Field Control Layer Device

RS485 Networking FCU controller

DFC....A

【Description】

The DFC series fan coil controller is a microcomputer controller with multi-function, high performance and independent operation. It can connect up to 32 fan controllers and LCD group control panels or communication protocol converters into a local area network through a two-wire RS485 communication transmission method. It uses remote or local browsers, or on-site one-to-many group control panels, which can centrally manage small air blowers scattered in various places. It can issue group, group and stand-alone commands, and execute various monitoring records. It has a standard built-in program, which can perform the following actions, such as timing on and off, changing the operating mode of the air conditioner, switching the operating wind speed, changing the set temperature, performing energy-saving actions, monitoring the operating status, performing hour statistics and even calculating energy consumption, etc. It is suitable for office buildings, five-star hotels, science and technology buildings, academic research institutions or production plants, etc., where centralized management and decentralized control of small blower equipment are required.

【Features】

- Built-in independent high-efficiency microprocessor (MCU) with independent operation capability.
- The return air temperature control is adopted, and the temperature control function is not affected by the installation position of the operation panel.
- Built-in FCnet communication interface, which can connect 32 controllers into a local network to realize centralized management and distributed control functions.
- The built-in SCnet communication interface can be connected to a single or group control panel, which is convenient for users to increase the man-machine operation interface at any time due to the need of secondary decoration.
- Use DFC kits provided by AIRTEK to update the firmware of the DFC. fan controller on the FCnet loop.
- Two digital input points (BI), it can be connected to the presence sensor, water leakage sensor, house card chain signal or windmill running status feedback signal.
- It has an analog input point (AI) with a 12-bit resolution for connecting a 10KΩ NTC thermistor return air temperature sensor.
- With two digital output points (BO), two-pipe type (air-conditioning or heating control), four-pipe type (air-conditioning and heating control) or two-pipe type + electric chain output control points are available.
- With automatic three-stage speed control and manual three-stage speed regulation.
- It has air-conditioning operation modes such as air-conditioning, heating, and air supply, as well as energy-saving operation functions to save energy and increase comfort.
- Time schedule table switch machine function.
- With 0-12 hours fast timer shutdown function.
- Automatic network time synchronization function.
- Abnormal status code display and software program crash self-wake-up function (WATCH DOG).
- With the function of power-off reset and automatically start the fan coil unit according to the address coding step.
- With the function of power-off memory operating parameters, it will return to the original operating conditions before power-off after power is restored.
- It has the capability of interconnection and mutual control with BACnet and MODBUS communication protocols, and can integrate all monitoring input and output points into the central monitoring system.

【Specification】

Model	Mode	Fan speed	BI	AI	BO	FO	Heating/Cooling	Description
DFC0140A	Cool/Heat/Fan	Auto/High/Med. /Low	0	1	1	3	Manual	2-piping(heating or cooling)
DFC2150A	Auto/Coo/Heat/Fan	Auto/High/Med. /Low	2	1	2	3	Manual/Auto	4-piping(heating and cooling)
DFC2150B	Auto/Coo/Fan	Auto/High/Med. /Low	2	1	2	3	No	2-piping heating or cooling +Interlock

Power Supply	**:**	85 ~ 265VAC, 50/60Hz, 2VA
Microprocessor	**:**	High speed processor
FCnet	**:**	MODBUS RTU standard RS-485 interface, speed 9600 BPS, network distance up to 1,200 meters.
SCnet	**:**	MODBUS port for control panel connection.
Digital Input (BI)	**:**	5VDC detection voltage, can accept dry contact or open collector input signal (Note: DFC0140A does not have this input)
Analog Input (AI)	**:**	A set of 10KΩ@25°C Negative Temperature Coefficient (NTC) temperature sensing side component is included, with a sensing range of 0°C to 50°C, and an accuracy of ±0.25°C.
Fan Output (FO)	**:**	It adopts UL/CUL/TUV certification 10A, 250VAC, SPST contact, which can control the high, medium and low wind speed of the windmill.
Binary Output (BO)	**:**	It adopts UL/CUL/TUV certification 7A.NO/5A.NC, 250VAC, SPDT relay, which can control two-line or
	:	three-line control valve or interlock control host.
Range	**:**	The temperature setting range is 0 ~ 50°C (Note: adjustable), and the control accuracy is ±1°C of the set point.
Certification	**:**	CE, RoHS
Environment	**:**	0~50℃ , 20~90%RH non-condensing

【Installation】

- Please read the catalog carefully before installation. Failure to follow the instructions of the catalog may cause danger or cause unpredictable results such as product damage.
- Do not connect the controller to the power supply during installation, because of the danger of electric shock or equipment damage, which may cause personal injury or damage the electrical circuit.
- Please install the controller in a repairable location. Do not install it in a location that is difficult to repair, poorly ventilated, direct heat, dust and moisture, and severe vibration, so as not to affect the normal service life of the product and maintenance services.
- For the network communication line between the controller and the control panel, please use the aluminum foil isolation shielding cable configuration above AWG22#4C.
- For the network communication line between the controller and the controller, please use the aluminum foil isolation shielding cable configuration above AWG18#2C, and adopt a daisy chain connection method with one input and one output. There should be no divergence or star shape and keep the potential positive and negative. . 120Ω termination resistors should be installed at the front and back ends of the network to effectively improve the stability of communication quality. The total length of the network should not exceed 1,200 meters.
- All network communication lines must be individually covered with EMT metal conduits, and do not co-manage with power lines or power lines in order to obtain good communication quality.
- It is recommended to use 0.5~1.25mm2 PCV control wires for power supply wires, windmill three-speed control wires and electric valve control wires. Excessive wire diameters will increase the difficulty of the wiring process and even lead to deformation and damage of the terminal block. Too small wire diameters may not be able to carry The load capacity of the equipment makes safety doubts.
- This controller can control two-line or three-line electric ice/hot water valve. When applied to two-line valve control, connect the electric valve to the OPEN terminal.
- The digital input point must be a dry contact. If you need an external power supply device such as a motion sensor, please provide your own power supply.
- The common point of the electric valve and the windmill should be connected to the ground wire of the power supply, and the wrong connection device will not operate normally.
- The capacity of the fuse of this controller is 5 amperes. If it is used in control situations with a capacity of more than 5 amperes, be sure to add an auxiliary relay that meets the capacity, otherwise the controller may be burned.
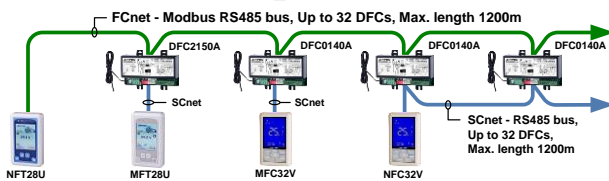
【Network Architecture】

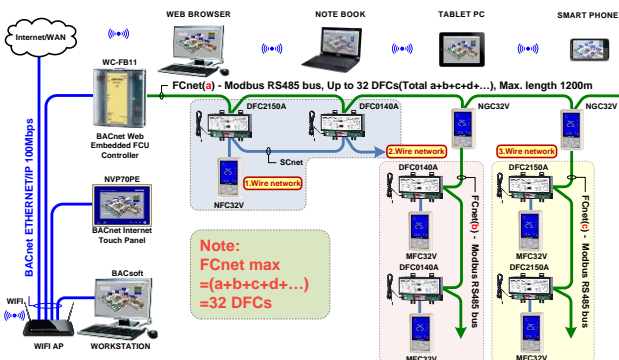**Figure 1. No more than 32 FCU control network diagram**

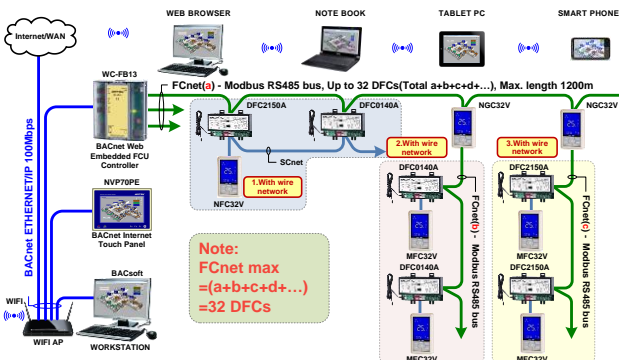**Figure 2. No more than 64 FCU control network diagram**

Note:
FCnet max
=(a+b+c+d+…)
=32 DFCs

Figure 3. No more than 64 FCU control network diagram

Note:
FCnet max
=(a+b+c+d+…)
=32 DFCs

【Dimension】 Unit: mm
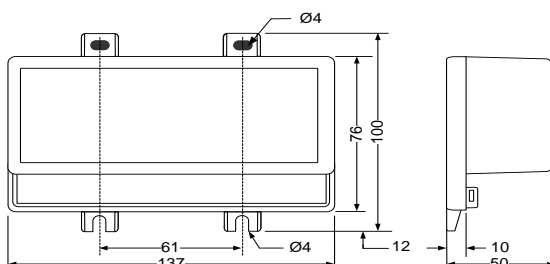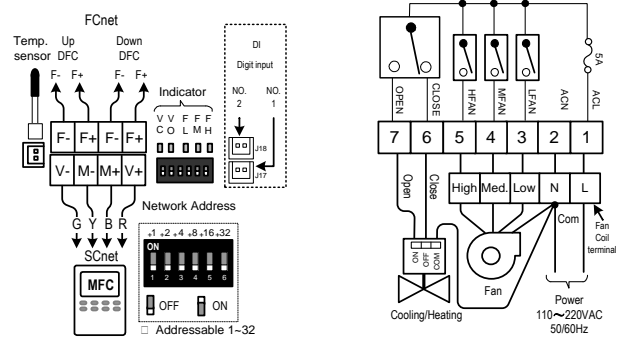

【Wiring Diagrams】

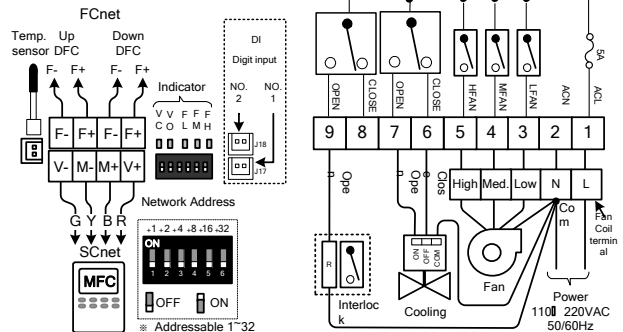
Figure 5. DFC0140A wiring diagram

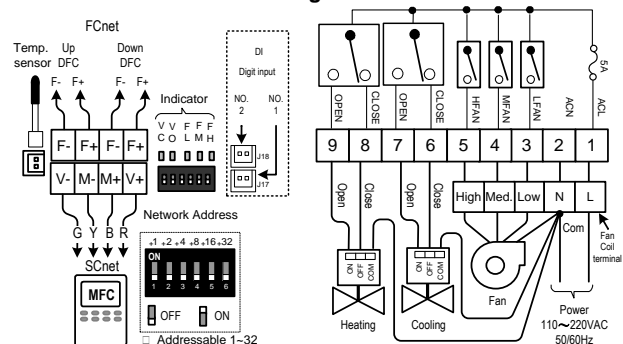**Figure 6. DFC2150B 2 piping cooling or heating + interlock diagram**

Figure 7. DFC2150A cooling and heating(4 piping) diagram