Alcorn McBride Inc.
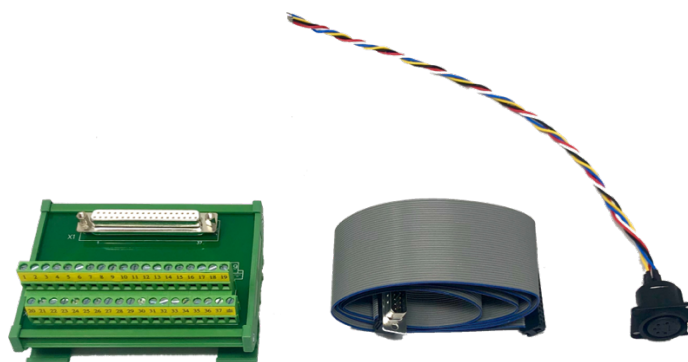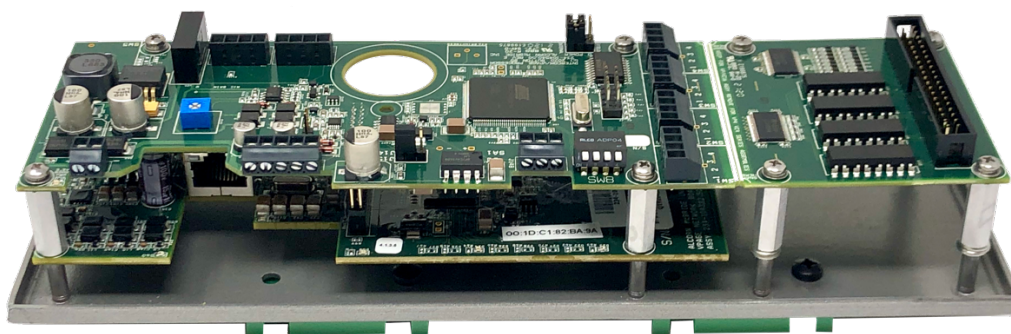
V-Page VP16K

16-ZONE INTELLIGENT PAGING STATION KIT

User's Guide

July 26, 2021

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WELCOME!

Thank you for purchasing the Alcorn McBride V-Page paging station!

What makes V-Page truly special is its ability to provide facility-wide paging using industry-standard Dante or AES67 network audio and the Q-Sys™ PA Station Protocol.

The V-Page VP16K supports up to 16-zones of paging and is designed to be mounted inside a custom console. It includes all of the accessories needed to wire up your custom-installed buttons, indicators, and microphone. Zone assignments, button and indicator behaviors, and zone priorities are all easily configured within in the Q-Sys Designer and Administrator software.

For easy and reliable installation, a single Ethernet (Cat5e or greater) cable carries audio, power, control and monitor data between the V-Page station and the Q-Sys system. This allows you to incorporate as many as 256 V-Page stations using a single Q-Sys core by simply connecting them to Power Over Ethernet (PoE) network switches. For stations that are far from the equipment room, V-Page even supports an SFP network transceiver (not included) for reliable long-distance communications.

For applications where you need a compact paging station solution that's ready to go out of the box, be sure to check out our V-Page VP4X paging station. The V-Page VP4X is a four-button station that comes with a push-to-talk microphone and integrated mounting bracket. The station is just the right size for a standard 4-gang wall box, making it a fantastic off-the-shelf paging solution.

PRODUCT FEATURES

The V-Page VP16K offers a wide range of features including:

- 16 Configurable Paging Zone Button Inputs
- 16 Indicator Outputs
- Dante & AES67 Network Audio
- Seamless Q-Sys Integration
- Audio, Control, and Power over Ethernet
- SFP Ethernet Support
- Adjustable Mic Gain
- Configurable LED Brightness
- Mounts on a Standard DIN Rail

TECHNICAL SUPPORT

Now that we've tantalized you with all of the wonderful things this product can do, I'll bet you're chomping at the bit to flip all the switches and push all the buttons. Not so fast! Before we get to the fun stuff, we just want to take a moment to remind you that we are here to help. Chances are that you're building something really cool and we want you to have access to the resources and support you need to be successful.

To start, you'll find a wealth of information on our website. This includes Application Notes that give you detailed documentation and examples for how this product is used in common types of themed entertainment projects. You'll also find the latest downloads for software, firmware, drawings, 3D models, cutsheets, and other helpful resources on our Support page. The Knowledge Base is especially handy for common questions and helpful troubleshooting tips. And last, but certainly not least, you always have our friendly and mildly entertaining staff available by email or telephone.

Training	https://www.alcorn.com/training
Application Notes	https://www.alcorn.com/applications
Support Resources	https://www.alcorn.com/support
Knowledge Base (FAQ)	https://alcornmcbride.zendesk.com/hc/en-us
Email Support	support@alcorn.com
Telephone Support	(407) 296-5800 (Mon-Fri 9am-6pm EST)

GETTING STARTED

Alright, time to roll up your sleeves and get to work! This section will guide you through basic concepts that will help you get on your way with V-Page.

Each V-Page station communicates with a Q-Sys Core via network connection using a plugin. To install this plugin, you need to download the file from our website (https://alcorn.com/products/vp16k/) and copy and paste the component to your design.

You must be running Q-Sys Firmware 7.0.0 or above and V-Page firmware 2.00 or above for the Plugin to work. To learn how to do a firmware update please refer to the firmware update section of this manual.

There are three steps that need to be completed to ensure that V-Page and Q-Sys function together properly.

1.   Hardware Installation
2.   Linking to a Q-Sys Core
3.   Audio Configuration

HARDWARE INSTALLATION

a.   Make sure that all the dip switches are in the OFF Position
b.   Power on V-Page by connecting Ethernet port to the Power Over Ethernet (PoE) switch and wait 20 seconds for V-Page unit to initialize. If no Power Over Ethernet (PoE) is available, refer to the VP16K Hardware section to learn about using an external power supply.
c.   Be sure to have your V-Page units on the same network as the Q-Sys Core

LINKING TO A Q-SYS CORE

a.   Single click the V-Page Plugin block for the station you would like to link and ensure your property settings are configured. (Refer to Plugin Properties section of this manual).
b.   Connect to the Q-Sys Core and then double click to open the plugin.
c.   Toggle Dip Switch #1 from OFF to ON and then OFF again.
d.   On the Q-Sys plugin, on the top right corner click "Link".

Once the station is linked to the Core the station will re-boot. At this time your plugin will be "Online" and the LED will light up.
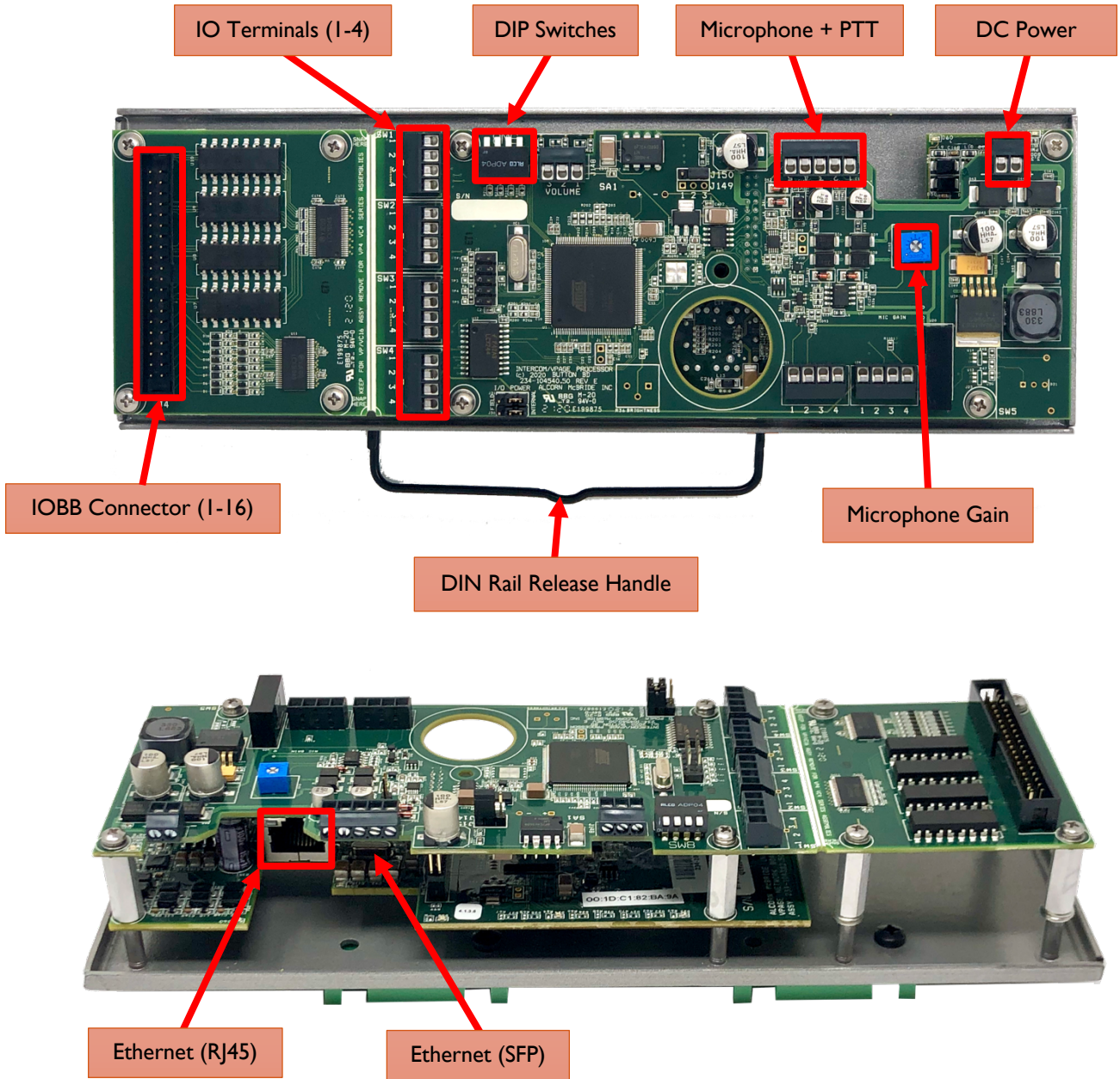
NOTE: Make sure that you have assigned a gateway in the Q-sys core and that your network infrastructure allows for both broadcast and multicast traffic.

AUDIO CONFIGURATION

a.   Launch the Audinate Dante Controller software.
b.   Click on the "Device Info" tab and double click on the V-Page station.
c.   Enable AES67 under the AES67 tab and reboot the interface.
d.   Once the interface has been rebooted, it's time to create an AES67 multicast flow. Click on "Add Multicast Flow".
e.   Check the "AES67 Flow" box. Add your channel into the new flow. Click "Create".
f.   In Q-Sys Designer, double click your AES67 Receiver Module and pick the new Stream Name.

HARDWARE INFORMATION

HARDWARE OVERVIEW

IO Terminals (1-4)

DIP Switches

Microphone + PTT

DC Power

IOBB Connector (1-16)

Microphone Gain

DIN Rail Release Handle

Ethernet (RJ45)

Ethernet (SFP)

ZONE STATUS LEDS

On a V-Page VP16K, an indicator output is available for each zone select input. Starting with Plugin v2.15.00, you now have the option to select the following Paging Mode States: Standard, APS, or Custom. Prior to Plugin v2.15.00, all VPages exhibited the Standard Mode functionality. Standard Mode is still the default mode selected while setting up a VPage-VP16K. To change this mode, adjust the Paging Mode option in the Plugin Properties tab.

Here are the various states of that output and what they mean:

Descriptions	Standard Mode LED States	APS Mode LED States	Custom Mode LED States
Idle Zone Available	On	Off	Configurable in Plugin
Idle Zone Selected	Fast Blink	On	Configurable in Plugin
Active Zone Available (Can Interrupt)	Off	Slow Blink	Configurable in Plugin
Active Zone Selected	Fast Blink	On	Configurable in Plugin
Zone Busy (Unavailable to Select)	Off	Fast Blink	Configurable in Plugin
Button Unused	Off	Off	Off
Link Active	All Chasing (1, 2, 3…)	All Chasing (1, 2, 3…)	All Chasing (1, 2, 3…)
Unconfigured/Unable to Connect to QSYS Core	All Slow Blink	All Slow Blink	All Slow Blink
Firmware Update Mode	Fast Pattern Blink	Fast Pattern Blink	Fast Pattern Blink

NOTE: These indicators can be overridden using the Breakaway feature of the V-Page plugin. This allows you to take manual control of the LED status using IO pins in Q-Sys designer.

CONFIGURATION OF DIP SWITCHES

The configuration DIP switches are located on the side of the V-Page. Changing the states of these switches, either during power-up or normal operation, can alter the behavior of the V-Page. The default position for all the switches for normal operation is OFF (UP).

V-Page can power up in one of the following modes (based on switches configuration):

- Normal Mode
- Factory Test Mode
- Firmware Update Mode

During power up, the state of some switches (ON or OFF) may result in action. During runtime, toggling the DIP switch (OFF => ON => OFF) may perform a specified action. See the descriptions below.
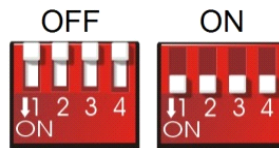
DIP SWITCH 1: LINK MODE

RUNTIME – LINK:

OFF => ON => OFF: Activate/deactivate Link. Toggle once to activate, toggle again to deactivate. Link will also exit on successful completion or will auto-exit after 60 seconds (default).

Link can be used in conjunction with Q-Sys to assign station ID, static IP/Port and Q-Sys feedback information to the V-Page. In a sense, this pairs the V-Page with a specific Q-Sys Core.

When the Link mode is active, LEDs will illuminate one at a time in a sequential chasing pattern.

DIP SWITCH 2: FIRMWARE UPDATE MODE / RESET FACTORY DEFAULTS

POWER UP – FIRMWARE UPDATE MODE:

ON: Enter Firmware Update mode. In this mode of operation, V-Page disregards all its settings and the rest of the DIP switches and uses a default IP of 192.168.0.254. Web server serves up Firmware Update page. For a detailed explanation on Updating V-Page firmware, see the Firmware Update section.

To exit Firmware Update Mode, return the switch to OFF position and perform a power cycle.

OFF: Default state of the switch for normal operation.

NOTE: It's advised to use AMI Terminal to invoke the firmware update. The V-Page will enter the firmware update mode on the last known IP instead of fixed 192.168.0.254

RUNTIME – LOAD FACTORY DEFAULTS (IN NORMAL OPERATION MODE ONLY):

OFF => ON => OFF: Perform factory defaults. All LEDs will light up solid RED for a few seconds, then V-Page will perform reset to defaults. Any stored settings will be erased from non-volatile memory and restored to their factory defaults. This affects Dante settings as well.

NOTE: Loading Factory Defaults will erase all V-Page settings!!

DIP SWITCH 3: FACTORY TEST MODE

POWER UP – FACTORY TEST MODE:

ON: Used for Factory Testing purposes only.

OFF: Default state of the switch for normal operation.

NOTE: Firmware Update DIP Switch 2 must be OFF!

NOTE: Factory Test Mode is mainly used for troubleshooting. It is NOT a requirement to program the V-Page as all the parameters can be programmed while operating in the normal mode.

NOTE: While in Test Mode, V-Page will not fully operate as a paging station.

DIP SWITCH 4: SPARE (NOT IN USE)

This DIP Switch is currently not in use.
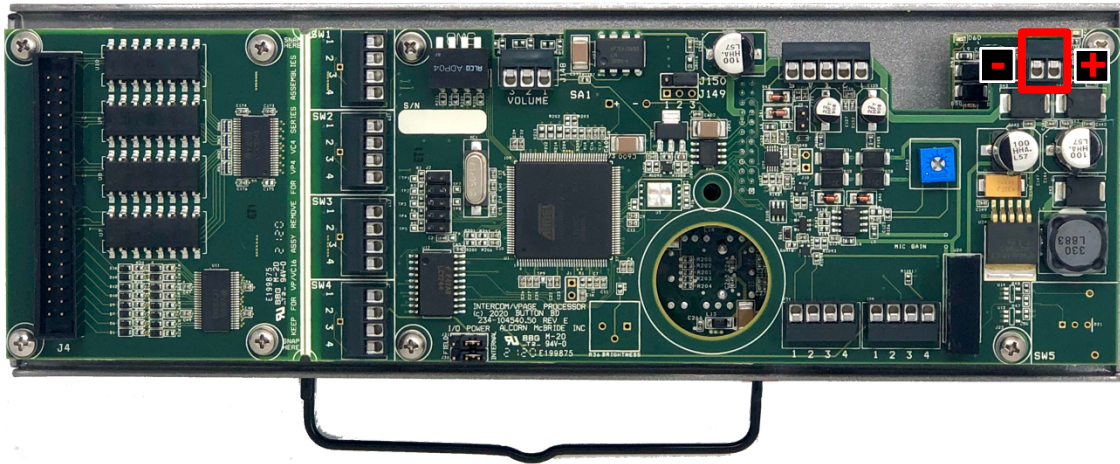
POWER UP/RUNTIME:

ON: Not in use.

OFF: Default state of the switch for normal operation.

CONNECTORS

POWER INPUT

An external power input is provided if you decide not to use the Power-Over-Ethernet (POE) feature. The Power connector pinout is shown circled in red below.
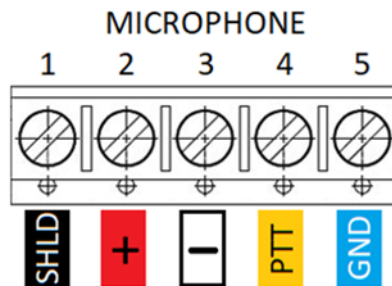
The power input accepts 5VDC to 37VDC at 1A Max.

MICROPHONE INPUT

The Microphone connector pinout is shown below. Pin numbers are also printed on the bottom of the PCB.

This input is designed for dynamic microphones and also includes a Push-to-Talk (PTT) input.

The following 5-pin XLR harness comes with the V-Page VP16K and is wired like so:

Phoenix Connector	Wire Color Code	5-Pin Female XLR
1	BLACK	1
2	RED	2
3	WHITE	3
4	YELLOW	4
5	BLUE	5

ETHERNET (RJ45)

A standard RJ-45 Ethernet Jack is used for the network connection and Power Over Ethernet (PoE) power.

ETHERNET (SFP)

A small form factor pluggable (SFP) transceiver connector is available to provide support for a fiber-optic alternative to the RJ45 port. Both Single-Mode and Multi-Mode modules are compatible. Make sure that the same SFP module model is used on both ends of the fiber optic connection to ensure compatibility.

IO TERMINALS (1-4)

If your custom paging station requires 4 buttons/indicators or less, it's very simple to interface directly to the IO terminals located on the VP16K main board. The Button inputs require a simple contact closure between pins 1-2 to activate. The lamp outputs apply +12VDC across the terminals LAMP (-) and LAMP (+) to power your LED indicators. These terminals are boxed in red.

If you're only connecting to these 4 terminals, you can even break off the circuit board at the dotted blue line if the VPage-VP16K needs to fit into a smaller space.
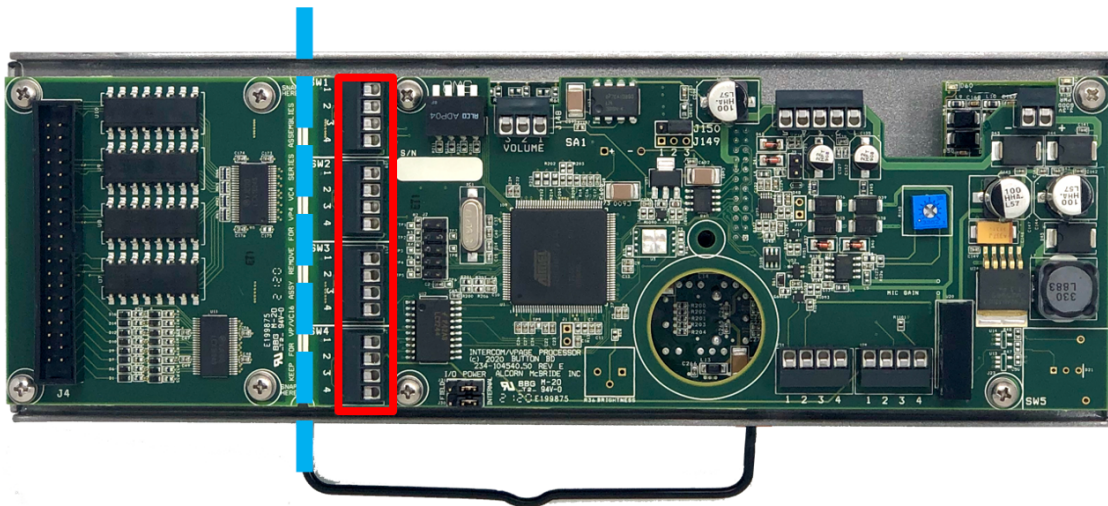
The pinout of these terminals is as follows:

SW1	
BUTTON 1 (-)	1
BUTTON 1 (+)	2
LAMP 1 (-)	3
LAMP 1 (+12V)	4

SW2	
BUTTON 2 (-)	1
BUTTON 2 (+)	2
LAMP 2 (-)	3
LAMP 2 (+12V)	4

SW3	
BUTTON 3 (-)	1
BUTTON 3 (+)	2
LAMP 3 (-)	3
LAMP 3 (+12V)	4

| SW4	
BUTTON 4 (-)	1
BUTTON 4 (+)	2
LAMP 4 (-)	3
LAMP 4 (+12V)	4

IOBB INTERFACE (1-16)

If your custom paging station requires 4-16 buttons/indicators, you must use the included IOBB expansion interface that comes included with your VP16K paging station kit. The Phoenix terminals of the IOBB make it easy to terminate your externally mounted pushbuttons and indicator lamps.

Here is the pinout of the IOBB terminals:

| IOBB Terminal Pinout			
BUTTON 1	1	BUTTON 9	20
BUTTON 2	2	BUTTON 10	21
BUTTON 3	3	BUTTON 11	22
BUTTON 4	4	BUTTON 12	23
BUTTON 5	5	BUTTON 13	24
BUTTON 6	6	BUTTON 14	25
BUTTON 7	7	BUTTON 15	26
BUTTON 8	8	BUTTON 16	27
BUTTON COM	9	BUTTON COM	28
BUTTON COM	10	LAMP 9 (-)	29
LAMP 1 (-)	11	LAMP 10 (-)	30
LAMP 2 (-)	12	LAMP 11 (-)	31
LAMP 3 (-)	13	LAMP 12 (-)	32
LAMP 4 (-)	14	LAMP 13 (-)	33
LAMP 5 (-)	15	LAMP 14 (-)	34
LAMP 6 (-)	16	LAMP 15 (-)	35
LAMP 7 (-)	17	LAMP 16 (-)	36
LAMP 8 (-)	18	LAMP GND (-)	37
LAMP GND (-)	19		

NOTE: The lamp outputs are optically isolated, capable of sinking up to 50mA at 30VDC max each.
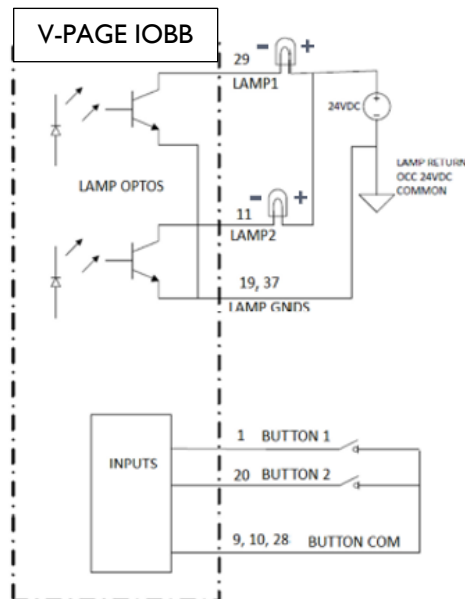
ACCESSING BUTTONS ACROSS MULTIPLE VPAGE-VP16K STATIONS (16+)

What if you need more than 16 buttons at a single console but still want just one microphone input? A single VPage-VP16K only provides 16 buttons. But, by tying multiple VP16K together, you can achieve as many buttons as you need in a single location.
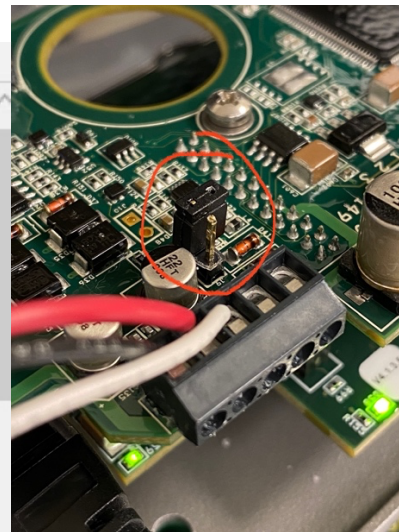
As an example, we need a VPage station with 25 buttons at the attraction's control tower. We'll physically install (2) VPage-VP16K (each providing 16 buttons, so 32 total) and physically wire up our gooseneck microphone to just one of those stations. Then, in QSYS Designer, we'll wire the single AES67 stream from the mic input to BOTH station audio inputs on the Zone PA Router. It's as easy as that!
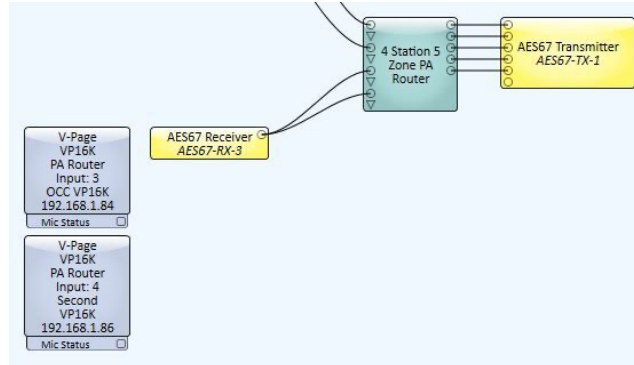
You will want to have all of your VP16K in "Zone Button" PTT Mode. This is set up in the VPage Paging Station Properties tab of each plugin instance. In Zone Button PTT Mode, as you press and hold a button, that activates the microphone and allows audio to flow to that specific audio zone. If you are in Mic Button PTT Mode, this setup will not work.

You will also want to make sure Jumper J9 is off on the VPage-VP16K that the gooseneck mic is wired to. This ensures that the mic is always hot no matter if a button is currently pressed or not. If Jumper J9 is on, this method of using multiple VP16K will not work. (Jumper J9 circled below in Red)

NETWORK ARCHITECTURE

V-Page is part of a system consisting of a Q-Sys Core, network hardware, and the V-Page stations themselves.

A single network connection handles both control and audio transport this connection can either be via CAT5e Ethernet cables or Single-Mode/Multi-Mode Fiber Ethernet cables if the length exceeds 300 ft.

When using CAT5e, power can be provided directly over the Ethernet connection via PoE. Since the SFP connection is not capable of providing power, a local DC power supply is required whenever you're using this interface for a fiber-based Ethernet connection.

One important thing to understand is that each V-Page station has two network interfaces that are switched into a single physical port; one for Control and the other for Network Audio (Dante or AES67). Also, Q-Sys cores handle AES67 and Dante very differently. AES67 can be utilized on the same network as Q-Lan, while Dante requires a dedicated Dante IO card to be installed within the Q-Sys core.

With all of these factors in mind, here are the network architectures we recommend depending on which audio network protocol you choose to use.

AES67 NETWORK ARCHITECTURE

The biggest advantage of using AES67 is that it co-exists peacefully with the native Q-Lan protocol used by Q-Sys DSP cores. This means that you can interface to both the audio and control interfaces of the V-Page stations simply by connecting one of the Q-Lan ports to the V-Page network.
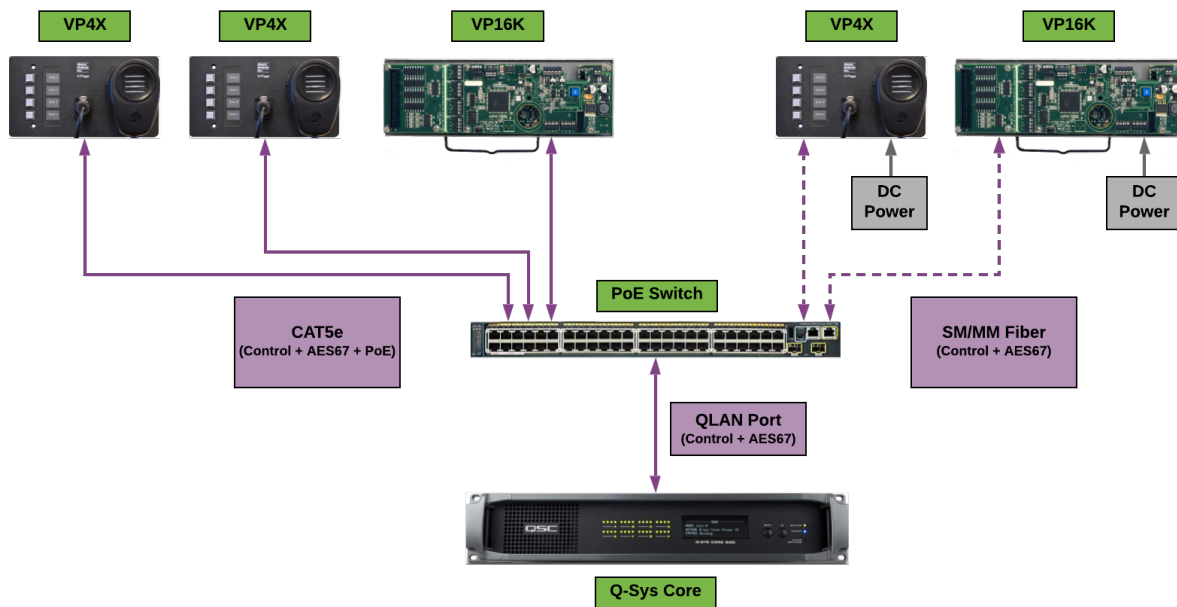
DANTE NETWORK ARCHITECTURE

This is the recommended method where Dante Audio and Control are using the same network switch. Q-Lan and Dante require a different QoS configuration while the AUX Network of the Q-Sys core acts as a generic ethernet port. This makes the AUX connector the ideal path to interface to the Control interface of the V-Page stations. Dante traffic must be routed to a separate network connection on the Dante IO card within the Q-Sys core.
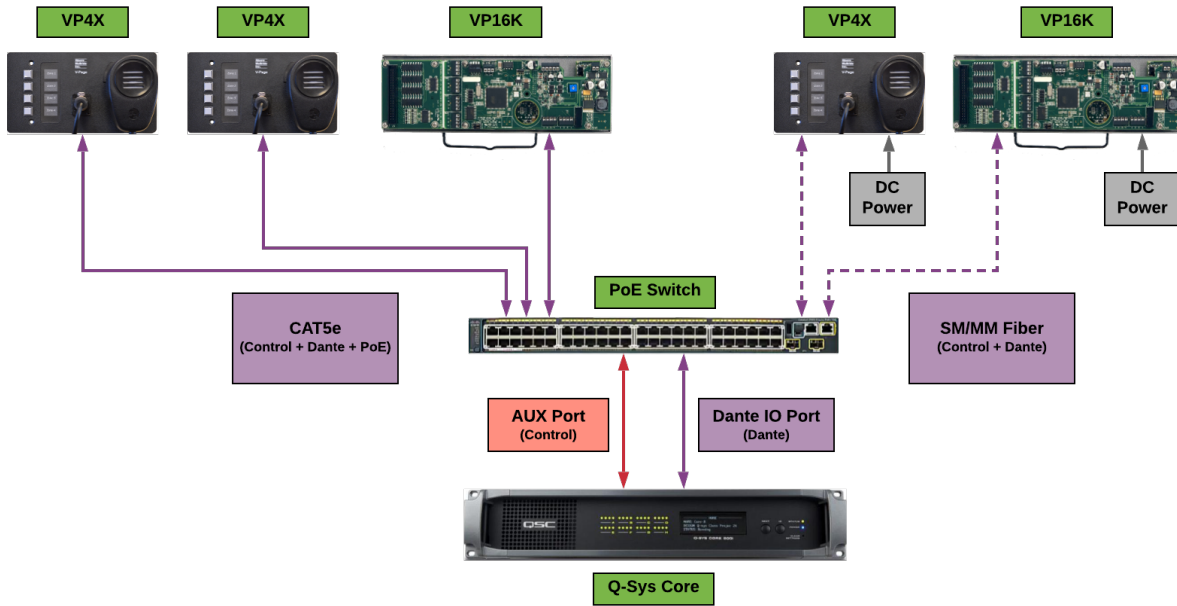
Q-SYS CONFIGURATION AND PLUGIN

V-Page communicates with a Q-Sys system to enable paging zones, determine zone priority, etc. This is accomplished using the built-in Q-Sys Zone PA Router. The V-Page station can also be configured directly from within a Q-Sys plugin, and then transferred to the physical station when it is "Linked" to the Q-Sys Core.

We utilize the built-in Q-Sys paging station capabilities of the station router to handle the PA routing of audio and zone selection. With Q-Sys you can assign zones to different outputs Q-Sys Administrator. For more details on this topic please refer to the help file on the Q-Sys Designer software.

Note: All Dante devices use PTP for clock synchronization and require Q-Sys core's PTP config to be set to domain 0. IEEE 1588 Priority 1 is set to 249 and Priority 2 is set to 112 for BMC purposes. PTP information (domain, priorities, etc) are not configurable in the VPage units.

| V-Page Paging Station Properties	
Model	VP16K
PA Router Input	1
Station Name	Lefty
Control IP Address	192.168.1.80
Control Subnet Mask	255.255.255.0
Control Gateway	192.168.1.1
Audio Mode	AES67
Audio IP	Static
Audio IP Address	192.168.1.81
Audio Subnet Mask	255.255.255.0
Audio Gateway	192.168.1.1
PTT Mode	Mic Button
Paging Mode	APS
Pulse Duration	1000
Show Debug	No

- **Model:** The user can select the proper model name of each station.
- **PA Router Input:** The input number to the PA Router component.
- **Station Name:** User defined name of each station.
- **Control IP Address:** The network control IP address entered by the user or fully populated once an IP is being assigned by a switch in DHCP mode.
- **Control Subnet Mask:** The subnet mask of the control network of the unit.
- **Control Gateway:** The gateway settings of the control network.
- **Audio Mode:** User defined setting if hardware allows it. Can either be Dante or AES67.
- **Audio IP:** The IP address of the audio network of the unit entered by the user or fully populated once an IP is being assigned by a switch in DHCP mode.
- **Audio Subnet Mask:** The subnet mask of the audio network of the unit.
- **Audio Gateway:** The gateway settings of the audio network.
- **PTT Mode:** Mic Button Mode (push and hold the button on the microphone to page) or Zone Button Mode (push and hold the zone button on the VPage Station to page).
- **Paging Mode:** This mode selection dictates how the buttons light up when paging zones are in particular states. See the Zone Status LEDs section of this manual for details.
- **Pulse Duration:**
- **Show Debug:** The amount of time in milliseconds for all the buttons once is selected.

If you select "Custom" for the Paging Mode, you get to setup your own paging mode "look" by adjusting the following options:

Paging Mode	Custom
Zone Idle State	On
Zone Idle Select State	Fast Blink
Zone Select Timeout	3
Zone Active State	On
Zone Active Select State	Fast Blink
Zone Busy State	On
Slow Blink Rate	2000
Fast Blink Rate	500
Pulse Duration	1000
Show Debug	No

- **Zone Idle:** Zone available for selection that no other station is currently paging to.
- **Zone Idle Select:** When you select a zone that was previously idle.
- **Zone Select Timeout:** The amount of time in seconds set by the user before going back to the default zone set by the Default button in the plugin.
- **Zone Active:** Page is in progress from a lower priority station, so interruption is possible with your own station.
- **Zone Active Select:** When you select a zone that a station with a lower priority is paging to.
- **Zone Busy:** Page in progress from a higher priority station, or station with the same priority (or your own station you are paging from!)
- **Slow Blink Rate:** In milliseconds, the rate of the slow blink (higher the number, slower the blink)
- **Fast Blink Rate:** In milliseconds, the rate of the fast blink (lower the number, faster the blink)
- **Pulse Duration:** In milliseconds, how long the breakaway pulse feature stays on for.
- **Show Debug:** If set to "Yes", show debug mode is accessible in the Plugin while connected to a QSYS Core. Helpful for troubleshooting.
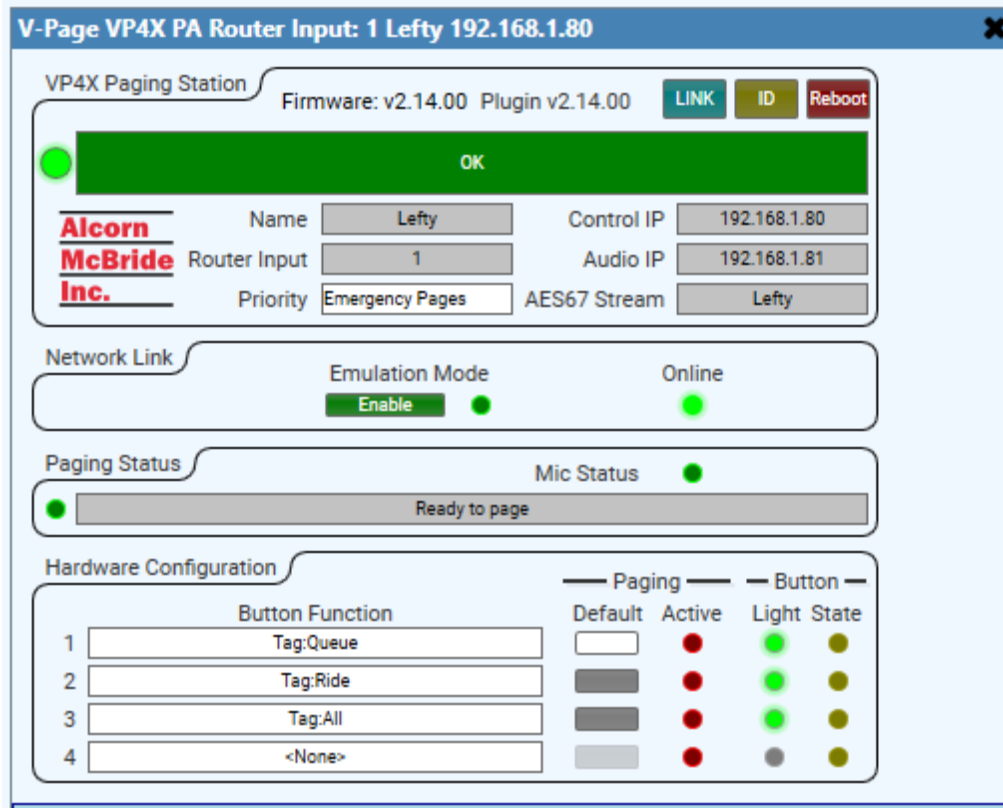
1. **Title Bar:** Basic plugin information, including control IP address. (VP4X pictured here, the VP16K plugin is essentially the same).
2. **Firmware:** Current V-Page station firmware version.
3. **Plugin:** Current Plugin version
4. **Link:** Use this button to associate a physical station with the plugin component (refer to "Linking a Station" section on the next page).
5. **ID:** Pressing the ID Button will make the front buttons of the V-Page station blink momentarily so you can visually verify what station the plugin is linked to.
6. **Reboot:** When pressed, this button software reboots the V-Page Station.
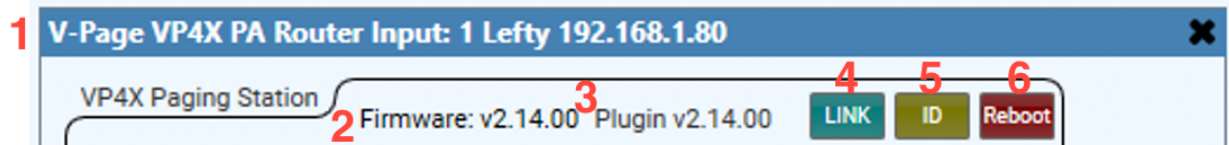
7. **Status Bar:** A graphic representation of the V-Page connection status. New with Plugin v2.15.00, this bar will also indicate if you have a firmware/plugin mismatch.
8. **Station Name:** A unique descriptive name to differentiate from other V-Page stations.
9. **Router Input:** The station ID, corresponding to the station number on the PA Router.
10. **Priority:** Station priority according to the PA settings in Q-Sys Administrator.
11. **Control IP Address:** The control IP Address of the V-Page station.
12. **Audio IP Address:** The IP Address of the audio stream.
13. **Audio Stream:** The name of digital audio stream used (Dante or AES67).
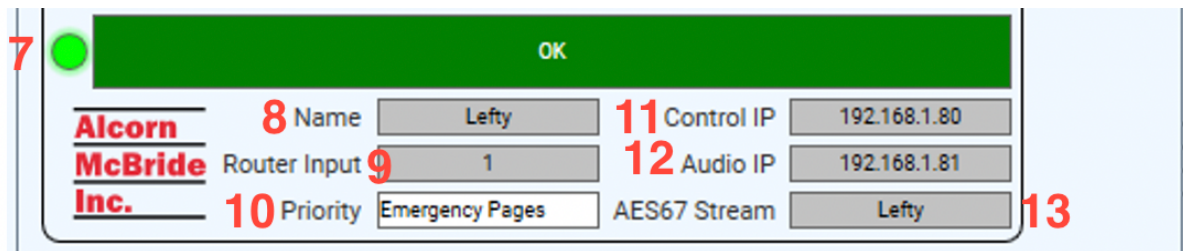
14. **Emulation Mode:** Allows the plugin and V-Page station to be tested without a core.
15. **Online:** LED is on if the V-Page station is currently connected to the Core.
16. **Mic Status LED:** Turn to bright green LED once the microphone is turn on.
17. **Paging Status and LED:** Indicates when the station is ready to page, actively paging, or unable to page.
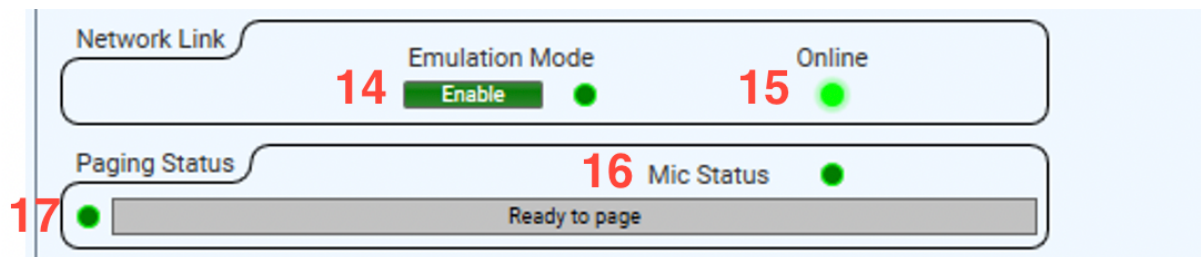
18. **Button Function:** Use this to assign functions to the V-Page buttons.
    a. **Zone Select -** These zones can be administered through Q-sys Administrator. Either Individual Zones can be assigned particular buttons, or by creating tags in Q-sys Administrator, a "group" of zones can be assigned to a single button.
    b. **None –** Not assigned any functionality.
    c. **Breakaway –** Button is used for manual control of Q-Sys IO pins
        i. **Break Away Toggle**: Turns button into toggle. Press once to turn it "on", press again to turn it "off". This is useful for programming something like a Mute button.
        ii. **Break Away Momentary**: The button's status stays in an "on" state for as long as the button is held down.
        iii. **Break Away Pulse**: Once the button is pressed, the state turns on for 500 milliseconds, then turns off. The time it stays on can be adjusted by adjusting the Pulse Duration in the plugin properties tab. Break Away Pulse is useful for programming a button to trigger a pre-recorded spiel.
19. **Paging Default:** This setting specifies a default zone button that will be selected once a page is completed in Standard Mode. Only one zone can have the default setting selected. When the block is white, that means it will be the default zone.
20. **Paging Active:** LED will light up when the zone is in use.
21. **Button Light:** A virtual representation of the physical V-Page button LEDs.
22. **Button State**: A virtual representation of the button's break away "state" pin (on or off).
    • **Zone Select:** The state LED stays off if button is configured as a standard zone selection button.
    • **Break Away Toggle:** When pressed, the control pin 'Breakaway State LED' will toggle states. (01), (10). This can be used to interface to other control pins within Q-sys like mute functions. In this mode, the button LED will represent the state of the 'Breakaway State LED' control pin.
    • **Break Away Pulse & Break Away Momentary:** This is like the toggle mode except that the control pin 'Breakaway State LED' will momentarily pulse to a value of 1. In this mode, the V-Page button LED can be manually controlled using the control pin 'Breakaway Input LED'.
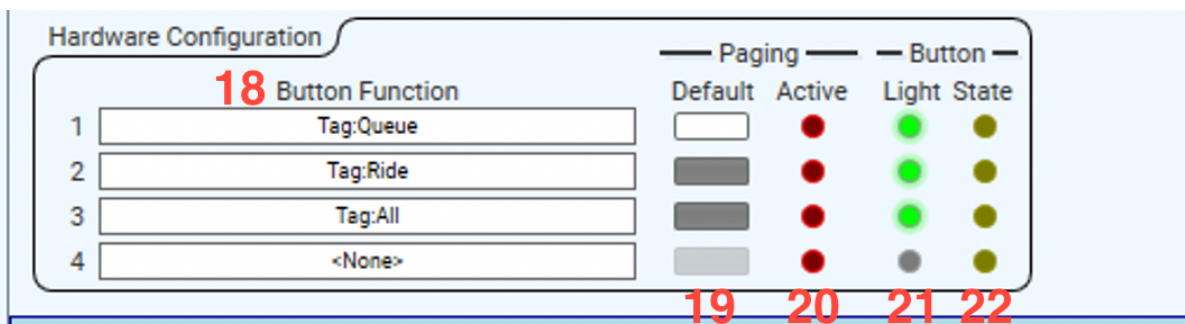
LINKING STATION TO QSYS

Your Q-Sys design must contain the minimum elements to make a V-Page work: The V-Page Plugin, a PA Router, and your Audio Source. A VP16K can transmit a single digital audio signal via Dante and AES67 stream.

Once your design is ready to be tested simply "Save to Core and Run". With your V-Page powered on and the zone buttons blinking, press and hold inputs 1,2, and 4 until a continuous scan sequence start on your V-Page unit. If you do not have inputs 1, 2, and 4 wired to buttons, you may instead use the Link DIP switch to get the VP16K into link mode as well. More on this can be read in the DIP SWTICH 1: LINK MODE section of this manual.

Once your V-Page is in Link Mode, double click on the plugin block and press LINK.

Remember: When adding additional V-Page stations to your system, don't forget to give the new station a unique ID and IP address.

Congrats! Your V-Page control has been set and you should be able to test your control functions.

ADDING PREVIOUSLY PROGRAMMED V-PAGE STATIONS TO A NEW DESIGN

If you need to reprogram a V-Page station, toggle DIP Switch 2 to the "On" then "Off" position. This will reset the station into Factory Default Mode.

NETWORK AUDIO CONFIGURATION

Audinate's Dante Controller will allow you to see all your Dante devices within the network, and enable the use of AES67 audio stream. Q-Sys control and AES67 can travel through the same physical cable; however, if Dante audio stream is preferred a separate Dante I/O card must be installed in your Q-Sys Core system.

You can download the Dante audio network configuration software, Dante Controller, here:
https://www.audinate.com/products/software/dante-controller

This webpage also contains instructions on how to use the application.

AES67 FLOW CONFIGURATION

For the stations to transmit AES67 signal through your network, we must enable the functionality using Dante controller.

1. Open Dante controller and double click on a station from the list
2. Go to the "AES67 Config" tab and select "enabled", then click reboot.
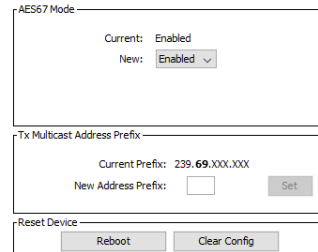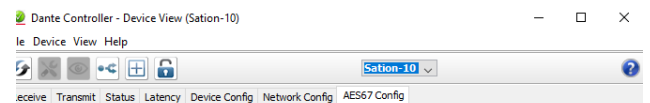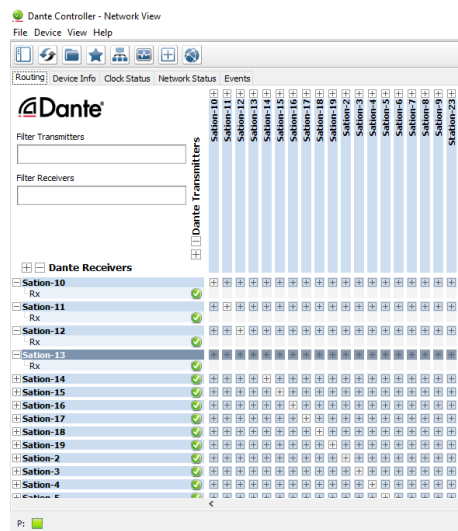
3. Click on the network flows Icon [icon] select "AES67 Flow" and "Add New Flow". Then click "Create" at the bottom. The station is now AES67 Enabled and will be available in the Q-Sys AES67 Receiver in the "Stream Name" drop-down menu.
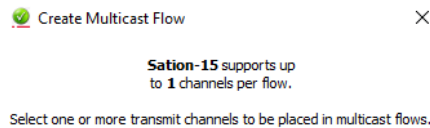
AES67 AUDIO ROUTING

Your design should contain an AES67 receiver in order to run digital audio from the V-Page through your design.

An AES67 Receiver should be previously added into the inventory tab by selecting the + sign and choosing an AES67 Receiver under the Streaming I/O sub menu. Drag and drop into your Q-SYS designer page an AES67 Receiver, connect a wire from Output 1 to Input 1 of the Zone PA router.
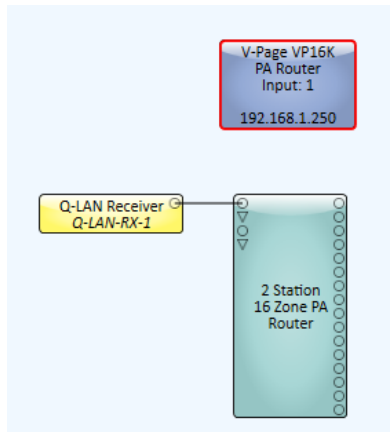
Next, "Save to Core and Run". Once connected, double click on your recently added AES67 Rx module an choose the stream name set by using Dante Controller.
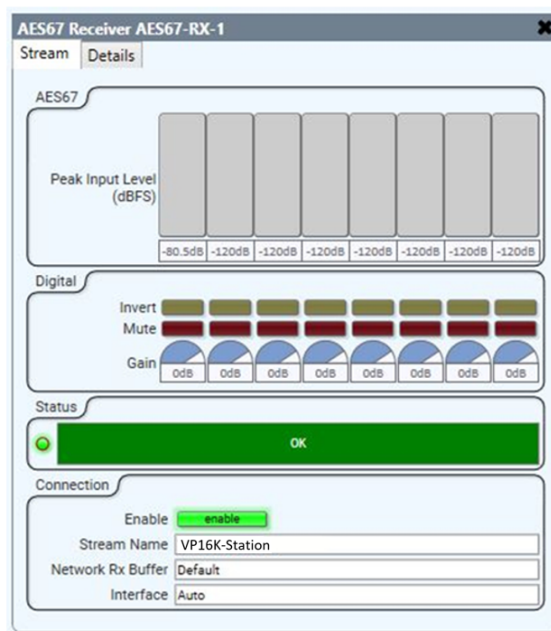
At this point you should be able to listen to your message once the Push-To-Talk is triggered. The Peak Input Level can help you to identify the audio signal for each V-Page.

AES67 RECEIVER
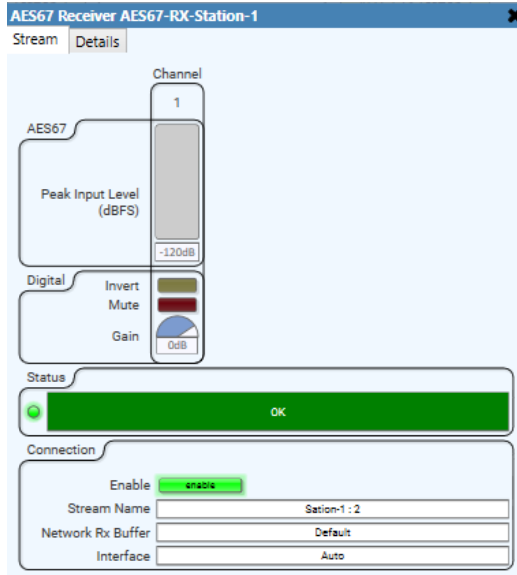
In the AES67 Receiver you will need to fill the following settings

1. **Enable:** used to turn the receiver on or off.
2. **Stream Name:** This list will auto populate from the stations in your network that are sending an AES67 Stream. The stream name was set when you linked the station. Select the station's audio that you want to get on that receiver.
3. **Receiver Name:** This setting is done on the properties tab for the component. We recommend using a name that can be easily related to the station that it belongs to.
4. **Interface:** Select which Q-Lan to use: Lan-A, Lan-B or Auto select.

At this point you should be able to see signal from your voice when you talk into the microphone while pressing the push-to-talk button. Now you have audio going from the station to the Q-sys core so that it can be properly routed for paging.

FIRMWARE UPDATE

All attempts have been made to retain backwards compatibility.

Firmware Update is not a risk-free process, although all precautions have been taken to avoid catastrophic failures. The update should only be performed if needed.

To obtain the latest firmware, please visit our website at www.alcorn.com.

FIRMWARE UPDATE PROCEDURE

The easiest way to update your VPage's firmware is by using our **VPage + VCom Utilities** software, also known as VPVC Utilities. This is available for download for free on our website at alcorn.com/support/software

Once open, you'll enter Firmware Update Mode by selecting your V-Page product in VPVC Utilities and clicking "Admin", then "Enter Firmware Update". *If "Enter Firmware Update" is greyed out and not selectable, it's most likely because your VPage has a control IP address of 169.254.XXX.XXX. To change this, Click "BootP" in VPVC Utillities, then the VPage you want to change the control IP of, then you can manually enter in a different IP address for the unit.*

Once Firmware Update Mode is activated (rapidly blinking GREEN LEDs on VP4X or patterned group blinking on VP16K) a web browser tab will be launched at your VPage's IP address, and you will see the dialogue below:

Firmware Loader v1.0.4

VPage Current Firmware v2.15

Choose File | No file chosen   Update Firmware

Exit Bootloader

Press "Choose File" then select the OS.NEW VPage firmware file and click "Update Firmware" to perform the update.

Update process may take up to a minute to complete. Then, V-Page will restart automatically (blinking LEDs until QSYS is detected). Update complete! V-Page will retain it's current control IP address through this entire process.

Alternatively, you can enter Failsafe Recovery if unable to enter Firmware Update Mode, or if your VPage gets stuck in the firmware update process (see troubleshooting guide at the end of this manual for more info on Failsafe Recovery Mode).

TROUBLESHOOTING GUIDE / FAQ

Have you tried turning it off and on again? If you have a question not answered by this manual, take a look at our Knowledge Base at alcorn.com. We're always updating it with new answers and useful information! If your question isn't answered there, please email us at support@alcorn.com

Q: HOW DO I TELL THE DIFFERENCE BETWEEN THE VP16PCB AND VP16K?

The VP16K replaced the VP16PCB in our V-Page product line in early 2018. The quickest way to tell the difference is that the VP16K includes a silver, shiny SFP connector underneath the bottom board. The VP16PCB does not have this SFP hardware component.

Q: I CAN'T ROUTE AUDIO

One of the most common issue with routing audio is switch/router/firewall blocking/filtering out multicast traffic required for the PTP protocol. Please disable IGMP snooping and disable any multicast blocking/filtering. Consult your switch/router/firewall manual.

Q: I GET FEEDBACK WHEN I KEY THE MICROPHONE. WHAT IS CAUSING THIS?

Reduce the gain setting in the Q-Sys or amplifier system.

Q: I CAN'T CONNECT TO A V-PAGE?

The default network state of the unit is DHCP. A set of IP addresses are needed were each address can be assigned via a network switch that will handle IP address automatically or the use of third-party application like BootIP where the user can assign an IP address manually based on the MAC address of the network interface.

Each V-Page unit has two MAC addresses one for control and the other for digital audio. Our unique ID start as 00:10:46:XX:XX:XX where Audinate unique ID start as 00:1D:C1:XX:XX:XX

It's important to clarify QSC Q-Sys Core based systems and V-Page control IP must be allocated under the same network and subnet.

Q: MY Q-SYS CORE CAN'T FIND MY V-PAGE. I PRESS A BUTTON/INPUT ON THE V-PAGE AND NOTHING IS HAPPENING? V-PAGE COMPONENT IN Q-SYS SHOWS V-PAGE OFFLINE OR THE ZONES ARE NOT SELECTED WHEN V-PAGE IS OPERATED?

This answer applies to any issues related to Q-Sys V-Page communication. Any of the following could be the case:

• V-Page isn't properly configured (Incorrect IP and/or subnet, or incorrect router input set)
• V-Page Q-Sys IP reference or remote port doesn't match the network setup.
• There's a firewall preventing broadcast traffic from getting through to the V-Page.
• Configured IPs (Q-Sys, V-Page) are on a different subnet.

Q: FIRMWARE FAILSAFE MODE: HOW DO I RECOVER MY V-PAGE UNIT FROM A FIRMWARE FAILURE?

A: You can enter Failsafe Recovery Mode to help. This mode should only be entered when the V-Page is on a test bench and is not wired into the rest of the network.

To enter Failsafe Recovery Mode, start with your V-Page unit powered off. Set the Dip Switch #2 to ON (down), then power on your unit, then return Dip Switch #2 to OFF (up) position. The V-Page is now placed on a static control IP of 192.168.0.254, regardless of its settings. Then, update firmware like normal by opening a web browser and going to https://192.168.0.254, and follow the prompts. When the VPage comes back online, it will no longer be at 192.168.0.254, but instead at the last remembered control IP address. If you don't know what that was, feel free to flip dip switch number 2 to on then off again while powered up to reset the unit to factory defaults.

Q: WHAT TYPE OF INDICATORS CAN I USE?

A: If the lamps are not incandescent, make sure your LED polarity wiring is correct (anode vs cathode) and your power supply ground is properly connected. If the ground is common between the unit and the power supply, you can short out button common and lamp ground terminals in that case. For power supply with isolated ground, it must be connected to the lamp ground terminal (please see page 14 for lamp wiring diagram).

Please note, each lamp output is rated at 80V/50mA max.

Q: ENABLING MUTE

A: Enabling the Mute is very simple just jump J9 so anytime the Push-to-Talk buttons is inactive the microphone input will be muted. (Most Push-to-Talk microphones -including the available MIC-US600EL do this automatically so this jumper is not required. The J9 Jumper is circled in the below photo, and is in the off position.
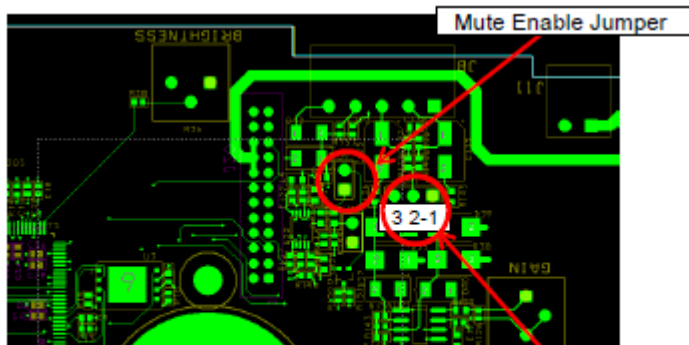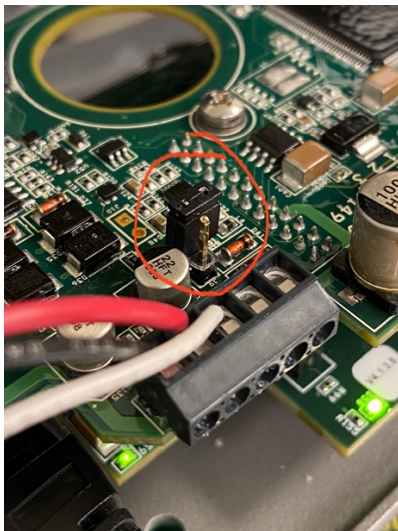
Q: CAN I ADJUST MY PTPV2 VPAGE CLOCKING PRIORITIES?

No. You cannot adjust this setting on our VCom or VPage units, but don't fret. Our priority settings fall in the middle of the PTPv2 priority spectrum, meaning if you have a different product such as a QSYS Core, you can set that product be be the grand master based upon it's adjustable priority settings compared to the static VPage/VCom priority settings.

Our AES67 enabled VPage and VCom Products (VPage-VP4X, VPage-VP16K, VCom-VC12X, and VCom-VC16K) PTPv2 clocking priorities are set and are not changeable. They are:

Priority 1: 249

Priority 2: 112

Note: They must sit on domain 0 (DFLT .129).

To ensure our VPage or VCom products are not chosen as a master clock in your system, you must set a different product that you'd like to be the master on your network to domain 0 and Priority1 to 0 (or just ensure that it is any number below 249). The lower the number, the higher the priority per the BMC Algorithm.

Note: AES67 requires PTPv2, which is not backwards compatible with PTPv1 (which Dante uses).

Best Master Clock (BMC) Algorithm Details:

In a PTPv2 network, one clock is elected as the Grandmaster. The Grandmaster is the clock from which all other clocks will derive their time. The Grandmaster is selected using a process that involves the BMC - or Best Master Clock algorithm. This algorithm takes into account the following information, prioritized in this order:

1. Priority 1 – the user can assign a specific static-designed priority to each clock, preemptively defining a priority among them. Smaller numeric values indicate higher priority. From 0 - 255. Lowest number wins.
2. Class – each clock is a member of a given class, each class getting its own priority.
3. Accuracy – precision between clock and UTC, in nanoseconds (ns)
4. Variance – variability of the clock
5. Priority 2 – final-defined priority, defining backup order in case the other criteria were not sufficient. Smaller numeric values indicate higher priority. From 0 - 255. Lowest number wins.
6. Unique identifier – MAC address-based selection is used as a tiebreaker when all other properties are equal.

For more details on this subject, check out this wikipedia article: https://en.wikipedia.org/wiki/Precision_Time_Protocol

HOW CAN I MAKE MY QSYS CORE THE PTPV2 GRAND MASTER?

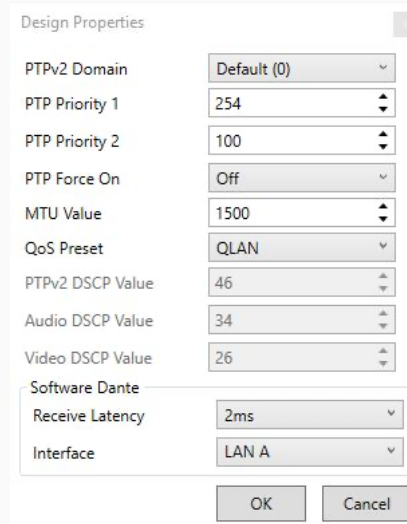By default, the QSYS Core's Priority settings are set to the following:

PTP Priority 1: 254

PTP Priority 2: 100

By comparison, our VPage/VCom Priority 1 is set to 249.

This means that if the settings are not adjusted in QSYS Designer, our VPage or VCom units will always win the algorithm, and your QSYS Core will never become the Grand Master.

To change this, all you must do are adjust these settings in QSYS Designer. Go to File > Design Properties.

Here, you can manually adjust the Priority 1 and Priority 2 settings. Again, you'll want to set Priority 1 to something less than 249. You will also want to make sure that your QoS settings on your network match the settings here, otherwise you could experience audio problems and dropped packets.

For more information about PTPv2 and Clocking Prioirities in the QSC ecosystem, check out this article: https://q-syshelp.qsc.com/Content/Schematic_Library/design_properties.htm

You can see whom is the PTPv2 Grandmaster in Dante Controller, in the Clock Status tab. Look in the AES67 column for this information. Just note, Dante Controller only lists products that your computer can see on the network.

If you're seeing a VPage or VCom product that is still not relinquishing a master status, It's possible that what you're seeing is a VPage that didn't have AES67 enabled and, therefore, is operating via Dante using PTPv1. It won't release it's master if there's no other device on the network operating in PTPv1. Please confirm that all VPages and VCom units have AES67 enabled so they will all operate on PTPv2 protocol.

LOCATING A V-PAGE ON A NETWORK

The V-Page hardware contains one physical Ethernet connection but two interfaces (V-Page control and Dante audio). They are isolated. This means there are 2 MAC addresses assigned to each "physical" V-Page unit hence 2 IPs. Furthermore, on any given network there are most likely multiple V-Page units.

This guide focuses on simplifying locating process of the physical V-Page unit remotely using V-Page station ID, V-Page MAC/IP (control), Dante MAC/IP (audio) and control <-> audio interface matching in a physical V-Page unit. All units must be online (both interfaces) on the same subnet.

AMI Terminal, one of our free pieces of software available for download on our website, is used to send all the commands. AMI Terminal can broadcast across your subnet by connecting to X.X.X.255, i.e. 192.168.0.255. AMI Terminal cannot connect to a Dante audio interface, but it can match by the Dante information stored in the V-Page, hence it can be used to match any given Dante interface information to the physical V-Page including physical identify by the Dante MAC/IP address.

| Action	Command	Response	Notes
Pinging all the V-Page Station IDs	"ID" h0D	V-Page Station ID from all the V-Pages online.	ID 99 is a default ID if Link hasn't been performed.
Pinging all the V-Page IPs	"IP" h0D	V-Page IP from all the V-Pages online.	IP reported is a dynamic IP if obtained via DHCP or static IP, if one is set.
Pinging all the V-Page MACs	"MC" h0D	V-Page MAC from all the V-Pages online.	
Pinging all the Dante MACs	"UMC" h0D	Dante MAC from all the V-Pages online.	
Pinging all the V-Page/Dante MAC pairs	"PMC" h0D	"V-Page MAC, Dante MAC" from all the V-Pages online.	Response contains both of the MACs (V-Page and Dante) from a single V-Page unit.
Physically identifying by V-Page Station ID	"XFN" h0D	"R" from matched V-Page and V-Page physically blinking for a short period of time.	X is the station ID assigned to the V-Page unit.
Physically identifying by V-Page or Dante IP	"X.X.X.XFN" h0D	"R" from matched V-Page and physically blinking for a short period of time.	X.X.X.X is the V-Page or Dante IP address.
Physically identifying by V-Page or Dante MAC	"X:X:X:X:X:XFN" h0D	"R" from matched V-Page and physically blinking for a short period of time.	X:X:X:X:X:X is the V-Page or Dante MAC address.

ACCESSORIES

Please contact sales@alcorn.com for pricing and availability.

IOBB

This is an I/O Breakout Box kit that provides access to all 16 button inputs and indicators on the V-Page VP16K. It includes a 6ft DB37 Cable and 37-contact terminal block.

This accessory is included with the V-Page VP16K kit, but this part number can be used to order a replacement in the event yours is damaged or lost.
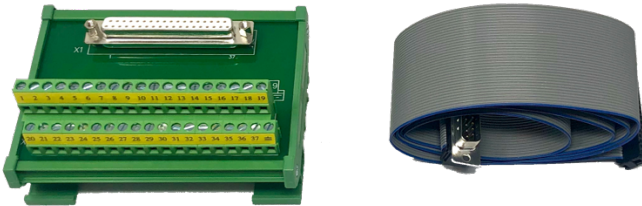
MIC-US600EL

Often, the V-Page VP16K is used with a dynamic gooseneck microphone. However, we offer this Electro-Voice US600EL handheld push-to-talk microphone and hook as an accessory if it works well for your application. It comes pre-terminated with a 5-pin XLR connector to mate with the stock connector that comes with this paging station.

DIN-19

The V-Page VP16K is designed to mount on a standard DIN Rail. For convenience, we offer a 19" long DIN rail that can be ordered with this part number.

SPECIFICATIONS

CONTROL

Controls	16 Contact-Closure Button Inputs Microphone Gain
Indicators	16 Lamp Driver Outputs
Config Switches	Link Firmware Update/Factory Defaults
Network Connectors	Female RJ45 SFP
Protocols	UDP, TCP, HTTP, Dante, AES67

AUDIO

Microphone Connector	Phoenix Screw Terminal 1844249 Panel-Mount Female 5-Pin XLR (Included)
Microphone Type	Balanced or Dynamic Microphone (Not Included)
THD+N	<0.07%
Signal-to-Noise Ratio	>85dB
Input Impedance	>30Mohm
Frequency Response	20Hz-20kHz +/-1%
Network Audio Interface	0x1 Dante 0x1 AES67
DSP Compatibility	Q-SYS Core 110f (AES67 Only) Q-SYS Core 250i (AES67 or Dante via CDN64 I/O Card) Q-SYS Core 500i (AES67 or Dante via CDN64 I/O Card) Q-SYS Core 510i (AES67 or Dante via CDN64 I/O Card) Q-SYS Core 1100 (AES67 or Dante via CDN64 I/O Card) Q-SYS Core 3100 (AES67 or Dante via CDN64 I/O Card) Q-SYS Core 5200 (AES67 Only)

PHYSICAL

Power (PoE)	PoE Class 3
Power (DC)	5-37VDC @ 1A Max Phoenix Terminal Block 1844210
Dimensions	9"W x 2.75"H x 2"D (229mm x 70mm x 51mm)
Weight	1.5lbs (0.7kg)
Environment	0°C (32°F) to 38°C (100°F) 0-90% Relative Humidity
Compliance	WEEE, RoHS