SIEMENS

BACnet ATEC Controller

Start-up Procedures

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Building Technologies

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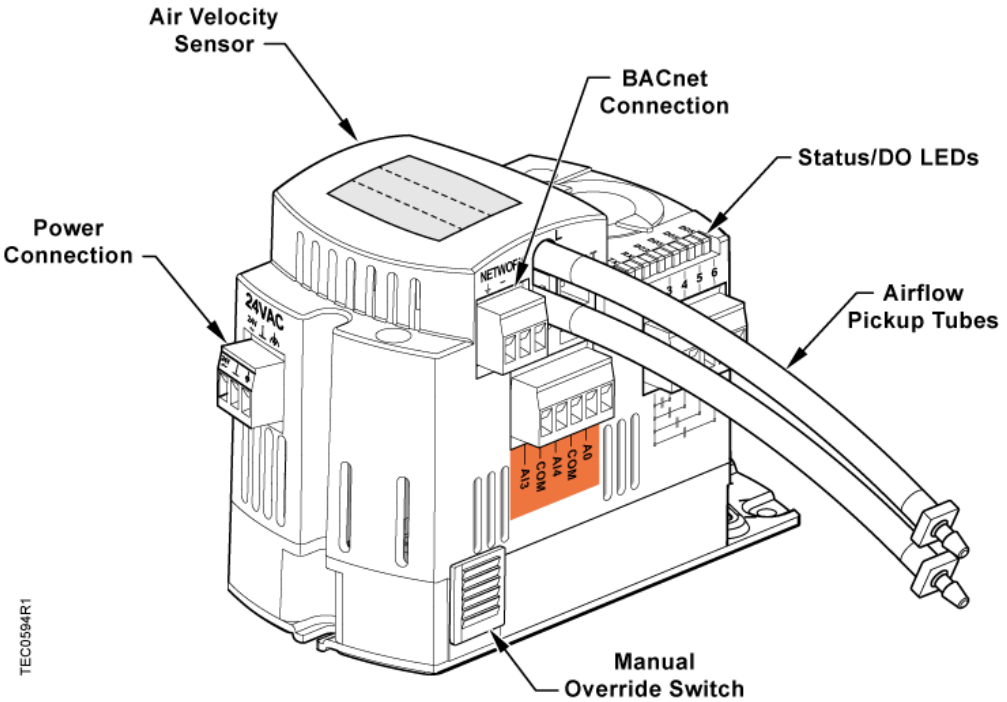
Before You Begin

NOTE:
WCIS version 4.0 or later must be used to auto-discover and auto-address Siemens BACnet MS/TP Equipment Controllers.

If you need metric units and the controller is communicating through the MS/TP Driver in the field panel, clear the **Metric** check box. The conversion must be handled in the field panel.



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

Communication and DO Indicators

The BACnet Actuating Terminal Equipment Controller has LEDs to indicate communication (yellow) and DO (digital output, if present) status BST (green).

The RX LED flashes for data packets received by the actuator from the MS/TP network. The TX LED flashes for data packets sent by the actuator to the MS/TP network. Each DO has an associated LED located above its termination point. This LED point is on when the associated DO is commanded ON; otherwise, it is OFF.

The BACnet ATEC will attempt to communicate with other devices as soon as it powers up. The TX LED will start flashing as it attempts to connect and transfer data.

NOTE:
Digital Room Units (Firmware Revision 26 and later) will update their controlled inputs without putting them Out Of Service. However, a command from an external source through the digital room unit will put the associated BACnet Input point Out Of Service.

Room Unit Identification

- For Analog Room Units (Series 1000) – The revision number is visually identified by its case.
- For Digital Room Units (Series 200/2300 Firmware Revision 25 or earlier) – The revision number displays for 5 seconds when the room unit is first powered up. These room units will display `laptop` when a laptop is connected and will no longer update room temperature sensor values.
- For Digital Room Units (Series 2200/2300 Firmware Revision 26 and later) – The revision number displays for 5 seconds when the room unit is first powered up or when a laptop is disconnected. These room units will continue to display and update the room temperature sensor values when a laptop is connected.

Setting Controller Address

1. In WCIS select **View > Edit/View Reports**.
2. Select a report from list and click **Apply**.
3. Set CTLR ADDRESS to the BACnet MS/TP MAC address. (0 through 127 for Master; 128 through 254 for Slave).

NOTE:
See the *WCIS Online Help* for instructions on auto-addressing on the network. Otherwise, set the controller address and MS/TP network baud rate prior to connecting the controller to the network. See Configuring BACnet Parameters [→ 19].

Setting the Application

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

Application Description	Application Number
VAV Cooling Only	6630
VAV Cooling and Heating	6631
VAV with Electric Reheat or Baseboard Radiation	6632
VAV with Hot Water Heat	6633
VAV Series Fan Electric Heat	6634
VAV Series Fan Hot Water Heat	6635
VAV Parallel Fan Electric Heat	6636
VAV Parallel Fan Hot Water Heat	6637
VAV Slave Mode	6684

At the start of the calibration cycle, the controller automatically sets CAL AIR to YES. When the cycle is complete, CAL AIR returns to NO.

The air velocity sensor calibration cycle begins within three minutes of an application start-up or initialization, depending on the controller's address. After this delay, the calibration cycle takes from 2 to 5 minutes to complete. The air damper closes during calibration.

NOTE:
You can continue the startup procedure while calibration is underway. However, the controller will ignore commands to control end devices (such as the damper) until calibration of the air velocity sensor is finished.

Enabling Actuators

⚠ CAUTION

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

The point(s) that determine actuator run times are:

- MTR 1 TIMING (damper actuator)
- MTR 2 TIMING (valve actuator, Application 6633, 6635 and 6637)

Your application may not have or use MTR2.

Use the manufacturing datasheet to set run time(s) for the actuator used by your application.

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. Set MTR SETUP according to Table *MTR SETUP Values*.

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

Motor Enable/Reverse Values for MTR SETUP.			
	Motor 1 Not Used	**Motor 1 Enabled**	**Motor 1 Enabled and Reversed**
Motor 2 Not Used	0	1	3
Motor 2 Enabled	4	5	7
Motor 2 Enabled and Reversed	12	13	15

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* for floating control actuators or the CLOSE/OPEN voltage configurations for analog actuators.
2. If any of the actuators still do not close completely, then the actuators have been installed or set up incorrectly. See the BACnet Actuating Terminal Equipment Controller (ATEC) Installation Instructions (550-162), the iKnow Troubleshooting Tool, or contact Technical Support.

Setting Open Close Voltages for 10V Actuators

If AOV control is used for modulating a valve instead of floating control, the open/close voltages must be set. Otherwise, this section can be skipped.

1. Set AOV 1 OPEN to the voltage that fully opens the modulating heating device connected to AOV 1.
2. Set AOV 1 CLOSE to the voltage that completely closes the modulating heating device connected to AOV 1.

NOTE:
Defaults are for a normally closed valve (OPEN = 10, CLOSE = 0).

Setting Number of Heat Stages

Depending on the application, STAGE COUNT refers to electric heat stages used (enabled).

- For electric heat applications, check the hardware to verify the number of electric heat stages wired to the controller (1 to 3 stages) and set HTG STG CNT to this value.

⚠ CAUTION

For installations using electric heat coils, never set minimum airflow settings to 0.
Equipment damage can occur if electric heat is on without airflow.

Enabling Autozero Module

If an Autozero Module is used, enable it by setting CAL MODULE to **YES**.

⚠ CAUTION

Short boards use DO 6 and long boards use DO 8 for the Autozero Module. If an Autozero Module is used, do not enable MTR3 (valve 2).

NOTE:
For a controller without an Autozero Module, the damper is commanded closed to get a zero airflow reading during calibration. For a controller with an Autozero Module, the damper is closed only for the first calibration after controller initialization or power up.

Selecting Automatic Calibration Option

1. Using the following table, set CAL SETUP to the value that best meets your job requirements.
2. If appropriate, change CAL TIMER from the default of 12 hours. This setting applies only if your choice for CAL SETUP includes Option 4.

NOTE:
The air velocity sensor should be calibrated at least once every 24 hours. Make sure that the sensor has been calibrated before balancing takes place, as this will affect the balancer's results.

CAL SETUP Options.	
CAL SETUP (value)	**Description**
0	Calibration occurs ONLY when the point CAL AIR is set to **YES**.
1	Calibration occurs when the field panel commands a Day/Night mode changeover. Actual calibration is subject to a time delay of 0, 1, 2, or 3 minutes. This delay is determined by the point CTLR ADDRESS divided by 4. The remainder is the time delay in minutes. **Example:** If CTLR ADDRESS = 11, then the controller will wait 3 minutes (11 ÷ 4 = 2 R3) after it receives the Day/Night mode changeover command before beginning the calibration routine.
2	Calibration occurs immediately after the override switch is pressed.
4 (factory default value)	Calibration occurs on the time interval set in the point CAL TIMER. **Example:** If CAL TIMER = 12, then the calibration period is 12 hours. Actual calibration is subject to a time delay based on the value of CTLR ADDRESS. See the example in Option 1 in this table.

NOTE:
Since these are additive values, options can be combined by summing their numbers. For example, to calibrate in Options 1 and 2, set CAL SETUP to **3**.

Setting Room Temperature Setpoints (Digital and Analog Room Units)

Set the following basic control temperature setpoints:

- Day (or OCC) cooling setpoint: DAY CLG STPT (default 74°F)
- Day (or OCC) heating setpoint: DAY HTG STPT
- Night (or UOC) cooling setpoint: NGT CLG STPT
- Night (or UOC) heating setpoint: NGT HTG STPT

If STPT DIAL is set to NO, CTL STPT will use the above setpoint depending on the HEAT.COOL mode and the day/night mode.

Selecting Options for Room Unit Setpoints

In addition to the base room temperature setpoints that should be entered above, when STPT DIAL = YES, the following options are provided for room units using Standard/Absolute or Warmer/Cooler temperature setpoints, depending on the room unit provided.

The following sections provide the setup configurations based on desired room unit setpoint option:

- Standard/Absolute Setpoints Mode (Digital Room Units [→ 10])
- Warmer/Cooling Setpoints Mode (Digital Room Units [→ 10])
- Standard/Absolute Setpoints Mode (Analog or Digital Room Units [→ 11])
- Warmer/Cooling Setpoints Mode (Analog Room Units) [→ 12]

NOTE:
For all of these configurations, if a zero shift of setpoint is specified when changing from heating to cooling, set DAY CLG STPT = DAY HTG STPT. This may not be in compliance with various energy and control standards.

Standard/Absolute Setpoint Mode (Digital Room Unit)

Digital Room Unit (2200/2300 Series Firmware Revision 26 and later)

The setpoint value entered on the room unit will be equal to the RM STPT DIAL and will be used for CTL STPT.

1. Set STPT DIAL = **YES**.
2. Set STPT SPAN = **0**.
3. Set SENSOR SEL = **1** (additive value)
   Enables Room Unit Temperature and setpoint options. Other room unit options can then be added as needed. See *Setting SENSOR SEL*.
4. Set RM STPT MIN and RM STPT MAX to a limit range for setpoint adjustment.
5. Set DAY CLG STPT and DAY HTG STPT to the initial values to be used by the room unit and to establish the heating/cooling setpoint and shift.

Configuration values used by the digital room unit are sent from the points configured above in the PTEC and do not need to be individually entered into the room unit. These include, SET PT MIN, SET PT MAX and SEL PT DIS (display option).

Example

DAY CLG STPT = 74, DAY HTG STPT = 70

In cooling mode, the current room setpoint in RM STPT DIAL displays when you press a setpoint UP/DOWN button. You can change the displayed value and the RM STPT DIAL value within the min/max limits.

When you press the UP button to the new cooling setpoint of 78 (an increase from the base cooling setpoint of plus 4 degrees), it displays in RM STPT DIAL. When the controller switches to heating mode, the RM STPT DIAL displays the DAY HTG STPT, also offset by plus 4 degrees (74).

In this Standard/Absolute configuration, the value of RM STPT DIAL will display the actual control setpoint.

Warmer/Cooler Setpoint Mode (Digital Room Unit)

Digital Room Unit (2200/2300 Series Firmware Revision 26 and later)

NOTE:
The revision number displays for 5 seconds when the room unit is first powered up or when a laptop is disconnected.
Digital Room Units (Firmware Revision 26 and later) will continue to display and update the room temperature sensor values when a laptop is connected.

The room unit setpoint shift (warmer/cooler) will be used to set the RM STPT DIAL temperature and will be used for CTL STPT.

1. Set STPT DIAL = **YES**.
2. Set STPT SPAN = **1** (or greater).
3. Set SENSOR SEL = **1** (additive value)
   Enables Room Unit Temperature and setpoint options. Other room unit options can then be added as needed. See *Setting SENSOR SEL*.
4. Set RM STPT MIN and RM STPT MAX to a limit range for setpoint adjustment.
5. Set DAY CLG STPT and DAY HTG STPT to the initial values to be used by the room unit and to establish the initial heating/cooling setpoint shift.

Configuration values used by the digital room unit are sent from the points configured above in the PTEC and do not need to be individually entered into the room unit. These include, SET PT MIN, SET PT MAX and SEL PT DIS (display option).

Example

DAY CLG STPT = 74, DAY HTG STPT = 70; STPT SPAN = 2

In the warmer/cooler configuration, while in cooling mode, when you press the UP or DOWN buttons the graphic display indicates the current shift, if any. You can change the graphic display in two step increments by pressing the UP or DOWN buttons. Press UP (warmer) by two increments (the maximum shift allowed with the setup) and the RM STPT DIAL will display the new cooling setpoint of 76°F; (a shift from the base cooling setpoint of 2 degrees). When the controller switches to heating mode, the RM STPT DIAL displays the DAY HTG STPT, which is also offset by plus + degrees (72°F), while the room unit graphic display maintains its + 2 degree shift.

RM STPT DIAL value will be limited to RM STPT MIN and RM STPT MAX values.

In this warmer/cooler configuration, the value of RM STPT DIAL displays the actual control setpoint.

Standard/Absolute Setpoint Mode (Analog or Digital Room Unit)

Analog (1000 Series) or Digital Room Units (Firmware Revision 25 or earlier)

NOTE:
The revision number displays for 5 seconds when the room unit is first powered up.

When configuring these devices, the CTL STPT is an offset calculation from the value set on the room unit. This offset is established by the difference between the DAY CLG STPT and the DAY HTG STPT. The value on the RM STPT DIAL, as set by the room unit, is the midpoint of this offset.

1. Set STPT DIAL = **YES**.
2. Set STPT SPAN = **0**.
3. Do one of the following:
   - Digital Room Unit: Set SENSOR SEL = **1** for Digital Room units (additive value)
     Enables Room Unit Temperature and setpoint options. Other room unit options can then be added as needed. See *Setting SENSOR SEL*.
   - Analog Room Unit: Set SENSOR SEL = **0** for Analog Room units (additive value)
     Disables Digital Room Unit Temperature and setpoint options. Other sensor select options for type of thermistor used can then be added as needed. See *Setting SENSOR SEL*.
4. Set RM STPT MIN and RM STPT MAX to limit range for setpoint adjustment.
5. Set DAY CLG STPT and DAY HTG STPT to establish the heating/cooling deadband only (actual value are not used to establish CTL STPT).

Example

DAY CLG STPT = 74, DAY HTG STPT = 70

This provides a setpoint deadband of 4 degrees.

In either cooling or heating mode, the RM STPT DIAL displays the value set by the room unit (limited by RM STPT MIN and MAX).

- In cooling mode, CTL STPT is RM STPT DIAL + 0.5 * setpoint deadband
- In the heating mode, CTL STPT is RM STPT DIAL – 0.5 * setpoint deadband

Example

When the user selects a setpoint on the room unit of 78 degrees, it will display in RM STPT DIAL. However, the control setpoint will be offset from this value. In cooling mode, CTL STPT will be 78 + 2 = 80 degrees, and in heating mode CTL STPT will be 78-2 = 76 degrees.

The displayed temperature setpoint on the room unit and the value of RM STPT DIAL will display MID POINT of the actual control setpoints.

Warmer/Cooler Setpoint Mode (Analog Room Unit Only)

Analog Room Unit (1000 Series)

The room unit setpoint shift (warmer/cooler) will be used to set the RM STPT DIAL temperature and will be used for CTL STPT.

1. Set STPT DIAL = **YES**.
2. Set STPT SPAN = **1** (or greater).
3. Set SENSOR SEL = **0** (additive value)
   Disables Digital Room Unit Temperature and setpoint options. Other sensor select options for type of thermistor used can then be added as needed. See *Setting SENSOR SEL*.
4. In this option, RM STPT MIN and RM STPT MAX are not used to limit setpoint range (this is accomplished by the STPT SPAN adjustment).
5. Set DAY CLG STPT and DAY HTG STPT to the initial values to be used by the room unit and to establish the initial heating/cooling setpoint shift.

The analog room unit setpoint slider is mapped to + and – the STPT SPAN configured.

When the slider is at mid point, there is no shift in cooling or heating setpoint used by CTL STPT and displayed in RM STPT DIAL.

Example

DAY CLG STPT = 74, DAY HTG STPT = 70; STPT SPAN = 4

In the warmer/cooler configuration, while in cooling mode, when you move the slider half way up to the top (a 2 degree shift), the CTL STPT and RM STPT DIAL display the new cooling setpoint of 76°F (a shift from the base cooling setpoint of 2 degrees). When the controller switches to heating mode, CTL STPT and RM STPT DIAL displays the DAY HTG STPT, which is also offset by + 2 degrees (72°F), while the slider remains at the previous position.

In this warmer/cooler configuration, the value of RM STPT DIAL displays the actual control setpoint.

Setting SENSOR SEL

SENSOR SEL is a configurable, enumerated point (values are additive). This point tells the controller what type of room unit is being used and how to handle loss of communication, for more information see Fail Mode Operation. It also provides the ability to enable the optional RH and CO2 sensors and indicates which thermistor type is connected.

Room Temperature, Setpoint, RH and CO2

- When the digital room unit (Series 2200/2300) is used, SENSOR SEL selects the source for temperature and setpoint and enables a loss of communications indication:
  - 1 = enables supervision (from the room unit) for fail communications for temperature and setpoint.
  - 2 = enables supervision (from the room unit) for fail communications for relative humidity.
  - 4 = enables supervision (from the room unit) for fail communications for CO2.

- When the analog room unit (Series 1000/2000) is used, SENSOR SEL values for temperature/setpoint, relative humidity and CO2 should be left at their default values (0).

Thermistor Inputs

- Default for either input is 10K.
- To enable 100K Ω thermistor on input, see the following table for additive values.

SENSOR SEL Value * (additive)	Description (include values to enable feature)
1	Select Digital Room Unit (for temperature sensing and setpoint dial)
2	Relative Humidity (RH) sensing
4	CO_2 sensing
8	100K Ω thermistor on AI 3 (or input is 10K Ω)
16	100K Ω thermistor on AI 4 (or input is 10K Ω)

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 control, enable it by setting WALL SWITCH to **YES**. In addition, AI/DI 4 must be configured for digital input (set to 0).

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

If WALL SWITCH is not enabled, AI/DI 4 can be used as a Spare (Analog or Digital).

Setting Duct Area

If you do not know the duct area, use the following table:

Area =	Round Duct	Rectangular Duct
Area in Sq. Ft.	(π x R^2)/144 (*Where:* π = 3.14 and R = radius of duct in inches)	Width x Height/144 (in inches)
Area in Sq. M	(π x R^2)/10,000 (*Where:* π = 3.14 and R = radius of duct in centimeters)	Width x Height/10,000 (in centimeters)

Setting Flow Coefficient

1. Set FLOW COEFF to the appropriate value found in the following table. This value is a starting point for the air balancer.
2. To fine tune the flow coefficient use the following formula:
   ⇨ **New Flow Coefficient = (Actual Volume ÷ Controller Volume) × Old Flow Coefficient**
   The actual volume is the actual value obtained from the balancer's measurements. The controller volume is the value obtained from AIR VOLUME.
3. If the controller volume is not within 5% of the actual volume, repeat Steps 1 and 2 until it is within 5%.

Box Manufacturer Flow Coefficients		
Manufacturer	**Sensor Type**	**Value**
Anemostat	2-pipe without orifice 2-pipe with orifice Spider without orifice Spider with orifice	0.79 0.59 0.73 0.39
Carnes	2-pipe Flow cross	0.66 0.59
Carrier		0.59
E.H. Price/Siemens Industry Terminal Boxes		0.78
Environmental Technologies		0.79
Krueger		0.68
Metal Aire		0.72
Nailor Industries		0.69
Titus		0.60
Trane		0.66

Setting Airflow Setpoints

NOTE:
Maximum flow(s) must be set ≥ minimum flow(s).

1. Set CLG FLOW MIN to the desired minimum cooling airflow setpoint.
2. Set CLG FLOW MAX to the desired maximum cooling airflow setpoint.
   ⇨ Application 6631 through Application 6637
3. Set HTG FLOW MIN to the desired minimum heating airflow setpoint.
4. Set HTG FLOW MAX to the desired maximum heating airflow setpoint.
5. Set VENT DMD MIN to the desired minimum ventilation airflow setpoint.

6. Set FLOW START to the heating loopout percentage that the flow will start to modulate in the heating mode. (that is, at HTG FLOW MIN).
7. Set FLOW END to the heating loop out percentage that the flow will end modulation (that is, at HTG FLOW MAX).
   ⇨ In addition to the flow setpoints in the heating mode (HTG FLOW MIN and HTG FLOW MAX), the parameters FLOW START (default is 0) and FLOW END (default is 100) will determine what portion of the HTG LOOPOUT the flow will modulate the heating mode. CAUTION: If FLOW START equals FLOW END, the flow will not modulate even if HTG FLOW MAX is greater than HTG FLOW MIN.
8. Set NGT FLOW MIN to the airflow for night (unoccupied) mode.
   – During night mode, airflow modulates to CLG FLOW MAX or HGT FLOW MAX to satisfy the unoccupied temperature setpoints.
   ⇨ **NOTE:** Cooling flow setpoint is modulated between CLG FLOW MIN and CLG FLOW MAX based on cooling demand >0.
   - Heating flow setpoint is modulated between HGT FLOW MIN and HTG FLOW MAX based on heating demand >0.
   - When CLG LOOPOUT = 0 (or HTG LOOPOUT =0) the flow setpoint is based on VENT DMD MIN or NGT FLOW MIN depending on day/night mode.

Performing the Automated Fault Detection and Diagnostics

VAV ATEC controllers have a built-in checkout procedure that performs a basic fault detection and diagnostic routine. It can be manually initiated at any time after the controller has been installed. This procedure tests all of the necessary I/O and ensures the controller can operate within the set airflow range, between CLG FLOW MIN and CLG FLOW MAX.

To perform the checkout procedure, set CHK OUT to **YES**. When the procedure has completed, CHK OUT returns to NO and the results display in CHK STATUS, Table *Possible Failure Value and Description*.

Possible Failure Value and Description	
CHK STATUS Values	**Description**
-1	Checkout procedure has not been run since last controller initialization.
0	No errors found.
1	RTS failed.
2	Room Setpoint dial failed (If STPT DIAL = YES).
4	AVS failed.
8	Controller could not reach CLG FLOW MIN or below.
16	Controller could not reach CLG FLOW MAX or above.
32	Controller did not read low (zero) flow when damper closed.

NOTE:
Multiple failures are added together and displayed as one value. For example, if the RTS failed (1) and the controller could not reach CLG FLOW MAX (16), CHK STATUS displays 17.

Failure codes indicate the following possible problems.

Room temperature sensor failed—CHK STATUS = 1

1. The cable for the room temperature sensor may be unplugged or loose. Check both ends to ensure that the cable is securely seated.
2. Connect directly to the controller through the room temperature sensor connection on the VAV Actuator and check whether communication is possible. If so, the problem lies in the room temperature sensor or its cable. If not, the problem is with the controller.
3. Contact your local Siemens Industry representative.

Room setpoint dial failed—CHK STATUS = 2

1. The cable for the room temperature sensor may be unplugged or loose. Check both ends to ensure that the cable is securely seated.
2. The controller may be incorrectly set to use a setpoint dial with a sensor that does not have the dial. If the sensor has no dial, change STPT DIAL from **YES** to **NO**.
3. Connect directly to the controller through the room temperature sensor connection on the VAV Actuator and check whether communication is possible. If so, the problem lies in the room temperature sensor or its cable. If not, the problem is with the controller.
4. Contact your local Siemens Industry representative.

Air velocity sensor failed—CHK STATUS = 4

1. The sensor tubing may be blocked, leaking, or disconnected. Check for pinched, disconnected, or cracked sensor tubing. Correct as needed.
2. The tubing connections for the air velocity sensor may be reversed. Re-pipe if HI and LO connections are incorrect.
3. The sensor or the VAV Actuator may be faulty.

Controller could not reach CLG FLOW MIN or below—CHK STATUS = 8

1. The actuator may be loose on the shaft. Check that the set screw is fully tightened against the damper shaft. Follow these torque guidelines:
   - 70 ± 5 inch pounds—solid metal
   - 37 ± 2 inch pounds—plastic, graphite, composite, or hollow metal (Hollow metal shafts require an insert to prevent shaft damage.)
2. The tubing for the air velocity sensor may be pinched, disconnected, or cracked. Check the tubing and correct as needed.

3. The tubing connections for the air velocity sensor may be reversed. Re-pipe if HI and LO connections are incorrect.
4. Box sizing information may be incorrect. Check the values of the following points and correct as needed:
   - DUCT AREA
   - FLOW COEFF
   - CLG FLOW MIN
   - CLG FLOW MAX
5. Motor setup information may be incorrect. Check the values of the following points and correct as needed:
   - MTR SETUP
   - MTR1 TIMING
   - DMPR ROT ANG
6. The box may not have been balanced correctly. Contact your local Siemens Industry representative.
7. The air velocity sensor may need calibration. Set CAL AIR to **YES** to run the calibration sequence. When CAL AIR returns to NO, indicating that the sequence is finished, run the checkout procedure again to see whether the problem has been corrected.

Controller could not reach CLG FLOW MAX or above—CHK STATUS = 16

1. Check for the problems described immediately above for CLG FLOW MIN.
2. The box may be starved for air, because either the central air-handling unit is off or there is low duct static.

Controller did not read low (zero) flow when damper closed—CHK STATUS = 32

1. Check for the problems described above for CLG FLOW MIN.
2. The damper shaft may not be secured correctly to the actuator so that when the actuator is fully closed, the damper does not completely shut off airflow.
3. Airflow calibration (at zero) may need to be performed ensuring the damper is fully closed and/or the air handling unit is off.

Setting Room Temperature Offset (optional)

Enter plus or minus corrections for room temperature sensor in RMTMP OFFSET.

Example

If the actual room temperature is 72.0°F (22.2°C), but the value of ROOM TEMP displays 73.0°F (23.8°C), then the value you enter into RMTMP OFFSET (or TEMP OFFSET) is –1.0 (negative 1 degree). In this case, ROOM TEMP will read the raw value 73.0°F (23.8°C), but CTL TEMP will equal 72.0°F (22.2°C).

CTL TEMP = ROOM TEMP + RMTMP OFFSET (or TEMP OFFSET)

Configuring BACnet Parameters

Using WCIS, do the following:

1. From the **Device** menu, select **Device Properties** to configure BACnet parameters.
2. In the **Object** section, enter information for the following fields:
   - **Instance Number** – unique to BACnet network (valid values are 0 through 4,194,303).
   - **Object Name** – unique to BACnet network (30 alphanumeric character limit in RAD50).
   - **Device Description** – description of controller (60 alphanumeric character limit).
   - **Device Location** – physical location of controller (60 alphanumeric character limit).
3. In the **BACNet Communication Settings** section:
   - **Set the CIS/MMI Command Priority to the desired value.**
   - Set **Baud Rate** to the MS/TP network baud rate. Options are; 9600, 19200, 38400 or 76800.
4. In the **MSTP Slave** section do one of the following:
   - Check the **MS/TP Slave** check box if the controller is to function as a slave device (when address range is 0 through 127).
   - Set the **Max Master Node** number.
5. In the **Device Settings** section (configuring the Room Unit port), do one of the following:
   - If using a sensing only Room Unit, the baud rate can be 1200 to 38400. Use **38400** for optimal use with WCIS.
   - If using a communicating digital Room Unit, the baud rate uses whatever rate the network is using or sets it to 19200 after the controller address is configured.
6. Press the **Write** button. The controller accepts the configuration values and then resets.
   ⇨ When the BACnet MS/TP TEC is successfully installed, the RX and TX LEDs continuously flashes On/Off rapidly. This indicates a proper communication with other devices on the network.

Auto Discover and Auto Addressing

An improved commissioning workflow has been designed for all BACnet PTEC controllers (standard 66*xx* applications) along with WCIS (Revision 4.0 and later). This provides the option to use the MS/TP network (using the field panel or a router) and the WCIS tool to discover and auto-address each controller. For more information, see the *WCIS Online Help*.

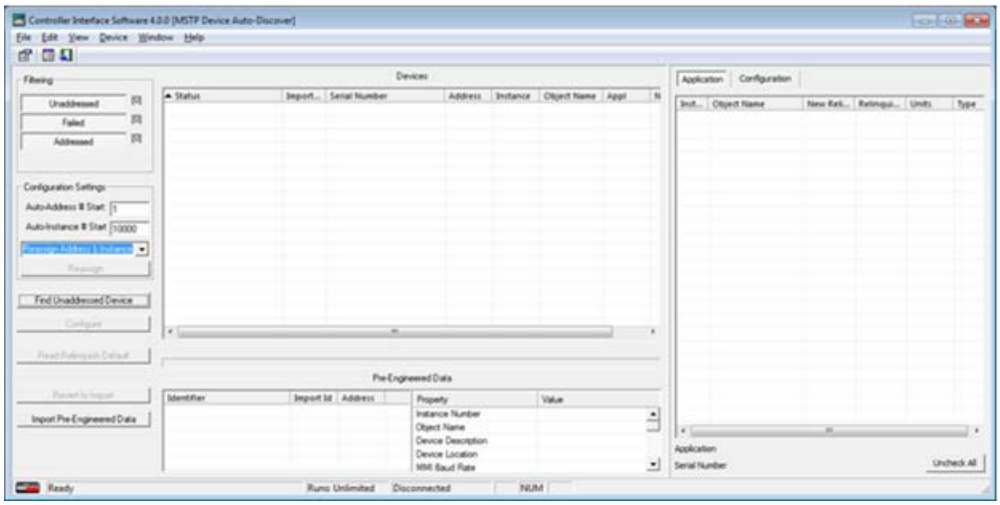
NOTE:
The current workflow will continue to support setting the baud rate and address for each controller using the HMI port or at the room unit.

▷ All BACnet PTEC controllers (standard 66*xx* applications) have an internal unique serial number and a two part serial number label.

1. Connect WCIS to the field panel or use a router connected to the MS/TP network.
2. Assign one PTEC a valid address (using the serial number). This will establish and set the baud rate for the entire network.

Auto Discovery allows you to automatically discover and identify PTEC/ATEC controllers on the BACnet MS/TP Network. There are two basic configurations:

- Devices not configured with an address. (Devices are discovered by their unique serial number.)
- Devices configured with an address and available for modification.



Filtering

These buttons allow you to select what you see in the **Auto-discovery** window. All three buttons are selected by default.

- **Unaddressed** - Displays unaddressed devices
- **Failed** - Displays failed devices
- **Addressed** - Displays addressed devices

Configuration Settings

- **Auto Address # Start** - Beginning address number. An address is reserved for each discovered device starting with this number.
- **Auto Instance # Start** - Beginning instance number. An instance number is reserved for each discovered device starting with this number.
- **Reassign Address and Instance** drop-down menu - Reassigns the address and instance number of the selected device(s).
- **Reassign Address Only** drop-down menu - Reassigns the address of the selected device(s).
- **Reassign Instance Only** drop-down menu - Reassigns the instance of the selected device(s).

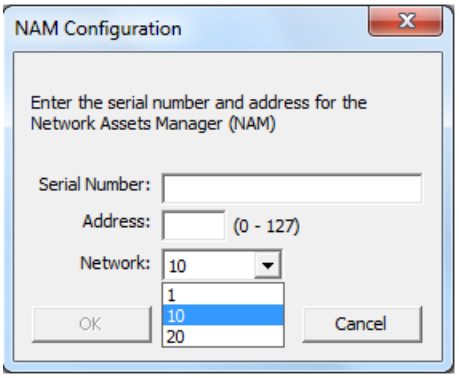
Auto-Discovery

- **Find Unaddressed Device** - Searches the connected network for all devices (addressed and unaddressed).
- **Configure** - Sends modified application data to the controller(s).
- **Read Relinquish Default** - Refreshes relinquish default column of the Application tab with values from the controller.
- **Revert to Import** - Returns to Pre-Engineered Data after changes have been made.
- **Import Pre-Engineered Data** - A .csv file can be used to set initial values in the controller. The file can be taken from Commissioning Tool or exported from Excel. See Commissioning a Controller [➞ 23].

Auto-Discovery Procedure

- Click **Find Unaddressed Device**.

  ⇨ If a NAM (Network Asset Manager) device is not defined, the **NAM Configuration** window displays. All new TECs can be assigned as a NAM.

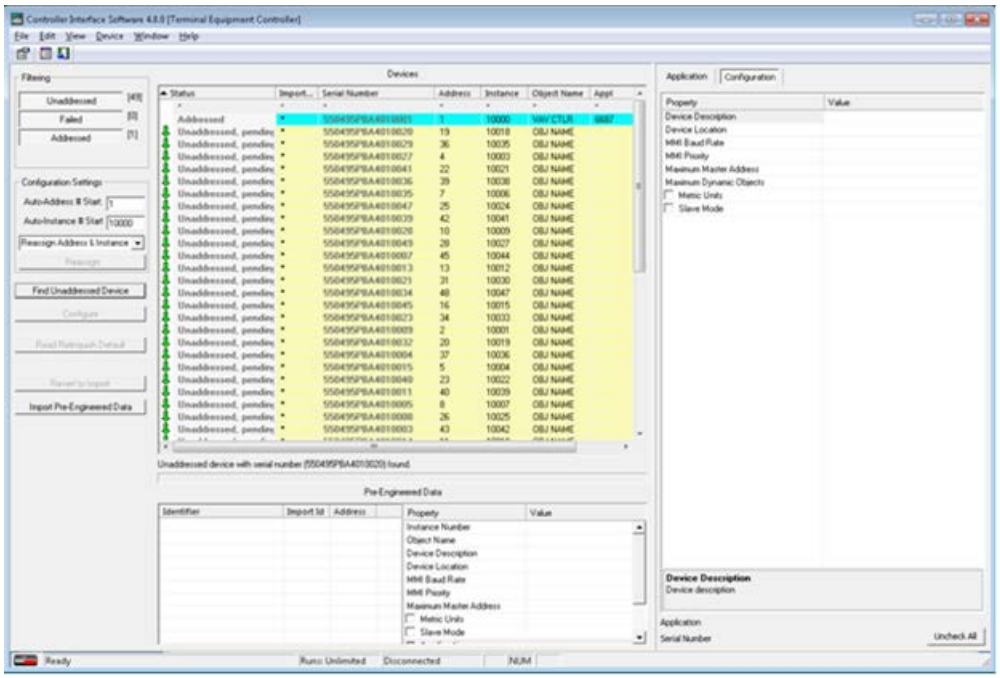


  – Enter the serial number (found on print from electrician).
  – Enter a unique (unused) address (0 through 127).
  – Click **OK**.

⇨ The device is assigned as the NAM for the network with the address you specified.

⇨ The NAM device auto-discovers all other devices on the network.

⇨ WCIS displays all devices.

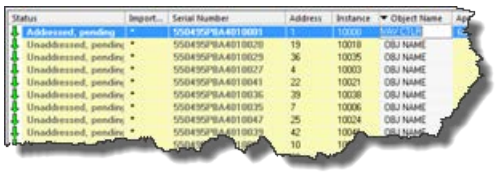


Configuring Discovered Devices

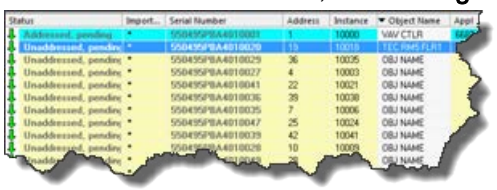
Each device on the network must have unique identifiers in the following fields:

- Address
- Instance
- Object Name - 30 alphanumeric character limit for Siemens field panels.

1. To change any of these fields, click in that field and enter the desired value.

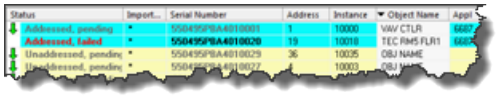


2. When all fields are defined, click **Configure**.



   ⇨ All devices defined properly displays `Addressed`.

   ⇨ If a device has not been defined properly, it displays `Unaddressed` and the problem field displays red text.



3. Correct any issues and click **Configure**.

Commissioning a Controller

Learning the Application Point Team

Once a device has been addressed, select your application.

- Do one of the following:
  - Right-click in the **Application** column and select the desired Application.
  - Click **Configure** to load the device for your application.
  - Right-click on the controller and select **Learn Point Team Descriptor**.

Import Data

1. Click the **Import Pre-Engineered Data** button.
   ⇨ The **Import Configuration Data** dialog box displays.
2. Browse to the desired .csv file and click **Open**.

⇨ The imported files are listed in the **Pre-Engineered Data** section of the **Auto-Discovery** window.

Each line in the window is a grouping of data for a controller. For more information see .csv File Format [➞ 24].

Assigning Import Data to Controller

1. Click in the **Import ID** column of the desired controller in the devices section.
2. Select the appropriate **Import ID number** of the **Pre-Engineered Data** you want to assign.

⇨ The **Application** and **Configuration** tabs are updated with the new (Pre-Engineered) data. You can manually change/update any data.

Assigning Import Data to Multiple Controllers

1. Click on the desired **Import Data** from the list in the Pre-Engineered Data section.
2. Select all desired controllers in the Devices window.
3. Right-click the selection in the Devices window and then select **Assign Import Data from Import ID x**.
4. Click **Configure**.

⇨ The Application will load into each controller selected. The **Application** and **Configuration** tabs are updated with the new (Pre-Engineered) data.

Commissioning Multiple Controllers

If you're commissioning multiple controllers with the same application all values can be loaded to each controller selected.

You can select multiple controllers by holding down either the **SHIFT** or **CTRL** key and clicking on multiple controllers listed.

You can configure values for multiple controllers with different applications by first selecting and making changes to one controller and then selecting all controllers and clicking **Configure**.

NOTE:
Once you select multiple controllers with different applications the Application tab goes blank. However, WCIS retains all changes and send the data for all selected controllers.

.csv File Format

The .csv file is auto generated from CT (is the old manufacture installed output file) and can be imported into WCIS. It has the following format and must be manually created.

First line must be – **IDENTIFIER**, **FIELDID**, **FIELDVAL;** all additional lines will be data in that format.

IDENTIFIER

This field is used to create groupings of data. Each group can be thought of as a collection of information (configuration data and point initial values) that will be loaded into one or more TEC's. The groups cannot be subdivided into smaller collections.

FIELDID

This is the specific data that will be set. All configuration data will have a key word associated with it and all points will be referenced by their point number (object ID). The following is a list of fields:

- ObjectName – Sets the device object name.
- Instance – Sets the device instance number.
- Description – Sets the device description.
- Location – Sets the device location.
- MaxMaster – Sets the device max master.
- MMIBaud – Sets the baud rate of the MMI tool port.
- MMIPriority – Sets priority for P1 commands received through the MMI tool port.
- IsMetric – Sets the units to SI.
- IsSlave – Sets the unit to a MSTP slave device.
- Comment – Creates comments in the file to make it more readable and are not imported into the tool.

FIELDVAL

This value must be set to the FIELDID. The format of this data is specific to the ID.

Description	Acceptable Values
ObjectName	30 RAD50 characters
Instance	0 – 4194302
Description	60 ASCII characters
Location	60 ASCII characters
MaxMaster	1 – 127
Point numbers	Depend on the specific points
MMIBaud	1200, 2400, 4800, 9600, 19200, 38400
MMIPriority	8 – 16
IsMetric	0 – No, 1 – Yes
IsSlave	0 – No, 1 – Yes

The Pre-Engineered Data file can be used in different ways. For example, you can create a group or collection of information for every TEC. You can then assign the correct group to the TEC based on the location as indicated by the job schedule. The schedule will display the serial numbers for all TEC's and the location where the TEC was installed. The groups of data are set up for a specific location and you simply select the correct group for the TEC that has the serial number associated with that location.

You can also set up groups that contain information that must be set in multiple TEC's. Select all TEC's that need the specific data and assign the ID.

Sample .csv file:

IDENTIFIER,FIELDID,FIELDVAL

Building100_TEC_VAV001,ObjectName,VAV in Building 100

Building100_TEC_VAV001,Instance,5400

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Siemens Industry, Inc.
Building Technologies Division
1000 Deerfield Pkwy
Buffalo Grove IL 60089
Tel. +1 847-215-1000

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