

Monitoring equipment

BACnet Building Programmable Multifunctional Controller

GC-DB01-x

【Application Description】

GC-DB01-x is a BACnet BTL B-BC certified building programmable multi-functional controller, with a variety of control/communication interfaces, programmable and stand alone capability, which has the function of multiple BACnet objects and services, and allows other devices to modify its BACnet object values, providing users with maximum interoperability. In addition, it also has the ability to manage other devices on the network.



【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 32-bit microprocessor with 1M+128K SRAM and 128K FRAM memory.
- 10/100M Ethernet communication interface, selectable as BACnet Ethernet or BACnet/IP communication method.
- With MSnet Modbus RTU RS-485 communication interface, it can be used to integrate other standard Modbus RTU devices.
- Equipped with EIMnet expansion I/O communication interface, which can be used to connect up to 24 AIRTEK series I/O expansion modules.
- The series is equipped with DSTcom HMI (Human Machine Interface) communication interface, which can be used to connect to AIRTEK series DSTxx live color touch panel.
- USB Type-C setup interface, connects to PC via normal USB Type-C cable and super terminal program without additional power supply.
- 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.
- Hardware clock with gold capacitor non-stop backup design can provide normal operation of the clock after power failure.
- All BACnet standard objects have a power-off memory function, which can be automatically written into FRAM when the power is off, 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.
- 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.

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【 Hardware difference between series models 】

Type	Ethernet	MS/TP	EIMnet	MSnet	USB Config	DSTcom
GC-DB01-L	3	X	1* 24EIM	1	V	V
GC-DB01-M	3	X	1* 12EIM	1	V	V
GC-DB01-S	3	X	1* 6 EIM	1	V	V

【 Software differences between series models 】

Type	Trend Record	Schedule	Alerts	Circulars	Calendar	Av	Bv	DDC program
GC-DB01-L	100	100	100	10	10	1000	1000	32KB
GC-DB01-M	50	50	50	5	5	1000	1000	32KB
GC-DB01-S	10	10	10	2	2	1000	1000	32KB

【 Expandable I/O products with EIMnet 】

Type	BI	AI	BO	AO
EIM24000M	24	X	X	X
EIM8000M	8	X	X	X
EIM0800M	X	8	X	X
EIM0080M	X	X	8	X
EIM0040M	X	X	4	X
EIM0004M	X	X	X	4
EIM4020M	4	X	2	X
EIM0402M	X	4	X	2

【 Can be used with DST field touch panel products 】

Type	Application Notes
DST28U	2.8" Modbus communication touch-operated color panel
DST35U	3.5" Modbus communication touch-operated color panel
DST70P	7.0" Modbus 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, 4VA(half-wave rectification)
- ◆ **Processor :**
 - * Cortex®-M4 32-bit RISC core Up to 180MHz
 - * 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.
 - * Ethernet has a top and bottom tandem connection cable that allows multiple WC/GC* devices to be used simultaneously.
- ◆ **MSnet Interface :**
 - * RS-485 Modbus RTU Master/Slave communication interface, Modbus Master RW command can be customized by BACsoft DDC editing.
 - * Connected signal rate of 9,600/19,200/38,400 BPS is selectable. Transmission distance 1,200 meters.
- ◆ **EIMnet Interface :**
 - * RS-485 I/O expansion module communication interface.
 - * Hot plug connectable to AIRTEK EIM series expansion I/O modules.
 - * EIMnet communication rate of 38,400 BPS and transmission distance of 1,200 meters.
- ◆ **DSTcom Interface :**
 - * RS-485 Modbus touch panel communication interface with hot plug connection AIRTEK DST series touch panel makes the controller Field operation function is available.
- ◆ **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.
- ◆ **Real Time Clock :**
 - * Real-time Clock with gold capacitor uninterruptible redundancy design.
- ◆ **Usage Environment :**
 - * 0 ~ 50°C, 20 ~ 90%RH without condensation.
- ◆ **Product Certification :**
 - * BTL(B-BC), CE certification and RoHS compliance.

【Software Specification】

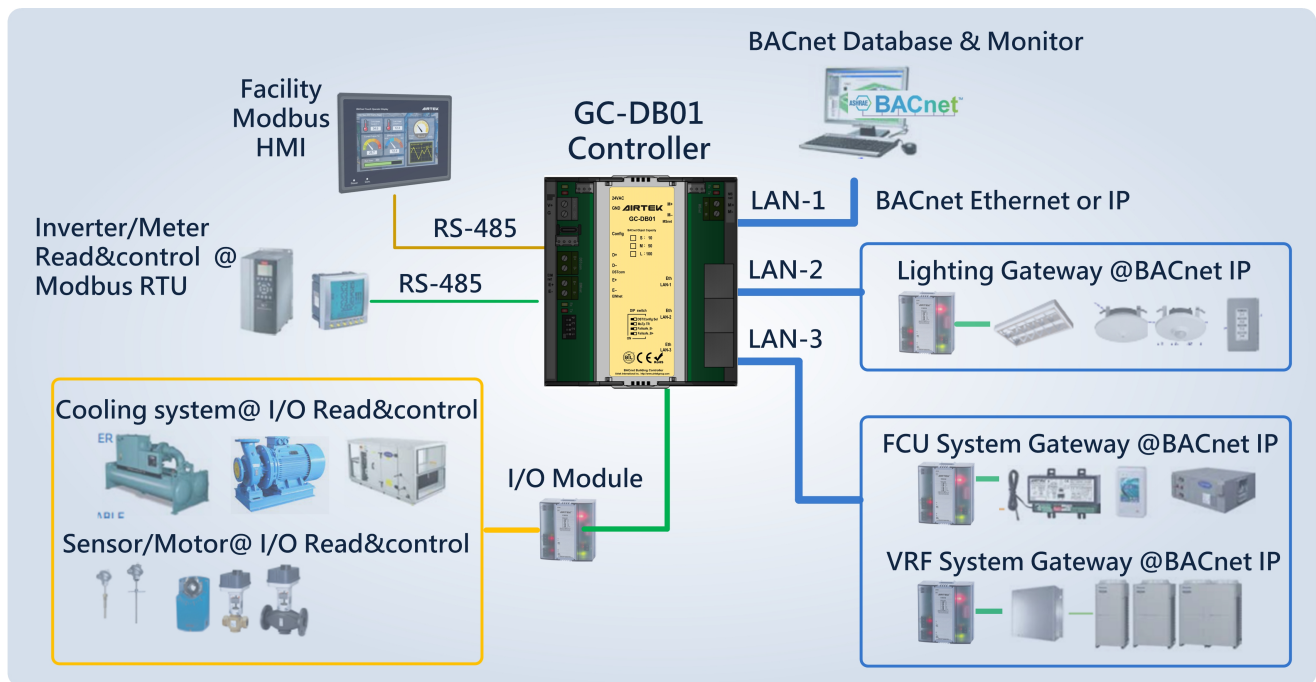
- ◆ **Trend Record :**
 - * Conforming to standard BACnet Trendlog objects and related attributes.
 - * Each Trendlog can allocate at least 256 data as data buffer temporary storage area.
- ◆ **Schedule / Calendar :**
 - * Weekly/exceptional schedule setting possible
 - * The priority level can be set for each exception time.
 - * With the reference calendar object can be carried out as a calendar Scheduling control.
 - * AIRTEK NVTxx Series BACnet Network Touch for Timepiece When operating the panel, you can also set the schedule on the field panel.
 - * Schedule objects can be configured with BACsoft-AWS/OWS. Used as a Group Control function.
- ◆ **Alarm / Notices :**
 - * Alarm with Notify function to set different alarms Notify different devices/users.
 - * Alarm with WC series web controller can notify users by E-mail or Line in real time.
 - * The AIRTEK 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 browser can remotely set network parameters and view the status values of 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, and then finish editing.
 - * Support sub-program function, can customize up to 32 sub-programs.
 - * The maximum program capacity is 32KB, and it supports 512 operation registers (Branch) and 128 external devices / 1024 external objects.

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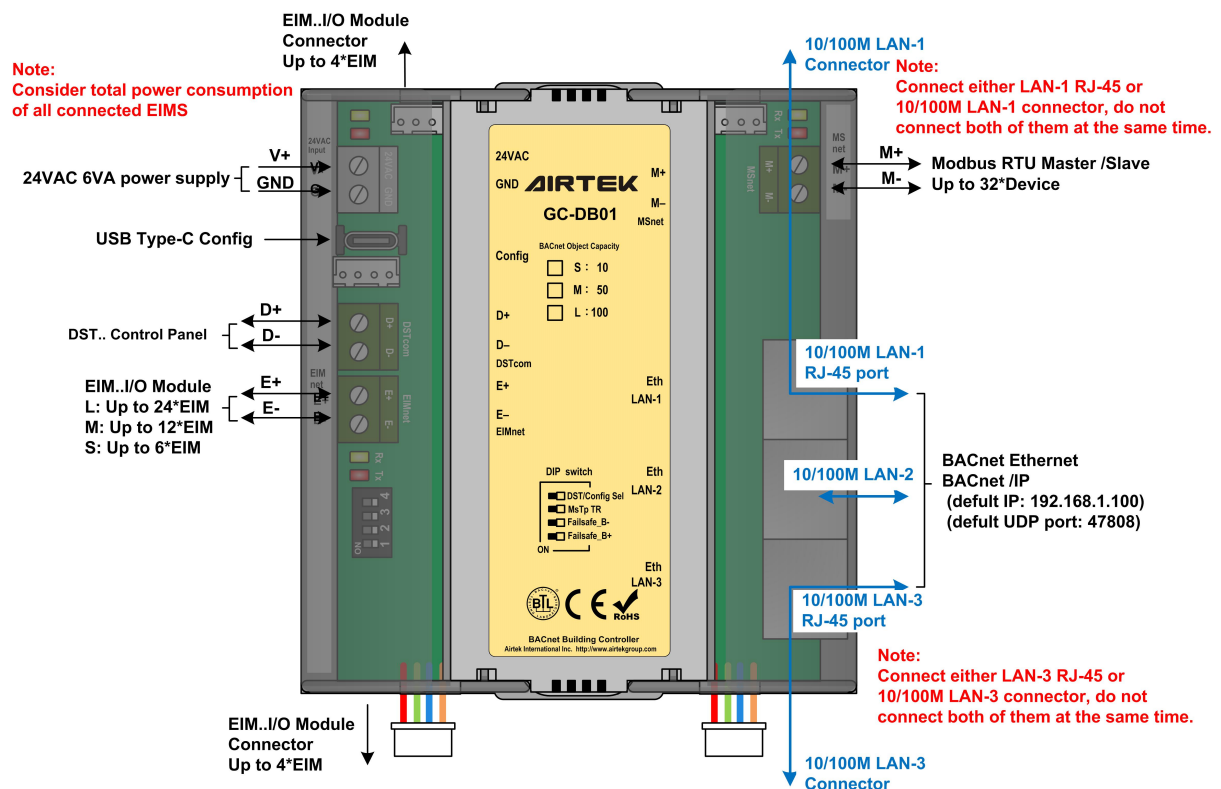
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【 Network Architecture 】



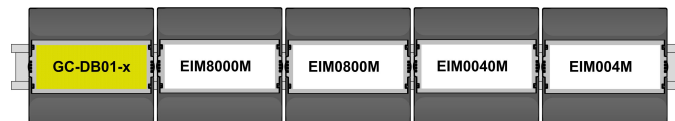
【 Port Wiring Instructions 】



【EIM/ Eth extension cable wiring instructions】

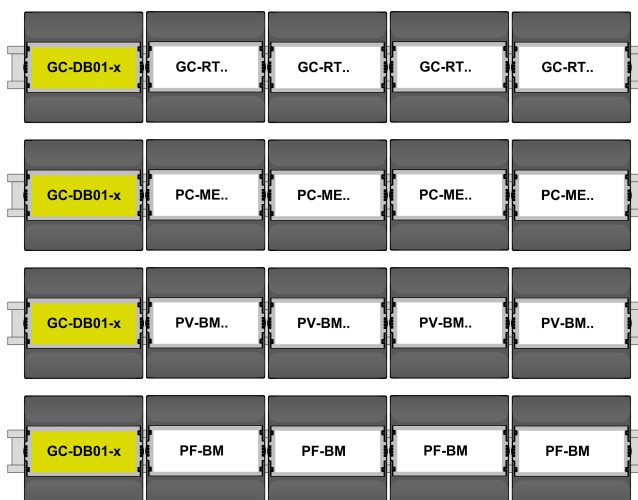
I/O or communication expansion integration with EIM/ Eth extension cable

- ◆ EIM/ Eth quick connect cable considering the line withstand current. It is recommended to connect no more than 4 EIM/Eth modules in series.
- ◆ Up to 24 EIM modules can be connected without powering through the quick connect cable.
- ◆ The EIMnet of each serial module should be connected to each other to avoid creating a star network topology.

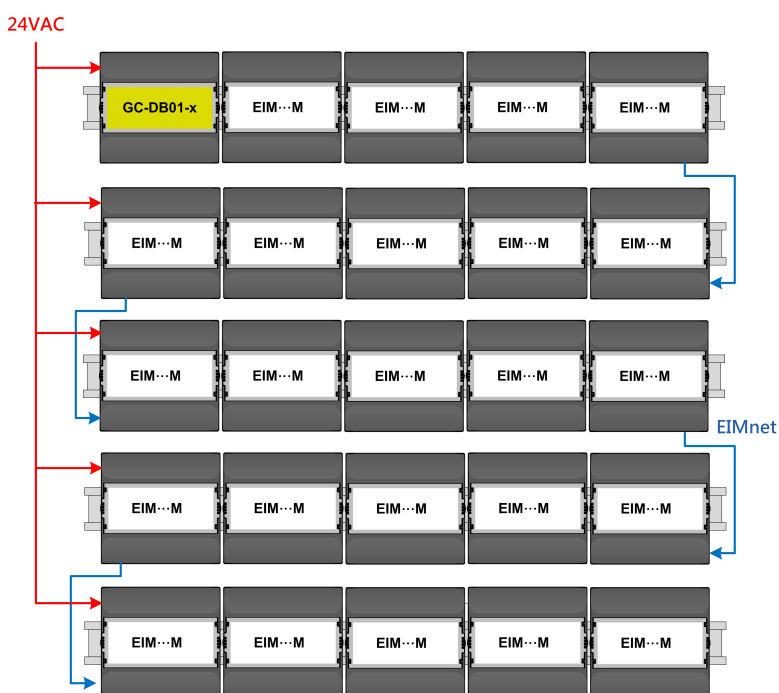


- ◆ Easy integration/expansion of various communication/system points through each communication module, but the actual software on GC-DB01 should be considered.

Whether the energy is sufficient for the application.



- ◆ 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

