

ULTRA-ZONE[®] Forced Air Zone Controls

LEAVE THIS BULLETIN ON THE JOB SITE FOR FUTURE REFERENCE

The One of a Kind UT3000 Zone Control System provides intelligent control of a communicating HVAC system or 24volt legacy HVAC system at a maximum of three zones using 24volt motorized dampers and any off-the-shelf 24volt thermostat or compatible communicating thermostat. The UT3000 is 100% plug and play when connected to a communicating HVAC system and network thermostats. The UT3000 includes features such as Proportional Operation, Automatic Equipment Recognition, Dual Fuel Functions and Precise Control of Supply Air Target & Limit set-points. EWC[®] Controls raises the bar again and sets another new standard for Residential and Light Commercial HVAC Air Zoning.

Zone Capacity

Controls two or three air zones with 24vac Power Open/Close or Spring Assisted motorized dampers.

Compatible HVAC Systems

Control Any Communicating HVAC system based on the ClimateTalk[™] Open Protocol. Or any 24volt 2 Heat / 1 Cool Gas/Electric system or 2 Heat / 1 Cool Conventional or Dual Fuel Heat Pump.

Compatible Thermostats

The UT3000 is compatible with any Communicating Thermostat that operates on the ClimateTalk[™] Open Protocol. Also compatible with any off-the shelf single stage 24volt Heat/Cool Thermostat or 2 Heat/1Cool Heat Pump Thermostat.

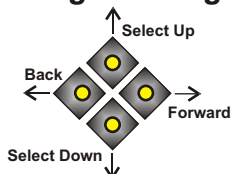
Automatic Heat / Cool Changeover

The UT3000 panel features automatic changeover from any thermostat allowing for individual zone comfort from the zoned HVAC system.

Status LCD

OUTSIDE TMP 32

4 Button LCD Programming



System LED's

In addition to the LCD, a total of 5 colored LED's provide indication of the HVAC system status and mode of operation.

Damper LED's

A total of 3 green LED's labeled Zone 1 thru Zone 3, are also provided to indicate which dampers are energized to Open.

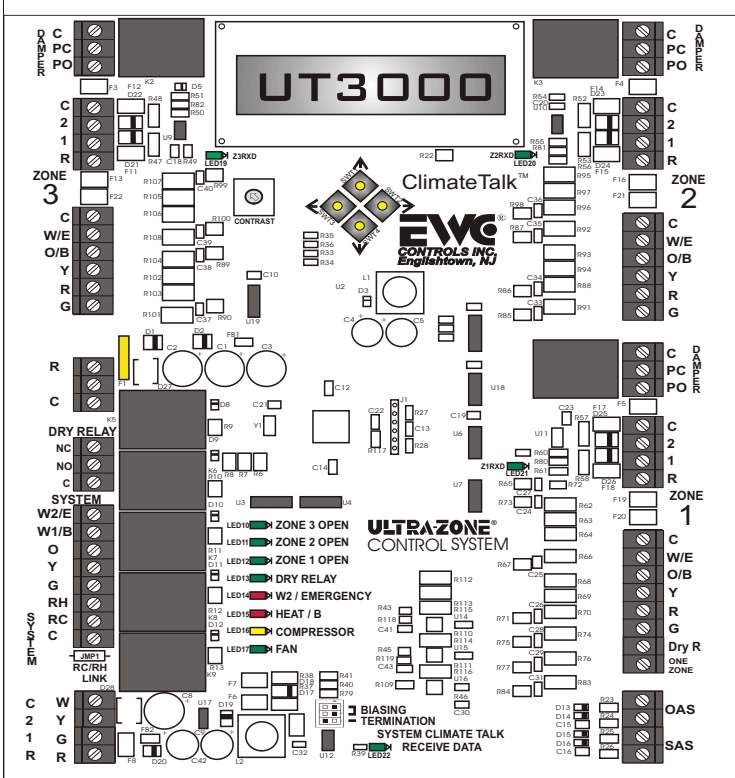


Figure 1. UT3000 panel

Communicating LED's

A total of 4 green Pulsing LED's are provided to indicate a Comm Link has been established with each Communicating T-stat and/or the Communicating HVAC system. A series of Rapid & Random Pulses indicate a successful link and data transmission. Otherwise, the Comm LED's will blink On & Off very slowly for non-communicating devices.

Fault Free Programming & Intuitive Temperature Control

The UT3000 comes pre-loaded with Default Operating Parameters for Zoned HVAC Systems. The Default Program Settings free the Technician from Programming but also allows Fine Tuning of the System to Optimize Performance and Personal Preference. The UT3000 operates in Proportional Mode at all times. Multi-Stage and Modulating Equipment will be operated in a manner that Minimizes Blower Speed, Maximizes Temperature Control and Improves System Efficiency.

Ancillary IAQ Dry Relay Provided

The UT3000 includes a SPDT Dry Relay with an Input Trigger that can be used to Connect, Interlock and Control Ancillary IAQ devices:

Fresh Air Damper * Whole House Humidifiers

Heat Recovery Ventilator * Energy Recovery Ventilator

Whole House De-humidifiers * Combustion Air Damper

The UT3000 will start the Indoor Fan when the Dry Relay Input is Energized. Connected Zone Dampers operate normally and are not affected by the relay's function.

INSTALLATION INSTRUCTIONS

MOUNT:

Choose a suitable location to mount the UT3000 housing. Likely locations are the Return Duct, a Nearby Wall or Convenient Studs where plywood can be installed to support the housing. Avoid mounting the UT3000 on the Supply duct. **Do not** mount the UT3000 directly to any Air-Handler, Furnace, Hot Water Coil or Evaporator Cabinet to avoid damage to these devices.

Follow National and/or Local Mechanical Code.

POWER:

EWC always recommends to install a separate transformer to power the UT3000.

Follow NEC and/or Local Electrical Code.

WIRE:

Connect your thermostats and your dampers. Use the knock-outs provided on the housing as the wire entry-way. Strip the jacket back to where the cable enters the housing. That makes for less bulk and allows easy routing of the wires for a clean install.

4 Wire Comm Network:

Adhere to the Climate Talk™ Color Code. RED, GREEN, YELLOW, WHITE. Doing so reduces the possibility of mis-wiring between devices on the Network.

PROGRAM:

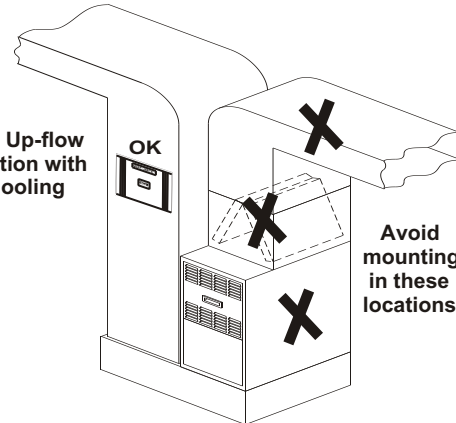
When connected to a Fully Communicating HVAC system, programming is not required. The UT3000 will automatically configure the entire system and start running as soon as thermostat demands are detected. **Allow at least 1-2 minutes for all Thermostats and the HVAC system to fully configure on the network.** The Default Supply air temperature Targets and off-set Limits will be used. Other unique features can be selected and/or you can adjust the default settings yourself.

When connected to a Conventional 24v HVAC system, you simply scroll thru the LCD menu and select the type of HVAC system you have and the type of thermostats you want to use. The Default Supply air temperature Targets and off-set Limits will be used, or you can adjust your own settings.

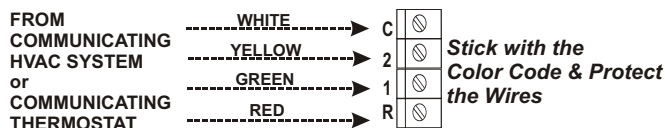
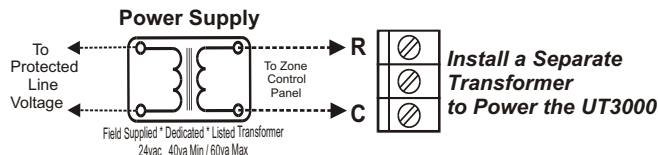
FINISH:

When the Installation is complete, run the system thru it's paces and observe the operation of the HVAC system in all possible modes of operation. Check the Zone Dampers and the Bypass Damper for proper operation. Balance the System and make adjustments as necessary.

Typical Up-flow
Installation with
DX Cooling



Avoid
mounting
in these
locations



If desired, you can reset the UT3000.

Upon Power Up, Press and Hold the Back & Forward buttons to Load the Factory Default Values, then Release.

UT3000 Version 1.12 SPECIFICATIONS:

NUMBER OF ZONES: 2 or 3 Zones, Non-Expandable

COMPATIBLE EQUIPMENT:

Climate Talk™ based Communicating HVAC systems - Up to 4 Stages Heating and 2 Stages Cooling

Gas/Electric/Hydro – Up to 2 Stages Heating and 1 Stage Cooling

Heat Pump Conventional or Dual Fuel – Up to 2 Stages Heating and 1 Stage Cooling

COMPATIBLE THERMOSTATS:

Climate Talk™ based Communicating HVAC Thermostat

Any single stage Heat/Cool Thermostat

Any 2 Stage Heat, 1 Stage cool Heat Pump Thermostat

COMPATIBLE DAMPERS:

EWC® Ultra-Zone® Models URD, ND, RSD and SID, Or

Any Competitor's 24vac 3 Wire or 2 Wire damper

MAX. DAMPERS PER ZONE:

Up to 18 ND, URD, or SID Dampers Per Zone @ 26mA per damper. **Total 54**

Only 1 Spring Type Damper Per Zone @ 400mA per damper. **Total 3**

OVER-CURRENT PROTECTION:

2.5Amp main circuit board protection

500mA on each Damper Motor Terminal Block

140mA on each Communicating Thermostat and HVAC System Terminal Block

140mA on each Regular 24v Thermostat Terminal Block

UT3000 MAXIMUM CURRENT DRAW = .5 Amp

POWER REQUIREMENT = 24Vac 40Va 50/60 Hz

AMBIENT OPERATING CONDITIONS:

TEMPERATURE: -4° to 158°F (-20° to 70°C)

HUMIDITY: 0% - 95% Rh Non-Condensing

ANCILLARY IAQ DRY RELAY FUNCTIONS:

Operate a Humidifier or De-Humidifier

Control a Fresh Air or Combustion Air Damper

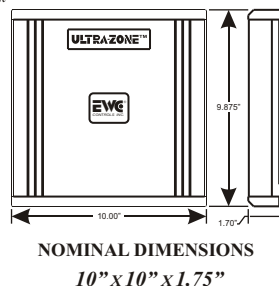
Operate & Interlock an ERV or HRV

ACCESSORIES:

Model SAS – Supply Air Sensor (**Included**)

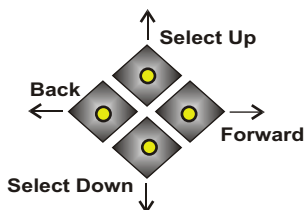
Model OAS – Outdoor Air Sensor (**Optional/Recommended**)

Model CPLS – Coil Protection Lockout Switch (**Optional/Recommended**)



FEATURE	DEFAULT	RANGE TO SELECT
System Type	Heat/Cool	Heat Pump or Heat/Cool
HP Type	NON Dual Fuel	Dual Fuel or Non-Dual Fuel
T-Stat Type	Heat/Cool	Heat Pump or Heat/Cool
Rev Valve	RV 'O'	'O' Type RV or 'B' Type RV
Fan Mode	Hydro	GAS or HYDRO (Electric)
OAS SP	15°	OFF or 7° to 42° F.
O.T. Offset	15°	5° to 20° F.
U.T. Offset	8°	5° to 10° F.
SAS HP TGT	100°	90° to 120° F.
SAS Gas TGT	125°	120° to 170° F.
SAS Cool TGT	50°	42° to 60° F.
SAS RSP DLY	60s	10seconds - 180seconds
W2 Threshold	85%	65% - 100% (Adj. in 5 point increments)
PURGE FAN	25%	25% - 100% (Adj. in 25 point increments)

LCD Screen Programming



4 Button LCD Programming

Use the *Forward* & *Back* buttons to navigate thru the Menu Features. Use the *Up* & *Down* buttons to change or adjust the options available in that feature. **Place a check mark next to each selection or write the value in the box for future reference!**

Remember if you are installing a Communicating HVAC system, the programming is done for you. **There is no need to perform these Programming steps.** You can still program certain detail functions ie. (24v T-stat Type). Select only the functions you want or need. Your program changes take effect in real time and the UT3000 will remember your settings even after a power failure. When the power is restored, the UT3000 will re-configure the network automatically.

Step 1

Heat Pump System

☐

OR

Heat Cool System

☐

Select either **Heat Pump** or regular **Heat/Cool** system. *If you have a Heat Pump and a Gas/Oil Furnace, you should still select Heat Pump.*

Step 2

Dual Fuel System

☐

OR

Non- Dual Fuel

☐

If you selected a Heat Pump system in Step 1, select whether your Heat Pump has a **Furnace** back-up system **or Electric Heat** back-up. *You can still operate most any Heat Pump in a restricted mode by using an Outdoor Sensor.*

Step 3

Heat Pump 'Stats

☐

OR

Heat / Cool 'Stats

☐

Select the type of 24v (Non-Communicating) Thermostat you want to use. You may have a Communicating thermostat in Zone 1 and Regular 24v thermostats in the other zones. **So you must select which type are in the other zones. You cannot mix 24v HP and HC type T-stats. All 24v T-stats must be Wired and/or Programmed for HC or HP Mode of Operation and the correct Reversing Valve Operation.**
Conflicting Zone Demands due to mis-wiring or incorrect programming will not be honored!

Step 4

HP Stat Type 'B'

☐

OR

HP Stat Type 'O'

☐

IMPORTANT
This selection is important when using HP T-stats. You must Wire and/or Program your HP T-stats to match this selection!

If you selected a Heat Pump system in Step 1 and Heat Pump Thermostats in Step 3, then select the type of Reversing Valve Operation.

Step 5

Fan Mode Hydro

☐

OR

Fan Mode Gas

☐

Select how you want the Indoor Fan to operate during Heating Operations. Select HYDRO if you have an Air-Handler with Hot Water Coil or an Electric Furnace. Select GAS if your system is a Gas/Oil Furnace with A/C. *If you selected a Heat Pump system in Step 1, the Fan Mode is set for you, in which case you'll see the screen Fan Mode N/A.*

Fan Mode N/A

Step 6

OAS SP 15°

☐

If you are using the Outside Air Sensor to Lock-Out the Heat Pump when the outside temperature drops low enough, select that **Set-Point** Temperature. *If you do not want to use an OAS Sensor to stage the system, adjust the OAS SP (Set-Point) value down to the OFF position and the UT3000 will display the screens to the right.*

OAS SP OFF

☐

OAS Sensor N/A

Step 7

O.T. Offset: 15°

☐

AND

U.T. Offset: 8°

☐

Examples:
 SAS HP Target = 100°F
 O.T. Offset + 15°F
HP Heat Limit = 115°F

SAS Cool Target = 50°F
 U.T. Offset - 8°F
Cooling Limit = 42°F

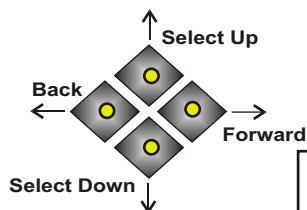
SAS Gas Target = 125°F
 O.T. Offset + 15°F
Gas Heat Limit = 140°F

If the Supply Air Temperature exceeds any Target Set-Point, (Plus or Minus the Off-Set), the resulting value becomes the **Over Temperature Condition**. Choose an **Off-Set** value that will provide a safe operating limit for your HVAC equipment. *The UT3000 will cycle the system off-line for 3 minutes, allowing the discharge air temperature to moderate while displaying the Over or Under Temp Condition (OTC or UTC) screen, depending on the mode of operation.*

Supply OTC* 140

Supply UTC* 42

LCD Screen Programming



4 Button LCD Programming

Use the *Forward & Back* buttons to navigate thru the Menu Features. Use the *Up & Down* buttons to change or adjust the options available in that feature. Place a check mark next to each selection or write the value in the box for future reference!

The UT3000 staging process is very unique. The difference between the Target Set-point and the Actual Supply Air temperature along with the SAS Response Delay determines how fast or slow the UT3000 will stage the HVAC system. Via the System (**SYS**) Output screen, (see the next page) the UT3000 will increase or decrease the System Output value so it can match the Target set-point. When the target is matched, the UT3000 will stop staging.

SAS HP TGT 100°

Step 8

Select the **HP** Heating Supply Air Temperature Target that the UT3000 will demand from the HVAC system. The UT3000 will automatically stage the HVAC system Up or Down to maintain this value.

SAS GAS TGT 125°

Step 9

Select the **GAS** Heating Supply Air Temperature Target that the UT3000 will demand from the HVAC system. The UT3000 will automatically stage the HVAC system Up or Down to maintain this value.

SAS COOL TGT 50°

Step 10

Select the **COOLING** Supply Air Temperature Target that the UT3000 will demand from the HVAC system. The UT3000 will automatically stage the HVAC system Up or Down to maintain this value.

SAS RSP DLY 60s

Step 11

Select how often the UT3000 will sample (*look at*) the Supply Air Temperature. **The UT3000 will increase or decrease the SYSTEM (SYS) demand output, trying to match the Actual Supply Air Temperature delivered from the HVAC system, to the active Cool Target, Gas Target or HP Target Set-Point. The Default value to sample the Supply Air is once every 60 seconds.** An SAS Response delay value of 10 seconds results in very fast staging. An SAS Response delay value of 120 seconds or more results in slower staging.

HEAT MODE: If the Heating Supply Air Temperature is below the Heat Target when the UT3000 samples the supply air, it will increase the SYSTEM Output by 1% every 60 seconds. If the Heating Supply Air Temperature is above the Heat Target when the UT3000 samples the supply air, it will decrease the **SYS** Output by 3% every 60 seconds.

COOL MODE: If the Cooling Supply Air Temperature is above the Cooling Target when the UT3000 samples the supply air, it will increase the **SYS** Output by 1% every 60 seconds. If the Cooling Supply Air Temperature is below the Cooling Target when the UT3000 samples the supply air, it will decrease the **SYS** Output by 3% every 60 seconds.

This function is in response to the Supply Air Sensor actual value, as compared to the Target Set-point including any differential. Select a lower value (30s) to Stage Faster. Select a higher value (120s) to Stage Slower.

W2 Threshold 85%

Step 12

Select the value at which the Auxiliary (W2) or Back-up system energizes. The Range is 65% - 100% and the default value is 85% of System (**SYS**) Output. Setting the value low means the Auxiliary system will operate more often. Setting a high value means the Auxiliary system operates less often. There is a 5% differential added to the value selected which prevents short cycling. **Setting the W2 threshold to 100% effectively turns it OFF.** The reason for this is the differential. So, a value of 90% actually trips at 95%. *Thus a value of 100% would require the System Output to reach 105% which is impossible. Use the 100% value if you want the Auxiliary system to Energize on the Outside Air Set-point only.* If desired, you can use the Outside Air Set-point **and** set the W2 Threshold to 95%. That would require the System (**SYS**) Output Percentage to reach 100% demand **or** the Outside Air temperature has to drop low enough, to warrant energizing the Auxiliary system.

Purge Fan 25%

Finish

Select how fast you want the Indoor Fan to run at the end of a cycle to Purge the last of the hot or cool air into the last zone calling. You may select 25%, 50%, 75% or 100%. The default value is 25%. **Note 1:** Fan Only operations using 24v T-stats on all zones will operate at the Fan Purge Setting. **Note 2:** Fan Only operations using 24v T-stats on zone 2&3 with a Communicating T-stat in zone 1 will operate at whatever speed is selected on the Zone 1 T-stat. Simply operate the communicating Zone 1 T-stat in Fan Only mode for a minimum of 20 minutes.

Important Note: Review all of these Programming Features carefully and call EWC Controls if you have any questions. With years of experience Zoning HVAC systems, we have plugged in the default values that should work fine for the majority of the jobs you will encounter. If desired, you can still adjust the settings to your own preference. When doing so, wait and patiently observe the effect of those changes before changing them again. The UT3000's output demands to the HVAC equipment will vary and change depending on numerous factors such as: Internal Load, Outdoor Conditions, System Capacity, SAS Response Delay Setting, Supply Air Target set-points and T-stat demand values.

LCD Screen Scrolling Displays

Once the programming is complete and the System is functioning, the LCD screen will scroll and display the following data screens continuously. The HVAC system mode of operation is displayed including Supply Air and Outdoor Air temperature, Auxiliary/Emergency mode and Ancillary Functions. The UT3000 LCD will continuously Scroll data as to which Zones are actively calling for a Heating, Cooling or Fan Operation. By watching the LCD display you can observe all system functions as they occur. If desired, you can lock the LCD on a single screen by pushing the Program Up & Down buttons at the same time. Select the screen you want to watch with the Up button. The screen will stay locked for 10 minutes then resume scrolling, or you can unlock the screen yourself by pushing the Forward button once.

Below are LCD data screen examples:



Communicating Thermostats are capable of providing a proportional heat or cool demand signal.

Zone 1 is calling for Heat @30%. This indicates the presence of a Communicating Thermostat in Zone 1 whose demands are given a weighted value due to it's proportional capability. (0% - 30% - 60% - 85% - 100% - etc.)



24v HP Thermostats cannot provide a proportional heat or cool demand signal. Heat demand = 50% or 100% (Y with Aux) Cool demand = 100% (Y alone)

Zone 2 is calling for Heat @50% including Fan, so the Fan demand is also 50%. This indicates the presence of a Regular 24v HP T-stat in Zone 2 whose demands are given fixed values only. (0% - 50% - 100%)



24v HC Thermostats cannot provide a proportional heat or cool demand signal. Heat demand = 100% (W) Cool demand = 100% (Y)

Zone 3 is calling for Cooling @100%. This indicates the presence of a Regular 24v H/C Thermostat in Zone 3, whose demands are given fixed values only. (0% - 100%)

IMPORTANT NOTE: You cannot mix 24V HP Thermostats with 24V Heat/Cool Thermostats. The LCD screens shown above are examples only. A Typical installation may have a Communicating T-stat in Zone 1 and the rest may be 24v Heat Pump type.

Acceptable UT3000 Thermostat Combinations:

Zone 1 = Communicating
Zone 2 = Communicating
Zone 3 = Communicating

Zone 1 = Communicating NOTE: The Comm T-stat could be in any Zone!
Zone 2 = 24v H/C But to make 24v fan operations behave like the Communicating T-stat, keep the Comm T-stat in Zone 1.

Zone 1 = Communicating NOTE: The Comm T-stat could be in any Zone!
Zone 2 = 24v HP But to make 24v fan operations behave like the Communicating T-stat, keep the Comm T-stat in Zone 1.

Zone 1 = 24v H/C
Zone 2 = 24v H/C
Zone 3 = 24v H/C

Zone 1 = 24v HP
Zone 2 = 24v HP
Zone 3 = 24v HP

Refer to Page 9 for Sample Thermostat Diagrams

SYS h035c000f035

This screen displays the SYSTEM (SYS) Output percentage to the HVAC Equipment. In this Heat Pump Example, the UT3000 is demanding 35% heating capacity and 35% fan capacity. That means 1st stage heat (Y1) is active. If the HP Target set-point (100F) is not satisfied before reaching 51% SYS Output, Y2 will energize. If the HP target set-point is still not satisfied before reaching the W2 threshold value, W2 will energize.

01% - 50% Output = Y1HP or Y1A/C or W1Gas

51% - 65% Output = Y2HP or Y2A/C

W2 Threshold 65% - 99% = W2HP or W2Gas

Note: The UT3000 may interpret a ZoneThermostat input as 100% demand but it will not Output a 100% System Demand. The UT3000 will demand only as much System Capacity as is necessary, to satisfy the Active Supply Air Target Set-Point. Upon the start of any heat or cool operation, any single calling zone is considered to be a maximum 33% demand out of a possible 99% demand, if all zones were calling.

SYS Aux100 Em100

SYS Hum000 Dh015

This screen displays the System Percentage demand from the Auxiliary and/or the Emergency system. The **Aux** will display a value during Auxiliary mode. Both screens will display values during Emergency mode. The next screen displays the System Percentage demand to Humidify or De-humidify. Humidify or IAQ demands may come from a Communicating thermostat or 24v Control. The UT3000 honors De-Humidify demands from Communicating thermostats with Communicating HVAC systems only.

Supply TMP 127

! SAS Sensor Bad !

This screen shows the supply air temperature at the location of the supply air sensor in real time. The UT3000 monitors and compares the Actual Supply Air Temperature to the HP Target, Cooling Target or Gas Target Set-points. The UT3000 will increase (by 1% increments) or decrease (by 3% increments) the SYS Demand Output in order to increase or decrease HVAC system capacity. If the Supply Air Sensor is disconnected or fails, the UT3000 will display the "Bad Sensor" screen and will default to "Timed Mode" staging until the Zone T-stat demands are satisfied. If the UT3000 observes the supply air temperature exceed any Target set-point plus or minus the OT or UT off-set, the UT3000 will

display one of these screens.

Supply OTC* 147

Supply UTC* 38

Outside TMP 32

! OAS Sensor Bad !

This screen shows the real time outside air temperature at the location of the outside air sensor. This OA value could be from the Communicating HVAC system or from a Sensor connected to the UT3000. If the OAS sensor fails or is disconnected, the UT3000 will display the "Bad Sensor" screen and will default to emergency mode. If you do not want to use an OAS Sensor to stage the system, adjust the OAS SP (Set-Point) value down to the OFF position and the UT3000 will display the screen to the right.

OAS Sensor N/A

Built-In Delay Timer Settings

The UT3000 has built-in Delay Timers that insure safe HVAC system operation.

- *Start-up Delay Timer 1 minute, fixed.
- *Short Cycle Timer 2 minutes, fixed.
- *Supply Air Limit Delay 3 minutes, fixed.
- *Changeover Timer 4 minutes, fixed.
- *Opposing System Service Timer 20 minutes, fixed.

TIMER DEFINITIONS

Start-Up Delay Timer

Upon initial power up or after a power failure, the UT3000 will not start the equipment for at least 1 minute.

Short Cycle Timer

When all Zones are satisfied, the UT3000 will not resume the same call for a minimum of 2 minutes.

Supply Air Limit Timer

If a Heating or Cooling operation cycles down due to excessive Supply Air temperature, the UT3000 will not re-start the HVAC system for 3 minutes.

Changeover Timer

At the end of a call, a 4 minute timer is started and the UT3000 will not switch to the opposite mode of system operation until the timer has expired.

Opposing System Service Timer

A 20 minute delay must expire, or the active zone(s) must satisfy, before the UT3000 will honor a thermostat demand to changeover to the opposite mode of system operation.

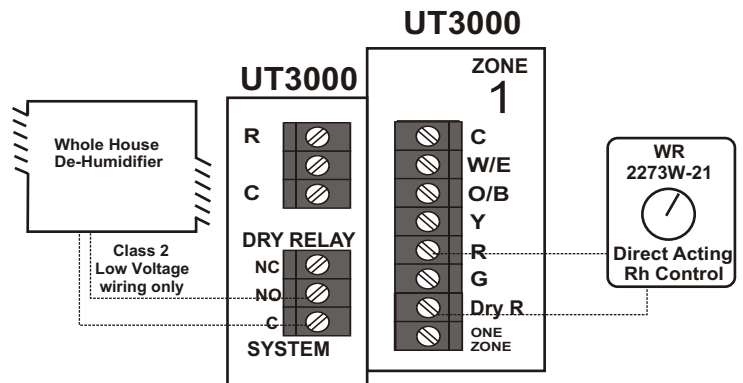
One Zone Mode Feature

The UT3000 includes the ONE ZONE feature that allows a Commercial Grade Thermostat or Time Clock to Force the UT3000 into the ONE ZONE MODE during Setback Periods. In compliance with California Title 24, when the One Zone Terminal is energized, the UT3000 ignores all Zone T-stat demands except for Zone 1. All Zone Dampers are Forced Open. When the One Zone terminal is de-energized, the UT3000 will resume Zoning Operations.

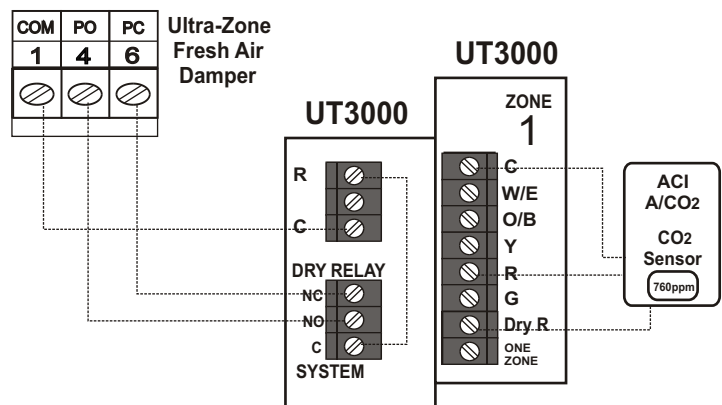
Ancillary IAQ Dry Relay Functions

The UT3000 includes a SPDT Dry Relay with an Input Trigger that can be used to Connect, Interlock and Control various IAQ devices. The Indoor Fan will operate automatically, when the Dry Relay Input is Triggered. *All Connected Zone Dampers still operate normally and are not affected by the relay's function.*

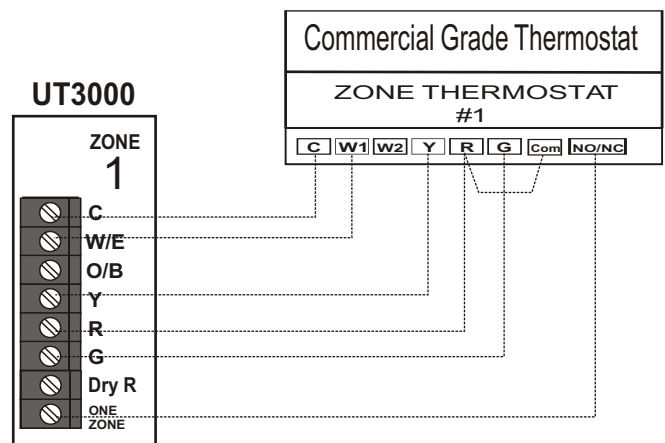
The Following Diagrams reflect ways to Utilize the IAQ Dry Relay and ONE ZONE Mode to your Advantage. These and Other Customized Wiring Diagrams are Available by contacting EWC® Controls. ***For Clarity, other wire connections are not shown.***



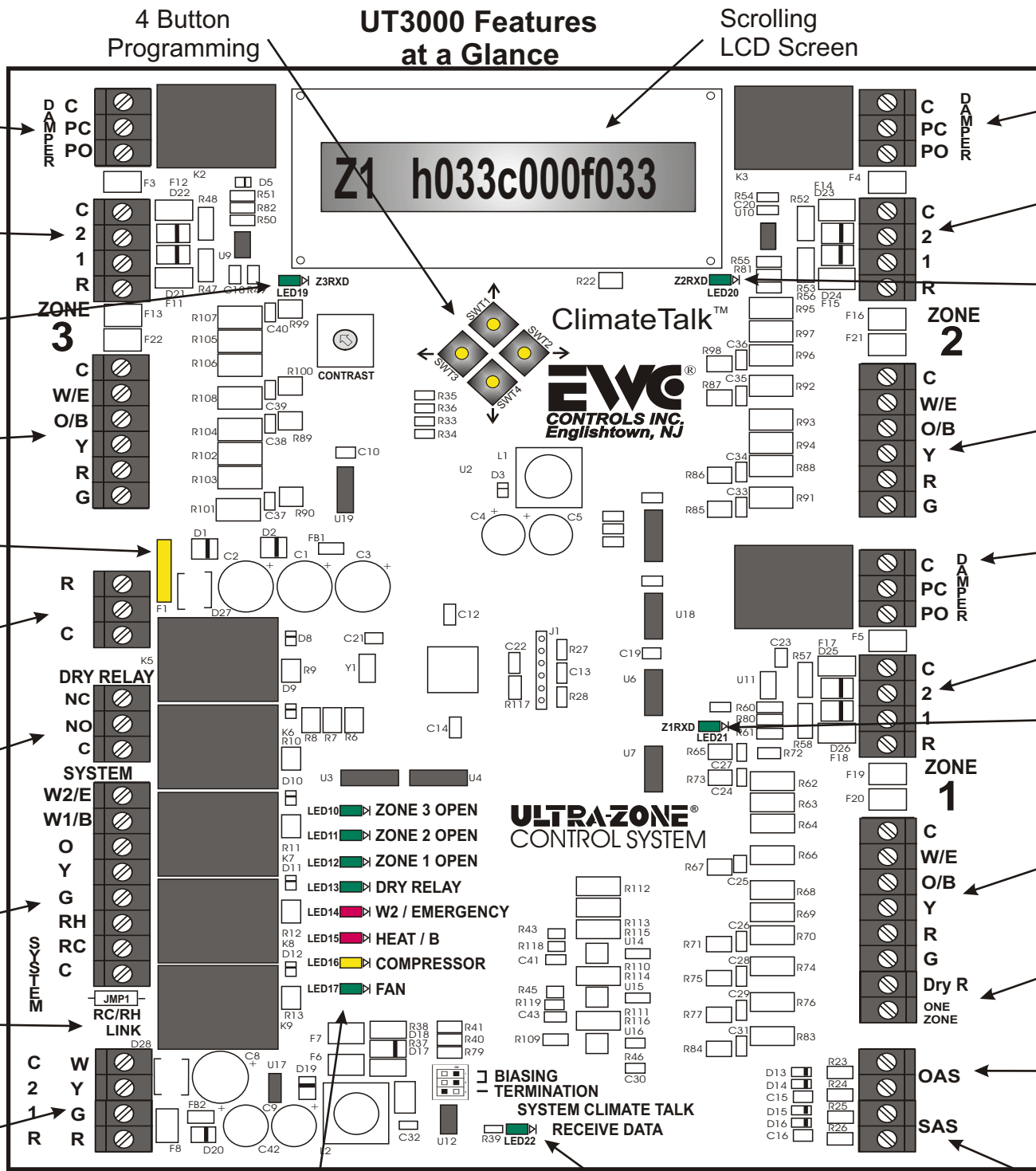
Interlock and Operate a De-humidifier. The UT3000 will energize the Indoor Blower to increase air movement thru the home



Fresh Air IAQ Solution using a Field Supplied Co2 Monitor



Setback "One Zone" Solution using a Commercial Grade Thermostat. If you prefer, you can use a Part # VAC Manual Vacation Switch. Call EWC Controls for assistance with your Setback solution.



Zone Damper #3

Communicating T-stat #3

Communicating LED Indicator Zone #3

Regular T-stat #3

Over-Current Breaker 2.5 amp

24vac Power Input

Ancillary Dry Relay Output

Regular Dry Relay System Output

Rc/Rh Jumper

Communicating System Output

4 Button Programming

UT3000 Features at a Glance

Scrolling LCD Screen

Zone Damper #2

Communicating T-stat #2

Communicating LED Indicator Zone #2

Regular T-stat #2

Zone Damper #1

Communicating T-stat #1

Communicating LED Indicator Zone #1

Regular T-stat #1

Ancillary & IAQ Function Inputs

Outdoor Air Sensor Terminals

Supply Air Sensor Terminals

Color Coded LED's

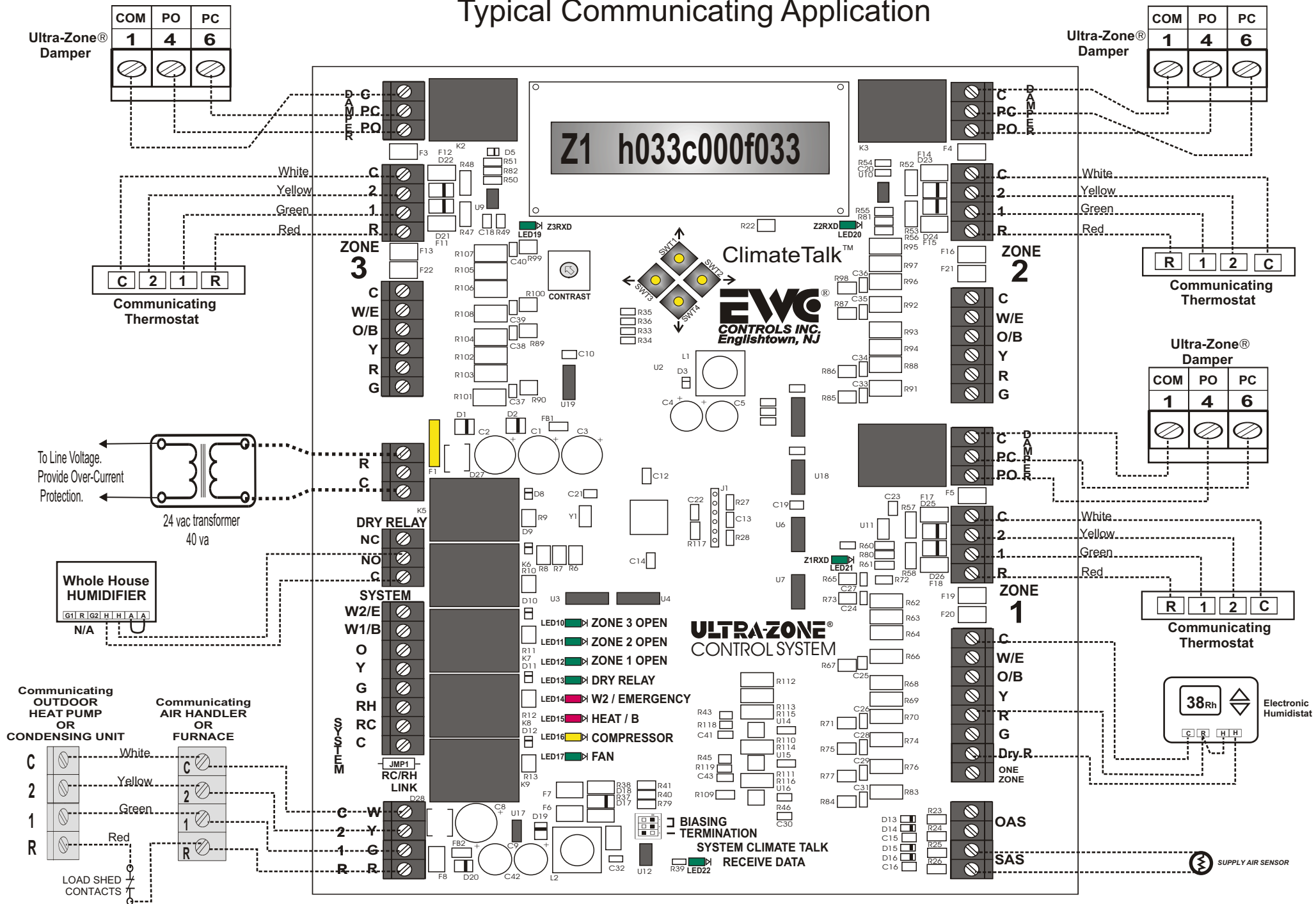
ClimateTalk
EWC
CONTROLS INC.
Englishtown, NJ

ULTRA-ZONE
CONTROL SYSTEM

BIASING - TERMINATION
SYSTEM CLIMATE TALK
RECEIVE DATA

Communicating SYSTEM LED Indicator

Typical Communicating Application



WIRING INSTRUCTIONS

WARNING: THESE PANELS ARE DESIGNED FOR USE WITH 24VAC. DO NOT USE OTHER VOLTAGES! USE CAUTION TO AVOID ELECTRIC SHOCK OR EQUIPMENT DAMAGE. ALL WORK SHOULD BE PERFORMED TO LOCAL AND NATIONAL CODES AND ORDINANCES. USE 18 AWG SOLID COPPER, COLOR-CODED, MULTI-CONDUCTOR THERMOSTAT CABLE.

Thermostat Wiring

Communicating thermostats can be used on all zones for all applications. You can also mix Communicating thermostats with 24v thermostats. Just make sure you select the correct type of 24v thermostat in the program menu. You cannot mix 24v Single stage heat/cool thermostats with 24v Heat Pump thermostats. A Comm LED is provided at each Comm Terminal Block to indicate a Link has been established with each communicating device. The Comm LED will pulse rapidly & randomly to indicate the Link is active. Otherwise it will blink very slow. Be patient and allow sufficient time for all Communicating T-stats to finish the configuration process. Usually 60 seconds or less. Make sure to allow enough time for the entire HVAC system to access the network. Usually no more than 3 minutes.

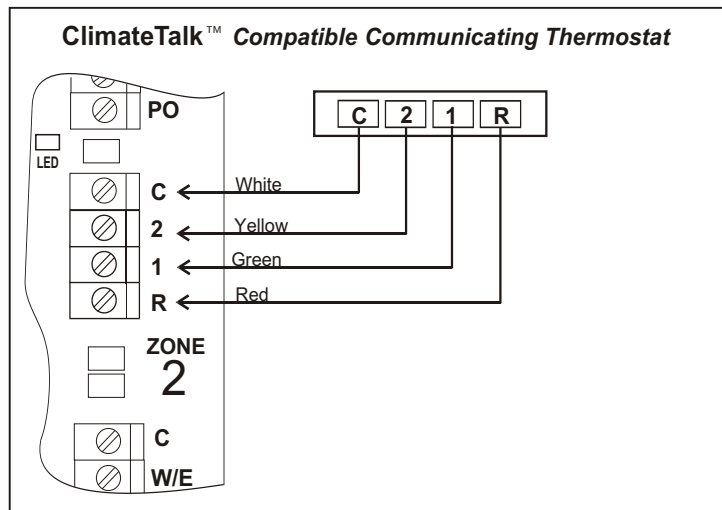


Figure 2a

OEM Mfr's Communicating Thermostat. See thermostat instructions for further details. You can use communicating thermostats on every zone. Or use a communicating thermostat in Zone 1 and less expensive 24v thermostats in Zone 2 and Zone 3.

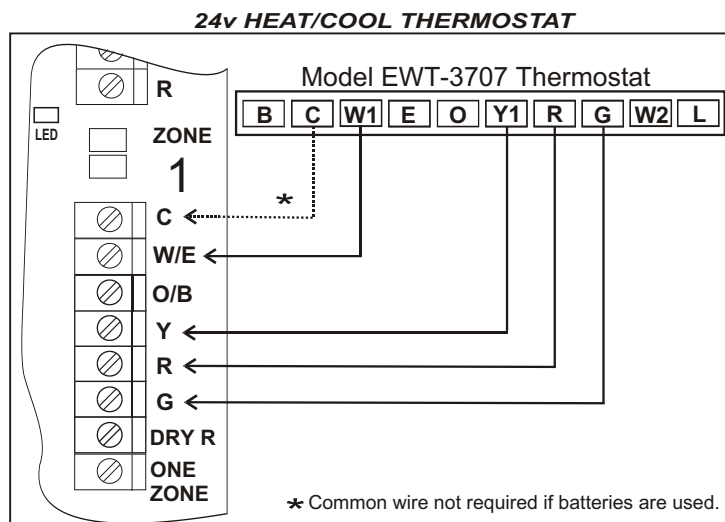


Figure 2c

Model EWT-3707 Thermostat Configured for 1 heat & 1 cool (SS1 mode). See thermostat instructions for details. The HVAC system equipment may be 24v Legacy or Communicating type.

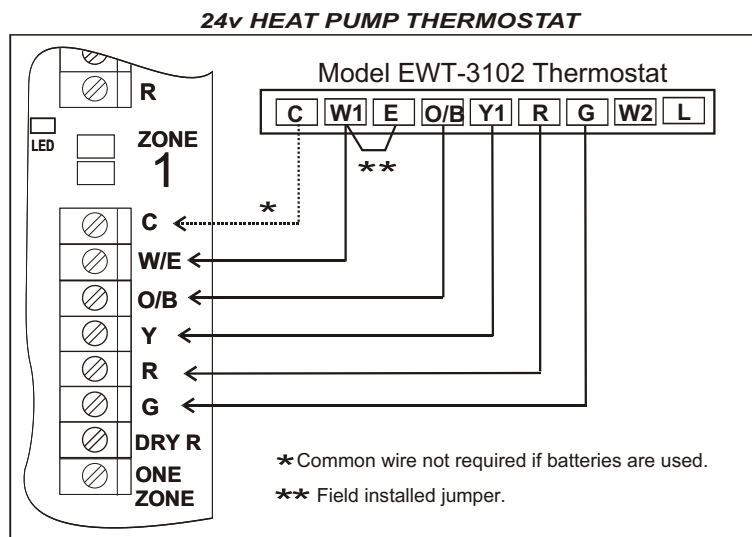


Figure 2b

Model EWT-3102 Thermostat Configured for 2 heat & 1 cool (HP1 mode). See thermostat instructions for details. The HVAC system equipment may be 24v Legacy or Communicating. You can also mix 24v type thermostats and communicating thermostats.

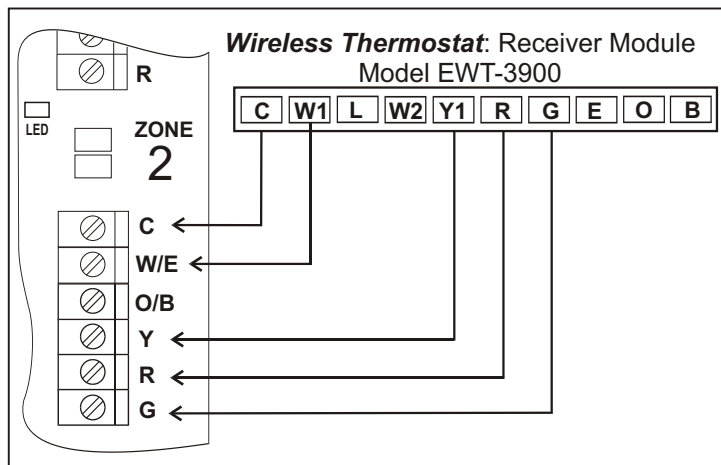


Figure 2d

Model EWT-3900 Wireless Thermostat. Configured for 1 heat 1 cool (SS1 mode). Can be configured for heat pump also. See thermostat instructions for details. Use Wireless thermostats in Zone 2 and/or Zone 3. Always use a hard wired type thermostat for Zone 1.

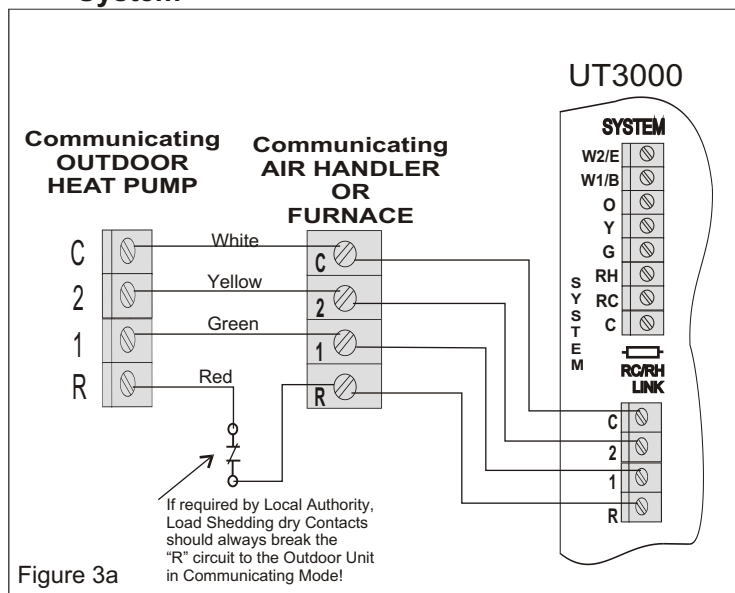
NOTE: The UT3000 allows the user to install *Communicating Thermostats* on all zones. *Communicating thermostats can also be used in combination with 24v thermostats.* You may also use regular Heat/Cool type thermostats or Heat Pump thermostats on all zones. This design simplifies the thermostat selection process and allows the installer to easily adapt the UT3000 to most any residential application. **NOTE:** Regardless of the type of 24v thermostats used, the W2 Threshold feature or the OAS Set-Point will control the auxiliary system. Once the W2 Threshold is crossed or the Outdoor Air Set-Point is reached, Auxiliary Heat will energize. Auxiliary demands from each thermostat are only used to determine the weight or percentage of demand from that zone, rather than immediately activating Auxiliary operations.

System Wiring

The UT3000 panel was designed to be easy to wire up and operate. We have provided several typical field wiring diagrams to review. Your actual field wiring may vary. In full communicating mode, 4 wires are all that is required from each thermostat and to the HVAC system. The UT3000 will "Talk" to the HVAC system and "Talk" to the thermostats in order to automatically setup and start operating the HVAC system. In 24volt mode, you can program the UT3000 to operate the type of HVAC system you are installing. Either way, the UT3000 allows you to Plug & Play or Program & Play!

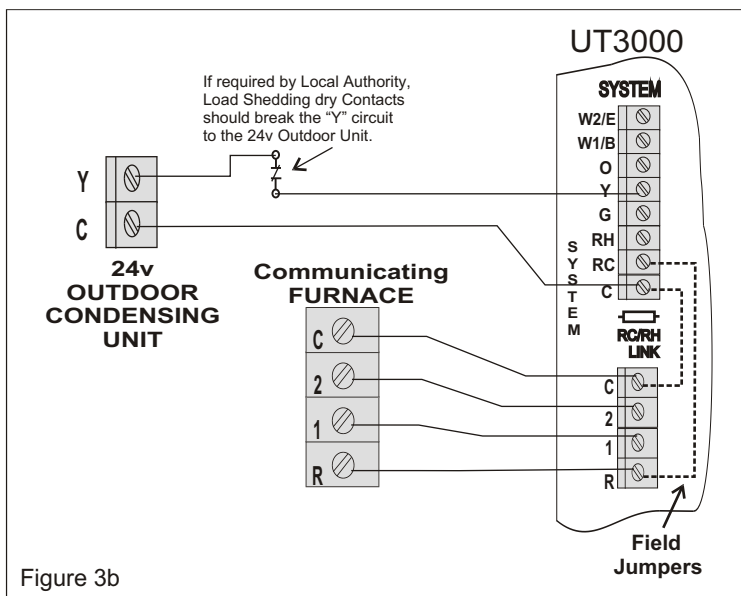
Communicating Dual Fuel or Standard Heat Pump System

Four wires are all that is required to each component. Plug & Play



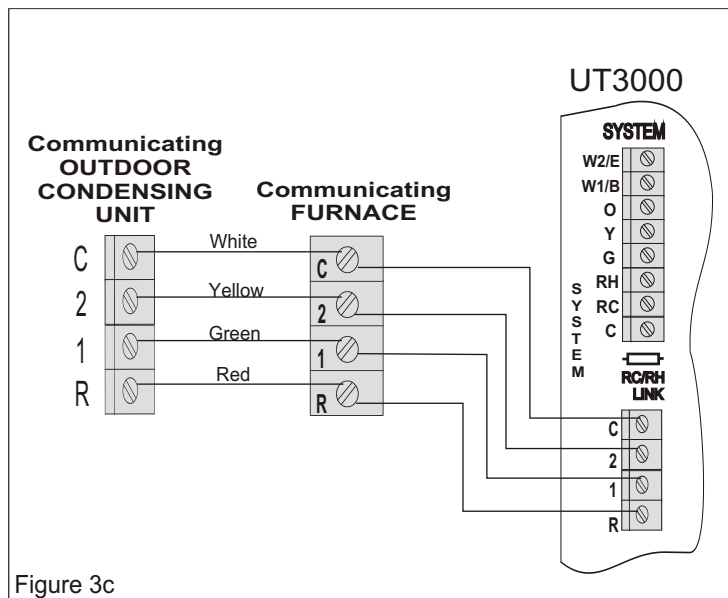
Communicating Furnace with 24v Air Conditioner

Four wires are required from the UT3000 to the Communicating furnace. Two wires are required to the air conditioner. The 2 wires can come from the UT3000 or the Furnace. Plug & Play



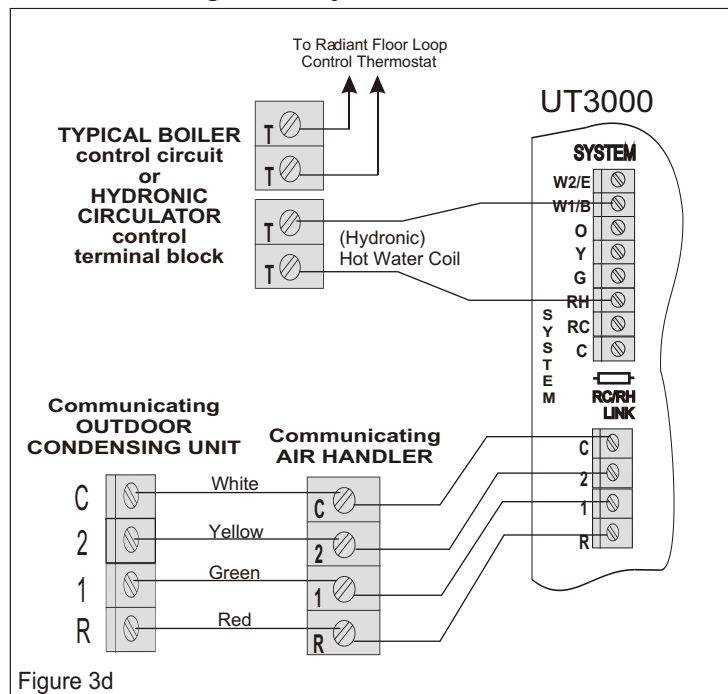
Communicating Fuel/Electric System

Four wires are all that is required to each component. Plug & Play



Existing Boiler with New A/C System

You may have a new Communicating A/C unit but still want to use your Old Boiler as the Heating system. Connect the T&T circuit from your boiler control panel to the Rh and W1/B terminals on the UT3000. Program the UT3000 for Hydronic Fan mode. Program & Play



Contact EWC Controls Technical Support for assistance on these and other Equipment Wiring Solutions.

DAMPER WIRING

Note: The 500mA Damper Circuit Breaker limits how many dampers can be directly connected to a single terminal block. You can connect up to eighteen (18) genuine ND, URD, or SID dampers to a single terminal block before relay isolation is required. You can connect only one (1) RSD or Competitor's Spring type damper to a single terminal block before relay isolation is required.

Note: All zone dampers default to the "OPEN" position after a purge delay and when all zone demands are satisfied, and no signals are detected from any zone thermostats.

ZONE DAMPER MOTOR TERMINAL BLOCK DESIGNATION & FUNCTION

Terminal PC 24vac Power to Close a Damper
Terminal PO 24vac Power to Open a Damper
Terminal C 24vac Common (Neutral)

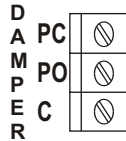


Figure 4

Genuine ND, URD & SID Damper Wiring

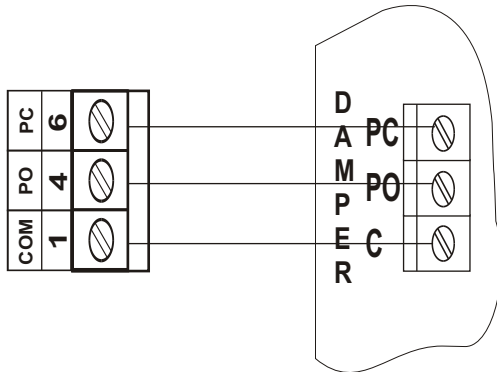
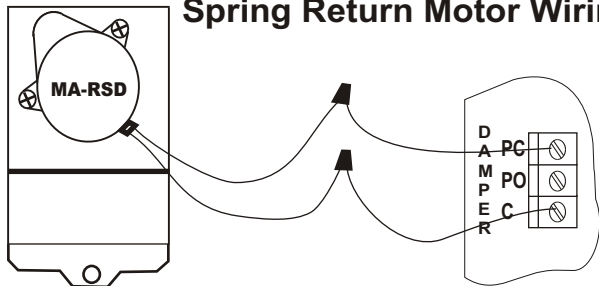


Figure 5a

On all these dampers and most older style dampers, including competitor's dampers, always wire up number to number or by terminal designations. (Com to Com)(PO to PO)(PC to PC) (1-1)(4-4)(6-6)

EWC Controls Typical Spring Return Motor Wiring



Any Spring Open Damper is wired to C & PC
Any Spring Close Damper is wired to C & PO

Figure 5b

Current Draw for a ND, URD, or SID Damper = **26mA**
Current Draw for a Spring Type Damper = **400mA**

Three or More ND, URD, SID Dampers on a Single Zone Terminal Block No Isolation is Required

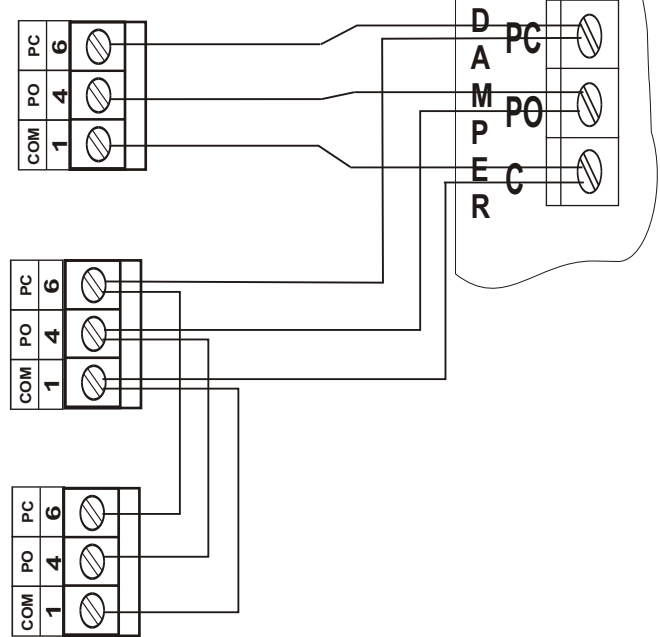


Figure 5c

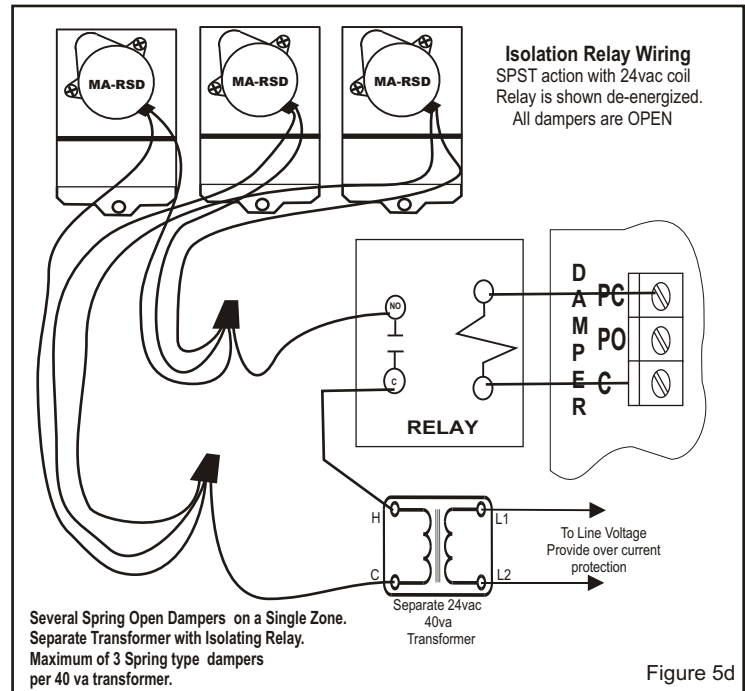
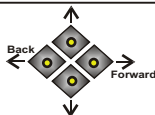


Figure 5d

DO NOT overload the UT3000's Damper Motor Circuit Breakers. If you need to connect more than one (1) Spring Type Damper to a single terminal block, use figure 5d to separate and isolate those dampers.

TROUBLESHOOTING

SYMPTOM	SOLUTIONS
LCD & LED's are responding properly but HVAC system is malfunctioning. Communicating T-stat displays fault messages.	Check HVAC system wiring for proper connections. Check HVAC system wiring for shorts/miswiring. Test wires for Continuity/Shorts. Check HVAC System documentation. Check HVAC equipment for faults. Check proper voltage for Data1 to C @ 2.8vdc. Check Data 2 to C @ 2.2vdc.
LCD & LED's are not responding properly and HVAC system is malfunctioning.	Check Zone system wiring for shorts/miswiring. Test wires for Continuity/Shorts. Check HVAC system wiring for proper wiring. Check HVAC system for faults. Check Zone thermostats for proper connections. Test wires for Continuity/Shorts. Refer to Technical Bulletin for correct Setup/Wiring/Program Settings.
LCD & LED's function and HVAC system functions normally but dampers do not respond.	Check damper motor wiring for proper connections. Check damper motor 24volt & 500mA Breaker. Test wires for Continuity/Shorts. Check damper motor wiring for shorts/miswiring. Test wires for Continuity/Shorts. Refer to Page 11 for Damper Wiring.
LCD & LED's do not function and HVAC system does not respond.	Check HVAC/UT3000 system transformer supply voltage. Check HVAC/UT3000 system 24vac transformer voltage/Breaker. Test all wires for Continuity, shorts to Common or shorts to earth ground. Check HVAC/UT3000 system wiring for shorts/miswiring.
Time Delay is Active and won't allow Heat or Cool to Function.	When Troubleshooting, Simultaneously Press the Back & Forward buttons for 1 second to Bypass any Active Time Delay.



CHECK YOUR WIRING

DETECTING 24vac SHORTS	SYMPTOM: Entire Panel or a Single Zone appears to be dead!
HVAC system not responding and UT3000 LED's are off.	If 24vac short has occurred, 24vac will be present at the UT3000 24v Input terminals R & C; but 24vac will not be present at any Thermostat R&C.
Dampers not responding and The UT3000 LED's are off.	SOLUTIONS: Remove 24vac power from UT3000 and allow F1 circuit breaker to cool! Find and repair short(s) in damper and/or thermostat field wiring. Restore 24 vac power.
ISOLATING 24vac SHORTS <i>140mA & 500mA circuit breakers protect the UT3000 and react to a short in the Thermostat/Damper component field wiring.</i>	Disconnect the wire(s) from the 'R' terminals on the UT3000 thermostat terminal blocks, and the "C/PO/PC" terminals on the UT3000 damper motor terminal blocks. Restore power. If the short is no longer present, Ohm out the thermostat and damper field wiring for continuity, shorts to common and/or shorts to earth ground. Replace or repair wires as necessary. Restore power.

Detecting 24v shorts to common or shorts to earth ground

When the 2.5A breaker is tripped it will get hot to the touch and none of the panel LED's will illuminate. The LCD will also cease to function. To reset the breaker, locate the short by removing each hot wire connected to the panel, one at a time. When the shorted wire is removed, the panel will resume normal functions. Now you must repair or replace the shorted wire. If one or more 140mA or 500mA breakers trip, only the device(s) connected to that block will be affected. Remove each hot wire connected to that block until the voltage is restored. Find and repair the short before re-connecting the wires. If there is a short between the Data 1 & 2 wires or if the Data wires are shorted to 24v or earth ground, the Communicating thermostat on that zone will alert you by displaying "Call for Service". If no communicating thermostat is connected and a short occurs on the 24v wires, that zone will not function. Find and repair the short using the methods described above.

TECHNICAL SUPPORT

EWC® Controls provides superior toll free Troubleshooting Support for the UT3000 when you are on the job site!

Call 1-800-446-3110 Monday - Friday 8am to 5pm EST. Otherwise call 1-732-446-3110 for information on the UT3000 and other ULTRA-ZONE® products. Visit our web site to download this Technical Bulletin and other related information at www.ewcccontrols.com

When calling for Technical Support from the job-site, please have a multi-meter, pocket screwdriver, and wire cutters/strippers on hand.