

SIEMENS



BACnet PTEC Controller Terminal Box (VAV)

Start-up Procedures

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Before You Begin



NOTE:

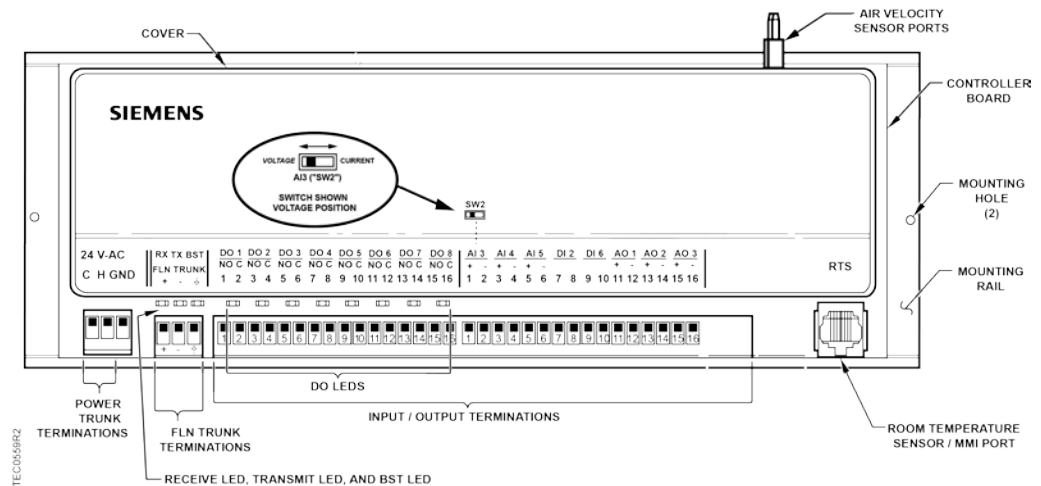
For information on applications with Firmware Revision Bx40 or earlier, see InfoLink and/or Asset Portal for documentation.

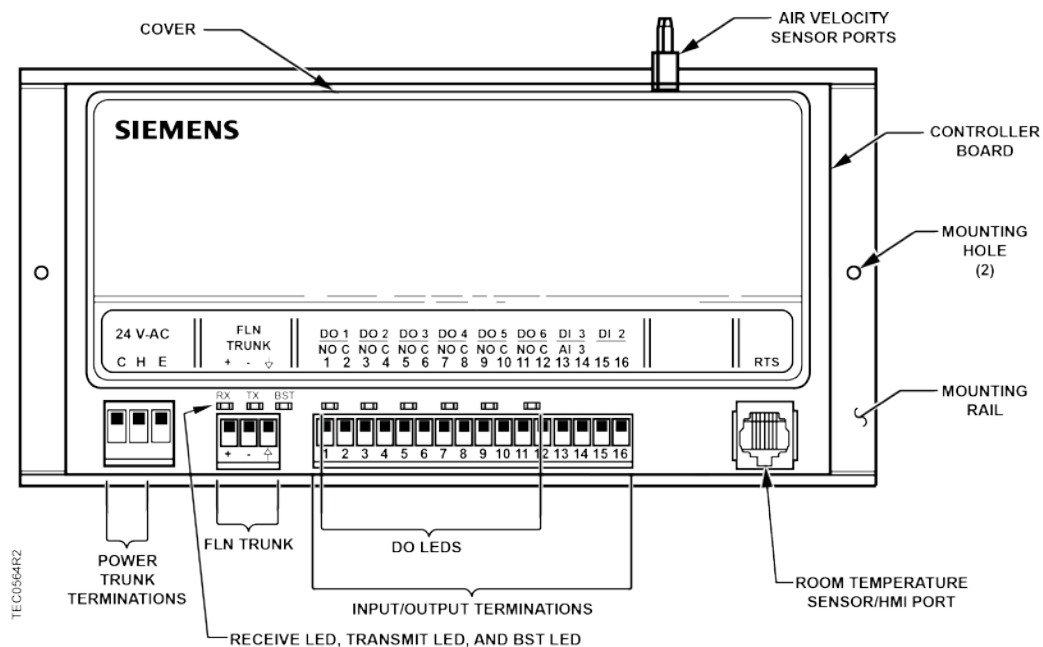


NOTE:

WCIS version 4.0 or later must be used to configure 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, uncheck 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.



NOTE:

Applications 6600 to 6607 on long board.
Applications 6620 to 6627 on short board.

Communication and DO Indicators

The Siemens BACnet PTEC VAV Terminal Box Controller has LEDs to indicate communication (yellow) and DO (digital output) status BST (yellow).

The RX LED will flash for data packets received by the controller from the MS/TP network. The TX LED will flash for data packets sent by the controller 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 PTEC will automatically detect the MS/TP baud rate at start up and will communicate with other devices when configured as a master MS/TP device (address 1 through 127). The TX LED will start flashing as it attempts to communicate with other devices.

Room Unit Identification

- For Analog Room Units – The revision number is visually identified by its case.
- For Digital Room Units (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 (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.

Enabling Actuators



CAUTION

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

The point that determines 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 the following table to set run time(s) for the actuator used by your application.
2. For damper rotation angles other than 90°, set ROT ANG to the appropriate value.

Specifying Motor Setup



CAUTION

If an Autozero Module is used, do not enable MTR3 (valve 2).

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.

| MTR SETUP Values | | | | | | | | | |
|------------------------------|------------------|-----------------|------------------------------|------------------------------|-----------------|------------------------------|------------------|-----------------|------------------------------|
| | 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 |
| Motor 3 Enabled and Reversed | 49 | 53 | 61 | 51 | 55 | 63 | 48 | 52 | 60 |

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 BACnet PTEC VAV Terminal Box Controller Installation Instructions (550-107, 550-144), the iKnow Troubleshooting Tool, or contact Field Support.

Setting the Application

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

| Application Description | Application Number (short board) | Application Number (long board) |
|---|----------------------------------|---------------------------------|
| VAV Cooling Only | 6620 | 6600 |
| VAV Cooling or Heating | 6621 | 6601 |
| VAV with Electric Reheat or Baseboard Radiation | 6622 | 6602 |
| VAV with Hot Water Reheat | 6623 | 6603 |
| VAV Series Fan Powered with Electric Reheat | 6624 | 6604 |
| VAV Series Fan Powered with Hot Water Reheat | 6625 | 6605 |
| VAV Parallel Fan Powered with Electric Reheat | 6626 | 6606 |
| VAV Parallel Fan Powered with Hot Water Reheat | 6627 | 6607 |
| VAV Slave Mode | 6688 | 6687 |

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.

Setting Number of Heat Stages or Valves

Depending on the application, STAGE COUNT, HTG STG CNT, VALVE COUNT, or VLV CNT (if present) refers to electric heat stages or valves used (enabled), some point names may vary.

- For water or steam valve applications, set VALVE COUNT or 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 STAGE COUNT or HTG STG CNT to this value.



CAUTION

For installations using electric heat coils and without terminal fans, never set min airflow settings to 0.

Equipment damage can occur if electric heat is on without airflow.

- For applications with Electric Heat and no terminal fan and when the heating coil is located in the terminal unit, supply airflow is required to allow heat transfer from the coil to the room. EHEAT FLOW (in percent of HTG FLOW MAX) provides a means to ensure that there is sufficient air flow present before activating any heating stage.

Enabling Autozero Module

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



CAUTION

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.

Air Velocity Sensor Calibration

The air velocity sensor calibration cycle takes from 2 to 5 minutes to complete. The air damper closes during calibration. At the start of the calibration cycle, the controller automatically sets the point CAL AIR to YES. When the cycle is complete, it sets CAL AIR to NO.



NOTE:

For a controller used without an Autozero Module, the damper is commanded closed to get a zero airflow reading during calibration. For a controller used with an Autozero Module, calibration occurs without closing the damper.

Wait until the calibration cycle is complete (CAL AIR is set to NO) before continuing with this startup procedure.

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 ($11 \div 4 = 2 \text{ R}3$) 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. |



NOTE:

Options can be combined by summing their numbers. For example, to calibrate in Options 1 and 2, set CAL SETUP to **3**.

Setting STPT SPAN

Set STPT SPAN = 0 for Room Unit setpoint use as standard (absolute values for example, 74 F). For configurations for warmer/cooler (per *Selecting Options for Room Unit Setpoints*), set STPT SPAN = 1 degree or greater (for example, STPT SPAN = 2 will allow -2 to +2 degrees from the current heating or cooling 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 data. It also provides the ability to enable the optional RH, and CO2 sensors and 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 temperature and setpoint and enables a loss of communications indication:
 - Temperature/Setpoint enable and supervision for fail communications (temperature) with a value of 1.
 - Relative humidity enable and supervision for fail communications with a value of 2.
 - CO2 enable and supervision for fail communications with a value of 4.
- When the analog room unit (Series 1000/2000) is used, default temperature sensing (0) from an analog room unit is enabled (relative humidity and CO2 sensing are not available and should not be selected).

Thermistor Inputs

- Default for either input is 10K.
- To enable 100K thermistor on input, see the following table for additive values of 8 or 16.

Other Inputs (only available on Digital Room Unit)

- Use the following table to select and enable communications supervision of room temperature/setpoint dial, relative humidity or CO2 for additive values of 1, 2 and 4.

| 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 | If short board: 100K Ω thermistor on AI 3 (else input is 10K Ω) If long board: 100K Ω thermistor on AI 5 (else input is 10K Ω) |
| 16 | Long board only: 100K Ω thermistor on AI 4 (else 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 (occupied/unoccupied) control, enable it by setting WALL SWITCH to **YES**.

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

Setting Duct Area

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

| Area = | Round Duct | Rectangular Duct |
|-----------------|---|---|
| Area in Sq. Ft. | $(\pi \times R^2)/144$ (where $\pi = 3.14$ and R = radius of duct in inches) | Width x Height/144 (in inches) |
| Area in Sq. M | $(\pi \times R^2)/10,000$ (where $\pi = 3.14$ and R = radius of duct in centimeters) | Width x Height/10,000 (in centimeters) |

Setting Flow Coefficient

- Set FLOW COEFF to the appropriate value found in the following table. This value is a starting point for the air balancer.
- To fine tune the flow coefficient use the following formula:

$$\Rightarrow \text{New Flow Coefficient} = (\text{Actual Volume} + \text{Controller Volume}) \times \text{Old Flow Coefficient}$$

The actual volume is the actual value obtained from the balancer's measurements. The controller volume is the value obtained from AIR VOLUME.
- If the controller volume is not within 5% of the actual volume, repeat the procedure until it is within 5%.

| Box Manufacturer Flow Coefficients | | |
|--|------------------------|-------|
| Manufacturer | Sensor Type | Value |
| Anemostat | 2-pipe without orifice | 0.79 |
| | 2-pipe with orifice | 0.59 |
| | Spider without orifice | 0.73 |
| | Spider with orifice | 0.39 |
| Carnes | 2-pipe | 0.66 |
| | Flow cross | 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 \geq 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 6621-short board, 6601-long board through Application 6627-short board, Application 6607-long board
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 will modulate to CLG FLOW MAX or HGT FLOW MAX to satisfy the unoccupied temperature setpoints.



CAUTION

For electric heating coils in the air terminal unit without a terminal fan, do not set HTG FLOW MIN to 0.

Equipment damage may occur if insufficient air flow is present with electric heat ON.

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 is showing 73.0°F (23.8°C), then the value to be entered into RMTMP OFFSET (or TEMP OFFSET) would be -1.0 (negative 1 degree). In this case, ROOM TEMP would read the raw value 73.0°F (23.8°C), but CTL TEMP would equal 72.0°F (22.2°C).

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

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 = Master; 128 through 254 = 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 [→ 13].

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:
 - **Name** – unique to BACnet network, (12 alphanumeric character limit).
 - **ID** – unique to BACnet network (valid values are 0 through 4,194,303).
 - **Description** – description of controller (60 alphanumeric character limit).
 - **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 (default is 19200).
4. In the **MSTP Slave** section:
 - Check the box for a slave device.
 - Set the **MAC 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 76800. For optimal use with WCIS use **38400**.
 - If using a communicating digital Room Unit, the baud rate must be set to **1200**.
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 flash On/Off rapidly and continuously (indicating 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 66xx 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*.



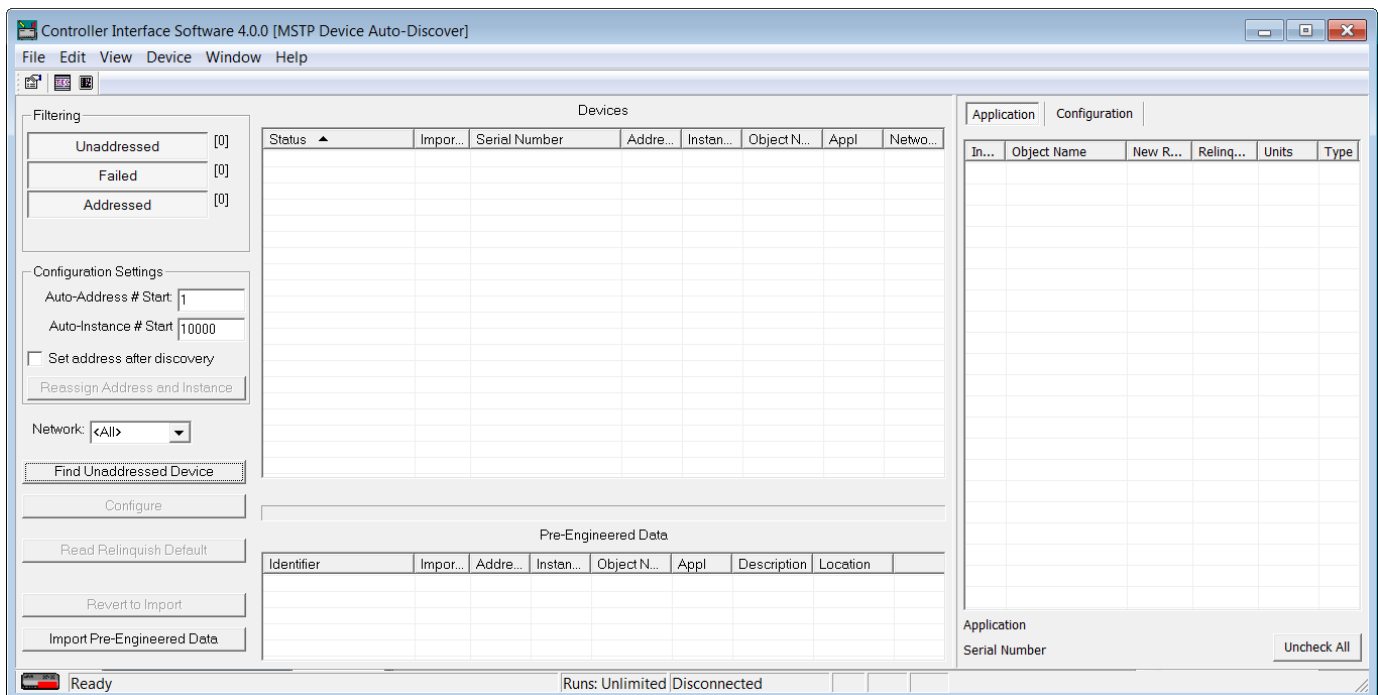
NOTE:

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 66xx applications) will 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 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 controller devices 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** (pull-down menu) - Reassigns the address and instance number of the selected device(s).
- **Reassign Address Only** (pull-down menu) - Reassigns the address of the selected device(s).
- **Reassign Instance Only** (pull-down menu) - Reassigns the instance of the selected device(s).

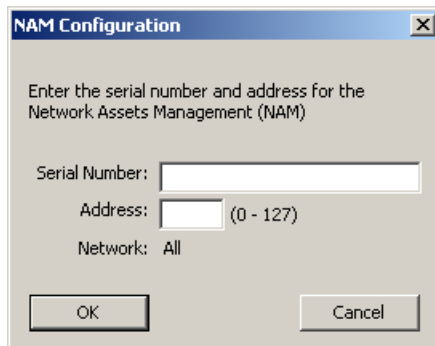
Auto-Discovery

- **Network** (pull-down menu) - Allows you to enter or select a specific network, if multiple networks are available.
- **Find Unaddressed Device** - Searches the connected network for all devices (addressed and unaddressed).
- **Configure** - Sends modified application data to the controller(s).
- **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 [→ 17].

Auto-Discovery Procedure

- Click **Find Unaddressed Device**.

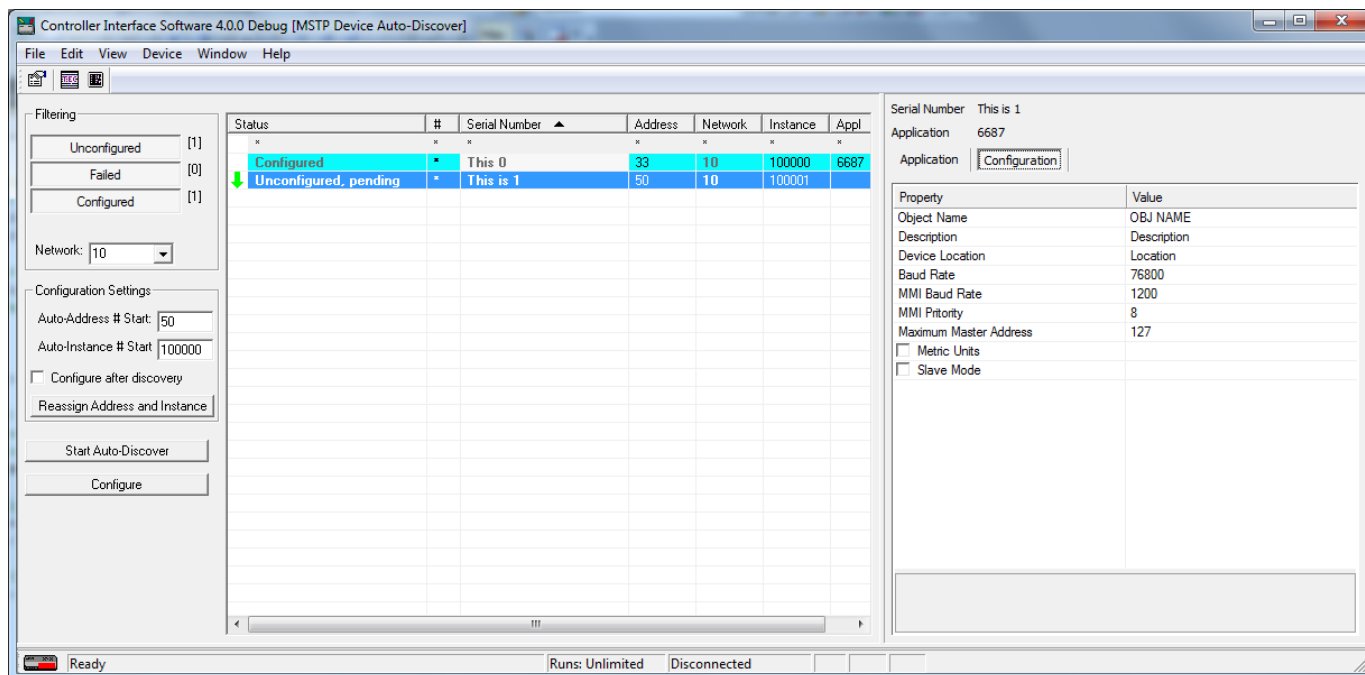
- ⇒ If a NAM device is not defined, the **NAM Configuration** window displays. (NAM - Network Asset Manager; All new TECs can be assigned as a NAM.)



The NAM Configuration dialog box is titled "NAM Configuration" and contains the following fields and buttons:

- Text: "Enter the serial number and address for the Network Assets Management (NAM)"
- Serial Number: [Text input field]
- Address: [Text input field] (0 - 127)
- Network: All
- Buttons: OK, Cancel

- Enter the serial number (found on print from electrician).
 - Enter a unique (unused) address (0 - 127).
 - Click **OK**.
- ⇒ The device will be assigned as the NAM for the network with the address you specified.
- ⇒ The NAM device will auto-discover all other devices on the network.
- ⇒ WCIS will display 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.

| Status | # | Serial Number | Address | Network | Instance | Appl |
|-----------------------|---|---------------------|---------|---------|----------|------|
| Configured | * | This is device 0x01 | 1 | 70 | 1 | 6600 |
| Configured | * | This is device 0x02 | 11 | 70 | 11 | 6687 |
| Configured | * | This is device 0x05 | 19 | 70 | 100008 | 6689 |
| Unconfigured, pending | * | This is device 0x02 | 18 | 70 | 100007 | |
| Unconfigured, pending | * | This is device 0x07 | 17 | 70 | 100006 | |
| Unconfigured, pending | * | This is device 0x08 | 16 | 70 | 100005 | |
| Unconfigured, pending | * | This is device 0x04 | 15 | 70 | 100004 | |
| Unconfigured, pending | * | This is device 0x10 | 14 | 70 | 100003 | |
| Unconfigured, pending | * | This is device 0x06 | 13 | 70 | 100002 | |
| Unconfigured, pending | * | This is device 0x03 | 12 | 70 | 100001 | |
| Unconfigured, pending | * | This is device 0x09 | 10 | 70 | 100000 | |

Serial Number
Application 6687

Application Configuration

| Property | Value |
|---------------------------------------|-------------|
| Object Name | VAV.CTLR |
| Description | Description |
| Device Location | Location |
| MMI Baud Rate | 1200 |
| MMI Priority | 8 |
| Maximum Master Address | 127 |
| <input type="checkbox"/> Metric Units | |
| <input type="checkbox"/> Slave Mode | |

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

| Status | # | Serial Number | Address | Network | Instance | Appl |
|-----------------------|---|---------------------|---------|---------|----------|------|
| Configured | * | This is device 0x01 | 1 | 70 | 1 | 6600 |
| Configured | * | This is device 0x02 | 11 | 70 | 11 | 6687 |
| Configured | * | This is device 0x05 | 19 | 70 | 100008 | 6689 |
| Unconfigured, pending | * | This is device 0x02 | 18 | 70 | 100007 | |
| Unconfigured, pending | * | This is device 0x07 | 17 | 70 | 100006 | |
| Unconfigured, pending | * | This is device 0x08 | 16 | 70 | 100005 | |
| Unconfigured, pending | * | This is device 0x04 | 15 | 70 | 100004 | |
| Unconfigured, pending | * | This is device 0x10 | 14 | 70 | 100003 | |
| Unconfigured, pending | * | This is device 0x06 | 13 | 70 | 100002 | |
| Unconfigured, pending | * | This is device 0x03 | 12 | 70 | 100001 | |
| Unconfigured, pending | * | This is device 0x09 | 10 | 70 | 100000 | |

⇒ All devices defined properly will display **Addressed**.

⇒ If a device has not been defined properly, it will display **Unaddressed** and the problem field displays red text.

| Status | # | Serial Number | Address | Network | Instance | Appl |
|--------------------|---|---------------|---------|---------|----------|------|
| Configured | * | This 0 | 33 | 10 | 4194303 | 6607 |
| Configured, failed | * | This is 1 | 33 | 10 | 100000 | 6687 |

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 from the menu.
 - 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 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.

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 will update 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** in the pop-menu.
 4. Click **Configure**.
- ⇒ The Application will load into each controller selected. The Application and Configuration tabs will update 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 multi-select by holding 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.

Flashing Controller Firmware

FLT Procedure

Use the Firmware Loading Tool (FLT) for this procedure.

1. Connect to RTS port of PTEC.
2. Set Communications to **1200 baud** and **ID**.
3. Click the **Identify** button in FLT.
4. Browse for new firmware.
5. Select **Load**.

WCIS Procedure

1. Connect to device.
2. From the **Device** menu, select, **Load TEC Firmware**.
⇒ The **Load TEC Firmware** dialog box displays.
3. Click the **Browse** button.
4. Select the firmware.
5. Select **Load**.

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