Controller with IPv4/IPv6 Remote Access and Touch Screen Interface for Redundant Telecom HVAC Systems

The CommStat Touch telecom controller with a touch screen interface is designed to allow remote control and monitoring of Marvair air conditioners and heat pumps with single or 2-stage compressors in a shelter or enclosure and is certified by ETL for HVAC UL60950-1 and FCC47CFR compliance. In addition to the control of HVAC equipment, CommStat Touch provides status information, alarm notifications, set point adjustment, and remote HVAC configuration.

CommStat Touch is factory programmed with standard industry set points, but can be configured on site or remotely and includes the Marvair RemoteLink IPv4/IPv6 communication module and the latest generation CommStat 4 PLC-based telecom controller. A standard Category 5 ethernet cable connects CommStat Touch to the shelter local network.

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The most current version of this manual can be found at www.marvair.com.
Chapter 1 Description & Specifications

Specifications/Features

➤ Remote Status, Monitoring, and Configuration
The CommStat Touch connects to a Network Operation Center (NOC) to provide two-way communication and control functions. Shelter conditions and HVAC status can be monitored and settings changed without the need to physically visit the site. Alarms are displayed and can be reset remotely or by using the touch screen.

➤ Control Up To Four Air Conditioners Or Heat Pumps In a Shelter
The CommStat Touch has the capability to be daisy chained with a second CommStat Touch controller for controlling up to four air conditioners or heat pumps in a shelter. When a CommStat Touch controller is daisy chained with a CommStat 4 in a Master/Slave configuration, any settings to the Master unit immediately take effect on the Slave unit. The interface for the daisy chain is an RJ11 connector.

➤ Ease of Control and Configuration
A large, backlit touch screen LCD display shows the status of the system and provides a convenient user interface. Status indicators for Heat, Cool, Power, Alarms and the Lead Unit are always displayed. When a fault is detected, an alarm symbol flashes and the LCD screen displays the fault. If multiple faults are detected, they will be displayed on the touchscreen and the remote interface.

The CommStat Touch is easily configured using the built-in graphical display. A Comfort button changes the temperature in the shelter for 90 minutes. After 90 minutes, the temperature reverts back to the programmed set points. A lead swap button alternates the lead and lag unit, allowing service technicians to quickly check the operation of each unit.

For security, the keypad can be locked out to prevent unwanted changes to the set points. °F or °C units are selectable.

➤ RoHS Compliant
The CommStat Touch controller contains no hazardous materials and is RoHS compliant.

➤ Thermostat

• Cooling Set Point: 65°F through 95°F (18°C through 35°C) in 1° increments.
• Heating Set Point: 50°F through 80°F (10°C through 27°C) in 1° increments.

➤ Differential

• All stages ON differential: 1°F through 5°F (1° through 3°C) in 1° increments.
• All stages OFF differential: 1°F through 5°F (1° through 3°C) in 1° increments. The 2nd stage differential is referenced to the 1st stage differential and the outputs will stage off as each stage’s differential is satisfied.
• Changeover Differential between cooling and heating: Minimum of 3°F (2°C).
• 3rd stage cooling Differential: 0°F through 7°F (0°C through 4°C) in 1° increments.

➤ Control Voltage

• The CommStat Touch is powered by 24 VDC or 48 VDC power supply. Should AC power be lost, the display, user interface and the alarm outputs remain functional. System outputs (Y, G, W, O and the Mixed Air Relay) will not be functional when 24 VAC is not present. If the control voltage is not present, the Low Voltage Loss alarm relay is energized and displayed on the screen.

➤ Operating Range: -40°F through 150°F (-40°C through 66°C)

➤ Minimum/Maximum AC Voltage: 18/30 VAC

➤ Minimum/Maximum DC Voltage: 20/60 VDC

➤ Ease of Installation

• Wiring connection insensitive to phasing of the units.
• Easy terminal connections for thermostat wire.
• Remote temperature sensors insure accurate temperature readings in the shelter.
• Easy attachment to the wall.

➤ Lead/Lag Operation

• User selectable changeover from ½ to 7 days in ½ day increments or automatic changeover on each call for cooling or heating. If the lead unit loses power, the lag unit automatically becomes the lead unit with all the set points of the lead unit. A lead swap button alternates the lead and lag unit, allowing service technicians to easily check the operation of each unit.
ALARMS

Dry contacts can be used for remote alarm or notification. Relays can be wired Normally Open (NO) or Normally Closed (NC). Alarms can be reset by pressing the "Reset Alarms" button on the status screen. All alarms remain functional when 24 VAC is not present.

- Low (Control) Voltage – activated if 24 VAC control voltage is not present.
- Lockout – activated if any air conditioner or heat pump is off due to either high or low refrigerant pressure lockout. If all the air conditioners or heat pumps are locked out, the Mixed Air Relay (MAR) will be activated on each of the air conditioners or heat pumps. This air conditioner or heat pump will go into the Ventilation mode, provided there is a call for cooling. (Note: The Mixed Air Relay is only on units with an economizer) If desired, the lockout alarm can be disabled by the user in the Configuration Set-up.
- Low Building Temperature Alarm – Activated if the temperature in the building drops to the selected temperature. If the low building temperature alarm is activated, the LCD displays, “Low Building Temperature”.
- First Stage High Building Temperature Warning – If the set point temperature is reached, the display will show, “First Stage High Building Temperature” on the LCD display.
- Second Stage High Building Temperature Alarm - Activated if the set point temperature is reached, the display will show, “Second Stage High Building Temperature” on the LCD display.
- Smoke Alarm – the contacts will be energized when the smoke detector inputs receive a signal from an external detector. All air conditioners or heat pumps are immediately shut down. A physical reset is required to clear the alarm in the manual mode. If auto reset has been selected, the alarm will reset after the user specified time (3-10 minutes). Smoke Alarm will be displayed on the screen.
- AUX1 and AUX2 – Two auxiliary dry contact outputs that can be energized based upon AUX1 and AUX2 inputs. See AUX1-IN/AUX2 INPUT on page 4 for complete description.

COMMSTAT TOUCH LEAD/LAG CONTROLLER INPUTS

1. 24 VAC Control Voltage
   The R and C terminals are the 24 VAC input power terminals for each respective air conditioner or heat pump.

2. 24/48 VDC Controller Power
   The CommStat Touch is powered by 24 VDC or 48 VDC. Should AC power be lost, the display, user interface and alarm outputs of the CommStat Touch will still be functional. However, the system outputs of the CommStat Touch (Y, G, W, O, and MAR) will not be functional when 24 VAC is not present.
   Note: DC power is polarity sensitive.

3. Temperature Sensors
   The CommStat Touch uses remote temperature sensor(s) to measure the temperature in the shelter and determine when the system is calling for heating or cooling. Up to three sensors can be connected to each CommStat Touch. There are two options for the sensors. If No (the default setting) is selected and multiple sensors are being used, the temperatures will be averaged. If Yes is selected and multiple sensors are being used, the sensor with the highest reading will be used for cooling operation and the one with the lowest reading will be used for heating. When multiple sensors are being used and there is a temperature differential greater than or equal to 5°F (4°C) between the sensors, the CommStat Touch lead/lag controller will energize the indoor blowers (G) on all connected units.
   Screen #20 in the Configuration Mode allows the user to determine how the temperature sensors will be configured.

4. Smoke Detector
   The smoke detector input terminals determine when there is a signal from an external smoke detector. They can be configured for either a Normally Open (N.O.) or Normally Closed (N.C.) smoke signal in Configuration screen # 18. During a smoke fault condition, all AC units will be turned off.
   The smoke alarm relay reset has two selections - Manual and Auto (default). If Manual is selected, a physical reset of the fault is required by touching the “Reset Alarms” button on the display or clicking the “Reset Alarms” button on the remote interface. Cycling power will not reset a smoke fault if Manual is selected.
   If Auto is selected the alarm will reset after an adjustable time delay of 3-10 minutes. The default is 5 minutes.
   Screen #17 in the Configuration Mode allows the user to determine how the smoke alarm relay reset will be configured. Alarm will be displayed on the screen and remote interface.
   Note: The Smoke Detector input is for DRY CONTACTS ONLY, applying voltage to the smoke alarm input will damage the controller.

5. Hydrogen Detector
   The hydrogen detector input terminals will determine when there is a 24 VAC signal from an external hydrogen detector. The CommStat Touch will switch the lead unit to Emergency Ventilation mode (ComPac II air conditioners or Classic heat pumps with economizers only) when high hydrogen levels are detected. It will switch back to normal air conditioning mode once the hydrogen levels are acceptable and the 24 VAC signal is removed from the hydrogen detector input terminals.
6. Generator Relay
The generator input will monitor for a 24 VAC signal which will be used to determine when the CommStat Touch is operating on generator power. When 24 VAC is recognized at the generator relay input, the CommStat Touch controller will only operate the units selected by the user in screen # 16 of the Configuration Menu. The options are:

1. to run only the lead unit (default),
2. the lead unit and one lag unit,
3. the lead unit and two lag units, or
4. the lead unit and three lag units.

Note: in the Generator Mode, only the Lead unit will operate in the Mechanical Cooling Mode; the economizer will not operate in the Generator Mode. However, if a hydrogen fault occurs during the Generator Mode, the Mechanical Cooling will be terminated on the Lead unit and the Lag unit will operate in the Economizer Mode. When set to economizer configuration 1 or 2 in screen #19, the CommStat Touch will only allow the lead unit to operate in mechanical cooling.

7. Lockout Relay (LOR)
The CommStat Touch has a lockout relay input (LOR) and will provide a Normally Open (NO) or Normally Closed (NC) output in accordance to this input. This feature is enabled in the Configuration Mode, screen #10 by either selecting 0, 1, 2 or 3 (2 default). If 0 or 1 is selected, the control will turn the lockout relay output off and annunciate which unit is locked out on the LCD display. If 2 or 3 is selected, the control will turn the lockout relay output on, energize the lockout relay output (NO or NC), and annunciate which unit is locked out on the LCD display. If all the units are locked out, the mixed air relay will be activated on each unit to provide emergency ventilation, provided there is a call for cooling. The mixed air relay and emergency ventilation are only available on units with economizers. Cycling power at the locked out air conditioner will reset the Lockout fault. A physical reset of the fault will be required by pressing the Reset Alarms button.

8. AUX1-IN/AUX2/Economizer Status Monitoring
The CommStat Touch has the option for two, dry contact, auxiliary outputs that will energize based on the AUX1 and AUX2 inputs. Each AUX input can be configured to look for a normally open (NO) or normally closed (NC) signal in Configuration Mode, screens # 21 and # 22. Each screen will allow the user the option of NO, NC, or OFF to disable the feature. Note: AUX1 and AUX2 are not available when the Economizer configuration 1 or 2 is selected in screen 19.

AUX1 and AUX2 are independent from the operation of the board and the air conditioners or heat pumps. AUX 1 IN and AUX2 IN can only be used as auxiliary inputs when screen 19 setting is set to NO. When economizer configuration 1 or 2 is selected, the AUX1 IN and AUX2 IN are used for economizer status monitoring.

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**COMMSTAT TOUCH LEAD/LAG CONTROLLER OUTPUTS**

*(Refer to the Thermostat and Line Voltage Connection Schematic on page 11)*

1. **Y or 1**
   The Y or 1 output energizes the compressor when the economizer is not selected. Upon a call for cooling, the Y (1) and O terminals are energized. On a call for 1st stage heating, the Y(1) output will be energized. There is a minimum compressor time off delay of 3 minutes for the lead unit and 4 minutes for the lag unit.

2. **G or 3**
   The G or 3 output terminal energizes the indoor fan during either heating or cooling.

3. **W or 4**
   The W or 4 output terminal energizes the electric heat.

4. **O (Heat Pumps) or Y2 (Air Conditioners with 2 Stage Compressors)**
   The O output terminal energizes the reversing valve on heat pumps. The valve is energized on a call for cooling. If staged air conditioners are selected in Configuration screen #25, the O output becomes the second stage cooling output, Y2.

5. **Lockout Alarm**
   When enabled in screen #10 of the Configuration Menu, the CommStat Touch monitors the Lockout Relay (LOR) input for a contact closure. If there is a contact closure between the LOR terminals, the control will turn off all outputs, energize the NO or NC contacts, and display which unit is locked out on the touch screen display and remote interface. The default setting in the configuration is 2. If all of the connected units are locked out, the Mixed Air Relay (MAR) will be activated on each of the connected units and the units will go into Emergency Ventilation mode. Cycling power will reset the Lockout Alarm or by pressing the Reset Alarms button.

6. **Low (Control) Voltage Loss Alarm**
   The low voltage loss alarm relay provides a dry contact closure if 24VAC control voltage is not present.
7. Low Building Temperature Alarm
The Low Building Temperature Alarm has an adjustable temperature range of 32°F thru 65°F (0°C thru 18.3°C) that may be adjusted in screen #8 of the configuration menu. If the temperature drops to this setting, all outputs will be turned off, the touch screen display and remote interface will annunciate Low Building Temperature and the Low Building Temperature alarm output relay will be activated. There is a 2°F (1°C) differential for this alarm to reset.

8. First Stage High Building Temperature Warning
The set point temperature is adjustable from 70°F thru 140°F (21°C thru 60°C). If this set point is reached, the control will display a First Stage High Building Temperature warning. The default setting for this is 85°F (29°C). There is a 2°F (1°C) differential for this alarm to reset. The first stage high temperature warning set point is adjustable in screen #6 of the Configuration Menu.

9. Second Stage High Building Temperature Alarm
This set point is adjustable from 75°F thru 145°F (24°C thru 63°C). If this set point is reached, the control will display a Second Stage High Building Temperature alarm. There is a 2°F (1°C) differential for this alarm to reset. The temperature set point for the second stage high temperature alarm is adjustable in screen #7 of the Configuration Menu. The default setting for this is 90°F (32°C).

10. Smoke alarm
The smoke alarm is energized when the smoke detector inputs sense a smoke fault condition. All outputs are off and the smoke alarm relay is energized during a smoke fault. This is a dry contact output that can be configured for NO or NC (default) operation in setting #18 of the configuration menu.

The smoke alarm has two selections - Manual and Auto (default). The smoke alarm relay can be manually reset by touching the Reset Alarms button on the touch screen or clicking Reset Alarms using the remote interface. If Auto is selected the alarm will reset after an adjustable time delay of 3-10 minutes, with a default time of 5 minutes. Screen #17 in the Configuration Mode allows the user to determine how the smoke alarm relay reset will be configured.

11. Mixed Air Relay (MAR)
The MAR output will be energized by the CommStat Touch when all connected units have locked out. This is referred to as the Emergency Ventilation Mode. The mixed air relay and Emergency ventilation are only available on units with economizers.

12. DC Air Mover Relay (AMR)
The DC Air Mover Relay has a dry contact output and is energized in the Emergency Ventilation Mode.

13. AUX1 and AUX2
The CommStat Touch has the option for two, dry contact, auxiliary outputs that are energized based on the AUX1 and AUX2 inputs. Each AUX input can be configured to look for a normally open (NO) or normally closed (NC) signal in configuration screens #21 and #22. Each configuration screen allows the user the option of NO, NC, or OFF (default) to disable the feature. The AUX1 and AUX2 outputs provide a NO, NC, and COM terminal. Note: AUX1 and AUX2 inputs are not available when the Economizer configuration 1 or 2 is selected in screen 19. The AUX 1 and AUX 2 are used for Economizer status monitoring when Setting 19 is set to Mode 1 or 2 (2 is default).

**IMPORTANT SAFETY PRECAUTIONS**

⚠️ **WARNING**
ALWAYS TURN OFF POWER AT THE MAIN AC AND DC POWER SUPPLY BEFORE INSTALLING, CLEANING, OR REMOVING THERMOSTAT.

⚠️ **WARNING**
DO NOT USE BATTERY OPERATED OR ELECTRIC TOOLS TO TIGHTEN SCREWS ON COVER OF THE COMMSTAT TOUCH.

- This thermostat is for 24 VAC applications only with 24/48VDC backup power; do not use on voltages over 30 VAC or 60 VDC
- Do not short across terminals of system control to test operation; this will damage your thermostat and may void your warranty
- All wiring must conform to local and national electrical and building codes
- Use this thermostat only as described in this manual

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IMPORTANT

CommStat Touch DC power is polarity sensitive. Use a multimeter to check polarity before making power connections.

➤ Verifying DC Voltage Polarity

1. Turn the DC breaker/disconnect in the air conditioner to the OFF position.
2. Turn DC breaker in the shelter’s DC power plant to the ON position.
3. Place the RED test probe on the + (positive) terminal and the BLACK probe on the – (negative) terminal at the top of the breaker/disconnect as shown.
   
   Note: Breaker shown for reference only. Appearance may vary depending on the HVAC unit configuration.

4. DC Field Voltage Connections at Top of the Breaker

5. If the test meter reads a NEGATIVE voltage turn OFF the DC power to the breaker/disconnect and reverse the power leads on the input of the DC breaker in the air conditioner.

6. Turn DC breaker in the shelter's DC power plant to the ON position.

7. Repeat step 3 to make certain that the DC power is POSITIVE voltage.
8. When the test meter reads POSITIVE, the DC breaker/disconnect in the air conditioner can be switched to the ON position.
## Ports and Connections

### Left Side

1. Touch Screen interface
2. Ethernet Port for network communication
3. USB Port

### Front

4. 24/48 VDC to 5 VDC Power Supply
5. RI-11 CommStat Communication Cable

### Right Side

### Back

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<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Touch Screen interface</td>
</tr>
<tr>
<td>2</td>
<td>Ethernet Port for network communication</td>
</tr>
<tr>
<td>3</td>
<td>USB Port</td>
</tr>
<tr>
<td>4</td>
<td>24/48 VDC to 5 VDC Power Supply</td>
</tr>
<tr>
<td>5</td>
<td>RI-11 CommStat Communication Cable</td>
</tr>
</tbody>
</table>
# Chapter 2 Installation

## CommStat Touch Installation

### Warning

**Turn off power to the HVAC unit before installing the CommStat Touch.**

### Warning

**Electrical Shock Hazard**

Turn off power at the main service panel by removing the AC and DC fuses or switching the appropriate circuit breaker to the off position before removing the existing thermostat.

### Warning

The unit is intended to be installed by a qualified personnel in accordance with local and national regulations or codes e.g. NEC in USA and CEC in Canada.

### Important

CommStat Touch installation must conform to local and national building and electrical codes and ordinances.

- **Items Required to Install the CommStat Touch (only if remote communication is required):**
  1. Cat 5 ethernet cable to connect the CommStat Touch to the local network or NOC (provided by installer)
  2. Laptop PC to test and configure the CommStat Touch

- **CommStat Touch Power and Communication Connections:**
  1. Mount the CommStat Touch in a suitable location close to the 24/48 VDC power source, and the local network. **Note:** Mount the CommStat Touch about five feet above the floor. Do not mount the CommStat Touch, in direct sunlight, behind a door, or in an area affected by a vent or duct. The CommStat Touch is designed for interior use only.
  2. Connect the 24 or 48 VDC positive (+) and negative (-) input to the provided wire leads marked DC+ and DC-. See factory and field wiring diagrams on pages 9 and 10.
  3. A Cat 5 ethernet cable is required to connect the RemoteLink to the local network or NOC. **Note:** Only if remote communication is required.
  4. Turn off power to the heating and cooling system by turning off DC power or removing the fuse or switching off the appropriate circuit breaker.
  5. Put controller against the wall where you plan to mount it (Be sure wires will feed through the wire opening in the base of the CommStat Touch).
  6. Mark the placement of the mounting holes.
  7. Using a drill bit, drill holes in the places you have marked for mounting.
  8. Align CommStat Touch with mounting holes and feed the control wires through wire opening.
  9. Use screws to mount CommStat Touch to wall.
  10. Insert stripped, labeled wires in matching wire terminals. See Wiring Diagrams. **CAUTION!: Be sure exposed portion of wires do not touch other wires.**
  11. Gently tug wire to be sure of proper connection. Double check that each wire is connected to the proper terminal.
  12. Seal hole for wires behind CommStat Touch with non-flammable insulation or putty.
  13. Replace cover on CommStat Touch.
  14. Turn on power to the system at the main service panel and DC power supply.
  15. Test CommStat Touch operation as described in “Testing the CommStat Touch”.
Optional Accessories

- Onboard Sensor (P/N 50189)
- Expansion Cable (P/N 80515) To be used when a CommStat Touch controller is installed in a Master/Slave configuration with a CommStat 4.
- Remote sensor with 25 ft. (762 cm) cable. P/N 80503
THERMOSTAT AND LINE VOLTAGE CONNECTIONS SCHEMATIC FOR MARVAIR AIR CONDITIONERS

with the Engineering Designator "A5"

NOTES:
1. For immediate shutdown of air conditioner upon a signal from smoke alarm, the jumper between terminals 8 and 10 in ComPac I, ComPac II and Classic II units must be removed and a jumper placed between terminals 8 and 3.
2. For units equipped with ELR relay, make connection from ELR relay terminals 4 and 12 to the CommStat 4 AUX1 and AUX2 inputs. For units not equipped with ELR relay, make connection from EC terminals COM and NC to the CommStat 4 AUX1 and AUX2 inputs.

* Input/Output to ComPac II air conditioner for emergency ventilation. (Economizer strategy mode #2 only)
DIMENSIONAL DATA

TOUCHSCREEN

HUMIDITY CONTROL
**ALARM CONNECTIONS SCHEMATIC**

**NOTE:**
No Longer Used

**JACKS FOR CONNECTION TO SECOND COMMSTAT 4 OR FOR REMOTE COMMUNICATION**

- 1ST STAGE HIGH TEMP OUTPUT
- 2ND STAGE HIGH TEMP OUTPUT
- DC POWER INPUT
- LOW TEMP OUTPUT
- LOW VOLTAGE OUTPUT
- HIGH VOLTAGE OUTPUT
- SMOKE OUTPUT
- LOCKOUT ALARM OUTPUT
- LOCKOUT ALARM OUTPUT
Chapter 3  Operation - Touch Screen

OPERATING THE COMMSTAT TOUCH TELECOM HVAC CONTROLLER

➤ CommStat Touch Boot Up

The CommStat Touch automatically boots up when power is applied. Upon boot up, there is a 30 second pause to allow the user to enter the Configuration Mode. Tapping the Setup Wizard button will go directly to the configuration Wizard mode (see CommStat Touch Interface Configuration Screen later in this section). If no buttons are tapped during the 30 second pause, CommStat Touch will automatically redirect to the System Status Screen.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tap to skip the boot up pause and go directly to the System Status screen.</td>
</tr>
<tr>
<td>2</td>
<td>Tap to enter the configuration Wizard mode.</td>
</tr>
</tbody>
</table>
CommStat Touch Interface System Status Screen

The CommStat Touch provides local and remote monitoring and control of the integrated Marvair CommStat telecom controller. The HTML-based interface refreshes automatically every 30 seconds to display the system status and alarms. *Note:* After an input is made, there may be a delay of up to 2 minutes before the new settings/parameters are displayed. This delay is a normal function and is not indicative of a malfunction or communication error.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“On” Indicates 24/48VDC power is present at the CommStat Touch HVAC controller.</td>
</tr>
<tr>
<td>2</td>
<td>Shelter interior temperature display (actual inside temperature, <em>not</em> set point).</td>
</tr>
<tr>
<td>3</td>
<td>Indicates installed CommStat firmware version.</td>
</tr>
<tr>
<td>4</td>
<td>CommStat communication protocol version.</td>
</tr>
<tr>
<td>5</td>
<td>Tap the Set as Lead button to alternate the Lead and Lag units. Functional only when in the Normal or Comfort operating mode and both units are operational.</td>
</tr>
<tr>
<td>6</td>
<td>See the following table for details on the Status Overview.</td>
</tr>
<tr>
<td>7</td>
<td>HVAC Unit #1 System Status Overview (Master Controller if Configured for Master/Slave).</td>
</tr>
<tr>
<td>8</td>
<td>HVAC Unit #2 System Status Overview (Master Controller if Configured for Master/Slave).</td>
</tr>
<tr>
<td>9</td>
<td>HVAC Unit #1 System Status Overview (Slave Controller if Configured for Master/Slave).</td>
</tr>
<tr>
<td>10</td>
<td>HVAC Unit #2 System Status Overview (Slave Controller if Configured for Master/Slave).</td>
</tr>
<tr>
<td>11</td>
<td>Comfort Mode allows the service tech to be comfortable while working in the shelter. Tapping the Comfort On/Off button once during normal operation enters Comfort Mode. The CommStat Touch will revert to normal operation after 90 minutes in the Comfort mode. It can also be removed from Comfort mode manually by tapping the Comfort On/Off button once. By reverting back to the desired set points after 90 minutes, energy costs can be minimized if the tech fails to cancel Comfort Mode. A blue Comfort Mode icon will flash on the display whenever Comfort Mode is active.</td>
</tr>
<tr>
<td>12</td>
<td>The CommStat Touch automatically refreshes every 30 seconds. To force an immediate refresh, tap the Refresh View button.</td>
</tr>
<tr>
<td>13</td>
<td>Error message scroll. In the event of multiple errors, tap either button to scroll through error notifications.</td>
</tr>
<tr>
<td>14</td>
<td>Tap to enter the CommStat Touch Configuration mode.</td>
</tr>
<tr>
<td>15</td>
<td>In the event of an alarm, notification icons display in this area.</td>
</tr>
<tr>
<td>16</td>
<td>Turn the CommStat On or Off.</td>
</tr>
<tr>
<td>17</td>
<td>Tap to reset the alarm display after the fault causing the alarm(s) has been corrected.</td>
</tr>
</tbody>
</table>
### System Status Overview Details

<table>
<thead>
<tr>
<th>Power:</th>
<th>On</th>
<th>Indicates Power to the HVAC unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off</td>
<td>Indicates No Power to the HVAC unit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode:</th>
<th>Cool 1*</th>
<th>Lead Unit 1st Stage Cooling - Lag Unit Off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cool 2*</td>
<td>Lead Unit 2nd Stage Cooling, Lag Unit Off</td>
</tr>
<tr>
<td></td>
<td>Cool 3*</td>
<td>Lead Unit 2nd Stage Cooling - Lag Unit 1st Stage Cooling</td>
</tr>
<tr>
<td></td>
<td>Cool 4*</td>
<td>Lead Unit 2nd Stage Cooling - Lag Unit 2nd Stage Cooling</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Lag Unit is Off</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lead/Lag:</th>
<th>Lead</th>
<th>Identifies whether unit is currently set to Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lag</td>
<td>Identifies whether unit is currently set to Lag</td>
</tr>
</tbody>
</table>

*In Modes 1 and 2, the Mode will only be displayed for the Lead unit. In modes 3 and 4, the Lead and Lag units will display the same mode status.

#### CommStat Touch Interface Configuration Screen

To enter the Configuration mode, tap the **Setup Wizard** button immediately after boot up, or the **Configuration** button on the System Status screen (item 13 on the previous page).

The CommStat Touch features two methods of inputting its settings:

- **Wizard (default):** Step through each setting sequentially (see settings table beginning on page 27)
- **Menu:** Quick access to each individual setting.

#### Wizard Mode Operation:

To enter Wizard Mode, tap the **Configuration** button on the **System Status** screen or on the boot up screen. To exit the configuration wizard, tap the **Cancel** key.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Setting information and available selections.</td>
</tr>
<tr>
<td>2</td>
<td>Tap to return to the previous setting.</td>
</tr>
<tr>
<td>3</td>
<td>Exit the Configuration mode and return to the System Status screen</td>
</tr>
<tr>
<td>4</td>
<td>You must tap the <strong>Save</strong> button to store any new settings.</td>
</tr>
<tr>
<td>5</td>
<td>Tap to enter the Configuration menu for quick access to individual settings.</td>
</tr>
<tr>
<td>6</td>
<td>Tap to advance to the next setting.</td>
</tr>
</tbody>
</table>
Menu Mode Operation:
To enter Menu Mode, tap the Configuration button on the System Status screen or on the boot up screen. Then tap the Menu button. To exit the configuration menu, tap the Cancel key. **Note:** All changes must be made sequentially - Only one setting may be changed and saved at a time.

![Menu Mode Operation Diagram](image)

**Choose a Parameter to Modify**

1. **°C / °F** (CommStat Screen 2)
2. **Lead/Lag Changeover** (CommStat Screen 3)
3. **Cooling** (CommStat Screen 4)
4. **Heating** (CommStat Screen 5)
5. **1st Stage High Temp Warning Set Point** (CommStat Screen 6)
6. **2nd Stage High Temp Warning Set Point** (CommStat Screen 7)
7. **Low Building Temp Alarm Set Point** (CommStat Screen 8)
8. **Continuous indoor Blower** (CommStat Screen 9)
9. **Alarms** (CommStat Screen 10)
10. **Anti-Short Cycle Timer** (CommStat Screen 11)
11. **1st Stage Differential** (CommStat Screen 12)
12. **2nd Stage Differential** (CommStat Screen 13)
13. **Off Differential** (CommStat Screen 14)
14. **Cooling Blower Off Time Delay** (CommStat Screen 15)
15. **Operation of Units on Generator Power** (CommStat Screen 16)
16. **Smoke Alarm Relay Reset** (CommStat Screen 17)

**Number** | **Description**
--- | ---
1 | Available Settings. Tap the button or refer to the settings table on page 27 for details of each setting.
2 | Tap to return to the previous menu page.
3 | Exit the Configuration mode and return to the System Status screen.
4 | Tap to advance to the next menu page.

➤ **CommStat Touch Configuration Input Entry**
Depending on the type of input, the CommStat Touch uses one of two input methods:

- **Radio Button**: Used to select from a group of pre-defined parameters.
- **Text Entry**: Used to enter numerical values.

![Example of Radio Button](image)

**Example of Radio Button**

![Example of Text Entry](image)

**Example of Text Entry**

The current setting is shown with a green highlight. To change a setting using a **Radio Button**, tap an un-highlighted button next to the desired setting as shown below.
Once a selection is made, tap the **Save** button to store the new setting.

To make a selection using **Text Entry**, tap anywhere in the empty field next to the desired setting as shown below.

![Text Entry Screen](image)

This will open the appropriate setting panel as shown below.

![Setting Panel](image)

The current setting and acceptable range of new settings are displayed. Tap the number keys to input a new setting and then tap the **Apply** button. To clear the new settings and return to the previous screen, tap the **Cancel** button.

Once the **Apply** button is tapped, the display returns to the previous screen with the new setting displayed. Tap **Save** to store the new setting.
CommStat Touch Alarm Reset

If an alarm is present, the CommStat Touch will display the relevant alarm (1). If more than one alarm is active, use the scroll buttons (2, 3) to view all alarms.

After the cause of the alarm has been corrected, tap the Reset Alarms button (4) to clear the alarm warning.

Note: The alarm notifications do not clear automatically. They must be reset manually.
Chapter 4  Operation - Remote Access

COMMSTAT REMOTE LINK TESTING AND CONFIGURATION

➤ Items Required to Test and Configure the CommStat RemoteLink (only if remote communication is required):
   1. USB keyboard

➤ Test and Configure the CommStat RemoteLink:
   1. Make sure the RemoteLink is not powered.
   2. Connect keyboard to any available CommStat Touch USB port (Item #3 in Ports and Connections on page 7).
   3. Simultaneously press the Control (CNTRL) and Escape (ESC) keys to access the system menu.
   4. Using the arrow keys, or the touch screen, select UXTerm from the System Tools menu.
   5. You will be automatically logged in as the user "commstat@commstat4" and able to enter the test and configuration program.

   6. If a static IPv6 address is to be assigned to the CommStat4 RemoteLink, at the "commstat@commstat4: "$" command prompt, type "sudo ./staticip [ipv6 address] [netmask]" (no quotes or brackets) and press <enter>.
   7. IPv6 address = ipv6 address in valid format (see IPv6 format information contained in the Assigning a Static IPv6 IP Address section below).
   8. Netmask = decimal number for the netmask.
   9. If successful, the Ethernet connection will be restarted and reflect the new static IP address.
   10. At the "$" command prompt, type "ip addr show eth0" and press <enter> to confirm the network settings.
   11. The IPv6 address you just set should be shown as one of the "inet6" addresses as show in the example below.
12. When you are finished, tap the “X” in the upper right corner of the **UXTerm** window. This will exit the test and configuration program.
COMMSTAT REMOTELINK INTERFACE

CommStat RemoteLink Interface Overview
The CommStat RemoteLink provides remote monitoring and control of the Marvair CommStat telecom controller, but it is not designed for real-time monitoring. The HTML-based interface refreshes automatically every 30 seconds to display the CommStat status and alarms. **Note:** After an input is made, there may be a delay of up to 2 minutes before the new settings/parameters are displayed. This delay is a normal function of the RemoteLink device and is not indicative of a malfunction or communication error.

### Number Description

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>System Status Overview</td>
</tr>
<tr>
<td>2</td>
<td>HVAC Unit #1 Status Overview <em>(Master Controller if Configured for Master/Slave)</em></td>
</tr>
<tr>
<td>3</td>
<td>HVAC Unit #2 Status Overview <em>(Master Controller if Configured for Master/Slave)</em></td>
</tr>
<tr>
<td>4</td>
<td>HVAC Unit #1 Status Overview <em>(Slave Controller if Configured for Master/Slave)</em></td>
</tr>
<tr>
<td>5</td>
<td>HVAC Unit #2 Status Overview <em>(Slave Controller if Configured for Master/Slave)</em></td>
</tr>
<tr>
<td>6</td>
<td>Alarm Status</td>
</tr>
<tr>
<td>7</td>
<td>Menu Selections</td>
</tr>
<tr>
<td>8</td>
<td>Configuration/Settings</td>
</tr>
<tr>
<td>9</td>
<td>Pop-Up Tool Tips Provide Additional Details and Instructions for Each Configuration/Setting</td>
</tr>
</tbody>
</table>
➤ **CommStat RemoteLink System Status**

The System Status portion of the interface is at the top of each screen and displays the HVAC system status, shelter conditions, software version information, and the swap Lead/Lag buttons.

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>CommStat master controller status if using master/slave configuration</td>
<td>N/A</td>
</tr>
<tr>
<td>Slave</td>
<td>CommStat slave controller status if using master/slave configuration</td>
<td>N/A</td>
</tr>
<tr>
<td>Unit 1/Unit 2</td>
<td>Identifies each HVAC unit in a lead/lag configuration</td>
<td>N/A</td>
</tr>
<tr>
<td>Set as Lead</td>
<td>Click to swap lead/lag between Unit #1 and Unit #2</td>
<td>N/A</td>
</tr>
<tr>
<td>Lead</td>
<td>Identifies which unit is currently set to Lead</td>
<td>On</td>
</tr>
<tr>
<td>Power</td>
<td>Indicates Power to the HVAC unit</td>
<td>On</td>
</tr>
<tr>
<td>Heat/Cool/Econ</td>
<td>Indicates unit operating mode (Heat, Cooling, Economizer)</td>
<td>On</td>
</tr>
<tr>
<td>CommStat Power</td>
<td>Indicates low voltage power is present at the CommStat HVAC controller</td>
<td>On</td>
</tr>
<tr>
<td>Shelter Temperature</td>
<td>Indicates the shelter or enclosure interior temperature</td>
<td>N/A</td>
</tr>
<tr>
<td>Utility Power</td>
<td>Indicates high voltage power is present at the HVAC units</td>
<td>On</td>
</tr>
<tr>
<td>Generator Power</td>
<td>If illuminated, the backup generator is supplying power to the shelter or enclosure</td>
<td>On</td>
</tr>
<tr>
<td>Firmware Version</td>
<td>CommStat HVAC controller firmware version (version 68 or later required for RemoteLink)</td>
<td>N/A</td>
</tr>
<tr>
<td>Protocol Version</td>
<td>CommStat HVAC controller protocol version (version 5 or later required for RemoteLink)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

➤ **CommStat RemoteLink Alarms**

Dry contacts can be used for remote alarm or notification. Relays can be wired Normally Open (NO) or Normally Closed (NC). Most alarm relays can be reset by clicking the **Reset Alarms** button.

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
<th>Alarm Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset Alarms</td>
<td>After the cause of the alarm has been corrected, click the <strong>Reset Alarms</strong> button to reset the alarm status</td>
<td>N/A</td>
</tr>
<tr>
<td>1st Stage Hi Temp</td>
<td>Activated if the 1st Stage High Temperature Alarm set point temperature is reached</td>
<td>Active</td>
</tr>
<tr>
<td>2nd Stage Hi Temp</td>
<td>Activated if the 2nd Stage High Temperature Alarm set point temperature is reached</td>
<td>Active</td>
</tr>
<tr>
<td>Lo Bldg Temp</td>
<td>Activated if the temperature in the building drops to the Low Building Temperature set point</td>
<td>Active</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Activated if hydrogen is detected inside the building</td>
<td>Active</td>
</tr>
<tr>
<td>Smoke</td>
<td>Activated if the smoke detector inputs receive a signal from an external detector. All air conditioners or heat pumps are immediately shut down</td>
<td>Active</td>
</tr>
<tr>
<td>Low Voltage Loss</td>
<td>Activated if control voltage is not present</td>
<td>Active</td>
</tr>
<tr>
<td>Unit 1 HP/LP Lockout</td>
<td>Activated if Unit #1 is off due to either high or low refrigerant pressure lockout</td>
<td>Active</td>
</tr>
<tr>
<td>Unit 2 HP/LP Lockout</td>
<td>Activated if Unit #2 is off due to either high or low refrigerant pressure lockout</td>
<td>Active</td>
</tr>
</tbody>
</table>
➤ **CommStat RemoteLink Menu Selections**

Use these buttons to choose the group of settings to adjust.

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Configuration</td>
<td>Used to set the CommStat basic parameters</td>
</tr>
<tr>
<td>Set Points</td>
<td>Heating, Cooling, Stage Differential set points</td>
</tr>
<tr>
<td>Configurations</td>
<td>Timer and Delay settings</td>
</tr>
<tr>
<td>System Type</td>
<td>Select Economizer or Non-Economizer and number of compressor stages</td>
</tr>
<tr>
<td>Alarms</td>
<td>Alarm threshold set points</td>
</tr>
</tbody>
</table>

➤ **CommStat RemoteLink Basic Configuration**

Use this of settings to adjust to CommStat basic configurations. After entering the setting value, click the **Apply** button. Changes are applied immediately to the CommStat, however it may take between 30 seconds and 2 minutes for the status to update via RemoteLink. For detailed information about each setting, see the settings table at the end of this manual.

*Note:* The CommStat RemoteLink will only recognize one setting change at a time. Additional changes will not be saved by the system.
➤ **CommStat RemoteLink Set Points**

Use this of settings to adjust to CommStat Set Points. After entering the setting value, click the **Apply** button. Changes are applied immediately to the CommStat, however it may take between 30 seconds and 2 minutes for the status to update via RemoteLink. For detailed information about each setting, see the settings table at the end of this manual.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current Setting</th>
<th>New Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>65°F - 95°F (18°C - 35°C)</td>
<td>65°F - 95°F (18°C - 35°C)</td>
</tr>
<tr>
<td>Heating</td>
<td>50°F - 80°F (10°C - 27°C)</td>
<td>50°F - 80°F (10°C - 27°C)</td>
</tr>
<tr>
<td>1st Stage Differential</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>2nd Stage Differential</td>
<td>1°F - 10°F (1°C - 6°C)</td>
<td>1°F - 10°F (1°C - 6°C)</td>
</tr>
<tr>
<td>Economizer Stage Differential</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Off Differential</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 1</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 2</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 3</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 4</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 5</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 6</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 7</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 8</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 9</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
<tr>
<td>Stage Differential 10</td>
<td>1°F - 5°F (1°C - 3°C)</td>
<td>1°F - 5°F (1°C - 3°C)</td>
</tr>
</tbody>
</table>

➤ **CommStat RemoteLink Configurations**

Use this of settings to adjust to CommStat Set Points. After entering the setting value, click the **Apply** button. Changes are applied immediately to the CommStat, however it may take between 30 seconds and 2 minutes for the status to update via RemoteLink. For detailed information about each setting, see the settings table at the end of this manual.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current Setting</th>
<th>New Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead/Lag Changeover</td>
<td>7</td>
<td>0.5 - 7 days, or 0 for Auto</td>
</tr>
<tr>
<td>Continuous Indoor Blower</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>Anti-Short Cycle Timer</td>
<td>3</td>
<td>0 - 3</td>
</tr>
<tr>
<td>Cooling Blower Off Time Delay</td>
<td>90</td>
<td>0 - 90</td>
</tr>
<tr>
<td>Excessive Compressor Operation</td>
<td>No</td>
<td>1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10</td>
</tr>
</tbody>
</table>
➤ **CommStat RemoteLink System Type**
Use this of settings to adjust to CommStat System Type. After entering the setting value, click the **Apply** button. Changes are applied immediately to the CommStat, however it may take between 30 seconds and 2 minutes for the status to update via RemoteLink. For detailed information about each setting, see the settings table at the end of this manual.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current Setting</th>
<th>New Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economizer Configuration</td>
<td>-</td>
<td>No 1 2</td>
</tr>
<tr>
<td>2. Operation of Units on Generator Power</td>
<td>-</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>3. Compressor Stages</td>
<td>-</td>
<td>1 2 No</td>
</tr>
</tbody>
</table>

➤ **CommStat RemoteLink Alarms**
Use this of settings to adjust to CommStat Alarm Set Points. After entering the setting value, click the **Apply** button. Changes are applied immediately to the CommStat, however it may take between 30 seconds and 2 minutes for the status to update via RemoteLink. For detailed information about each alarm setting, see the settings table at the end of this manual.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Current Setting</th>
<th>New Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1st Stage High Temp Warning Set Point</td>
<td>-</td>
<td>70°F - 140°F (21°C - 60°C)</td>
</tr>
<tr>
<td>2. 2nd Stage High Temp Warning Set Point</td>
<td>-</td>
<td>75°F - 145°F (24°C - 63°C)</td>
</tr>
<tr>
<td>3. Low Building Temp Alarm Set Point</td>
<td>-</td>
<td>2°F - 65°F (0°C - 18°C)</td>
</tr>
<tr>
<td>4. Alarms</td>
<td>-</td>
<td>1 (Disabled) 2 (Enabled)</td>
</tr>
<tr>
<td>5. Smoke Alarm Relay Reset</td>
<td>-</td>
<td>3 - 10. 9 - Manual</td>
</tr>
</tbody>
</table>
# Chapter 5 Settings and Modes

## COMM STAT TOUCH LEAD/LAG CONTROLLER SETTINGS TABLE

<table>
<thead>
<tr>
<th>Screen Number</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Keypad Lockout&lt;br&gt;<strong>Select OFF to disable lockout or a 3-digit number to enable lockout. (9,9,9 is the default password)</strong></td>
<td>OFF</td>
</tr>
<tr>
<td>2</td>
<td>°F or °C&lt;br&gt;7 days</td>
<td>°F</td>
</tr>
<tr>
<td>3</td>
<td>Lead/Lag air conditioner changeover. 0.5 to 7 days in ½ day increments</td>
<td>7 days</td>
</tr>
<tr>
<td>4</td>
<td>Cool set point. 65°F thru 95°F (18°C thru 35°C) in 1° increments</td>
<td>79°F (24°C)</td>
</tr>
<tr>
<td>5</td>
<td>Heat set point. 50°F thru 80°F (10°C thru 27°C) in 1° increments</td>
<td>65°F (18°C)</td>
</tr>
<tr>
<td>6</td>
<td>First stage high temperature warning set point. 70°F thru 140°F (21°C thru 60°C) in 1° increments</td>
<td>85°F (29°C)</td>
</tr>
<tr>
<td>7</td>
<td>Second stage high temperature alarm set point. 75°F thru 145°F (24°C thru 63°C) in 1° increments.</td>
<td>90°F (32°C)</td>
</tr>
<tr>
<td>8</td>
<td>Low building temperature alarm set point. 32°F thru 65°F (0°C thru 18°C) in 1° increments</td>
<td>45°F (7.2°C)</td>
</tr>
<tr>
<td>9</td>
<td>Continuous indoor blower on all units. Select ON, AUTO or ON (Lead only)</td>
<td>AUTO (Lead Only)</td>
</tr>
<tr>
<td>10</td>
<td>Alarms&lt;br&gt;0 = No alarm output. Screen does not display High voltage fail.&lt;br&gt;1 = No alarm output. High voltage input required.&lt;br&gt;2 = Alarm output. Screen does not display High voltage fail.</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Anti-short cycle timer. 0 = no delay or 3-10 minutes in 1 minute increments. The Time Delay in the HVAC unit should be set to 0 if the default value of 5 minutes is selected.</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>1st stage temperature differential 1°F thru 5°F (1°C thru 3°C) in 1° increments. This setting only affects the turning on of the system. The turn off differential is fixed at 1°F/C.</td>
<td>1°F (1°C)</td>
</tr>
<tr>
<td>13</td>
<td>2nd stage temperature differential 2°F thru 5°F (1°C thru 3°C) in 1° increments. This differential is in reference to the 1st stage differential and the outputs are staged off each stage's differential is satisfied.</td>
<td>1°F (2°C)</td>
</tr>
<tr>
<td>14</td>
<td>OFF differential option of all stages. 1°F thru 4°F (1°C thru 3°C) in 1° increments. The actual differential OFF setting range is limited by the factory set dead band of 3°F/3°C minimum separation between Heat &amp; Cool set points.</td>
<td>4°F (2°C)</td>
</tr>
<tr>
<td>15</td>
<td>Indoor blower off time delay 0-90 seconds in 1 second increments</td>
<td>90 seconds</td>
</tr>
<tr>
<td>16</td>
<td>Operation of units on generator power. See page 3 for description of options.&lt;br&gt;1 = Lead unit only&lt;br&gt;2 = Lead unit &amp; one lag unit&lt;br&gt;3 = Lead unit and two lag units&lt;br&gt;4 = Lead unit and three lag units</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Smoke alarm relay reset. Select either manual or automatic reset. If an automatic reset is desired, select the number of minutes – from 3 to 10. The default is 5 minutes. The smoke alarm relay can be manually reset by holding the UP &amp; DOWN buttons for 4 seconds or by cycling the 24 VAC power to clear the fault.</td>
<td>5 Minutes</td>
</tr>
<tr>
<td>18</td>
<td>Smoke detector contacts Normally Open or Normally Closed. When configured for N.O., an open circuit between the smoke terminals will be considered a smoke fault. When configured for N.C., a closed circuit between the smoke input terminals will be considered a smoke fault.</td>
<td>Normally Closed</td>
</tr>
<tr>
<td>19</td>
<td>Economizer Configuration&lt;br&gt;<strong>No</strong> = ComPac I unit, no economizer&lt;br&gt;<strong>1</strong> = ComPac II units with economizer using operational mode #1&lt;br&gt;<strong>2</strong> = ComPac II units using economizer operational mode #2 (See economizer modes descriptions on page 29)</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>Remote temperature Sensor(s). If No (the default) is selected and multiple sensors are being used, the temperatures will be averaged. If multiple sensors are being used and Yes is selected, the sensor with the highest temperature reading will be used to control the units when in the cooling mode. In heating, the sensor with the lowest reading will be used to control the units.</td>
<td>Yes</td>
</tr>
<tr>
<td>21</td>
<td>AUX 1 dry contact output. Selection are:&lt;br&gt;<strong>NO</strong> = Output will be energized when there is no contact closure between the AUX1-IN terminals.&lt;br&gt;<strong>NC</strong> = Output will be energized when there is contact closure between the AUX1-IN terminals&lt;br&gt;<strong>OFF</strong> = Disabled. When configuration screen #19 is set to 1 or 2, this configuration screen is not accessible.</td>
<td>Off</td>
</tr>
<tr>
<td>22</td>
<td>AUX 2 dry contact output. Selection are:&lt;br&gt;<strong>NO</strong> = Output will be energized when there is no contact closure between the AUX2-IN terminals.&lt;br&gt;<strong>NC</strong> = Output will be energized when there is contact closure between the AUX2-IN terminals&lt;br&gt;<strong>OFF</strong> = Disabled. When configuration screen #19 is set to 1 or 2, this configuration screen is not accessible.</td>
<td>Off</td>
</tr>
<tr>
<td>Screen Number</td>
<td>Description</td>
<td>Default</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>23</td>
<td>Excessive compressor operation. Select between 5-10 cycles per two hour period or &quot;No&quot; to disable. When set between 5-10 cycles and the compressor cycles more than the set point, the first stage differential will increase by 2°F (1°C).</td>
<td>NO</td>
</tr>
<tr>
<td>24</td>
<td>Language Select either English, French or Spanish</td>
<td>English</td>
</tr>
<tr>
<td>25</td>
<td>Select either 1-stage air conditioner, 2-stage air conditioner or heat pump.</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>Master/Slave setting. When connected to another CommStat Touch, the user selects whether this unit is the Master (Yes) or Slave (No).</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| 27-36         | Set the differential between stages from 0°F through 7°F (0°C through 4°C) in 1° increments. The screens are only visible when using two CommStat Touch controllers in a Master/Slave configuration. Screens 27-36 are only used with multi-stage air conditioners and heat pumps with electric heat. | #27: 5°F (3°C)  
#28-36: 2°F (1°C) |
| 37            | This setting is used to select the number of HVAC units used in the application. Selecting the correct number of HVAC units will eliminate nuisance alarms.  
1 = One HVAC unit connected to the CommStat Touch.  
2 = Two HVAC units connected to the CommStat Touch. One lead and one lag unit.  
3 = Three HVAC units connected to the CommStat Touch. One lead and two lag units.  
4 = Four HVAC units connected to the CommStat Touch. One lead unit and 3 lag units. | 2       |
| 38            | Economizer Stage Differential. 1°F thru 5°F (1°C thru 3°C) in 1° increments. This setting provides an adjustable temperature differential between stages of Economizer Cooling only. This setting does not affect the stage differential of Mechanical Cooling. | 1°F (1°C) |

**ECONOMIZER OPERATIONAL MODES**

The CommStat Touch provides for two Operational Modes for ComPac II air conditioners with economizers. The desired mode can be selected in Configuration screen 19. For details, see the following Economizer Modes sections.

**Emergency Ventilation Mode:** The CommStat Touch will force all connected air conditioners to economizer operation if all connected air conditioners are locked out upon a call for cooling.
**CommStat Touch Economizer Mode 1 with Two Single-Stage Compressors**

*with Cooling Set Point at 79°F*

Call for Cooling @ 80°F
1st Stage Differential (Setting #12)

- Outdoor Temperature Below 70°F
  - Lead Unit Economizes
  - If Shelter Temperature Does Not Drop 2°F After 90 Seconds
    - Lag Unit Economizes
    - Lag Unit OFF
    - Lead Unit Economizes Until Shelter Temperature Reaches 75°F
    - Lead Fan Only

- Outdoor Temperature Above 70°F
  - Lead Unit DX Cooling
  - Shelter Temperature Drops 2°F (78°F)
    - Lead Unit Economizes
    - Lead + Lag Unit DX Cooling Until Shelter Temperature Reaches 75°F
    - Lag Unit OFF
    - Lead Fan Only
  - Shelter Temperature Rises 1°F (81°F)
    - Lead Fan Only

2nd Stage Differential (Setting #13)
CommStat Touch EconoMizer Mode 1 with Two 2-Stage Compressors

with Cooling Set Point at 79°F

Call for Cooling @ 80°F
1st Stage Differential (Setting #12)

Outdoor Temperature
Below 70°F

If Shelter Temperature Does Not Drop 2°F After 90 Seconds

Lead Unit Economizes

Lag Unit Economizes

Lead Unit DX Cooling 1st Stage

Lead Unit DX Cooling 2nd Stage

Stage Differential (Setting #27)

Shelter Temperature Drops 2°F (78°F)

Lag Unit OFF

Lead 2nd Stage + Lag Unit DX Cooling 1st Stage

Lead 2nd Stage + Lag Unit DX Cooling 2nd Stage

Shelter Temperature Drops 2°F (86°F)

Lag Unit OFF

Lead Fan Only

Shelter Temperature Rises 5°F (86°F)

Lead 2nd Stage + Lag Unit DX Cooling 1st Stage

Lead 2nd Stage + Lag Unit DX Cooling 2nd Stage

Stage Differential (Setting #28)

Shelter Temperature Rises 2°F (88°F)

Lag Unit OFF

Lead Fan Only

Outdoor Temperature Above 70°F

Lead Unit DX Cooling 1st Stage

Shelter Temperature Rises 1°F (81°F)

Lead Unit DX Cooling Until Shelter Temperature Reaches 75°F

Lead Fan Only
COMMSSTAT TOUCH ECONOMIZER MODE 2 WITH TWO SINGLE-STAGE COMPRESSORS

with Cooling Set Point at 79°F

Call for Cooling @ 80°F
1st Stage Differential (Setting #12)

Outdoor Temperature Below 70°F

Outdoor Temperature Above 70°F

If Shelter Temperature Does Not Drop 2°F After 90 Seconds

Lead Unit Economizes

Lag Unit Economizes

Lead Unit OFF

Lead Unit Economizes Until Shelter Temperature Reaches 75°F

Lead + Lag Unit DX Cooling Until Shelter Temperature Reaches 75°F

Lag Unit OFF

Lead Fan Only

Lag Unit OFF

Lead Fan Only

Shelter Temperature Drops 2°F (78°F)

Shelter Temperature Rises 1°F (81°F)

2nd Stage Differential (Setting #13)
COMMSTAT TOUCH ECONOMIZER MODE 2 WITH TWO 2-STAGE COMPRESSORS

with Cooling Set Point at 79°F

Call for Cooling @ 80°F
1st Stage Differential (Setting #12)

Outdoor Temperature Below 70°F

If Shelter Temperature Does Not Drop 2°F After 90 Seconds

Lag Unit Economizes

Outdoor Temperature Above 70°F

Lead Unit Economizes

2nd Stage Differential (Setting #13)

Lead Unit DX Cooling 1st Stage

Adaptive Staging Begins

If Required (See Adaptive Staging Sequence)

Shelter Temperature Drops 2°F (78°F)

Lead 2nd Stage + Lag Unit DX Cooling 1st Stage

Lead Fan Only

Shelter Temperature Drops 2°F (86°F)

Lead 2nd Stage + Lag Unit DX Cooling 2nd Stage

Lead Fan Only

Lead Unit OFF

Lead Unit DX Cooling 2nd Stage

Shelter Temperature Rises 1°F (81°F)

Stage Differential (Setting #27)

Lead 2nd Stage + Lag Unit DX Cooling 2nd Stage

Lag Unit OFF

Shelter Temperature Rises 5°F (86°F)

Lead 2nd Stage + Lag Unit DX Cooling 1st Stage

Lag Unit OFF

Stage Differential (Setting #28)

Shelter Temperature Rises 2°F (88°F)
**COMMSTAT TOUCH ADAPTIVE STAGING SEQUENCE**

<table>
<thead>
<tr>
<th>OFF time between cooling calls</th>
<th>Wait time before going to 2nd stage on Lead Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater Than 8 Minutes</td>
<td>15 Minutes</td>
</tr>
<tr>
<td>Between 7 - 8 Minutes</td>
<td>10 Minutes</td>
</tr>
<tr>
<td>Between 6 - 7 Minutes</td>
<td>5 Minutes</td>
</tr>
<tr>
<td>Between 5 - 6 Minutes</td>
<td>2 Minutes</td>
</tr>
<tr>
<td>Between 4 - 5 Minutes</td>
<td>1 Minute</td>
</tr>
<tr>
<td>Between 3 - 4 Minutes</td>
<td>40 Seconds</td>
</tr>
<tr>
<td>Less than 3 Minutes</td>
<td>20 Seconds</td>
</tr>
</tbody>
</table>

Adaptive staging is based on rate of change in temperature over time between Cooling calls on the Lead Unit. This assures that the operating capacity of the HVAC is constantly matched for internal heat load while maintaining efficiency.

*Note:* Only available in **Economizer Mode 2** with Two 2-Stage compressors.

**COMMSTAT TOUCH HUMIDITY CONTROL**

*Note:* The humidity controller is only used to prevent economizer operation when the internal humidity level is greater than the humidity setpoint. When the internal humidity level exceeds the humidity setpoint, the Lead unit will only operate in DX cooling. The economizer is disabled until the internal humidity is below the humidity setpoint.

Changing dehumidifier settings:

1. Set dehumidifier by pressing the UP/DOWN arrows. RH% will change in increments of five.
   - High Limit: 80%
   - Low Limit: 5%
   - Default: 80%
2. Press "More" to enter operation style. Press the UP/DOWN arrows to set.
   - "Auto" runs dehumidifier automatically according to your RH% settings.
   - "Off" turns the dehumidifier off.
3. Press "Done" to save settings, or "More" to enter ventilation settings.

**To Enter Installer Advanced Setup:**

1. Press and hold the UP/DOWN arrows for 3 seconds.
2. Press "More" to advance to the next setup option. See table on next page.
3. Use the UP/DOWN arrows to select options.
4. Press "Done" at any time to save and return to the home screen.
Chapter 6  Testing the CommStat Touch

TESTING THE COMMSTAT TOUCH THERMOSTAT CONTROLLER

➤ Check-Out of Cooling Cycle

Due to the wide range of configurations, the following instructions are limited to checking the operation of the cooling and heating modes. If alarm or fault conditions are displayed, recheck all field wiring and the configuration screens.

Important:
Be sure that the crankcase heater (if used) has been energized for at least 24 hours before starting the unit(s). Double-check all electrical connections before applying power. ComPac® air conditioners with scroll compressors running on 3Ø power must be checked for proper rotation during the initial start-up. Please refer to ComPac Installation & Operation manual for determining if the 3Ø compressors are rotating correctly. Incorrect rotation can damage the compressor and may not be covered by the warranty.

Procedure:
1. In the Configuration screen No. 4, set the cooling set point temperature to a point higher than the ambient temperature. In the Configuration screen No. 5, set the heating set point temperature to a temperature that is lower than the ambient.
2. Set the time delay in the ComPac® I or ComPac® II A/C control box to three minutes. On ComPac II air conditioners with the economizer, check the changeover setting of the sensor and reset it if needed. (See ComPac air conditioner Installation & Operation manual).
3. Using configuration screen No. 4, slowly lower the thermostat’s cooling set point temperature until the switch closes. The indoor fan should operate. Once the indoor fan turns on, allow approximately three minutes (5 minutes if the default of 5 minutes is selected in screen number 11) for the compressor to start. Note that the outdoor fan may not come on immediately, because it is cycled by refrigerant pressures.

NOTE: (ComPac® II A/C only). To check the system operation under different ambient conditions, the air temperature and enthalpy sensors must be “tricked”. When outdoor ambient conditions are higher than the control setting, a component cooler aerosol may be sprayed directly into the enthalpy sensor to simulate low enthalpy conditions, causing the economizer damper to open. Alternately, when outdoor conditions are lower than the set point, a source of heat such as a hair dryer can be directed on the air temperature sensor to simulate warmer conditions, which will bring on mechanical cooling and start the compressor.
4. To stop cooling, slowly raise the thermostat cooling set point to a temperature higher than the ambient. Follow the same procedure for additional units.

NOTE: The fan purge allows the indoor fan to run for approximately 90 seconds after the compressor is off. This operation provides a small improvement in system rated efficiency.

➤ Check-Out of Heating Cycle

Procedure: (Applies only to heat pumps or air conditioners with resistance elements)
1. Using Configuration screen No. 5, raise the heating set point temperature to a setting which is higher than the ambient temperature. The fan and electric heat should immediately cycle on.
2. Move the system switch to the ‘OFF’ position. All functions should stop.

NOTE: (ComPac® II A/C with economizer only) The damper blade should remain closed during the heating cycle (unless the minimum position potentiometer has been set for constant ventilation A fully counterclockwise position corresponds to full closure of the damper. See ComPac Installation & Operation manual for details.