

**Electronic Thermostat**

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**Installation, Operating &  
Maintenance Instructions**



# GENERAL INFORMATION

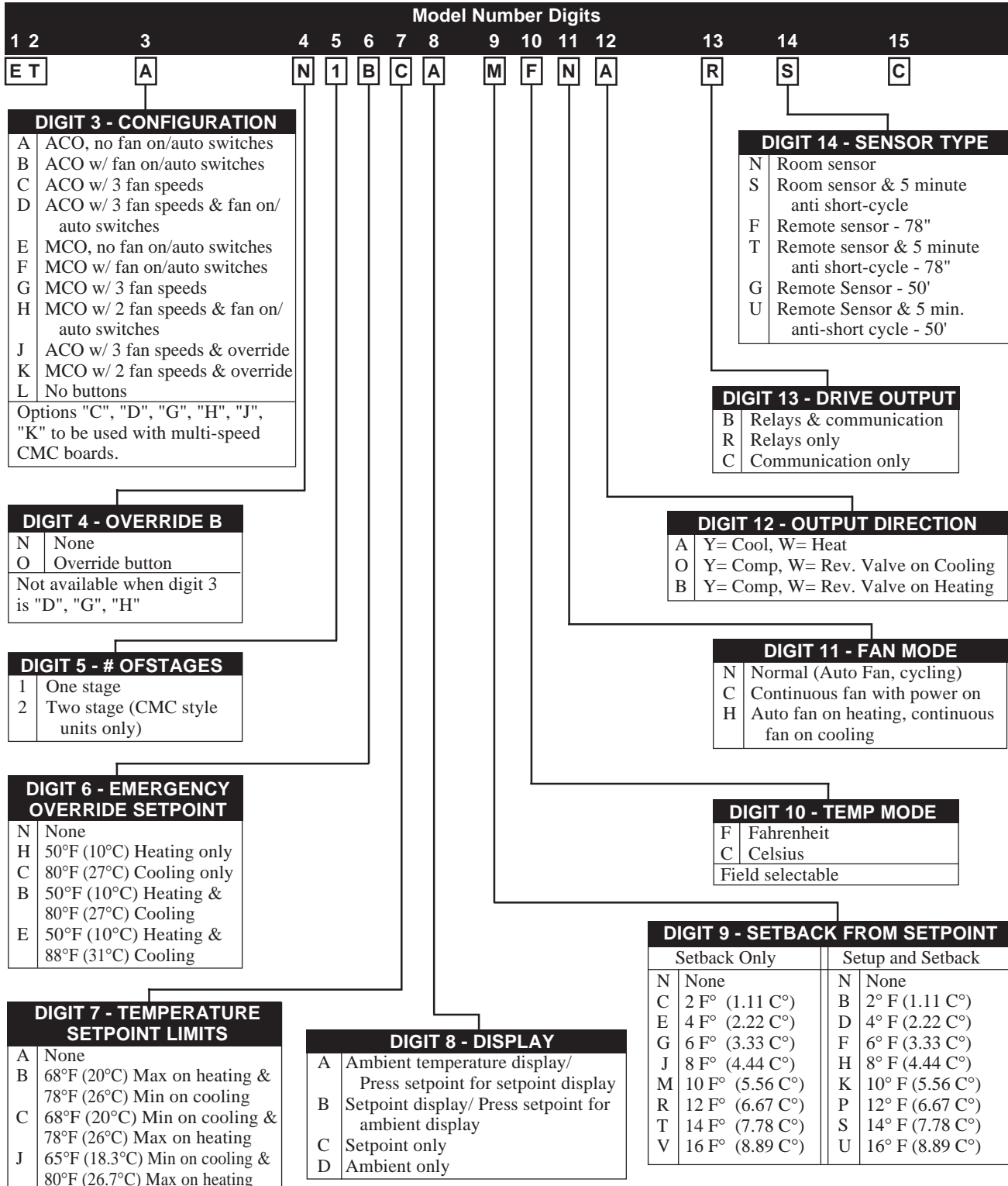
## Introduction

This Installation, Operation and Maintenance Manual is for Climate Master ET Series Electronic Thermostats.

ClimateMaster ET Series Thermostats are typically factory programmed per application requirements and

shipped under separate cover. No special subbase is required. An optional ClimateMaster remote sensor is shipped separately.

Each thermostat has a 15 digit model number printed on the backplate which identifies thermostat features. Refer to the decoder below to determine the features provided



with the ET Series thermostats to be installed in your application.

**NOTE: Some options are available only when the HVAC unit controlled utilizes a ClimateMaster CMC-2000 Series controller board.**

## Overview

The ClimateMaster ET Electronic thermostat is intended for 24 Volt control of heat pumps and conventional heating and cooling equipment. The thermostat can be used with standard electromechanical units or with ClimateMaster units equipped with CMC-2000 Series Controllers.

*Throughout this document, the term UNIT is used to mean the HVAC unit controlled by the thermostat.*

## Specifications

The following are general operating parameters and specifications for the ET Series Electronic Thermostat:

**Operating Environment:** 0° F (-17.7° C) to 140° F (60° C) with 5% to 95% relative humidity, non-condensing.

**Storage Environment:** 0° F (-17.7° C) to 140° F (60° C) with 5% to 95% relative humidity, non-condensing.

**Power Requirements:** 24Volts AC, .14 amps, 50/60 HZ.

**Physical Dimensions:** The thermostat is 4.6" (11.7 cm) wide by 4.6 (11.7 cm) high by 1.2" (3 cm) deep. It can be mounted: on a vertical or horizontal 2"x4" junction box, or directly on the wall surface.

**Relay Ratings:** The thermostat relay contacts are rated at 2 amps at 24 Volts. (Terminals are R, Y, W, G, low and medium.) (Supplied only with "B" or "R" in position 13.)

**Serial Port:** The thermostat is equipped with a RS-485 standard serial port. Terminals are +N, - N, SHI.

**Connections:** A terminal strip is provided for Class II low voltage.

# OPERATION

**Mode of Operation:** The thermostat can be ordered factory programmed with many operating options for either Manual Changeover Operation (MCO) or Automatic Changeover Operation (ACO).

It can also have features which only work when applied to a unit equipped with a ClimateMaster CMC-2000 Series Controller Board. Each of the eight standard factory programmed variations is shipped with a custom faceplate for ease of use.

The following describes some of the more common operations available on the ET Series Thermostat.

**Starting Operation:** The HVAC unit is turned on by pressing the "POWER" button on the thermostat. When pressed, an LED on the front panel is illuminated.

**Thermostat Display:** The thermostat can be field selected to display temperature in either Fahrenheit (°F) or Celsius (°C). It can also be factory programmed to display as standard either ambient temperature or setpoint temperature.

Standard setpoint temperature display may be temporarily masked for five (5) seconds by ambient temperature by pressing both the temperature "UP" and "DOWN" buttons simultaneously. Standard ambient temperature display may be temporarily masked for five (5) seconds by setpoint temperature by pressing either the temperature "UP" or the temperature "DOWN"

buttons. Display is switched back to standard display automatically within two (2) seconds after the buttons are released.

Setpoint temperature display is indicated by a setpoint indicator dot on the temperature display.

**Fan Operation:** Fan "AUTO/ON" buttons select whether the fan runs continuously or if it cycles with the compressor. A red LED illuminates to indicate the option selected. When no fan switches are provided on the thermostat, the fan operation is as specified in the model number decoder.

**Multi-speed Fan Control:** When the thermostat offers multi-speed fan speed control for units with electromechanical controls and three speed capability, then high speed connects to G1, medium speed to "MED" and low speed to "LOW".

See the CMC-2000 Series Installation, Operation and Maintenance Manual for more information on fan speed control.

**MCO Operation:** When the thermostat is factory programmed with an MCO option it must be manually set to either heating or cooling. MCO thermostats have a "HEAT" and a "COOL" button. The MCO thermostat can be equipped with or without fan switches or with either automatic or two speed fan operation.

**ACO Operation:** When the thermostat is factory programmed with an ACO option, it automatically changes from heating to cooling. ACO thermostats have a "POWER" button. The ACO thermostat can be equipped with or without fan switches or with either automatic fan or three speed fan operation.

**Emergency Override:** The ET Series Thermostat can be ordered with a factory programmed emergency override option. This option monitors room temperature as long as power is available to the thermostat even when the power button is turned "OFF".

This option may be ordered to maintain a room temperature minimum of 50° F (10° C), a maximum room temperature of 80° F (26.7° C) or both minimum and maximum limits. Refer to the decoder on page 2 to determine if this option is included with the installed thermostat.

**CMC-2000 Series Operation:** A thermostat intended to operate with a unit equipped with a CMC-2000 Series controller operates with the following unique sequences:

*Multi-speed fan control* is handled through the RS-485 interface between the thermostat and the controller.

When an **override button** is provided, the unit overrides night setback for two (2) hours after being activated by pushing the "OVERRIDE" button. In night setback mode, the thermostat displays the factory programmed night setback temperature, provided the thermostat normally displays set-point temperature. When the override button is

pressed, setpoint returns to the normal day setting for two (2) hours. (See **Night Setback** on page 8 for more information.)

**Two stage Operation** is provided for use with units equipped with CMC-2000 Series Controllers. Units must be addressed as shown in the ClimateMaster CMC-2000 Series Installation, Operation and Maintenance Manual. The first stage CMC-2000 Series controller must have dip switches set to address one and the second stage controller must have dip switches set to address two. Units must be powered down before dip switch settings are changed. **Note:** The CMC-2000 Series controller must have these dip switch settings for two stage operation even when the thermostat is not working with DDC communications.

When the CMC-2000 Series Controller board is equipped with an *optional fan control*, the thermostat can be set at "HI", "MED" or "LOW" fan speeds. A red LED indicates which speed is selected.

**Fault Indicator:** When the thermostat is used with units equipped with a fault output, the LED light indicates that a fault has occurred. This feature is standard on ClimateMaster units with CMC-2000 Series Controllers without an additional wire. It is an option on other electromechanical equipment.

When this feature is an option, the fault wire is connected to terminal "X" on the back of the thermostat. The fault light operates on 24 VAC or 24 VDC.

## INSTALLATION

### **⚠ WARNING**

**To prevent electrical shock or equipment damage, disconnect power supply before installing.**

*The installation of the ET Series Electronic Thermostat must be in accordance with the regulations of ALL Authorities having jurisdiction and MUST conform to all applicable Codes. It is the responsibility of the Installing Contractor to determine and comply with ALL applicable Codes and Regulations. Installer MUST be an experienced service technician trained in the installation of this type of equipment.*

### **Pre-Installation**

Installation, operating and maintenance instructions are provided with each thermostat. Before start-up, read all manuals and become familiar with the thermostat and its operation.

Verify that the unit to be controlled by the thermostat is installed and ready for operation.

Check the applications and correctly match the thermostat with the unit to be controlled.

Field supply and install an optional electrical junction box following location instructions listed below.

Determine which of the field wiring diagrams shown on pages 6 and 7 are to be used.

### **Location**

Install the thermostat approximately 4 feet (1.22 meters) above the floor in an area exposed to circulating room air of average room temperature.

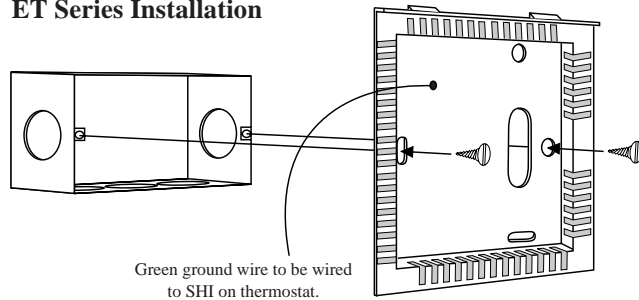
The ET Series Electronic Thermostat must be installed in accordance with the following guidelines:

- Install on an interior wall only. Do not install on an exterior wall.
- Install out of direct sunlight.
- Install at some distance from air discharge grilles. Do not directly expose to hot or cold discharge air.
- Install out of drafty areas and dead air spaces.

## Mounting

Mount the ET Series Electronic Thermostat as shown in Figure 1.

**Figure 1**  
**ET Series Installation**



- 1) Remove the thermostat from the shipping carton.
- 2) Check part number on the back to ensure that it is correctly matched to the unit to be controlled.
- 3) Remove the thermostat back from the thermostat with the Allen key provided.
- 4) Pull the control wire through the back plate.
- 5) Attach the thermostat to the field supplied and installed electrical junction box using the two screws provided. If the thermostat is to be mounted directly on the wall, use the backplate as a template and mount using appropriate field supplied hardware.
- 6) Connect the control wires to the screws on the thermostat per the appropriate wiring diagram illustrated in Figure 3 (page 6). Attach only one wire per terminal.
- 7) Replace the backplate using the Allen key provided.

**Deco Panel:** When the thermostat is provided with a deco panel (ClimateMaster part no. 69602912), mount the deco panel between the mounting plate and the wall using the screws provided with the thermostat. (See Figure 2 below for dimensions.)

## Electrical Wiring

### ▲ CAUTION

To avoid equipment damage, turn power OFF before making all wiring connections.

**NOTE:** For use with CMC 2000 Controls, power must be OFF to the CMC 2000 Controller before connecting the thermostat. If power is left ON, the CMC 2000 Controller will not communicate with the ET Series thermostat.

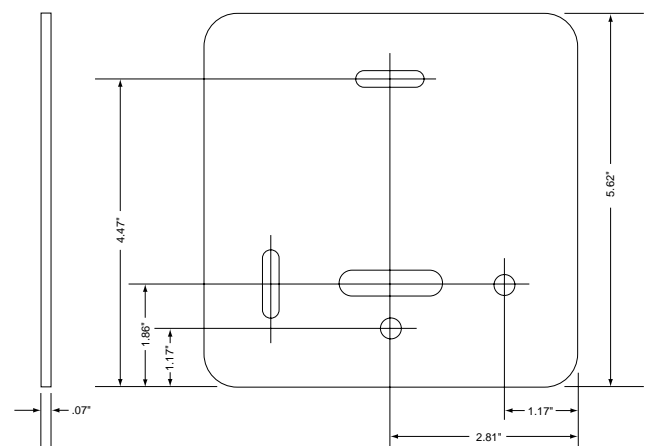
Wire thermostats for use with units using CMC-2000 Series Controllers as shown in Figure 3 (page 6). Note that the wire should be a four (4) conductor, shielded cable. Refer to the CMC-2000 Series IOM for recommended types wire.

Wire thermostats for use with ClimateMaster units with electromechanical controls as shown in Figure 4 (page 6).

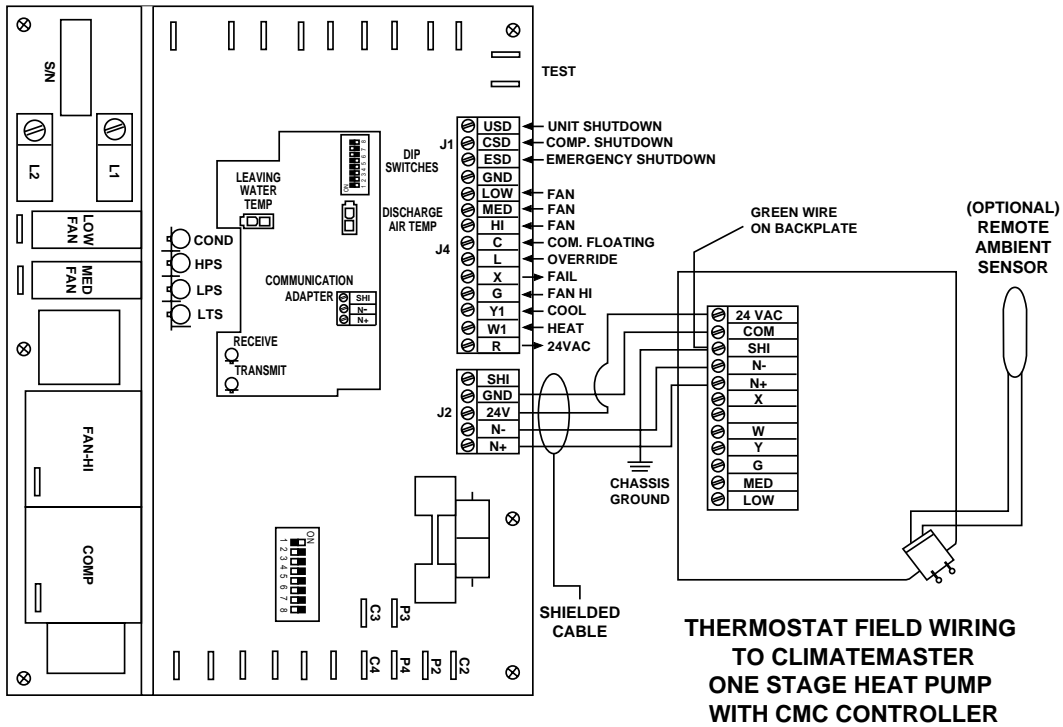
Wire other equipment with electromechanical controls as shown in Figure 5 (page 6). **Note:** This drawing shows "W1" configured as an "O" terminal. The thermostat is also available with "W1" configured as a "B" terminal.

**Remote Sensor:** An optional ClimateMaster remote sensor can only be installed with an ET Series Thermostat equipped with a two pin connector mounted inside the thermostat for that purpose. The sensor is available with either a 78 inch (198.12 cm), pre-formed cable (part no. 69626517) or a 50 foot (152.4 m), pre-formed cable (part no. 69626518). The thermostat shall be factory calibrated for the length ordered.

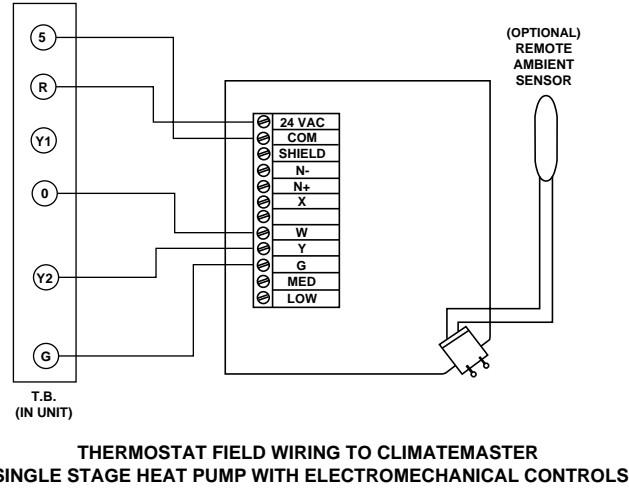
**Figure 2**  
**Deco Panel for ET SERIES Thermostat (p/n 69602912)**



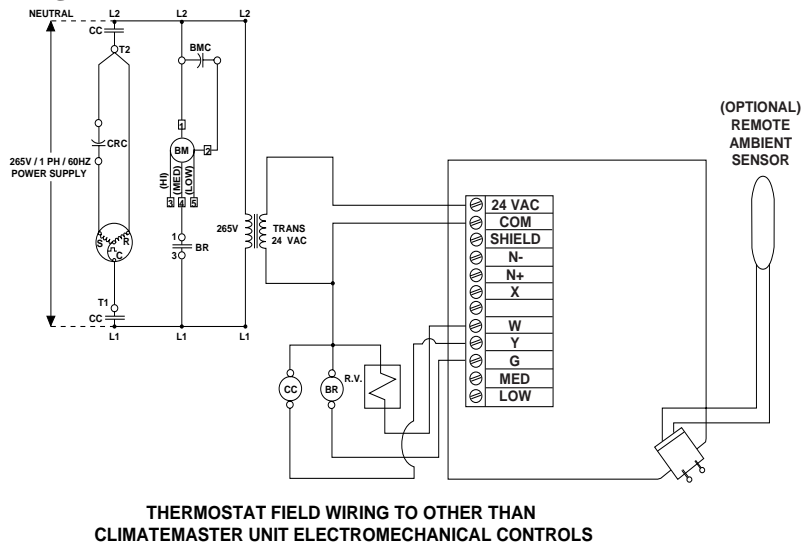
**Figure 3**



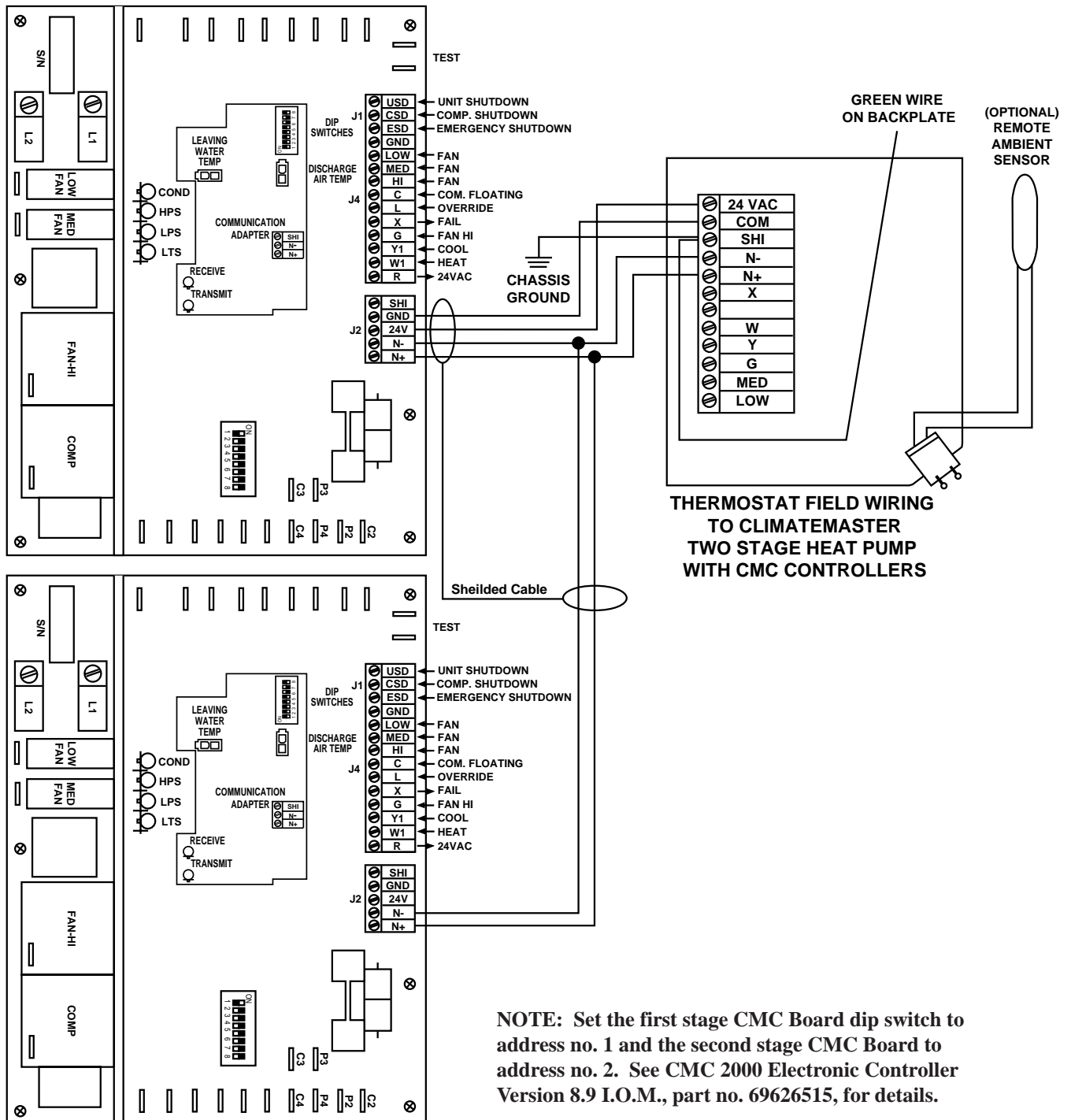
**Figure 4**



**Figure 5**



**Figure 6**  
**Thermostat field wiring to a two stage unit with CMC 2000 Series Controller**





# UNIT START-UP

## ▲ CAUTION

**To avoid equipment damage, DO NOT attempt to checkout thermostat operation without verifying that the unit to be operated is installed and ready to be operated.**

**NOTE: For use with CMC 2000 Controls, power must be OFF to the CMC 2000 Controller before connecting the thermostat. If power is left ON, the CMC 2000 Controller will not communicate with the ET Series thermostat.**

1) **Starting the Unit:** Press the "POWER" button. The LED should illuminate. If the LED is not illuminated, verify that unit power is turned on and check for 24 Volts at the thermostat terminal.

2) **MCO thermostat:** Push "HEAT" button and raise setpoint above ambient temperature. Within a few seconds the unit should begin to operate. Push "COOL" button and lower setpoint below ambient temperature. This should stop compressor and fan operation. If the thermostat is equipped with an anti short-cycle timer or is used with a CMC-2000 Series Control board supporting an anti short-cycle timer, the unit should begin to operate in cooling mode after a 5 minute time delay. Raise the setpoint until the unit stops operating.

3) **ACO thermostat:** Raise setpoint above ambient temperature. Within a few seconds the unit should begin

operating. Lower setpoint below ambient temperature. This should stop compressor and fan operation. If the thermostat is equipped with an anti short-cycle timer or is used with a CMC-2000 Series Control board supporting an anti short-cycle timer, the unit should begin to operate in cooling mode after a 5 minute time delay. Raise the setpoint until the unit stops operating.

4) **Operating Faults:** If at anytime the fault light illuminates check the unit for operational problems. Refer to the IOM supplied with the unit for trouble-shooting information.

5) **Fahrenheit/Celsius Setting:** To switch the reading on the thermostat from Fahrenheit (°F) to Celsius (°C) (or from Celsius to Fahrenheit), hold the power button down for 30 seconds and then release.

6) **Night Setback:** When the thermostat is connected to a unit with a CMC 2000 Series Controller and night setback is initiated (see CMC 2000 Series Installation, Operation and Maintenance Manual, page 6), the setpoint adjustment buttons are locked. The thermostat will display the night setback setpoint provided the thermostat normally displays setpoint. Two (2) hour day operation can be activated by pressing the override button. When the override button is pressed, the setpoint adjustment buttons are unlocked, and the setpoint returns to the day setpoint.



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