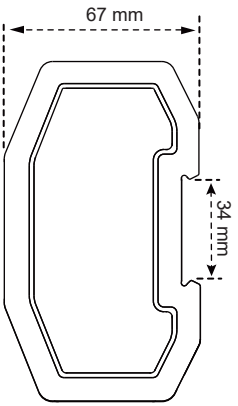
Contents

I. Installation Diagram 1
1. Product Dimensions 1
2. Installation Diagram 1
II. Specifications 2
III. LonWorks Gateway Wiring 2
IV. Functions of LonWorks Gateway 3
V. LonWorks Communication Objects of LonWorks Gateway 3
1. Communication Objects 3
2. IDU LonWorks Objects 3
2.1 Output Class Variable (Readable) 3
2.2 Input Class Variable (Writable) 6
2.3 IDU Information Output Class Variable (Readable) of Bus 9
2.4 IDU Group Input Class Variable (Writeable) 9
3. ODU LonWorks Objects 10
3.1 Output Class Variable (Readable) 10
3.2 ODU Information Output Class Variable of Bus 10
4. Other LonWorks Objects 12
4.1 Version Information Output Class Variable 12
4.2 Gateway ID Output Class Variable 12

I. Installation Diagram

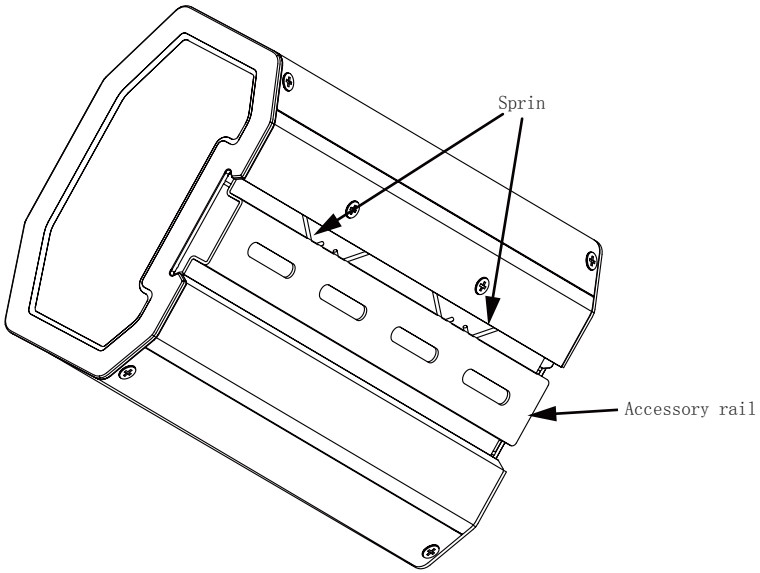
1. Product Dimensions





2. Installation Diagram

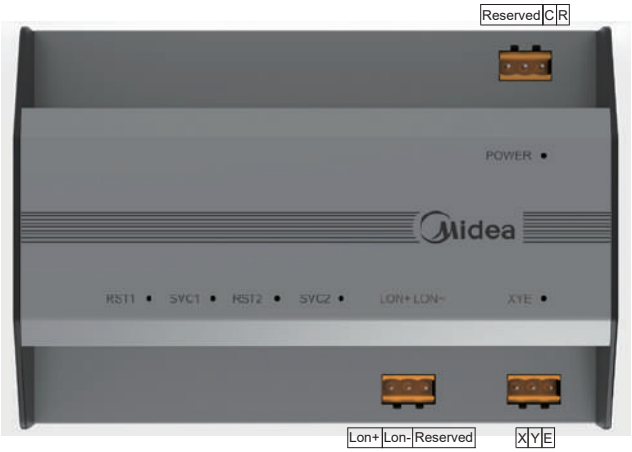
The product uses the rail-type installation method: first secure the rail in the packing carton to the position where the product will be installed, and then fasten the spring of the gateway on the rail.



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 ODUs. 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℃ to 80℃.
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

16110900000144 V.B

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℃。