





Kaysun K8-LON BMS Controller Owner's Manual

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Kaysun K8-LON BMS Controller



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%.

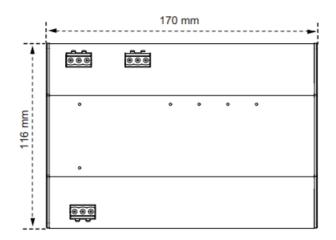
LonWorks Gateway Wiring

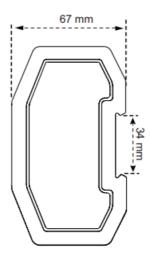
The wiring configuration for the LonWorks Gateway is as follows:

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

Installation Diagram

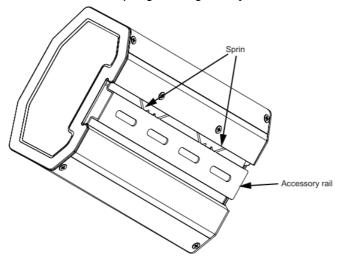
Product Dimensions





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.



LonWorks Gateway Wiring



No.	Name	Remarks
1	POWER	24VAC, 50/60Hz, 200mA
2	XYE	To ODU XYE 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.

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.

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

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:

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

	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
Fan speed	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.

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

	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
Mode	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

	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
Fan speed	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.

1. 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 (Celsiu s)	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.

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

B: 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.

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.

ODU LonWorks Objects

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

- 1. **0**: no error
- 2. 1-20: A0-AF, AH, AL, AP, AU
- 3. 21-40: b0-bF, bH, bL, bP, bU
- 4. 41-60: C0-CF, CH, CL, CP, CU
- 5. **61-80:** E0-EF, EH, EL, EP, EU
- 6. 81-100: F0-FF, FH, FL, FP, FU
- 7. **101–120**: H0–HF, HH, HL, HP, HU
- 8. 121-140: L0-LF, LH, LL, LP, LU
- 9. 141-160: J0-JF, JH, JL, JP, JU
- 10. **161–180**: n0–nF, nH, nL, nP, nU
- 11. **181–200**: P0–PF, PH, PL, PP, PU
- 12. 201-220: r0-rF, rH, rL, rP, rU
- 13. **221–240**: t0–tF, tH, tL, tP, tU
- 14. 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.

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.

Other LonWorks Objects

1. Version Information Output Class Variable

Variable name: nvo Version

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

2. Gateway ID Output Class Variable

Variable name: nvo_Gateway_ld

Parameter definition: outputs the network variable nvo_Gateway_ld to display the ID (1 or 2) of the current gateway.

- 1. **ID 1:** manages IDU/ODU #0-15.
- 2. ID 2: manages IDU/ODU #16-31.

MAIN OFFICE

Blasco de Garay, 4-6 08960 Sant Just Desvern (Barcelona) **Tel**.+ 34 93 480 33 22 http://www.kaysun.es/en/

MADRID

Senda Galiana, 1 Poligono Industrial Coslada Coslada (Madrid) **Tel**. +34 91 669 97 01 **Fax**.+349167421 00 **madrid@frigicoll.es**

FAQs

How do I reset the LonWorks Gateway?

To reset the LonWorks Gateway, press the reset button located on the device for 10 seconds until the reset indicator light blinks.

What should I do if the communication objects are not functioning properly?

If the communication objects are not working correctly, please check the wiring connections and ensure they are properly connected according to the provided diagram.

Documents / Resources



Kaysun K8-LON BMS Controller [pdf] Owner's Manual K8-LON BMS Controller, K8-LON, BMS Controller, Controller

References

User Manual

Manuals+, Privacy Policy

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