



Integrating Vitrea Keypads with HomeWorks QS

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1. Overview

The VTouch Plus keypads, by Vitrea, are touch-glass keypads designed to integrate with HomeWorks QS. Integration is accomplished via IP through the VBox-Plus gateway which supports up to 50 keypads. Connections between the keypads and gateway utilize a 4-wire bus; 2 wires for communication and 2 wires for power (24 VDC). Integration supports programming for Press, Hold, Dual Action, and Double Tap button functions.

This application note is to serve as a quick start guide for integration. Additional information related to wiring and customizing the keypads can be found in the Vitrea manuals available here: <http://vitrea-sh.com/support/manuals/>

2. System Components

2.1. VBox-Plus Gateway

The VBox-Plus Gateway is a Vitrea device that interprets communication over IP between the HomeWorks QS processor and Vitrea keypads. It is critical that the integration ID of the keypads in the HomeWorks QS software and Vitrea configuration tool match. A PC, connected to the USB port on the gateway, is used to configure the keypads via the process outlined in **Section 3**.

2.2. Wiring

The VBox-Plus Gateway is wired to a 24 VDC supply via one of the two pairs of “+” and “-” terminals. The other pair of “+” and “-” terminals is used to power the keypads on that link. The two data wires connect the A (D+) and B (D-) terminals on all of the keypads to the VBox-Plus Gateway. It is recommended that a daisy-chain connection is used for the keypads.

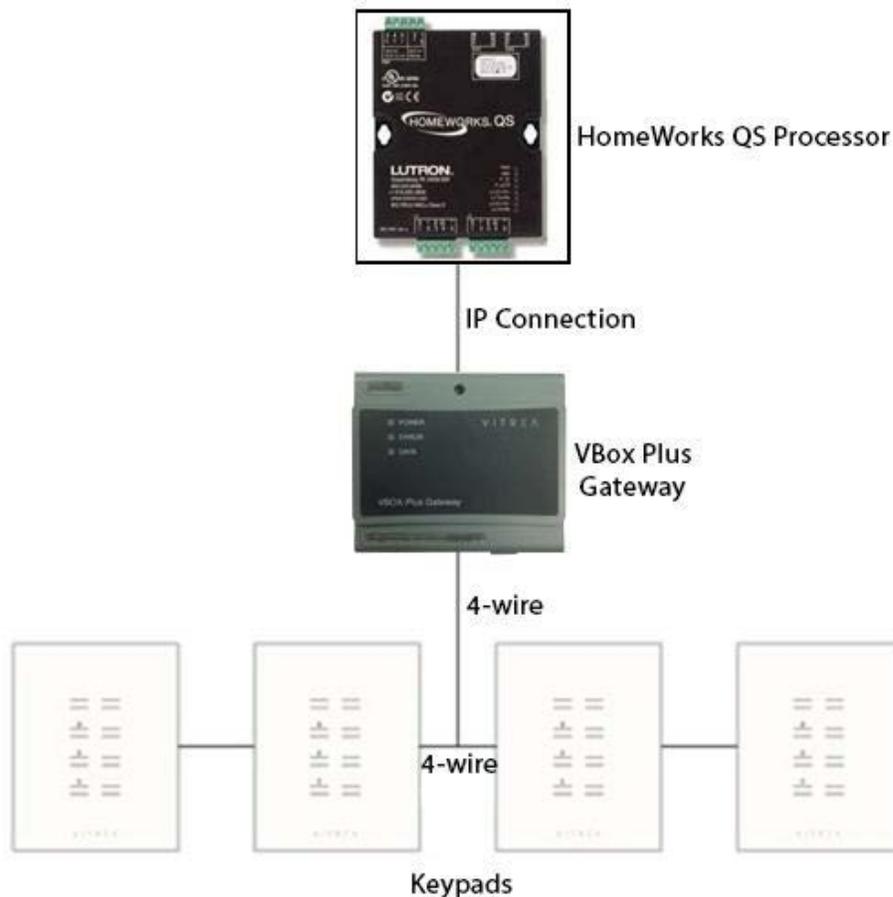


Figure 1: System Wiring

3. Vitrea Keypad Setup Using the VBox-Plus Configuration Tool

3.1. Overview

Connect a PC to the VBox-Plus Gateway, via the USB port, and use the Configuration Tool to configure the keypads and network settings. The VBox-Plus Configuration Tool may be downloaded from <http://vitrea-sh.com/wp-content/uploads/2013/10/VBOX-Plus-Configuration-Tool.zip> and requires Windows XP SP2 or Windows 7 with Microsoft.Net Framework 2 installed. Communication over the Ethernet port is terminated when a USB cable is connected to a VBox-Plus Gateway. If prompted for additional drivers, the FTDI USB-to-Serial package can be downloaded from: <http://www.ftdichip.com/Drivers/VCP.htm>.

3.2. Connecting and Configuring the System

Connect a USB cable between the PC and gateway and open the configuration tool. Using the Connection menu, select the COM port connected to the gateway from a list of available COM ports and click Connect as shown in **Figure 2**. The connection status is displayed in the lower left of the tool.

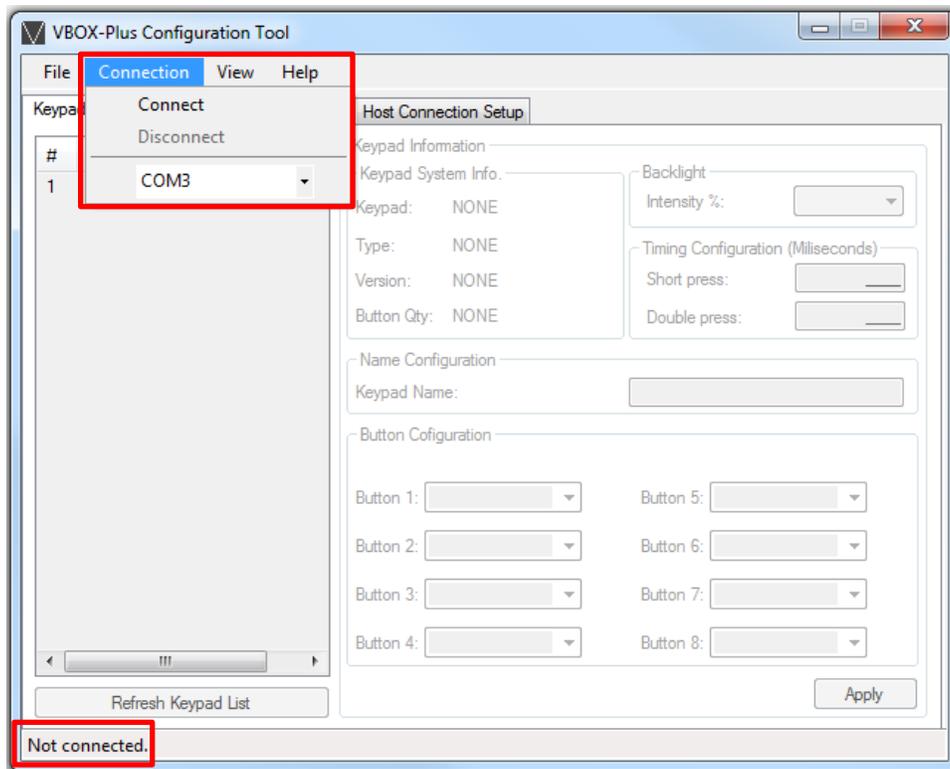


Figure 2: Connection Menu of the VBox-Plus Configuration Tool

Note: If the USB cable or power to the VBOX-Plus Gateway is disconnected during operation, reconnect to the COM port manually.

Once connected, navigate to the *System Configuration* tab. If this is a new Vitrea system, it is recommended that a full system factory reset is performed, as shown in **Figure 3**. This will restore all settings in the software to the default value and unaddress the keypads.

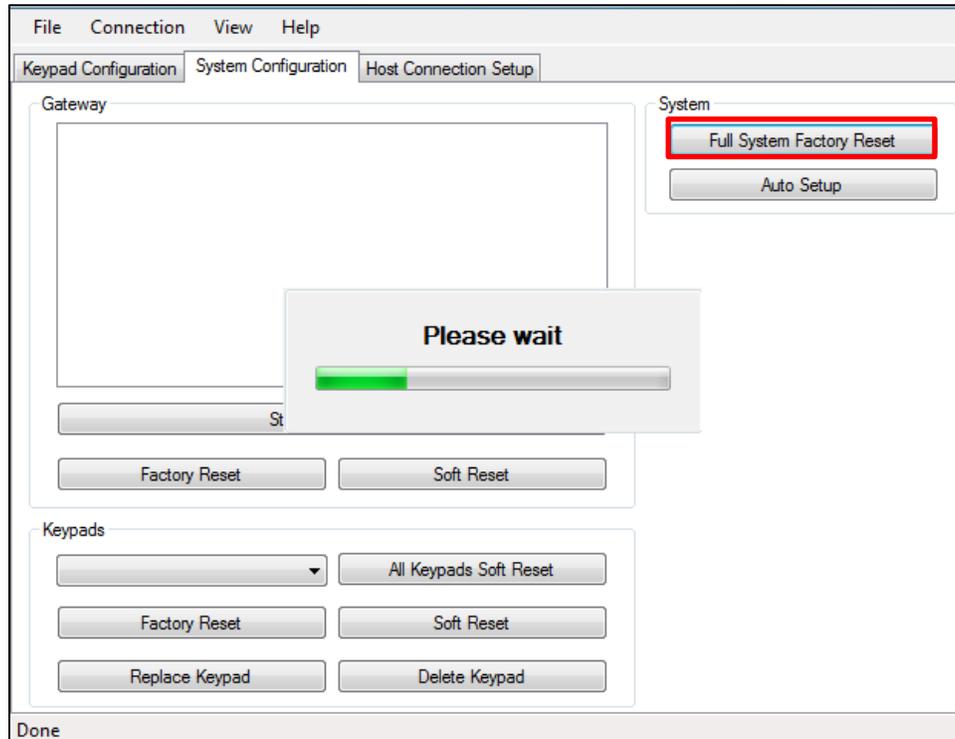


Figure 3: Full System Factory Reset

3.3. Register (address) New Keypads

Similar to activation in the HomeWorks QS software, all Vitrea keypads must be registered using the Configuration Tool. Once registration is started, all keypads which are ready to be registered in the system will flash orange LEDs. Pressing any button on the flashing keypad will register the device and sequentially assign a number from 1 to 50 in the order that the devices are pressed. This number represents the keypad in the space and therefore must match the integration ID of the programmed control in the HWQS software. To simplify the process, the starting keypad number in the sequence can be customized on the *Host Connection Setup* tab. As shown in Figure 4, enter a starting keypad number of 10001. This will assign 10001 to the first keypad that is activated, 10002 to the second, and so forth.

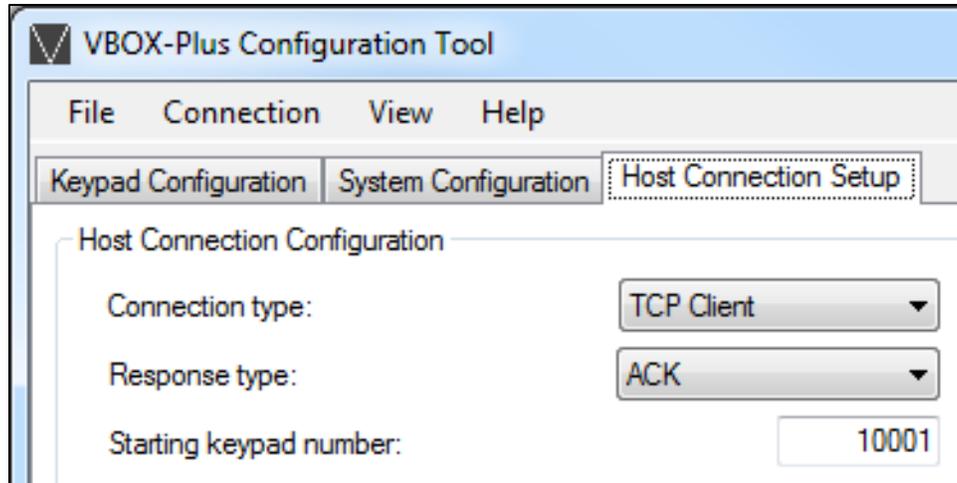


Figure 4: Setting the Starting Keypad Number

Once the starting keypad number is set, start the registration process by clicking *start registration* on the *System Configuration* tab. Touch a button on all devices in the space, taking note of the order in which the keypads are registered and thus addresses assigned to them. Click *Stop Registration* once all devices are addressed. The keypad numbering shown on the *keypad configuration* tab will start with device #1 and sequentially increase regardless of the starting keypad number entered on the host connection tab.

3.4. Configuring the Network Connection with HomeWorks QS Processors

The *Host Connection Setup* tab is where the TCP/IP information of the VBOX-Plus Gateway and HomeWorks QS processor is configured. As shown in **Figure 5**, enter the following information where the host IP settings match that of the HomeWorks QS processor:

- Connection type : select Client
- Response to host commands type : select ACK
- Starting keypad number : 10001 (This number is the first Integration ID for the virtual keypads)
- Host IP Settings : Static IP address and TCP/IP Port (default is 23) of the HWQS processor
- VBOX-Plus Gateway : Static IP address, Subnet Mask and Default Gateway IP Address

Once the settings are entered, click *Apply*.

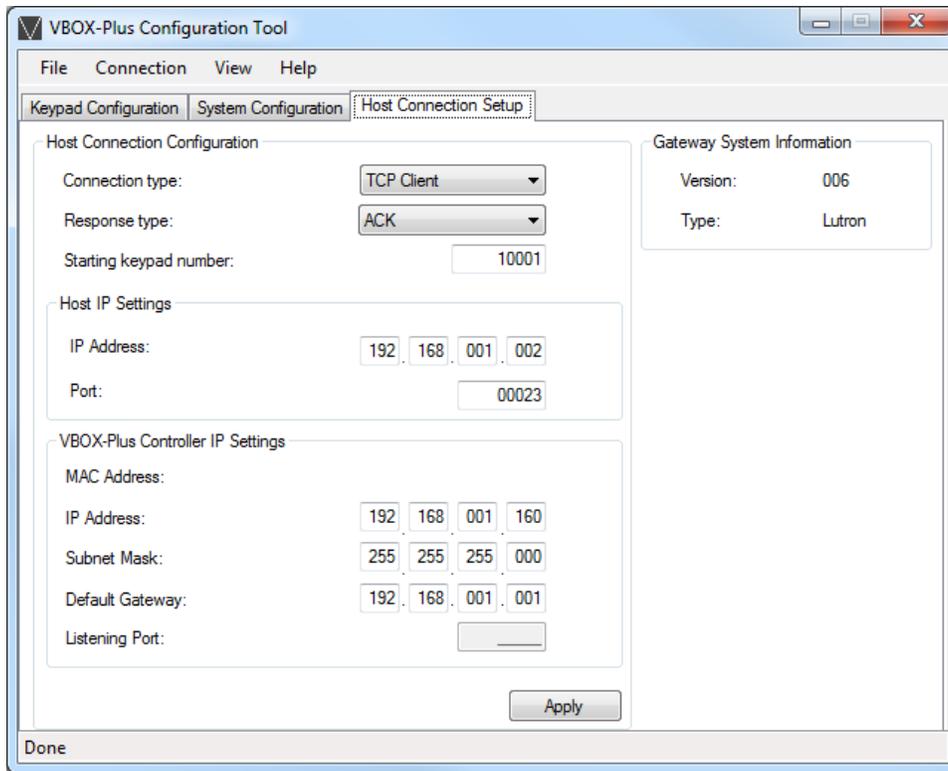


Figure 5: Configuring the Host (HWQS Processor) and VBox-Plus Gateway

4. Keypad Programming Using HomeWorks QS

4.1. Designing the System

Virtual or phantom keypads may be used to represent the Vitrea keypads in the space. If an eight button Vitrea keypad is installed that does not implement a raise and lower, a phantom keypad will need to be used as Lutron does not have an eight button device. Keep in mind, however, that phantom keypads do not show up in the HomeControl+ app. For applications where remote control of the device is required, virtual keypads must be used. The number of buttons on a phantom keypad is selected on the programming screen for the device as shown in Figure 6. A virtual device is any product added in the software but is never purchased nor activated and therefore only exists in the HomeControl+ app. Phantom keypads on the other hand do not exist in the space nor the app and are used during programming for third party integration. Virtual and phantom keypads program in the same manner as any other control.

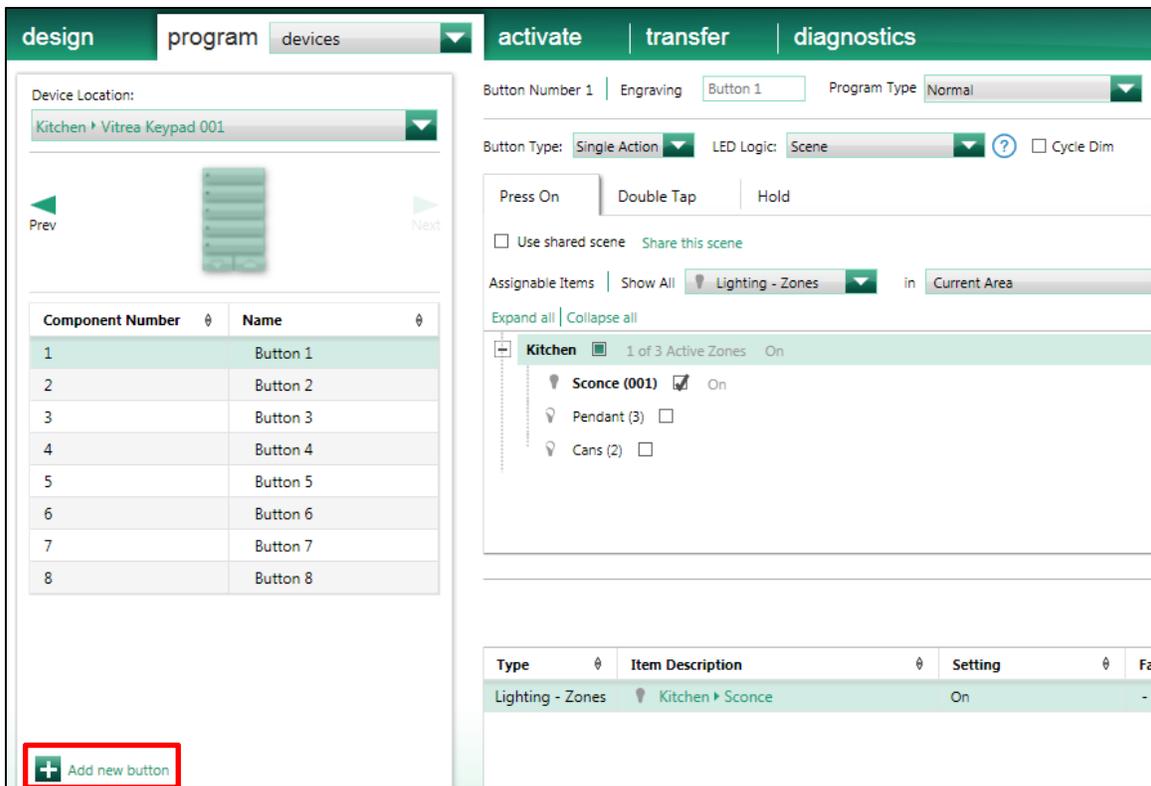


Figure 6: Phantom Keypad Button Setup and Programming

4.2. Assigning Integration IDs and a Telnet Login for the Vitrea Devices

Communication to and from the VBox-Plus Gateway and the HWQS Processor is accomplished using Lutron integration strings. The Gateway both interprets and sends these strings to update LED statuses and complete actions in the space. Since Lutron integrations strings use the device IDs to map each control, the IDs created during addressing using the Vitrea Configuration Tool must match the control's ID in the HWQS software. The integration IDs can be changed in the HWQS software to match using the *Configure Integration* window under the *Tools* menu (Figure 7). As mentioned in Section 3.3, the first keypad should be 10001 and will increment in the order by which they were addressed.

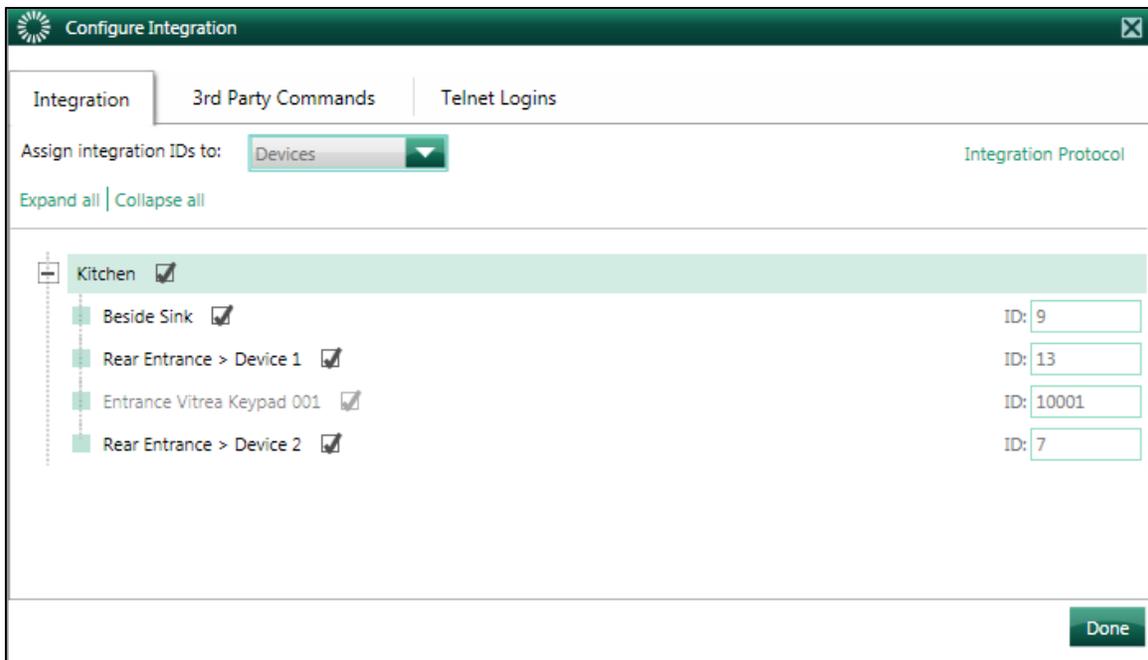


Figure 7: Configure Integration Window

Communication with the VBox-Plus Gateway requires a telnet login. From the *Configure Integration* window, on the *Telnet Logins* tab, create a login with the username and password set to “VITREA”.

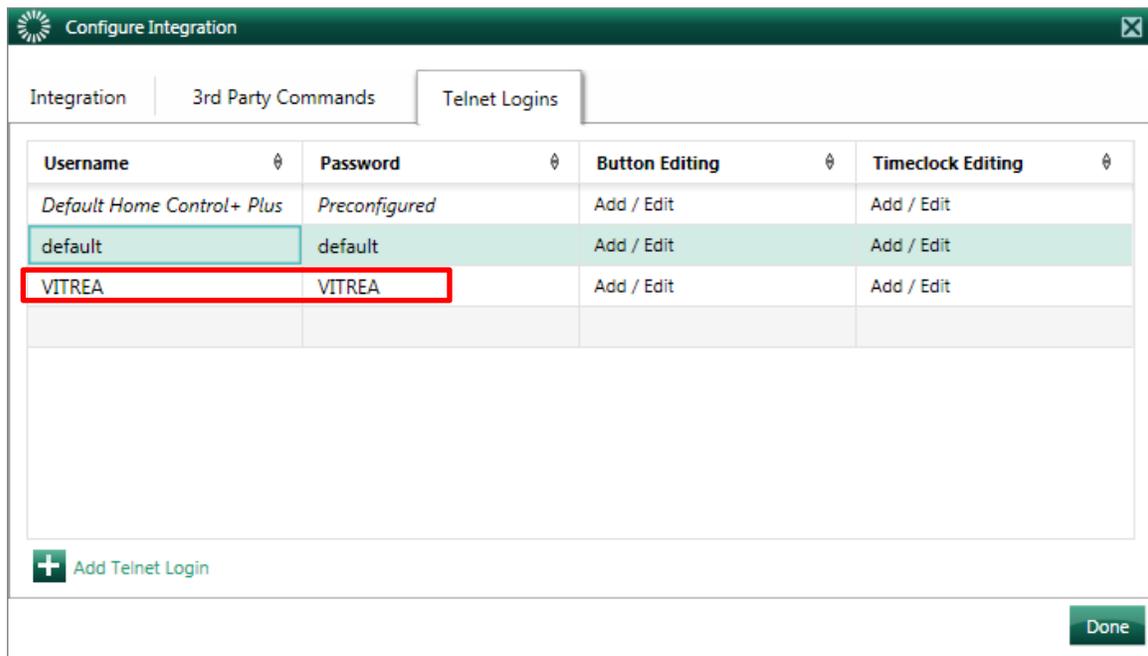


Figure 8: Vitrea Telnet Login

4.3. HomeWorks QS Processor IP Settings

To preserve communication between the VBox-Plus Gateway and HomeWorks QS, a static IP address is required for the processor. The configuration settings created in **Section 3.4** for the host, which is the HWQS Processor, must match the settings in the HWQS software. Static IPs for the HWQS Processor are set on the *activate* tab by unchecking the *DHCP* option and entering the information manually. Information related to the IP of the VBox-Plus Gateway is not needed.

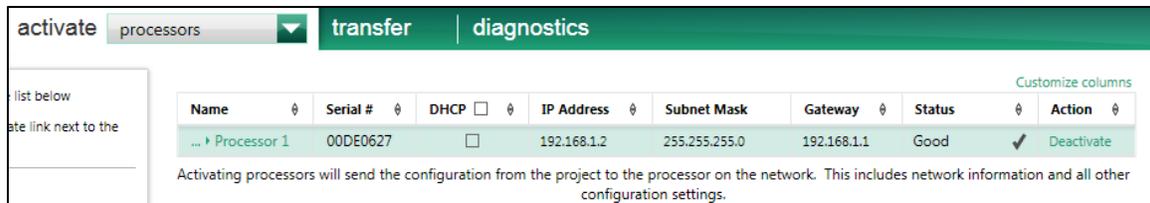


Figure 9: Setting a Static IP for the HWQS Processor

5. Diagnostics

Diagnostics can be performed using the HomeWorks QS software via terminal or the Vitrea Configuration Tool via the diagnostics window. The Vitrea diagnostics window can be used to perform the following:

- Monitor the messages passing between the program and VBOX-Plus Gateway during the configuration process
- Send commands to the VBOX-Plus Gateway manually
- Change the status of one or all of the LED's on any selected keypad
- Obtain the touch status of keys (buttons) on any selected keypad

Diagnostics is both launched and closed from the *View* menu option. Click the *Get Status* button (Figure 10) to display the status of the selected keypad (using the dropdown) connected to that Gateway.

Example Message

M:S:01:7:P - Keypad 1, Button 7, Press

M:S:01:7:R - Keypad 1, Button 7, Release

M:S:01:7:L - Keypad 1, Button 7, Long press/Hold

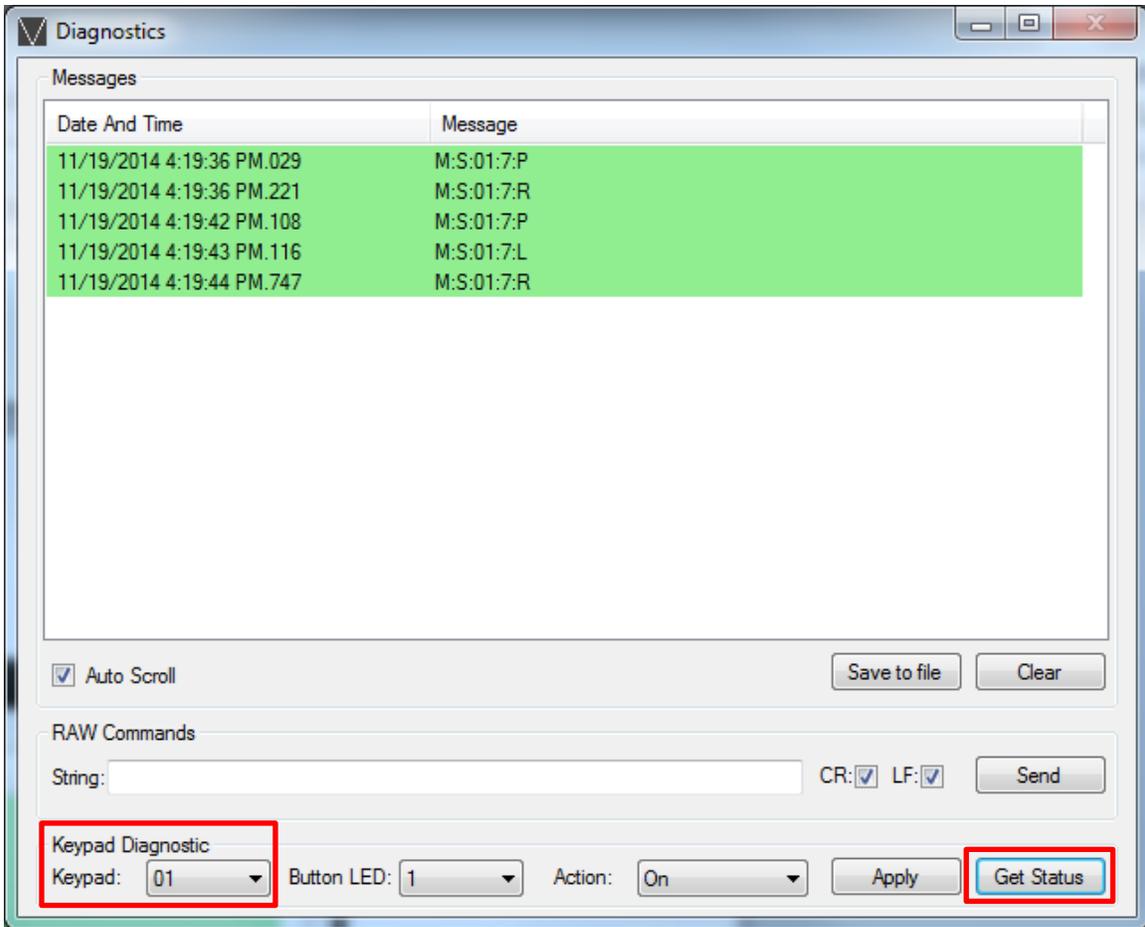


Figure 10: Vitrea Diagnostics Window