

Monitoring equipment

BACnet Building Programmable Routing Controller

GC-RB01-x

【Application Description】

GC-RB01-x is a BACnet BTL B-BC certified building programmable controller with router function, programmable and stand alone capability, allows other devices to modify its BACnet object value. Supports advanced BACnet standards such as Schedule, Calendar, Event enrollment, and Trend-log object and function.



【Product Features】

- Manufactured in accordance with the BACnet communication protocol established by the American Society for Heating, Refrigeration, and Air Conditioning (ASHRAE) and certified to BTL B-BC level.
- Peer to Peer data transfer and sharing capabilities and programmability, standalone operation, alarm and event management, calendars, Schedule, and more trend logging, device and network management functions.
- Built-in dual 32-bit microprocessors with 1M+128K SRAM, 128K FRAM and 1M+8M Flash memory.
- 10/100M Ethernet communication interface, optional BACnet Ethernet or BACnet/IP communication method.
- GC-RB01-x series has MS/TP master/slave communication interface with 2,500Vrms anti-interference potential isolation design. 16 or 32 live controllers can be connected.
- USB Type-C setup interface, connects to PC via normal USB Type-C cable and super terminal program without additional power supply.
- With Web Config function, you can set the initial value of the device, modify parameters and view the status value of input and output points remotely through a web browser.
- Online program editing, debugging, online program download and online firmware update.
- Proportional, integral, differential, floating, logical, and arithmetic functions and support for subroutine execution
- Calendar, Schedule, Notification Class, Trend-log, Alarm & Event enrollment, and other standard BACnet objects. Schedule, Trend-log and Alarm & Event enrollment support external object access.
- Up to 1,000 digital software points (BV) and 1,000 analog software points (AV) can be used to calculate values, set points, timers or alarms, etc. The BV points support 16-bit priority control.
- Gold capacitor non-stop redundancy design can provide normal operation of the clock after power failure.
- All BACnet standard objects with power failure memory function, it can be automatically written into FRAM when power failure occurs, and the data can be stored for more than 10 years.
- With the 3-port Ethernet HUB function, there is no need to prepare a separate HUB when connecting to other Ethernet devices, saving cost.
- There are various models with different software/hardware power depending on the size of the building, so that users can find the most suitable product with the best price/performance ratio according to their actual needs.
- It can be equipped with a variety of peripherals, and can be freely expanded to include physical I/O points and the number of various communication ports/protocols, providing maximum design flexibility.

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【 Hardware difference between series models 】

Type	Ethernet	MS/TP	EIMnet	MSnet	USB Config	DSTcom
GC-RB01-L	3	1* 64 dev	X	X	V	X
GC-RB01-M	3	1* 32 dev	X	X	V	X
GC-RB01-S	3	1* 16 dev	X	X	V	X

【 Software difference between series models 】

Type	Trend Record	Schedule	Alerts	Circulars	Calendar	Av	Bv	DDC program
GC-RB01-L	100	100	100	10	10	1000	1000	32KB
GC-RB01-M	50	50	50	5	5	1000	1000	32KB
GC-RB01-S	10	10	10	2	2	1000	1000	32KB

【 Can be used with NVT touch panel 】

Type	Application Notes
NVT28U	2.8" BACnet communication touch-operated color panel
NVT35U	3.5" BACnet communication touch-operated color panel
NVT70P	7.0" BACnet communication touch-operated color panel

【 Eth LAN can be used to expand communication integration products 】

Type	Application Notes
GC-RT...	Expansion of BACnet MSTP connection loop
PC-ME10	Expansion of Modbus TCP Client connection loop
PC-ME11	Expansion of Modbus RTU Master connection loop
PF-BM...	Expansion of AIRTEK FCU connection loop
PV-BM...	Expansion of Panasonic VRF connection loop

【 Hardware Specifications 】

◆ Supply Power :

*24VAC, 50/60Hz, 5VA (half-wave rectification)

◆ Processor :

*Cortex®-M4 32-bit RISC core Up to 180MHz

*Cortex®-M4 32-bit RISC core Up to 72MHz

*1M+128K SRAM, 1M+8M Flash, 128K FRAM

◆ Ethernet Interface :

*10/100Mbps Ethernet interface*3 with Hub function
BACnet (Ethernet or /IP) communication is possible.

*The Ethernet network also has an upper and lower serial connection cable, allowing multiple WC/GC when devices are used simultaneously, they can be interconnected without a separate Ethernet cable.

◆ MS/TP interface :

*RS-485 BACnet MSTP communication interface, up to 32 BACnet devices can be connected.

* Built-in rated isolation voltage of 2,500Vrms and interference immunity with a maximum operating insulation voltage of 560Vpeak.

*Communication rate of 9,600/19,200/38,400/76,800 BPS can be selected. Transmission distance 1,200 meters.

◆ Product Certification :

BTL(B-BC), CE certification and RoHS compliance.

◆ Config interface :

* USB Type-C interface, after connecting to PC, you can use the software with terminal function to set the internal network parameters of the controller.

* When setting up via the USB Type-C interface, power can be supplied via the PC USB port, eliminating the need for additional power supply.

◆ Real Time Clock :

*Real-time Clock with gold capacitor uninterruptible redundancy design. Provides normal operation of the clock after power failure.

◆ Usage Environment :

* 0 ~ 50°C, 20 ~ 90%RH without condensation.

【 Software Specification 】

◆ Trend Record :

*Conforming to standard BACnet Trendlog objects and related attributes

* Each Trendlog can allocate at least 256 data as data buffer temporary storage area.

◆ Schedule / Calendar :

* Week/exceptional time setting is available.

Exceptional time includes date/date

range/week-n-day and other time control functions.

* The priority level can be set for each exception time.

* With the reference calendar object can be carried out as a calendar scheduling control.

* Schedule can also be set on the field panel when connected to the NVTxx series BACnet network.

* Schedule objects can be configured with BACsoft-AWS/OWS used as a Group Control function.

◆ Alerts / Notices :

* Alarm with Notify function to set different alarms notify different devices/users.

* Alarm with WC series web controller can be used by E-mail, Line notify the user immediately.

* The DACSMSB controller can be set by SMS. Send out alarm notifications; set up to 10 phone groups.

◆ Web parameter setting :

* With Web Config function, any device's browser can be remote set the network parameters and view the status values of the physical input and output points.

◆ Software Digital Analog Point BV/AV :

* All software points support simultaneous access to multiple communication methods such as BACnet & Modbus RTU.

* All BV points support BACnet Priority attribute.

◆ Communication Protocols :

* BACnet Ethernet or BACnet IP, BACnet MSTP.

* Modbus RTU Master/Slave.

◆ DDC Program :

* Use BACsoft-AWS software to edit the program, Remote transfer of program files is possible.

* Support sub-program function, can customize up to 32 sub-programs. Each subroutine can be customized with 32 sets of custom variables.

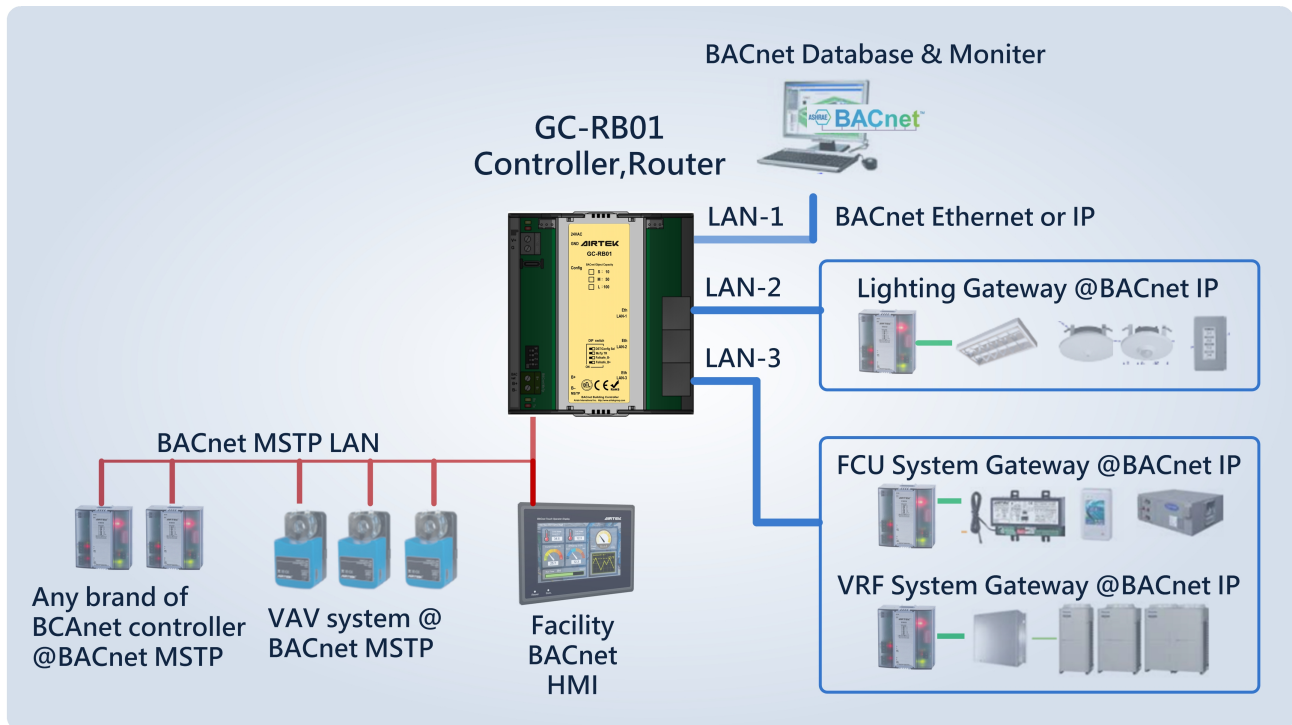
* The maximum program capacity is 32KB, supports 512 operation registers (Branch) and 128 external devices / 1024 external objects.

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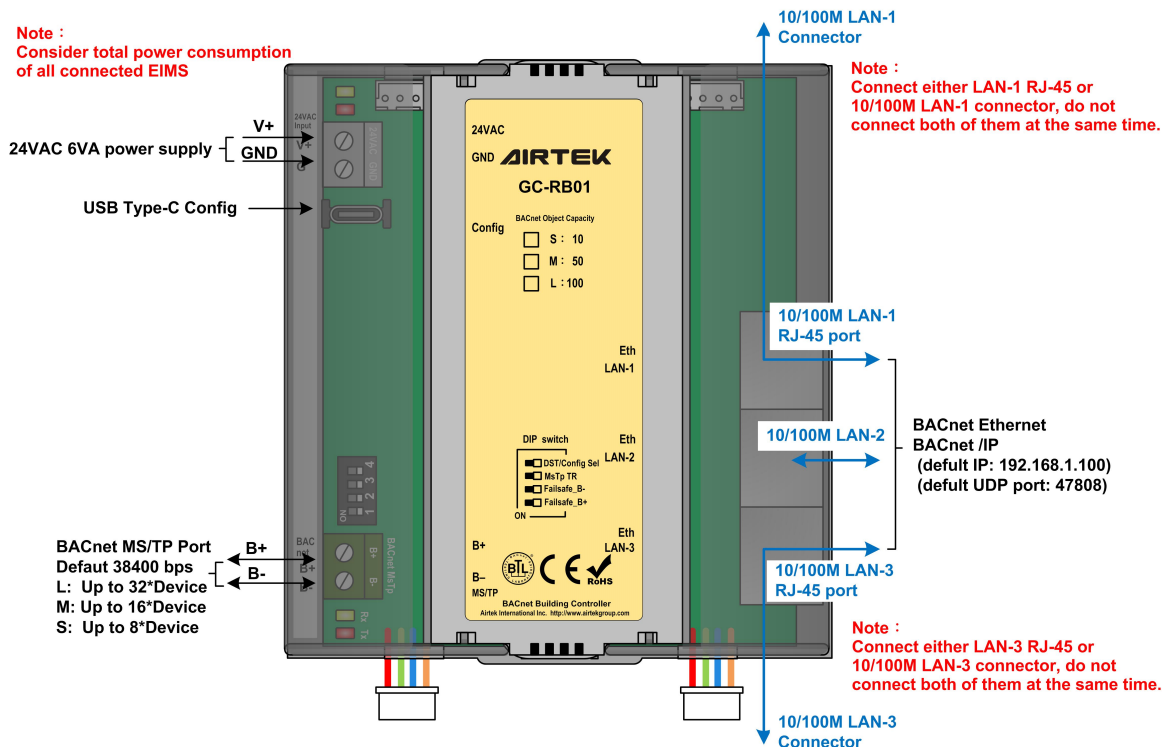
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【Network Architecture】



【Port Wiring】



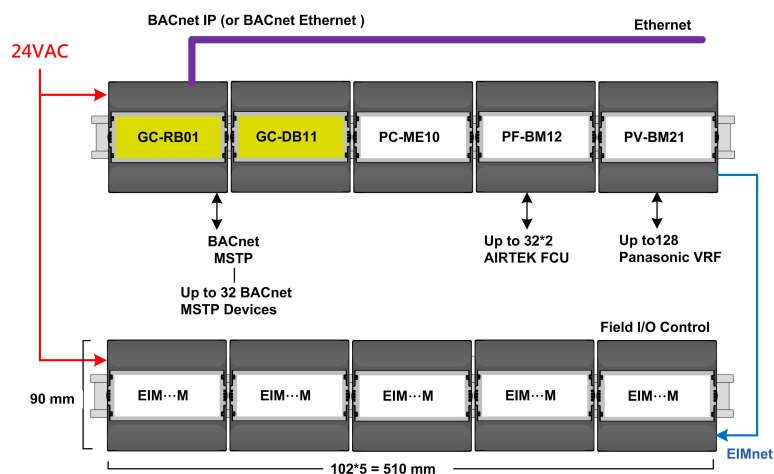
【EIM/ Eth extension cable wiring】

I/O or communication expansion integration with EIM/ Eth extension cable

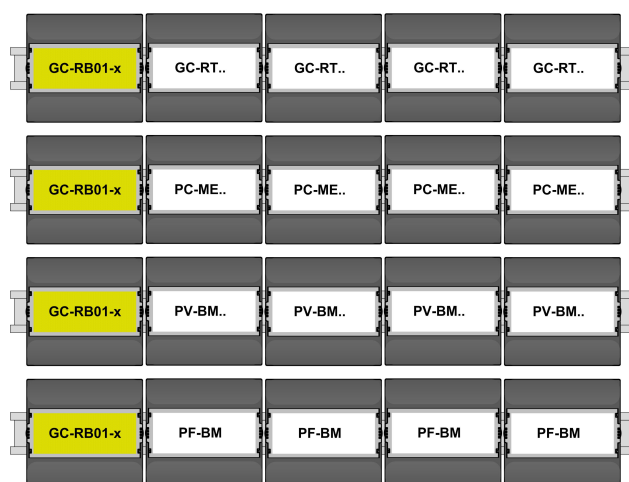
- ◆ EIM/ Eth quick connect cable considering the line withstand current.
- ◆ It is recommended to connect no more than 4 EIM/Eth modules in series.

Example of application of EIM/Eth serial cable connection:

- ◆ High integration energy
- ◆ Comprehensive application functions
(Small size / save cable / save HUB)



Easily integrate/expand various communication/expansion through each communication module system points, but in practice, the GC-RB01 needs to be considered whether the software power is sufficient for the application.



- ◆ GC-RB01 has no EIMnet, and the diagram shows the wiring example with GC-DB11.
- ◆ The EIMnet of each serial module should be connected to each other to avoid creating a star network topology.

- ◆ Expand the number of MSTP LAN loops with GC-RT.
- ◆ Expand the number of Modbus TCP/RTU integration with PC-ME10/11.
- ◆ Add VRF system integration function with PV-BM.
- ◆ Add FCU system integration function with PF-BM.

【Size】 Unit:mm

