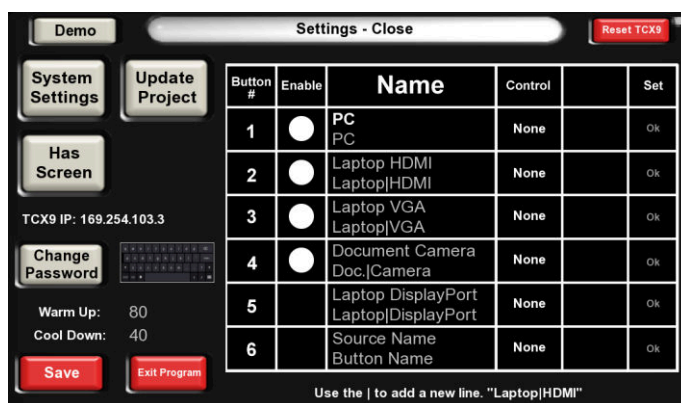


TEKVOX adds flexible system designs to standard Drop-Ins using the TekFlex seamless modular matrix and the TCX9 touchscreen controller. TekFlex is a unique matrix with flexible input and output slots. These slots allow for user insertable cards that can provide either input or outputs for HDMI, VGA, HDBaseT, SDI, and DVI. All Output cards have scalers to match different resolutions for displays or deices like VTC and streaming systems. So if you need 12 inputs and 4 outputs, you do not need to purchase a 16x16 frame, just use the TekFlex-16 with your choice of 12 input cards and 4 output cards. On most modular based matrix switchers their cards have either 4 HDMI or 4 HDBaseT connections. This can be costly if you only need 1 HDBaseT input or output. With TekFlex you just choose the type of cards you need. TekFlex can be purchased with 12, 16 and 32 slots. Our standard is the TekFlex-16.

The TCX9 touchscreen controller provides a powerful control system with cloud based projects that do not require the purchase of an application. This makes it a lot easier for the client to implement the project. When apps have to be purchased, the customer always has an issue with buying the app. Then if we install the app and devices fails, the customer does not own the app and has to purchase it again. This has caused lots of issues when using applications like DemoPad and Crestron. If a TCX9 fails, you do not need to purchase another app, just log into your account and download the project.

The TCX9 runs as a Kiosk program and is locked down. To edit and exit the program a password protected Settings page is used. One of the features that makes this system flexible is from the Settings page an administrator can change the names of the source selections and their control page. For example, you want to add a Blu-ray or maybe a BYOD wireless, just enter Settings and make the changes to the button. Each button is matched to the TekFlex input slot number. There are no programming changes required for the TCX9. For remote access the TCX9 supports a password protected VNC server application.



At Prairie View A&M various types of TekFlex designs are used to implement complex classrooms. These rooms include:

- Standard Dual Display
- Dual Display with VTC and WebEx
- Courtroom with Pointmaker, VTC and WebEx

Standard Dual Display Classroom

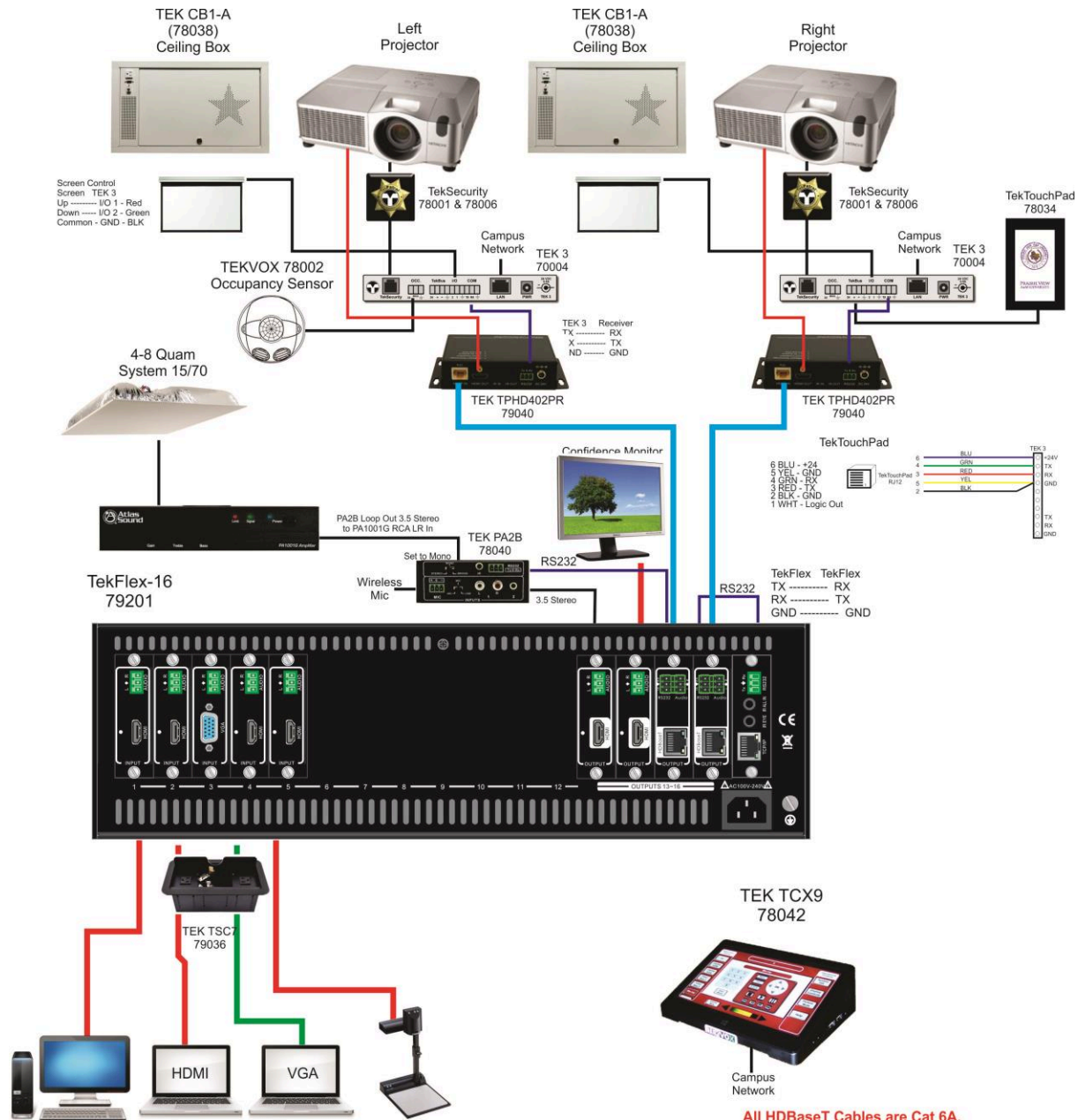
For a Standard Dual Display room the system can either be video projectors or LCD monitors. Since the driver for the display is in the TEK 3, the TCX9 does not care what the display is. On the TCX9's Settings page the Warm Up and Cool Down values can be changed to match the display. A TekFlex-16 is used with four HDMI inputs and one VGA input. The outputs are two HDMI and two HDBaseT. TekFlex does not allow for breakaway audio, so slot 13 HDMI output is used for the speaker audio. This output is connected to a PA2B RS232 controlled audio amplifier. Since the room requires more speakers than the PA2B can handle, the loop output of the PA2B is connected to a 70 volt Atlas amplifier. A confidence monitor is added to slot 14 HDMI output, and allows for previewing all inputs separately from what is displayed. For the Left and Right outputs in slots 15 and 16 HDBaseT output cards are used to send video and RS232 control to their respective ceiling boxes.

To control the Dual Display Room, this system utilizes two TEK 3s that are referred to as 'Left' and 'Right'.

Drivers loaded in the left TEK 3 are used to control its display and the PA2B volume controller. An occupancy sensor is used to automatically power off the system, if it is left running after people have left the room. RS232 control of the PA2B is sent back over the HDBaseT cable and extracted at the slot 15 transmitter.

Drivers loaded in the right TEK 3 are used to control its display, the TekFlex and the TekTouchPad. RS232 control of the TekFlex is sent back over the HDBaseT cable and extracted at the slot 16 transmitter. A TekTouchPad is mounted on a wall as a backup to the TCX9 in case there are network issues.

The room is designed to support dual displays allowing the instructor to select a source and send it to the Right Display, Left Display, Program Audio or All. This allows two different sources to be shown on the display. Since the instructor is facing the students, the Display Right and Left buttons are reversed to coincide with the orientation of the displays behind the instructor. The podium monitor operates a confidence monitor allowing any source that is selected to be viewed before sending to the room. This also allows the instructor to view their PC while displaying a document camera. Pressing the "All" button provides for a quick way to send to all displays and program audio.



All HDBaseT Cables are Cat 6A.

Dual Display with VTC and WebEx

This room is designed as a custom room with the ability to provide dual video projection, Polycom GS700 video codec and using the PC for WebEx. The system can operate in three different modes selected when powering on the system. These modes include Presentation, Polycom and WebEx. The operation of the touchscreen changes with the selected mode.

During Presentation mode the system operates like a standard Dual Projection classroom described above.

When the system is in Polycom mode, the source buttons change to allow for selection of the VTC and Cameras, and the video projection is set to VTC People set to Left and VTC Content set to Right. Selecting a source such as PC or Laptop places the Polycom into content mode, sending both people and content. The graphics can be stopped by pressing Stop Graphics button. Selecting VTC displays the controls for the Polycom. These controls are similar to the buttons on the remote.

The View PC button allows for the PC to be seen on the confidence monitor without affecting any of the routing. While in VTC mode, this can be very useful allowing the instructor to work on the PC while the VTC sources are shown.

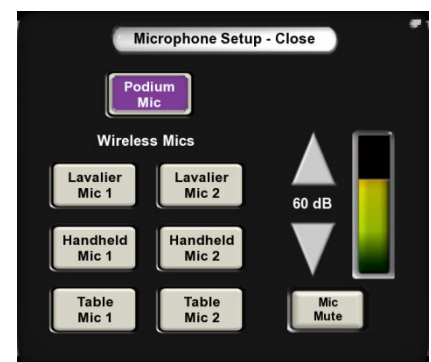
When WebEx is selected for the operation of the system, the Polycom cameras are used as the video source to send to the PC. This is achieved by selecting a camera on the Polycom and routing the Polycom output to the PC using a Magewell HDMI to USB capture dongle.

For the audio system a Biamp TesiraForte VI DSP audio system was required to provide Acoustic Echo Cancelling (AEC) of the microphone inputs and a USB audio connection to the PC. Having a USB audio connection to the PC greatly simplified how to get audio in and out of the PC.

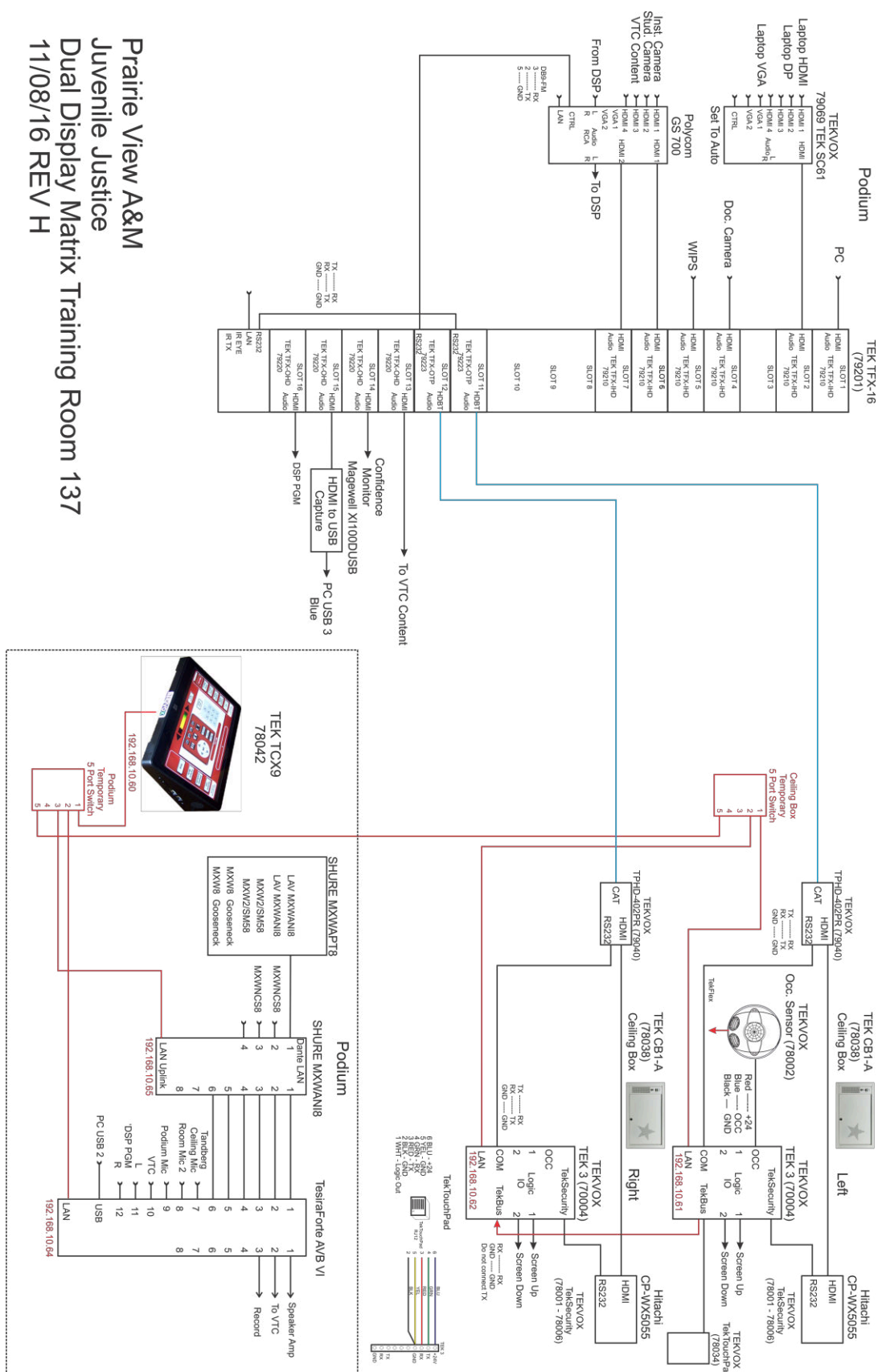
Drivers loaded in the left TEK 3 are used to control its projector, the TekFlex, the Polycom and the TekTouchPad. An occupancy sensor is used to automatically power off the system, if it is left running after people have left the room. RS232 control of the TekFlex is sent back over the HDBaseT cable and extracted at the slot 11 transmitter.

Drivers loaded in the right TEK 3 are used to control its projector. RS232 control of the TekFlex is sent back over the HDBaseT cable and extracted at the slot 16 transmitter. A TekTouchPad is mounted on a wall as a backup to the TCX9 in case there are network issues.

Control of the Tesira DSP is performed by a JavaScript driver loaded in the TCX9. This driver allows for easy control of the Tesira volume controls and presets. The driver supports true feedback from the Tesira using subscriptions.

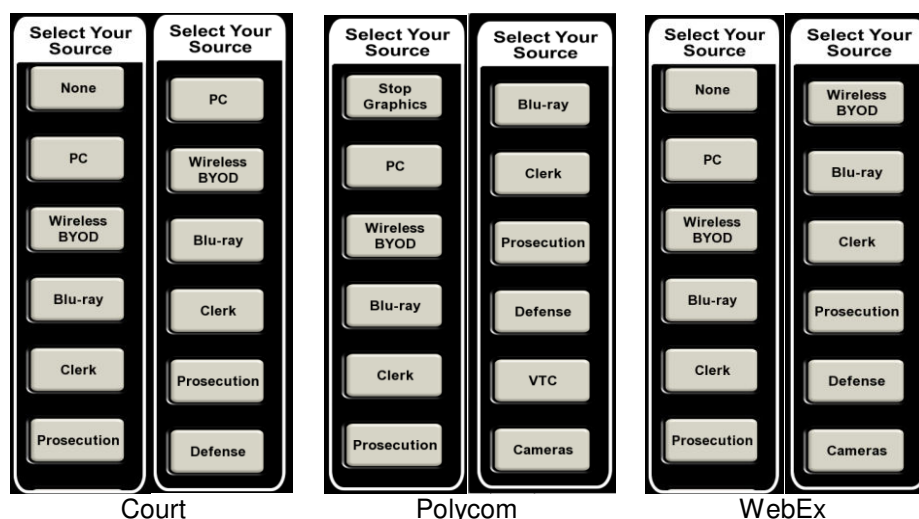


Prairie View A&M
Juvenile Justice
Dual Display Matrix Training Room 137
11/08/16 REV H



Courtroom with Pointmaker, VTC and WebEx

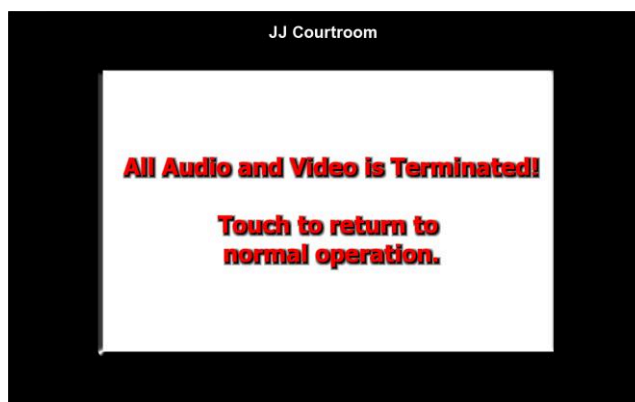
The Courtroom system is designed to simulate an advanced courtroom with a Court, Polycom and WebEx mode. In this system there are two TCX9 touchscreen controllers. Both the Clerk and Judge have control of the system, but only the Clerk's monitor can preview content before sending to all other displays. Typically the Judge only needs to be able to mute all audio and video from a single "Mute All" button. Depending on the selected mode, the source buttons will change their names and function. Since the number of source buttons is more than what can be seen at one time on the screen, they are placed into a list that can be scrolled up and down.



The Courtroom has one large display for the Jury and four touchscreen displays for the Judge, Clerk, Prosecution and Defense. Each of these displays can be used for annotation using Pointmaker by enabling annotation on the TCX9. Pressing the "Annotation" button also displays the Pointmaker Annotation control screen on the TCX9.



Pointmaker Annotation controls



Mute All selected by Judge

There are two TEK 3s to control the devices. The #1 TEK 3 controls TekFlex the Jury Display on slot 16. The #2 TEK 3 controls the Polycom, Pointmaker and Blu-ray.

Like the Dual Display with VTC and WebEx system a Tesira VI is used to control the audio. USB from the Tesira is used along with a Magewell HDMI to USB dongle is use to get audio in and out of the PC and video to the PC.

One of the unique features of the TEK 3s and Tesira is the ability for multiple TCX9s to connect and synchronize to each other. This allows both TCX9s to operate with the same program while they seem to track each other.

