

FX2-DX™

Digital Control

Operations Manual



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Introduction:

The FX2-DX digital controller operates onboard air conditioning equipment to provide room temperature control and humidity reduction. It allows for easy adjustment of fan speed, operating mode and temperature in a wide variety of applications. The FX2-DX digital control is designed to operate with self contained and central type marine air-conditioning systems.

Features include:

- **Four position menu navigation switch featuring a joystick style interface with push on / push off control.**
- **Built in room temperature sensor.**
- **The display is compatible with Vimar and Gewiss frames.**
- **Visual symbols enable the viewer to see the operating status at a glance.**
- **Easily programmed for customized operation.**
- **Both automatic and manual six level fan speed adjustment.**
- **Built in options for fault protection for Voltage, Current and Freon pressure.**
- **De-icing cycle to prevent evaporator icing.**
- **Automatic moisture mode provides relative humidity control.**
- **Universal 115/230 VAC 50/60 Hz power supply.**

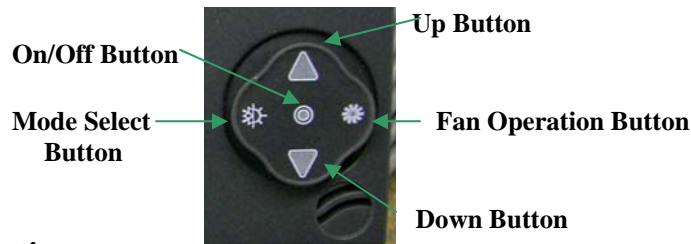
Optional features include:

- **Outside air temperature sensor.**
- **Alternate air sensor.**
- **Pump sentry water sensor.**

Before you start:

1. Applying power:

When power is first applied, the display will show the software revision, and then return to the last state the unit was in when power was removed.



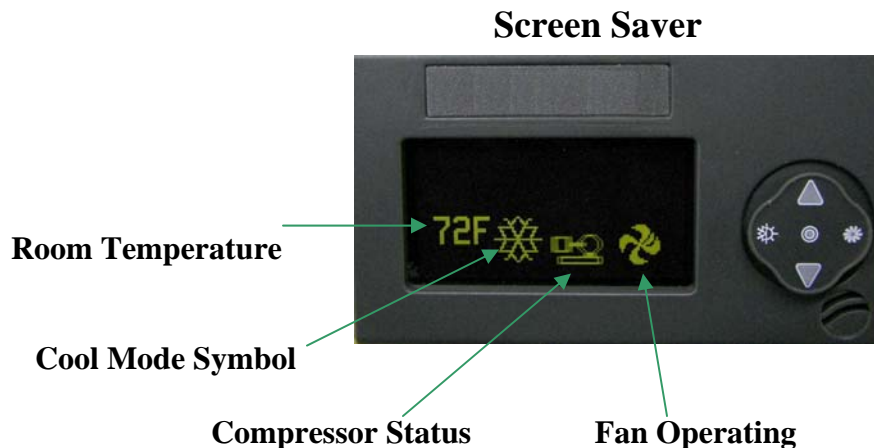
2. Joystick operation:

The four position joystick may be tapped up, down, right, left or in the center to make changes to the operation of the control. Gently tap this switch to operate it. Excessive force will damage the switch.

3. Operating states:

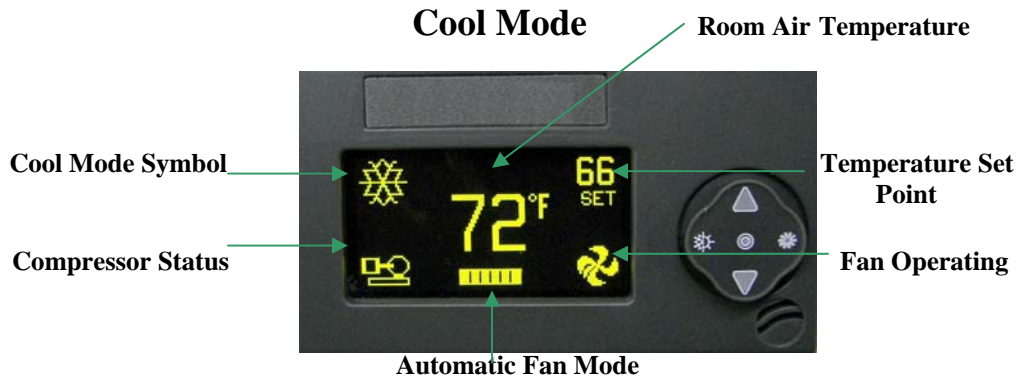
The display operates in 2 operational states. In the *OFF* state, the temperature is displayed and only fan operation is available. In the *ON* state, the display shows the temperature set point, room temperature, fan, and compressor status. Switch between these states by pressing and releasing the On/Off button.

Operating Screens



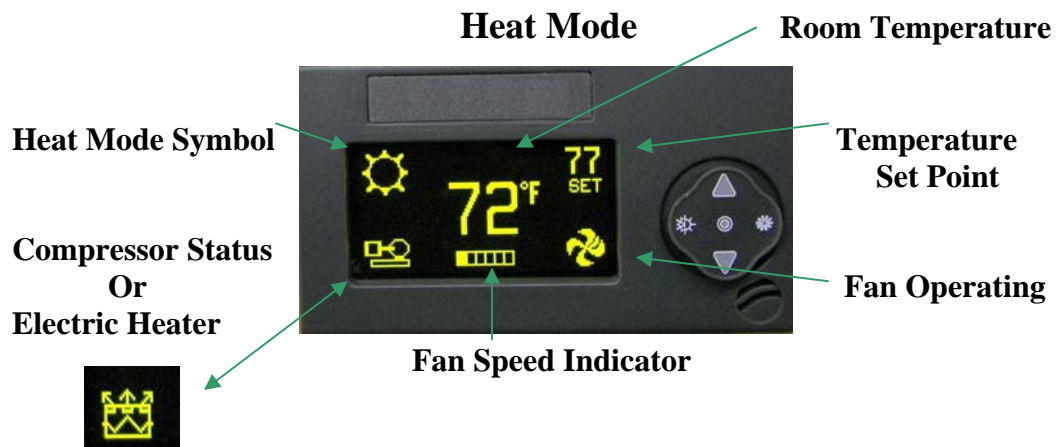
Screen Saver

In screen saver, the display will appear dim and the information will scroll across the screen. Status symbols appear as needed and operation continues in the mode selected. To exit this mode, just tap any button.



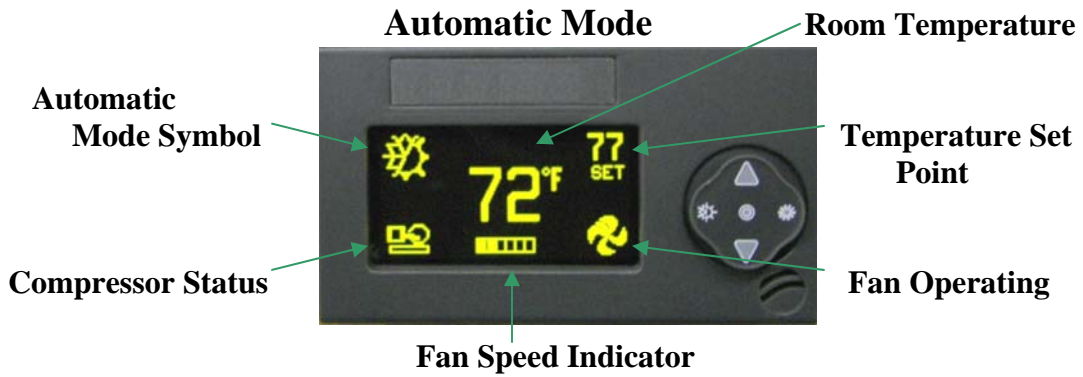
Cool mode

To select cooling only, tap the mode select button to scroll through the symbols in the top left of the display until the cool symbol appears. Set the desired room temperature by tapping the up or down button. The system will provide cooling as necessary. The compressor symbol will appear when system is cooling.



Heat mode

To select heating only, tap the mode select button to scroll through the symbols in the top left of the display until the heat symbol appears. Set the desired room temperature by tapping the up or down button. The system will provide heating as necessary. The compressor or electric heat symbol will appear when the system is heating.



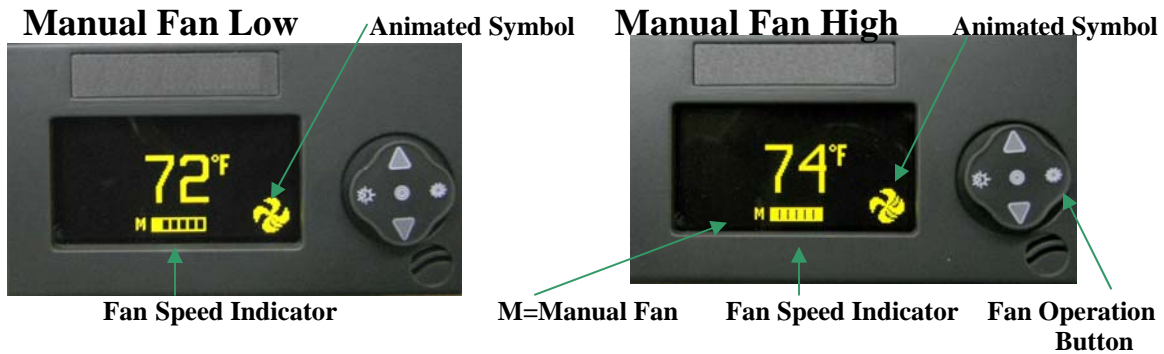
Automatic Mode

To select automatic mode, tap the mode select button to scroll through the symbols in the top left of the display until the automatic mode symbol appears. In this mode, the system will automatically maintain room temperature. Set the desired room temperature by tapping the up or down joystick button. When the system is operating, the appropriate symbol will appear in the lower left corner.



Moisture Mode

Select this mode to help control humidity in the room while the room is unoccupied. To select moisture mode, tap the mode select button to scroll through the symbols in the top left of the display until the moisture mode symbol appears. The control will operate in cooling mode for up to 1 hour every 6 hours.



Operating the fan:

Fan speed may be controlled automatically by room temperature or manually. Tap the joystick fan button to cycle through fan speeds and automatic operation. Manually selected fan speed is indicated with the M showing before the speed indicator. When the fan is automatically controlled, the M is not present. The fan may be controlled in the cool, heat, automatic modes as well as in the off state to circulate room air.

Manual fan speed operation is not available when the compressor is not running if the cycle fan option is set. Turn the unit off in this case and then manual fan operation may be used. Manual fan speed operation is also not available in moisture mode.



Outside Air Temperature

If the optional outside air temperature sensor is installed, the temperature set point in the upper right of the display will alternate with OAT showing outside air temperature.

Viewing System Status

In the ON state, press and hold the Mode select button for two seconds. The display will indicate AC line voltage, System current, AC Line frequency, and High and Low pressure switch status and condenser coil temperature if optional sensor is installed.

Failure codes

The following fault messages will be shown on the display in the event of a failure. Repeated faults are an indication of a problem and should be checked by a qualified service person.

- | | |
|---------------------|---------------------|
| HIGH FREON PRESSURE | LOW FREON PRESSURE |
| LOW AC VOLTAGE | SYSTEM OVER CURRENT |
| CHECK WATER PUMP | AIR SENSOR TROUBLE |
| LOCKOUT | |

Program Parameters:

There are fifteen programmable parameters with their factory defaults described in this section. The table below defines the parameter descriptions along with the permitted values and default settings.

To enter the program mode first put the unit in the off state. Next press the following sequence of buttons: **Mode, Up, Down, Mode**. Use the fan button to advance to the next parameter and the mode button to go back to the last parameter. Use the up and down buttons to change the parameters value. Exit the program mode when finished by pressing and releasing the On/Off button or wait 60 seconds for the display to exit.

Description	Default	Value
Cycled fan	Continuous	Cycled or Continuous
Reverse fan in heat	Reverse	Reverse or Normal
System units	°F	°F or °C
Display brightness	15	4=Minimum 15=Maximum
Screen saver brightness	4	- and 1-8
Temperature calibration	0	Ambient +/- 10°F
Staging delay	15	5-135 Seconds
Failsafe Level	3	Off 1, 2, 3
Low AC line detection	Off	Off 75 to 100 (115VAC units) 175 to 200 (220 VAC units)
De-Ice time	Off	Off, 30 to 90 seconds
Pump sentry	Off	Off, 100°F to 150°F
Cycle pump	Cycle	Cycle or Continuous
Electric Heat	No Electric Heat	Electric Heat or No Electric Heat
Fan speed 1	30	30-90
Fan speed 2	35	30-90
Fan speed 3	40	30-90
Fan speed 4	45	30-90
Fan speed 5	55	30-90
Fan speed 6	85	30-90
Reset Parameters	No	No or Yes

Parameter description:

- **Cycled fan:** When set for cycled, the fan will operate on demand. When set for continuous, the fan will always run unless you turn the system off.
- **Reverse fan in heat:** Fan speed will increase as the room temperature rises if this parameter is set for reverse. If set for normal, fan speed will decrease as room temperature rises. This

parameter only works in heat mode and the fan must be set for automatic operation.

- **System units:** Degrees Fahrenheit (°F) or degrees Celsius (°C) can be selected
- **Display brightness:** Display brightness can be set from 4 to 15 to suit room lighting. Brightness will change as the number is changed.
- **Screen saver brightness:** If set for (-) than a single bar (-) will blink sequentially in the four corners of the display. Number values from 1 to 8 can be set to suit room brightness and the unit will operated as described in the screen saver section.
- **Temperature calibration:** This parameter allows the user to calibrate the room air temperature sensor. The room temperature will be displayed and can be adjusted +/-10 °F or +/-5°C
- **Staging delay:** The compressor staging delay is provided for multi system installations where more than one system is operating from the same power source. Set the Staging delays at different intervals so only one compressor starts at a time when power is applied.
- **Fail safe level:** There are four fail safe levels the controller can be set to operate with OFF, 1, 2, and 3.

If LOCKOUT appears in the display, the unit must be turned off then on again with the Off/On button.

Off	Do not detect or display any faults except air sensor failure
1	The controller will detect a fault but will not display the fault Operation will stop until the fault is cleared.
2	The controller will detect and display all faults. Operation will stop until the fault is cleared.
3	The controller will detect and display all faults. Operation will stop until the fault is cleared. After 4 faults the controller will LOCKOUT and prevent further operation

- **Low AC line detection:** When set, if the AC line voltage remains below the set value, the system will follow the action set by the failsafe level.
- **De-Ice time:** When set, the system will perform the evaporator de-icing program
- **Pump sentry:** This system can be equipped with an optional sensor to monitor the condenser coil temperature. If the temperature exceeds the set value, the failure will be handled according to the failsafe level. This failure will prompt the user to CHECK WATER PUMP. Plug this sensor into the Outside jack. Outside air temperature is not available when the pump sentry is used..
- **Cycle pump:** When set for cycle, the pump will run on demand. When set for continuous, the pump will run continuously when the system is on.

- **Electric heat/ No electric heat:** Set this parameter only if the system is equipped with an electric heater. *If the heater current will exceed 10 Amps, a contactor must be connected to the valve output to use this feature.*
- **Fan speed 1-6:** This parameter is used to optimize fan performance and should *be changed only by qualified service personnel.*
- **Reset parameters:** To reset all parameters to factory defaults, select YES and then exit the program mode by pressing the joystick center button. The display will show EEPROM RESET then show the room temperature in the off mode.

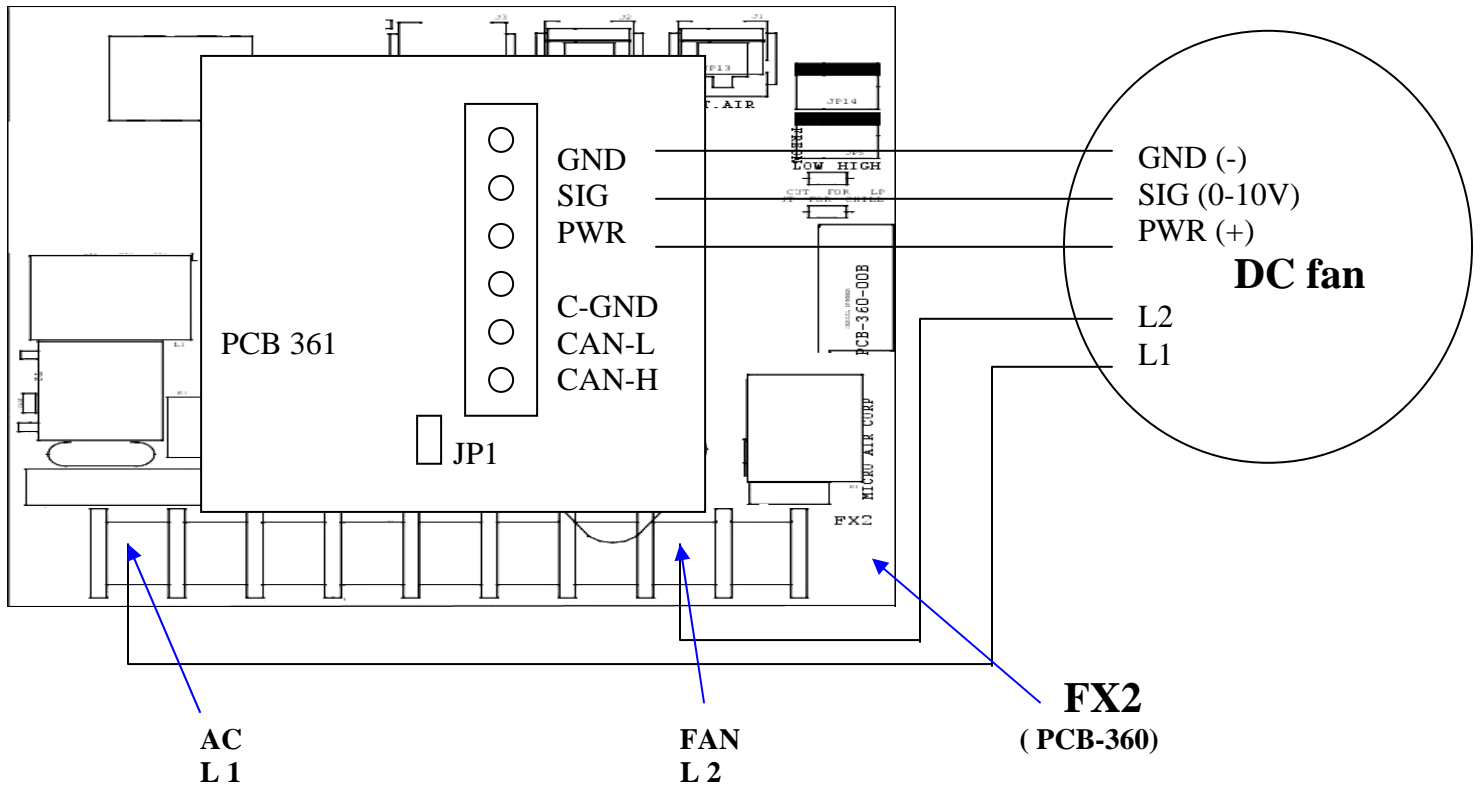
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Specifications

Set point range	55°F to 85°F 12.7°C to 29.4°C
Ambient temperature range displayed	5°F to 150°F
Sensor accuracy	2°F at 77°F
Low voltage limit 115 VAC units	75VAC
Low voltage limit 230 VAC units	175VAC
Line voltage limit	250VAC
Frequency	50 or 60 Hz
Fan output MAX	6 Amps
Valve output MAX	10 Amps
Pump output MAX	¼ HP at 115 VAC ½ HP at 230 VAC
Compressor output	1HP at 115 VAC 2HP at 230 VAC
Minimum operating temperature	0°F
Maximum operating temperature	180°F
Maximum RH conditions	99% Non condensing
Maximum length of the display cable	75 Feet
Maximum length of the Outside air sensor cable	50 Feet



Optional DC Fan / CAN Bus Control

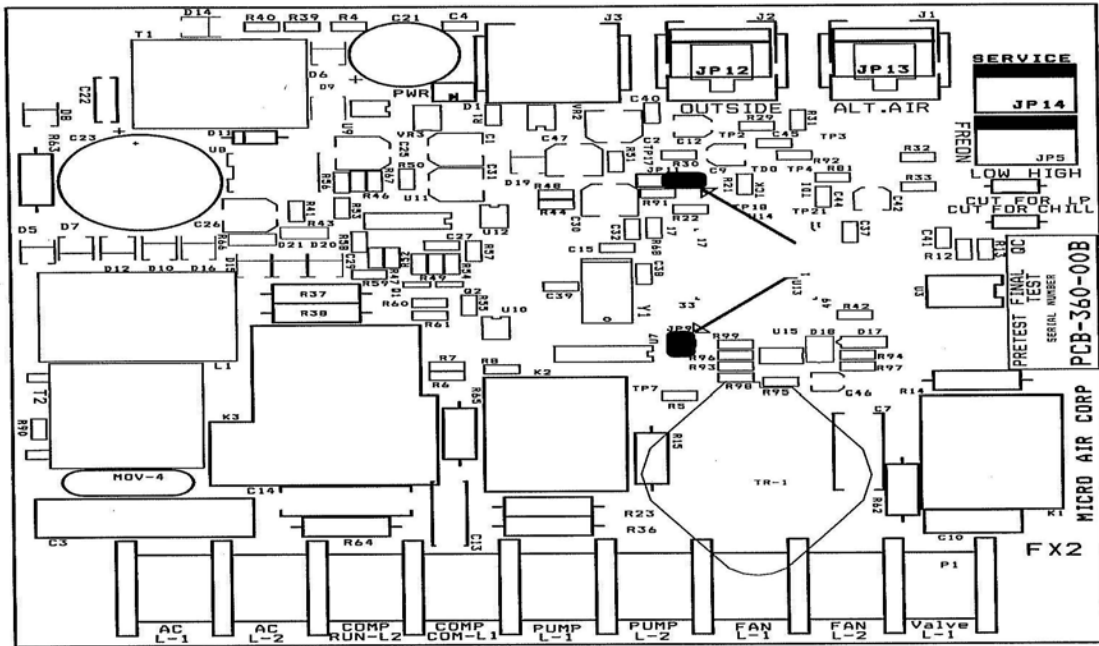
DC Fan

When the optional DC fan control (PCB-361) is installed in the FX2 power supply board (PCB-360), connect the fan input wires to GND, SIG and PWR. Connect the fan voltage supply lines to AC L1 and FAN L2 on the PCB-360. Follow the fan manufacturers' guidelines for wiring this fan.

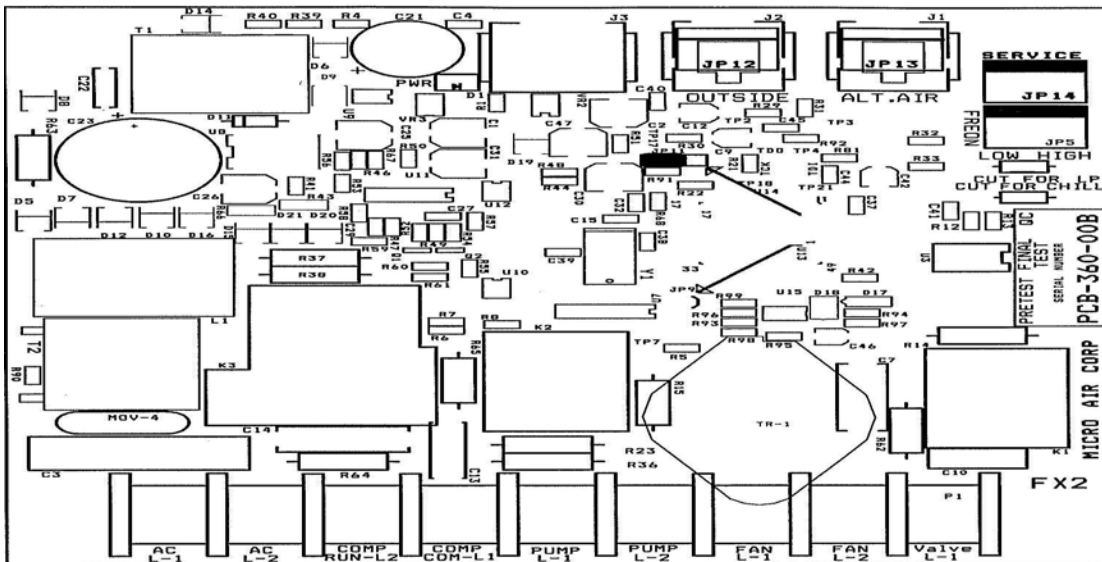
CAN Bus

When the optional CAN bus controller is used, connect the C-GND, CAN-L and CAN-H wires on the bus to the appropriate connection. CAN bus wire system limit is 500 feet and must have a terminator (JP1) on the first (usually the PC) and the last connection in the system only.

Power supplies designed for use with CAN bus systems use power supply board (PCB-360) specific to that application that allow both CAN bus and DC fan operation. Be sure you have the correct supply before attempting CAN operation.



"FX Series" jumpers configuration:
 JP9 is installed
 Pins 2 and 3 of JP11 are shorted



"OLED" jumpers configuration:
 JP9 is not installed
 Pins 1 and 2 of JP11 are shorted