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*Comfort-Care*®

Century®

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**Upgrade Kit**

**CXM2**

### Scope:

Instructions for conversion of **CXM** unit controls to **CXM2** unit controls. This kit is not intended for conversions for any other controls combinations.

Existing Unit & Accessory Controller(s)	Replacement Unit Controller
CXM	CXM2
CXM + CXM	CXM2 + CXM2

Upgrade kits S17S0001N02U1 and S17S0001N02U2 include controls, harnesses, and diagnostic sensors for use with Comfort-Aire/Century product lines:

HB Compact	HRC	HWW
HB Large*	HKV*	HNW

\*Certain product lines contain 2 control boards and must be replaced with 2 new control boards. Please refer to the IOM associated with your product series for details.

**IMPORTANT: READ AND UNDERSTAND ALL INSTALLATION INSTRUCTIONS BEFORE BEGINNING CONVERSION. INSTALLATION OF THE NEW CXM2 CONTROL BOARD SHOULD ONLY BE ATTEMPTED BY A QUALIFIED TECHNICIAN.**

### Background:

In 2022-2023 Comfort-Aire/Century introduced the new CXM2 unit control in its products. The CXM2 control offers new functionality to communicate with the WSHP system including connection via Wi-Fi when controlled by the AWC iGate® 2 thermostat. Existing applications can have enhanced system capabilities by converting to new CXM2 control.

## Contents:

## Kit S17S0001N02U1 – Single Control Board Conversion Kit Contents:

Part #	Quantity	Description
17S0001N02	1	Programmed CXM2 unit control board
17B0030N05	1	Yellow Leaving Water Temperature (LWT) Sensor
17B0030N06	1	Green Entering Water Temperature (EWT) Sensor
17B0008N07	1	White Leaving Air Temperature (LAT) Sensor
17B0031N04	1	Black Compressor Discharge Temperature (CDT) Sensor
11B0003N02	1	4-PIN Molex Housing
17B0032N01	3	Sensor clips 3/16 OD TUBE MTG 3/8
17B0032N02	3	Sensor clips 3/16 OD TUBE MTG 1/2
24001003	1	Nylon Cable Clamp / P clip (LAT)
98B0011N01	2 ft	Insulated Tape
#####	1	Red jumper wire
99D7001N01	1	Conversion kit instructions
68539900	4	6-inch tie cable
PP80-24	--	Thermal grease

## Kit S17S0001N02U2 - Dual Control Board Conversion Kit Contents:

Part #	Quantity	Description
17S0001N02	2	Programmed CXM2 unit control board
17B0030N05	1	Yellow Leaving Water Temperature (LWT) Sensor
17B0030N06	1	Green Entering Water Temperature (EWT) Sensor
17B0008N07	1	White Leaving Air Temperature (LAT) Sensor
17B0031N04	2	Black Compressor Discharge Temperature (CDT) Sensor
17B0031N04	1	Black Compressor Discharge Temperature (CDT) Sensor
11B0003N02	2	4-PIN Molex Housing
17B0032N01	2	Sensor clips 3/16 OD TUBE MTG 3/8
17B0032N02	2	Sensor clips 3/16 OD TUBE MTG 1/2
24001003	1	Nylon Cable Clamp / P clip (LAT)
98B0011N01	2 ft	Insulated Tape
#####	1	Red jumper wire
99D7001N01	1	Conversion kit instructions
68539900	5	6-inch tie cable
PP80-24	--	Thermal grease

### Required Tools & Materials:

- 5/16" nut driver
- Phillips standard screwdriver
- Phillips mini screwdriver

### Reference material:

As a supplement to this document, the CXM2 unit controller AOM can be downloaded from <https://files.climatemaster.com/97B0137N01.pdf>

1. Disconnect power supply to heat pump.

**Warning! Disconnect all power to the unit. Bodily harm due to shock could occur if power is not completely disconnected before work begins.**

2. Open front access panel and remove the existing CXM board by removing all wire connections and removing 4x mounting screws.

#### **Tips:**

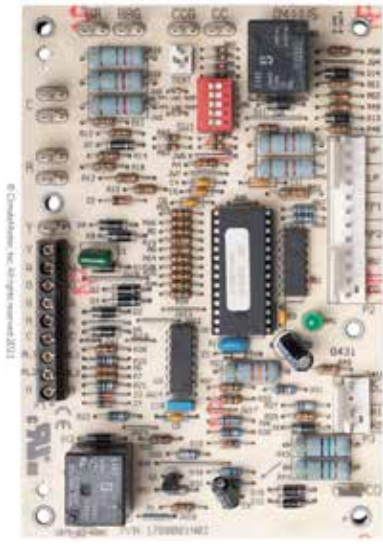
- Keep control board mounting screws as they will be needed to reinstall the new CXM2 board.
- Take a picture or label all wire connections to the CXM before moving. This will help with making sure the connections are correctly wired when installing the CXM2 board.

3. Install the new CXM2 board by using the screws in the previous step to attach the new board.

#### **Notes:**

- The mounting hole pattern for the CXM2 is the same as the mounting hole pattern for the CXM, no drilling or modifications are needed).
- Not all the metal shoulder eyelets need to have a mounting screw, but it is advised to mount a screw in the 4 corner holes, if possible.
- The CXM2 is grounded through all the metal shoulder eyelets.
- Most connections to the CXM and CXM2 are the same. Therefore, some connections will merely require reading labeled wires and connecting to appropriate point on CXM2.

CXM



CXM2



4. Wiring Diagram

Navigate to the ClimateMaster wire diagram webpages to determine product specific wire diagram, download, and print.

- Residential - <https://www.climatemaster.com/geothermal-dealer/residential/product-literature>
- Commercial - <https://www.climatemaster.com/commercial/products>

5. Power Connections

- a. The connections for 24 VAC power are similar for the CXM and CXM2.
- b. Connect the 24VAC transformer wires to the CXM2.
- c. Wires from the 24 VAC transformer should be connected to the R and C, 1/4" male quick connects on the CXM2.

**Note:** The CXM2 board has an on-board fuse (16B0028N02). If your system contains an in-line fuse, this is no longer required and can be removed.

**CXM2 with onboard fuse:**



## 6. System Inputs

- a. The connections for HP, LP, FP1, FP2, RV, and CO are similar for the CXM and CXM2.
- b. Connect system input harness to terminal block J2 on the CXM2.

## 7. Electric Heat (skip this step if electric heat coils are not being used in heat pump)

- a. The connections for Electric Heat are similar for the CXM and CXM2.
- b. Connect the Electric Heat circuit harness to terminal block J3 on the CXM2.

## 8. Compressor Relay

- a. The connections for the compressor relay are similar for the CXM and CXM2.
- b. Wires from compressor contactor coil should be connected to CC and CCG terminals on CXM2.

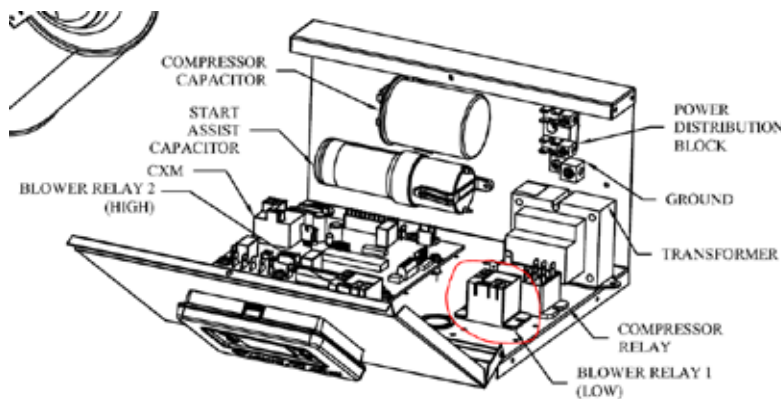
## 9. Blower

a. **Single Speed PSC Fan Applications** (line voltage duty) -- unit voltages 277 Volt or less.

- i. Disconnect the wire from off-board blower relay COM and connect to the CXM2 Fan Enable (K1) relay COM.
- ii. Disconnect the wire from off-board blower relay NO and connect to the CXM2 Fan Enable (K1) relay NO.
- iii. Remove the off-board blower relay (used with the CXM control) from the control box. This relay will not be used with the CXM2 control for single speed fan applications.

b. **Two Speed PSC Fan Applications** (line voltage duty) -- unit voltages 277 Volt or less

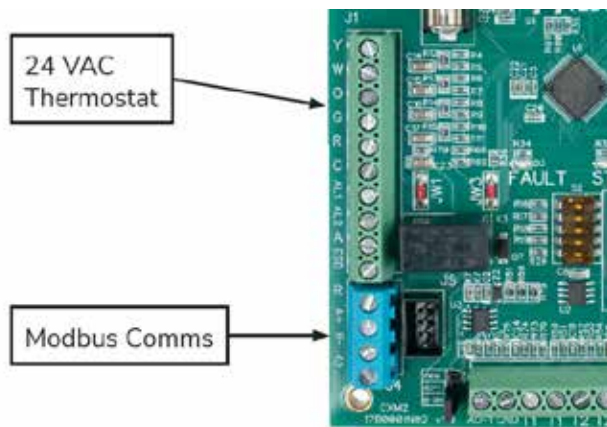
- i. Disconnect the wire from off-board (BR2) blower high relay COM and connect to the CXM2 Fan Enable (K1) relay COM.
- ii. Disconnect the (black) wire from off-board (BR1) blower low relay NO and connect to the CXM2 Fan Enable (K1) relay NO.
- iii. Move the (black) wire from off-board (BR2) blower high relay NC to the off-board (BR2) blower high relay COM.
- iv. Disconnect the wire from off-board (BR1) blower low relay COM and connect to the off-board Fan Speed (BR2) relay NC.
- v. Remove the off-board (BR1) blower low relay (used with the CXM control). This relay will not be used with the CXM2 control for two speed fan applications.



- c. **PSC Fan Applications** (pilot duty) unit voltages greater than 277 Volts
  - i. Wires from blower relay coil should be connected to the CXM2 in a pilot duty mode of operation.
  - ii. One blower relay coil wire (was connected to CXM-BRG) should be connected to C terminal (4" quick connect) on CXM2.
  - iii. The second blower relay coil wire should be connected to the NO terminal (4" quick connect) of the Fan Enable (K1) relay on the CXM2.
  - iv. The COM terminal of the Fan Enable (K1) relay on the CXM2 should be jumpered to R terminal (4" quick connect) on the CXM2 using the red wire supplied in the kit.

10. Thermostat

- a. Determine thermostat type, if new thermostat is being installed refer to the instructions provided with the thermostat.
  - Standard 24v thermostat
    - i. Connect thermostat low voltage wires (Y, W, O, G, R, C) to appropriate points to terminal block J1 located on the CXM2 board.
  - Comfort-Aire/Century Communicating thermostat
    - i. Connect thermostat communications wires (R, A+, B-, C) to appropriate points on terminal block J4 located on the CXM2 board.
    - ii. DIP Switch S1.3 must be to ON for Modbus communications master.
- b. Refer to the IOM provided for a complete explanation of the dipswitch settings and functions.



**Note:** All Comfort-Aire/Century CXM2 control boards will energize the reversing valve in the cooling mode. Use a heat pump type thermostat with "O" terminal (reversing valve).

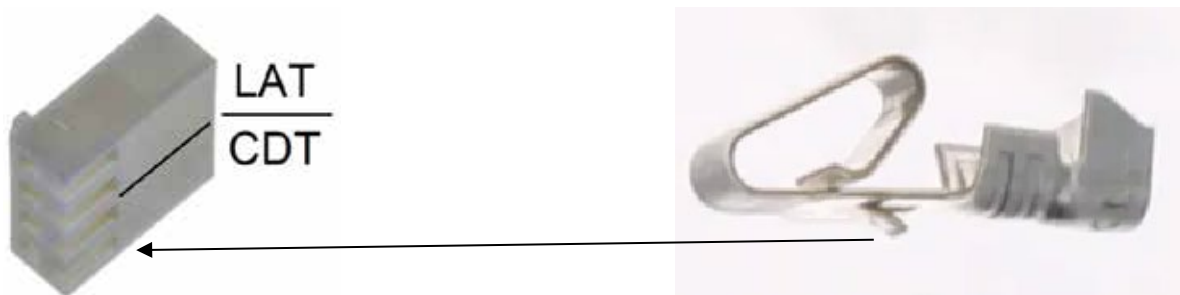
11. Modbus Communications

**Two Circuit (Dual Compressor) Units Only**

- a. Wire communications from board 1 terminal block J4 connector to the board 2 J4 connector.
- b. Set board 1 DIP Switch s1.2 to the "ON" position for Stage 1 operation. Board 1 is designated as the board with the thermostat and accessory connections.
- c. Set board 2 DIP Switch S1.2 to the "OFF" position for Stage 2 operation.

## 12. Diagnostic Sensors

- a. Connect the (yellow) Entering Water Temperature (EWT) sensor to the T2 screw terminal as terminal block J6 on CXM2.
- b. Connect the (green) Leaving Water Temperature (LWT) sensor to the T3 screw terminal as terminal block J6 on CXM2.
- c. Insert the (white) Leaving Air temperature (LAT) sensor crimp terminal ends into the 4-pin housing as shown in the diagram below.
- d. Insert the (black) Compressor Discharge temperature (CDT) sensor crimp terminal ends into the 4-pin housing as shown in the diagram below.
- e. Connect the (white) Leaving Air temperature (LAT) sensor and (black) Compressor Discharge temperature (CDT) sensor harness (from steps c. and d.) to terminal block J8 on CXM2.



**Note:** The sensor's crimp terminal end will lock into the housing when inserted in the correct orientation. Insert the crimp terminal end with the small tab facing in the same directions as the housing slot.

**Note:** For two circuit (dual compressor) applications, repeat steps d. and e. to connect the (black) Compressor Discharge temperature sensor harness to terminal block J8 on the second stage CXM2.

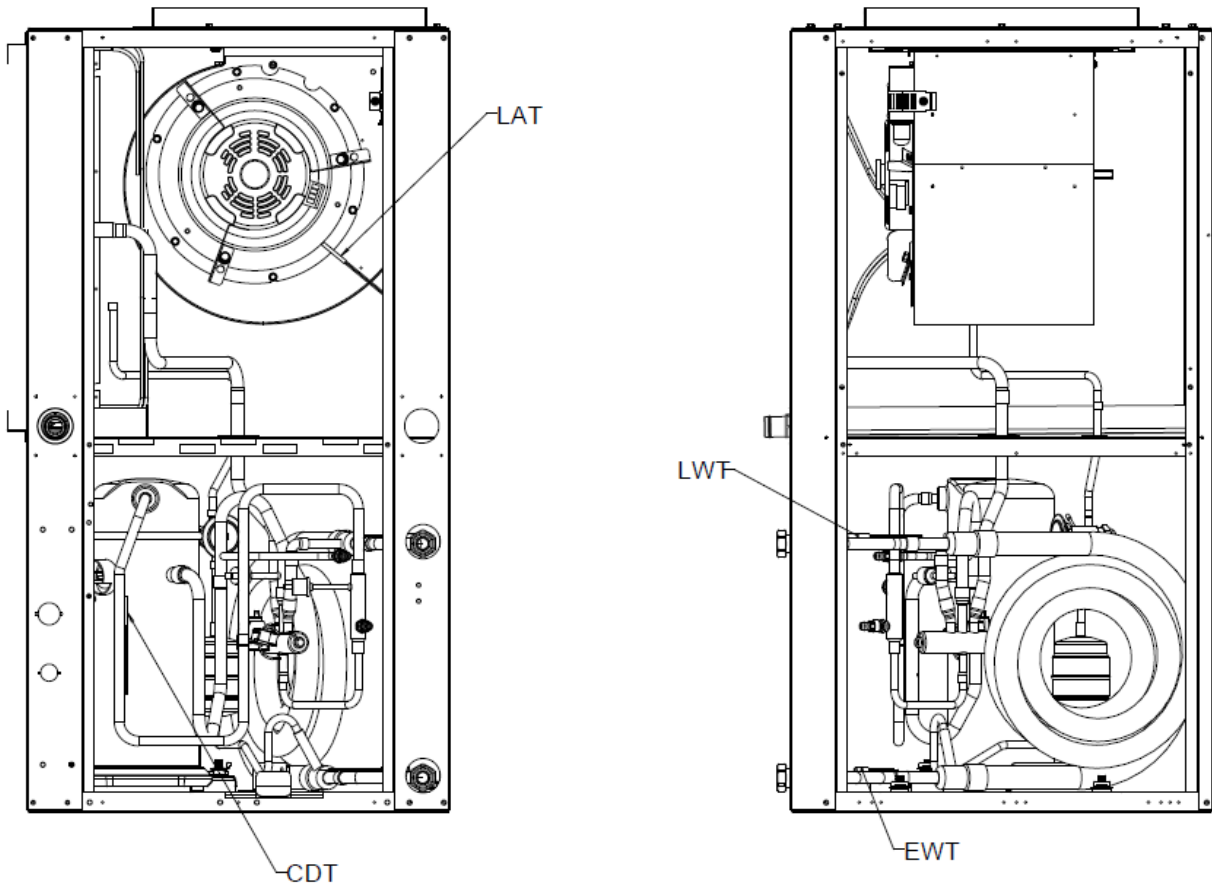
**Point to Point Wiring List of New Sensors:**

Color	Description	Terminal #1	Mounting Location
Yellow	Leaving Water Temperature (LWT) Sensor	P10 – T3	Leaving water leg
Green	Entering Water Temperature (EWT) Sensor	P10 – T2	Entering water leg
White	Leaving Air Temperature (LAT) Sensor	P10 – T4	Blower housing
Black	Compressor Discharge Temperature (CDT) Sensor	P9 – T6	Compressor Discharge Refrigerant Line

**Note:** Refer to unit diagrams and pictures for additional details on sensor placement.

## Diagnostic Sensor Placement

The following models show the typical install locations for sensors.



### (Yellow) Leaving Water Sensor (LWT)

The images below show the Leaving water Temperature sensor (yellow) installed on the leaving water leg using a sensor clip, zip tie, and thermal grease.



(Black) Compressor Discharge Temperature (CDT) sensor  
Sensor installed with insulation tape.



(White) Leaving Air Temperature (LAT) sensor:  
Sensor installed with P-clip to blower housing.



(Green) Entering Water Temperature (EWT) sensor:  
Sensor installed with insulation tape.



Installed CXM2 board:



13. Determine the proper operating temperature and alarm parameters.
  - a. Check the board jumpers (JW1-3) and clip the board jumpers only if required (see product IOM for details).
  - b. Refer to the CXM2 IOM for a full description of the jumper functions and operating ranges.

**CAUTION: CLIPPING BOARD JUMPERS WILL CHANGE THE TEMPERATURE PROTECTION RANGE OF THE UNIT AND MAY LEAD TO EQUIPMENT DAMAGE AND MAY VOID ANY REMAINING WARRANTIES IF NOT PROPERLY DONE. ONLY CLIP THE JUMPERS IF YOU ARE SURE. DO NOT CLIP THE JUMPERS IF YOU ARE UNSURE OF THE PROPER TEMPERATURE OPERATING RANGE OF THE UNIT.**

14. Recheck all wiring terminations for proper location and connection.
15. Turn on power supply(s) to unit.
  - a. Check voltage at R and C terminals. Voltage must be between 19 and 30 VAC.
  - b. Adjust the thermostat and check the CXM2 control board through all stages and modes of operation.

**Note:** Pressing the TEST button for one second will cause the board to enter the Test mode. In the Test mode, all time delays will be sped up by a factor of 15 to aid in the checkout procedure. The CXM2 control board will revert to normal time delay functions after 20 minutes, or the TEST button can be pressed again to exit the Test mode.

**USE CAUTION WHILE IN THE TEST MODE, SHORT CYCLING OF THE UNIT MAY LEAD TO COMPRESSOR DAMAGE OF FAILURE.**

16. Wire Diagram Replacement.
  - a. Remove the CXM wire diagram.
  - b. Install the appropriate CXM2 wire diagram printed in step 4 in its place.
  - c. Note any changes or special features on the new wiring diagram.

**THE NEW WIRING DIAGRAM MUST BE INSTALLED TO AID IN FUTURE SERVICING AND PART ORDERING OF THE UNIT.**

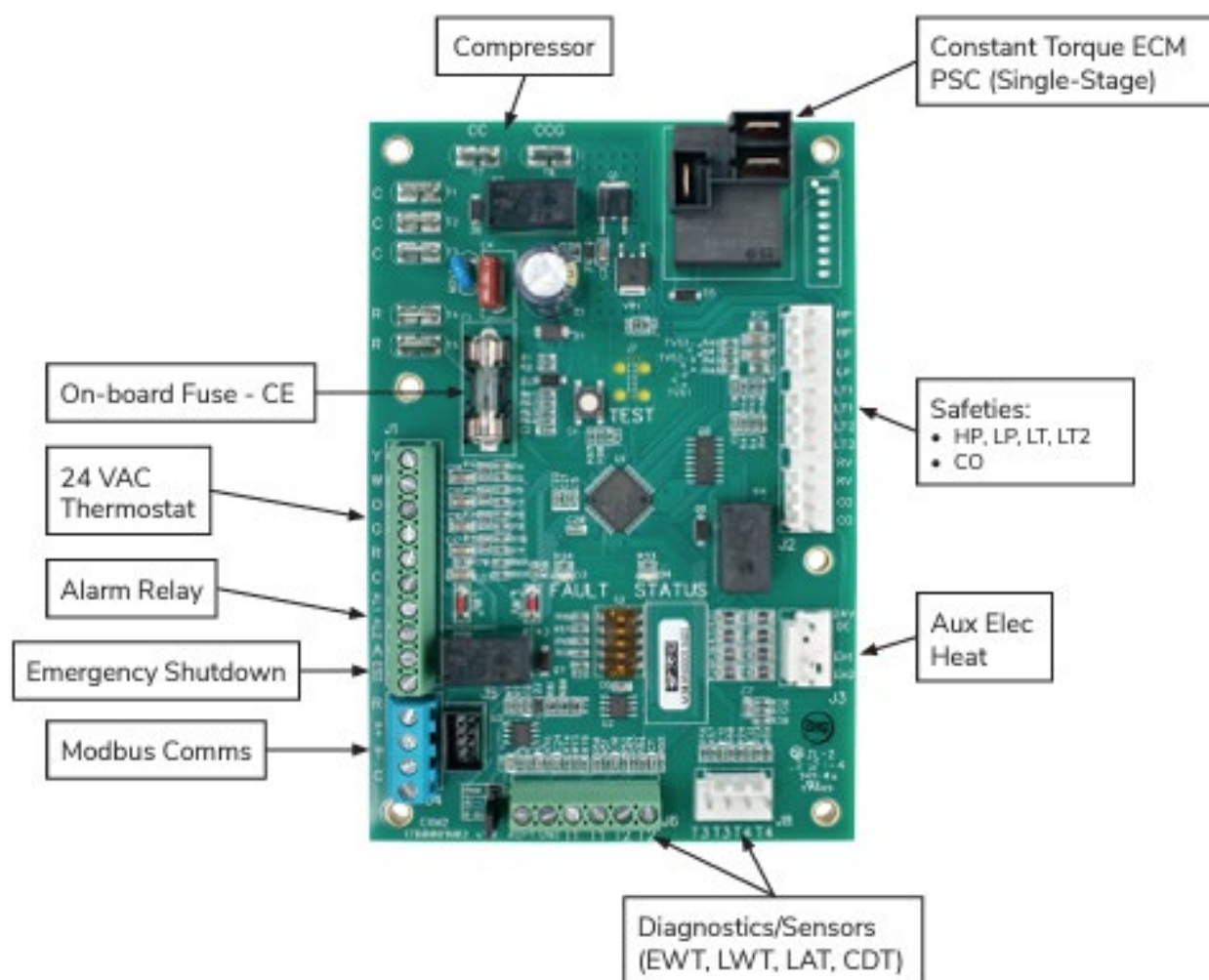
## Optional Steps:

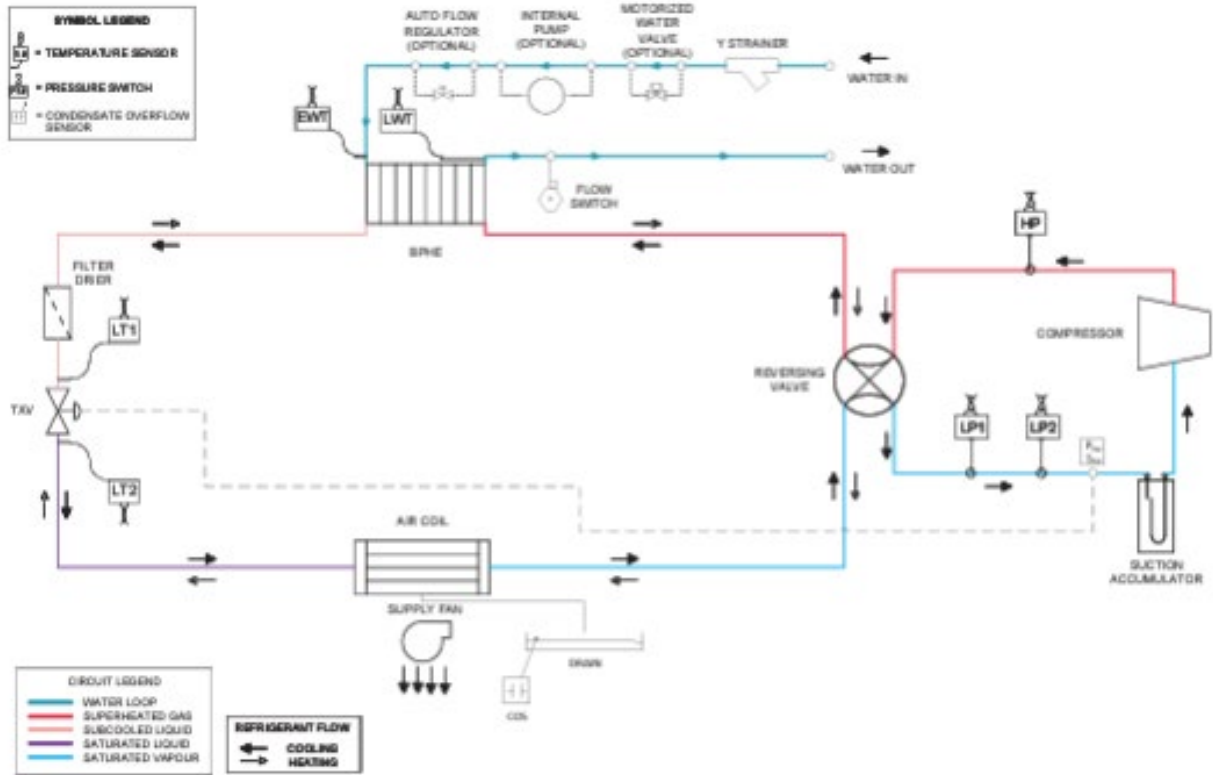
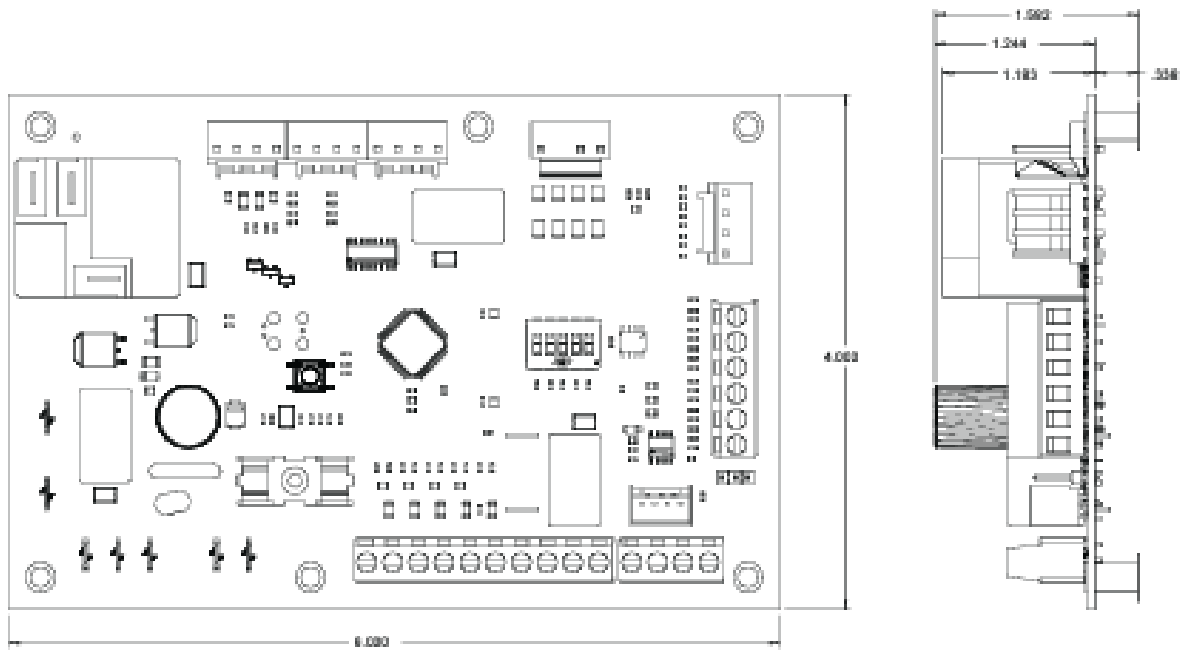
17. If connecting to a new iGate 2 thermostat, download the myUplink phone app and connect the new thermostat to the cloud

- iGate 2 quick start guide chrome- <https://files.climate.com/LC1088.pdf>
- myUplink quick connection guide - <https://files.climate.com/LC1087.pdf>

18. Configure unit family, size, and options using the iGate 2 myUplink app, ACD service tool, or PC service tool.

## Helpful diagrams and images:









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Due to ongoing product improvements, specifications and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.

Incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.

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