SIEMENS

BACnet PTEC Unit Vent Controller

Application 6576 - Heating and/or Chilled Water Cooling, ASHRAE Cycle III

Application Note

Table of Contents

Overview

In Application 6576, the controller controls a unit ventilator equipped with a chilled water coil for cooling, and/or a heating coil, which may be hot water, steam, or electric, for ASHRAE Cycle III. A face-bypass damper can be controlled, replacing both the modulating (0 to 10V) heating and cooling actuators. If a face-bypass damper is used, 2-position valves on the coils may be controlled. Heating only and cooling only units can also be controlled with this application by overriding HEAT.COOL.

Other features available in this application include morning warm-up/cool-down, night mode override, and free-cooling.

NOTE:
Using a low temperature detection thermostat (LTDT) is strongly recommended for hot water and steam systems.

This application controls room temperature by directly modulating the coil control devices. This application also controls an outdoor air damper according to the schedule as defined by ASHRAE Cycle III, to maintain a given mixed air temperature setpoint. The free-cooling/economizer function is turned on and off by the field panel using FREE CLG. If free cooling is not available, the outdoor air damper will be kept at minimum position; otherwise, the outdoor air damper will modulate to maintain the mixed air temperature setpoint. The unit ventilator fan is also controlled in this application.

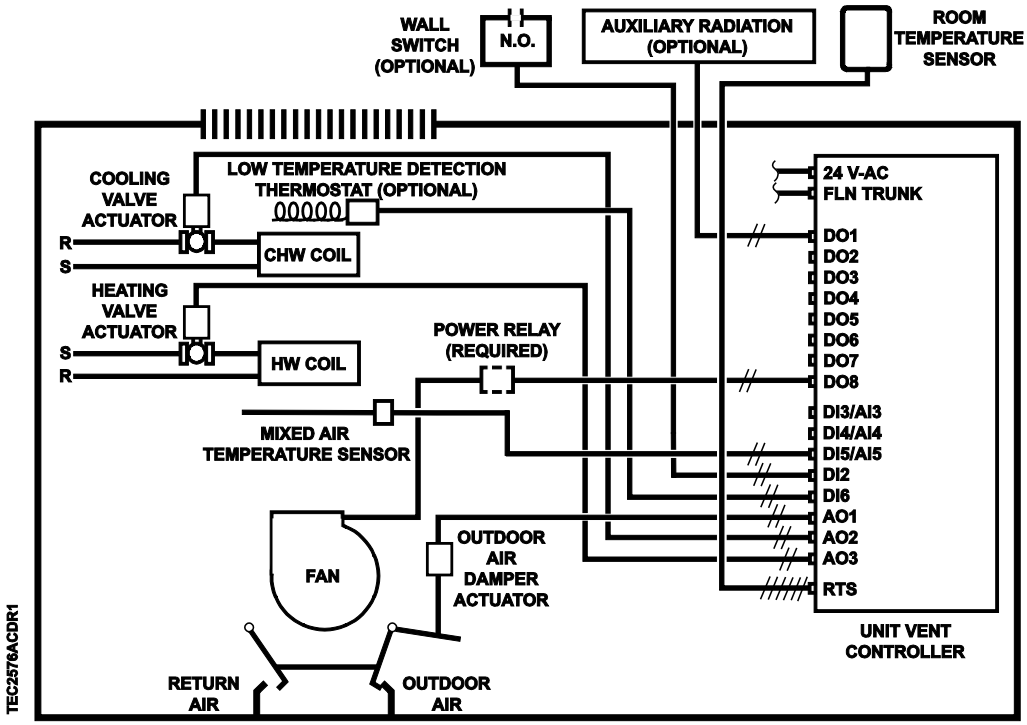
Application 6576 Diagram Cross Reference

Hardware Configuration	Control Drawing	Control Schedule	Wiring Diagram
Chilled water coil, valve control	Control Diagram 1 [→ 7], except: 1. No heating coil, heating valve actuator, or auxiliary radiation.	Control Schedule 1 [→ 11], except: 1. No heating mode.	Wiring Diagram 1 [→ 24], except: 1. No heating valve actuator or auxiliary radiation.
Chilled water coil, face-bypass damper control	Control Diagram 3 [→ 8], except: 1. No heating coil, heating valve actuator, or auxiliary radiation.	Control Schedule 3 [→ 13], except: 1. No heating mode.	Wiring Diagram 3 [→ 26], except: 1. No 2-position heating valve actuator or auxiliary radiation.
Hot water coil, valve control	Control Diagram 4 [→ 9], except: 1. LTDT recommended.	Control Schedule 1 [→ 11], except: 1. No cooling mode.	Wiring Diagram 1 [→ 24], except: 1. No cooling valve actuator. 2. LTDT recommended.
Hot water coil, face-bypass damper control	Control Diagram 3 [→ 8], except: 1. No cooling coil or cooling valve actuator. 2. LTDT recommended if	Control Schedule 3 [→ 13], except: 1. No cooling mode.	Wiring Diagram 3 [→ 26], except: 1. No 2-position cooling valve actuator.

Hardware Configuration	Control Drawing	Control Schedule	Wiring Diagram
	2-position valve is used.		
Steam coil, valve control	Control Diagram 4 [→ 9], except: 1. Read steam coil instead of heating coil. 2. LTDT recommended.	Control Schedule 1 [→ 11], except: 1. No cooling mode.	Wiring Diagram 1 [→ 24], except: 1. No cooling valve actuator. 2. LTDT recommended.
Steam coil, face-bypass damper control	Control Diagram 3 [→ 8], except: 1. No cooling coil or cooling valve actuator. 2. Read steam coil instead of heating coil. 3. LTDT recommended if 2-position valve is used.	Control Schedule 3 [→ 13], except: 1. No cooling mode.	Wiring Diagram 3 [→ 26], except: 1. No 2-position cooling valve actuator.
Electric coil only	Control Diagram 2 [→ 8], except: 1. No cooling coil or cooling valve actuator. 2. No LTDT.	Figure 7, except: 1. No cooling mode.	Wiring Diagram 2 [→ 25], except: 1. No cooling valve actuator. 2. No LTDT.
2-pipe, hot water/chilled water coil, valve control	Control Diagram 1 [→ 7], except: 1. No heating coil or heating valve actuator. 2. Read heating/cooling coil instead of cooling coil. 3. Read heating/cooling valve actuator instead of cooling valve actuator. Terminate heating/cooling valve actuator at AO2. 4. LTDT recommended.	Control Schedule 1 [→ 11], except: 1. Read coil valve instead of HW/STM valve and CHW valve.	Wiring Diagram 1 [→ 24], except: 1. No heating valve actuator. 2. Read heating/cooling valve actuator instead of cooling valve actuator. Terminate heating/cooling valve actuator at AO2. 3. LTDT recommended.
2-pipe, hot water/chilled water coil, face-bypass damper control	Control Diagram 5 [→ 10], except: 1. LTDT recommended if 2-position valve is used.	Control Schedule 3 [→ 13]	Wiring Diagram 4 [→ 27], except: 1. LTDT recommended if 2-position valve is used.
4-pipe, hot water and chilled water coils, valve control	Control Diagram 1 [→ 7], except: 1. LTDT recommended.	Control Schedule 1 [→ 11]	Wiring Diagram 1 [→ 24], except: 1. LTDT recommended.
4-pipe, hot water and chilled water coils, face-bypass damper control	Control Diagram 3 [→ 8], except: 1. 2-position valves required if automatic heat/cool switchover is required. 2. LTDT recommended if 2-position valve is used.	Control Schedule 3 [→ 13]	Wiring Diagram 3 [→ 26], except: 1. 2-position valves required if automatic heat/cool switchover is required. 2. LTDT recommended if 2-position valve is used.

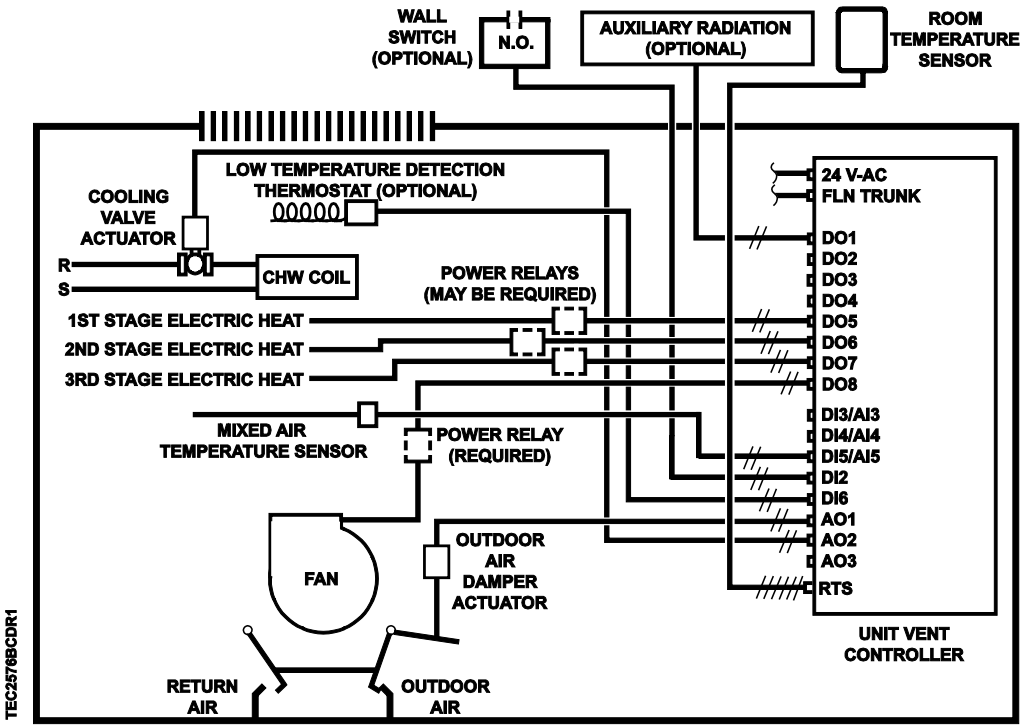
Hardware Configuration	Control Drawing	Control Schedule	Wiring Diagram
4-pipe, steam and chilled water coils, valve control	Control Diagram 1 [→ 7], except: 1. Read steam coil instead of heating coil. 2. LTDT recommended.	Control Schedule 1 [→ 11]	Wiring Diagram 1 [→ 24], except: 1. LTDT recommended.
4-pipe, steam and chilled water coils, face-bypass damper control	Control Diagram 3 [→ 8], except: 1. Read steam coil instead of heating coil. 2. 2-position valves required if automatic heat/cool switchover is required. 3. LTDT recommended if 2-position valve is used.	Control Schedule 3 [→ 13]	Wiring Diagram 3 [→ 26], except: 1. 2-position valves required if automatic heat/cool switchover is required. 2. LTDT recommended if 2-position valve is used.
Electric coil, step control, and chilled water coil, valve control	Control Diagram 2 [→ 8]	Control Schedule 2 [→ 12]	Wiring Diagram 2 [→ 25]

Control Diagram 1



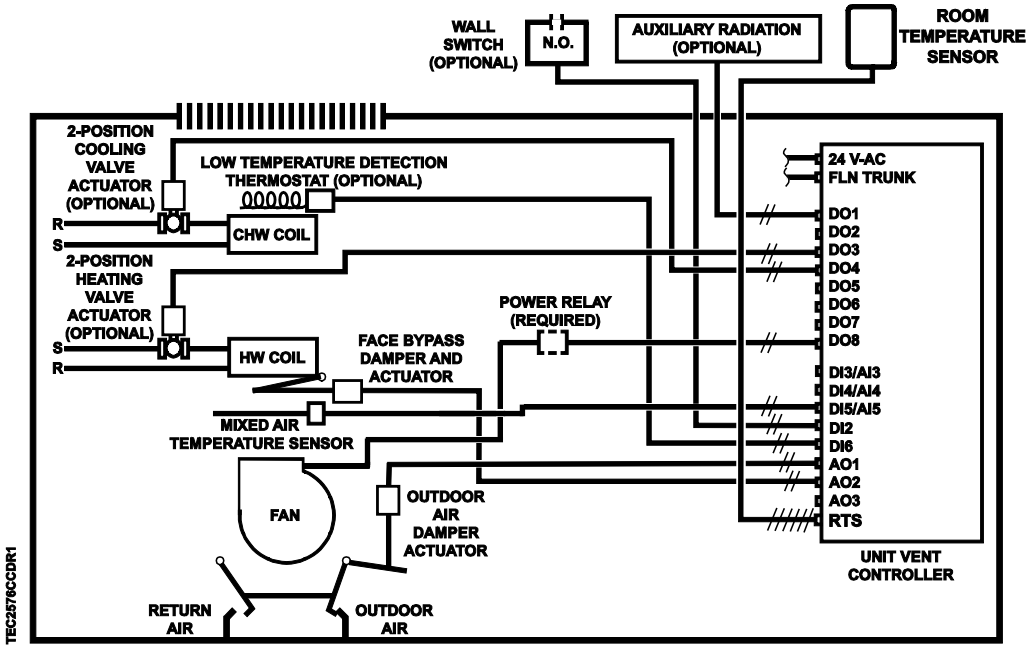
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Diagram 2



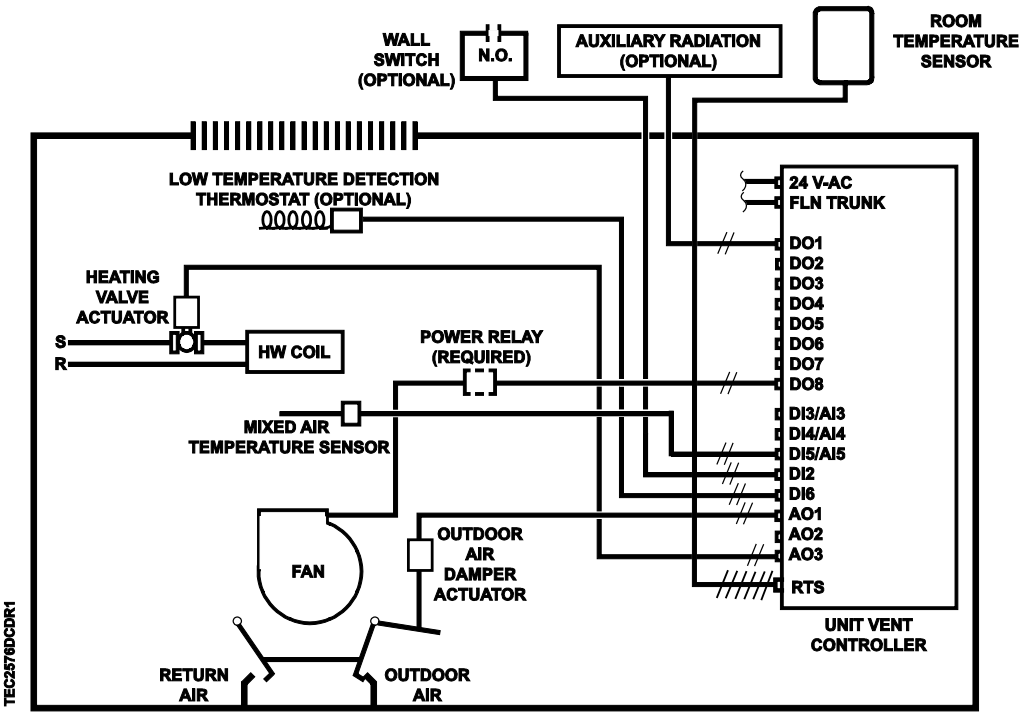
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Diagram 3



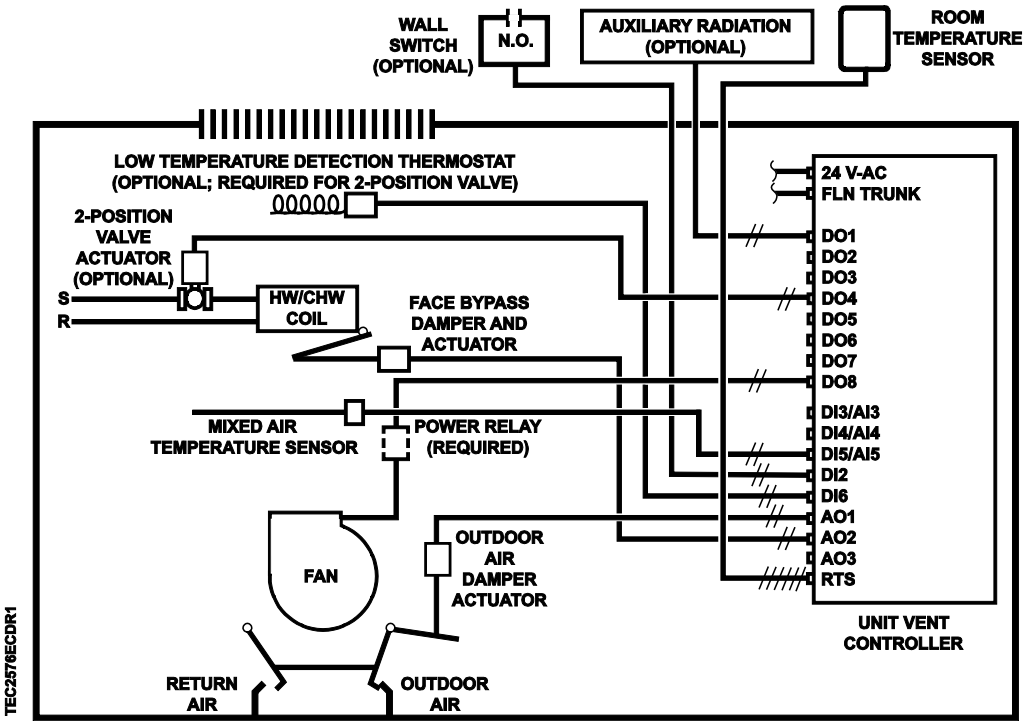
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Diagram 4



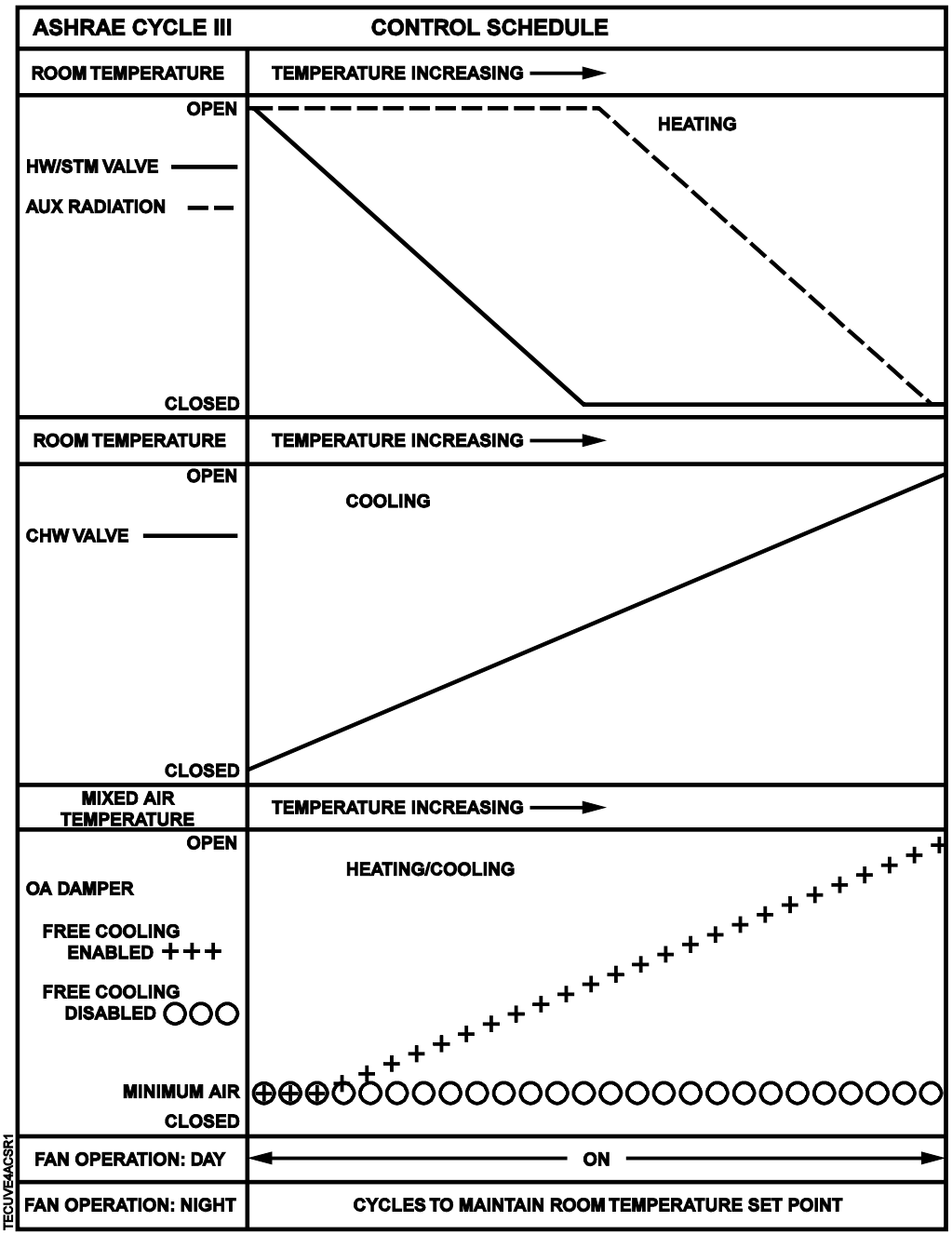
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Diagram 5



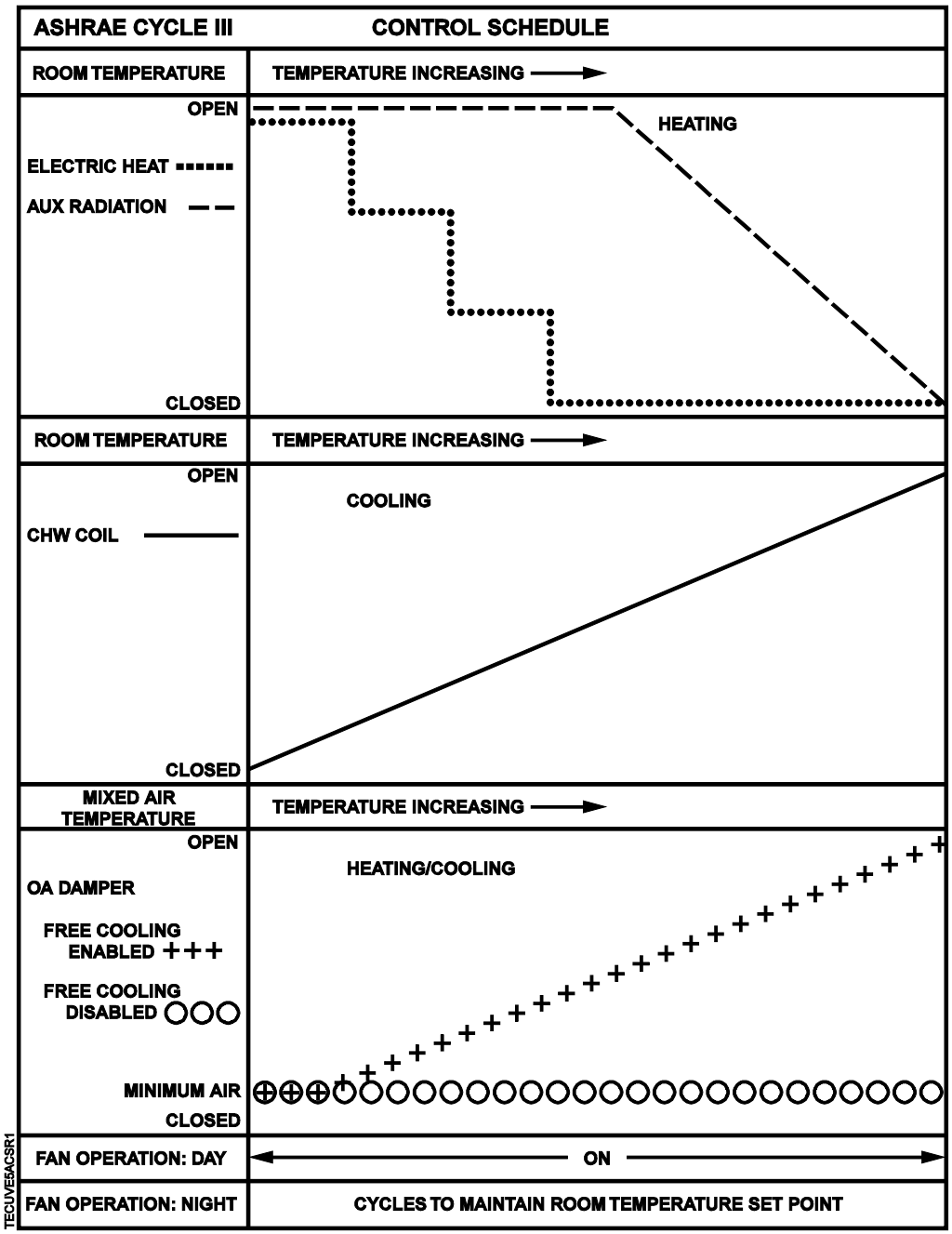
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Schedule 1



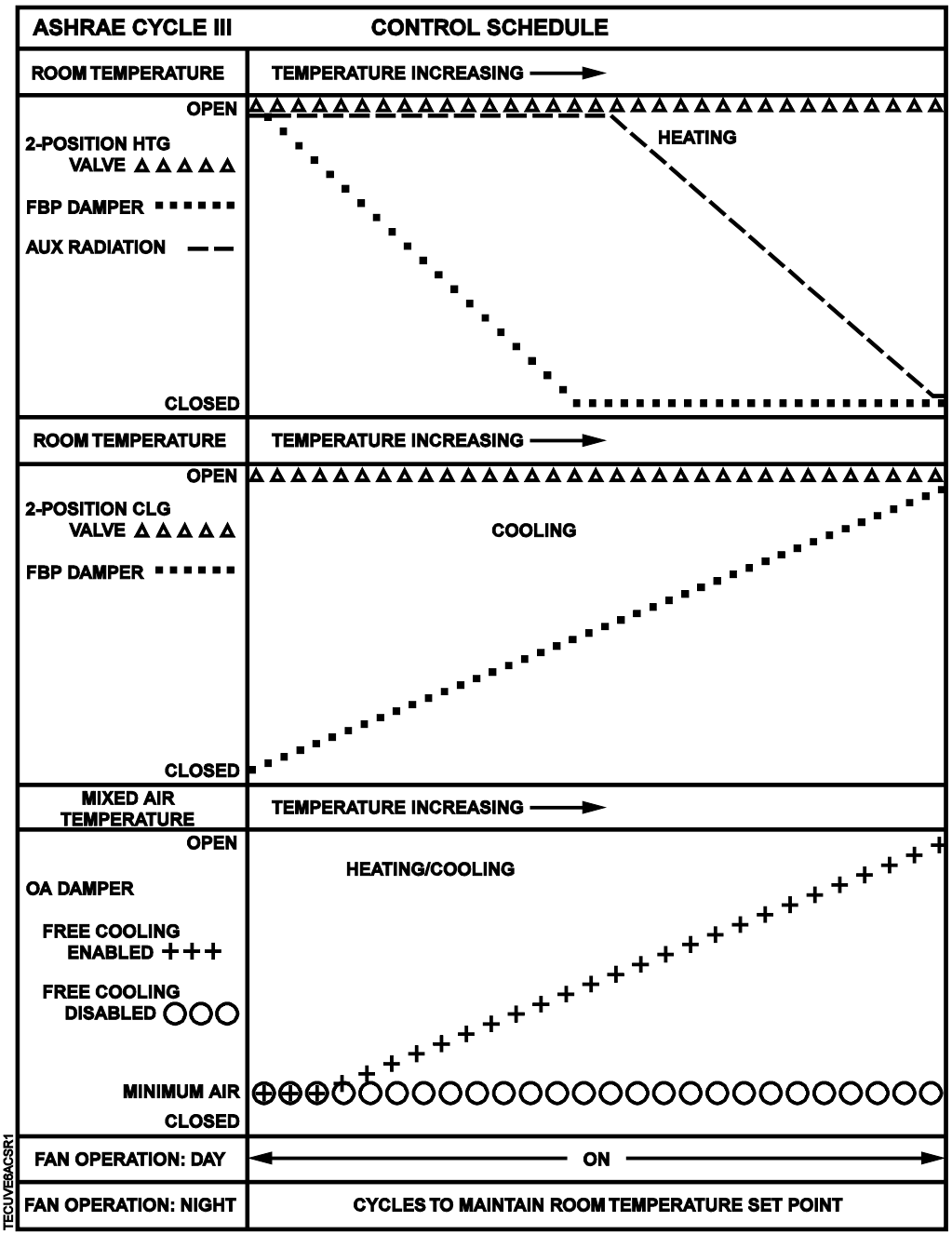
See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Schedule 2



See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Control Schedule 3



See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

BACnet

The controller communicates using BACnet MS/TP protocol for open communications on BACnet MS/TP networks.

Product	Supported BIBBs	BIBB Name
BTEC	DS-RP-B B	Data Sharing-Read Property-B
	DS-RPM-B	Data Sharing-Read Property Multiple-B
	DS-WP-B	Data Sharing-Write Property-B
	DM-DDB-B	Device Management-Dynamic Device Binding-B
	DM-DOB-B	Device Management-Dynamic Object Binding-B
	DM-DCC-B	Device Management-Device Communication Control-B
	DM-RD-B	Device Management-Reinitialize Device-B
	DM-BR-B	Device Management-Backup and Restore-B
	DM-OCD-B	Device Management-Object Creation and Deletion-B

Hardware Inputs

Analog

- Averaging air temperature sensor (10K thermistor)
- Room temperature sensor
- Room temperature setpoint dial (optional)

Digital

- Low Temperature Detection Thermostat (LTDT)
- Night mode override (optional)
- Wall switch (optional)

Hardware Outputs

The following is a list of devices that can be used by this application depending on your hardware configuration.

Analog (0 to 10V)

- Cooling valve actuator
- Heating valve actuator
- Face-bypass damper actuator
- Outdoor air damper actuator

Digital

- Unit fan
- Auxiliary radiation electric coil contact; or, auxiliary radiation 2-position valve actuator
- 1st stage electric heat

- 2nd stage electric heat
- 3rd stage electric heat
- 2-position cooling valve actuator
- 2-position heating valve actuator

Sequence of Operation

The following paragraphs present the sequence of operation for Siemens BACnet PTEC Unit Vent Controller Application 6576, Heating and/or Chilled Water Cooling, ASHRAE Cycle III.

Control Temperature Setpoints

Depending on the controller's current operational mode (day or night), the control temperature setpoint, CTL STPT holds the value of one of the following setpoints:

Day Mode – In day mode, CTL STPT holds the value of DAY CLG STPT or DAY HTG STPT. If the room temperature sensor has a setpoint dial and STPT DIAL is set to YES, then CTL STPT holds the value of RM STPT DIAL.

If the setpoint dial is used and the value of RM STPT DIAL is less than the value of RM STPT MIN, then CTL STPT holds the value of RM STPT MIN. If the value of RM STPT DIAL is greater than the value of RM STPT MAX, then CTL STPT holds the value of RM STPT MAX.

Night Mode – In night mode, CTL STPT holds the value of NGT CLG STPT or NGT HTG STPT.

NOTE:
The value of CTL TEMP is the same as the value of ROOM TEMP, unless CTL TEMP is overridden.

Room Temperature Offset (Optional)

TEMP OFFSET is a user-adjustable offset that will compensate for deviations between the value of ROOM TEMP and the actual room temperature. This corrected value is displayed in CTL TEMP.

CTL TEMP = ROOM TEMP + TEMP OFFSET

Example

If the actual room temperature is 72.0°F, and the value of ROOM TEMP is 73.0°F, then the value entered into TEMP OFFSET is –1.0. In this case, the value of ROOM TEMP would read 73.0°F, but the value of CTL TEMP would read 72.0°F.

Day and Night Modes

The day/night status of the space is determined by the status of DAY.NGT. The control of this point differs depending on whether the controller is monitoring the status of a wall switch or if the controller is connected to a field panel.

When a wall switch is physically connected to the termination strip on the controller DI 2 (see the Control Diagram(s)), and WALL SWITCH = YES, the controller monitors the

status of DI 2. When the status of DI 2 is ON (the switch is closed), then DAY.NGT will be set to DAY indicating that the controller is in day mode. When the status of DI 2 is OFF (the switch is open), then DAY.NGT will be set to NIGHT indicating that the controller is in night mode.

When WALL SWITCH = NO, the controller does not monitor the status of the wall switch, even if one is connected to it. In this case, if the controller is operating stand-alone, then the controller stays in day mode all the time. If the controller is operating with centralized control (that is, it is connected to a field panel), then the field panel can send an operator or PPCL command to override the status of DAY.NGT. See *Powers Process Control Language (PPCL) User's Manual* (125-1896) and *Field Panel User's Manual* (125-3019 or 125-3020) for more information.

Night Mode Override Switch

If an override switch is present on the room temperature sensor and a value (in hours) other than zero has been entered into OVRD TIME, pressing the override switch will reset the controller to day operational mode for the time period that is set in OVRD TIME. The status of NGT OVRD changes to DAY. After the override time elapses, the controller returns to night mode and the status of NGT OVRD changes back to NIGHT.

The override switch on the room sensor will only affect the controller when in night mode.

Valve Configuration

Definition of "2-pipe heat/cool":

- If the unit has one valve, controlling a coil that may have hot water or chilled water, depending on the season, then 1 VLV HTGCLG is set to YES. This configuration is often referred to as "2-pipe heat/cool".
- If the unit has any other setup, then 1 VLV HTGCLG is set to NO. This includes units which are heating or cooling only, units with a heating and a cooling coil (often referred to as ""4-pipe"), units with electric heating, etc.

Day Heating Operation

In day heating operation, the controller maintains the room temperature at the value stored in CTL STPT by doing the following:

- Modulating the heating coil control device based on the difference CTL TEMP and CTL STPT. If CTL TEMP goes below CTL STPT, the heating valve actuator opens. If CTL TEMP goes above CTL STPT, the reverse occurs.
- Controlling auxiliary radiation (if provided) using a pulse-width modulation algorithm. The auxiliary radiation will be on for a percentage of the time held in AUX HTG TIME. The on-time is modulated in sequence with the coil control device. Auxiliary radiation is first ON and last OFF.
- Positioning the outdoor air damper as follows:
  - For ASHRAE Cycle III, when FREE CLG is enabled, the position of the outdoor air damper is based on the difference between the mixed air temperature point, MA TEMP, and the mixed air temperature setpoint, MA STPT. If the value of

MA TEMP is below the value of MA STPT, the damper closes. The damper cannot close beyond the value of OADPR MINPOS. When FREE CLG is disabled, the damper is held at the value of OADPR MINPOS.

Day Cooling Operation

In day cooling operation, the controller maintains the room temperature at the value stored in CTL STPT by doing the following:

- Modulating the available coil control device based on the difference between the control temperature point, CTL TEMP, and CTL STPT. If CTL TEMP goes above CTL STPT, the cooling valve actuator opens or the face-bypass damper opens. If CTL TEMP goes below CTL STPT, the reverse occurs.
- Positioning the outdoor air damper as follows:
  - For ASHRAE Cycle III, when FREE CLG is enabled, the position of the outdoor air damper is based on the difference between the mixed air temperature point, MA TEMP, and the mixed air temperature setpoint, MA STPT. If the value of MA TEMP is below the value of MA STPT, the damper closes. The damper cannot close beyond the value of OADPR MINPOS. When FREE CLG is disabled, the damper is held at the value of OADPR MINPOS.

Night Heating Operation

The controller maintains the room temperature at the value stored in CTL STPT by doing the following:

If CTL TEMP drops below the value of NGT HTG STPT minus the value of NGT DBAND:

- The fan turns ON
- Heating turns ON

If CTL TEMP rises above NGT HTG STPT:

- The fan turns OFF
- Heating turns OFF

When the fan turns ON, the heating actuators and auxiliary radiation are opened. When the fan turns OFF, all heating and auxiliary radiation is closed. If electric heat is being controlled, then the fan will remain ON for 30 seconds after the last stage of electric heat is turned OFF. If NGT HW HTG is set to YES, (for hot water coils), then the heating actuator is kept open at all times during the night.

In night heating operation, the controller operates as follows:

- For units with hot water coils, NGT HW HTG must be set to YES, so that the valve will be positioned to full open.
- For units with steam or electric coils, NGT HW HTG must be set to NO, so that the coils can be cycled.
- The face-bypass damper is at full face when the fan is ON and full bypass when the fan is OFF and the 2-position heating valve actuator is open.
- The controller may switch to cooling mode when appropriate if NGT CLG MODE is set to YES.
- Heating only is provided when NGT CLG MODE is set to NO.

Night Cooling Operation

In night cooling operation, the controller maintains the room temperature at the value stored in CTL STPT by doing the following:

- If CTL TEMP rises above the sum of NGT CLG STPT and NGT DBAND:
  - The fan turns ON
  - Cooling turns ON
- If CTL TEMP drops below NGT CLG STPT:
  - The fan turns OFF
  - Cooling turns OFF
- When NGT CLG MODE is set to NO, the unit will operate in night heating mode only.

In night cooling operation, the controller operates as follows:

- For units with hot water coils, NGT HW HTG must be set to YES, so that the valve will be positioned to full open.
- For units with steam or electric coils, NGT HW HTG must be set to NO, so that the heating coils can be kept OFF.
- The face-bypass damper is at full face when the fan is ON and at full bypass when the fan is OFF and the 2-position cooling valve actuator is open.

Heating/Cooling Switchover

For 2-pipe heating/cooling units, (1 VLV HTGCLG is set to YES), and the switchover between heating and cooling must be controlled by the field panel which commands HEAT.COOL.

For all other units (1 VLV HTGCLG is set to NO), the heating/cooling switchover is determined as follows:

If the following conditions are met for the length of time set in SWITCH TIME, the controller switches from heating to cooling mode by setting HEAT.COOL to COOL:

- HTG LOOPOUT is below 50% if auxiliary radiation is not available, (AUX.NOAUX is set to NOAUX), or below SWITCH LIMIT if auxiliary radiation is available.
- CTL TEMP is greater than the sum of CTL STPT plus SWITCH DBAND.
- CTL TEMP is greater than the appropriate cooling setpoint minus SWITCH DBAND.

If the following conditions are met for the length of time set in SWITCH TIME, the controller switches from cooling to heating mode by setting HEAT.COOL to HEAT:

- CLG LOOPOUT is below SWITCH LIMIT.
- CTL TEMP is less than CTL STPT minus SWITCH DBAND.
- CTL TEMP is less than the appropriate heating setpoint plus SWITCH DBAND.

If night cooling is not available, as indicated by NGT CLG MODE, then the controller remains in heating mode during the night.

Control Loops

The unit ventilator is controlled by three Proportional, Integral, and Derivative (PID) control loops: a heating loop, a cooling loop, and a mixed air loop.

Heating Loop – The heating loop uses the value of CTL STPT and CTL TEMP to modulate the value of HTG LOOPOUT.

Cooling Loop – The cooling loop uses the value of CTL STPT and CTL TEMP to modulate the value of CLG LOOPOUT.

Mixed Air Loop – The mixed air loop uses the values of MA STPT and MA TEMP to modulate the value of MA LOOPOUT.

Morning Warm-up / Cool-down

Morning warm-up or cool-down occurs after the controller switches from night mode to day mode, upon power-up, or if the controller is reset. During morning warm-up or cool-down, the controller provides maximum heating or cooling with the outdoor air damper closed until the temperature of the space reaches the value of CTL STPT plus or minus the value of MORN DBAND. In morning cool-down, if FREE CLG is set to ENABLE, the outdoor air damper is opened.

In heating mode, normal day heating operation begins when the temperature of the room reaches the value of CTL STPT minus MORN DBAND.

In cooling mode, normal day cooling operation begins when the temperature of the room reaches the value of CTL STPT plus MORN DBAND.

For example, in day heating mode, if CTL STPT is 72°F (22.2°C) and MORN DBAND is 3°F (1.6°C), normal day heating operation begins when the temperature of the room reaches 69°F (20.6°C).

ON/OFF Coil Valve Control

When a face-bypass configuration is used, the coils may be turned ON and OFF with 2-position valves using DOs. There are two conditions when this might occur:

1. In the case where a 4-pipe configuration is used with a face-bypass damper, the cooling valve actuator will be shut while in heating, and the heating valve actuator will be shut while in cooling. In this configuration, 2-position valves must be used to prevent both coils from being ON at the same time.
   NOTE: In night cooling, if NGT HW HTG is set to YES, the heating coil is kept open.
2. When in heating or cooling, if the face-bypass damper is all the way closed (bypass) for more than two minutes, then the active coil can be closed to conserve energy. This is an option which is performed when FBP.2PSVCTL is set to ENABLE. Otherwise, the valve is kept open when the damper is closed.
   NOTE: In night cooling, if NGT HW HTG is set to YES, the heating coil is kept open.

When a 2-pipe heat/cool configuration is used (1 VLV HTGCLG is set to YES), with or without a face-bypass damper, NGT HW HTG should be set to YES. The 2-pipe heat/cool coil will then stay open during both night heating and night cooling.

Staged Electric Heat

If electric heat is used, then it is controlled as follows:

HTG OUTPUT	Stage 1	Stage 2	Stage 3
0% - 33%	ON	OFF	OFF
34% - 66%	ON	ON	OFF
67% - 100%	ON	ON	ON

In addition, no stage may turn ON or OFF until the number of seconds held in EHT STG DELY have elapsed since the last time any stage turned ON or OFF. Stage one will always be the first stage to turn ON and the last stage to turn OFF.

AI4/AI5 OFFSET (Optional)

AI 4 OFFSET works like RMTMP OFFSET. It can be used to calibrate AI4 aux temp sensor input if necessary. The actual temperature plus AI 4 OFFSET will equal AI4 display temperature.

AI 5 OFFSET works the same as AI 4 OFFSET.

Room Unit Operation

Stat Supervision

STAT SUPV is a configurable, enumerated point (values are additive). This point tells the controller what kind of room unit is connected and how to respond to a loss of communication between a Series 2200 and 3200 type Room Units and the controller.

The default value for STAT SUPV is zero, no response (also for Series 1000/2000 stats). A value of 1 means that if communication is lost for at least one minute, CTL TEMP will have a status of Failed. A value of 3 means that both CTL TEMP and RM RH will be Failed after a loss of communication for at least one minute.

CO2 Monitoring

RM CO2 displays the CO_2 value in units of parts-per-million (PPM). RM CO2 can be unbundled for monitoring purposes.

Room RH

RM RH displays the relative humidity value in percent. RM RH can be unbundled for monitoring purposes.

Fan Operation

In day mode, FAN, is ON all of the time.

In night mode, the fan only operates when required for heating or cooling.

In night heating, the fan turns ON when the temperature drops below the value of CTL STPT minus NGT DBAND. When the temperature rises above CTL STPT, the fan turns OFF.

If any stage of electric heat is ON, the fan will be ON. The fan will remain ON for 30 seconds after the last stage of electric heat is turned OFF.

In night cooling, the fan turns ON when the temperature rises above the value of CTL STPT plus NGT DBAND. When the temperature drops below CTL STPT, the fan turns OFF.

PPCL STATUS

PPCL STATUS displays LOADED or EMPTY.

LOADED = PPCL programming is present in the controller. A new application number must be assigned (12000 through 12999).

EMPTY = NO PPCL programming is present.

Fail Mode Operation

The Unit Vent Controller has a fail-safe operation that can be triggered by several occurrences.

A low temperature detection thermostat (LTDT) can be used to signal the controller when the temperature sensed by the LTDT is below the low temperature limit.

If the room temperature sensor input to the Unit Vent Controller fails or the LTDT equals ON, the controller goes through the following shutdown sequence:

- Outdoor air damper is closed.
- Heating is full ON (except electric which is OFF).
- Cooling is full OFF.
- Fan is OFF.
- Face-bypass damper is open to face.
- Auxiliary radiation is OFF.
- 2-position heating valve actuator is open.
- 2-position cooling valve actuator is closed.

NOTE:
DO 2 will not be commanded by the fail mode, all other DOs can be affected.

If the mixed air temperature sensor fails, the following conditions occur:

- The outdoor air damper is closed.
- The heating and cooling loops continue to control room temperature.

- In the failed state, temperature control is not possible.

If a failed sensor returns or if the LTDT turns OFF, then normal control resumes.

This BACnet controller supports BACnet command priorities in which each command is issued with a priority level from 1-16; 1 is the highest priority and 16 is the lowest priority. Operator commands have a priority level 8 and therefore are given precedence over normal application control which is at priority level 16. The fail-safe commands described above are issued with a BACnet priority of 5 (Critical Equipment Control). Since 5 is a higher priority than 8, a normal operator command can not override outputs when they are in their safe mode. For an emergency override of the outputs, a command at a priority higher than 5 is needed, or alternatively, the failed input point can be overridden back to its normal state which releases the fail-safe mode allowing commands to be accepted.

Application Notes

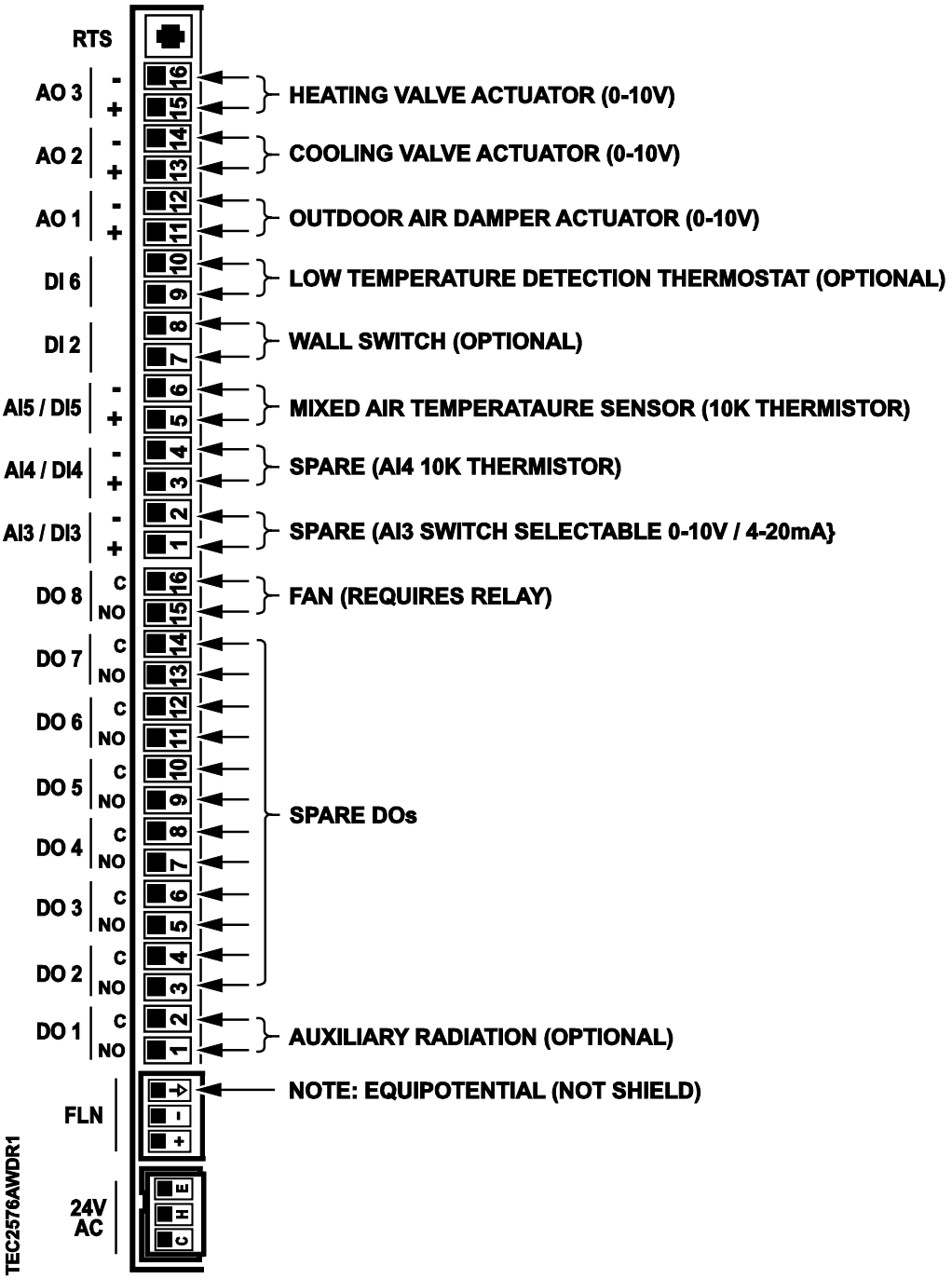
- If the unit ventilator cycles excessively, if the temperature swings in the room are excessive or if there is trouble in maintaining the setpoint, then either the cooling loop, the heating loop, or both need to be tuned.
- The Unit Vent Controller as shipped from the factory keeps all associated equipment OFF. See the Start-up document for how to release the controller and its equipment to application control.
- When the fan is manually switched OFF at the unit fan speed switch, the actuators should be wired so they return to their normal state.

Wiring Diagram(s)

⚠ CAUTION

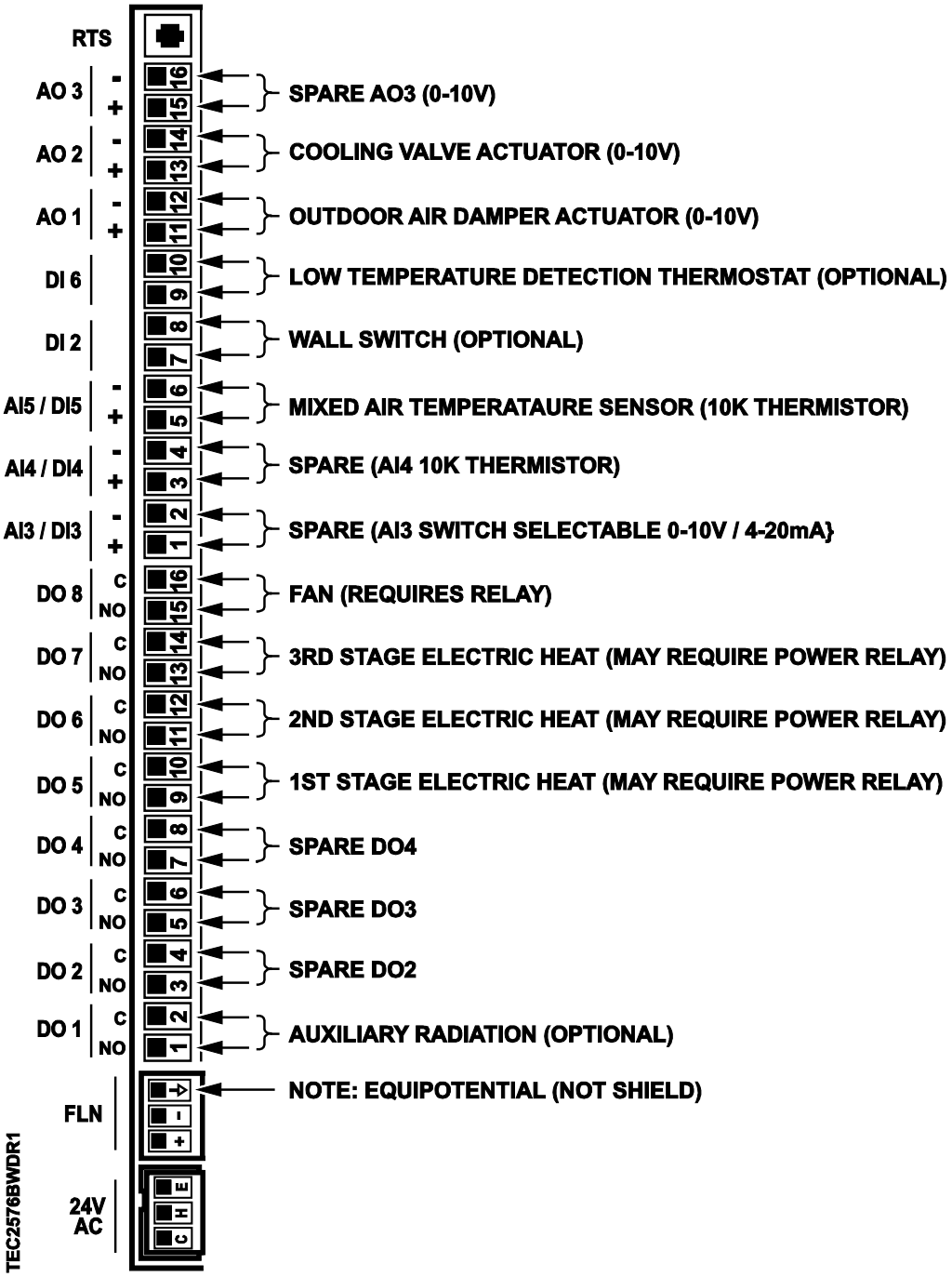
The controller's DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. An external interposing relay is required for any of the following:
• VA requirements higher than the maximum
• 110 or 220 Vac requirements
• DC power requirements
• Separate transformers used to power the load.
(for example part number 540-147, Terminal Equipment Controller Relay Module)

Wiring Diagram 1



See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Wiring Diagram 2



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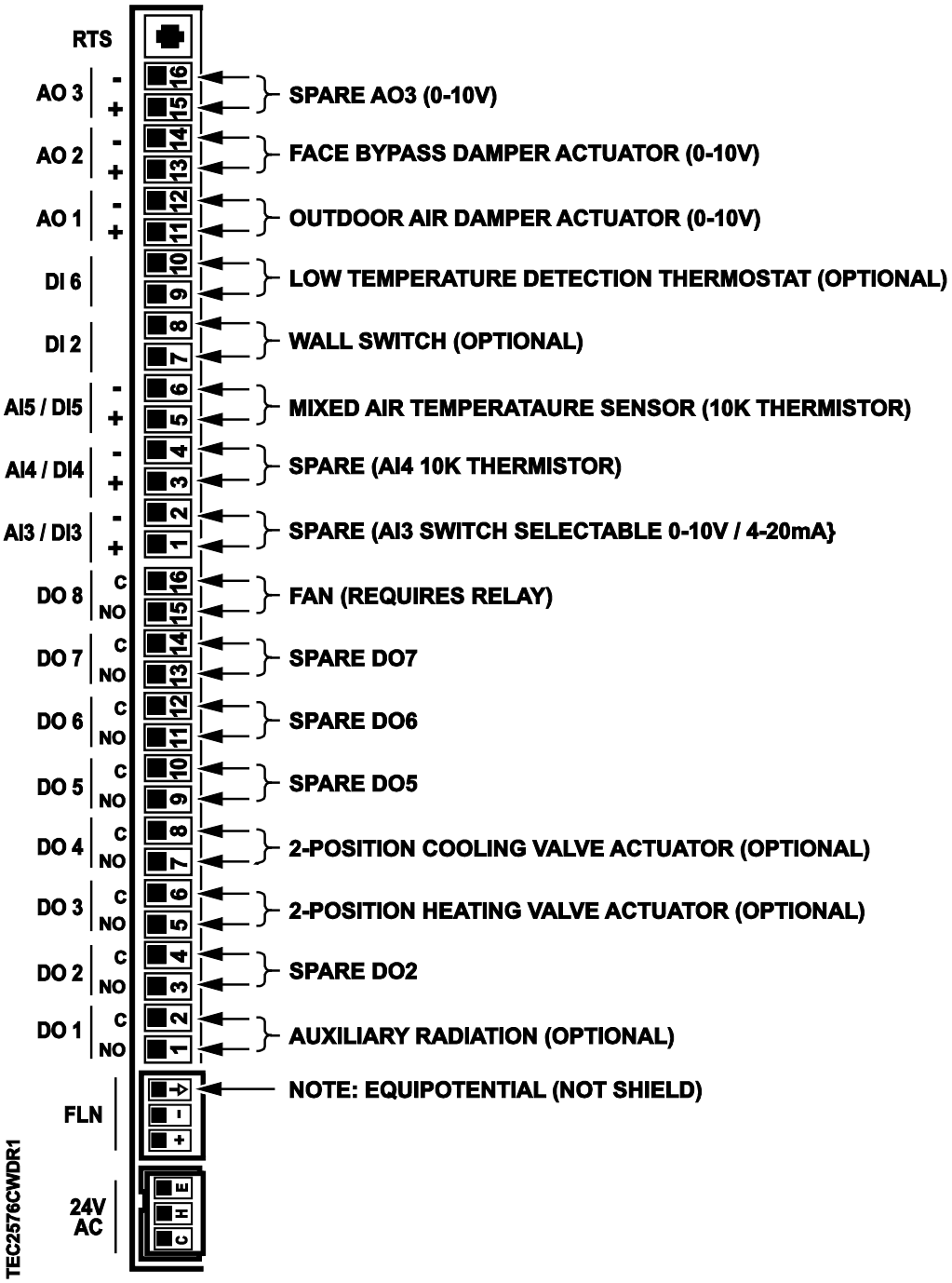
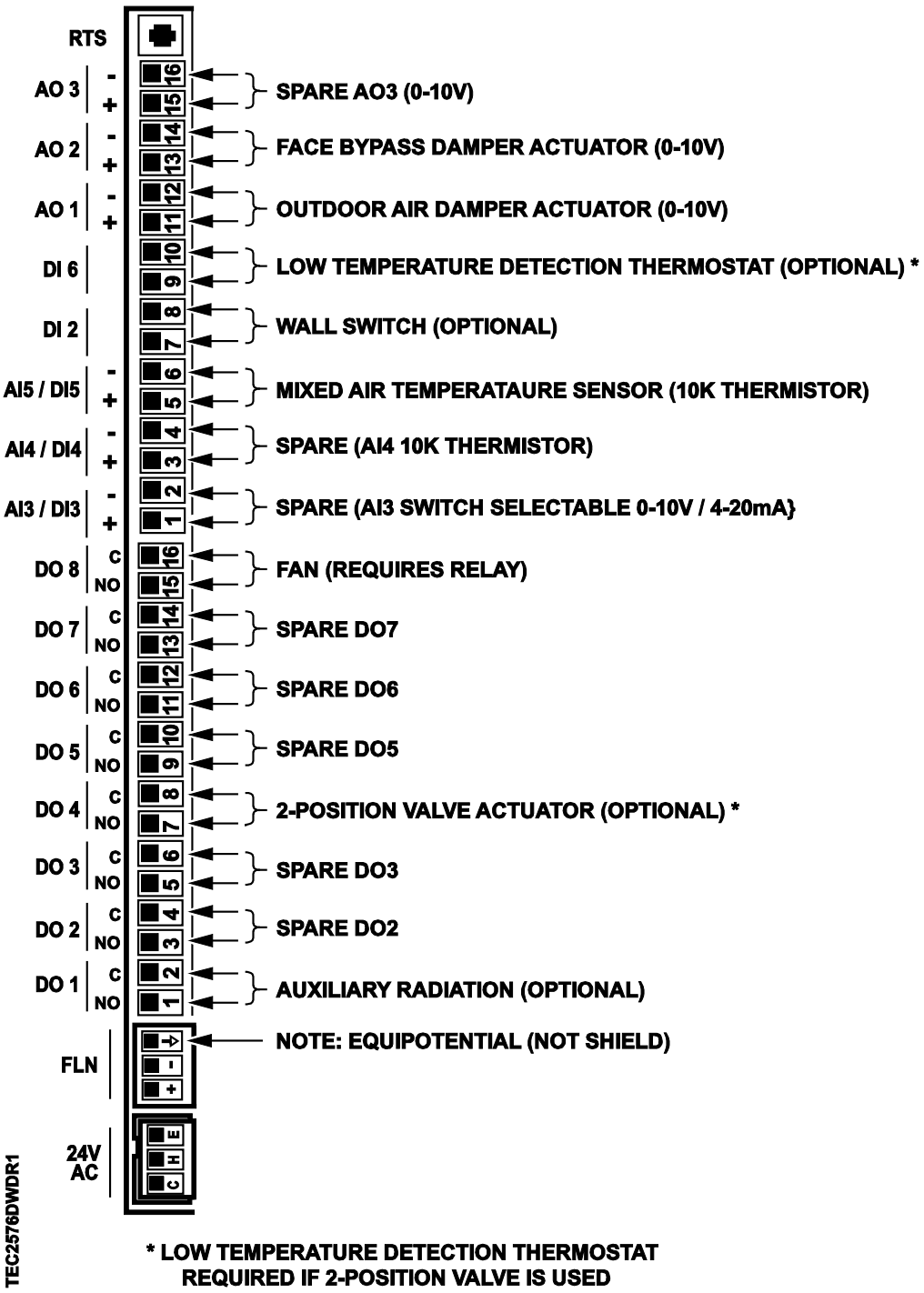
Wiring Diagram 3



See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Wiring Diagram 4



See the Application 6576 Diagram Cross Reference [→ 5] for Application Configuration(s).

Application 6576 Point Database

Object Type [a)]	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) [b)]	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	1	CTLR ADDRESS	99	--	0-255	--	--
AO	2	APPLICATION	6595	--	0-32767	--	--
AO	3	TEMP OFFSET	0.0 (0.0)	DEG F (DEG C)	-63.75	--	--
AI	{04}	ROOM TEMP	74.0 (23.45)	DEG F (DEG C)	48-111.75	--	--
BO	{05}	HEAT.COOL	COOL	--	Binary	HEAT	COOL
AO	6	DAY CLG STPT	74.0 (23.45)	DEG F (DEG C)	48-111.75	--	--
AO	7	DAY HTG STPT	70.0 (21.21)	DEG F (DEG C)	48-111.75	--	--
AO	8	NGT CLG STPT	82.0 (27.93)	DEG F (DEG C)	48-111.75	--	--
AO	9	NGT HTG STPT	65.0 (18.41)	DEG F (DEG C)	48-111.75	--	--
AO	10	OADPR MINPOS	14.8	PCT	0-102	--	--
AO	11	RM STPT MIN	55.0 (12.81)	DEG F (DEG C)	48-111.75	--	--
AO	12	RM STPT MAX	90.0 (32.41)	DEG F (DEG C)	48-111.75	--	--
AI	{13}	RM STPT DIAL	74.0 (23.45)	DEG F (DEG C)	48-111.75	--	--
BO	14	STPT DIAL	NO	--	Binary	YES	NO
AI	{15}	MA TEMP	74.0 (23.496)	DEG F (DEG C)	37.5-165	--	--
BO	16	1 VLV HTGCLG	NO	--	Binary	YES	NO
BO	17	FBP.MODVALVE	VALVE	--	Binary	FBP	VALVE

Object Type [a]	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) [b]	Eng Units (SI Units)	Range	Active Text	Inactive Text
BO	18	WALL SWITCH	NO	--	Binary	YES	NO
BI	{19}	DI OVRD SW	OFF	--	Binary	ON	OFF
AO	20	OVRD TIME	1	HRS	0-255	--	--
BO	{21}	NGT OVRD	NIGHT	--	Binary	NIGHT	DAY
BO	22	AUX.NOAUX	NOAUX	--	Binary	AUX	NOAUX
BO	{23}	FREE CLG	DISABL	--	Binary	ENABLE	DISABL
BI	{24}	DI 2	OFF	--	Binary	ON	OFF
BI	{25}	DI 5	OFF	--	Binary	ON	OFF
BI	{26}	LOW TEMP DET	ON	--	Binary	OFF	ON
BO	27	ELEC.NOELEC	NOELEC	--	Binary	ELEC	NOELEC
BO	28	FBP.2PSVCTL	DISABL	--	Binary	ENABLE	DISABL
BO	{29}	DAY.NGT	DAY	--	Binary	NIGHT	DAY
BO	{30}	WRMUP.COOLDN	ON	--	Binary	ON	OFF
AO	31	AOV1 SPAN	10	VOLTS	0-10.23	--	--
AO	32	AOV1 START	0	VOLTS	0-10.23	--	--
AO	33	AOV2 SPAN	10	VOLTS	0-10.23	--	--
AO	34	AOV2 START	0	VOLTS	0-10.23	--	--
AO	35	AOV3 SPAN	10	VOLTS	0-10.23	--	--
AO	36	AOV3 START	0	VOLTS	0-10.23	--	--
AO	37	AO DIR.REV	0	--	0-255	--	--
AO	{38}	AOV1	0	VOLTS	0-10.23	--	--

Object Type [a)]	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) [b)]	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	{39}	AOV2	0	VOLTS	0-10.23	--	--
AO	{40}	AOV3	0	VOLTS	0-10.23	--	--
BO	{41}	AUX RAD	OFF	--	Binary	ON	OFF
BO	{42}	DO 2	OFF	--	Binary	ON	OFF
BO	{43}	HTG 2POS VLV	OFF	--	Binary	ON	OFF
BO	{44}	CLG 2POS VLV	OFF	--	Binary	ON	OFF
BO	{45}	EHEAT 1	OFF	--	Binary	ON	OFF
BO	{46}	EHEAT 2	OFF	--	Binary	ON	OFF
BO	{47}	EHEAT 3	OFF	--	Binary	ON	OFF
AI	{48}	AI 3	0	PCT	0-102	--	--
AI	{49}	AUX TEMP AI4	74.0 (23.496)	DEG F (DEG C)	37.5-165	--	--
BO	{50}	FAN	OFF	--	Binary	ON	OFF
BI	{51}	DI 3	OFF	--	Binary	ON	OFF
BI	{52}	DI 4	OFF	--	Binary	ON	OFF
BO	53	NGT HW HTG	YES	--	Binary	YES	NO
BO	54	NGT CLG MODE	NO	--	Binary	YES	NO
AO	{55}	AUX OUTPUT	0	PCT	0-102	--	--
AO	57	AUX HTG TIME	10	MIN	0-255	--	--
AO	58	EHT STG DELY	30	SEC	0-255	--	--
AO	59	DO DIR.REV	0	--	0-255	--	--
AO	{60}	HTG OUTPUT	0	PCT	0-102	--	--
AO	{61}	CLG OUTPUT	0	PCT	0-102	--	--
AO	{62}	OA DMPR POS	0	PCT	0-102	--	--

Object Type [a]	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) [b]	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	63	CLG P GAIN	1.6 (2.88)	--	0-51	--	--
AO	64	CLG I GAIN	0.05 (0.09)	--	0-2.0475	--	--
AO	65	CLG D GAIN	10 (18.0)	--	0-2046	--	--
AO	66	CLG BIAS	50	PCT	0-102.2	--	--
AO	67	HTG P GAIN	0.4 (0.72)	--	0-12.75	--	--
AO	68	HTG I GAIN	0.015 (0.027)	--	0-0.819	--	--
AO	69	HTG D GAIN	5 (9.0)	--	0-1023	--	--
AO	70	HTG BIAS	50	PCT	0-102.2	--	--
AO	{77}	MA LOOPOUT	0	PCT	0-102.2	--	--
AO	{78}	CTL TEMP	74.0 (23.45)	DEG F (DEG C)	48-111.75	--	--
AO	{79}	CLG LOOPOUT	0	PCT	0-102.2	--	--
AO	{80}	HTG LOOPOUT	0	PCT	0-102.2	--	--
AO	{81}	MA P GAIN	0.2 (0.36)	--	0-5.1	--	--
AO	{82}	MA I GAIN	0.00054 (0.000972)	--	0-0.36855	--	--
AO	{83}	MA D GAIN	24 (43.2)	--	0-255	--	--
AO	{84}	MA BIAS	0	PCT	0-102.2	--	--
AO	85	SWITCH LIMIT	4.8	PCT	0-102	--	--
AO	86	SWITCH TIME	10	MIN	0-255	--	--
AO	88	NGT DBAND	3.0 (1.68)	DEG F (DEG C)	0-63.75	--	--
AO	89	MORN DBAND	2.0 (1.12)	DEG F (DEG C)	0-63.75	--	--
AO	90	SWITCH DBAND	2.0 (1.12)	DEG F (DEG C)	0-63.75	--	--

Object Type [a]	Object Instance (Point Number)	Object Name (Descriptor)	Factory Default (SI Units) [b]	Eng Units (SI Units)	Range	Active Text	Inactive Text
AO	{92}	CTL STPT	74.0 (23.45)	DEG F (DEG C)	48-111.75	--	--
AO	{93}	MA STPT	74.0 (23.496)	DEG F (DEG C)	37.5-165	--	--
AO	98	LOOP TIME	5	SEC	0-255	--	--
AO	{99}	ERROR STATUS	0	--	0-255	--	--
AO	122	AI 4 OFFSET	0.0 (0.0)	DEG F (DEG C)	-63.75	--	--
AO	123	AI 5 OFFSET	0.0 (0.0)	DEG F (DEG C)	-63.75	--	--
AO	124	STAT SUPV	0	--	0-255	--	--
AI	{125}	RM CO2	1000	PPM	0-8191	--	--
AI	{126}	RM RH	50	PCT	0-102	--	--
BO	{127}	PPCL STATE	EMPTY	--	Binary	LOADED	EMPTY

[a] Object Types are; Analog Input (AI), Analog Output (AO), Binary Input (BI) and Binary Output (BO).

[b] A single value in a column means that the value is the same in English units and in SI units.

[c] Point numbers that appear in brackets { } may be unbundled at the field panel.