

# TEKVOX and AV Control Systems

## White Paper

How does TEKVOX differ from AMX, Crestron, and Extron?

AV control systems are based on events. You press a button and it causes a script to run. In the past there wasn't a need for anything really complex and most devices were controlled by RS232, relays, or IR. Now there is the need to talk to IP devices that may require REST, JSON and SOAP using SSL. With the complexity of the software also comes a large cost to the end-user.

AMX and Creston are similar with the ability to write complex code for very large systems. They are both centralized type systems with proprietary software and touch panels supplying only a GUI interface. AMX has always been a programmer's type system with inline code similar to the C programming language. It will even directly compile some C source code. It also has the ability to be programmed using Java. Being that these are both centralized platforms, changing equipment can get expensive do to reprogramming.

Crestron is more like a logic based system originally designed for non-programmers, but as systems became more complex and so did the Crestron software. They added the ability to write code similar to AMX using what they called Simple+ and now have S# that allows wring code in C# and HTML5.

Extron is in some ways similar to TEKVOX being they are more decentralized with device controllers that run drivers. Extron did add the ability to write software in Python for more advanced systems.

TEKVOX is all about remote equipment management and monitoring. The TEKVOX devices are designed to be managed without any special setup or programming. Administrator only needs to run our secure TekManager software and locate TekMonitors on their network and TekManager will render itself. Our touch panels can be remotely managed using simple VNC software. For management of large multi-campus or building systems among multiple users our TekEnterprise server or Cloud based software can be used.

Feature	AMX	Crestron	Extron	TEKVOX
Centralized	Yes	Yes	Partial	No
Project Based	Partial	Yes	Yes	Individual
Touch Panel VNC	Yes	No	No	Yes
Embedded Remote Management	No	No	Yes	Yes
Dual NIC	Yes	Yes	Yes	Yes
Full Remote Room Setup	No	No	No	Yes
Easy Peripheral to Other Systems	No	No	Yes	Yes
Nonproprietary Programming	No	No	Partial	Yes
Web Based GUI Programming	Yes	Yes	Yes	No
Large Scale Secure System	Yes	Yes	No	No

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The main difference between TEKVOX to other control system manufacturers is, TEKVOX uses distributed control environment where others are centralize. With TEKVOX the touch panel is the main controller where it communicates to the TEKVOX TekMonitor mini IP controllers and other IP devices like DSP audio systems. Unlike other controls systems that use proprietary software and hardware TEKVOX takes advantage of Windows IoT, Android, and iOS devices for the touch panel. Programming for the touch panel is done using JavaScript which opens a huge market of programmers. There is also a software version of the TekMonitor that can run as a service on a Windows IoT industrial PC called a TekMonitor IoT Controller. TekMonitor runs drivers that communicate to end devices. This method simplifies the software in the touch panel and makes future device replacements easy. So if you need to change out a projector just load a new driver in the TekMonitor. No need to go back to the touch panel and reload new software.

TekMonitors are designed to also be a peripheral device for other control systems. When added to AMX or Crestron they can make it easy to provide management and an easy way to change drivers. They can also be used to easily bridge between different control systems like connecting Crestron lighting to AMX or TEKVOX.

Some very powerful methods that a lot of IP devices like DSPs do are they allow for multiple connections and subscribing to feedback. For a DSP this might be a level, route or meter. In the old days the control system had to poll for feedback sometime slowing down the control system. Similarly the TekMonitor also allows for multiple connections and uses a method we call EzLink. With EzLink the TekMonitor can be programmed as to what items you want it to apply feedback to. With these types of methods we can have multiple touch panels running the same program and they all synchronize together without any special communication between the panels.

There are several issue with network based controlled systems:

- The cost of network drops can get expensive.
- During the installation the network might not be installed, is not active or is on the wrong VLAN. This can cause costly and serious room setup delays.
- Campus network issues can cause the system not to operate.
- The IT staff decides to change the IP address of their network which can cause expensive setup or reprogramming of the control system.
- For typical dual NIC system where the control system creates a separate local network for the room equipment, remote setup and maintenance of the system can be difficult or not possible.

Most all control systems have the ability to create a dual network where one side of the network is connected to a campus network and the other side is used to create a local network for equipment in the room. This seems like a great idea to create a system with only one network drop, but if there are DSPs, cameras and other equipment like Dante devices that are on the local network, there is no easy way to service the equipment remotely. TEKVOX has solved this issue with the TekMonitor IoT Controller. This controller has a dual NIC with the second NIC having a DHCP server which creates a separate local network. This controller also includes a VNC server allowing local campus remote access or Remote Management Software can be added for off campus management. From the IoT controller Windows based programs can be launched given remote access to all of the equipment in

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the room. With TEKVOX ShareView a remote user can view cameras and all other video sources to help maintain the system.