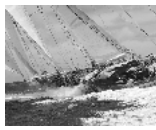


OT-FX2 OLED TOUCH

for the FX II Touch control panel

OPERATOR'S MANUAL

Technicold Marine Systems | www.technicold.com

TECHNICOLD
by NORTHERN LIGHTS




Technicold by Northern Lights
1419 W. Newport Center Drive
Deerfield Beach, FL 33442
Tel: (954) 421-1717
Fax: (954) 421-1712

Printed in U.S.A.
PART NO.: OTFX2

TECHNICOLD
by NORTHERN LIGHTS

OPERATOR'S MANUAL
for OTFX2

Read this operator's manual thoroughly before starting to operate your equipment.
This manual contains information you will need to run and service your new unit.

Table of Contents

NOTES: All items labeled COMP should be considered Electric Heater applications.
When the Alternate Air Sensor is required the Outside Air Sensor is not available.

Litho U.S.A. Publication number OT-FX2 OLED TOUCH 7/15

INTRODUCTION

Introduction:

The FXII Touch system is a versatile digital controller configurable for self contained air conditioning, air handling, and fresh air make up duty.

Features include:

- Easy touch screen operation.
- 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.
- Universal 115/230 VAC 50/60 Hz power supply.
- Built in options for fault protection for low voltage, high current, low Freon
- pressure, and high Freon pressure.
- Selectable de-icing program to prevent evaporator icing.
- Automatic moisture mode provides periodic cabin dehumidification.

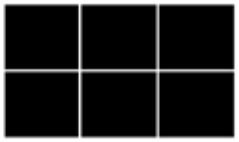
Optional features include:

- Outside air temperature sensor.
- Alternate air sensor.
- DC fan control board featuring programmable speed control for up to four quiet DC fans.
- CAN Computer area network capability
- EasyStart compressor start control.
- Fresh Air Makeup Unit provides humidity and temperature control of fresh air.
- Pump sentry sensor for monitoring condenser coil temperature.

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

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. Screen saver is activated after two minutes without touching the screen in any mode. To exit screen saver, just touch the screen.

Touch Screen Operation:
The touch screen is divided into six equal touch areas as shown on the right. Icons are displayed in these areas to indicate the function. Functions are activated by pressing and releasing or pressing and holding the touch area.



Control Off:
When the display is in the off mode, the temperature will show in the center of the screen. Press the On/Off symbol in the lower left corner to start the operation of the control.

Control Function:
Three basic configurations for this control are Air Handler (AH), Direct Expansion (DX), and Fresh Air Make up Unit (FAMU). Control function is determined by selecting the appropriate settings in the programmable parameters and setting configuration jumpers on the FXII power supply. Specific details of settings can be found throughout this manual.

DX and AH Configuration:
Sensor Connections (DX / AH):
An alternate air sensor may be installed in the ALT jack on the FXII power supply. This sensor overrides the display mounted ambient air sensor. The sensor is normally installed in the return air stream.

Sensor Connections (DX):
An outside air sensor may be connected to the OUTSIDE jack on the FXII power supply. Outside air temperature will alternate with the set point in the upper right corner of the display. A pump sensor may be installed on the condenser coil and connected to the OUTSIDE jack. See Pump Sentry in the programmable parameters section for details

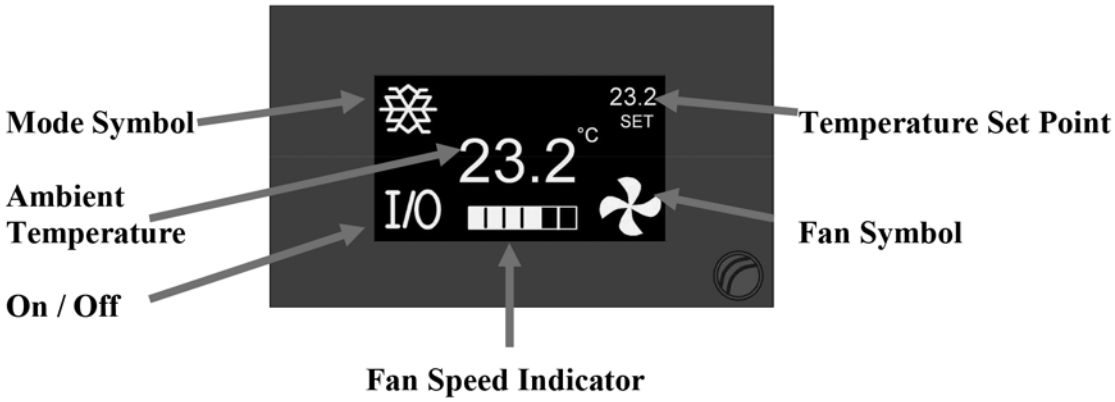
OPERATIONS

Sensor Connections (AH):

A loop water sensor must be connected to the OUTSIDE jack on the FXII power supply.

On systems that do not use the alternate air sensor, an outside air sensor may be connected to the ALT jack on the FXII power supply. Outside air temperature will alternate with the set point in the upper right corner of the display. Set the “Alt Air Enabled” programmable parameter to use this feature.

DX and AH Operation:



Operating Modes:

Four operating modes are available and can be changed by pressing the symbol in the upper left corner. The symbols below will appear in the upper left on the display.


Automatic mode symbol


Heat only symbol


Moisture mode symbol


Cool only symbol

Automatic mode will change the system from cooling to heating or from heating to cooling as necessary. Once you have selected the mode, set the desired room temperature by pressing the set point in the upper right corner. Use the arrows to raise or lower the set point and press X when you are finished.

Moisture mode is used to help control humidity in the room while the room is unoccupied. The control will operate in cooling mode for up to 1 hour every 6 hours. Manual fan speed selection is not available in this mode.

Operating the fan:
Fan speed may be controlled automatically by room temperature or manually.
Press the fan operating symbol in the bottom right corner to change speeds. Manually selected fan speed is indicated with the M showing before the fan 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.
Cycled fan option: *Manual fan speed cannot be set when this option is enabled and the system is not heating or cooling.*

Viewing System Status (View Mode)
Line voltage, line frequency, and system current can be viewed on the display. In the off mode or any operating mode, press and hold the fan speed indicator to view the status. Press and hold the area where it is normally located if the indicator is not visible.
To exit the status view, press anywhere on the display.
AH ONLY: Loop water temperature is also available in the view mode. If the loop water sensor is not installed or fails, no reading will appear
DX ONLY: High and low Freon pressure switch status and condenser coil temperature (with optional sensor) is also displayed in the view mode.
EASY START ONLY: When the" Easy Start Graph" parameter is enabled, a start graph is available from the view mode by entering the view mode and tapping in the center a second time. This shows the peak start current and running current for the last compressor start.

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. This sensor is plugged into the "OUTSIDE" jack on the power supply board.

Alternate Air Sensor
An optional sensor may be installed in the return air stream that bypasses the sensor installed in the display. This is used to get more accurate ambient air temperature readings when the display is installed in less optimal locations. This sensor is plugged into the "ALT. AIR" jack on the power supply.

Pump Sentry (DX only)
An optional sensor may be installed on the condenser coil to monitor temperature.
See program parameters for details.

SYSTEMS WITH EASYSTART

Capacitor Selection:

Start capacitors should be sized according to the following guidelines:
Run capacitors should be sized according to the compressor manufacturer's recommendations. Capacitors often see voltages much higher than the applied line voltage. Select capacitors that have the appropriate voltage rating for your system.

BTU Rating	Start Capacitor Size
36,000 to 60,000	189 to 227uF
24,000 to 36,000	130 to 156uF
12,000 to 24,000	88 to 106uF
7,000 to 12,000	66 to 77uF

Initial Starts:

EasyStart has adaptive software that collects data during the first eleven starts of the compressor. EasyStart uses this data to determine the best starting characteristic for minimum start current delivered to the compressor. It is highly recommended that these starts be done with a stable power source such as shore power. Start the compressor eleven times after installation to allow EasyStart to learn about the compressor. No further setup is required.

Forcing EasyStart to relearn:

If the start or run capacitor is replaced or the compressor is replaced, EasyStart must relearn the compressor. Follow these steps below to complete this process. Refer to the FXII DX EasyStart wiring diagram for jumper position identification.

1. Remove AC power
2. Short pins four (4) and six (6) on JP1 with the black jumper.
3. Restore AC power for 30 seconds.
4. Remove AC Power.
5. Remove the jumper from pins four (4) and six (6) on JP1 and place it over pins three (3) and four (4).
6. Restore AC power and start the compressor eleven times. EasyStart will relearn the start characteristics of the compressor.

ADDITIONAL EASYSTART JUMPER USAGE:

Jumpers can be placed on JP1 for certain special functions. Do not place jumpers except as shown.

NORMAL

Most operation should be done without a jumper installed on JP1 or with the jumper installed across pins 3 and 4 as shown.

RELEARN (4,6)

If a compressor, start capacitor, or run capacitor is replaced, place a jumper on pins 4 and 6 as shown. Cycle power on then off again. Remove the jumper. Cycle the compressor on then off eleven times to complete the setup.

DEFAULT (1,3)

A compressor may be operated with a factory defined start characteristic. This may not be the optimal start for the connected compressor and is generally used for factory diagnostics. No optimization is done with this setting.

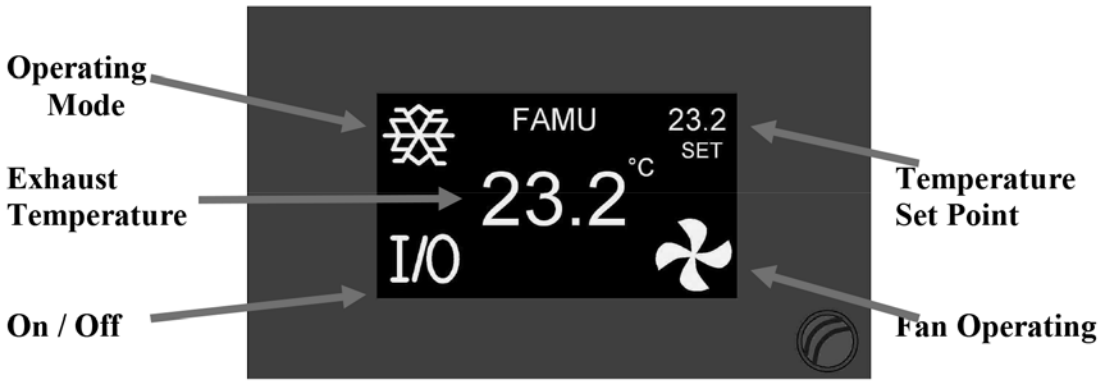
DISABLE (5,6)

This setting disables the microprocessor on the board so no operation can occur. Use this setting on an FX II system if you are installing a compressor with its own start device and are not using EasyStart. In this case you must follow the wiring diagram for a standard FX II system

FRESH AIR MAKE UP UNIT (FAMU)

Sensor Connections:

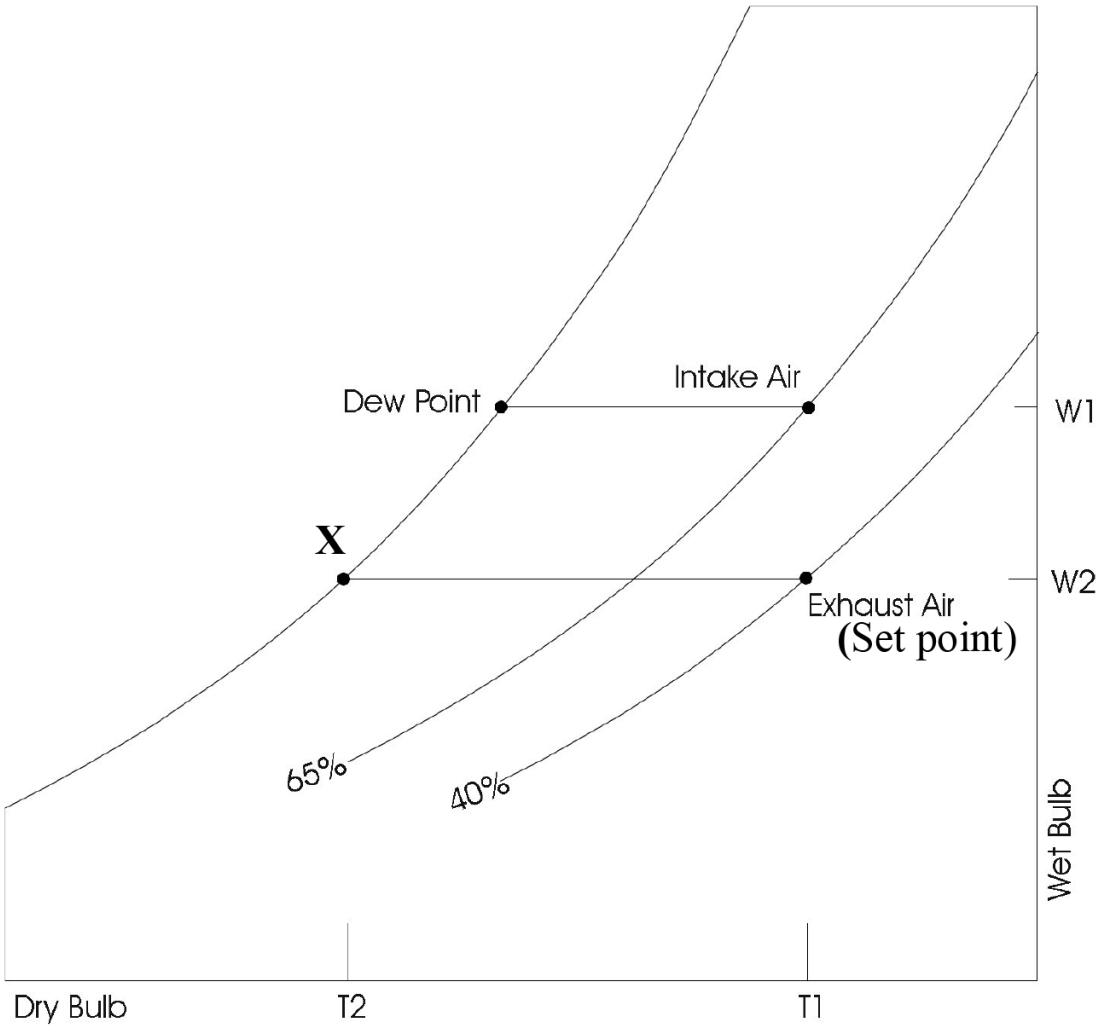
A loop water sensor must be connected to the OUTSIDE jack on the FXII power supply.
No sensor should be connected to the ALT.AIR jack on the FXII power supply.
A combination humidity and air sensor must be connected to the INTAKE and EXHAUST jacks on the FXII power supply.



This configuration requires a factory installed board, for connecting humidity sensors, on the FX II power supply. Output wiring does not follow the output labels written on the board. Follow the wiring diagram for the FAMU to wire this control.
Relative humidity measurement is handled by two dual purpose sensors combining humidity and temperature measurement that are placed at the intake and exhaust of the air handler.
The operating mode and fan symbol display is determined by the active outputs.

- Heater active
- Valve active
- Both heater and valve are active
- Fan active

The temperature set point (SET) will alternate with two other values in the display during operation. Relative humidity (RH) of the exhaust and intake air temperature (OAT) will show at regular intervals. Relative humidity of the intake air may be viewed in the system status.



The above graph illustrates the dehumidification process. The intake air temperature is reduced below the dew point. Moisture is removed from the air reducing the dew point and air temperature to point X. The air is then warmed by the electric heater to the set point.

The FAMU control will attempt to keep the exhaust air temperature within 2°F of set point and humidity below the humidity set point.

VIEWING SYSTEM STATUS (FAMU VIEW MODE)

Line voltage, line frequency, system current, inlet humidity, and loop water temperature can be viewed on the display. In the off mode or any operating mode, press and hold either center touch area to view the status. To exit the status view, press and release any touch area on the display.

Fault Messages:

Air Sensor Trouble (DX / AH)

The temperature sensor in the display has failed.

RH Inlet Sensor Trouble (FAMU)

A problem exists with the intake humidity and air sensor.

RH Outlet Sensor Trouble (FAMU)

A problem exists with the exhaust humidity and air sensor.

High Freon Pressure (DX)

The High Freon pressure switch was opened.

Low Freon Pressure (DX)

The low Freon pressure switch was opened for 10 minutes

Low AC Voltage (DX)

Line voltage was below the limit set in the programmable parameters for greater than 10 minutes.

System Over Current (DX)

Sustained current draw existed that exceeded the programmed value.

Check Water Pump (DX)

Cooling water temperature is above the limit set in the programmable parameters.

Lockout (DX)

Four faults occurred within one hour. Press the On/Off icon twice (Off then on again) to clear the lockout.

Hardware jumpers are provided on the FXII power supply to provide additional functions. See Programmable Parameters for additional configuration settings.

Display Selection:			
	JP9	**JP11**	**Usage**
OLED	OFF	OLED	OLED display.
FX-MAXX	ON	FXMAX	FXMAX display.

Configuration:			
System	**JP7**	**JP8**	**Usage**
AH	ON	OFF	ALL
DX	OFF	ON	With low Freon pressure switch.
DX	ON	ON	No low Freon pressure switch.
FAMU	ON	OFF	ALL

PROGRAMMABLE PARAMETERS

Descriptions of programmable parameters, factory default values, and allowable values are shown in the program parameters tables. Installed options and parameter selections control which parameters are displayed. Some parameters are not available with older revision displays. Separate tables are provided for DX, AH, and FAMU units following the parameter descriptions. *FX II power supply jumpers must be properly configured prior to setting parameters.*

Entering the program mode:

To enter the program mode the display must be in the off mode. Press and hold the On / Off symbol for 3 seconds. Press the right arrow to advance to the next parameter and press the left arrow to go back to the last parameter. Press the up or down arrows to change the parameters value. Exit the program mode when finished by pressing the X or wait 60 seconds for the display to exit.

Parameter description:

Cycled fan: (DX, AH)

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: (DX)

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: (ALL)

Degrees Fahrenheit (°F) or degrees Celsius (°C) can be selected

Display brightness: (ALL)

Display brightness can be set from 4 to 15 to suit room lighting. Brightness will change as the number is changed.

Screen saver brightness: (ALL)

Number values from 0 to 8 can be set to suit room brightness and the unit will operated as described in the screen saver section. Setting the parameter to 0 will cause the display to show nothing when in screen saver.

Temperature calibration: (ALL)

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: (DX)

This parameter provides control of timing for compressor starts. When a system is first powered, the staging delay prevents the compressor from starting for the length of time set. When a cooling or heating cycle is completed, the compressor cannot restart until the staging delay has expired.

Alt air enabled: (AH)

When set for alt air enabled, the alt air jack can be used with an optional air sensor to over ride the display mounted air sensor. When set for outside air enabled, an optional sensor may be installed to monitor outside air temperature.

This will appear as OAT on the display.

Electric heat/ No electric heat (AH, DX)

Set this parameter only if the system is equipped with an electric heater.

Contactors must be used if the current exceeds the rated value.

If the loop water sensor is not installed or fails, electric heat will not be available and the system will open the valve when necessary regardless of loop temperature.

Electric heat will only be used if the loop water temperature is less than ambient + 15°F (ambient + 8.3°C)

AH: The electric heater is connected to the compressor L1 and compressor L2 terminals. Heater current must not exceed 30 Amps.

DX: The electric heater is connected to the valve L1 and compressor L2 terminals. Heater current must not exceed 10 Amps. Staging delay should be adjusted if necessary.

Fail safe level: (DX)

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 by touching the Off/On symbol in order to clear LOCKOUT condition.

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 message Operation will stop until the fault is cleared.
2	The controller will detect and display all fault messages. Operation will stop until the fault is cleared.
3	The controller will detect and display all fault messages. Operation will stop until the fault is cleared. After 4 faults the controller will LOCKOUT and prevent further operation

Low AC line detection: (DX)

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: (DX)

When set, the system will perform the evaporator de-icing program.

Pump sentry: (DX)

An optional sensor plugged into the “Outside” jack can be used to monitor the condenser coil temperature. If the temperature exceeds the set value, the failure will be handled according to the fail safe level programmed. This failure will prompt the user to CHECK WATER PUMP. Outside air temperature is not available when the pump sentry is used.

PROGRAMMABLE PARAMETERS

Cycled pump: (DX)

When set for "Cycled", the pump will run on demand. When set for "Continuous", the pump will run continuously when the system is in cool, heat or auto mode.

Normal water valve operation: (AH, FAMU)

This feature allows service personnel to force the water valve open to facilitate bleeding air from the system. Selecting override will force the water valve open for four hours. Touch the on/off symbol to cancel this operation

Fan A speed 1-6: (DX, AH)

These parameters are used to optimize fan performance and airflow. Fan A controls the triac driven fan output on the FXII power supply. It also controls the DC fan connected to the fan A terminals on the DC fan option board if installed. Speed 1 corresponds to the lowest speed setting available from the display. Speed 6 corresponds to the highest speed setting. Fan speed will change as the parameter is changed so that adjustments can be observed.

Fan B, C, and D speed 1-6: (DX, AH)

These options will only be visible if the DC fan option board is installed. Adjustments are made in the same manner as fan A. See DC fan option board for details.

CANBUS (DX,AH)

This option should be enabled in systems with a CANBUS capable power supply only. *All other users must leave this option set for DISABLED.* Enabling this option allows the user to set the CAN unit ID and group ID.

Unit ID: (DX, AH)

This number is assigned at installation for use with the CAN system. It should only be changed by qualified service technicians.

Group ID: (DX, AH)

This number is assigned at installation for use with the CAN system. It should only be changed by qualified service technicians.

EasyStart Graph (DX)

This option should be enabled on systems equipped with EasyStart only. *All other users must leave this option set for NONE.* When the parameter is set for "SHOW" the display will show a graph of the compressor start each time a start occurs. The same graph is available from the view mode by tapping the upper center or lower center of the display touch pad. If this parameter is set for hide, the graph is hidden on each start but is still available from the view mode. When set for "NONE", the graph is not available for viewing.

Configure System: (ALL)

This option selects between Fresh Air Makeup Unit (FAMU), Direct Expansion (DX) or Air Handler (AH) operation. On later software revisions, selecting a change requires confirmation. A Y or an N appears next to the change arrows. Press the Y to confirm the change or N to cancel the change. The display will return to show "Configure System" with your selection. *Changing the system configuration will reset all parameters to factory defaults.*

Humidity set point: (FAMU)

This parameter sets the percent of relative humidity threshold for the fresh air makeup unit as measured at the air intake. If the percent of relative humidity rises to the programmed level, the control will begin dehumidifying air and continue until the relative humidity drops to five percent below the set value.

Current Limit (DX)

This option sets the maximum continuous current. If the current rises above this level for one second the system will shut down and a system over current fault will be displayed.

Reset parameters: (ALL)

To reset parameters to factory defaults, select YES and then exit the program mode by pressing the X in the top left of the touch screen. The display will show EEPROM RESET then show the room temperature in the off mode. The FAMU parameter is not reset.

AIR HANDLER (AH) PROGRAMMABLE PARAMETERS TABLE

Description	Default	Value
Cycled fan	Continuous	Cycled or Continuous
System units	°F	°F or °C
Display brightness	15	4=Minimum 15=Maximum
Screen saver brightness	4	0 to 8
Temperature calibration	0	Ambient +/- 10°F
Alternate air enabled	Alternate air enabled	Alternate air enabled or Outside air enabled
Electric Heat	No Electric Heat	Electric Heat or No Electric Heat
Normal valve operation	Normal valve operation	Normal valve operation or Valve override
Fan A speed 1	30	30 to 90
Fan A speed 2	35	30 to 90
Fan A speed 3	40	30 to 90
Fan A speed 4	45	30 to 90
Fan A speed 5	55	30 to 90
Fan A speed 6	85	30 to 90
Fan B speed 1	*30*	*30 to 90*
Fan B speed 2	*35*	*30 to 90*
Fan B speed 3	*40*	*30 to 90*
Fan B speed 4	*45*	*30 to 90*
Fan B speed 5	*55*	*30 to 90*
Fan B speed 6	*85*	*30 to 90*
Fan C speed 1	*30*	*30 to 90*
Fan C speed 2	*35*	*30 to 90*
Fan C speed 3	*40*	*30 to 90*
Fan C speed 4	*45*	*30 to 90*
Fan C speed 5	*55*	*30 to 90*
Fan C speed 6	*85*	*30 to 90*
Fan D speed 1	*30*	*30 to 90*
Fan D speed 2	*35*	*30 to 90*
Fan D speed 3	*40*	*30 to 90*
Fan D speed 4	*45*	*30 to 90*
Fan D speed 5	*55*	*30 to 90*
Fan D speed 6	*85*	*30 to 90*
CAN BUS	Disabled	Enabled or Disabled
CAN ID	0	0 to 254
Group ID	0	0 to 254
Configure System	AH	AH, FAMU
Reset Parameters	No	No or Yes

Italic parameters are for systems with the DC Fan Option Board only.

DIRECT EXPANSION (DX) PROGRAMMABLE PARAMETERS TABLE

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	0 to 8
Temperature calibration	0	Ambient +/- 10°F
Staging delay	15	5-135 Seconds
Failsafe Level	Off	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
Cycled pump	Cycled	Cycled or Continuous
Electric Heat	No Electric Heat	Electric Heat or No Electric Heat
Fan A speed 1	30	30 to 90
Fan A speed 2	35	30 to 90
Fan A speed 3	40	30 to 90
Fan A speed 4	45	30 to 90
Fan A speed 5	55	30 to 90
Fan A speed 6	85	30 to 90
Fan B speed 1	*30*	*30 to 90*
Fan B speed 2	*35*	*30 to 90*
Fan B speed 3	*40*	*30 to 90*
Fan B speed 4	*45*	*30 to 90*
Fan B speed 5	*55*	*30 to 90*
Fan B speed 6	*85*	*30 to 90*
Fan C speed 1	*30*	*30 to 90*
Fan C speed 2	*35*	*30 to 90*
Fan C speed 3	*40*	*30 to 90*
Fan C speed 4	*45*	*30 to 90*
Fan C speed 5	*55*	*30 to 90*
Fan C speed 6	*85*	*30 to 90*
Fan D speed 1	*30*	*30 to 90*
Fan D speed 2	*35*	*30 to 90*
Fan D speed 3	*40*	*30 to 90*
Fan D speed 4	*45*	*30 to 90*
Fan D speed 5	*55*	*30 to 90*
Fan D speed 6	*85*	*30 to 90*
CAN BUS	Disabled	Enabled or Disabled
Unit ID	1	1 to 253
Group ID	1	1 to 253
Easy Start Graph	NONE	None, Show, Hide
Configure System	DX	DX, FAMU
Current Limit	Off	1 to 35 Amps
Reset Parameters	No	No or Yes

Italic parameters are for systems with the DC Fan Option Board only.

FRESH AIR MAKE UP UNIT (FAMU) PROGRAMMABLE PARAMETERS TABLE

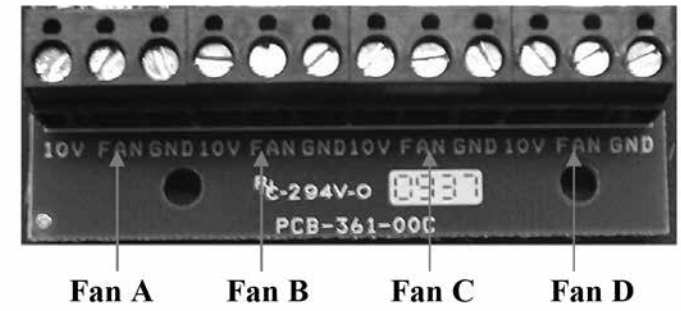
Description	Default	Value
System units	°F	°F or °C
Display brightness	15	4=Minimum 15=Maximum
Screen saver brightness	4	0 to 8
Temperature calibration	0	Ambient +/- 10°F
Normal valve operation	Normal valve operation	Normal valve operation or Valve override
Configure System	AH or DX (Note 1)	AH, DX, FAMU
Humidity set point	50	35 to 65
Reset Parameters	No	No or Yes

(Note 1) If the system configuration selects between DX and FAMU, Jumper JP8 is installed and must be removed for correct operation

DC FAN OPTION BOARD

This option allows up to four PWM controlled DC fans to be connected to an FX-II digital control. The option board PCB-361 is a factory installed option located directly above the PCB-360 power supply unit. Speed control for each fan is individually adjustable in the programmable parameters.

FAN CONNECTIONS:



INSTALLATION

Each fan is connected by three wires to the control board. Connect the control wires to their corresponding terminals on the option board. The 10V terminal is connected to the DC fans' +10 volt output. The GND terminal is connected to the DC fans' ground control wire only. Do not connect the GND wire to an AC ground. The FAN terminal is connected to the DC fans' 0-10V signal wire.

Connect the DC fan's AC input directly to the AC line input. All other connections to the FXII power supply are as they would be in a normal installation.

- *The FXII power supply board provides an output for a triac driven fan connected to Fan L1 and Fan L2 on the power supply board. When connected, the fan will follow the speed control for Fan A on the DC fan option board.*
- *Do not connect the DC fan power source to the Fan L1 terminal on the power supply.*

OPERATION

Connected fans will follow the six fan speeds selected on the display. If manual fan speed 4 is selected, all connected fans will be on speed 4.

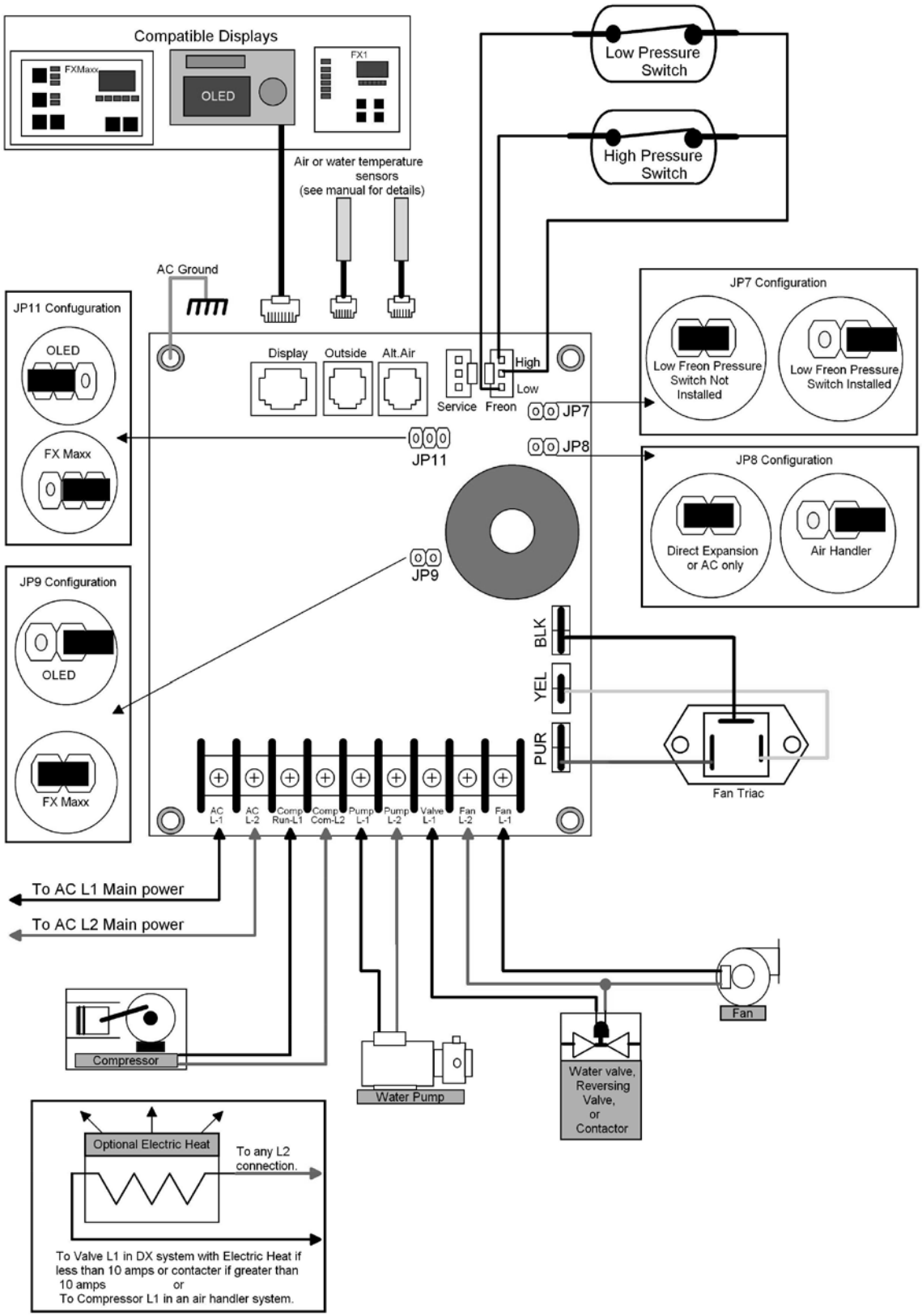
ADJUSTING INDIVIDUAL FAN SPEEDS

It may be desirable in an installation to have one or more fans respond differently to the six fan speed control levels. The program parameter table B lists fans A, B, C and D each with six speed adjustment points. Fan A speed X controls both the triac driven fan output and the DC fan A output. Fans B, C, and D control only the DC fan output for the fan connected to that output. To make changes to fan A, first enter the program mode.

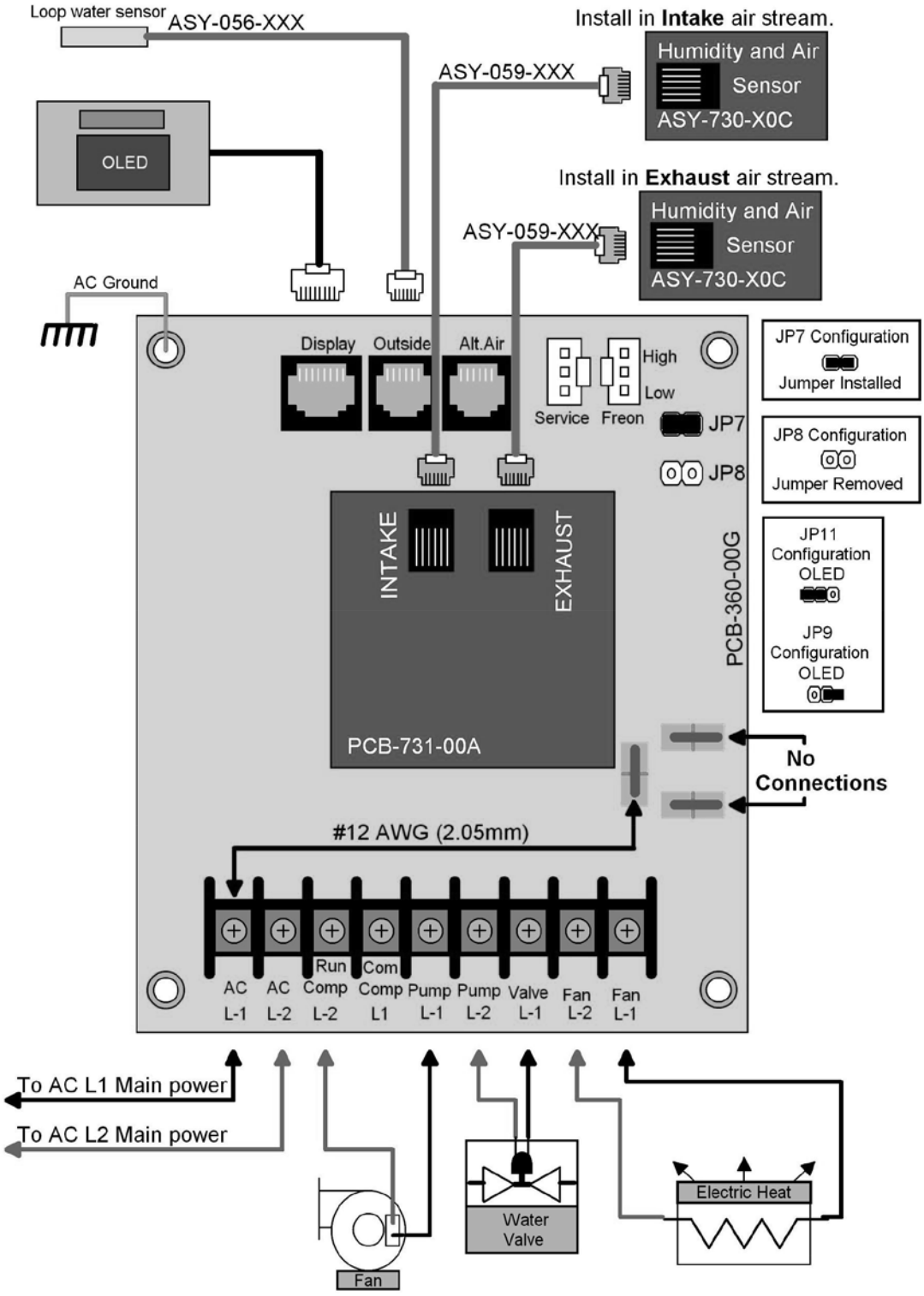
(See the entering program mode section for details.) Advance through the parameters to the Fan A Speed 1 parameter. Fan A Speed 1 is the lowest fan speed setting for the triac driven fan and DC Fan A. Use the up and down pads to increase or decrease the fan speed to a desired level. Advance to speeds 2-6 and make changes to each speed as desired. Each fan speed parameter has an adjustment range of 30-90 with 90 being the fastest fan speed setting. Each speed parameter may be adjusted anywhere in this range. Adjustments may be made to fans B, C, and D in the same manner.

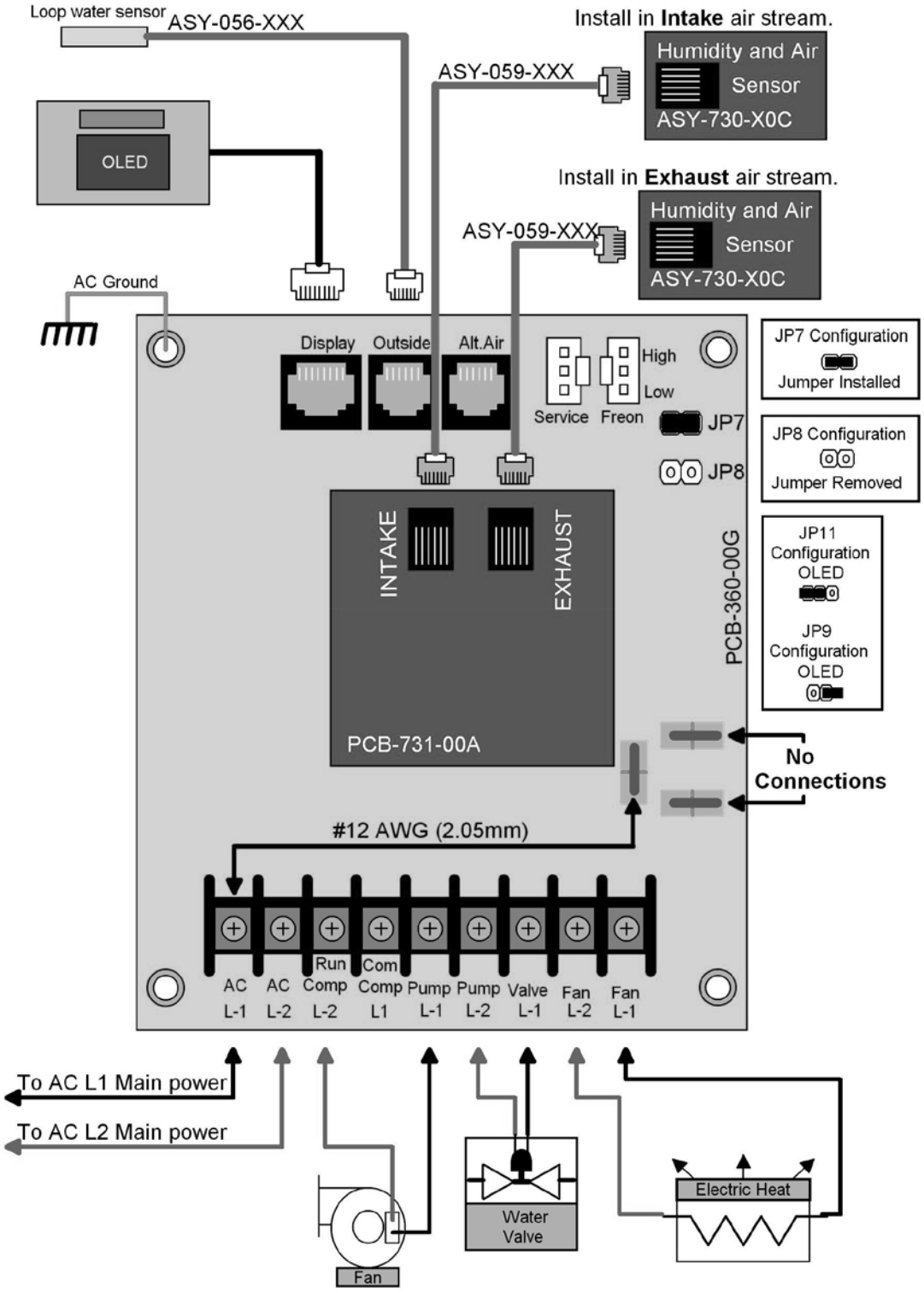
SPECIFICATIONS

General:	
Set point range	55°F to 85°F 12.7°C to 29.4°C
Ambient temperature range displayed	5°F to 150°F
Temperature 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
Minimum operating temperature	0°F
Maximum operating temperature	180°F
Maximum RH conditions (Board and display)	95 % Non-condensing
Maximum length of the display cable	75 Feet
Maximum length of the Outside air sensor cable	50 Feet
Application:	
Direct Expansion (DX):	
Fan output MAX	6 Amps
Valve output MAX (Or electric heater connected to valve output)	10 Amps Maximum
Pump output MAX	¼ HP at 115 VAC ½ HP at 230 VAC
Compressor output	1HP at 115 VAC 2HP at 230 VAC
Air Handler (AH):	
Electric heater output (Connected to compressor L1 and L2)	30 Amps Maximum
Valve output MAX	10 Amps Maximum
Fan output MAX	6 Amps
Fresh Air Make Up Unit(FAMU)	
RH measurement range	5% to 100%
Electric heater output (Connected to Fan L1 and L2)	20 Amps Maximum
Valve output MAX	10 Amps Maximum
Fan output MAX (Connected to Pump L1 and L2)	10 Amps Maximum

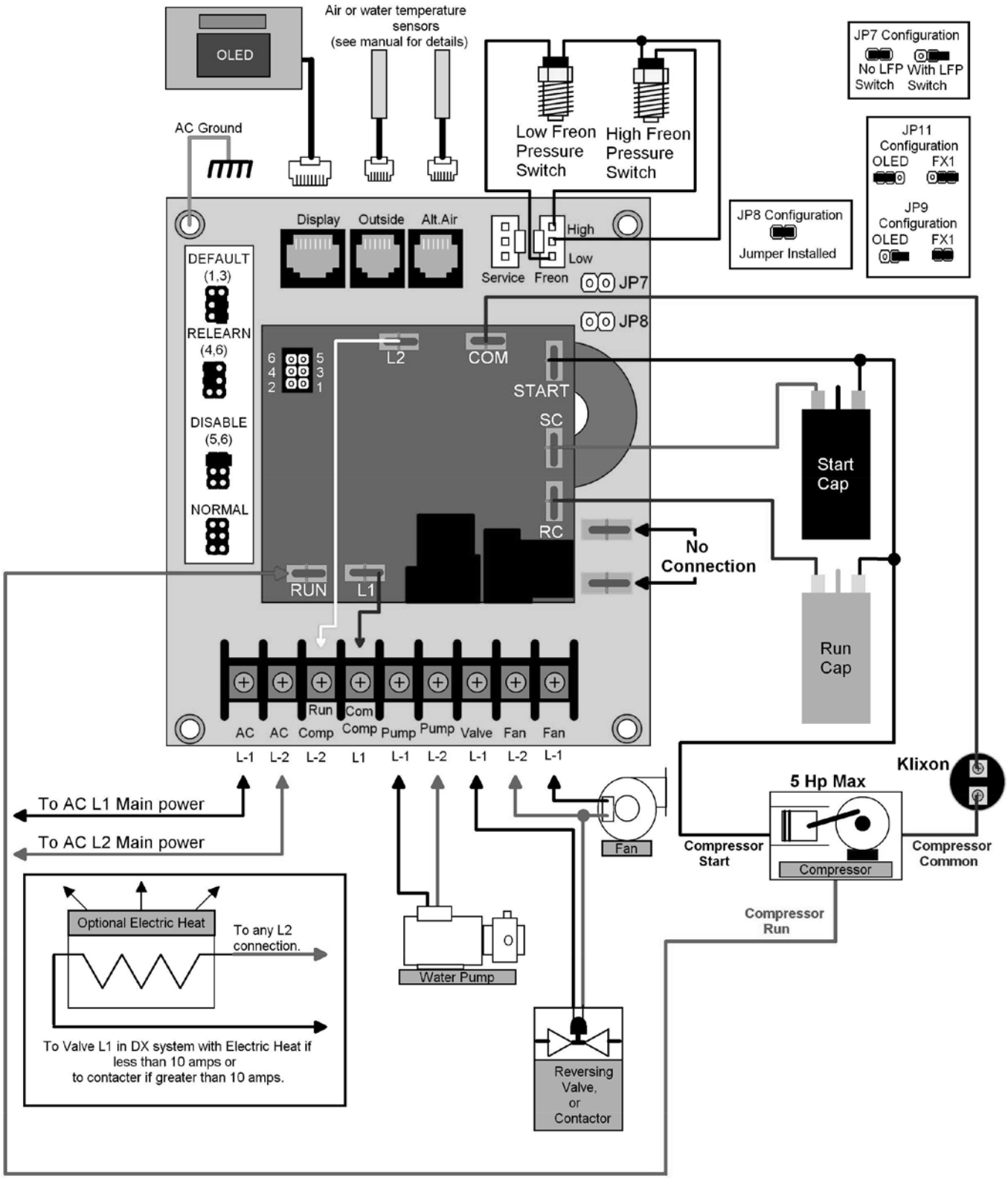

Compatible Displays
FXMaxx
OLED
FX1
Air or water temperature sensors (see manual for details)
Low Pressure Switch
High Pressure Switch
AC Ground
JP11 Confuguration
OLED
FX Maxx
Display
Outside
Alt.Air
Service
Freon
High
Low
JP7
JP8
JP11
JP9
JP7 Configuration
Low Freon Pressure Switch Not Installed
Low Freon Pressure Switch Installed
JP8 Configuration
Direct Expansion or AC only
Air Handler
JP9 Configuration
OLED
FX Maxx
BLK
YEL
PUR
Fan Triac
AC L-1
AC L-2
Comp Run-L1
Comp Com-L2
Pump L-1
Pump L-2
Valve L-1
Fan L-2
Fan L-1
To AC L1 Main power
To AC L2 Main power
Compressor
Water Pump
Water valve, Reversing Valve, or Contactor
Fan
Optional Electric Heat
To any L2 connection.
To Valve L1 in DX system with Electric Heat if less than 10 amps or contacter if greater than 10 amps or
To Compressor L1 in an air handler system.

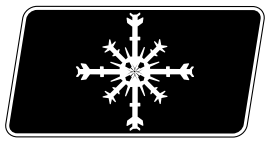
DX WIRING DIAGRAM




Loop water sensor
ASY-056-XXX
Install in **Intake** air stream.
Humidity and Air Sensor
ASY-730-X0C
ASY-059-XXX
OLED
Install in **Exhaust** air stream.
Humidity and Air Sensor
ASY-730-X0C
ASY-059-XXX
AC Ground
Display
Outside
Alt.Air
Service
Freon
High
Low
JP7
JP8
JP7 Configuration
Jumper Installed
JP8 Configuration
Jumper Removed
JP11 Configuration
OLED
JP9 Configuration
OLED
INTAKE
EXHAUST
PCB-360-00G
PCB-731-00A
No Connections
#12 AWG (2.05mm)
AC L-1
AC L-2
Run Comp L-2
Com Comp L1
Pump L-1
Pump L-2
Valve L-1
Fan L-2
Fan L-1
To AC L1 Main power
To AC L2 Main power
Fan
Water Valve
Electric Heat

DX WIRING DIAGRAM





TECHNICOLD
by NORTHERN LIGHTS

1419 W. Newport Center Drive, Deerfield Beach, FL 33442
Tel: (954) 421-1717 • www.northern-lights.com