

SIEMENS



TEC Controller

Unit Conditioner - Electronic Output

Start-up Procedures

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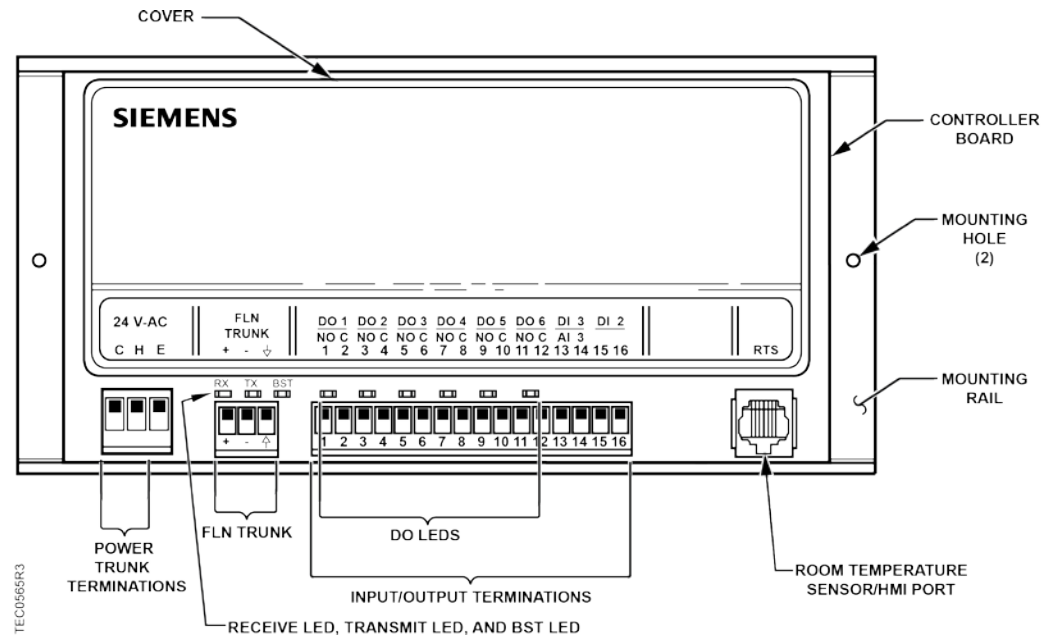
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Before You Begin



Generic Controller I/O Layout. See *Wiring Diagram* for application specific details.

Communication and DO Indicators

The Siemens TEC Unit Conditioner (Fan Coil) Controller has LEDs to indicate communication (yellow) and DO (digital output) status BST (green).

Verifying Power to the Controller

Verify that the controller is powered up. Check that the BST LED on the controller is flashing. If the BST LED does not flash on/off once per second, see the *iKnow Troubleshooting Tool* or contact Technical Support for troubleshooting information.

Enabling Actuators



CAUTION

The controller's DOs control only 24 Vac loads.
The maximum rating is 12 VA for each DO.

The points that determine actuator run times are:

- MTR 1 TIMING
- MTR 2 TIMING
- MTR 3 TIMING

Your application may not have or use all three points.

1. Use and/or to set run time(s) for the actuator(s) used by your application.
2. For damper rotation angles other than 90°, set DMPx ROT ANG to the appropriate value. The names of these points vary.

Damper Actuator Run Time		
Damper Actuator	Setting (seconds)	
	50 Hz	60 Hz
GDE131.1	125	90
GLB131.1	150	125

Valve Actuator Run Time		
Valve Actuator	Setting (seconds)	
	50 Hz	60 Hz
SSB81U, floating control fail in place	180	150
SSC81U, floating control fail in place	150	125
SSC81.5U, floating control fail-safe	125	125
SQS85.53U, floating control spring return	35	30

Specifying Motor Setup

MTR SETUP determines which actuators are controlled by the application and whether they are direct or reverse acting. See the *MTR SETUP Values for Standard Configurations* table for standard configurations and the *Motor Enable/Reverse Values for MTR SETUP* table for non-standard configurations.



NOTE:

When MTR SETUP is changed, all enabled actuators will calibrate. Wait until each actuator has completed calibration before continuing.

MTR SETUP Values for Standard Configurations				
Application	Configurations			Value for MTR SETUP
	Motor 1	Motor 2	Motor 3	
2040	damper (normally closed)	spare	spare	1
2041	damper (normally closed)	heating valve 1 (normally open)	heating valve 2 (normally open) (optional)	for one valve: 13 for two valves: 61
2050	heating/cooling valve 1 (normally	heating valve 2 (normally open)	N/A	for one valve: 3 for two valves: 15

MTR SETUP Values for Standard Configurations				
Application	Configurations			Value for MTR SETUP
	Motor 1	Motor 2	Motor 3	
	open)	(optional)		
2051	cooling valve 1 (normally closed)	heating valve 2 (normally open)	N/A	13
2052	N/A	N/A	N/A	0
2053	N/A	heating valve (normally open)	N/A	12
2054	cooling valve (normally closed)	N/A	N/A	1

Motor Enable/Reverse Values for MTR SETUP									
	Motor 1 Enabled			Motor 1 Enabled and Reversed			Motor 1 Not Used		
	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed	Motor 2 Not Used	Motor 2 Enabled	Motor 2 Enabled and Reversed
Motor 3 Not Used	1	5	13	3	7	15	0	4	12
Motor 3 Enabled	17	21	29	19	23	31	16	20	28

Verifying Actuator Setup

1. Command all actuators closed. Verify that they close and remain closed. If not, adjust the setting for MTR SETUP according to Table *MTR SETUP Values*.
2. If any of the actuators still do not close completely, then the actuators have been installed or set up incorrectly. See the Siemens TEC Unit Conditioner (Fan Coil) Controller Installation Instructions (540-1026), the iKnow Troubleshooting Tool, or contact Field Support.

Setting the Application

Add the TEC to your job database and select one of the following applications.

Application Description	Application Number
VAV Pressure Dependent Cooling or Heating (Unit Conditioner application)	2040
VAV Pressure Dependent with Hot Water Heat (Unit Conditioner application)	2041

Application Description	Application Number
Two Pipe Fan Coil Unit Cooling or Heating	2050
Fan Coil Unit Cooling and Heating	2051
Fan Coil Unit 2 Stages Cooling and Electric Heat	2052
Fan Coil Unit 2 Stages Cooling and Hot Water Heat	2053
Fan Coil Unit Cooling and Electric Heat or VAV Pressure Dependent with Electric Heat	2054

After you set the application, the controller goes through a shut-down/load sequence as it switches from slave mode to the application selected. After the application loads, the calibration cycle begins.

Setting Number of Heat Stages or Valves

Depending on the application, HTG STG CNT or VLV CNT (if present) refers to electric heat stages or valves used (enabled).

- For water or steam valve applications, set VLV CNT to the number of valves used (1 or 2).
- For electric heat applications, check the hardware to verify the number of electric heat stages wired to the controller (1 to 3) and set HTG STG CNT to this value.



CAUTION

Insufficient airflow across energized electric heating coils can cause equipment damage.

Minimum flow must provide adequate airflow across energized electric heating coils.

Setting Room Temperature Setpoints

- Day (or OCC) cooling setpoint: DAY CLG STPT
 - Day (or OCC) heating setpoint: DAY HTG STPT
 - Night (or UOC) cooling setpoint: NGT CLG STPT
 - Night (or UOC) heating setpoint: NGT HTG STPT
1. If the room temperature sensor has a setpoint dial that will be used, set STPT DIAL to **YES**. Otherwise, set STPT DIAL to **NO**.
 - Set RM STPT MIN and RM STPT MAX for the minimum and maximum allowable room temperature setpoint values, respectively. Valid values range from 55° to 95°F (13° to 35°C). Default values are 55°F (13°C) for RM STPT MIN and 90°F (32°C) for RM STPT MAX.
 2. Setpoint dial configured with a heating/cooling deadband (default).
 - To allow the controller to operate with a heating/cooling deadband (functioning the same as provided when the setpoint dial is not present), use the following configuration:

- Set the DAY HTG STPT less than the DAY CLG STPT by the deadband (or zero energy band) that is desired. (for example, DAY HTG STPT = 70°F; DAY CLG STPT = 74°F, providing a deadband of 4 degrees). Only the difference between these values is used to determine the setpoint that will be used.
 - As described below, the setpoint(s) for heating/cooling will be 1/2 of the deadband above or below the setpoint dial value.
 - ⇒ When HEAT.COOL equals HEAT, then:
 - ⇒ CTL STPT will equal $RM\ STPT\ DIAL - 0.5 * (DAY\ CLG\ STPT - DAY\ HTG\ STPT)$ and will be limited by RM STPT MIN and RM STPT MAX.
 - ⇒ When HEAT.COOL equals COOL, then:
 - ⇒ CTL STPT will equal $RM\ STPT\ DIAL + 0.5 * (DAY\ CLG\ STPT - DAY\ HTG\ STPT)$ and will be limited by RM STPT MIN and RM STPT MAX.
 - NOTE:** A space where the deadband is used can be more energy efficient than a space where the deadband is not being used.
3. Setpoint dial configured for zero heating/cooling deadband.
- When the job specification requires a common heating and cooling temperature setpoint, use the following configuration:
 - Set DAY HTG STPT equal to DAY CLG STPT. This will configure the setpoint deadband equal to zero.
 - If a setpoint deadband equals zero, then:
 - CTL STPT will equal RM STPT DIAL, and will be limited by RM STPT MIN and RM STPT MAX.
 - NOTE:** A space where the heating/cooling deadband is zero may be more comfortable than a space where the deadband is being used, but may use more energy.
4. Set the room temperature setpoints to the desired values. Heating setpoints are not present in cooling only applications.

Setting Override Time

If using night/unoccupied override, set OVRD TIME to the number of whole hours that an override should last. If OVRD TIME equals 0 (default), this feature is disabled.

Enabling Wall Switch

If a wall switch is used for day/night (occupied/unoccupied) control, enable it by setting WALL SWITCH to **YES**.

Otherwise, leave WALL SWITCH at its default value of **NO**.

Setting Controller Address



NOTE:

If you are going to enter an LCTRL point at the field panel, keep track of the controller address and override time you enter at the WCIS. You will be required to enter these values again at the field panel.

Set the controller address by setting CTRL ADDRESS to the appropriate number.
(Addresses 00 to 98 are valid; 00 to 31 are typically used.)

Update each controller at the field panel immediately after you complete the controller start-up procedures and have made all other changes to the controller's point database (including balancing, tuning, etc.).

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