# Monitoring equipment

RS485 Networking FCU controller

DFD…A

【 Application Notes 】

DFD series fan coil controller is a multi-functional, high-performance, stand-alone microcomputer controller that connects up to 32 fan controllers with LCD group control panels or communication protocol converters into a local network through a two-wire Modbus RTU communication transmission method, enabling centralized management of scattered fan units, group and single unit control and status monitoring.
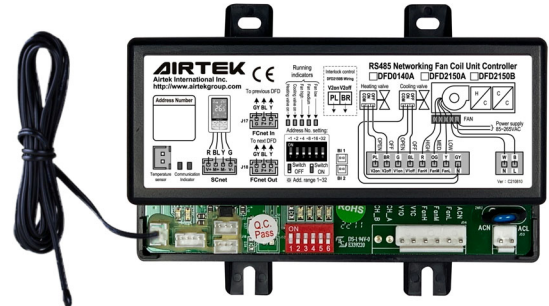
【 Product Features 】

- Built-in high-efficiency microprocessor (MCU) with independent operation capability.
- The temperature control function is not affected by the installation position of the operation panel.
- The built-in FCnet communication interface allows 32 controllers to be connected to a local network to realize the function of centralized management of the decentralized controllers.
- Built-in SCnet communication interface can be connected to single or group control panel, which is convenient for users to expand the human-machine operation interface at any time for secondary decoration needs.
- Using AIRTEK's tool DFD kits, you can set the parameters or update the firmware of the fan controller online and adjust the control function according to your needs.
- Two digital input points (BI) can be connected to PIR, water leakage sensor, house card interlock signal or windmill operation status feedback signal.
- It has two digital output points (BO), which can be controlled by 2-pipe (manual heating and cooling), 4-pipe (automatic heating and cooling), 2-pipe + host interlock or 2-pipe floating valve.
- With automatic three-step variable speed control and manual three-step speed adjustment function.
- With air conditioning operation modes such as air conditioning, heating, and air supply, and a patented energy-saving operation function, comfort is maintained while saving energy demand.
- With time schedule start/stop function, 0~12 hours quick timer stop function, billing forced stop or billing forced air supply function.
- Network time automatic synchronization function can accept the network time correction of central monitoring, so that the controller time is the same in all systems.
- With abnormal status code display and software program self-wake-up function (WATCH DOG).
- The plug-in PIN design simplifies installation and maintenance.
- With the function of power failure memory operation parameters, it can restore the original operation condition before power failure after power restoration.
- With BACnet (with AIRTEK's FC GATEWAY) or MODBUS communication protocol interconnection and mutual control capability, it can integrate all monitoring input and output points to the central monitoring system.

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【 Specification 】

Type	Air-conditioning mode	Wind Speed Switching	BI	AI	Valve control	Mainframe Interlock	Windmill output	Cooling / Heating	Plumbing Systems
DFD0140A	Cool/Heat/Fan	Auto/High/Med./Low	0	1	1 points	No	3 points	Manual	2 piping
DFD2150A	Auto/Cool/Heat/Fan	Auto/High/Med./Low	2	1	2 points (cold and warm)	No	3 points	Manual/ Auto	4 piping
DFD2150A-CH	Cool/Fan	Auto/High/Med./Low	2	1	1 point (single cooling)	1 points	3 points	No	2 piping
DFD2150A-FL	Cool/Heat/Fan	Auto/High/Med./Low	2	1	2 points (floating)	No	3 points	Manual	2 piping

◆ Supply power :

 * 85～265VAC, 50/60Hz, 2VA。

◆ Microprocessors :

* High-speed computing microprocessors (MCU) with memory space.

◆ FCnet interface :

* MODBUS RTU RS-485 communication interface. communication rate 9,600 BPS.

◆ SCnet interface :

 * MODBUS RTU communication interface RS-485 communication interface and 5VDC power supply for connection to LCD operation panel.

◆ Analog input :

 * The product is equipped with a 10KΩ@25℃ negative temperature coefficient (NTC) temperature sensing element, sensing range 0℃～50℃, accuracy ±0.25℃.

◆ Valve output :

* Use UL/CUL/TUV certified 7A.NO/5A.NC, 250VAC, SPDT relay, which can control the second-wire or third-wire control valve.

◆ Windmill output :

* Use UL/CUL/TUV certified 10A, 250VAC, SPST relay, which can control the high, medium and low wind speed of the windmill.

◆ Setting range and scale :

* Temperature setting range 15～30℃(Note: Adjustable), Set the scale to 0.1°C.

◆ Usage environment :

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

◆ Product Certification :

* CE certified and RoHS compliant.

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【 Installation Instructions 】

- Please read the catalog carefully before installation. Failure to install the product according to the instructions in the catalog may result in danger or unpredictable results such as product damage.
- Please install the controller in a serviceable location. Do not install it in a location where maintenance is not easy, where there is poor ventilation, direct heat source, dust and humidity, or where there is strong vibration, so as not to affect The normal service life of the product and maintenance service will be affected.
- For the network communication cable between the controller and the control panel, please use AWG22#4C or more aluminum foil isolation masking cable configuration.
- The network communication line between controller and controller, use AWG18#3C or more aluminum foil isolation shield cable configuration, adopt one in one out daisy chain connection method, do not have divergence or star shape and pay attention to keep the potential positive and negative polarity consistent. It is recommended to add 120Ω terminal resistance at the front and rear of the network to effectively improve the stability of communication quality.
- All network communication lines must be individually wrapped with EMT metal conduit, not co-located with power or power lines, in order to get good communication quality.
- This controller can control 2-wire or 3-wire electric ice/hot water valves. When used for 2-wire valve control, the electric valve is connected to the OPEN terminal.
- The common point between the electric valve and the windmill should be connected to phase N. Incorrectly wired equipment will not operate properly.

  The capacity of this controller fuse is 5 amps, if applied to the control occasion that exceeds 5 amps capacity, please be sure to add the auxiliary Relay to meet the capacity, otherwise it may

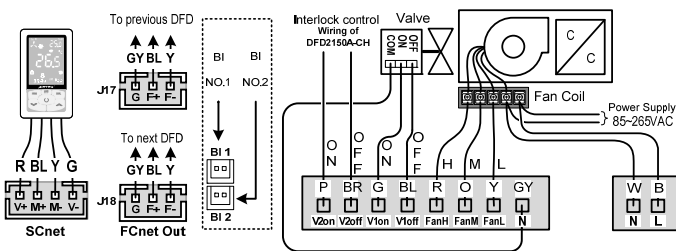 Otherwise, the controller may be burned out.
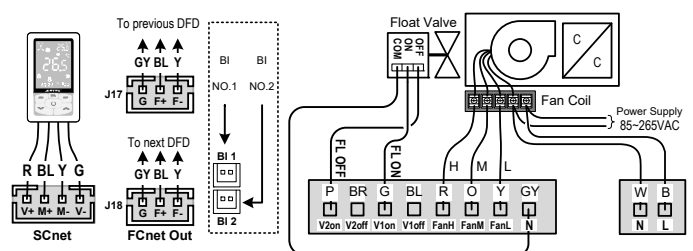
【 Wiring Diagram 】
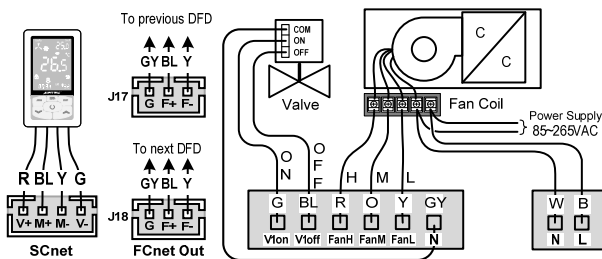
(Figure 1) DFD0140A control wiring diagram
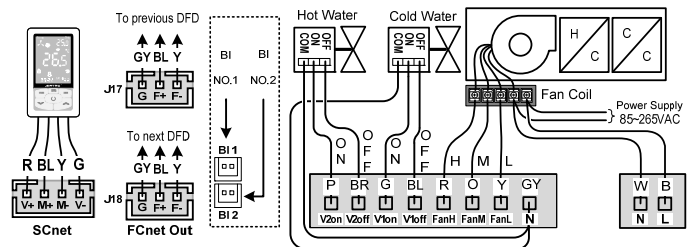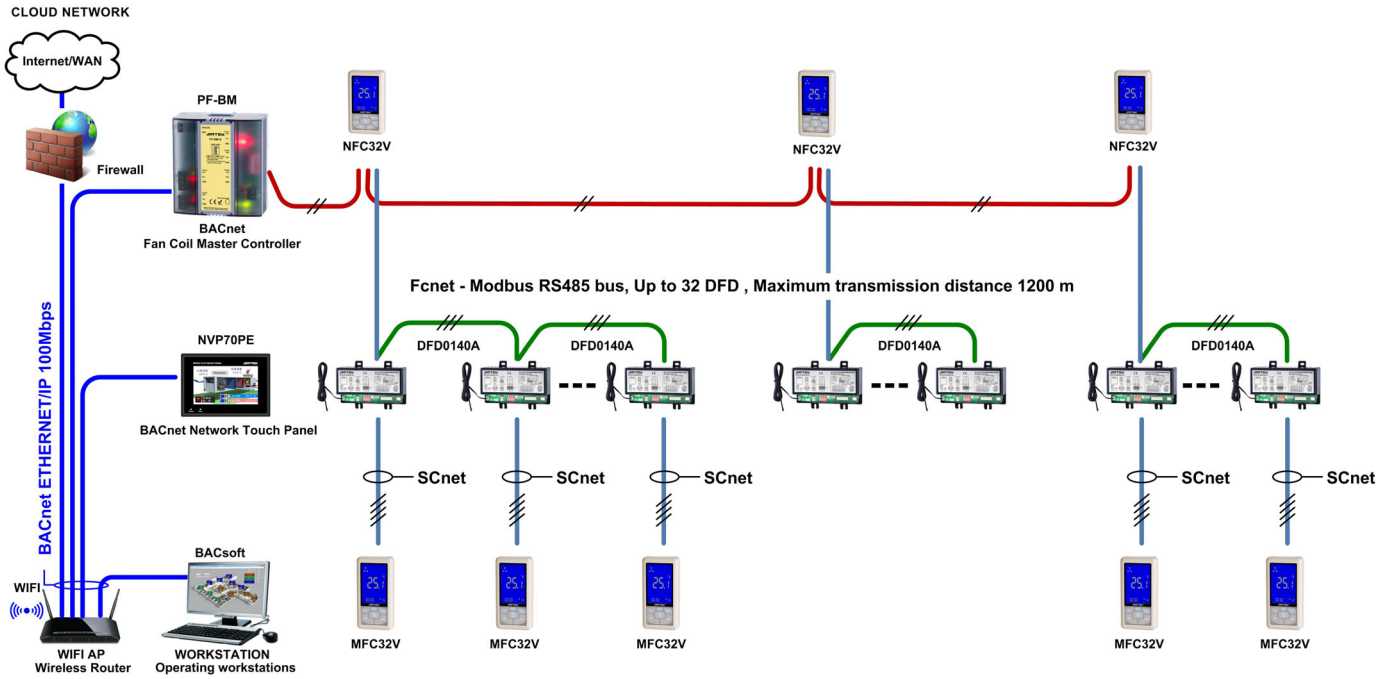

(Figure 2) DFD2150A control wiring diagram

(Figure 3) DFD2150A-CH control wiring diagram

(Figure 4) DFD2150A-FL control wiring diagram

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【Network Architecture】

【Size】Unit：mm