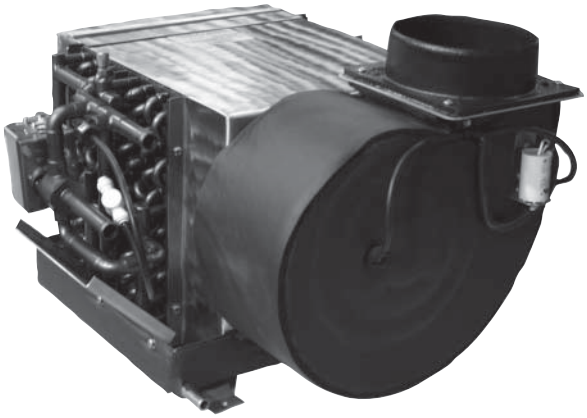



OTFAMU

Fresh Air Make Up System For Chilled Water

OPERATOR'S MANUAL



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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

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Introduction:

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

This manual will cover the FAMU application.

Features include:

- **Fresh Air Makeup Unit provides humidity and temperature control of fresh air.**
- **Easy touch screen operation.**
- **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.**
- **Universal 115/230 VAC 50/60 Hz power supply.**

Operations:

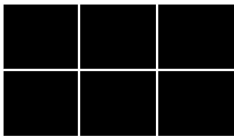
Applying power:

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. The control has been set-up from the factory for FAMU control.

⚠ CAUTION Do not change the "configure system" parameter or move any jumpers on the board.

Specific details of settings can be found throughout this manual.

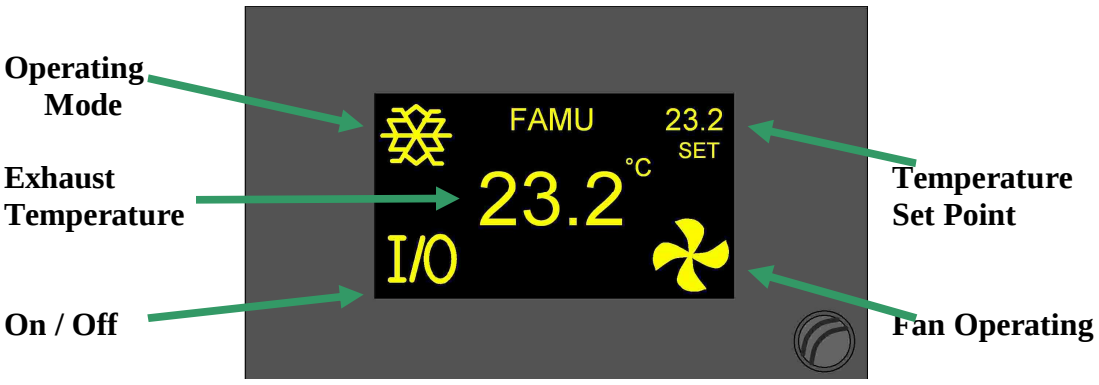
Fresh Air Make Up Unit (FAMU):

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

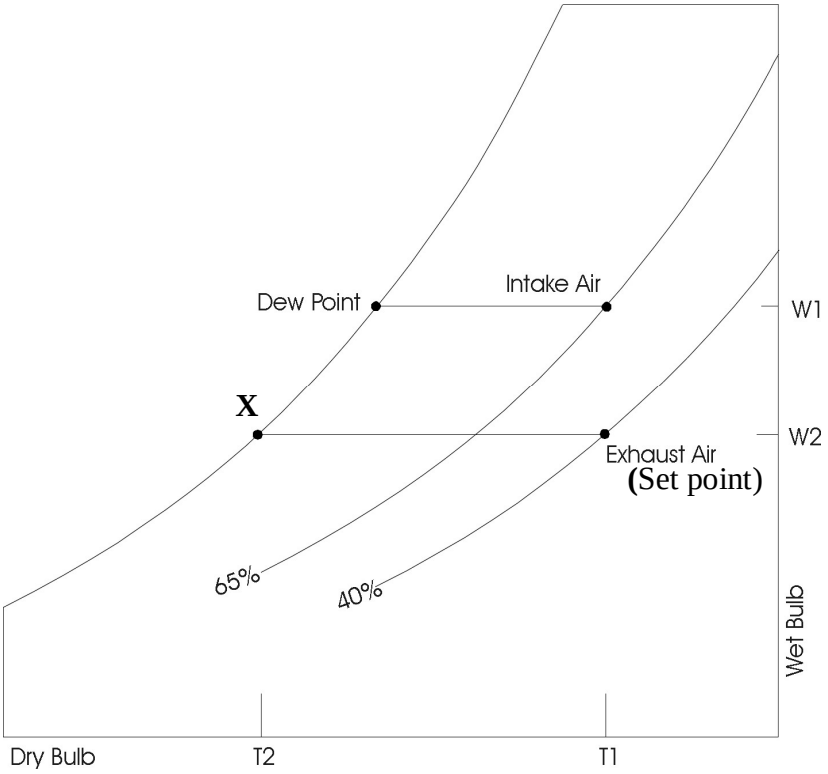
Valve active

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.

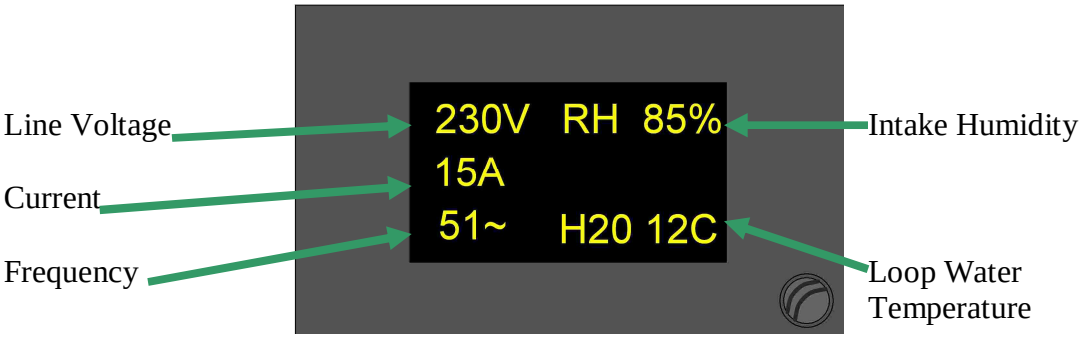
FAMU System Operation:



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:

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.

Jumper settings:

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.

Configuration:

System	**JP7**	**JP8**	**Usage**
FAMU	ON	OFF	ALL

INSTALLATION INSTRUCTIONS

CONTROL BOX

The control box has a NEMA 12 (IP 52) rating. Mount the box in a protected area contusive with its rating. In mounting locations where the control box is subject to harsher environmental conditions, higher rating enclosures are available. Alternatively, the installer can provide additional protection/shielding for the box.

An air space is required behind the box for heat-sink purposes. Use the rubber stand-offs provided with the box for mounting, or use alternate methods. Do not mount the box flush to the bulkhead.

Vertical is the recommended mounting position.

All wiring and cable shall have a drip loop when exiting the box.

Secure all wiring and cables after they exit the box. This prevents stress on the control board connections and prevents damage to the board should the cables be pulled.

COMPONENT WIRING

The circuit board inside the control box has designations printed under the terminal strip.

Do not wire the components using the board designations.

Wire the components using the wiring diagram.

If the diagram is not available, use the following designations:

Power Supply L1 to AC –L1

Power Supply L2 to AC-L2

Fan L1 to Pump L1

Fan L2 to Comp L2

Water Valve L1 to Valve L1

Water Valve L2 to Pump L2

Electric Heater L1 to Fan L1

Electric Heater L2 to Fan L2

OLED DISPLAY

Mount the display in any position but ensure that the control face can be easily accessed and viewed for operation and programming.

Make sure there is enough clearance in the cavity behind where the display is to be mounted. Remember that the display cable must be easily accessible and removable. Do not crush the cable in the cavity. A minimum of 2” clearance is required.

Ambient conditions around the display shall not exceed 95 % Non-condensing Relative Humidity. Nor shall the operating temperature drop below 0°F or rise above 180°F.

VIMAR® idea® 16713 bezels are used for mounting the display.

The display bezel accepts Vimar® or Gewiss® type frames.

There are two screws provided with the bezel for mounting in soft materials such as wood. We recommend drilling pilot holes prior to fastening. These screws can be easily removed from the bezel with finger pressure if alternate mounting methods are required.

Once mounted, plug the display cable into the back of the display. Secure the cable near the display this prevents damage to the display should the cable be pulled.

RELATIVE HUMIDITY/TEMPERATURE SENSOR BOARDS

Provided are two Relative Humidity/Temperature Sensors circuit boards as part of the kit. One sensor board mounts in the Intake air stream between the coil and filter. The other sensor board is located in the outlet air steam.

Both sensor boards and their corresponding cables are identical. Do not cross the connections when plugging into the main control board. If the inputs are crossed, the system will not function correctly.

The markings on the main control board are INTAKE & EXHAUST. The Intake air is the sensor board between the coil and filter; the Exhaust air sensor board is in the outlet of the blower.

Secure the cables once plugged into the sensors and main board. This prevent damage to the boards should the cables be pulled.

CIRCULATION WATER SENSOR

Circulation water temperature monitoring is via a glass temperature sensor. This sensor is required for correct operation of the water valve and electric heater.

The sensor mounts on the supply water pipe feeding the air handler. The supply water feed is the bottom pipe connected directly on the water valve.

Affix the sensor firmly to the pipe ensuring that the entire length of the sensor is in contact with the pipe. If using a small hose clamp to secure it, do not over-tighten and crush the sensor.

A metal housing encapsulates the glass sensor. Damage can still occur if too much pressure is applied.

Insulate the sensor once attached.

The connector end of the cable plugs into the center socket on the board, marked *OUTSIDE*.

Secure the cable once plugged into the main board. This prevents damage to the board should the cable be pulled.

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. The DX and AH features are not used; therefore those parameters are not included in this manual. ***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:

- **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
- **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

- **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. The system can only be operated in famu configuration. Do not change to DX or AH configuration.*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.
- **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.

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	FAMU	AH, DX, FAMU
Humidity set point	50	35 to 65
Reset Parameters	No	No or Yes

Specifications

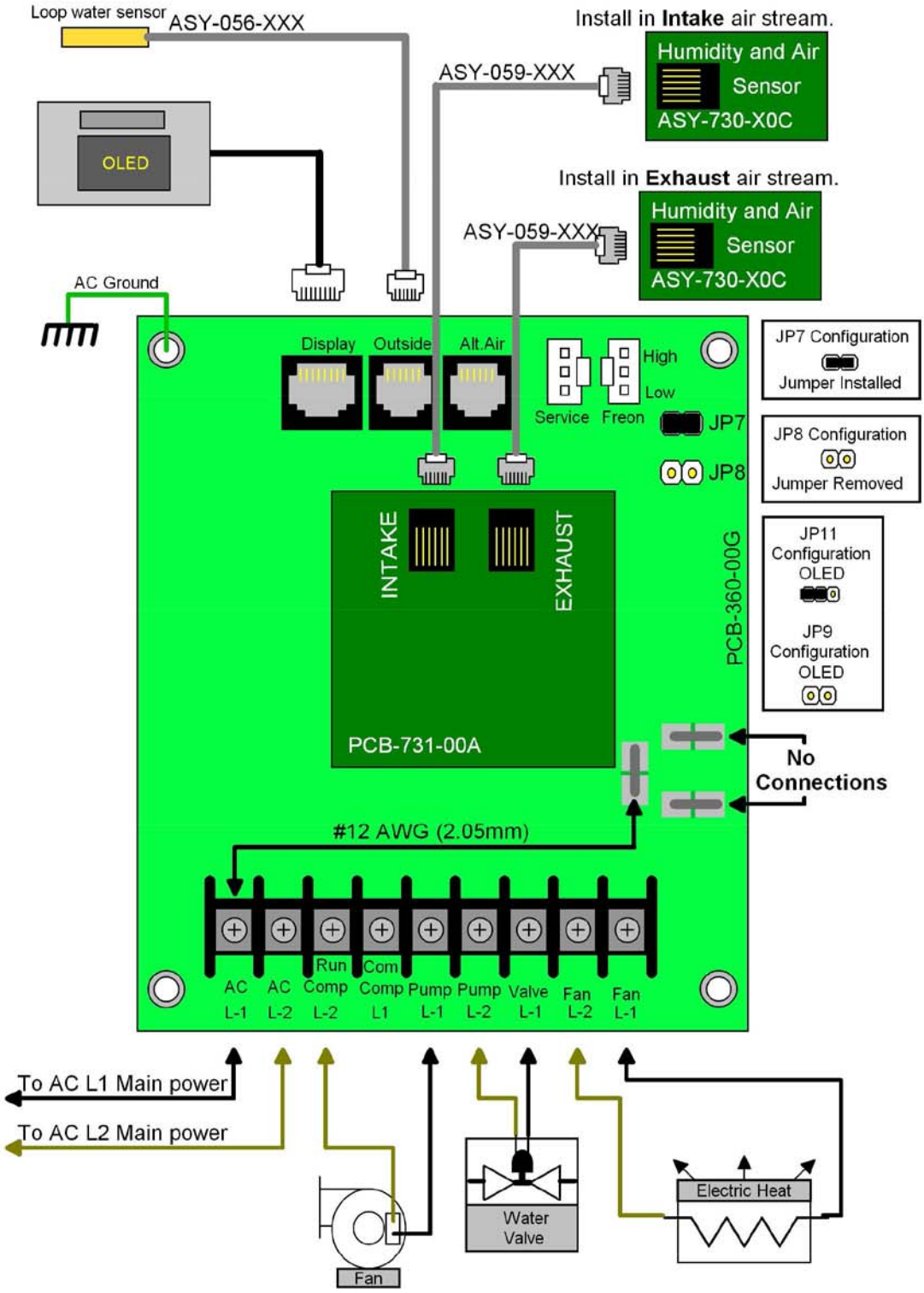
General:

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

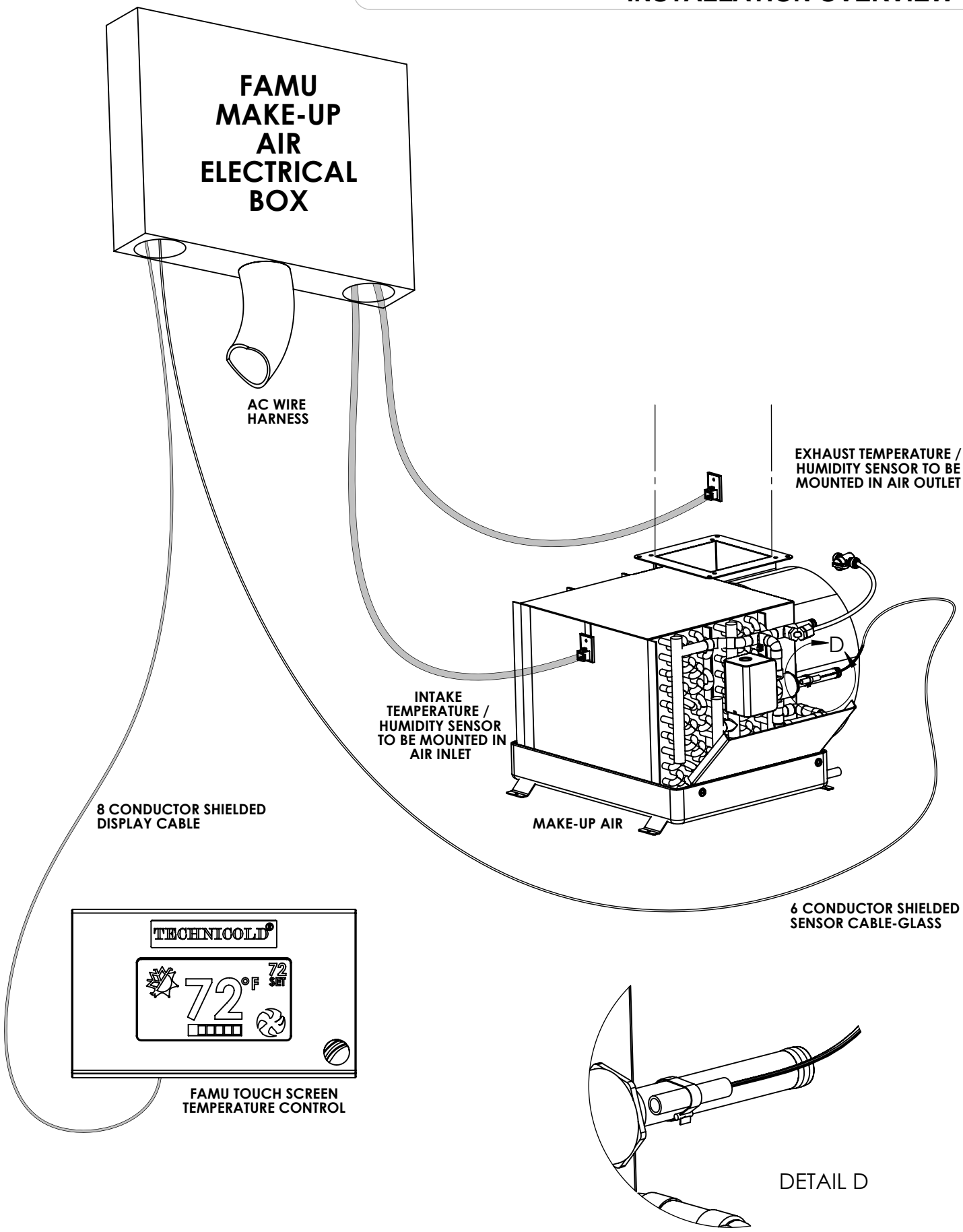
Application:

Fresh Air Make Up Unit(FAMU)

RH measurement range	
Electric heater output	5% to 100%
(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



FXII Fresh Air Makeup Unit Wiring


FAMU
MAKE-UP
AIR
ELECTRICAL
BOX
AC WIRE
HARNESS
EXHAUST TEMPERATURE /
HUMIDITY SENSOR TO BE
MOUNTED IN AIR OUTLET
D
INTAKE
TEMPERATURE /
HUMIDITY SENSOR
TO BE MOUNTED IN
AIR INLET
8 CONDUCTOR SHIELDED
DISPLAY CABLE
MAKE-UP AIR
6 CONDUCTOR SHIELDED
SENSOR CABLE-GLASS
TECHNICOLD
72 °F
72
SET
FAMU TOUCH SCREEN
TEMPERATURE CONTROL
DETAIL D

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