

DDC-8446

DDC HVAC Controller

Simple yet Open

- ❖ ARM Cortex 32-bits Processor
- ❖ Fully Programmable
- ❖ Operate Independently
- ❖ HVAC Logic Calculation
- ❖ Login Password Protection
- ❖ Alarm Handler
- ❖ Flexible IO Points Combination
- ❖ Flexible Functional Module Combination
- ❖ Timer Program
- ❖ Built-in Real-time Clock
- ❖ Mathematical and Logical Calculation



Review

The latest DDC-8446 series adopted the method of applying point counts flexibly, with at least 22 base point counts (8UI, 4DI, 4AO, 6DO). It is provided with BACnet MSTP and Modbus RTU, both are the two largest open-source communication protocols in control systems to monitor various devices.

The most outstanding feature is that users are allowed to add-on different point counts IO extension modules, IO-0800 module (8DI) or IO-6020 module (6UI, 2AO), to come up with a well-designed and highly competitive proposal based on the demands of the project. Besides that, DDC8446 is upgradable to equip more advanced Ethernet function, by adding-on GW-112 extension module. It supports web page function configuration, which allows DDC-8446 to support BACnet IP/Modbus TCP protocols.

Features

❖ Standard Open-Source Protocol

Provided with two of the largest communication protocols in building-automation, BACnet IP/MSTP and Modbus TCP IP/RTU, and able to achieve real-time monitoring and communication with upper layer software.

❖ High Precision Analog Channel Conversion

12-bits analog-to-digital converter (ADC) programmable gain amplifier (PGA) provide high precision resolution and analog input readings.

12-bits digital-to-analog converter (DAC) provides high precision analog output readings.

❖ Online Firmware Upgradable/Configurable

Controller can be upgraded and configured through 485 connection.

❖ High Stability Operating System

Reliability and stability of operating system has been improved with software/ hardware monitor (watchdog). Built-in high precision real-time clock (backup lithium battery).

❖ **Energy and Device Management Function**

Functional modules are specifically customized for energy and device managements

❖ **Pluggable Extension Module**

Functions or IO point counts of DDC-8446 is extendable through right-sided slot with different modules. It can be applied with IO-0800, IO-6020, whereas its left-sided slot can be extended with GW-112.

Device Informations

Modal	DDC-8446
Description	DDC-8446Series: 22 Points General-purpose Controller (8UI,4DI,4AO,6DO)
Name	DDC-8446

Device Parameters

Exterior	Size	166x134x62mm		
	Casing Material	UL 94 ABS+PC		
	Weight	365g		
Electrical Ratings	Power Supply	24V AC +/- 5% or 24V DC +20%/-10%		
	Power Consumption	<10W		
	Rated Current	0.25A at 24VAC/VDC		
	Operating Temperature	30 to 131 °F (0 to 55 °C)		
	Storing Temperature	-4 to 185 °F (-20 to 85 °C)		
Electrical Ratings	Operating Humidity	0% to 95% relative humidity, without condensation		
	Battery	Panasonic CR1220 Lithium Battery		
Input / Output	Analog Input (UI)	8 Channels, 12-bits with PGA		
		Voltage	0 - 10V ($\pm 0.01V$), 0 - 5V ($\pm 0.01V$)	
		Current	4 - 20mA ($\pm 0.01mA$) , 0 - 20mA ($\pm 0.01mA$)	
		Resistance	0 - 50K	
		Thermistor Sensor	NTC: 10K TYPE 2/3, 3K, 20K ($\pm 0.1^{\circ}C$)	
	Input / Output	True DI supported		
		Digital Input (DI)	4 Channels	
			Type: Dry Contact, Non-isolated	
			Limit: ON State < 50000 Ω , OFF state >90000 Ω	
		Digital Output (DO)	6 Channels	
Analog Output (AO)	Type: Relay, SPST NO, 30VDC 1A/125VAC 0.5A			
	4 Channels, 12-bits			
	Current: 0 - 20mA, 4 - 20mA (Max load resistance, 500 Ω)			
Communication	Voltage: 0 - 10V			
	RS485	1 Channels, EIA-485 Standard Two Wire, Half Duplex, 1 Load		
	Modbus Baud Rate	9.6K, 19.2K, 38.4K, 57.6K, 115.2K bit/s		
	BACnet Baud Rate	9.6K, 19.2K, 38.4K, 76.8K bit/s		
	Byte Length	8 bits		
	Parity	None, Even, Odd		
Supported Protocols	Bacnet MSTP or Modbus RTU			

Optional Extension Module Parameters



IO-0800 Module



IO-6020 Module



IO-0008 Module



GW-112 Module

IO-0800 Module	Size	89x134x62mm	
	Casing Material	UL 94 ABS+PC	
	Weight	183g	
	Power Supply	Controller Internal Power Supply	
	Internal Communication	Controller Internal Protocol	
	Digital Input (DI)	8 Channels	
		Type: Dry Contact, Isolated 3.7kV	
		Limit: ON State < 50000Ω, OFF state > 90000Ω	

IO-6020 Module	Size	89x134x62mm		
	Casing Material	UL 94 ABS+PC		
	Weight	183g		
	Power Supply	Controller Internal Power Supply		
	Internal Communication	Controller Internal Protocol		
	Analog Input (UI)	6 Channels, 12-bits with PGA		
		Voltage	0 - 10V (±0.01V), 0 - 5V (± 0.01V)	
		Current	4 - 20mA (±0.1mA) , 0 - 20mA (±0.1mA)	
		Resistance	0 - 50K	
		Thermistor Sensor	NTC: 10K TYPE 2/3, 3K, 20K (±0.1°C)	
	True DI supported			
Analog Output (AO)	2 Channels, 12-bits			
	Current: 0 - 20mA, 4 - 20mA (Max load resistance, 500Ω)			
	Voltage: 0 - 10V			

IO-0008 Module	Size	89x134x62mm	
	Casing Material	UL 94 ABS+PC	
	Weight	183g	
	Power Supply	Controller Internal Power Supply	
	Internal Communication	Controller Internal Protocol	
	Digital Output (DO)	8 Channels	
	Type: Relay, SPST NO, 30VDC 1A/125VAC 0.5A		

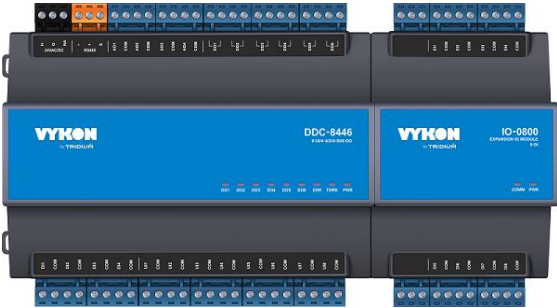
GW-112 Module	Size	89x124x62mm	
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Casing Material		UL 94 ABS+PC
Weight		163g
Internal Communication		Controller Internal Protocol
RS485	RS485	2Channels, EIA-485 Standard Two Wire, Half Duplex, 1 Load
	Modbus Baud Rate	9.6K, 19.2K, 38.4K, 57.6K, 76.8K, 115.2K bit/s
	Bacnet Baud Rate	9.6K, 19.2K, 38.4K, 76.8K bit/s
	Byte Length	8 bits
	Parity	None, Even, Odd
	Protocol	Port1 (Bacnet MSTP, Modbus RTU, Modbus Master) Port2 (Modbus Bridge, Bacnet Router)
IP Protocol		IP, TCP, UDP, ICMP, HTTP, BACnet IP, ModbusTCP

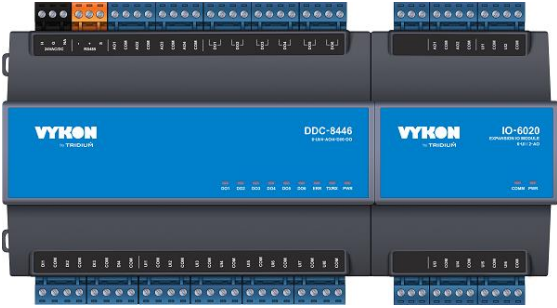
The left and right-sided extension ports of DDC-8446 are extendable to 485 bus or IP controller with larger point counts. The following are existing combinations. Noticed that the extension ports are reserved for DDC to implement different types of functions which can be developed in future.

485 Bus Controller

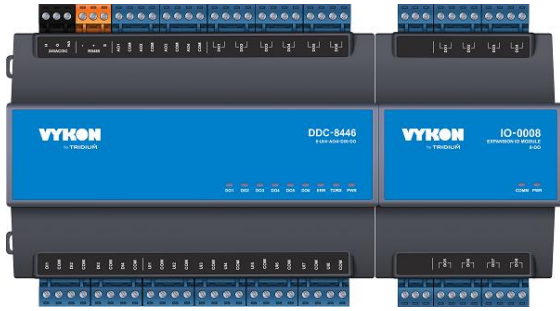
Combination 1: DDC-8446+IO-0800
 IO Point Count Combination: 8AI/12DI/4AO/6DO
 Total Point Count: 30 Points



Combination 2: DDC-8446+IO-6020
 IO Point Count Combination: 14AI/4DI/6AO/6DO
 Total Point Count: 30 Points



Combination 3: DDC-8446+IO-0008
 IO Point Count Combination: 8AI/4DI/4AO/14DO
 Total Point Count: 30 Points



IP Controller Combination

IP Combination 1: GW-112+DDC-8446

O Point Count Combination: 8AI/4DI/4AO/6DO

Total Point Count: 22 Points



IP Combination 2: GW-112+DDC-8446+IO-0800

IO Point Count Combination: 8AI/12DI/6AO/6DO

Total Point Count: 30 Points



IP Combination 3: GW-112+DDC-8446+IO-6020

IO Point Count Combination: 14AI/4DI/6AO/6DO

Total Point Count: 30 Points



IP Combination 4: GW-112+DDC-8446+IO-0008

IO Point Count Combination: 8AI/4DI/6AO/14DO

Total Point Count: 30 Points

