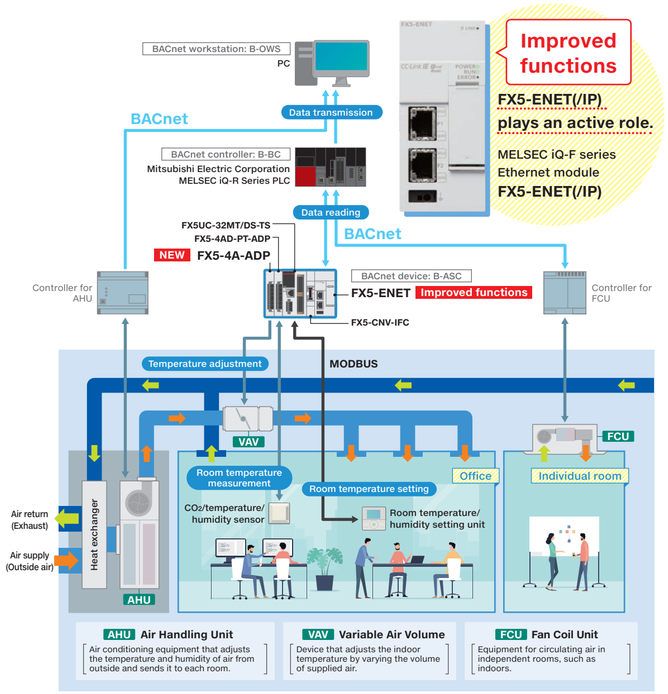
Do you worry about things like:

Needing to know the air conditioning situation for the entire office, not floor-by-floor.

Not knowing what needs to be prepared to achieve air conditioning management.

Those worries can be solved with the MELSEC iQ-F series

Temperature adjustment data can be sent to the BACnet controller of FX5-ENET(/IP) and sent back to the BACnet workstation for centralized data management.



Improved functions

FX5-ENET(/IP) plays an active role.

MELSEC iQ-F series Ethernet module FX5-ENET(/IP)

◀ BACnet details are shown inside.

PROGRAMMABLE CONTROLLERS
MELSEC iQ-F Series

FX5-4A-ADP

■ Power Supply Specifications

Item	Specifications
External electric supply (Analog conversion circuit)	24 V DC +20%/-15% 100 mA External electric supply is carried out from the power supply connector of an adapter.
Internal electric supply (Interface)	5 V DC 10 mA Internal electric supply is carried out from 5 V DC power supply of a CPU module.

■ Analog Input Specifications

Item	Specifications			
Number of analog input points	2 points (2 channels)			
Analog input voltage	-10 to +10 V DC (input resistance 1 MΩ)			
Analog input current	-20 to +20 mA DC (input resistance 250 Ω)			
Digital output value	14-bit binary value			
Input characteristics, resolution*	Analog input range		Digital output value	Resolution
	Voltage	0 to 10 V	0 to 16000	625 μV
		0 to 5 V	0 to 16000	312.5 μV
		1 to 5 V	0 to 12800	312.5 μV
		-10 to +10 V	-8000 to +8000	1250 μV
	Current	0 to 20 mA	0 to 16000	1.25 μA
		4 to 20 mA	0 to 12800	1.25 μA
		-20 to +20 mA	-8000 to +8000	2.5 μA
Accuracy (accuracy for the full scale digital output value)	Ambient temperature 25±5°C: within ±0.1% (±16 digit) Ambient temperature 0 to 55°C: within ±0.2% (±32 digit) Ambient temperature -20 to 0°C: within ±0.3% (±48 digit)			
Absolute maximum input	Voltage: ±15 V, Current: ±30 mA			

*: For details of input characteristics, refer to the following manual.
→ MELSEC iQ-F FX5 User's Manual (Analog Control - CPU module built-in, Expansion adapter)

■ Analog Output Specifications

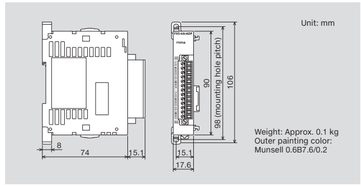
Item	Specifications			
Number of analog output points	2 points (2 channels)			
Digital input	14-bit binary value			
Analog output voltage	-10 to +10 V DC (external load resistance value 1 k to 1 MΩ)			
Analog output current	0 to 20 mA DC (external load resistance value 0 to 500 Ω)			
Output characteristics, resolution*	Analog output range		Digital value	Resolution
	Voltage	0 to 10 V	0 to 16000	625 μV
		0 to 5 V	0 to 16000	312.5 μV
		1 to 5 V	0 to 16000	250 μV
		-10 to +10 V	-8000 to +8000	1250 μV
	Current	0 to 20 mA	0 to 16000	1.25 μA
		4 to 20 mA	0 to 16000	1 μA
Accuracy (accuracy for the full scale of the analog output value)	Ambient temperature 25±5°C: within ±0.1% (Voltage ±20 mV, Current ±20 μA) Ambient temperature 0 to 55°C: within ±0.2% (Voltage ±40 mV, Current ±40 μA) Ambient temperature -20 to 0°C: within ±0.3% (Voltage ±60 mV, Current ±60 μA)			

*: For details of output characteristics, refer to the following manual.
→ MELSEC iQ-F FX5 User's Manual (Analog Control - CPU module built-in, Expansion adapter)

■ Common Specifications

Item	Specifications
Conversion speed	Maximum 2.0 ms (The data will be updated at every scan time of the PLC.)
Insulation method	Between input/output terminal and PLC: Photocoupler Between input/output channels: Non-isolation
Number of occupied I/O points	0 points (This number is not related to the maximum number of I/O points of the PLC.)
Applicable CPU module	FX5UJ CPU module: Ver. 1.010 or later FX5U(C) CPU module: Ver. 1.240 or later
Applicable engineering tool	GX Works3: Ver. 1.075D or later

■ External Dimensions



■ For specifications of FX5-ENET(/IP), refer to the related manual.

■ Product List

Item	Specifications
FX5-4A-ADP	Analog input/output expansion adapter
FX5-ENET	Ethernet module
FX5-ENET/IP	Ethernet module (EtherNet/IP compatible)
FX5U-U-HW-E	MELSEC iQ-F FX5U User's Manual (Hardware) Model code: 09R536
FX5UC-U-HW-E	MELSEC iQ-F FX5UC User's Manual (Hardware) Model code: 09R558
FX5UJ-U-HW-E	MELSEC iQ-F FX5UJ User's Manual (Hardware) Model code: 09R578
FX5-U-ANALOG-E	MELSEC iQ-F FX5 User's Manual (Analog Control - CPU module built-in, Expansion adapter) Model code: 09R557
FX5-U-ENET-E	MELSEC iQ-F FX5-ENET User's Manual Model code: 09R736
FX5-U-ENETIP-E	MELSEC iQ-F FX5-ENET/IP User's Manual Model code: 09R737
FX5-U-ENET-BAC-E	MELSEC iQ-F FX5 User's Manual (BACnet) Model code: 09R743

⚠ Safety Warning

・To ensure proper use of the products in this document, please be sure to read the instruction manual prior to use.

Registration

・The company names, system names and product names mentioned in this document are either registered trademarks or trademarks of their respective companies.
・In some cases, trademark symbols such as '™' or '®' are not specified in this document.

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New publication, effective May 2021
Specifications subject to change without notice.

MITSUBISHI ELECTRIC
Changes for the Better

FACTORY AUTOMATION

MELSEC iQ-F Series
iQ Platform-compatible PLC
FX5-4A-ADP, FX5-ENET, FX5-ENET/IP

MELSEC iQ-F series

New members of the MELSEC iQ-F series

Analog input/output expansion adapter

NEW

This single module enables analog I/O control. It can be used in various places, such as control panels with limited space.

Functions improved over those of the previous product (FX3U-3A-ADP).

Number of connectable modules
When FX5UJ, FX5U, or FX5UC are used:
Up to 2 modules

Analog Input 2 channels

Analog Output 2 channels

Analog input/output expansion adapter
FX5-4A-ADP

Item	FX5-4A-ADP NEW	FX3U-3A-ADP
Number of input points	2 points	2 points
Number of output points	2 points UP	1 point
Input type	Voltage/current	Voltage/current
Input range	-10 to +10 V -20 to +20 mA UP	0 to 10 V 4 to 20 mA
Output range	-10 to +10 V 0 to 20 mA UP	0 to 10 V 4 to 20 mA
Resolution	14-bit UP	12-bit

Improved points

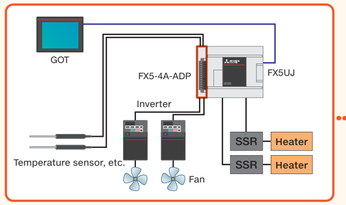
In the case of 2 channels for analog input and 2 channels for output

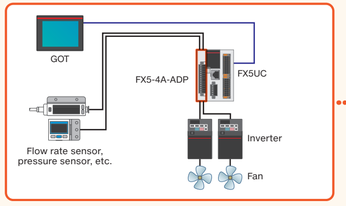
FX3U-3A-ADP: 1 module
FX2N-2DA: 1 module
Two modules in total are required.

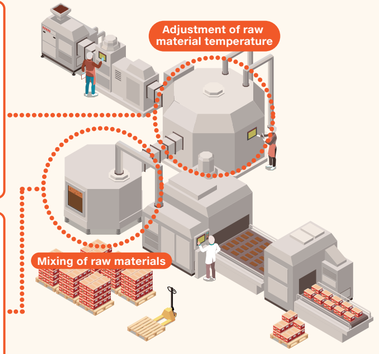
But now, just one FX5-4A-ADP is enough.

It saves both cost and space.

System configuration example







More applications in other fields such as:
· Injection molding machines, filling equipment, etc.

Control of open building automation is possible.

Ethernet module supports BACnet.

Improved functions

- **Supports the BACnet open network in the air conditioning field for buildings.***
- Enables **management of machinery and equipment** related to building maintenance.
- Achieves low-cost air conditioning system for buildings or factories.

*: Existing Ethernet modules can be also updated if their current version is 1.003 or later. For the serial numbers of modules that can be updated and details of the firmware update function, refer to the MELSEC iQ-F FX5 User's Manual (Application).

Ethernet module
FX5-ENET
FX5-ENET/IP

What is BACnet?

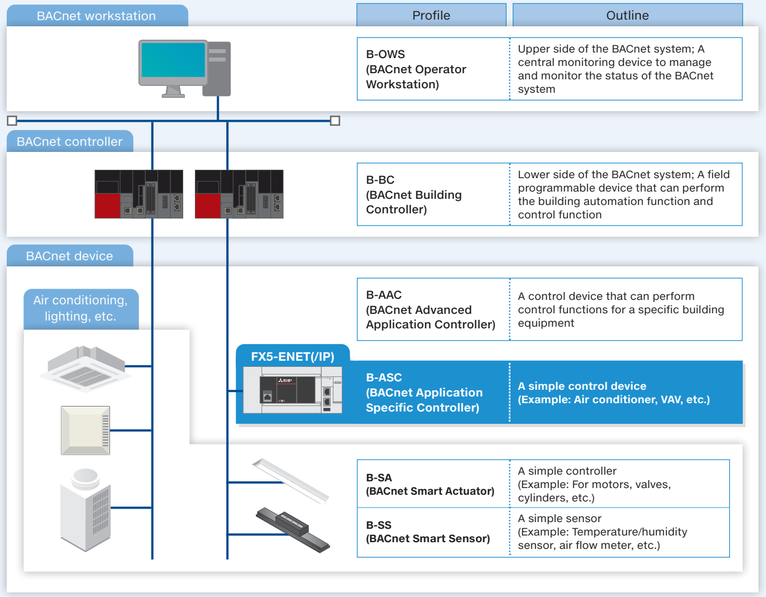
BACnet is an open communication standard for building networks established in 1995 by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).

BACnet communication can be used in combination with general-purpose Ethernet such as MELSOFT connections, simple CPU communication, etc. as well as EtherNet/IP.

BACnet standard

Item	FX5-ENET, FX5-ENET/IP
Profile (Role)	B-ASC
Corresponding standard	· ANSI/ASHRAE Standard 135-2016 · ANSI/ASHRAE Standard 135-2010 · IEIEJ-G-0006: 2006 Addendum a · ANSI/ASHRAE Standard 135-2012 · ANSI/ASHRAE Standard 135-2004

BACnet system



Supports 11 types of objects to realize monitoring of air conditioning in facilities.

Supported objects

Object name		Number of instances	Description
Accumulator	(AC)	4	Used to monitor an accumulated value such as heat quantity
AnalogInput	(AI)	8	Used to monitor an analog input such as temperature and humidity
AnalogOutput	(AO)	8	Used to control a parameter such as temperature/humidity setting
AnalogValue	(AV)	8	Used to control a parameter such as temperature/humidity setting (Used in the same way as AO)
BinaryInput	(BI)	16	Used to monitor binary input such as power ON/OFF and equipment error status
BinaryOutput	(BO)	16	Used to control binary output such as power ON/OFF and equipment error status
BinaryValue	(BV)	16	Used as a BI to control a parameter such as temperature/humidity setting, etc. or as a BO to control binary output such as power ON/OFF, equipment error status, etc.
Multi-state Input	(MI)	8	Used to monitor a multi-state input such as air volume (low, medium, or high), etc.
Multi-state Output	(MO)	8	Used to control a multi-state output such as air volume (low, medium, or high), etc.
NetworkPort	(NP)	1	Used to monitor a communication port
Device	(DC)	1	Used to monitor an Ethernet module

Functions supporting Ethernet modules

Type	FX5-ENET	FX5-ENET/IP
CC-Link IE Field Network Basic	●	–
EtherNet/IP	–	●
Socket communication	●	●
MELSOFT connection	●*	●*
SLMP server (3E/1E)	●*	●*
BACnet/IP	●*	●*
Simple CPU communication	●*	●*

*: To be supported from April 2021