

OPERATION MANUAL

GW-LON Operation Manual

Thank you very much for purchasing our product.
Before using your product, please read this manual carefully and keep it for future reference.

Safety Precautions

Read the safety precautions carefully prior to installation.

Make sure you observe the important safety precautions provided below.

Warning

- Improper handling may lead to death or serious injury.

Caution

Improper handling may lead to personal injury or material loss.

Warning

- Get authorized agents or professionals to install the device, as non-professionals may not install the equipment properly which may in turn lead to electric shock or fire.
- Follow the instructions in this manual strictly as an improper installation may cause electric shock or fire.
- Get a professional to carry out any re-installation works. Improper installation may lead to electric shock or fire.
- Do not try to disassemble the device. Otherwise, the gateway may malfunction or overheat, and even cause a fire.

Caution

Do not install the product in a place where there is a danger of flammable gas leaks. Any leakage within the vicinity of the gateway may cause a fire.

Do not install in places that are hot, humid, and dusty, as this may easily lead to short circuits, heating, and poor contact that may cause a fire.

The wiring must be adapted to the current of the gateway; if not, it may lead to power leakage or heating, and cause a fire.

Use specified cables, and do not exert external forces on the wiring terminals, as this may lead to breakages and heating, and cause a fire.

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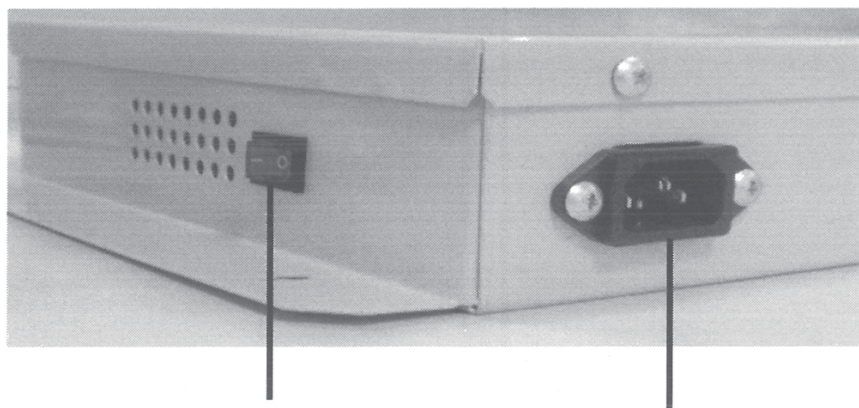
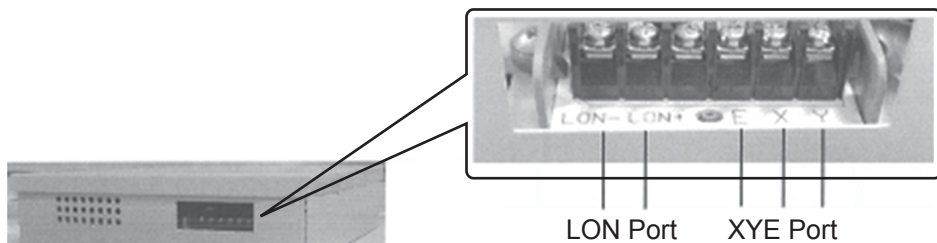
Functions

The embedded LonWorks function module in the gateway supports the LonTalk protocol. By converting the RS485 protocol adopted by the VRF unit into the standard LonTalk protocol, it allows the VRF system to communicate with the LonWorks-based building network system.

Specifications

No.	Function	Description
1	Processor/ memory	FT 5000 smart transceiver chip, 10MHz, 64K Flash memory
2	Services	Hidden service switch Service LED (red) LED power indicator (green)
3	Input power	Voltage range: 100~240 VAC 50/60Hz Maximum current: 2A
4	Operating environment	Temperature: 0~+40°C
5	Software configuration	LonMark standard configuration Support direct read/write to memory by LNS-based network management tool
6	Dimensions	31.9 cm x 25.1 cm x 6.1 cm

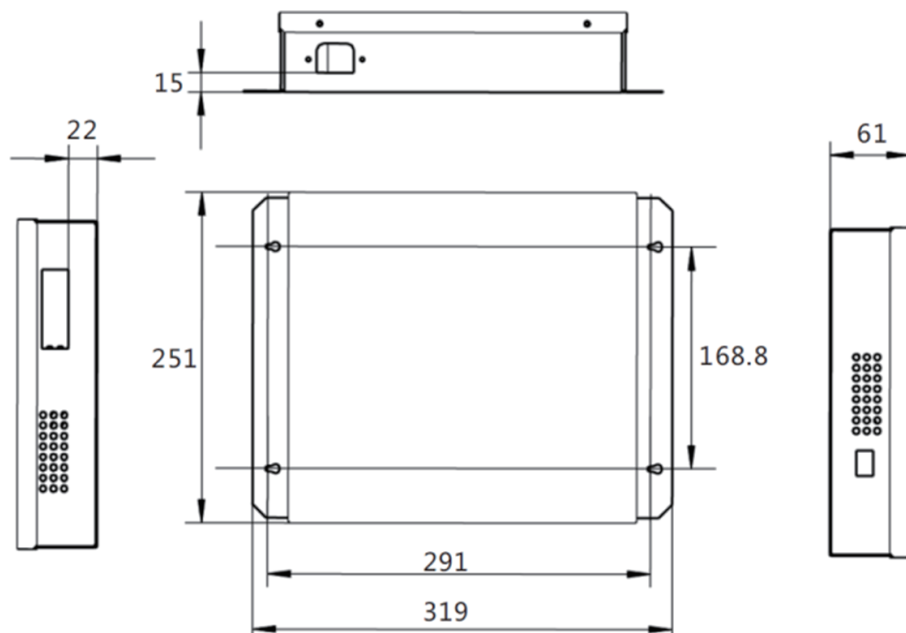
Interfaces



Power Switch

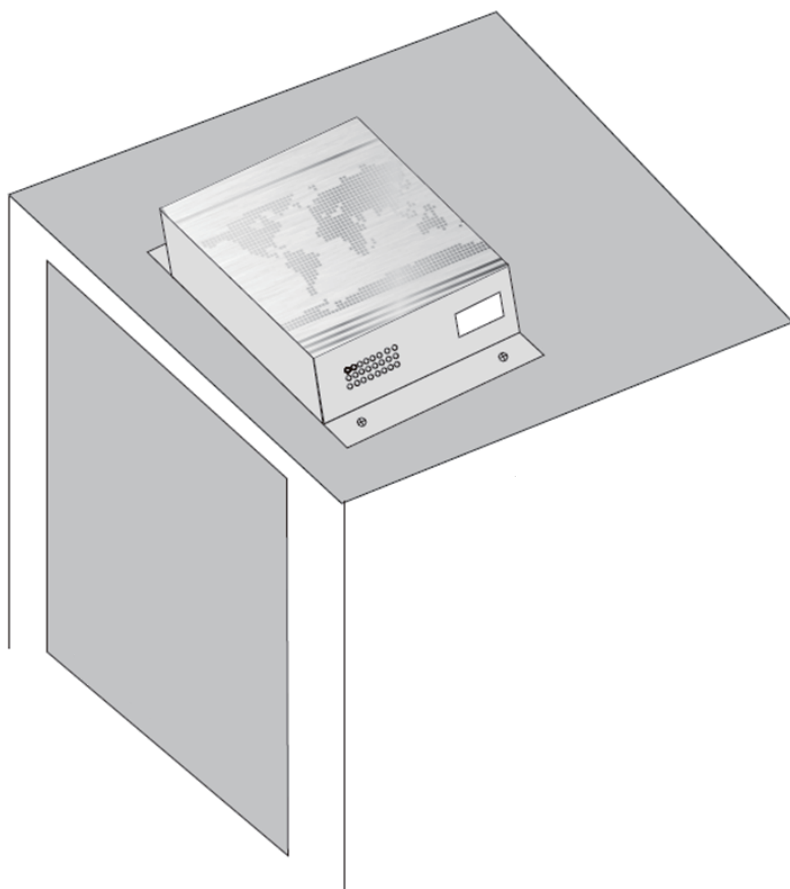
Power Port
100~240 VAC 50/60Hz

Dimensions



Mounting Method

Mount the equipment using the method shown below. Do not place other items on the surface of the product when the product is placed horizontally to prevent accidents.



Wiring

The gateway has one set of X/Y/E communications ports to connect to one X/Y/E bus: up to 64 indoor units (address range: 0~63), 32 outdoor units (8 refrigerant systems, address range: 00~31).

The gateway has one LON bus port with the TP/FT-10 channel type that is connected to the LonWorks-based building network system using twisted-pair cables.

The maximum communication distance of the LON bus and the X/Y/E bus is up to 1000 metres, but the actual communication distance depends on the actual installation environment and other factors.

Network Variables for Controller

Description

The gateway has two boards. Each board can be connected to a maximum of 32 indoor units and 16 outdoor units. For the main board, 0~31 are the addresses for the indoor units, and 00~15 are the addresses for the outdoor units. For the sub board, 32~63 are the addresses for the indoor units, and 16~31 are the addresses for the outdoor units.

LonWorks Object Description for Indoor Unit

The indoor unit provides 10 types of LonWorks objects for the LonWorks-based building system to choose from.

Input Variables

The gateway sends input variables to the indoor units, and these are all read/write variables.

1) Mode setting

Variable name: nviSetMode_M

Parameter definition:

Status	Value - LonMaker	Value - NLutil
Heat	1	1
Cool	3	3
Off	6	6
Fan	9	9
Dry	14	E

Note: nviSetMode_1 is the mode setting for indoor unit 0, and so on. Of these, nviSetMode_1 to nviSetMode_32 of the main board are the mode settings for indoor units numbered 0 to 31, and nviSetMode_1 to nviSetMode_32 of the sub board are the mode settings for indoor units numbered 32 to 63.

By default, the unit will operate in the preset mode when it is turned on. If the upper computer sends any value other than the defined values, the unit will turn off by default.

2) Fan speed setting

Variable name: nviSetWind_M

Parameter definition:

Status	Value - LonMaker	Value - NLutil
Speed 1	1.01	02 01
Speed 2	2.01	04 01
Speed 3	3.01	06 01
Speed 4	4.01	08 01
Speed 5	5.01	0A 01
Speed 6	6.01	0C 01
Speed 7	7.01	0E 01
Auto	8.01	10 01

Note: nviSetWind_1 is the fan speed setting for indoor unit 0, and so on. Of these, nviSetWind_1 to nviSetWind_32 of the main board are the fan settings for indoor units numbered 0 to 31, and nviSetWind_1 to nviSetWind_32 of the sub board are the fan settings for indoor units numbered 32 to 63.

If the upper computer sends any value other than the defined values, a low fan speed is implemented by default.

3) Temperature setting

Variable name: nviSetTemp_M

Parameter definition:

Temperature (degree Celsius)	Value - LonMaker	Value - NLutil
17	17.00	06 A4
18	18.00	07 08
19	19.00	07 6C
20	20.00	07 D0
21	21.00	08 34
22	22.00	08 98
23	23.00	08 FC
24	24.00	09 60
25	25.00	09 C4
26	26.00	0A 28
27	27.00	0A 8C
28	28.00	0A F0
29	29.00	0B 54
30	30.00	0B B8

Note: nviSetTemp_1 is the temperature setting for indoor unit 0, and so on. Of these, nviSetTemp_1 to nviSetTemp_32 of the main board are the temperature settings for indoor units numbered 0 to 31, and nviSetTemp_1 to nviSetTemp_32 of the sub board are the temperature settings for indoor units numbered 32 to 63.

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 temperature value is a decimal, the upper computer will send only its integer part. For example, for a value of 17.68°C, the upper computer sends only 17°C.

The nviSetTemp_M setting is invalid if nviSetMode_M is set to Off or Fan mode.

Output Variables

The gateway reads in the output variables from the indoor units, and these are all read-only variables.

1) Mode and fan speed

Variable name: nvoModeWind_M

Parameter definition:

Variable format: (mode) 0000 (fan speed) 00

Mode	HVAC_HEAT	Heat
	HVAC_COOL	Cool
	HVAC_FAN ONLY	Fan
	HVAC_DEHUMID	Dry
	HVAC_OFF	Off
Fan Speed	0	Stop Fan
	1.22	Speed 1
	1.23	Speed 2
	1.24	Speed 3
	2.5	Speed 4
	2.51	Speed 5
	2.52	Speed 6
	2.53	Speed 7
	2.54	Auto

Note: nvoModeWind_1 is the mode and fan setting of indoor unit 0, and so on. Of these, nvoModeWind_1 to nvoModeWind_32 of the main board are the mode and fan settings for indoor units numbered 0 to 31, and nvoModeWind_1 to nvoModeWind_32 of the sub board are the mode and fan settings for indoor units numbered 32 to 63.

Besides the mode and fan speed, other values in the variable format are always 0 and not defined.

When the indoor unit is offline, the value of the variable is HVAC_OFF 000000.

2) Set temperature

Variable name: nvoSetTemp_M

Parameter definition: 17.00~30.00 represents 17~30°C.

Note: nvoSetTemp_1 is the temperature set for indoor unit 0, and so on. Of these, nvoSetTemp_1 to nvoSetTemp_32 of the main board are the temperatures set for indoor units numbered 0 to 31, and nvoSetTemp_1 to nvoSetTemp_32 of the sub board are the temperatures set for indoor units numbered 32 to 63.

If the mode is set to Auto in nvoModeWind_M, then nvoSetTemp_M is the value set for the cooling temperature in Auto mode.

When the indoor unit is offline, the value of the variable is 0.

3) Indoor temperature

Variable name: nvoldUTemp_M

Parameter definition: Display the actual temperature.

Note: nvoldUTemp_1 is the indoor temperature for indoor unit 0, and so on. Of these, nvoldUTemp_1 to nvoldUTemp_32 of the main board are the indoor temperatures for indoor units numbered 0 to 31, and nvoldUTemp_1 to nvoldUTemp_32 of the sub board are the indoor temperatures for indoor units numbered 32 to 63.

When the indoor unit is offline, the value of the variable is 0.

4) Error codes for indoor unit

Variable name: nvoIDUErrCode_M

Refer to the following table for the 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
Reserved	

For some models, the errors displayed may not be actual errors. In this case, refer to actual errors of the unit.

Note: nvoIDUErrCode_1 represents the error code of indoor unit 0, and so on. Where, nvoIDUErrCode_1 to nvoIDUErrCode_32 displayed on the main board represent error codes for indoor units 0 to 31 respectively, and nvoIDUErrCode_1 to nvoIDUErrCode_32 displayed on the sub board represent error codes for indoor units 32 to 63 respectively.

When an indoor unit is offline, the variable value is 0.

OFF group variable for indoor unit

Variable name: nviSysForcedOff

Parameter definition:

Status	Value
Off	6

The gateway does not process any other values sent by the upper computer.

If the upper computer sends the variables of the main board, it will only turn off the indoor units connected to the main board. If the upper computer sends the variables of the sub board, it will only turn off the indoor units connected to the sub board.

Variables of the status of indoor units

1) Online status

Variable name: nvoOnlineStatus

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

2) On/Off status

Variable name: nvoRunningStatus

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

LonWorks Object Description for Outdoor Unit

The outdoor unit provides one type of LonWorks object for the LonWorks-based building system to choose from.

Error codes for outdoor units

Variable name: nvoODUErrCode_M

Refer to the following table for the 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
Reserved	

For some models, the errors displayed may not be actual errors. In this case, refer to actual errors of the unit.

Note: nvoODUErrCode_1 represents the error code of outdoor unit 00, and so on. Where, nvoODUErrCode_1 to nvoODUErrCode_16 displayed on the main board represent error codes for outdoor units 00 to 15 respectively, and nvoODUErrCode_17 to nvoODUErrCode_32 displayed on the sub board represent error codes for outdoor units 16 to 31 respectively.

When an outdoor unit is offline, the variable value is 0.

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