



## Wireless Controller Driver Guide Used With VWG-APP-1028 Wireless Card For Vykon® JACE 2, 6 & 7® Series Product

(R1 Issue Date: July 13, 2010)



### Product Overview

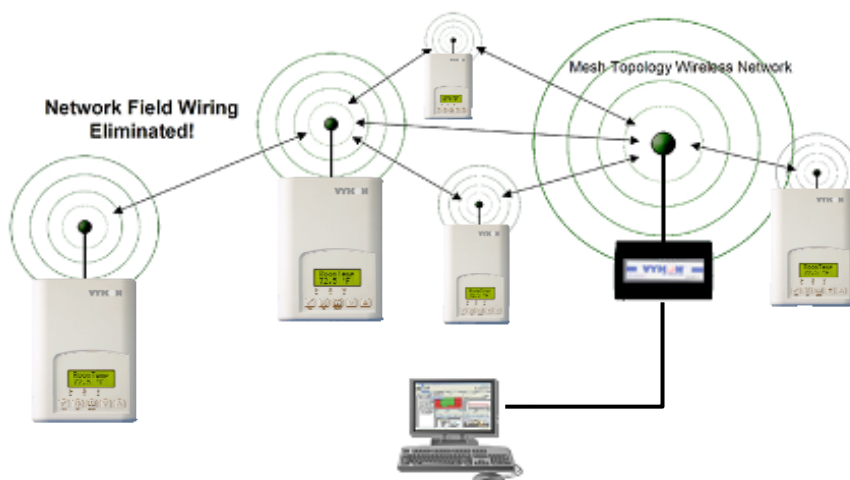
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The VWG-APP-1028 wireless communication card and related “WirelessTstat” driver jar file have been specifically designed to be used by Niagara AX® powered JACE controllers.

When utilized in conjunction with the Vykon wireless controllers they offer the integrator simple integration to the Niagara AX® Workbench environment.

The application is targeted at retrofit applications where the addition of communicating field bus wiring within the building space is prohibitive. The JACE communication card and associated Wireless Communicating Controllers encourages the use of existing wiring utilized by existing electronic thermostat type controls.

Additional documentation is available



## Compatibility & History Revision Table

### Release 1, May 2009

Associated Jar Files	Revision Level	Associated Displayed Driver Name	Compatible Devices
WirelessStat.jar	3.1.30 Main • 2.1 • 2.1.1 • 2.1.2	WirelessStatNetwork	<ul style="list-style-type: none"> <li>VT7200 Zone wireless controllers</li> <li>VT7300 FCU wireless controllers</li> <li>VT7600 Staging wireless controllers</li> </ul>

- Compatible VT7200 Zone wireless controllers are identified with wireless module 051-0021 Rx
- Compatible VT7300 FCU wireless controllers are identified with wireless module 051-0021 Rx
- Compatible VT7600 Staging wireless controllers are identified with wireless module 051-0022 Rx

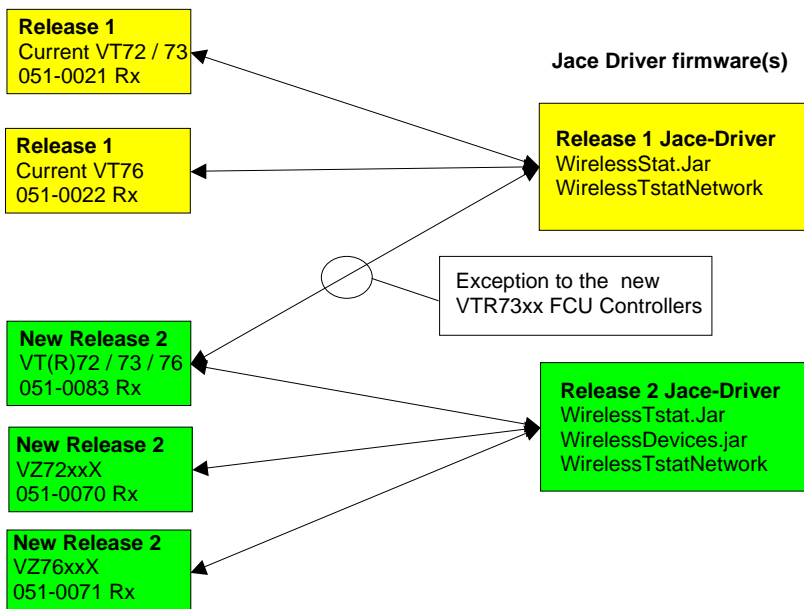
### Release 2, June 2010

Associated Jar Files	Revision Level	Associated Displayed Driver Name	Compatible Devices
WirelessTstat.jar WirelessTstatDevices.jar	4.0	WirelessTstatNetwork	<ul style="list-style-type: none"> <li>VT7200 Series zone wireless controllers</li> <li>VT7300 Series FCU wireless controllers</li> <li>VT7600 Series staging wireless controllers</li> <li>VTR7300 Series FCU wireless controllers</li> <li>VZ7200 Series zone wireless controllers</li> <li>VZ7600 Series RTU wireless controllers</li> </ul>

- Compatible VT7200 Series zone wireless controllers are identified with wireless module 051-0083 Rx
- Compatible VT7300 Series FCU wireless controllers are identified with wireless module 051-0083 Rx
- Compatible VT7600 Series staging wireless controllers are identified with wireless module 051-0083 Rx
- Compatible VTR7300 Series FCU wireless controllers are identified with wireless module 051-0083 Rx
- Compatible VZ7200 Series zone wireless controllers are identified with wireless module 051-0070 Rx
- Compatible VZ7600 Series RTU wireless controllers are identified with wireless module 051-0071 Rx

## Compatibility Overview

### Controller wireless communication adapter revision(s)



### Important Notes:

The Release 2 wireless controllers are fully compatible to the Release 1 Jace-Driver versions. This means that if replacement controller parts are required on a Release 1 installation, Release 2 controllers are compatible

Release 2 VTR7300 FCU controllers & Zoning products VZ72xxX / VZ76xxX are **NOT compatible** to Release 1 Jace-Driver versions installations

Release 1 Jace-Driver versions installations **CANNOT be updated** to the new Release 2 Jace-Driver versions as the controllers are **NOT** compatible

## Trademarks

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## Disclaimers

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Electronic controls are static sensitive devices. Discharge yourself properly before manipulation and installing the Vykon wireless communication card.

All Vykon wireless communication cards and related wireless controllers are to be used only as operating controls. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user to add safety devices and/or alarm system to protect against such catastrophic failures.

All Vykon Series wireless controllers and associated components have been rigorously tested to ensure reliable operation in most building applications using the latest 2.4 ZigBee technologies. Vykon cannot guarantee against potential network interference should additional wireless systems be deployed sharing close proximity.

Best practices covered in this manual and all related Vykon documents should be considered as a guide to apply Vykon Wireless Network devices only. The instructions included in this manual are based upon Vykon in house testing and should be referred to as a guide only.

Vykon Inc. may not be held liable for continued reliable or robust operation of any and all wireless based devices. Although Vykon has taken many precautions in assuring the robustness of the VT7000 series wireless controller product line and associated network access point (JACE's with wireless option card) please note; future application of additional wireless devices utilizing the same or similar channels and / or frequencies may degrade performance of overall system and / or reliability.

Non-approved modifications or changes made to the communication card, the wireless controller driver or wireless controllers may void the FCC compliance of the wireless card and wireless controllers.

Ferrites supplied with the power supply and Vykon Wireless Communication Card shall be installed according to instructions. Failure to do so may void the FCC compliance of the wireless card and wireless controllers.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

## About Vykon Wireless Mesh Networks

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The Vykon wireless card (VWG-APP-1028) and related networkable wireless controllers series operate using ZigBee/IEEE 802.15.4 physical layer for communication.

### **General characteristics of the wireless physical communication layer are:**

- Uses a wireless physical layer of 2.4GHz with a data rates of 250 kbps
- Yields high throughput and low latency
- Automatic multiple topologies configuration: star, peer-to-peer, mesh
- Fully handshake protocol for transfer reliability
- Range typical indoor through 4 gypsum wall partitions: 60 feet / 18M typical (up to 150 feet / 46 M based on environment)

### **IEEE 802.15.4 along with ZigBee Networks and Application Support Layer provide:**

- Low cost installation deployment
- Ease of implementation
- Reliable data transfer
- Short range operation
- Very low power consumption
- Appropriate levels of security

The JACE with the wireless communication card acts as network coordinator device for the IEEE 802.15.4/ZigBee network used with the wireless VYKONStats.

Many network specific features of the IEEE 802.15.4 standard are not covered in detail in this paper. However, these are necessary for the efficient operation of a ZigBee network. These features of the network physical layer include receiver energy detection, link quality indication and clear channel assessment. Both contention-based and contention-free channel access methods are supported with a maximum packet size of 128 bytes, which includes a variable payload up to 104 bytes. Also employed are 64-bit IEEE and 16-bit short addressing, supporting over 65,000 nodes per network. All those properties of the physical layer are used and employed by the Vykon mesh network but are hidden to the installed / user for ease of configuration and commissioning of the network database.

A “recommended” typical maximum of:

- **30** network able controllers can be supported by a single JACE2.
- **50** network able controllers can be supported by a single JACE6.

Database creation and configuration is easily made using the Workbench environment.

The theoretical maximum of number of controllers supported by a single Jace is dependent on the resources available for the WirelessTstatNetwork driver Jar file and the extent of integration added to the station itself. When additional functions and services are added to the station, the available resources for the driver will be less. Once you have configured the station for the wireless network and all other features (graphics, services, histories, alarms, etc.), you should monitor the resources so that they do not exceed the recommended limits for each specific platform.

## Wireless Card Installation

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Please refer to the “VYKONStat *Wireless Communication Card Installation Guide*” manual supplied with the VWG-APP-1028 communication card for detailed information on the wireless communication card installation inside a JACE controller.

### **Only use Com1 option slot card position for the card**



## Basic Initial Design and Deployment Consideration

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**IMPORTANT:** It is **HIGHLY** recommended that you do a proper field survey with the Vykon survey tools to establish connectivity limitations and architecture layout on **ALL** job sites considered for deployment with the Vykon wireless controller products. Please refer to the following manual for the survey procedures and tool usage: VYKONStat Wireless Survey Tool User Guide.

Please note that the following is well covered in the field survey tool procedure manual. A quick summary is provided here as a reference.

The Vykon wireless survey tools are intended to verify and validate the deployment and use of the Vykon wireless thermostats on a potential job site.

The survey tool will display a numerical percentage value on the LCD screen which represents the wireless network ZigBee RSSI dBi value (Receiving Signal Strength Indicator).

- Any value from 10 to 100% indicates good ZigBee connectivity.
- Any value below 10% “may” indicate that an extra Router VRP 500W1028W may need to be installed.

### Knowing and understanding the 6A / 5H rule of ZigBee and how to cover orphan nodes!!!

ZigBee is a standard which is suitable for wireless sensor and controller networks. In ZigBee, a device / node / controller is said to join a network if it can obtain a ZigBee network address from a parent device. This ZigBee address is a value which is NOT initially exposed or available for the integrator to see.

Devices / nodes / controllers can calculate and assign addresses for their surrounding devices by a distributed address assignment scheme. This assignment is flexible, but it does somewhat restricts the number of attached devices and the possible depth of the said network for any given device on the network.

ZigBee supports three kinds of networks type: star, tree, and mesh networks. The ZigBee coordinator ( In our case, this is the Jace with the wireless communication card ) is responsible for initializing, maintaining, and controlling the network.

- A star network has a coordinator with devices directly connecting to the coordinator.
- A tree and mesh networks, devices can communicate with each other in a multi-hop fashion.

The network is formed by one ZigBee coordinator and multiple ZigBee routers. A device can join a network as an end device by the associating with the coordinator or a router.

A ZigBee device / node / controller is said to have successfully joined a network if it can obtain a ZigBee network address from the main Jace coordinator or any other router devices / nodes / controller.

### 6A stands for a maximum 6 addresses per device / node / controller.

Any given device / node / controller including the Jace –coordinator can ONLY give a maximum 6 ZigBee addresses out to other devices so they join the active ZigBee network. This means for any device / node / controller to be able to successfully join a ZigBee network, it needs an address to be assigned by another device / node / controller which is within connectivity and that has NOT already assigned its maximum of 6 addresses allowed.

Please note that once a device / node / controller has been assigned a ZigBee address & has joined the active ZigBee network, it will save its assigned ZigBee address to flash memory & re-use it afterwards even after a power failure or a network re-start. The ONLY time device / node / controller would require a NEW ZigBee address is if the network is re-started with either a new PAN ID or a new Channel value. This causes the currently assigned & saved ZigBee address in flash to be erased & will force the / node / controller to try to re-join a new network.

### Orphan Nodes.

As such it is important to understand that **HOW** the network is first initially started up “may” create orphan unassigned devices / nodes / controllers that will seem to NOT want to join the ZigBee network. Let’s first understand how an orphan node is created. A typical example is when jobs are started on a technician desk before sending the devices / nodes / controllers in the field for installation. Often the integration technician will power the Jace – coordinator & connect it to the Workbench tool first creating & adding the WirelessTstatNetwork driver layer.

Once the WirelessTstatNetwork driver layer is up and running, they open & will start up the wireless devices / nodes / controllers one by one on their desk and add them to their Niagara database.

- They will power the first unit, add it to the database & then power it down.
- They will power the second unit, add it to the database & then power it down.
- And so forth up to 6 devices maximum

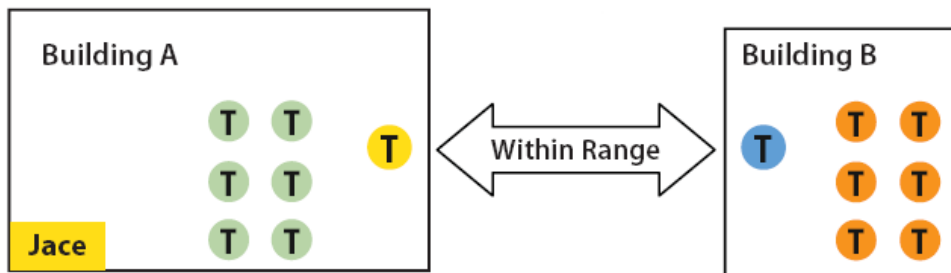
This will work fine for 6 devices maximum, simply because the Jace – coordinator has filled its maximum 6 give away addresses. So when the technician powers up the 7<sup>th</sup> device / node / controller, it will NOT be able to join the ZigBee network.....unless one of the previous device / node / controller is powered back on also.

In order to add another 6 devices, one of the previously added devices needs to be left on. And so forth as the number of added devices / nodes / controllers grows. If 42 devices are to be added to the network, 8 of them should be ALWAYS powered & within connectivity range of all the others.

So how would orphan nodes appear in the field & how would you allow them to join the ZigBee network?

Please note again that this ONLY applies to the initial network start-up & that once all the devices are online to the Niagara database, everything will operate seamlessly even on power up / down & network re-starts.

**How Orphan nodes are created in the field. Ex.:** 2 small buildings are within a few feet of each other. Both have 6+ devices / nodes / controller each.



A possible case for Building B orphan nodes is as follow: Building A is first stated & sets the Jace – coordinator configuration parameters for the PAN ID & Channel.

#### Premises:

- Building A is first stated.
- Yellow device / node / controller have given out its 6 addresses to other devices in building A.
- Building B devices / nodes / controllers can only be connected through blue device / nodes / controller due to maximum distance coverage.

#### Result:

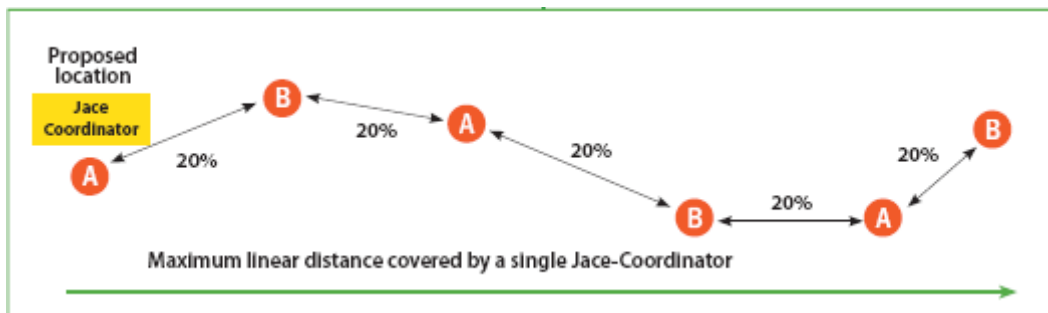
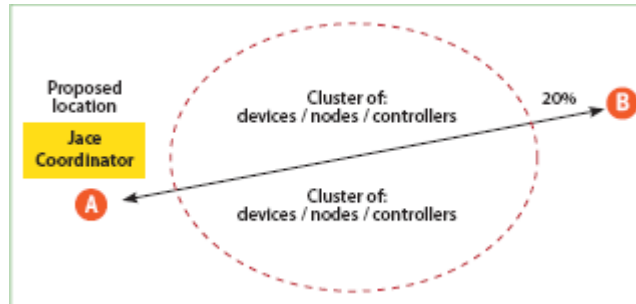
- Orange devices / nodes / controllers cannot join the ZigBee network.

#### Workaround to get orphan devices on the network:

- Disconnect & bring one of building B device / node / controller & power it up in building A until it joins the ZigBee network ( confirmed either at the Jace – coordinator or using the status LED on the wireless communication card of the device / node / controller.
- When the device / node / controller has joined the network in building A and is added to the Niagara database, bring it back into building B so it can propagate ZigBee addresses to the other devices in building B.

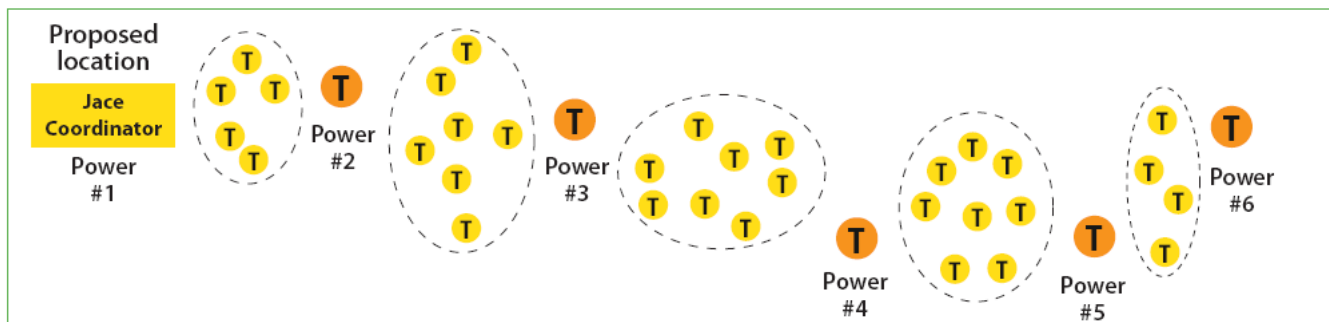
## 5H stands for 5 hops maximum recommended.

**5H** is for a simple process when laying out the architecture of the network. ANY given device / node / controller should be “**optimized**” to be **NO FURTHER IF POSSIBLE** than **5 Hops** to & from the Jace / Coordinator. This is due to the nature of the Vykon ZigBee stack in the wireless controllers. To properly layout the potential architecture and determine the number of Jace’s required on the job site, you first need to establish the maximum possible coverage of a single Jace with a wireless communication card with a 5 hop maximum. This is also done with the survey tools & is covered in detail in the manual for the survey procedures and tool usage: *VYKONStat Wireless Survey Tool User Guide*.



## Best practice ZigBee initial network start-up procedure

In order to avoid creating orphan devices / nodes/ controllers and moving about devices / nodes / controllers during the initial network start-up, it is recommended that you use the same power up sequence for devices as you originally did during the survey. Again, please note that once a device / node / controller has been assigned a ZigBee address and has joined the active ZigBee network, it will save its assigned ZigBee address to flash memory & re-use it afterwards even after a power failure or a network re-start. The **ONLY** time a device / node / controller would require a **NEW** ZigBee address is if the network is re-started with either a new PAN ID or a new Channel value. This causes the currently assigned & saved ZigBee address in flash to be erased and will force the / node / controller to try to re-join a new network. I.E. this is **ONLY** applicable during the initial network start-up.



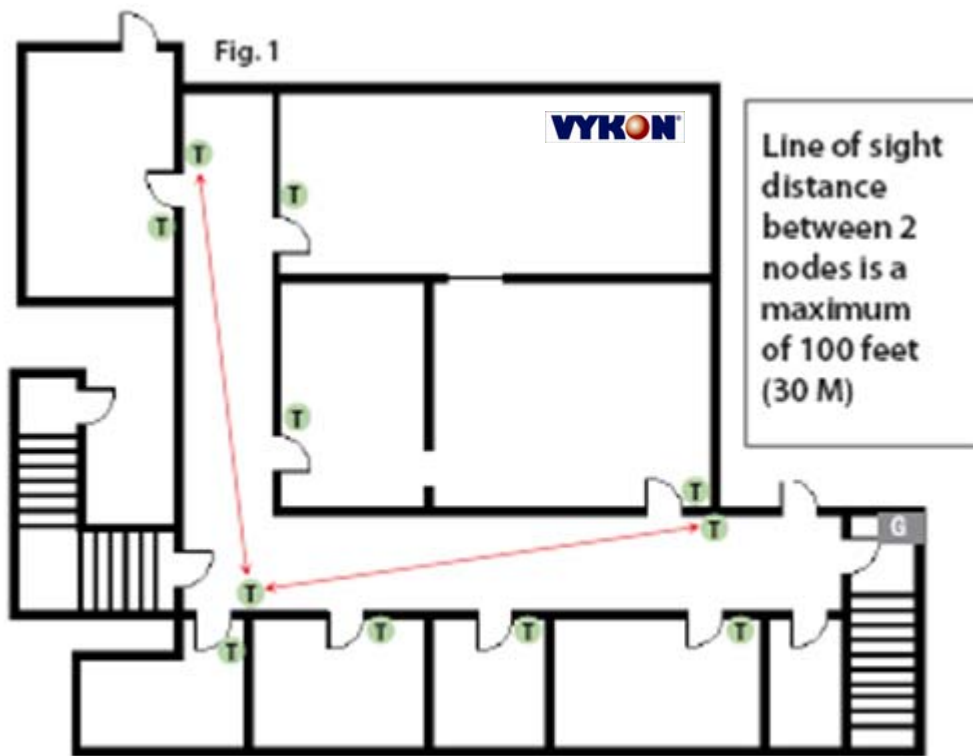


**Proper design considerations need to be addressed prior to any installation of a JACE with a Vykon wireless communication card and related wireless controllers.**

Vykon recommends using a per floor horizontal architecture vs. a vertical one. Transmitting from one floor to the other may be possible in certain applications (such as going through stair ways), but the design and optimization of the thermostat antenna is designed for optimal horizontal distance penetration and not a vertical one. As such, be prepared to use AT LEAST ONE coordinator (VWG / Jace-Driver) per floor.

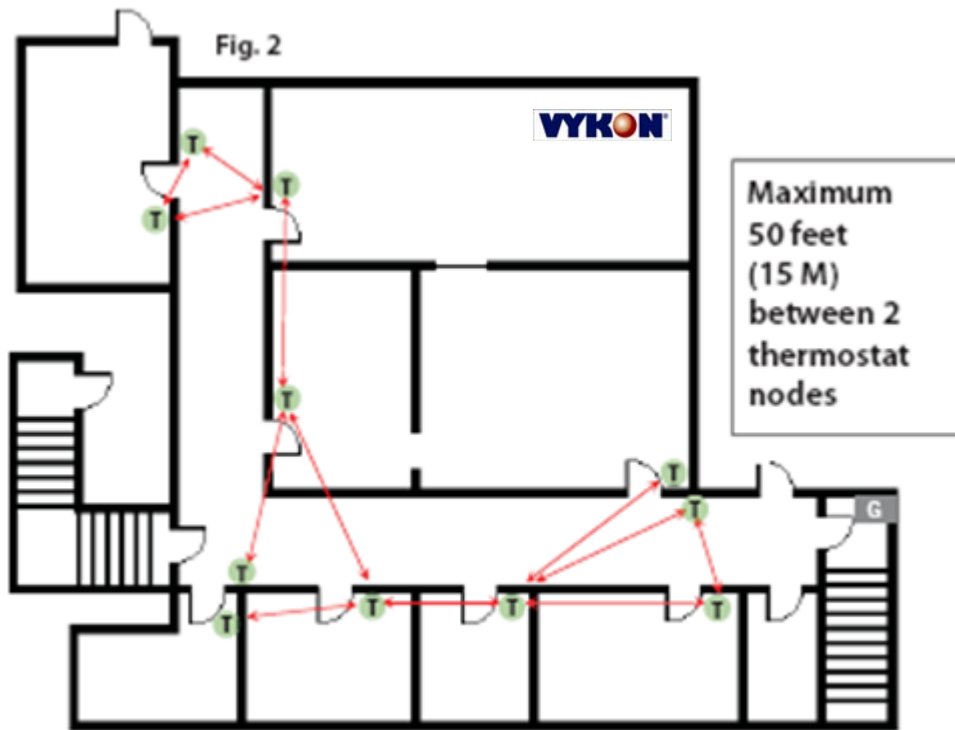
- Please note that radio transmissions CAN NOT travel through steel. If floors are constructed with steel joists or other steel materials it is highly unlikely that the wireless thermostat transmissions will be successful between floors.

1. To properly avoid network interference with 802.11 Wi-Fi devices in the 2.4GHz spectrum range, Vykon recommends the use of 802.15.4 channels 15, 25 and 26 only. 802.11 Wi-Fi transmissions overlap and may interfere with other channel selection allowed by 802.15.4 ( Channels 11 to 24 )
2. Maximum distance between each node ( controller ) should be:
  - Clear line of sight distance between 2 nodes should be under 100 feet ( 30 M )

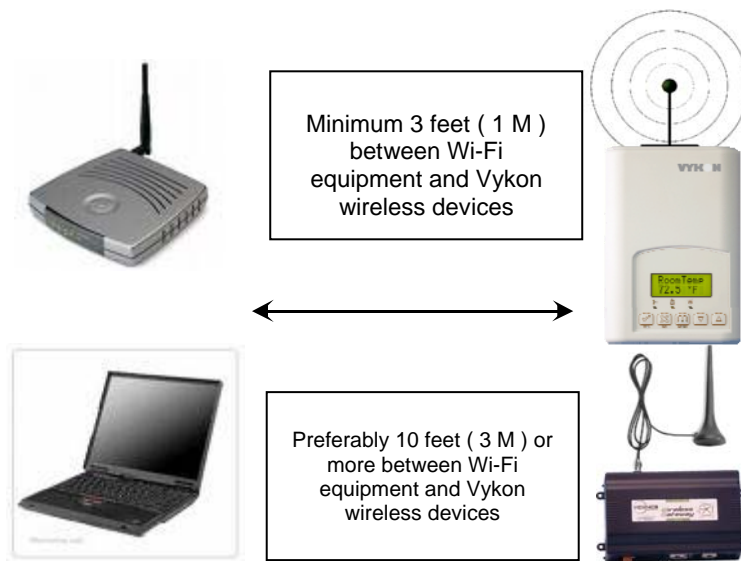




- Non line of sight distance for typical gypsum wall partitions made with metal stud frame should be under 30 feet ( 10M )



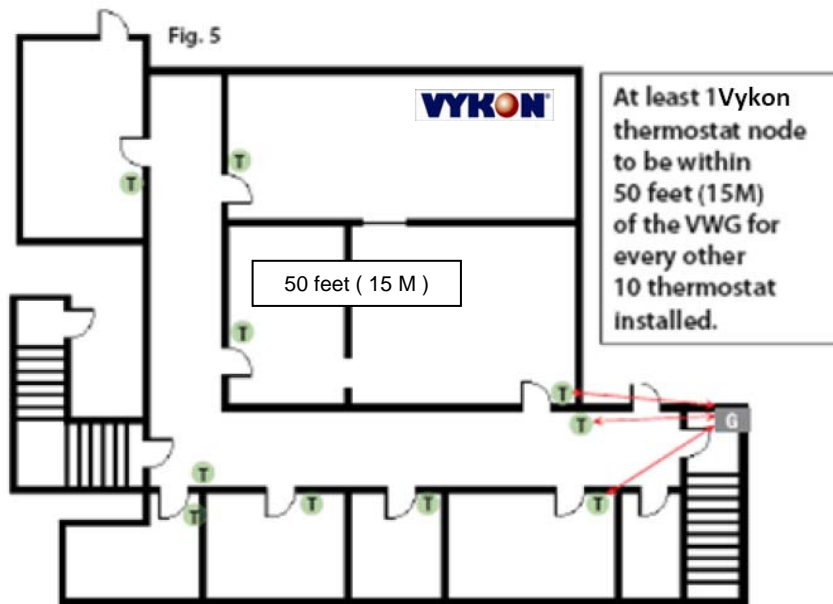
3. Ensure that the minimum distance between any Vykon node and any Wi-Fi devices (wireless routers, wireless adapters, lap-tops using wireless networks, etc....) to be at least 3 foot ( 1 M ) and preferably 10 feet ( 3 M ) or more.



4. Ensure that at least one VYKONStat is within 30 feet of the Vykon Wireless Controller for every cluster of 10 VYKONStats installed.
5. Always try to locate the Vykon Wireless Controller near the center of all associated VYKONStats.
6. Always try to locate the Vykon Wireless Controller near, or in line of sight, to as many VYKONStats as possible.
7. Try to avoid metal, brick walls or concrete obstructions between wireless devices as much as possible.
8. Make sure the antenna on the Vykon Wireless Controller is always perpendicular to the floor.
9. Avoid placing Vykon Wireless Controller and VYKONStats near metal or enclosed in metal boxes. If the Vykon Wireless Controller needs to be installed inside a metal cabinet, use the remote antenna accessory.

Example: For a recommended maximum of 30 wireless controllers total per JACE, a minimum of 3 of them should be within 30 feet ( 9 M ) of the Vykon Wireless Controller range.

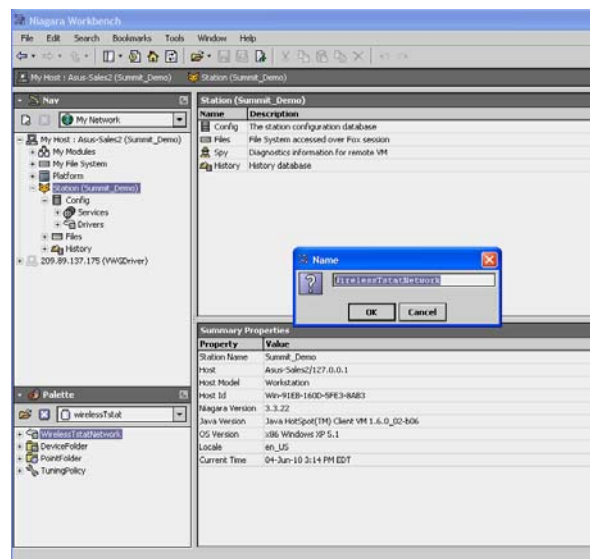




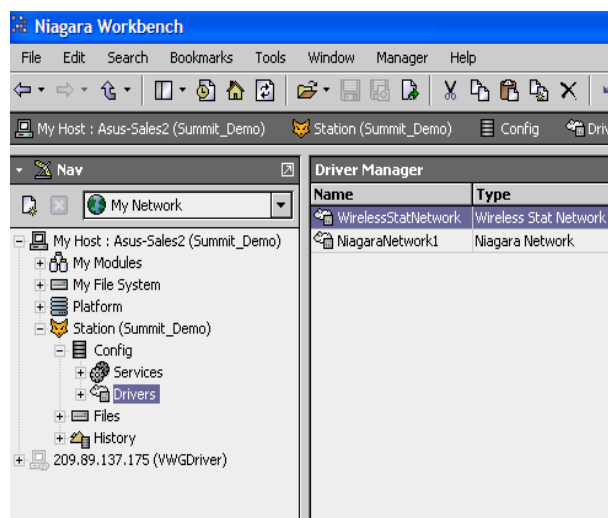
## JACE and Wireless Communication Card Configuration

**Initial Configuration Note:** The following instructions assume you are familiar with the AX workbench environment and its related functions:

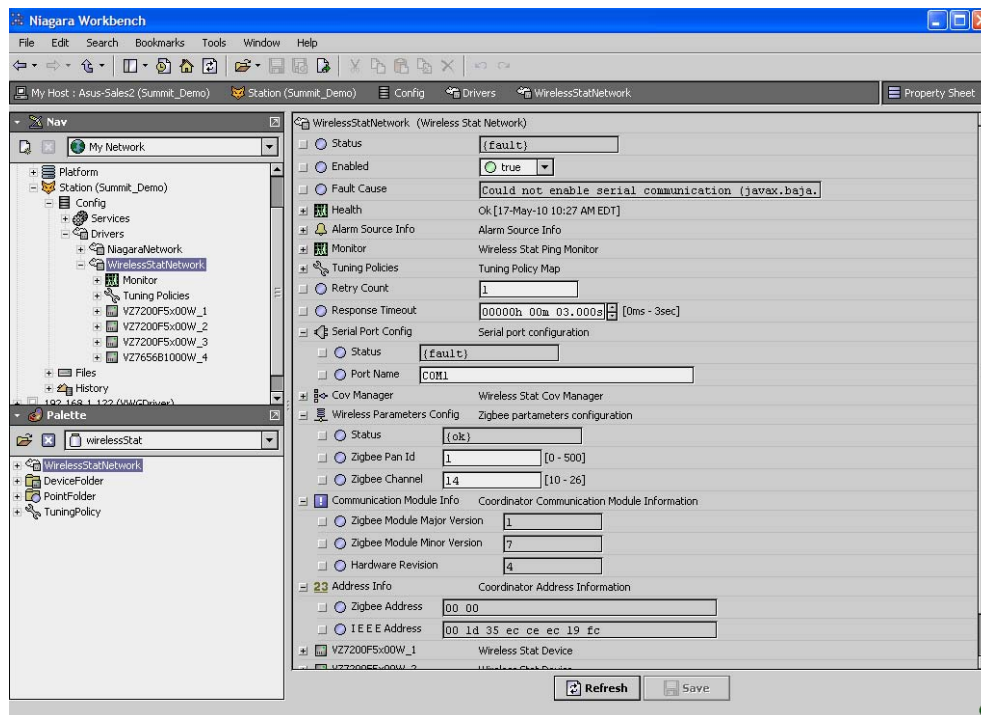
- Install the wireless communication card as stipulated by the instructions provided with the wireless card
- Copy the “WirelessTstatNetwork” and “WirelessTstatDevices” jar files to your local AX Workbench module folder
- Using the Software Manager, add the “WirelessTstat” jar file to the target JACE with the wireless communication card already installed
- Re-boot both the local AX Workbench interface and the JACE itself to properly load the “WirelessTstatNetwork” jar modules
- Using the “WirelessTstat” palette tool or the add network tool, simply drag & drop the “WirelessTstatNetwork” driver under the local driver folder of the JACE



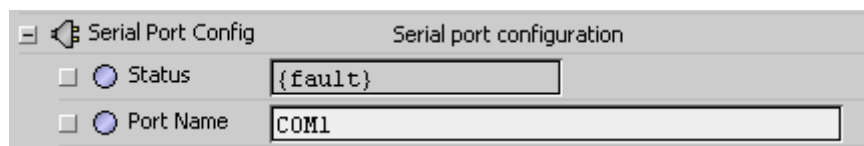
- Rename the “WirelessTstatNetwork” driver extension name if required.



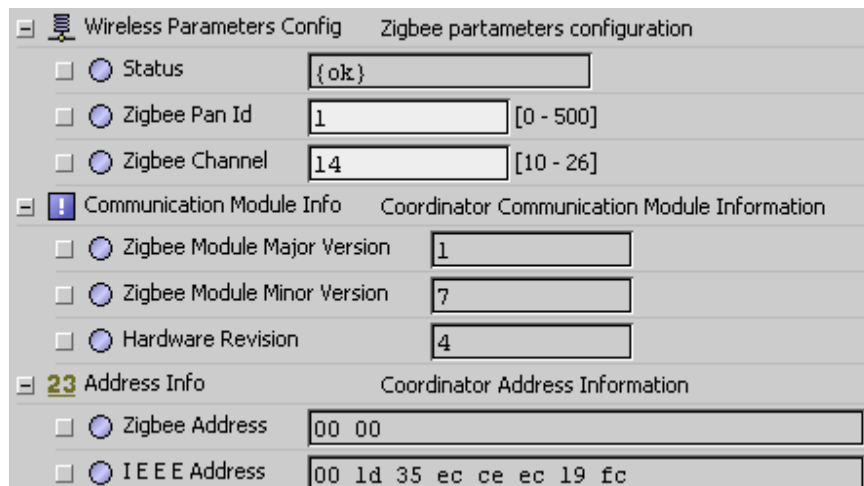
- Right hand click the “WirelessTstatNetwork” driver to load the network property sheet



- Under the Serial Port Configuration, set Port Name to “COM1”. Only COM1 can be used with the wireless communication card since hardware flow control is required. All other properties are locked and set as read only



- Set the ZigBee wireless communication card options.



## VWG ZigBee Settings

Those settings are where you set the ZigBee PAN ID (Personal Area Network Identification) address and the channel for the wireless communication card.

- **Gateway ZigBee PAN ID.** (Personal Area Network Identification). This is where the PAN ID of the gateway is set. Range is from address 1 to 500. The default of "0" is **not** a valid PAN ID.
- **Channel Select.** This is where the current Channel frequency used by the gateway is set. Range is from 11 to 26. ( 2405 MHz to 2480 MHz, 5 MHz channel spacing ) Please note that channel 26 is attenuated by 4 db compared to the other channels. The default of "10" is not a valid Channel.
- Vykon highly recommends the use of 802.15.4 channels 15, 25 and 26 only. 802.11 Wi-Fi transmissions overlap and **"may"** interfere with other channel selection allowed by 802.15.4 ( Channels 11 to 14 & 16 to 24 )
- **IEEE Address.** Individual unique IEEE address for any ZigBee device on the network. Factory assigned & non-editable.
- **Zigbee Address.** Individual unique ZigBee address for any ZigBee device on ANY INDIVIDUAL ZigBee network. The address is assigned during the initial network start-up & saved in flash memory. This is the main address used for all key low level network functions.
- Please note that the communication module information and the assigned IEEE & ZigBee wireless address information are given for information references only.
- It is important to click on the "SAVE" button for the new wireless parameters to take effect and the wireless network to properly start.
- Any time the PAN ID or Channel is changed, a new ZigBee address is assigned by the network manager to the devices.

## IMPORTANT NOTES (Please Read Carefully) :

- Vykon recommends using a per floor horizontal architecture vs. a vertical one. Transmitting from one floor to the other may be possible in certain applications (such as going through stair cases), but the design and optimization of the thermostat antenna is designed for optimal horizontal distance penetration and not a vertical one. As such, be prepared to use AT LEAST ONE coordinator (Jace-Driver) per floor.
- Please note that radio transmissions CANNOT travel through steel. If floors are constructed with steel joists or other steel materials it is highly unlikely that the wireless thermostat transmissions will be successful between floors.
- A "recommended" typical maximum of:
  - **30** network able controllers can be supported by a single JACE2.
  - **50** network able controllers can be supported by a single JACE6.
  - Be sure you set the **SAME** PAN ID and Channel value at both the gateway and the controller(s).
- When properly configured, the issue of RF interference and lost data between the Jace-Driver and the controllers can be avoided. Without proper care or proper software configuration serious interference issues can happen.
- **Again, Vykon recommends using only channels 15 & 25.** Vykon recommends this purely as a practical tip for deployment in the field based on our experience. These channels are not affected and are out of the range of IEEE802.11x Wi-Fi Channels spectrum.

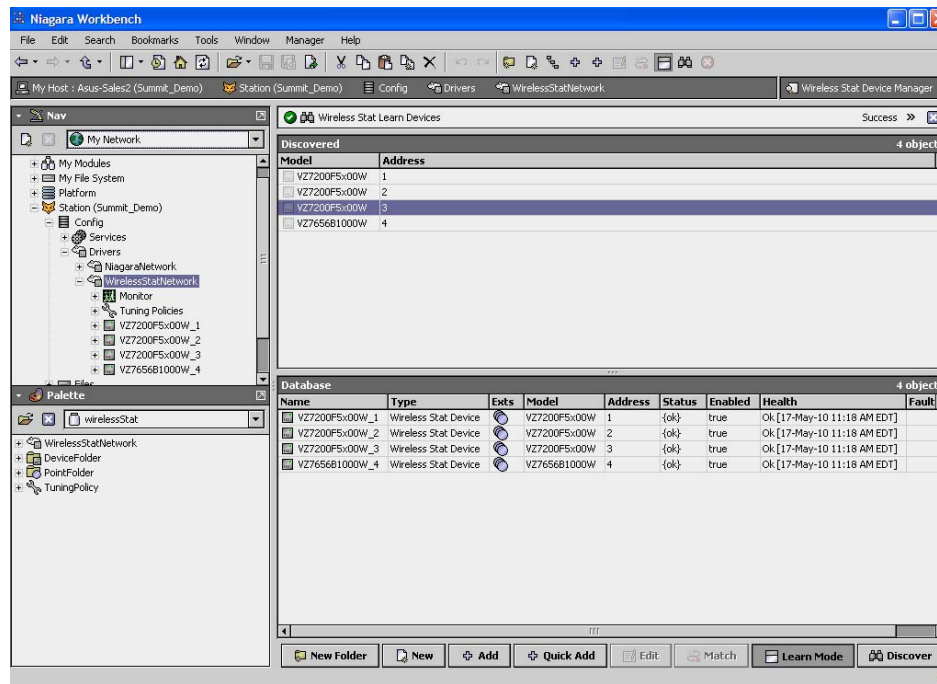
## Controller Discovery & Database Tools

### IMPORTANT NOTE (Please Read Carefully) :

The communication layer operates differently than “most” low level traditional wired communication bus. The “heart” of the network resides on the wireless communication card found on the JACE. It is commonly referred to as the “coordinator” to the network.

As such, as soon as a valid PAN ID and Channel are given to the JACE wireless communication card, any controller having the same configuration of PAN ID and Channel can be detected and registered to the wireless coordinator.

A discovery process is necessary to bring them to the interface and a discovery button is provided.



The “Discovered Device” folder lists the current controllers detected by the JACE that have the same PAN ID and Channel settings as the JACE. A Yellow highlight indicates a previously discovered controller that has not updated its mandatory wireless heartbeat to the JACE and is now offline to the JACE.

If a properly configured controller ( typically the ones furthest from the JACE ) has issues joining the network and cannot be discovered by the JACE, a forced sync can be done by right clicking on the WirelessTstatNetwork driver extension and selecting “ping”. Bringing it close to the JACE coordinator is another option. This will enable it to have a Zigbee address assigned by the wireless communication card of the JACE or another controller device. It will then enable the JACE to discover it; once discovered, re-install it at the proper location.

**FOR MORE INFORMATION ON THE DISCOVERY PROCESS & GENERAL SYSTEM ARCHITECTURE,** please refer to the survey tool manual which provides more information on the subject: Rx\_MAN VST5000W5028W-Exx.

- **Name.** The controller's given name in the database. The name is constructed of the controller model number and its current local MAC address. Ex. A VT7300C5028W with a local MAC address of 21 will carry a name in the database of VT7300C5000\_21. The model name text string is fully editable as required.
- **Model.** The default controller model number given in the database.
- **Type.** Identified for the moment which type of Vykon wireless device has been detected
- **Com Address.** The current physical MAC address set at each individual controller in its local configuration.



- **Status.** Indicates if the current controller is online to the JACE or not.
  - **If online,** the status will be {OK} and the controller line will be white
  - **If offline,** the status will be {down} and the controller line will be yellow
- **Health.** The current status of each controller wireless node. “OK” is for an online controller and the date and time represent the last time a communication event was received by the JACE from a controller. A “Fail” represents a controller that stopped responding to its mandatory heartbeat.

#### Database Tools - Add / Remove Selected Controller



At the bottom of the “WirelessTstatNetwork” folder, Add and Quick Add buttons are used to add devices to the network along with other options.

- **New.** The “New” controller button is a utility that allows the integrator to create offline devices prior to the installation. This allows the integrator to pre-build a database and all related utilities before the actual installation takes place. When the assigned controller would be automatically discovered in the field during commissioning, all required functions and bindings would already be done & assigned.

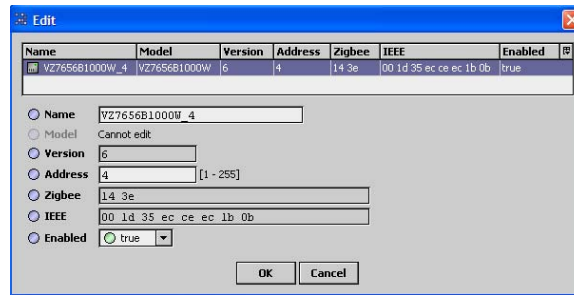
Select the number of devices to add of the same type and the starting local MAC address each controller will be assigned in the field.

Name	Model	Version	Address	Zigbee	IEEE	Enabled
WirelessStat_1	VT7657B5x00W	0	1	00 00	00 00 00 00 00 00 00 00	true
WirelessStat_2	VT7657B5x00W	0	2	00 00	00 00 00 00 00 00 00 00	true
WirelessStat_3	VT7657B5x00W	0	3	00 00	00 00 00 00 00 00 00 00	true
WirelessStat_4	VT7657B5x00W	0	4	00 00	00 00 00 00 00 00 00 00	true

☐ Name: WirelessStat\_1  
☐ Model: VT7657B5x00W  
☐ Version: 0  
☐ Address: 1 [1 - 255]  
☐ Zigbee: 00 00  
☐ IEEE: 00 00 00 00 00 00 00 00  
☐ Enabled: ☒ true

Then select the required controller model number that will be installed on the job site. Remember to select **ALL** controllers if more than one is required. The controller can be enabled now or at a later date if the installation is done in segments.

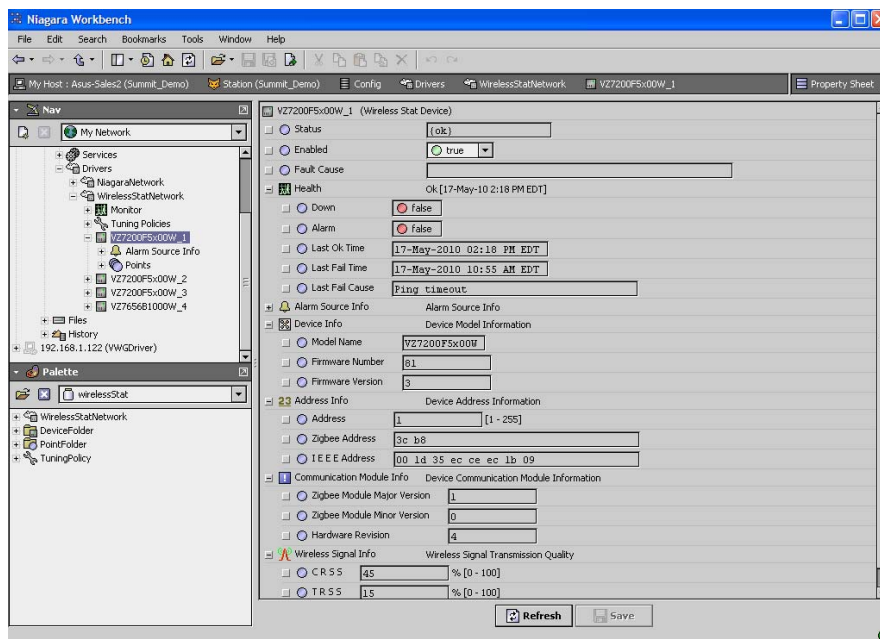
- **Edit.** Allows you to edit the characteristics assigned to any specific wireless controller. The controller name, Com Address and enabled flag can be modified. The controller Model Type cannot be changed. If another model is required under the same address, simply delete it and either create a new one offline or re-discover the proper one.



- **Match.** When replacing thermostats or matching them in the field during the initial commissioning, this feature allows you to match the characteristics of an offline created thermostat or an existing replaced one to a newly discovered one.
- **Add and Quick Add.** Transfer any selected device from a “temporary” status under the discovered window and loads them directly under the under “WirelessTstatNetwork” folder in the database window. This will enable the controller to display all its point extensions. The add button allows you to edit the device before it adds it to the network. Quick add is directly added to the network.

## Controller Device Property Sheet

Right hand click any controller the “WirelessTstatNetwork” driver to load the controller property sheet



**Status:** Will give the sanity of the wireless controller to the network

- (ok) Device heartbeat reporting properly with no fault encountered
- (down) Device heartbeat failed. No communication to the device
- (fault) Transaction time out on specific object write(s). Device heartbeat is still valid
- (disabled, fault) Device has been disabled

**Enabled:** Enables or disables the communication to the wireless controller. It can be used if a complete database is created for all the devices and the installation / integration is done in segments.

**Health:** Health status of the device. The “Last Ok Time” represents the last time the JACE received the mandatory heartbeat from the controller.

**Device Info, Address Info & Communication Module Info:** All read only properties related to the local controller and are given as general information.

**Wireless Signal Info:** CRSS - Coordinator Receiving Signal Strength ( in % )  
TRSS - Thermostat Receiving Signal Strength ( in % )

These values can be known before implementing the Vykon wireless system by using the Vykon Survey Tool (VST5000W5028W). It will determine if the area is suitable for using Vykon wireless products. Any value from 10 to 100% indicates good ZigBee connectivity. Any value below 10% “may” indicate that an extra Router VRP 5000W1028W may need to be installed.

## Controller Objects Supported

Name	Type	Facets
Return Air Temperature	Numeric Point	units=°F,min=-40.0,max=122.0
Outdoor Temperature	Numeric Writable	units=°F,min=-40.0,max=122.0
Outdoor Temperature Override	Boolean Writable	falseText=Normal,trueText=Override
Supply Temperature	Numeric Point	units=°F,min=-40.0,max=150.0
Occupancy Command	Enum Writable	range=wirelessStatDevices:OccupancyCommandEnum
Effective Occupancy	Enum Point	range=wirelessStatDevices:EffectiveOccupancyEnum
Occupied Cooling Setpoint	Numeric Writable	units=°F,min=54.0,max=100.0
Occupied Heating Setpoint	Numeric Writable	units=°F,min=40.0,max=90.0
Unoccupied Cooling Setpoint	Numeric Writable	units=°F,min=54.0,max=100.0
Unoccupied Heating Setpoint	Numeric Writable	units=°F,min=40.0,max=90.0
PI Cooling Demand	Numeric Point	precision=0,units=%,min=0.0,max=100.0
PI Heating Demand	Numeric Point	precision=0,units=%,min=0.0,max=100.0
System Mode RTU Zoning	Enum Writable	range=wirelessStatDevices:SystemModeRtuZoningEnum

Name	Type	Out	Read Value	Write Value
Return Air Temperature	Numeric Point	46.3 °F {ok}	46.3 °F {ok}	0.0 °F {ok}
Outdoor Temperature	Numeric Writable	19.5 °F {ok} @ def	19.5 °F {ok}	- {null} @ def
Outdoor Temperature Override	Boolean Writable	Normal {ok} @ def	Normal {ok}	- {null} @ def
Supply Temperature	Numeric Point	49.0 °F {ok}	49.0 °F {ok}	0.0 °F {ok}
Occupancy Command	Enum Writable	Local Occupancy {ok} @ def	Local Occupancy {ok}	- {null} @ def
Effective Occupancy	Enum Point	Occupied {ok}	Occupied {ok}	0 {ok}
Occupied Cooling Setpoint	Numeric Writable	75.0 °F {ok} @ def	75.0 °F {ok}	- {null} @ def
Occupied Heating Setpoint	Numeric Writable	72.0 °F {ok} @ def	72.0 °F {ok}	- {null} @ def
Unoccupied Cooling Setpoint	Numeric Writable	82.0 °F {ok} @ def	82.0 °F {ok}	- {null} @ def
Unoccupied Heating Setpoint	Numeric Writable	65.0 °F {ok} @ def	65.0 °F {ok}	- {null} @ def
PI Cooling Demand	Numeric Point	0 % {ok}	0 % {ok}	0 % {ok}
PI Heating Demand	Numeric Point	66 % {ok}	66 % {ok}	0 % {ok}
System Mode RTU Zoning	Enum Writable	Auto {ok} @ def	Auto {ok}	- {null} @ def
Highest PI Heat Zone Max	Numeric Point	3 {ok}	3 {ok}	0 {ok}

Please note that the wireless objects related to any specific controller exchange present value to and from the JACE on a fixed COV subscription base.

Back and forth from the JACE to the wireless controllers, the COV values are fixed to:

- 2.5% for PI demand Numeric objects
- 0.5 for all temperature ( C & F ) and humidity Numeric objects
- On change for all Enum's & Boolean's

A “recommended” typical maximum of:

- **30** network able controllers can be supported by a single JACE2.
- **50** network able controllers can be supported by a single JACE6.

The total number of controller supported is also dependent on the resources available for the “WirelessTstatNetwork” driver Jar file and **the extent of integration added to the JACE station itself.**

It is safe to assume that if more advanced functions and services are added to the station, the available resources for the driver will be less. It is important that once the station is all done and installed with all GUI, services, trends, logs, etc...that resources are monitored and not above what is recommended by Tridium for each specific type of JACE platform.

All objects such as GUI's, configuration parameters and statuses will be discovered when a discovery process is done. Afterwards, it is **up to the user to pick and choose what is needed for the implementation.** Therefore by selecting only the objects needed for the required integration and discarding the other un-required objects will consume fewer resources. I.E. All points are discovered and only the desired ones should be added to the network.

## Objects Supported By Models: (VT7200 & VT7300 Series)

Please refer to the specific installation guide of each VT7200 & VT7300 controllers for a detailed overview on each property listed

Object Name	Object Type	Object Property	VT7200C5x28W	VT7200F5x28W	VT7300A5x28W	VT7305A5x28W	VT7300C5x28W	VT7305C5x28W	VT7350C5x28W	VT7355C5x28W	VT7300F5x28W	VT7305F5x28W	VT7350F5x28W	VT7355F5x28W
Room Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Outdoor Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Room Humidity	Numeric Point	Present Value (R)							√	√			√	√
Supply Temperature	Numeric Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Occupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Occupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Stand-By Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Stand-By Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Dehumidification RH Setpoint	Numeric Writable	Present Value (R,W)							√	√			√	√
Occupancy Command	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Sequence of Operation	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
System Mode	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Fan Mode	Enum Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Keypad Lockout	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Dehumidification Lockout	Boolean Writable	Present Value (R,W)							√	√			√	√

Object Name	Object Type	Object Property	VT7200C5x28W	VT7200F5x28W	VT7300A5x28W	VT7305A5x28W	VT7300C5x28W	VT7305C5x28W	VT7350C5x28W	VT7355C5x28W	VT7300F5x28W	VT7305F5x28W	VT7350F5x28W	VT7355F5x28W
Aux Command	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Password	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
PI Heating Demand	Numeric Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
PI Cooling Demand	Numeric Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Effective Occupancy	Enum Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Dehumidification Status	Boolean Point	Present Value (R)							√	√			√	√
Fan Status	Enum Point	Present Value (R)			√	√	√	√	√	√	√	√	√	√
Aux Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
BI1 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
BI2 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
UI3 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
PIR Motion Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Service Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Filter Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Window Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√	√	√
Temporary Occupancy Time	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Get From	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Deadband	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Heating Setpoint Limit	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Cooling Setpoint Limit	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Display Scale	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Menu Scroll	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√

Object Name	Object Type	Object Property	VT7200C5x28W	VT7200F5x28W	VT7300A5x28W	VT7305A5x28W	VT7300C5x28W	VT7305C5x28W	VT7350C5x28W	VT7355C5x28W	VT7300F5x28W	VT7305F5x28W	VT7350F5x28W	VT7355F5x28W
Room Temperature Override	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Configuration Setpoint Type	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Outdoor Temperature Override	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
BI1 Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
BI2 Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
UI3 Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Auto Mode Enable	Boolean Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Pipe Number	Enum Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Output #1 Configuration	Enum Writable	Present Value (R,W)	√	√										
Aux Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Fan Mode Sequence	Enum Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Setpoint Function	Boolean Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Reheat Time Base	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Proportional Band	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Auto Fan	Boolean Writable	Present Value (R,W)			√	√	√	√	√	√	√	√	√	√
Stand-By Time	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
Unoccupied Time	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√	√	√
RH Display	Boolean Writable	Present Value (R,W)							√	√			√	√
Dehumidification Hysteresis	Numeric Writable	Present Value (R,W)							√	√			√	√
Dehumidification Max Cooling	Numeric Writable	Present Value (R,W)							√	√			√	√
Control Type	Boolean Writable	Present Value (R,W)	√				√	√	√	√				
Floating Motor Timing	Enum Writable	Present Value (R,W)	√				√	√	√	√				
On Off Control CPH	Enum Writable	Present Value (R,W)	√				√	√	√	√				
Direct Reverse Acting	Boolean Writable	Present Value (R,W)		√							√	√	√	√

## Objects Supported By Model (VT7600 Series)

Please refer to the specific installation guide of each VT7600 controllers for a detailed overview on each property listed

Object Name	Object Type	Object Property	VT7600A5x28W	VT7652A5x28W	VT7600B5x28W	VT7652B5x28W	VT7605B5x28W	VT7656B5x28W	VT7607B5x28W	VT7657B5x28W	VT7600H5x28W	VT7652H5x28W
Room Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Outdoor Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Room Humidity	Numeric Writable	Present Value (R,W)							√	√		
Supply Temperature	Numeric Point	Present Value (R)	√	√	√	√	√	√			√	√
Supply RH	Numeric Point	Present Value (R)							√	√		
Occupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Occupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Unoccupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Unoccupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Dehumidification RH Setpoint	Numeric Writable	Present Value (R,W)							√	√		
Humidification RH Setpoint	Numeric Writable	Present Value (R,W)							√	√		
Effective Humidification RH Setpoint	Numeric Point	Present Value (R)							√	√		
Humidification High Limit Setpoint	Numeric Writable	Present Value (R,W)							√	√		
Occupancy Command	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
System Mode RTU	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√		
System Mode HPU	Enum Writable	Present Value (R,W)									√	√
Fan Mode	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Keypad Lockout	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√



Object Name	Object Type	Object Property	VT7600A5x28W	VT7652A5x28W	VT7600B5x28W	VT7652B5x28W	VT7605B5x28W	VT7656B5x28W	VT7607B5x28W	VT7657B5x28W	VT7600H5x28W	VT7652H5x28W
Password	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
PI Heating Demand	Numeric Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
PI Cooling Demand	Numeric Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Effective Occupancy	Enum Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Humidifier Output	Numeric Point	Present Value (R)							√	√		
Dehumidification Status	Boolean Point	Present Value (R)							√	√		
Economizer Output	Numeric Point	Present Value (R)					√	√				
G Fan Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
W2 Status	Boolean Point	Present Value (R)			√	√	√	√	√	√		
W1 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Y1 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Y2 Status	Boolean Point	Present Value (R)			√	√	√	√	√	√	√	√
Reversing Valve Status	Boolean Point	Present Value (R)									√	√
Aux Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
DI Status	Boolean Point	Present Value (R)							√	√		
DI1 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√			√	√
DI2 Status	Boolean Point	Present Value (R)	√	√	√	√	√	√			√	√
PIR Motion Status	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Frost Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√

Object Name	Object Type	Object Property	VT7600A5x28W	VT7652A5x28W	VT7600B5x28W	VT7652B5x28W	VT7605B5x28W	VT7656B5x28W	VT7607B5x28W	VT7657B5x28W	VT7600H5x28W	VT7652H5x28W
Set Clock Alarm	Boolean Point	Present Value (R)		√		√		√		√		√
Service Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Filter Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Fan Lock Alarm	Boolean Point	Present Value (R)	√	√	√	√	√	√	√	√	√	√
Heating Lockout Temperature	Numeric Writable	Present Value (R,W)		√	√	√	√	√	√	√	√	√
Cooling Lockout Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Power up Delay	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Progressive Recovery	Boolean Writable	Present Value (R,W)		√		√		√		√		√
Aux Contact	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Fan Purge Delay	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Heating Stages	Enum Writable	Present Value (R,W)			√	√	√	√	√	√		
Cooling Stages	Enum Writable	Present Value (R,W)			√	√	√	√	√	√		
Heating CPH	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Cooling CPH	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Minimum On/Off Time (Anticycle)	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Temporary Occupancy Time	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Event Display	Enum Writable	Present Value (R,W)		√		√		√		√		√
Get From	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Deadband	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Heating Setpoint Limit	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√

Object Name	Object Type	Object Property	VT7600A5x28W	VT7652A5x28W	VT7600B5x28W	VT7652B5x28W	VT7605B5x28W	VT7656B5x28W	VT7607B5x28W	VT7657B5x28W	VT7600H5x28W	VT7652H5x28W
Cooling Setpoint Limit	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Display Scale	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Menu Scroll	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Room Temperature Override	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Outdoor Temperature Override	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Room Humidity Override	Boolean Writable	Present Value (R,W)							√	√		
Proportional Band	Enum Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Unoccupied Time	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
RH Display	Boolean Writable	Present Value (R,W)							√	√		
Dehumidification Hysteresis	Numeric Writable	Present Value (R,W)							√	√		
Frost Protection	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
Fan Control	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√	√	√	√	√
DI Configuration	Enum Writable	Present Value (R,W)							√	√		
DI1 Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√			√	√
DI2 Configuration	Enum Writable	Present Value (R,W)	√	√	√	√	√	√			√	√
Heatpump Stages	Enum Writable	Present Value (R,W)									√	√
Economizer Changeover Setpoint	Numeric Writable	Present Value (R,W)					√	√				
Economizer Minimum Position	Numeric Writable	Present Value (R,W)					√	√				

Object Name	Object Type	Object Property	VT7600A5x28W	VT7652A5x28W	VT7600B5x28W	VT7652B5x28W	VT7605B5x28W	VT7656B5x28W	VT7607B5x28W	VT7657B5x28W	VT7600H5x28W	VT7652H5x28W
Mechanical Cooling Enable	Boolean Writable	Present Value (R,W)					√	√				
Mixed Air Setpoint	Numeric Writable	Present Value (R,W)					√	√				
High Balance Point	Numeric Writable	Present Value (R,W)									√	√
Low Balance Point	Numeric Writable	Present Value (R,W)									√	√
Comfort Mode	Boolean Writable	Present Value (R,W)									√	√
Reversing Valve Configuration	Boolean Writable	Present Value (R,W)									√	√
Compressor Auxiliary Lockout	Boolean Writable	Present Value (R,W)									√	√
Dehumidification Low OA Lockout	Numeric Writable	Present Value (R,W)							√	√		
Dehumidification Lockout Functions	Boolean Writable	Present Value (R,W)							√	√		
Low RH Setpoint	Numeric Writable	Present Value (R,W)							√	√		
Low Temp Reset RH Setpoint	Numeric Writable	Present Value (R,W)							√	√		
High Temp Reset RH Setpoint	Numeric Writable	Present Value (R,W)							√	√		

## Objects Supported By Models: ( VZ7000 Zoning Products, VTR7300 Controllers and VRP5028W Wireless Repeater)

Please refer to the specific installation guide of each controller for a detailed overview on each property listed

### Wireless Repeater

The wireless repeater (VRP5000W1028W) has been specifically designed to be used within a Wykon wireless ZigBee network. It is intended to be a low cost additional communication component when some remote thermostats are too far from the main mesh of Wykon devices and cannot communicate. The repeater will enable the remote thermostats to establish communication and will act as bridges to the main mesh. Furthermore, it does not need to be added to the database network to lessen the resource required for the Jace & the station.

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Room Temperature	Numeric Writable	Present Value (R,W)	√		√	√	√	√
Outdoor Temperature	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Room Humidity	Numeric Point	Present Value ®					√	√
Supply Temperature	Numeric Point	Present Value ®		√	√	√	√	√
Occupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Occupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Stand-By Cooling Setpoint	Numeric Writable	Present Value (R,W)	√		√	√	√	√
Stand-By Heating Setpoint	Numeric Writable	Present Value (R,W)	√		√	√	√	√
Unoccupied Cooling Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Unoccupied Heating Setpoint	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Dehumidification RH Setpoint	Numeric Writable	Present Value (R,W)					√	√
Occupancy Command	Enum Writable	Present Value (R,W)	√	√	√	√	√	√

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
System Mode	Enum Writable	Present Value (R,W)			√	√	√	√
Fan Mode	Enum Writable	Present Value (R,W)			√	√	√	√
Keypad Lockout	Enum Writable	Present Value (R,W)	√	√	√	√	√	√
Dehumidification Lockout	Boolean Writable	Present Value (R,W)					√	√
Password	Numeric Writable	Present Value (R,W)			√	√	√	√
PI Heating Demand	Numeric Point	Present Value ®		√	√	√	√	√
Weighted PI Heating Demand	Numeric Point	Present Value ®	√					
PI Cooling Demand	Numeric Point	Present Value ®		√	√	√	√	√
Weighted PI Cooling Demand	Numeric Point	Present Value ®	√					
Effective Occupancy	Enum Point	Present Value ®	√	√	√	√	√	√
Dehumidification Status	Boolean Point	Present Value ®					√	√
Fan Status	Enum Point	Present Value ®			√	√	√	√
G Fan Status	Boolean Point	Present Value ®		√				
W2 Status	Boolean Point	Present Value ®		√				
W1 Status	Boolean Point	Present Value ®		√				
Y1 Status	Boolean Point	Present Value ®		√				
Y2 Status	Boolean Point	Present Value (R)		√				
Aux Status	Boolean Point	Present Value (R)		√				

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
DI1 Status	Boolean Point	Present Value (R)		√				
BI1 Status	Boolean Point	Present Value (R)	√		√	√	√	√
BI2 Status	Boolean Point	Present Value (R)	√		√	√	√	√
UI3 Status	Boolean Point	Present Value (R)	√					
PIR Motion Status	Boolean Point	Present Value (R)			√	√	√	√
Set Clock Alarm	Boolean Point	Present Value (R)		√				
Service Alarm	Boolean Point	Present Value (R)		√	√	√	√	√
Filter Alarm	Boolean Point	Present Value (R)		√	√	√	√	√
Window Alarm	Boolean Point	Present Value (R)			√	√	√	√
Static Pressure	Numeric Point	Present Value (R)		√				
By-Pass Damper	Numeric Point	Present Value (R)		√				



Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Heating Lockout Temperature	Numeric Writable	Present Value (R,W)		√				
Cooling Lockout Temperature	Numeric Writable	Present Value (R,W)		√				
Static Pressure Setpoint	Numeric Writable	Present Value (R,W)		√				
Discharge High Limit Setpoint	Numeric Writable	Present Value (R,W)		√				
Discharge Low Limit Setpoint	Numeric Writable	Present Value (R,W)		√				
Transferred Zone PI Heating Demand	Numeric Point	Present Value (R)		√				
Transferred Zone PI Cooling Demand	Numeric Point	Present Value (R)		√				
Highest PI Heat Zone Mac	Numeric Point	Present Value (R)		√				
Highest PI Cooling Zone Mac	Numeric Point	Present Value (R)		√				
Highest PI Heating Demand	Numeric Point	Present Value (R)		√				

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Highest PI Cooling Demand	Numeric Point	Present Value (R)		√				
Power up Delay	Numeric Writable	Present Value (R,W)		√				
Heating Stages Lock Status	Boolean Point	Present Value (R)		√				
Cooling Stages Lock Status	Boolean Point	Present Value (R)		√				
Discharge Temperature Alarm	Boolean Point	Present Value (R)		√				
Local Units	Boolean Writable	Present Value (R,W)		√				
Progressive Recovery	Boolean Writable	Present Value (R,W)		√				
Zone Communication Lost	Boolean Point	Present Value (R)		√				
Aux Contact	Boolean Writable	Present Value (R,W)		√				
Fan Purge Delay	Boolean Writable	Present Value (R,W)		√				
Smart Recovery Active	Boolean Point	Present Value (R)	√	√				
Control Type	Enum Writable	Present Value (R,W)		√				
VZ76 RTC Zone Sequence	Enum Writable	Present Value (R,W)		√				
VZ72 RTC Zone Sequence	Enum Writable	Present Value (R,W)	√					
Static Pressure Transducer Range	Enum Writable	Present Value (R,W)		√				
Heating Stages	Enum Writable	Present Value (R,W)		√				
Cooling Stages	Enum Writable	Present Value (R,W)		√				
Heating CPH	Enum Writable	Present Value (R,W)		√				
Cooling CPH	Enum Writable	Present Value (R,W)		√				

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Min On/Off Time	Enum Writable	Present Value (R,W)		√				
BI1 Configuration	Enum Writable	Present Value (R,W)		√				
Temporary Occupancy Time	Enum Writable	Present Value (R,W)	√	√	√	√	√	√
Event Display	Enum Writable	Present Value (R,W)		√				
System Mode RTU	Enum Writable	Present Value (R,W)		√				
Get From	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
Network Handle	Enum Writable	Present Value (R,W)	√					
Deadband	Numeric Writable	Present Value (R,W)	√	√	√	√	√	√
RTC Com Address (MAC Address)	Numeric Writable	Present Value (R,W)	√					
Config AO2 Outside Air Lockout Setpoint	Numeric Writable	Present Value (R,W)	√					
Config BO5 Outside Air Lockout Setpoint	Numeric Writable	Present Value (R,W)	√					
Damper Minimum Position	Numeric Writable	Present Value (R,W)	√					
Damper Maximum Position	Numeric Writable	Present Value (R,W)	√					

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Damper Maximum Heating Position	Numeric Writable	Present Value (R,W)	√					
Heating Setpoint Limit	Numeric Writable	Present Value (R,W)	√		√	√	√	√
Cooling Setpoint Limit	Numeric Writable	Present Value (R,W)	√		√	√	√	√
AO2 Status	Numeric Point	Present Value (R)	√					
Display Scale	Boolean Writable	Present Value (R,W)	√		√	√	√	√
Menu Scroll	Boolean Writable	Present Value (R,W)	√		√	√	√	√
Configuration Motion Detection	Boolean Writable	Present Value (R,W)	√					
AO2 RA/DA	Boolean Writable	Present Value (R,W)	√					
BO5 Time Base	Boolean Writable	Present Value (R,W)	√					
BO5 Contact Function	Boolean Writable	Present Value (R,W)	√					
BO5 Status	Boolean Point	Present Value (R)	√					
AO2 Lock Status	Boolean Point	Present Value (R)	√					
BO5 Lock Status	Boolean Point	Present Value (R)	√					
Room Temperature Override	Boolean Writable	Present Value (R,W)	√		√	√	√	√

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Configuration Setpoint Type	Boolean Writable	Present Value (R,W)	√		√	√	√	√
Reheat Configuration	Enum Writable	Present Value (R,W)	√					
PI Heating Weight	Enum Writable	Present Value (R,W)	√					
PI Cooling Weight	Enum Writable	Present Value (R,W)	√					
Outdoor Temperature Override	Boolean Writable	Present Value (R,W)	√	√	√	√	√	√
Room Humidity Override	Boolean Writable	Present Value (R,W)					√	√
Heating Valve Status	Boolean Point	Present Value (R)			√	√	√	√
Cooling Valve Status	Boolean Point	Present Value (R)			√	√	√	√
BI1 Configuration	Enum Writable	Present Value (R,W)			√	√	√	√
BI2 Configuration	Enum Writable	Present Value (R,W)			√	√	√	√
UI3 Configuration	Enum Writable	Present Value (R,W)			√	√	√	√
Auto Mode Enable	Boolean Writable	Present Value (R,W)			√	√	√	√
Pipe Number	Enum Writable	Present Value (R,W)			√	√	√	√
Fan Mode Sequence	Enum Writable	Present Value (R,W)			√	√	√	√

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Setpoint Function	Boolean Writable	Present Value (R,W)			√	√	√	√
Proportional Band	Enum Writable	Present Value (R,W)			√	√	√	√
Auto Fan	Boolean Writable	Present Value (R,W)			√	√	√	√
Stand-By Time	Numeric Writable	Present Value (R,W)			√	√	√	√
Unoccupied Time	Numeric Writable	Present Value (R,W)			√	√	√	√
RH Display	Boolean Writable	Present Value (R,W)					√	√
Dehumidification Hysteresis	Numeric Writable	Present Value (R,W)					√	√
Dehumidification Max Cooling	Numeric Writable	Present Value (R,W)					√	√
Damper Position	Numeric Writable	Present Value (R,W)	√					
RUI1 Configuration	Enum Writable	Present Value (R,W)			√	√	√	√
RBI2 Configuration	Enum Writable	Present Value (R,W)			√	√	√	√
RUI1 Status	Numeric Point	Present Value (R)			√	√	√	√
RBI2 Status	Boolean Point	Present Value (R)			√	√	√	√
Sequence of Operation	Enum Writable	Present Value (R,W)			√	√	√	√
Heating CPH	Enum Writable	Present Value (R,W)			√	√	√	√
Cooling CPH	Enum Writable	Present Value (R,W)			√	√	√	√
Heat No/Nc	Boolean Writable	Present Value (R,W)			√	√	√	√
Cool No/Nc	Boolean Writable	Present Value (R,W)			√	√	√	√
Pulsed Heat	Boolean Writable	Present Value (R,W)			√	√	√	√

Object Name	Object Type	Object Property	VZ7200F5x28W	VZ7656B5x28W	VTR7300A5x28W	VTR7305A5x28W	VTR7350A5x28W	VTR7355A5x28W
Low Battery Alarm	Boolean Point	Present Value (R)			√	√	√	√
Wireless Window Switch Used	Boolean Point	Present Value (R)			√	√	√	√
Wireless Window Switch Status	Boolean Point	Present Value (R)			√	√	√	√
Wireless Door Switch Used	Boolean Point	Present Value (R)			√	√	√	√
Wireless Door Switch Status	Boolean Point	Present Value (R)			√	√	√	√
Heating Demand Limit	Numeric Writable	Present Value (R,W)			√	√	√	√
Cooling Demand Limit	Numeric Writable	Present Value (R,W)			√	√	√	√
PI Heating Demand	Numeric Point	Present Value (R)	√					
PI Cooling Demand	Numeric Point	Present Value (R)	√					



## List of Property Numeric Value Range Restrictions

Object Name	Object Type	Range Restrictions
Room Temperature	Numeric Writable	temperature,min=-40,max=122
Outdoor Temperature	Numeric Writable	temperature,min=-40,max=122
Room Humidity	Numeric Point	percent,min=5,max=90
Supply Temperature	Numeric Point	temperature,min=-40,max=122
Supply RH	Numeric Point	percent,min=0,max=100
Effective Humidification RH Setpoint	Numeric Point	percent,min=0,max=100
PI Heating Demand	Numeric Point	percent,min=0,max=100
Weighted PI Heating Demand	Numeric Point	percent,min=0,max=100
PI Cooling Demand	Numeric Point	percent,min=0,max=100
Weighted PI Cooling Demand	Numeric Point	percent,min=0,max=100
Humidifier Output	Numeric Point	percent,min=0,max=100
Economizer Output	Numeric Point	percent,min=0,max=100
Static Pressure	Numeric Point	pascal,min=0,max=5000
By-Pass Damper	Numeric Point	percent,min=0,max=100
Transferred Zone PI Heating Demand	Numeric Point	percent,min=0,max=100
Transferred Zone PI Cooling Demand	Numeric Point	percent,min=0,max=100
Highest PI Heating Zone Mac	Numeric Point	percent,min=0,max=100
Highest PI Cooling Zone Mac	Numeric Point	percent,min=0,max=100
Highest PI Heating Demand	Numeric Point	percent,min=0,max=100
Highest PI Cooling Demand	Numeric Point	percent,min=0,max=100
AO2 Status	Numeric Point	percent,min=0,max=100
RUI1 Status	Numeric Point	temperature,min=-40,max=122
Occupied Cooling Setpoint	Numeric Writable	temperature,min=54,max=100
Occupied Heating Setpoint	Numeric Writable	temperature,min=40,max=90
Stand-By Cooling Setpoint	Numeric Writable	temperature,min=54,max=100
Stand-By Heating Setpoint	Numeric Writable	temperature,min=40,max=90
Unoccupied Cooling Setpoint	Numeric Writable	temperature,min=54,max=100
Unoccupied Heating Setpoint	Numeric Writable	temperature,min=40,max=90
Dehumidification RH Setpoint	Numeric Writable	percent,min=30,max=95
Humidification RH Setpoint	Numeric Writable	percent,min=10,max=90
Humidification High Limit Setpoint	Numeric Writable	percent,min=50,max=90
Password	Numeric Writable	none,min=0,max=1000

Object Name	Object Type	Range Restrictions
Heating Lockout Temperature	Numeric Writable	temperature,min=-15,max=120
Cooling Lockout Temperature	Numeric Writable	temperature,min=-40,max=95
Static Pressure Setpoint	Numeric Writable	pascal,min=0,max=5000
Discharge High Limit Setpoint	Numeric Writable	temperature,min=-70,max=150
Discharge Low Limit Setpoint	Numeric Writable	temperature,min=-35,max=65
Power-up Delay	Numeric Writable	seconds,min=10,max=120
Get From	Numeric Writable	none,min=0,max=254
Deadband ( VT76xx )	Numeric Writable	temperature,min=2.0,max=4.0
Deadband ( VT72 / 73xx )	Numeric Writable	temperature,min=2.0,max=5.0
RTC Communication Address	Numeric Writable	none,min=1,max=127
Config BO5 Outside Air Lockout Setpoint	Numeric Writable	temperature,min=-40,max=122
Damper Minimum Position	Numeric Writable	percent,min=0,max=100
Damper Maximum Position	Numeric Writable	percent,min=0,max=100
Damper Max Heat Position	Numeric Writable	percent,min=0,max=100
Heating Setpoint Limit	Numeric Writable	temperature,min=40,max=90
Cooling Setpoint Limit	Numeric Writable	temperature,min=54,max=100
Stand-By Time	Numeric Writable	hours,min=5.0,max=240.0
Unoccupied Time	Numeric Writable	hours,min=5.0,max=240.0
Dehumidification Hysteresis	Numeric Writable	percent,min=2,max=20
Dehumidification Max Cooling	Numeric Writable	percent,min=20,max=100
Economizer Changeover Setpoint	Numeric Writable	temperature,min=14,max=70
Economizer Minimum Position	Numeric Writable	percent,min=0,max=100
Mixed Air Setpoint	Numeric Writable	temperature,min=50,max=90
High Balance Point	Numeric Writable	temperature,min=34,max=90
Low Balance Point	Numeric Writable	temperature,min=-40,max=30
Dehumidification Low OA Lockout	Numeric Writable	temperature,min=-40,max=122
Low RH Setpoint	Numeric Writable	percent,min=10,max=90
Low Temp Reset RH Setpoint	Numeric Writable	temperature,min=-40,max=15
High Temp Reset RH Setpoint	Numeric Writable	temperature,min=20,max=55
Damper Position	Numeric Writable	percent,min=0,max=100
Heat Demand Limit	Numeric Writable	percent,min=0,max=100
Cool Demand Limit	Numeric Writable	percent,min=0,max=100

\*\* Room Temperature, Outdoor Temperature and Room Humidity need to have their Boolean override counterpart object set to "Override" first if the present value needs to be written over from the network. Ex To set a network present value on the numeric "{Room Temperature}" numeric object, the "Room Temperature Override" Boolean object needs to be set from Normal to Override. The controller local present value will then be derived from the wireless network instead of the present value at the controller.

## List of Property Enumeration Sets for BV Objects

Object Name	Object Type	Range Restrictions
Dehumidification Status	Boolean Point	falseText=Off,trueText=On
G Fan Status	Boolean Point	falseText=Off,trueText=On
W2 Status	Boolean Point	falseText=Off,trueText=On
W1 Status	Boolean Point	falseText=Off,trueText=On
Y1 Status	Boolean Point	falseText=Off,trueText=On
Y2 Status	Boolean Point	falseText=Off,trueText=On
Reversing Valve Status	Boolean Point	falseText=Off,trueText=On
Aux Status	Boolean Point	falseText=Off,trueText=On
Aux Status	Boolean Point	falseText=Off,trueText=On
DI Status	Boolean Point	falseText=Deactivated,trueText=Activated
DI1 Status	Boolean Point	falseText=Deactivated,trueText=Activated
DI2 Status	Boolean Point	falseText=Deactivated,trueText=Activated
BI1 Status	Boolean Point	falseText=Deactivated,trueText=Activated
BI2 Status	Boolean Point	falseText=Deactivated,trueText=Activated
UI3 Status *	Boolean Point	falseText=Deactivated,trueText=Activated
PIR Motion Status	Boolean Point	falseText=No Motion,trueText=Motion
Frost Alarm	Boolean Point	falseText=Off,trueText=On
Set Clock Alarm	Boolean Point	falseText=Off,trueText=On
Service Alarm	Boolean Point	falseText=Off,trueText=On
Filter Alarm	Boolean Point	falseText=Off,trueText=On
Fan Lock Alarm	Boolean Point	falseText=Off,trueText=On
Window Alarm	Boolean Point	falseText=Off,trueText=On
Heat Stages Lockout Status	Boolean Point	falseText=Off,trueText=On
Cool Stages Lockout Status	Boolean Point	falseText=Off,trueText=On
Discharge Temperature Alarm	Boolean Point	falseText=Off,trueText=On
Comm Lost	Boolean Point	falseText=Off,trueText=On
RTC Smart Recovery Active	Boolean Point	falseText=Off,trueText=Active
BO5 Status	Boolean Point	falseText=Off,trueText=On
AO2 Lock Status	Boolean Point	falseText=Inactive,trueText=Active
BO5 Lock Status	Boolean Point	falseText=Inactive,trueText=Active
Heating Valve Status	Boolean Point	falseText=Off,trueText=On
Cooling Valve Status	Boolean Point	falseText=Off,trueText=On
RBI2 Status	Boolean Point	falseText=Off,trueText=On
Low Battery Alarm	Boolean Point	falseText=Off,trueText=On
Wireless Window Switch Used	Boolean Point	falseText=Not Used,trueText=Used
Wireless Window Switch Status	Boolean Point	falseText=Off,trueText=On
Wireless Door Switch Used	Boolean Point	falseText=Not Used,trueText=Used
Wireless Door Switch Status	Boolean Point	falseText=Off,trueText=On

Object Name	Object Type	Range Restrictions
Dehumidification Lockout	Boolean Writable	falseText=Disabled,trueText=Enabled
Aux Command	Boolean Writable	falseText=Off,trueText=On
Units	Boolean Writable	falseText=Imperial,trueText=SI
Progressive Recovery	Boolean Writable	falseText=Off,trueText=Active
Aux Contact	Boolean Writable	falseText=Normally Opened,trueText=Normally Closed
Fan Purge Delay	Boolean Writable	falseText=Off,trueText=On
Display Scale	Boolean Writable	falseText=C,trueText=F
Menu Scroll	Boolean Writable	falseText=No Scroll,trueText=Scroll Active
Config Motion Detection	Boolean Writable	falseText=No PIR,trueText=PIR Cover Present
AO2 RA/DA	Boolean Writable	falseText=Direct Acting,trueText=Reverse Acting
BO5 Time Base	Boolean Writable	falseText=15 Minutes,trueText=10 Seconds
BO5 Contact Function	Boolean Writable	falseText=Normally Opened,trueText=Normally Closed
Room Temperature Override	Boolean Writable	falseText=Normal,trueText=Override
Config Setpoint Type	Boolean Writable	falseText=Permanent,trueText=Temporary
Outdoor Temperature Override	Boolean Writable	falseText=Normal,trueText=Override
Room Humidity Override	Boolean Writable	falseText=Normal,trueText=Override
Auto Mode Enable	Boolean Writable	falseText=Disabled,trueText=Enabled
Setpoint Function	Boolean Writable	falseText=Dual Setpoints,trueText=Attached Setpoints
Reheat Time Base	Boolean Writable	falseText=15 Minutes,trueText=10 Seconds
Auto Fan	Boolean Writable	falseText=Auto Speed,trueText=Auto Speed / Auto Demand
RH Display	Boolean Writable	falseText=Disabled,trueText=Enabled
Control Type	Boolean Writable	falseText=On/Off,trueText=Floating
Direct Reverse Acting	Boolean Writable	falseText=Direct Acting,trueText=Reverse Acting
Fan Options	Boolean Writable	falseText=On Heat,trueText=Auto Heat
Frost Protection	Boolean Writable	falseText=Off,trueText=On
Fan Control	Boolean Writable	falseText=Off,trueText=On
Mechanical Cooling Enable	Boolean Writable	falseText=Off,trueText=On
Comfort Mode	Boolean Writable	falseText=Comfort,trueText=Economy
Reversing Valve Config	Boolean Writable	falseText=Normally Cool,trueText=Normally Heat
Comp Aux Lockout	Boolean Writable	falseText=Off,trueText=On
Dehumidification Lockout Functions	Boolean Writable	falseText=Disabled,trueText=Enabled
Heat No/Nc	Boolean Writable	falseText=Normally Closed,trueText=Normally Openend
Cool No/Nc	Boolean Writable	falseText=Normally Closed,trueText=Normally Openend
Pulsed Heat	Boolean Writable	falseText=Off,trueText=On

\* This object is linked to UI3 input on all VT7200 and VT7300 series controller when used in binary mode. The Not Activated / Activated flag status is changed upon a local contact closing on the input and will also result in the SupplyTemp Numeric to respond from one end of its range to the other.

## List of Property Enumeration Sets for MV Objects

Object	Index	Range Restrictions
Alarm ( VT72xx & VT73xx )	1	No alarm
	2	Window alarm
	3	Filter alarm
	4	Service alarm
	5	Window & filter alarms
	6	Window & service alarms
	7	Filter & service alarms
Alarm-VT76xx	1	No alarm
	2	Frost alarm
	3	Clock alarm
	4	Clock & frost alarms
	5	Filter alarm
	6	Filter & frost alarms
	7	Filter & clock alarms
	8	Filter & frost & clock alarms
	9	Service alarms
	10	Service & frost alarms
	11	Service & clock alarms
	12	Service & frost & clock alarms
	13	Filter & service alarms
	14	Service & filter & frost alarms
	15	Service & filter & clock alarms
	16	Clock & filter & frost & service alarms

Object	Index	Range Restrictions
Aux Configuration	1	Not Used
	2	Normally Opened With Occupancy
	3	Normally Closed With Occupancy
	4	Normally Opened With Occupancy & Fan
	5	Normally Closed With Occupancy & Fan
	6	Network Controlled
Cooling CPH	1	3 CPH
	2	4 CPH
Control Type	1	Highest
	2	Average of 3 highest
	3	Average of 5 highest
BI1 Config ( VT72 / VT73xx )	1	None
	2	Rem NSB
	3	Motion NO
	4	Motion NC
	5	Window
BI2 Config ( VT72 / VT73xx )	1	None
	2	Door Dry
	3	Rem OVR
	4	Filter
	5	Service
DI1 Config ( VT76xx )	1	None
	2	Rem NSB
	3	Rem OVR
	4	Filter
	5	Service
	6	Fan Lock Alarm
DI2 Config ( VT76xx )	1	None
	2	Rem NSB
	3	Rem OVR
	4	Filter
	5	Service
	6	Fan Lock Alarm

Object	Index	Range Restrictions
BI1 Config ( VZ7200X )	1	None
	2	Motion NO
	3	Motion NC
Effective Occupancy	1	Occupied
	2	Unoccupied
	3	Temporary Occupied
	4	Stand-by
Fan Mode ( VT73xx ) <b>Note 4:</b>	1	Low
	2	Med
	3	High
	4	Auto
	5	On
Fan Mode ( VT76xx ) <b>Note 4:</b>	1	On
	2	Auto
	3	Smart
Fan Mode Sequence ( VT73xx ) <b>Note 4:</b>	1	Low - Med - High
	2	Low - High
	3	Low - Med - High - Auto
	4	Low - High - Auto
	5	On - Auto
Fan Status (VT73xx )	1	Off
	2	Low
	3	Medium
	4	High

Object	Index	Range Restrictions
Floating Motor Timing	1	0.5 Minutes
	2	1 Minute
	3	1.5 Minutes
	4	2 Minutes
	5	2.5 Minutes
	6	3 Minutes
	7	3.5 Minutes
	8	4 Minutes
	9	4.5 Minutes
	10	5 Minutes
	11	5.5 Minutes
	12	6 Minutes
	13	6.5 Minutes
	14	7 Minutes
	15	7.5 Minutes
	16	8 Minutes
	17	8.5 Minutes
	18	9 Minutes
Heat Pump Stage	1	One Stage
	2	Two Stages
Heating CPH	1	3 CPH
	2	4 CPH
	3	5 CPH
	4	6 CPH
	5	7 CPH
	6	8 CPH
Cooling Valve Status Heating Valve Status	1	Closed
	2	Opened
Keypad Lockout ( VT73xx )	1	Level 0
	2	Level 1
	3	Level 2
	4	Level 3
	5	Level 4
	6	Level 5
Keypad Lockout ( VT72xx )	1	Level 0
	2	Level 1
	3	Level 2
	4	Level 3
Keypad Lockout ( VT76xx )	1	Level 0
	2	Level 1
	3	Level 2



Object	Index	Range Restrictions
Minimum On/Off Time ( Anticycle )	1	0 Minutes
	2	1 Minute
	3	2 Minutes
	4	3 Minutes
	5	4 Minutes
	6	5 Minutes
Event Display	1	2 Events
	2	4 Events
Heating Stages Cooling Stages	1	1 Stage
	2	2 Stages
Network Handle	1	Default Zone Handle
	2	Default Minus Occupancy
	3	Full Release
Occupancy Command	1	Local Occupancy
	2	Occupied
	3	Unoccupied
On Off Control CPH	1	3 CPH
	2	4 CPH
	3	5 CPH
	4	6 CPH
	5	7 CPH
	6	8 CPH
Output #1 Configuration ( VT72xx )	1	One Output
	2	Separate Outputs
PI Cooling Weight PI Heating Weight	1	0%
	2	25%
	3	50%
	4	75%
	5	100%
Pipe Number	1	Two Pipes
	2	Four Pipes
Proportional Band ( VT76xx )	1	3 °F / 1.7 °C
	2	4 °F / 2.2 °C
	3	5 °F / 2.8 °C
	4	6 °F / 3.3 °C
	5	7 °F / 3.9 °C
	6	8 °F / 4.4 °C
	7	9 °F / 5.0 °C
	8	10 °F / 5.6 °C

Object	Index	Range Restrictions
Proportional Band-( VT72xx & VT73xx )	1	2 °F / 1.1 °C
	2	3 °F / 1.7 °C
	3	4 °F / 2.2 °C
	4	5 °F / 2.8 °C
	5	6 °F / 3.3 °C
	6	7 °F / 3.9 °C
	7	8 °F / 4.4 °C
RUI1 Config	1	None
	2	Filter
	3	Service
	4	(COC/NH) Change over dry contact. Normally Heat
	5	(COC/NC) Change over dry contact. Normally Cool
	6	(COS) Change over analog sensor
RBI2 Config	1	None
	2	Filter
	3	Service
Reheat Config	1	None
	2	Analogue Duct Heater Only
	3	On/Off Duct Heater Only
	4	On/Off Peripheral Heating Only
	5	Analogue Duct and On/Off Peripheral Heating
Reheat CPH	1	2 CPH
	2	3 CPH
	3	4 CPH
	4	5 CPH
	5	6 CPH
	6	7 CPH
	7	8 CPH
Zone Sequence	1	Cool
	2	Heat
Sequence Of Operation ( VT73xx & VT72xx ) <b>Note 2</b>	1	Cooling only
	2	Heating only
	3	Cooling & reheat
	4	Heating & reheat
	5	Cooling & heating 4 pipes
	6	Cooling heating 4 pipes & reheat

Object	Index	Range Restrictions
Sequence Of Operation (VTR73xx) <b>Note 3</b>	1	Cooling only
	2	Heating only
	3	Cooling / Heating or Cooling With Electric Reheat
	4	Heating With Electric Reheat
	5	Electric Reheat Only
Static Pressure Range	1	0 to 1.5 in WC
	2	0 to 2 in WC
	3	0 to 3 in WC
	4	0 to 4 in WC
	5	0 to 5 in WC
System Mode-VT76Hxx	1	Off
	2	Auto
	3	Cool
	4	Heat
	5	Emergency
System Mode – VT76xx	1	Off
	2	Auto
	3	Cool
	4	Heat
System Mode – VZ72xx, VT72xx & VT73xx <b>Note 1, Note 2 &amp; Note 3</b>	1	Off
	2	Auto
Temporary Occupancy Time ( VT76xx )	1	0 Hours
	2	1 Hour
	3	2 Hours
	4	3 Hours
	5	4 Hours
	6	5 Hours
	7	6 Hours
	8	7 Hours
	9	8 Hours
	10	9 Hours
	11	10 Hours
	12	11 Hours
	13	12 Hours

Object	Index	Range Restrictions
Temporary Occupancy Time-(VT73xx & VT72xx)	1	0 Hours
	2	1 Hour
	3	2 Hours
	4	3 Hours
	5	4 Hours
	6	5 Hours
	7	6 Hours
	8	7 Hours
	9	8 Hours
	10	9 Hours
	11	10 Hours
	12	11 Hours
	13	12 Hours
	14	13 Hours
	15	14 Hours
	16	15 Hours
	17	16 Hours
	18	17 Hours
	19	18 Hours
	20	19 Hours
	21	20 Hours
	22	21 Hours
	23	22 Hours
	24	23 Hours
	25	24 Hours
UI3 Config	1	None
	2	(COC/NH) Change over dry contact. Normally Heat
	3	(COC/NC) Change over dry contact. Normally Cool
	4	(COS) Change over analog sensor
	5	(SS) Supply air sensor monitoring

**Note 1** For VT72xx, VT73xx & VTR73xx devices, usable enumerations for the System Mode depends on Sequence of Operation selected. The **Auto** mode can be used only if the **AutoMode** configuration parameter is set to **On**.

**Note 2** For VT72xx & VT73xx, the default value of System Mode depends on the Local Sequence of Operation selected and the value of the AutoMode configuration parameter.

Sequence Of Operation	Function	Auto Mode parameter Enabled	Auto Mode parameter Disabled
1	Cooling Only	Cool	Cool
2	Cooling with Reheat	Auto	Heat
3	Heating Only	Heat	Heat
4	Heating with Reheat	Heat	Heat
5	Cooling/Heating 4 Pipes	Auto	Heat
6	Cooling/Heating 4 Pipes with Reheat	Auto	Heat

**Note 3** For VTR73xx, the default value of System Mode depends on the Local Sequence of Operation selected and the value of the AutoMode configuration parameter.

Sequence Of Operation	Function	Auto Mode parameter Enabled	Auto Mode parameter Disabled
1	Cooling only	Cool	Cool
2	Heating only	Heat	Heat
3	Cooling / Heating or Cooling With Electric Reheat	Auto	Heat
4	Heating With Electric Reheat	Heat	Heat
5	Electric Reheat Only	Heat	Heat

**Note 4:**

- VT7200 do not have fan outputs and fan mode commands
- VT7300 fan mode input is dependent on local Fan Configuration
- VT7600 fan mode inputs accepted are: Auto and On. All other modes are rejected.

Available Fan modes for the VT73xx & VTR73xx controller is dependent on the local configuration of the Fan Menu parameter

Fan Menu Configuration	Fan Modes Index Accepted	Default Value
1	1 Low - 2 Med - 3 High	High
2	1 Low - 2 High	High
3	1 Low - 2 Med - 3 High - 4 Auto	High
4	1 Low - 2 High - 3 Auto	High
5	1 Auto - 2 On	Auto

Integration – Global Commands

The following figure shows which typical objects from each controller attached to a VWG can be monitored and commanded from the front-end.

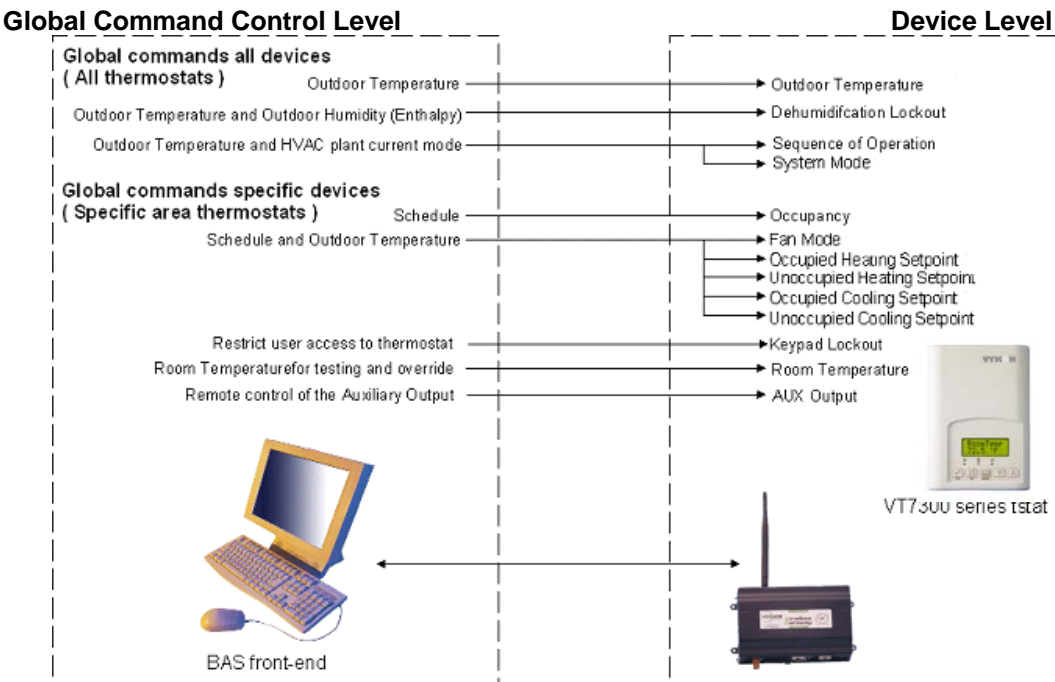
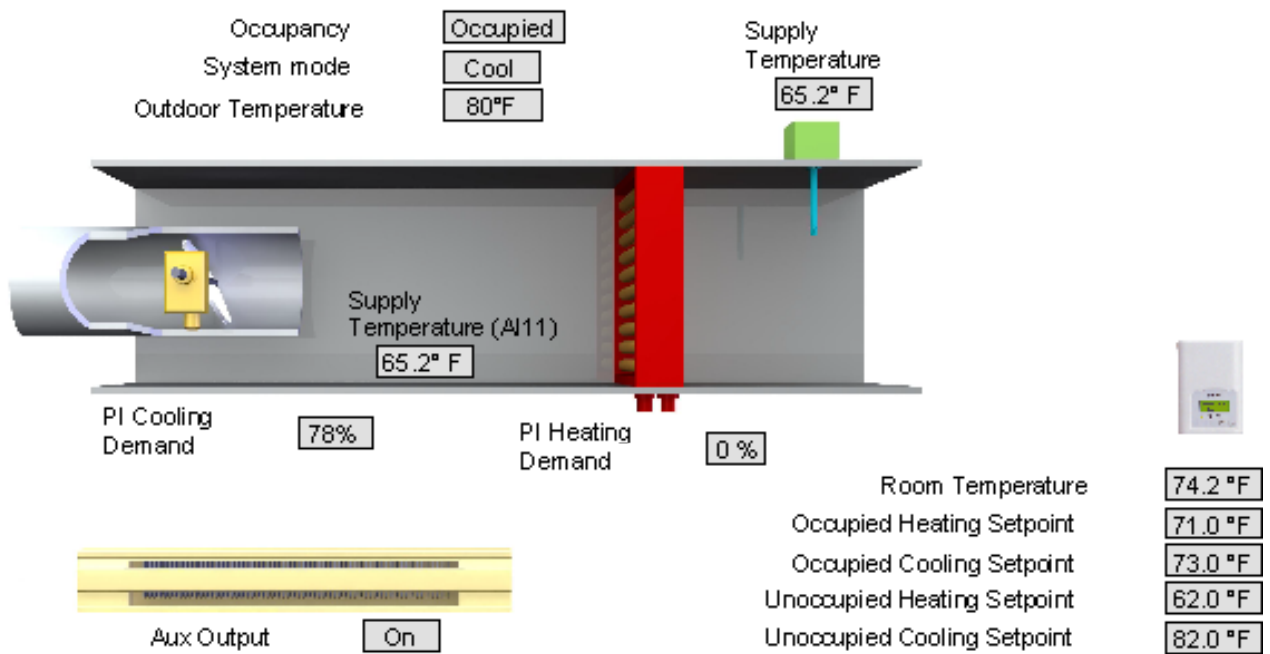


Figure 1: Global commands from a BAS front-end to a JACE and associated controller

## VT720xx Integration – Graphic User Interface (GUI) objects

The following objects should be typically used in a GUI:

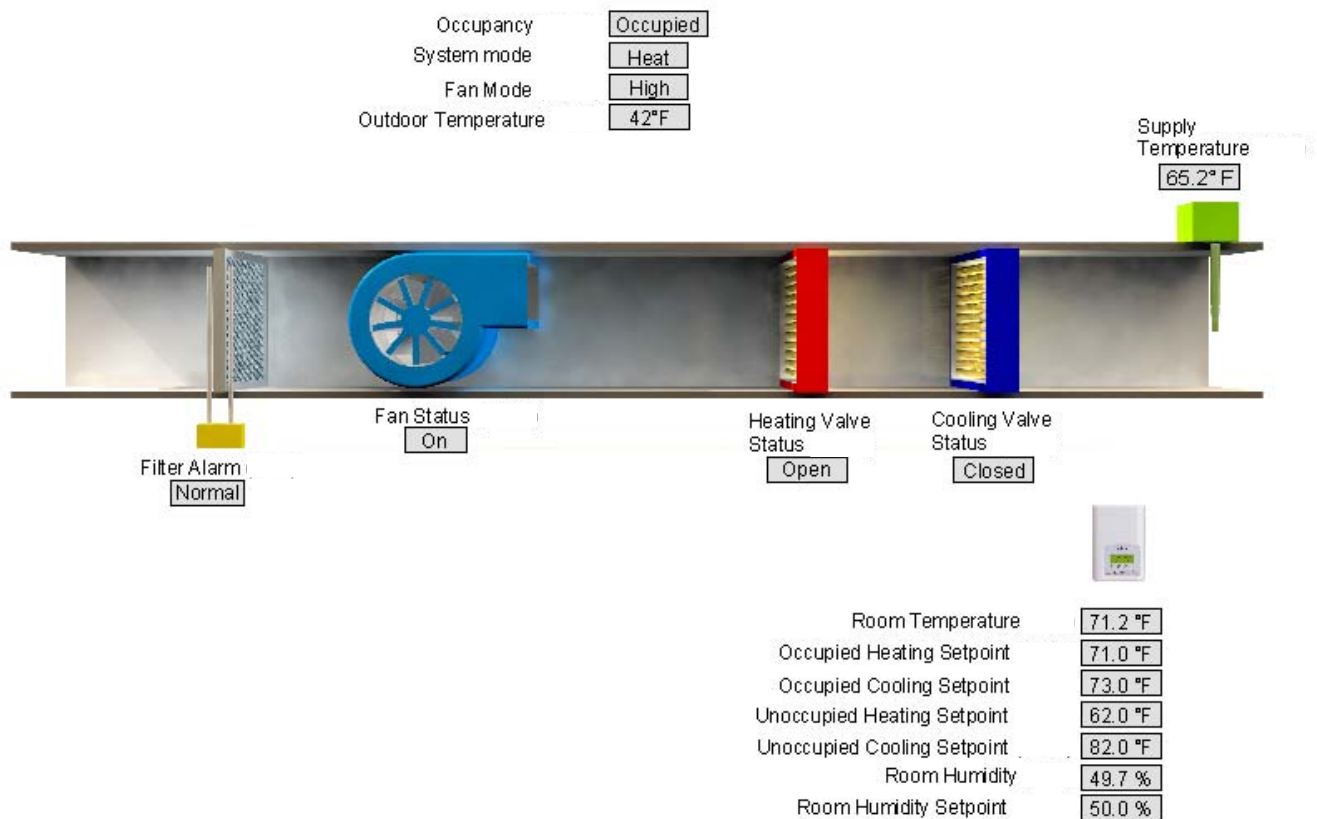
- Room Temperature (Numeric);
- Occupied and Unoccupied Heat Setpoints (Numeric);
- Occupied and Unoccupied Cool Setpoints (Numeric);
- Outdoor Temperature (Numeric);
- Supply Temperature (Numeric) (If available);
- Occupancy Command (Enum);
- System Mode (Enum);
- Heating Valve Status (Enum);
- Cooling Valve Status (Enum);
- PI Heating Demand (Numeric)
- PI Cooling Demand (Numeric)
- Window Alarm (Boolean);
- Filter Alarm (Boolean);
- Service Alarm (Boolean);



## VT73xxX Integration – Graphical User Interface (GUI) Objects

The following objects should be typically used in a GUI:

- Room Temperature (Numeric);
- Occupied and Unoccupied Heat Setpoints (Numeric);
- Occupied and Unoccupied Cool Setpoints (Numeric);
- Room Humidity (Numeric) (If available);
- Room Humidity Setpoint (Numeric) (If available);
- Outdoor Temperature (Numeric);
- Supply Temperature (Numeric) (If available);
- Occupancy Command (Enum);
- System Mode (Enum);
- Fan Mode (Enum);
- Fan Status (Enum);
- Heating Valve Status (Enum);
- Cooling Valve Status (Enum);
- PI Heating Demand (Numeric)
- PI Cooling Demand (Numeric)
- Window Alarm (Boolean);
- Filter Alarm (Boolean);
- Service Alarm (Boolean);

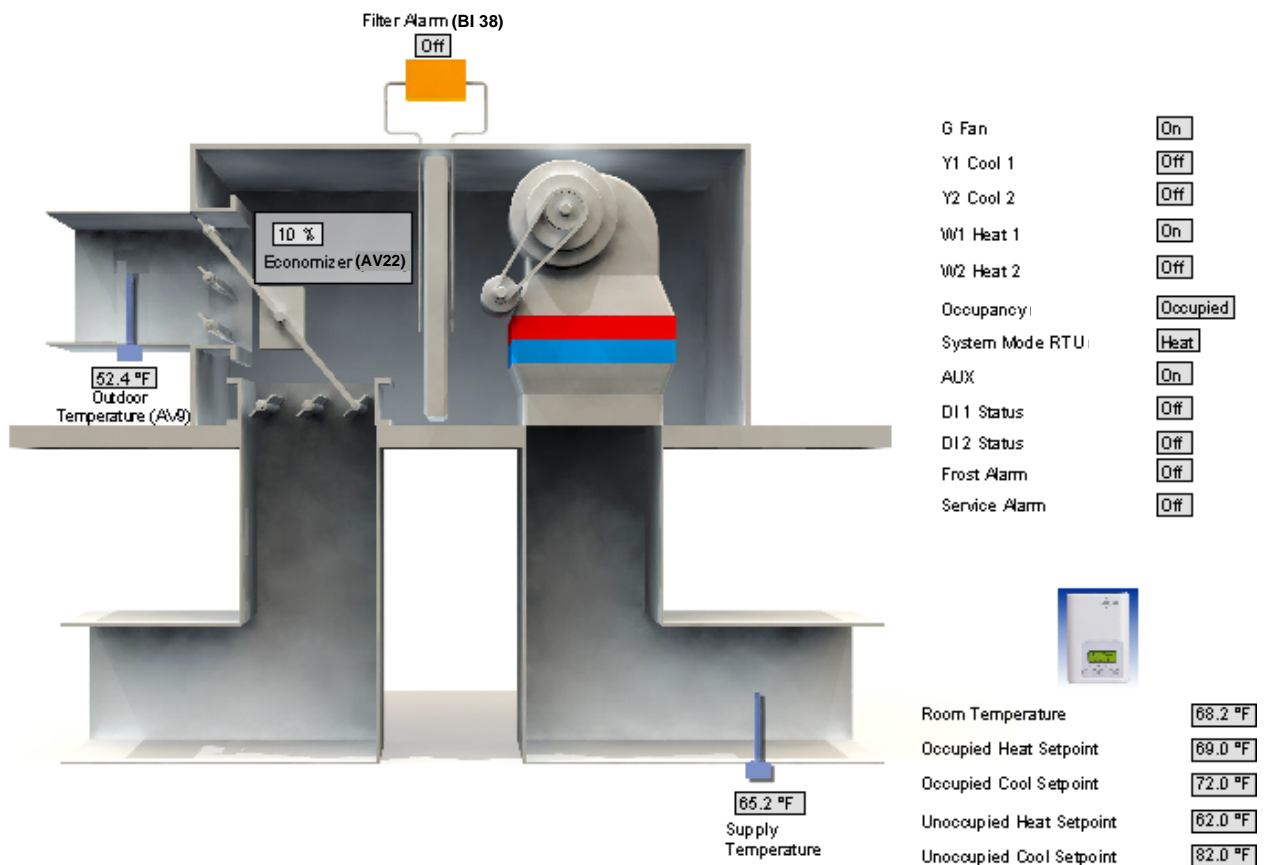




## VT76xxX Integration – Graphical User Interface (GUI) Objects

The following objects should be typically used in a GUI:

- Room Temperature (Numeric);
- Occupied and Unoccupied Heat Setpoints (Numeric);
- Occupied and Unoccupied Cool Setpoints (Numeric);
- Outdoor Temperature (Numeric);
- Supply Temperature (Numeric) (If available);
- Occupancy Command (Enum);
- Effective Occupancy (Enum);
- System Mode RTU (Enum) or System Mode HPU (Enum);
- G Fan (Boolean);
- Y1 Cool (Boolean);
- Y2 Cool (Boolean);
- W1 Heat (Boolean);
- W2 Heat (Boolean) or Reversing Valve (Boolean);
- Economizer Output (Numeric) (if available);
- Aux (Boolean);
- DI 1 Status (Boolean);
- DI 2 Status (Boolean);
- Frost Alarm (Boolean) (if available);
- Filter Alarm (Boolean) (if available);
- Service Alarm (Boolean) (if available);
- Fan Lock Alarm (Boolean) (if available);



Typical GUI for a VT7605B5028W with Economizer control

- Be sure all thermostats / controllers communicating to any single JACE are using the same PAN ID and Channel as the JACE wireless communication card found & set in the property sheet.
- Room Temperature, Outdoor Temperature and Room Humidity need to have their Boolean override counterpart object set to "Override" first if the present value needs to be written over from the network. Ex To set a network present value on the numeric "{Room Temperature" numeric object, the "Room Temperature Override" Boolean object needs to be set from Normal to Override. The controller local present value will then be derived from the wireless network instead of the present value at the controller.
- For VT72xx, VT73xx & VTR73xx, the currently selected Sequence of Operation Enumeration limits the System Mode usable Enumeration index. A change in the Sequence Of Operation Enum will set the active system mode and also restrict the usable range that a local controller can accept.
- For VT73xx & VTR73xx, Fan Mode Enumerations. Controllers will **not** accept all possible index values. VT73xx & VTR73xx fan mode input is dependent on local Fan Configuration parameter. Fan actual current value is read at Fan Status object.
- Each controller connected to a wireless network reports to the JACE with an automatic heartbeat for the local online-offline sanity. Please refer to the health status "Last Ok Time" value for the total amount of time a single controller has not updated its mandatory 3 minutes heartbeat update to the JACE.

Jace Serial Wireless Adapter LED Status Indicators	
1 x ( 200ms ) short blink	Power on
2 x ( 200ms ) short blinks	Power on and card memory initialized properly
3 x ( 200ms ) short blinks	Power on, card memory initialized properly and serial communication with the Jace main board active
4 x ( 200ms ) short blinks	Power on, card memory initialized properly, serial communication with the Jace main board active and wireless networks started successfully
4 x ( 200ms ) short blinks and 1 x ( 1500ms ) long blink	Power on, card memory initialized properly, serial communication with the Jace main board active, wireless networks started successfully and wireless communication with controllers active
Thermostat / Controller Wireless Adapter LED Status Indicators	
1 x ( 200ms ) short blink	Power on
2 x ( 200ms ) short blinks	Power on and communicating with controller
3 x ( 200ms ) short blinks	Power on, communicating with controller and there is connectivity to wireless network
4 x ( 200ms ) short blinks	Power on, communicating with controller, connectivity to wireless network and the Jace is communicating with Wireless controller
4 x ( 200ms ) short blinks And 1 x ( 1500ms ) long blink	Power on, communicating with controller, connectivity to wireless network and the Jace is communicating with Wireless controller.
System Troubleshooting Recommendations	
<ol style="list-style-type: none"> <li>1. If a controller is not detected by a JACE, verify that the LED is blinking at least 4 times. If it is only blinking twice, ensure that the PAN and Channel of the controller is the same as the Jace it must communicate with.</li> <li>2. When commissioning a network, it is recommended to use channels 15 or 25. Alternate these channels between floors.</li> <li>3. If a particular controller refuses to join the network and cannot be seen by the Jace. Please move momentarily closer to the JACE until it has joined the network and it is added to the database. It can then be re-located to its original position.</li> </ol>	

**Document Control**

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01	July 13, 2010	Initial release