

JENEsys Edge[®] VAV Configuration Tool



niagara⁴

Trademarks

Onyxx[®] and the Onyxx logo are U.S. registered trademarks of Lynxspring, Inc.
Lynxspring[™] and the Lynxspring logo are U.S. registered trademarks of Lynxspring, Inc.
JENEsys[®] and JENEsys Edge[®] are U.S. registered trademark of Lynxspring, Inc.
Helixx[®] is a U.S. registered trademark of Lynxspring, Inc.
Other brands and product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Copyright Notice

© 2023 Lynxspring, Inc.
All rights reserved.

This document contains proprietary information which is protected by copyright. No part of this document may be copied, photocopied, reproduced, translated, or converted to any electronic or machine-readable form in whole or in part without prior written approval of Lynxspring, Inc.

Disclaimer

NO WARRANTY. This technical documentation is being delivered to you AS-IS, and Lynxspring makes no warranty as to its accuracy or use. Any use of the technical documentation or the information contained therein is at the risk of the user. Documentation may include technical or other inaccuracies or typographical errors. Lynxspring reserves the right to make changes in this document without prior notice, and the reader should in all cases consult Lynxspring to determine whether any such changes have been made. The information in this publication does not represent a commitment on the part of Lynxspring.

Lynxspring shall not be liable for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

This guide contains links and references to third-party websites that are not under the control of Lynxspring, and Lynxspring is not responsible for the content of any reference material or linked websites. If you access a third-party website mentioned in this guide, then you do so at your own risk. Lynxspring provides these links only as a convenience, and the inclusion of the link does not imply that Lynxspring endorses or accepts any responsibility for the content on those third-party sites.

Lynxspring, Inc.
2900 NE Independence Ave
Lee's Summit, MO 64064
P 816.347.3500 F 816.437.0780
<http://www.lynxspring.com>

Table Contents

Introduction	1
Installation	1
Start Screen	2
General	2
Project Setup	3
General	3
Base Configuration	3
Assignments	6
VAV Entry	8
General	8
Navigation Tree	9
Basic Configuration	9
Control Configuration	10
Flow Configuration	13
Inputs/Outputs	14
Template Editor	16
Document Management	17
Version History	17

Introduction

The JENEsys Edge® VAV Configuration Tool is a user-friendly interface used to build the VAV Configuration spreadsheet. The spreadsheet is then used in the JENEsys Edge VAV Supervisor station to configure live Edge VAV controllers.

The result is a tool that will further speed configuration time and reduce the chance of import failures in the Onyx Rapid Integration Tool. In addition, the tool will check for errors to maximize your ability to commission a VAV system quickly and cleanly.

The purpose of this document is to provide a description of the tool screens and the operation of each part of the tool.

Installation

The VAV Configuration Tool installation package (figure 1) includes 2 files (setup.exe, VAV Configuration Tool Setup.msi). Double-click the **setup.exe** file to run the installation wizard.

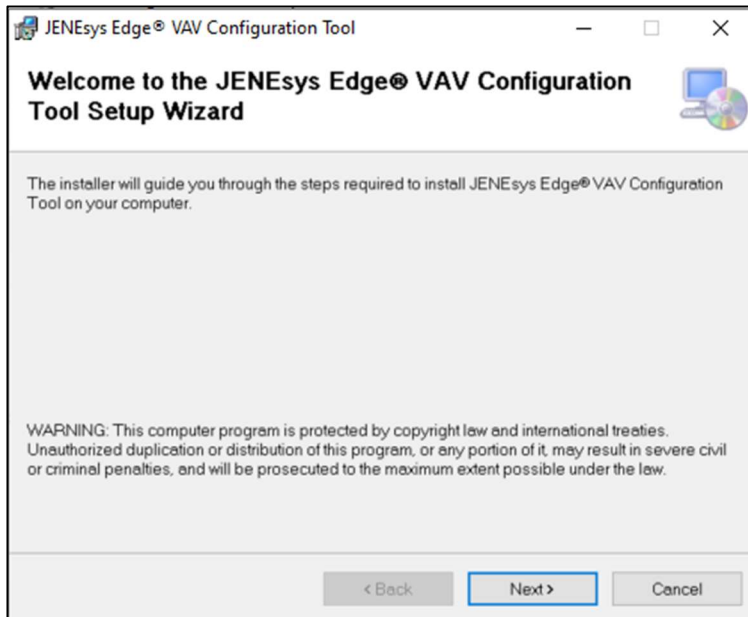
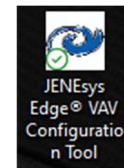


Figure 1

Click the **Next** button to select the Installation Folder.

You can use the default or select a different folder.

Once the setup is complete, you will find an icon to launch the tool on your desktop as well as an entry in your Programs Menu.



Start Screen

General

When you first launch the application, the tool's folder system is created under the *C:\JENEsys/EdgeVAV Configuration Tool* folder. Two folders are created: **Projects** (to hold project folders/files) and **Templates** (to hold template files). Finally, the start screen (figure 2) is displayed.

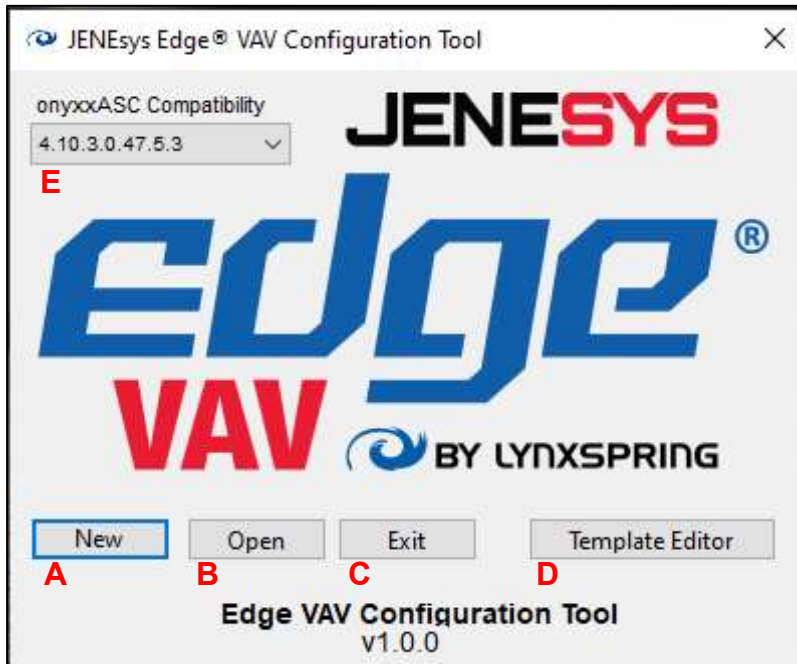


Figure 2

- A. New:** Start a new project. The user is prompted for a project name followed by the creation of a folder under **VAV Projects**. The user is then directed to the Project Setup window.
- B. Open:** Opens an existing project. Opens a browser window to locate the project file. Once selected, the user is directed to the project setup window and all values from the project file are loaded.
- C. Exit:** Closes the Edge VAV Configuration Tool
- D. Template Editor:** Launch the Template Editor to create, modify, or delete VAV configuration templates. Once created, you can apply the templates when you configure VAV details later.
- E. onyxxASC Compatibility:** Sets the compatibility mode for the project. The version is based on the onyxxASC driver version (although this may change to the station release version).

Project Setup

General

This window defines the structure of the project. It determines the naming and number of AHUs, Zones, and VAVs that comprise the system. You can also set naming configurations to tailor the system to a particular customer as well as define starting network configurations. Two tabs are used in this window: **Base Configuration** and **Assignments**

There are several buttons (figure 3) that are common to both tabs in this window.

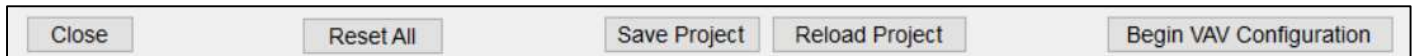


Figure 3

- **Close Project:** Closes the **Project Setup** window and returns to the **Start Screen**. If the project has been modified, the user has the option of saving the modifications.
- **Reset All:** Clears all data from the Project Setup fields. The user is given a warning that this cannot be undone.
- **Save Project:** Save the project to a project file and the project database.
- **Reload Project:** Reloads the project from the saved database. This does **not** reload project data from a file. It will override existing field values with values from the database. The user is prompted that this cannot be undone.
- **Begin VAV Configuration:** Launches the **VAV Entry** window to edit each VAV in the system. The user is given the option to save any modifications.

Base Configuration

The Base Configuration tab (figure 4) is used to set the initial project defaults, naming structure, and default network settings. The number of AHUs and VAVs, and the list of Zone names are then used in the Assignment tab to build the navigation structure.

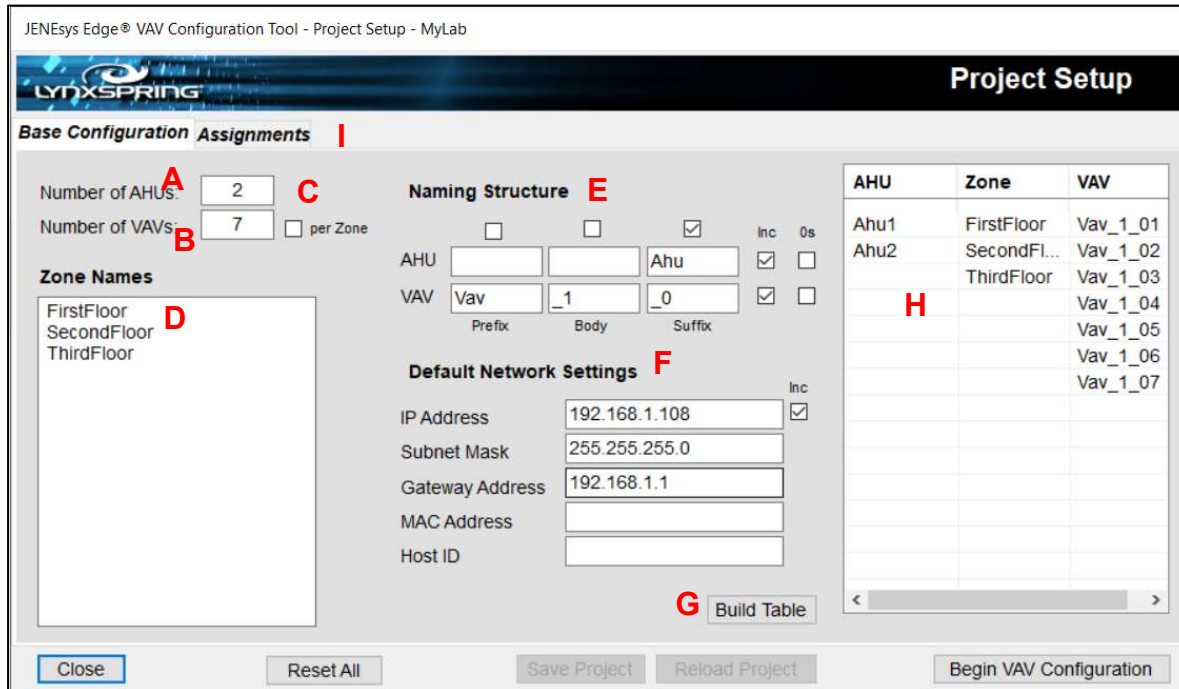


Figure 4

- A. **Number of AHUs:** Sets the number of AHUs that are present in the system.
- B. **Number of VAVs:** Sets the number of VAVs in the system. This value will be different based on the Per Zone checkbox C.
- C. **Per Zone checkbox:** Indicates that the number of VAVs chosen are to be applied to each zone in each AHU when the navigation tree is constructed. When unchecked the number of VAVs chosen are the total number of VAVs in the system.
- D. **Zone Names:** Enter the zone names to be used. After the first zone name, hit the <Enter> key to enter the next.
- E. **Naming Structure section (figure 5):**

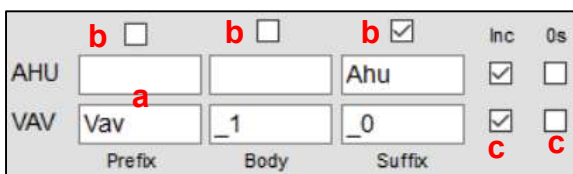


Figure 5

- a. **Prefix/Body/Suffix fields:** These fields let you define the different parts that make up the name of the AHUs and VAVs in the system.

- b. **Enable/Disable:** Enables or disables the inclusion of the Prefix, Body, and/or Suffix for both the AHU name and the VAV name.
- c. **Inc/0s checkboxes:** The **Inc** checkbox next to either the AHU or VAV will increment each enabled part of the name based on the number of AHUs and VAVs set. The **0s** checkbox will place leading zeroes in the AHU or VAV name based on the number of AHUs/VAVs indicated. For example, if there are 10 AHUs entered and 0s is unchecked, the AHU names will be AHU1, AHU2, AHU3...AHU10. If 0s is checked, the AHU names will be AHU01, AHU02, AHU03...AHU10.

F. **Default Network Settings section (figure 6):**

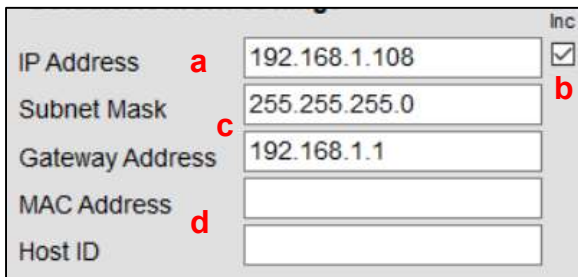


Figure 6

- a. **IP Address:** Default starting IP address for a VAV device.
 - b. **Inc checkbox:** When checked, the last quadrant of a VAV device IP address is incremented.
 - c. **Subnet Mask/Gateway Address:** Set the default subnet mask and gateway address.
 - d. **MAC Address/Host ID:** Default Niagara device MAC address and Host ID.
- G. **Build Table:** Creates table H from the naming structure and the numbers of AHU/VAVs and Zone Names. You can use this button repeatedly as you fine tune the naming that will be applied to the navigation structure.
- H. **AHU/VAV/Zone table:** This table is filled after a user presses the **Build Table** button. There are 3 columns: AHU, VAV, and Zone. While this table does not reflect the navigation structure, you can use the table to check the desired naming of each column entry.
- I. **Assignments tab:** Shows the Assignments tab where the user can assign AHUs, Zones, and VAVs to a tree to build the navigation structure.

Assignments

The Assignments tab (figure 7) is used to assign and build the AHUs, Zones, and VAVs into a navigation structure that is created when the exported configuration spreadsheet is imported into the Supervisor station using the Onyx Rapid Integration Tool.

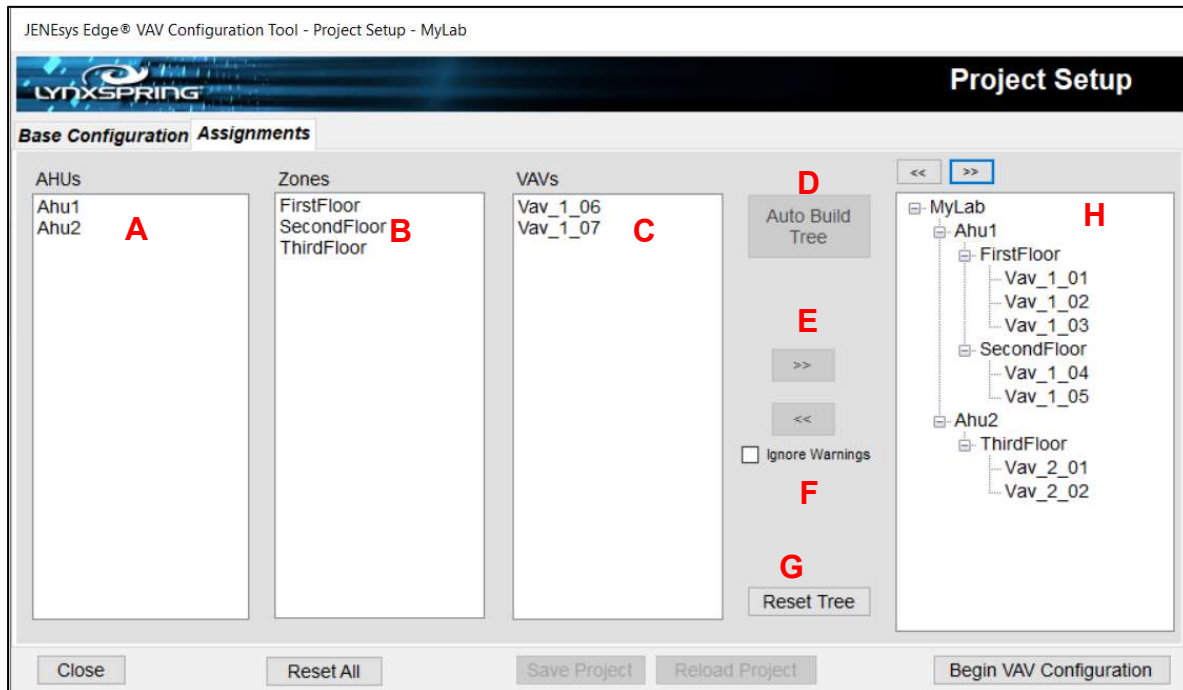


Figure 7

- A. **AHUs:** List of AHU names built when the user clicks the **Build Table** button in the **Base Configuration** tab. Right-click to Add items, Edit or Delete existing items.
 - B. **Zones:** List of Zone names built when the user clicks the **Build Table** button in the **Base Configuration** tab. Right-click to Add items, Edit or Delete existing items.
 - C. **VAVs:** List of VAV names built when the user clicks the **Build Table** button in the **Base Configuration** tab. Depending on the state of the **Per Zone** checkbox in the **Base Configuration** tab, this list may change as VAVs are added to the tree. If **Per Zone** is **not** checked, as each VAV is added to the tree, it is removed from the VAV name list. If the **Per Zone** is checked, the list is not affected when a VAV is added to the tree. Right-click to Add items, Edit or Delete existing items.
- Note:** With an AHU and a Zone selected in their respected lists, you can also double-click a VAV to add it to the tree.
- D. **Auto Build Tree:** This button is enabled only when the **Per Zone** checkbox is checked. It is used to automatically create the tree structure where all VAV names are applied to all Zones under all AHUs. After the build is completed, you can manually edit individual VAV entries to fine tune the structure.

- E. **Add to Tree:** Adds an AHU/Zone/VAV combination to the tree. The button is only enabled when an AHU, a Zone, and a VAV are all selected. If the **Per Zone** checkbox is checked, the VAV is removed from the VAV list to prevent duplicate combinations. If **Per Zone** is not checked, the system will check to ensure duplicate entries are not possible.
- F. **Remove from Tree:** Remove a selected VAV from the tree. The user is presented with a warning that all configuration data for the VAV in the project database is removed. This warning can be hidden using the **Ignore Warning** checkbox. If the **Per Zone** checkbox is not checked, removed VAVs will be re-added to the VAV list. If you select an AHU or Zone tree segment, all VAVs/Zones under the segment are removed.
- G. **Reset Tree:** Remove all entries from the navigation tree. This will refill the VAV list if the **Per Zone** checkbox is not checked. If the VAVs have been configured in the VAV Entry window, this will erase all configurations from the database (but not the project file).
- H. **Navigation Tree:** View the navigation tree as it will be seen in the Edge Supervisor. In the tree, the user can collapse or expand segments. When the first VAV is added to the tree, the **Begin VAV Configuration** button is enabled.

Users can edit the VAV labels to fine tune the naming as needed. At this time, it is not possible to edit the AHU or Zone labels.

VAV Entry

General

This window is used to define the configuration of each VAV in the system. The window allows for using templates to help speed configuration as well as using checkboxes in a tree for bulk configuration. Four (4) tabs are used: Basic **Configuration**, **Control Configuration**, **Flow Configuration**, **Inputs/Outputs**.

There are several buttons (figure 8) that are common to all tabs in this window.



Figure 8

- **Save to Template:** Save the fields in the Control Configuration, Flow Configuration, and the Inputs/Outputs tabs to a template file. The button is enabled when 0 or 1 VAV is selected from the tree. If multiple VAVs are selected, this button is disabled.
- **Save Project:** Saves the project database to a file named for the project. The file is in a folder also named for the project.
- **Build XLS:** Export all VAVs from the project database to an Excel spreadsheet. The spreadsheet can then be used without any modifications in the Onyx Rapid Integration Tool. When clicked, the system will validate each VAV in the database and produce a log file with any errors that prevent the program from building the spreadsheet. The user is notified that errors and/or warnings have been encountered during validation and logged in a file in the project folder. Errors prevent the export, warnings do not.
- **Save to Tree:** Use to save changes to fields to the tree. This updates the project database
- **Return:** Returns the user to the Project Setup window. If necessary, the user is presented with an opportunity to save the project to a file.

Navigation Tree

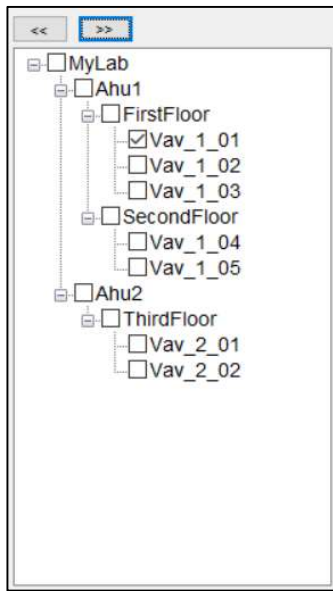


Figure 9

- The navigation tree (figure 9) is synchronized between the **Project Setup** window and the **VAV Entry** window.
- Checkboxes are used to edit a single configuration or many.
 - Selecting a zone will select all VAVs in that zone
 - Selecting an AHU will select all VAVs in all Zones
 - Selecting the root will select all VAVs in the system.
- Checking and unchecking tree items does not affect the data in the configuration. As each item is checked, the project database is polled to put data in the appropriate fields
- When multiple VAVs are selected, the background color of some values may change from white to yellow. A white background color indicates the value is shared among all checked VAVs. A yellow background color indicates that values are different among the checked values. Entering a value in fields will be set to each selected VAV when the **Save to Tree** button is clicked.
- The >> and << buttons let you either collapse all the tree items or expand all of them.

Basic Configuration

As the name implies, the Basic Configuration tab (figure 10) lets you configure basic information about each VAV. Several entries in this tab are populated based on the **Project Setup** window such as AHU, Zone, VAV names, and network settings.

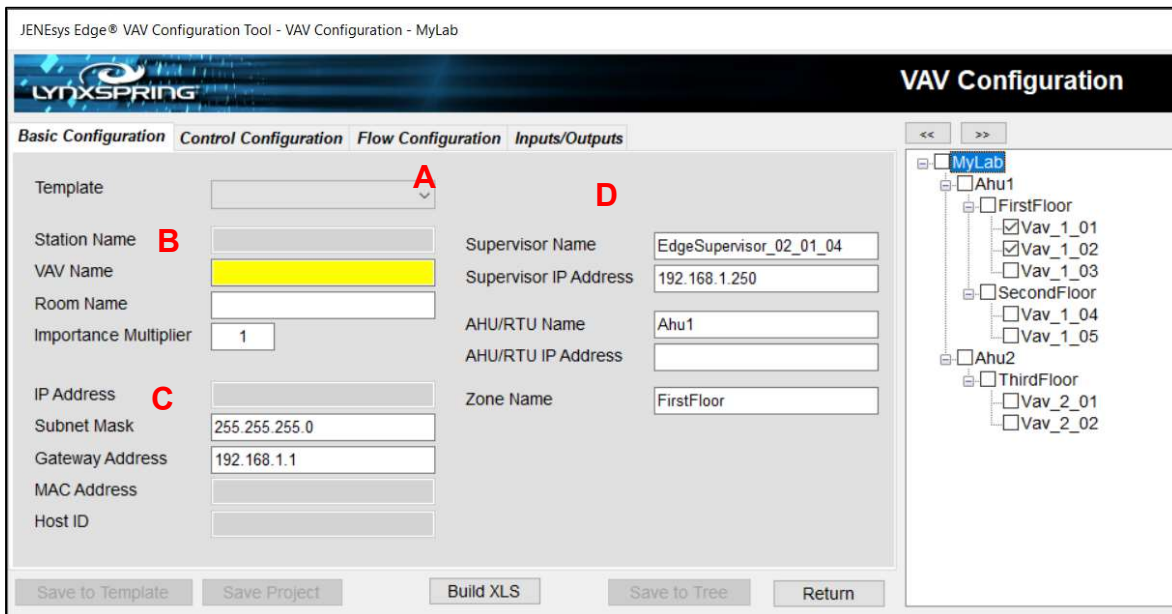


Figure 10

- A. **Template:** This dropdown is updated with saved templates from either the Save as Template button in this window or the Template Editor window. When selected, the template data is applied to the **Control Configuration**, **Flow Configuration**, and **Inputs/Outputs** tabs of each VAV selected in the tree.
- B. **Identification Data:** Basic information to identify the VAV. The **Station Name** field must be unique across all VAVs in the database. When multiple VAVs are selected in the tree, the Station Name field is disabled.
- C. **Networking Data:** Initially filled with information from the **Project Setup** window. Each Tcp/Ip address field (IP Address, Subnet Mask, Gateway Address) has internal checks to make sure the entry is valid. Like the Station Name field, the IP address, MAC address, and Host ID fields must be unique across all VAVs in the system. When multiple VAVs are selected in the tree, these fields are disabled.
- D. **Connecting Systems Data:** This section contains Supervisor, AHU, and Zone data to identify the VAV in the system and the Supervisor to which the VAV will communicate its data. The AHU and Zone names are auto populated from the **Project Setup** window and cannot be empty when the Build XLS button is clicked. Likewise, the Supervisor Name and Supervisor IP address fields are required. The Excel spreadsheet cannot be created if these fields are left blank.

Control Configuration

The **Control Configuration** tab (figure 11) contains 7 dropdown fields. The **VAV Configuration** dropdown field can affect the fields in the **Flow Configuration** tab. For example, if a dual duct box is selected as the VAV configuration for the VAV, the Heating section in the Flow Configuration tab is enabled, otherwise it is disabled.

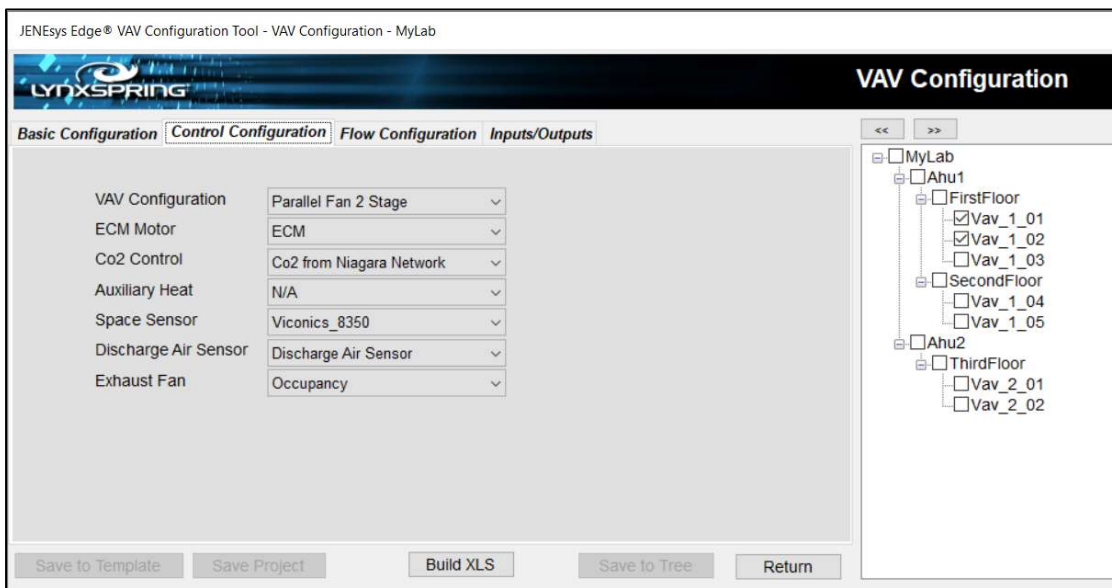


Figure 11

A. **VAV Configuration:** The type of VAV configuration (figure 12). See the JENEsys Edge® VAV Users Guide for additional information on all 27 types.

Cooling Only No Fan 1 Stage No Fan 2 Stage No Fan 3 Stage No Fan 4 Stage No Fan Hot Water Valve No Fan SCR No Fan Floating Actuator Parallel Fan No Heat	Parallel Fan 1 Stage Parallel Fan 2 Stage Parallel Fan 3 Stage Parallel Fan Hot Water Valve Parallel Fan SCR Parallel Fan Floating Actuator Series Fan No Heat Series Fan 1 Stage Series Fan 2 Stage	Series Fan 3 Stage Series Fan Hot Water Valve Series Fan SCR Series Fan Floating Actuator Dual Duct 5.11 Dual Duct 5.12 Dual Duct 5.13 Dual Duct 5.14 Ventilation
---	--	---

Figure 12

B. **EMC Motor:** Does the fan (if appropriate) have a variable type of control? (N/A [no], ECM [yes])

C. **Co2 Control:** Indicates how the VAV will receive a Co2 sensor.

N/A Co2 from Tstat Co2 from UI6 Co2 from Niagara Network
--

Figure 13

N/A: control is not required for this VAV.

Co2 from Tstat: Co2 value obtained from digital thermostat

Co2 from UI6: Co2 value received from sensor connected to Universal Input 6 terminals.

Co2 from Niagara Network: Co2 value received through the Fox Network from a source outside of the EdgeVAV system.

D. **Auxiliary Heat:** This setting (figure 14) indicates whether this VAV uses auxiliary heating and what type of control.

N/A Fintube Analog Fintube Digital Fintube Floating Radiant Panel Analog Radiant Panel Digital Radiant Panel Floating Unit Heater Analog Unit Heater Digital Unit Heater Floating Duct Booster Analog Duct Booster Digital Duct Booster Floating

Figure 14

E. **Space Sensor:** Determines how the controller gets the space temperature value for this VAV.

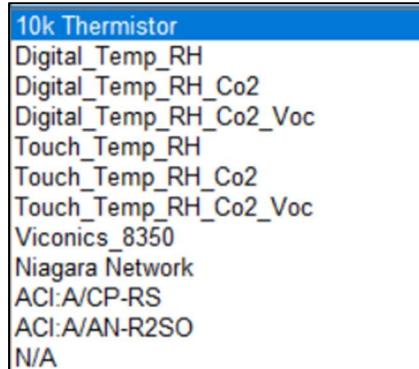


Figure 15

F. **Discharge Air Sensor:** Option to choose whether a discharge air sensor is used on this VAV.

G. **Exhaust Fan:** Option to choose the type of exhaust fan control. See the JENEsys Edge® VAV Users Guide for more details.

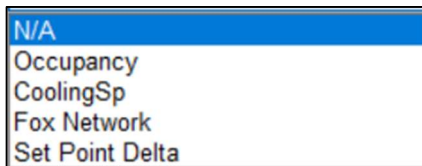


Figure 16

N/A: control is not required for this VAV.

Occupancy: controlled on/off by the VAV time schedule.

CoolingSp: controlled by VAV cooling control setpoint + differential (2 degF)

Fox Network: controlled manually from the Supervisor

Set Point Delta: controlled by space temperature setpoint

Flow Configuration

The Flow Configuration tab (figure 17) is used to enter flow settings for the VAV. This includes selecting the VAV box manufacturer and the box size. This is done in the dropdown list at the top of the tab (A).

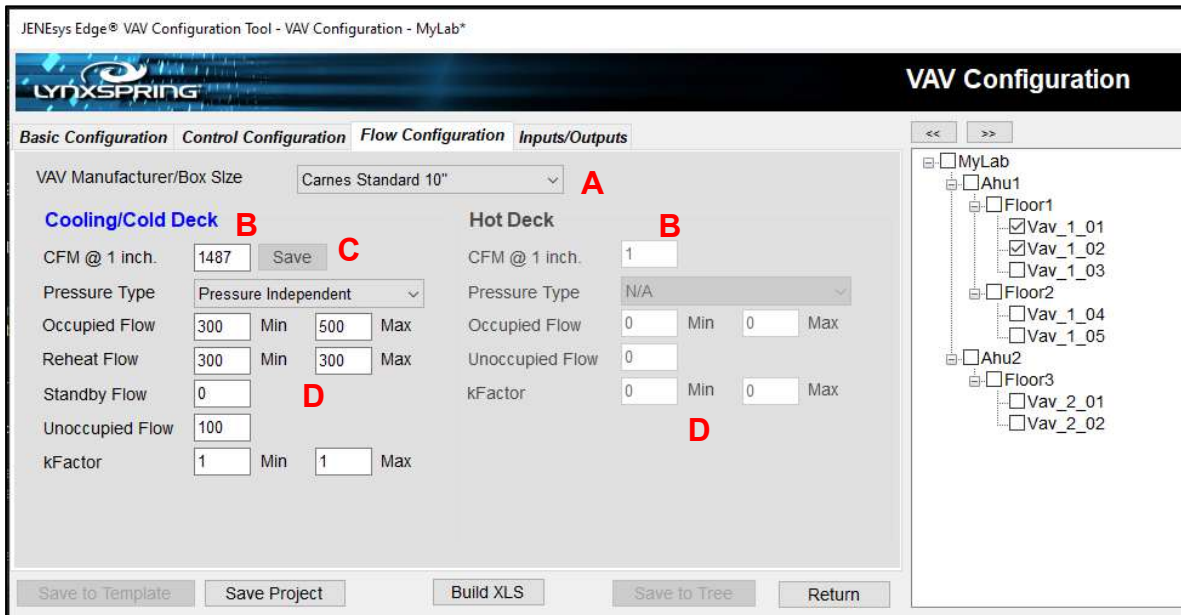


Figure 17

- A. **VAV Manufacturer/Box Size:** Selecting a standard item from the dropdown list will load the CFM @ 1 inch field (B) to the appropriate CFM.

There are 83 standard selections and 10 custom settings. The custom settings are saved for each project.

- B. **CFM @ 1 inch.:** When a custom box size and manufacturer are selected (from the bottom of the dropdown list A), the CFM @ 1 Inch field (B) background turns purple and the Save button (C) is enabled.
- C. **Save:** For custom **CFM @ 1 inch** values only. After a new name is supplied by the user, the new value is saved to the project database and dropdown list A is updated with the new name.
- D. If the **Minimum Occ Flow** value is greater than the **Maximum Occ Flow** value (D), an error is reported when the **Build XLS** button is clicked. If the **Minimum Occ Flow** value or the **Maximum Occ Flow** value are 0, a warning is reported when the **Build XLS Button** is clicked.

Inputs/Outputs

The Inputs/Outputs tab (figure 18) is used to define the control for each input and output on an Edge VAV controller. The Edge VAV controller has 4 analog outputs, 4 digital outputs, and 6 universal inputs for a total of 14 inputs & outputs. A 15th input (flow static pressure) is special and not in need of configuration.

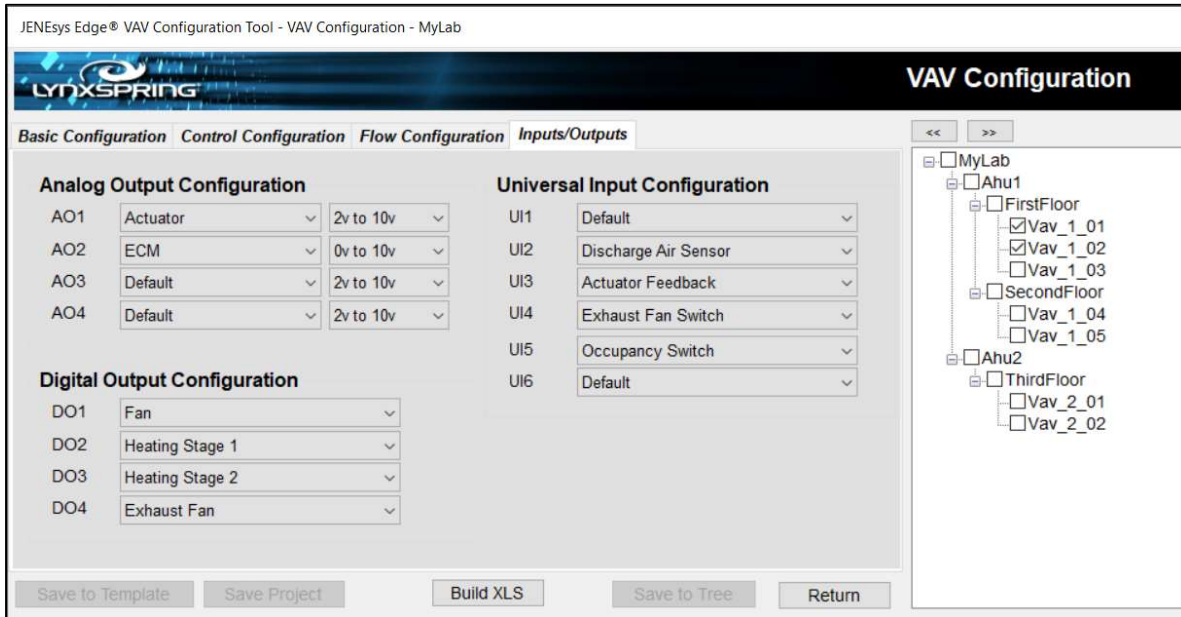


Figure 18

- A. **Analog Output Configuration:** Control assignment (figure 19) and voltage type (figure 20) for each of the 4 analog outputs. If not required, use **Default, 2v to 10v**.

Control Types

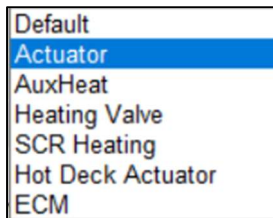


Figure 19

Output Voltages

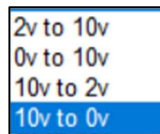


Figure 20

B. **Digital Output Configuration:** Control assignment (figure 21) for each of the 4 digital outputs.

Default
Fan
Heating Stage 1
Heating Stage 2
Heating Stage 3
Heating Stage 4
Floating Drive Open
Floating Drive Closed
Aux Heat
Aux Floating Drive Open
Aux Floating Drive Closed
Exhaust Fan

Figure 21

C. **Universal Input Configuration:** Control assignment (figure 22) for each of the 6 universal inputs.

Default
Space Temp
Space Sp
Discharge Air Sensor
Actuator Feedback
Vav Fan Status
Occupancy Switch
Exhaust Fan Switch
Window Switch
Hot Deck Flow
Co2

Figure 22

Template Editor

The Template Editor window (figure 23) is accessed only from the **Start Screen**. Its layout mimics the Control Configuration, Flow Configuration, and Inputs/Output tabs of the VAV Entry window.

Users can use the **Template Editor** to build VAV configurations specific to a particular region, box manufacturer and size, input/output configuration, et al.

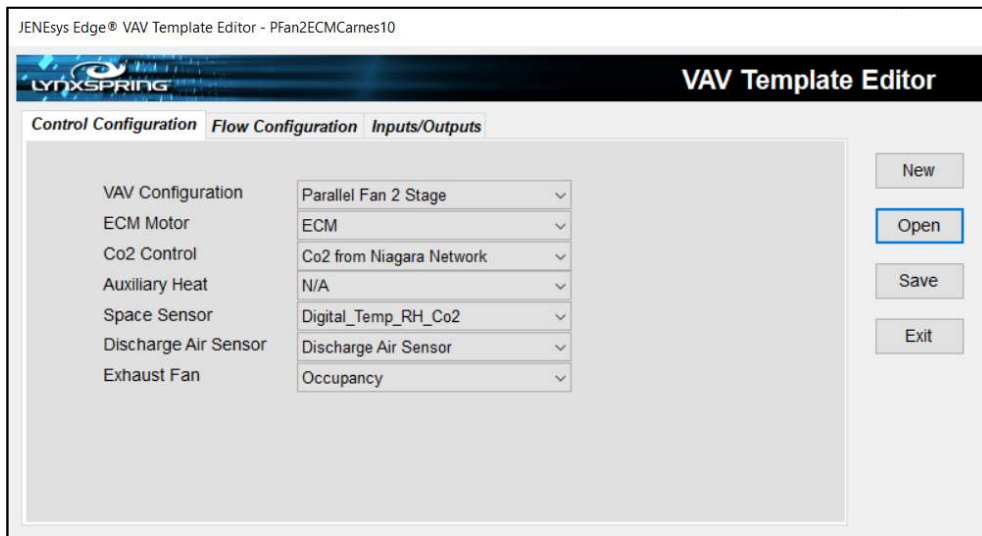


Figure 23

There are four (4) buttons (table 1) used for template file management. These buttons are available in all tabs of the editor.

New	Start a new template.
Open	Open an existing template.
Save	Save entries to new or existing template.
Exit	Close the Template Editor window and return to the Start Screen .

Table 1

Document Management

Version History

Version	Date	What	Who
v1.0.4	2/2/2023	Initial development	Kirk Brockman
v1.0.5	2/10/2023	Fixed a bug in build XLS Validity Check that improperly produced warnings without log entries.	Kirk Brockman