



# Classroom Technology Standards

A Guide for Classroom & Conference Room Planning

Produced by the Office of Technology Services

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# Classroom Taxonomy

## Overview (CTSG-001)

The Office of Technology Services (OTS) works with stakeholders in the university community, vendors, manufacturers, college/departmental technology staff, and academic leadership including department chairs and deans to develop design standards for the audiovisual technology installed in Towson University's nearly 500 classrooms that best meet the needs of the university. The goals of standardization aim to:

1. Provide a comfortable, modern, flexible, easy-to-use, and reliable teaching-learning environment that accommodates a variety of instructional methods
2. Design an active, engaging environment for today's generation of learners
3. Provide a consistent, intuitive interface for controlling audiovisual equipment throughout the campus for faculty, staff, and students
4. Ensure maximum reliability and up-time based on proven designs, components, and installation methods
5. Ensure ease of support and usage by installing standard computer models and audiovisual components
6. Keep the number of makes and models to a minimum so that an inventory of replacement equipment can be maintained
7. Provide a means for easy, intuitive incorporation of end-user devices such as phones, tablets, and laptops

Article CTSG-001; Version 1; Last Revised 10/16/2019

## Classroom Audiovisual Architecture & Accessibility (CTSG-002)

### 1. Digital Architecture

The audiovisual industry has transitioned from an analog to digital audiovisual architecture and OTS adapted our standards to meet these demands. As part of the transition, known as the "analog sunset" in consumer and professional electronics, new devices are shipping with digital outputs only and older analog outputs are being disabled or severely limited by new content. The changes OTS made allow the University to take advantage of the latest technologies, provide better integration of digital devices brought on campus, streamline classroom design, and meet growing instructional needs.

### 2. Flat Panels vs. Projection

Some spaces benefit from using flat panels (4k or greater resolution) instead of traditional projectors and projector screens. This is already happening in spaces that don't rely heavily on white boards, such as conference rooms and some classrooms as well. Flat panels offer brighter, sharper images and are not dramatically affected by ambient light.

### 3. Accessibility

All systems must be designed with accessibility in mind and meet all current Americans with Disabilities Act (ADA) requirements. This includes but not limited to:

- Installation of Assistive Listening Devices in rooms with voice reinforcement or where sound is a key part of instruction.
- Installation of height adjustable podiums
- Appropriate placement of podiums to provide required clearance
- Making Xpanels available for all rooms with control systems, which allows rooms to be controlled remotely through a personal device using a screen reader

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## Classroom Technology Tiers (CTSG-003)

	<p><b>ADVANCED LEARNING/INSTRUCTIONAL SPACES AND TECHNOLOGIES:</b> High-end, high-cost, specialty technology and venues.</p> <p><b>Examples:</b> Simulation models, digital microscopes, observation labs and recording devices, specialty control devices; concert or performance venues in which students physically use the equipment; radio and TV production; advanced distance learning suites.</p>	<p><b>SUPPORT</b></p> <p>Support, training, documentation, and learning resources for faculty provided by college or department technology staff or other resources; OTS role, if applicable, limited to review of design in relation to campus standards, interaction with network and infrastructure, etc. For certain technologies and venues, OTS may play a specific, limited role in support, with roles and responsibilities articulated via memoranda of understanding.</p>
	<p><b>CURRICULIZED:</b> Course-specific technology needed for instruction to support a specific academic class, program, major, etc. Students must physically interact with the technology, which is typically not as general purpose as Extended or Foundation.</p> <p><b>Examples:</b> Specialty monitors with high-precision drawing capability; unique printers, possibly higher-end 3D and subtractive manufacturing devices; specialty peripherals; ceiling mounted document camera, ultra-high resolution display or projection; specialty collaboration workstations; software categories 6, 7, and 8, including discipline specific applications.</p>	
	<p><b>EXTENDED:</b> Proven general-purpose technologies in which deployment is done in a deliberate, phased, or limited manner or is evolving in adoption but not yet considered foundational.</p> <p><b>Examples:</b> Multiple screens or flat-panel displays; interactive solutions (interactive projectors and/or flat panels); fixed wireless projection and collaboration features; software category 5. Students must either directly interact with the technology, or the technology is used by the instructor in a way to engage students or enhance the students' learning experience.</p>	<p><b>SUPPORT</b></p> <p>Telephone, chat, training, documentation, and secondary in-person support (as workload permits) provided by OTS staff. College or department technology providers typically provide routine in-person or classroom-based incident support, in collaboration with OTS staff. Support roles and responsibilities between OTS and departments/colleges will typically be covered in a common campus-wide delineation of duties.</p>
	<p><b>FOUNDATION:</b> Proven, current-generation general-purpose audiovisual and projection systems and is core for all formal learning spaces.</p> <p><b>Standard Equipment Includes:</b> projector with screen or flat panel; in-ceiling speakers; podium with computer and monitor (touch); document camera; Crestron LCD touch panel and control system; Cable Cubby with HDMI connection for portable devices; distance learning and lecture capture systems; software categories 1-4; instructor and student computers, thin clients, and other devices for student use.</p> <p>Optional add-on: dual-image multi-window processor to show two different audiovisual sources side-by-side on the projector or flat panel.</p>	

See the “STF Project Categories” linked below for information on Foundation, Extended, Curriculized, and ALIST tiers:

<https://www.towson.edu/technology/facultystaff/support/instruction/classroom/projects/>

## Projector Configuration Requirements (CTSG-004)

1. Any setting that shuts down a projector based on the loss of signal must be disabled.

Article CTSG-004; Version 1; Last Revised 2/23/2017

## Classroom Computer Configuration Requirements (CTSG-005)

### 1. Overview

A classroom computer is primarily used to present information to classes by using a display and is shared by multiple faculty. Classroom computers are critical to instruction and are configured with security settings and file management measures to preserve system integrity and assure that the computer runs consistently at an optimum level of performance. Because many people share the computer, it is different than a personal computer in an office or home. Personal files must not be stored on this computer but stored using one of the other options outlined in this chart: <https://www.towson.edu/technology/facultystaff/documents/storing-data-risks-vs-benefits.pdf>. Installation of special software is managed with several options (listed below) to accommodate faculty needs. Software installed on the computer will be upgraded regularly in a timely manner that does not disrupt instruction.

Windows-based PCs will be the primary solution, with interactive monitors in new venues. If there is a need for both Windows and Mac Operating Systems, a dual-boot Mac will be deployed so the faculty member can choose which OS they wish to use when starting the system.

### 2. Classroom computer standards

- a. A base lab image and imaging process is provided by OTS, see the TU Lab Managers SharePoint site for more information: <https://tu.sharepoint.com/sites/ctc/tulabs/default.aspx>
- b. Computers follow classroom Active Directory guidelines
- c. Users logon as Users (not Administrators)
- d. Classroom-specific group policy is applied
  - i. Group Policy is set so shutdown is disabled
  - ii. Group Policy is set so that the PC never sleeps.
  - iii. Group Policy is set so the monitor doesn't sleep until after 90 min.
  - iv. Group Policy is set so screen saver doesn't start until 60 min.
  - v. Group Policy is set not to show last logged on user:
    - Computer Configuration\Windows Settings\Security Settings\Local Policies\Security Options
    - Do not display last user name in logon screen = Enabled
  - vi. Group Policy is set to delete profiles

- vii. Group Policy is set to disable “Welcome Screen”
- e. Classroom PCs are part of their own Configuration Manager collection for managing installation packages, etc.
- f. Remote Desktop is enabled
- g. BIOS is set to have the computer automatically power on overnight
- h. The computer is configured with standard university software (below). If special software is needed, several options are available:
  - i. Install software on an office computer and use Remote Desktop to access the software on that computer (recommended)
  - ii. Virtual Workspace access
  - iii. If software is not available in Run Advertised Programs, please discuss software needs with your department head or technology coordinator.

### **3. Software Included on Standard Configuration**

#### Windows:

- a. Microsoft Windows 10 Enterprise and Updates
- b. Microsoft Office 365 Enterprise (Includes Word, Excel, Access, & Power Point) and Updates
- c. Microsoft Internet Explorer and Updates
- d. Mozilla Firefox
- e. Google Chrome
- f. .Net Framework
- g. Microsoft System Center Configuration Manager Client
- h. Virtual Workspace Client
- i. Adobe Reader
- j. Windows Media Player
- k. Adobe Shockwave Player
- l. VLC
- m. Filezilla Client
- n. Microsoft Silverlight
- o. Java
- p. Panopto
- q. Cisco WebEx Meetings
- r. Zoom

#### Mac:

- a. Microsoft Office 2019 Enterprise (Includes Word, Excel, & Power Point) and Updates
- b. Mozilla Firefox
- c. Google Chrome
- d. Virtual Workspace Client
- e. VLC
- f. Filezilla Client
- g. Java
- h. Adobe Air

- i. Cisco WebEx Teams
- j. Cisco WebEx Meetings
- k. Zoom
- l. iLife
- m. iWork
- n. Microsoft Remote Desktop

#### 4. Classroom Organizational Unit (OU)

- a. A Classrooms OU exists at: towson.edu/Computer Accounts/Lab and Public/Classrooms and Conference Rooms
- b. Under the \Classrooms and Conference Rooms OU, there are separate OUs for each university building; each building OU will contain the classroom computer accounts, groups, group policy, etc.
- c. Managers of the Classrooms and Conference Rooms OU that can create computer accounts, etc. are in the Smart Classroom Administrators group.

#### 5. Standard Classroom Computer Naming Convention

##### a. Classroom Computers

To identify classroom computers, a standard naming convention was established as follows: CLS-BuildingRoomNumber-01, 02, etc.

IMPORTANT: room numbers need to use the 4-digit number, used by Facilities.

**Example:** two computers installed in the Cook-404A classroom would have the following names:

CLS-CK0404A-01

CLS-CK0404A-02

##### b. Lab - Classroom Computers

Some classrooms are also computer labs that have their own Lab OU and computer naming convention. In these cases the instructor computer can be located in the lab OU but MUST be named using the standard naming convention outlined above.

An example of a lab –classroom instructor computer account is: CLS-ES0107-01

An example of a lab-classroom student computer account is: ES0107-02, ES0107-03, etc.

#### 6. InFocus MondoPad (Retired)

The PC appliance must be treated as a regular classroom PC. There is currently a standard image available that will configure most settings (other than adding a maildrop). The following items must be done for each:

- a. Join to domain
- b. Install SCCM
- c. Install endpoint protection

- d. Name properly (CLS-CollectionCode-MOND)
- e. Change Mondopad logo to TU logo
- f. Enable minimize button for non-admin accounts under Settings>General
- g. Set browser homepage to [www.towson.edu](http://www.towson.edu)
- h. Install Microsoft Office
- i. Install Microsoft Lync, Skype, Flash, Adobe Reader, Citrix, Shockwave, Java, VLC, Firefox, Chrome (with Remote Desktop plugin), Panopto, and Visio Viewer
- j. Set up maildrop ([CollectionCode-Mondopad@towson.edu](mailto:CollectionCode-Mondopad@towson.edu)). The password must be set not to expire and stored in KeePass. See Knowledge Center Article:  
<https://www.towson.edu/knowledgecenter/admin/adminarticle.aspx?article=823&searchtype=IT>
- k. Printers can be added by the department like a regular Windows PC
- l. Set passcodes (4-pin Admin)
- m. SSID must match computer name
- n. Add Athena local admin account with same password as the regular image
- o. Add short cuts for Lync, Skype, and Office
- p. Follow campus standards for BIOS settings (except for SATA operation):  
<https://www.towson.edu/knowledgecenter/admin/adminarticle.aspx?article=763&searchtype=IT>

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## Classroom Standard Equipment (CTSG-006)

### 1. Document Cameras

#### a. ELMO PX-30E

- The ELMO PX-30E is the university's standard document camera, it can show high-quality 4K images and integrate with other ELMO products or a PC. This document camera is the best choice in the majority of classroom installations.

Manufacturers Link: <http://www.elmoussa.com/>

#### c. WolfVision VZ-8plus4

- The WolfVision VZ-8plus4 provides a slightly warmer color due to the use of a halogen lamp. In a side by side comparison there was minimal differences in image quality when compared to the standard ELMO P30HD, but it is twice the cost. This document camera is only practical for projects with external funding sources or situations where slight differences in color are vital for teaching, such as an art class.

Manufacturers Link: <http://www.wolfvision.com/>

#### d. WolfVision VZ-3

- The WolfVision VZ-3 is a competitor to the ELMO document camera mentioned above. It offers a smaller footprint, LED lighting, and easy to use one arm design.

Manufacturers Link: <http://www.wolfvision.com/>



e. WolfVision EYE-14

- The WolfVision EYE-14 is a Ceiling Visualizer that is mounted above a flat surface and allows everything in it's field of vision to be projected. This is ideal for situations that call for large objects to be demonstrated to a class.

Manufacturers Link: <http://www.wolfvision.com/>

f. WolfVision vSolution Cam

- The WolfVision vSolution Cam is a smaller compact document camera that does not have a base.

Manufacturers Link: <http://www.wolfvision.com/>

## **2. Projectors**

a. Panasonic PT-FRQ50 (Standard)

- The Panasonic PT-FRQ50 is a 4K (3840 x 2160) 5,200 lumen projector that uses a laser light source. This design requires no lamp replacement or filter cleaning and has a virtually instant on/off time.

Manufacturers Link: <http://panasonic.net/>

c. Panasonic PT-FRQ60

- The PT-FRQ60 is a 6,000 lumen 4K resolution (3840 x 2160) projector that is perfect for larger venues or rooms that require more advanced projection capabilities.

Manufacturers Link: <http://panasonic.net>

e. Epson BrightLink

- The Epson BrightLink is an "interactive projector" allowing a pen to be used to control motions and annotations on the screen. The projector is mounted directly above the projection surface so it can fit in many different size rooms.

Manufacturers link: [www.epson.com/brightlink](http://www.epson.com/brightlink)

## **3. Speakers**

Note: Some rooms may require, 2.1, 5.1, or 7.1 sound systems, in those cases equipment choices must be discussed as part of the project planning and based on the best fit for the room.

a. Bose EdgeMax EM90 & EM180

- The Bose Edgemax series of in-ceiling speakers offer capabilities of wall mounted speakers with an aesthetically pleasing design.

Manufacturers link: <https://www.bose.com>

b. Atlas FAP62T

- The Atlas FAP62 is an in-ceiling loudspeaker with 32-watt 70/100V transformer and ported enclosure

Manufacturers link: <https://www.atlasied.com/fap62t>

#### **4. Cable Access Enclosure**

a. Extron Cable Cubby 500

- The Cable Cubby 500 includes connections for Ethernet, USB, HDMI, 3.5mm audio, and power connections

Manufacturers link: <http://www.extron.com/>

b. Extron Cable Cubby 202

- The Cable Cubby 202 is available for smaller form factor podiums.

Manufacturers link: <http://www.extron.com/>

c. Liberty Adapter Ring

- The Liberty Adapter ring attaches to the HDMI cable and features the following connections:
  - Full sized DisplayPort male to HDMI female
  - Mini-DisplayPort male to HDMI female
  - USB-C to HDMI Female
  - Lightning to HDMI Female

Manufacturers link: <https://secure.libertycable.com/>

#### **5. Computer Monitors**

a. Planar PCT2485

- Standard desktop computer monitor for instructor computers

Manufacturers link: <http://www.planar.com/products/desktop-touch-screen-monitors/24-inch/helium/>

b. Dell 22" Widescreen Monitor

- Standard desktop computer monitor for lab computers

Manufacturers link: <http://www.dell.com/>

c. ViewSonic TD2220

- This optical touch monitor (can use stylus or finger tips) allows for instructors to bring interactivity to their lecture material. With a 22" display it provides a large workspace that makes it easier to engage students with content like videos and images.

Manufacturers link: <http://www.viewsonic.com/us/td2220.html>

## 6. Audiovisual System + Interface

The university standardized on Crestron as the primary audiovisual control system and is currently moving all classrooms onto the university network to allow remote management using Crestron Fusion RV (formerly known as RoomView).

a. Crestron DMPS3-4K-350-C

- The Crestron DMPS3-4K-350-C is an AV control system, switcher, mic mixer, and amplifier.

Manufacturers link: <https://www.crestron.com/products/model/DMPS3-4K-350-C>

b. Crestron CP4N (Active Learning)

- The Crestron CP4N is a control processor is used in more complex spaces, such as Active Learning rooms, and in conjunction with Crestron NVX equipment listed below:

Crestron DM-NVX-D30

- DM NVX HDR Network AV Decoder.

Crestron DM-E30C

- DM NVX HDR Network AV Encoder Card

Manufacturers link: <https://www.crestron.com>

c. Crestron TS-770-B (Standard)

- The Crestron TS-770 is a 7" touch screen with an edge-to-edge glass screen for higher durability. It is the tabletop model. For wall mounting the TSW-770-B must be used.

Manufacturers link: <http://www.crestron.com/>

e. Crestron TSW-570P-B-S (Active Learning Standard)

- The Crestron TSW-570P is a 5" touch screen with an edge-to-edge glass screen for higher durability.

Manufacturers link: <http://www.crestron.com>

## 7. Wireless Presenter Remotes

Wireless presenter remotes are commonly used in classrooms to advance PowerPoint slides without having to walk back to the computer. These are not covered under STF funds or supported by OTS but we recognize they are important in the overall instructional environment. Policies and funding for wireless presenters vary by

college so please check with local IT providers, chairpersons, or other college leadership before purchasing one since they may require drivers to be installed on classroom PCs. Wireless presenters are available online and at consumer electronics stores such as Best Buy, Staples, etc.

## 8. Assistive Listening Devices

### a. Williams Sound FM-557 Pro D

- This is an RF assistive listening device used to improve hearing ability in spaces with voice amplification.
- ADA placard must be posted in rooms with this device.
- Includes Dante capabilities.

Manufacturers link: <https://www.williamssound.com/>

## 9. Microphones

### a. Biamp TCM 1 Beamtracking microphone

- This is a ceiling mic that connects to the in-room computer via USB. It is used in medium to large spaces such as classroom and lecture halls.

Manufacturers link: <https://www.biamp.com>

### b. Shure ULXD4

- This is a Dante wireless mic receiver used for both voice reinforcement in the room and videoconferencing/lecture capture. G50 Frequency (G58 for non-Dante version).

## 10. Cameras

### a. Vaddio RoboSHOT 12 QUSB

- This is a pan/tilt/zoom camera that connects to the in-room computer via USB.

Manufacturers link: <http://www.vaddio.com/>

### b. Vaddio ConferenceSHOT FX

- This is a fixed wide-angle camera for meeting rooms and huddle spaces.

Manufacturers link: <http://www.vaddio.com/>

### c. Crestron UC-SB1-CAM

- This is an all-in-one speaker bar with built-in camera and microphone.

Manufacturers link: <http://www.crestron.com>

d. Logitech Meetup

- This is an all-in-one speaker bar with built-in camera and microphone.

Manufacturers link: <http://www.logitech.com>

e. Cisco WebEx Room Bar

- This is an all-in-one speaker bar with built-in camera, microphone, wireless sharing, and codec. For rooms up to 7 people.

Manufacturers link: <http://www.cisco.com>

f. Cisco WebEx Room Bar Pro

- This is an all-in-one speaker bar with built-in camera, microphone, wireless sharing, and codec. For rooms with 7-10 people.

Manufacturers link: <http://www.cisco.com>

g. Cisco WebEx Room Kit EQ

- This is an all-in-one speaker bar with built-in camera, microphone, wireless sharing, and codec. For rooms up to 14 people.

Manufacturers link: <http://www.cisco.com>

## 11. Audio Mixers

b. Biamp TesiraForte X 800 (standard)

- This is a microphone mixer that connects to the in-room computer via USB.

Manufacturers link: <https://www.biamp.com/>

b. Biamp TesiraForte AVB CI

- This is a microphone mixer that connects to the in-room computer via USB.

Manufacturers link: <https://www.biamp.com/>

## 12. Audio Amplifiers

a. QSC SPA2-60

- This is an external amplifier that must be used in room with video conferencing in conjunction with the Biamp TesiraForte mixer.

Manufacturers link: <https://www.qsc.com/>

### 13. Projection Screen

a. Dalite 38792LS White Case 119D / 58 x 104 Electric Screen HD 0.9

- This is a 16:9 electric tensioned HD screen with 0.9 gain.

Manufacturers link: <https://www.legrandav.com/products/da-lite>

### 14. Non-Interactive Display

We do not have a specific standard model large display but all must be commercial grade, 4K, controllable over RS-232, and have a No Show/Display Mute function. The NEC C Series is currently in use on campus.

### 15. Interactive Display

a. ClearTouch CTI-6065K-UH20

- This is an 86" 4K interactive (touch) display (but a smaller model may be appropriate for some spaces).

Manufacturers link: <https://www.getcleartouch.com>

### 16. Scheduling Panel

a. Crestron TSS-770-B-S-LB KIT

- This is a 7" room scheduling touch screen with room availability light bar.
- Bottom of panel must be mounted 46" high on the lever side of the door.

Manufacturers link: <https://www.crestron.com>

### 17. Wireless Projection

a. Mersive SolsticePod

- Allows clients to wirelessly project material from Windows and Mac computers as well as iOS and Android mobile devices.

Manufacturers link: <https://www.mersive.com>

### 18. Power Conditioners

a. Middle Atlantic RLNK-915R

- This is a networked power conditioner. Components must be connected in this order and labeled within the device:

1. Control Processor

2. Network Switch
3. Computer
4. Wireless Input
5. USB Extender
6. Mic Mixer
7. Distribution Amplifier

Manufacturers link: <https://www.middleatlantic.com>

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## Stickers (CTSG-007)

### 1. STF Stickers

- a. Sticker must be properly aligned.
- b. Stickers must not be in the way of any function, but must be conspicuous to the general observer
- c. Stickers must be affixed during QA before photos are taken so they show in the Virtual Tour.
- d. After a room is tagged it will be marked as such in COLLECTIONS in the Virtual Tour.
- e. Items that must be stickered
  - ii. Projectors
    - Will be affixed on side facing down if ceiling mounted, must not cover any other labeling, fans, or buttons
    - In future, stickers must be applied prior to mounting for easy access
  - ii. Document cameras
    - Sticker must be affixed on (WV VZ-3 specific)
      - i. On the back of the arm
      - ii. On the plate that connects the base to the arm.
        1. Stickers must not be placed on the white base
  - iii. Computer – computers include class and lab computers as well as iPad's purchased with STF
    - Stickers must be affixed on
      - i. The front of desktop computers
        1. Stickers placed on the front must not cover any buttons or lights
      - ii. The top near the TU tag for desktops, the bottom/back for laptops/tablets
  - iv. Processor in rack
    - Sticker must be placed on the front of the DMPS3-4K-350C - this is to identify the entire rack
  - v. Cameras

### 2. Interactive Display Stickers

- A. Must be placed on the bottom left hand corner of all interactive touch screen displays including computer monitors.

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# Distance Learning, Video Conferencing, & Lecture Capture

## Standard Equipment (CTSG-008)

Towson University utilizes a software based distance learning & lecture capture model. Rooms either include USB cameras/microphones or a bridge to convert standard camera/microphones to a format that can be connected to the computer in the room and through a USB connection in the Cable Cubby for connection to a laptop.

- a. Cameras must be mounted 7 feet above finished floor.
- b. Flat panel displays must be mounted 6 feet above finished floor to the center of the display.
- c. Flat panel displays must be mounted 6 inches away from fire alarms/annunciators.
- d. Microphones installed for voice reinforcement must also feed distance learning/lecture capture system. Wireless and podium microphones must always be set up for voice reinforcement and distance learning/lecture capture.
- e. Camera names must be entered in the configuration page of each camera device so that they match the name on the Crestron touch panel (i.e. Camera 1) and are recognized by the computer USB as this name.

### 1. Basic Setup

- a. Camera - Basic/portable recording can be accomplished in any room with a webcam plugged into the instructor's PC, TU recommended models can be found here:

<https://www.towson.edu/technology/facultystaff/hardwaresoftware/hardware.html>

- b. Wireless Microphone - A wireless USB mic can be added to this setup for more flexible instructor micing. To capture omnidirectional sound, products are available from Blue and Acoustic Magic to capture the entire room audio.

### 2. Permanent Setup

- a. Foundation – This is used to describe the majority of our standard classrooms on campus. These rooms are used for general lectures and would need basic video and mic capabilities to facilitate software-based lecture capture.

Equipment: PTZ USB camera, mic mixer w/USB out, Ceiling microphones, additional USB connection for laptops, and wireless mic. Two displays are also added on the podium to allow for dual monitor functionality.

- b. Curriculized – These are rooms that have needs that go above and beyond what is found in a standard room; this could include the need for more advanced microphones, more camera angles, etc.

Equipment: One or more HD PTZ cameras, mic mixer w/ USB out, additional USB connection for laptops, ceiling mic arrays, wireless mic(s). Two displays are also added on the podium to allow for dual monitor functionality. Additional equipment to support specific courses or programs of study may be included in Curriculized rooms.

- c. ALIST: These are rooms that must contain the highest quality video and audio quality possible with consideration given to room lighting, acoustics, etc. They represent the fewest number of classrooms. Special staffing may be necessary to assist faculty or control equipment in a studio environment. Broadcast or near broadcast quality may be typical, as well as other unique types of technology beyond



computers and audiovisual.

Equipment: 2 HD PTZ Cameras, mic mixer w/USB out, additional USB connection for laptops, individual mics at each seat, podium mic & wireless mic (s).

Article CTSG-008; Version 1; Last Revised 2/27/2023

## Distance Learning Equipment in ALIST/Curriculized Spaces (CTSG-009)

1. The minimum set of equipment must be installed as follows:

- a. Display 1 in view of instructor
- b. Display 2 in view of students
- c. Camera facing instructor
- d. Camera facing students



2. Each display device must be able to be able to show any source and be controlled independently using the multiple display touch panel layout found in Appendix A.

3. Standard Scenario

- a. Projector/Main Display: Local computer content (PowerPoint, etc.) (Must also have the ability to show all media and camera shots)
- b. Display 1: Displays remote students (or used as a confidence monitor in lecture capture scenarios)
- c. Display 2: Shows remote students or remote instructor (depending on scenario)



Article CTSG-009; Version 1; Last Revised 11/16/2020

## Conference Rooms (CTSG-010)

Towson University utilizes Cisco WebEx Room Kit hardware in conference room spaces. The following standard equipment is installed based on the size of the space.

### 1. Small Conference room/huddle space (2 – 7 people)

- a. Single Display
- b. Cisco Room Bar
- c. Micro form factor computer (connected via HDMI and USB [or single USB-C cable if equipped] to Cisco Room Bar)



### 2. Medium Conference Room (7-10 people)

- a. 1-2 Displays
- b. Cisco Room Bar Pro
- c. Micro form factor computer (connected via HDMI and USB [or single USB-C cable if equipped] to Cisco Room Bar Pro)

- d. Additional ceiling or desktop microphones
- e. HDMI and USB connections for laptop



### 3. Large Conference Room (up to 14 people)

- a. 2 Displays
- b. WebEx Room Kit EQ
- c. Micro form factor computer (connected via HDMI and USB [or single USB-C cable if equipped] to WebEx Room Kit)
- d. Additional ceiling or desktop microphones
- e. HDMI and USB connections for laptop



### 4. Specialty Conference Room (14+ people)

Some large conference rooms require more advanced features such as video walls, 3+ displays, lighting/shade control, etc. These are outfitted using the standard classroom equipment and control systems described throughout this document.

Article CTSG-010; Version 1; Last Revised 5/22/2023

## Instructor Stations

### Requirements (CTSG-011)

Each podium must contain the following:

1. Articulating arms must be used for the monitors (or interactive displays). Model Info: Ergotron 45-241-026

2. Dual Monitors are recommended in any room used for instructional recording.
3. Podium casters must be lockable
4. No doors must be over the keyboard compartment
5. At least one (quiet) fan must be present in the cabinet
6. Grommet positions for whip (if applicable)
7. Core drilling must be used for new buildings, in addition to the conduit for a quad electric outlet and 6 network drops, each floor box must have separate conduit for AV signal and speaker, mic, camera cabling. 3 1" conduits or 2" and a 1" conduit.
8. If no core drilling is present, locking wall plates/receptacles must be used [see Locks (CTSG-024)] and AV cables (whip) must be tightly secured to avoid a tripping hazard. If cables must, as a last resort, be run across floors the ADA compliant Legrand OFR Series Overfloor Raceway System must be used. Temporarily, yellow tape provided by OTS is acceptable but only if there is a confirmed date when permanent raceway/core drilling will be completed and the use has been approved by OTS.
9. In large venues where high power projectors are used, a dedicated circuit must be provided to prevent the projector from shutting down if too much power is drawn.
10. Six network ports must be run to the instructor stations (1 PC, 1 Laptop, 1 Crestron, 1 Wireless Input, 1 Power Conditioner, 1 Future Expansion).
11. Wire diagram must be provided in digital format
12. All cables must be labeled
13. Document cameras must be connected to the podium computer via USB
14. Equipment mounted behind displays and cameras (i.e. power strips, power supplies, USB extenders, DM receivers, etc.) must not use velcro to secure it in place. Instead we require where possible the use of cable ties, wall mounts, or other methods that do not use an adhesive that easily breaks down.
15. AV, computers, and other technology devices are not put on timed circuits or sensors. Power must be available to them 24/7.
16. Assistive listening devices must be installed in all rooms with voice reinforcement or where sound is a key part of instruction in a quantity that it is in compliance with current ADA requirements.



Article CTSG-011; Version 1; Last Revised 5/22/2023

## Cable Cubby (CTSG-012)

The Cable Cubby must include Ethernet, USB, HDMI, 3.5mm audio, USB-A/USB-C power outlets, and two electrical outlets. HDMI, Ethernet, and 3.5mm audio must contain pull-through cables with male connectors. USB must contain pull-through cable with female connector.



Article CTSG-012; Version 1; Last Revised 6/20/2019

# Lighting

## Overview (CTSG-013)

1. Intuitive wall-mounted light switches must be within easy reach of the instructor workstation. They are very reliable, require no training, and will work regardless of the state of the Crestron system.
2. Lighting controls must also be integrated into the Crestron system where possible. These controls are meant to supplement, not replace, the standard wall switches.
3. Additional factors: switches must be installed at wheelchair-accessible height; for multiple switches (zoned lighting), the switches must either be labeled or a reference placard must be mounted next to the switch bank; redundant switches must be located on the wall as close as possible to each entry door to the room.

Article CTSG-013; Version 1; Last Revised 10/23/2019

## Lighting and Switching Specifications (CTSG-014)

1. Soft Lights directly in front of projection screen must be able to be turned off (including turning off any motion sensor so they do not come back on inadvertently).
2. Lights in the student seating area of the room must be dimmable to allow for low-level illumination (for note-taking) or completely off (for watching videos, etc., where no note-taking is needed).
3. The "master" bank of light switches that control the entire room must be installed on the wall behind or next to the podium for easy access (unobstructed) when lecturing; the instructor must not have to walk more than two steps to manage the lights during the class.
4. At least one light switch must be placed near the entrance of the room. This will let room users turn on at least a portion of the room lights so you can safely enter the room (and turn off the light when leaving).
5. Any occupancy sensors must have the ability to be overridden using the light switches at the instructor podium so the entire room can be darkened or illuminated during a class, under control of the instructor.
6. Light switches must be labeled, ideally with pocket inserts, so the instructor knows what the switch turns on/off. You mustn't have to use trial and error.
7. A motorized screen switch must also be placed near the podium and labeled. The switch must have up/down/stop (three buttons). Primary control of the screen will be under Crestron touch-panel control, but the manual wall switch must be able to override the Crestron system to allow for manual control.
8. Sight lines – lighting should be flush to the ceiling – or dropped in a way as to not obstruct projector throw to screen.

Article CTSG-014; Version 1; Last Revised 11/16/2020

# Touch Panel

## Overview (CTSG-015)

Our standards require that a touch panel be installed in most rooms that control the AV functions of the room. Our standard touch panels have a similar look and functionality, with standard "hard" buttons with main controls and variations of "soft" menus that can be customized depending on the equipment in each room. Screen shots must be submitted to Towson University for review prior to project competition

Article CTSG-015; Version 1; Last Revised 11/16/2020

## Natural Flow Patterns When Moving Between Controls (CTSG-016)

1. The user begins the experience with the Start button and works their way through the left column of "hard" buttons. The Start button tells the user what to do next: step through the other buttons on the left-hand column and turn on the projector, select their audiovisual source, and lower the screen. When class is done, they'd press the Finish to shutdown the system. This kind of natural flow pattern helps guide the movement of a user through a class session.
2. When deciding on what goes on the left-hand panel of hard buttons vs. the right, we followed people's natural reading style for a two-column presentation: you start at the left-most column, read your way from top to bottom, then move on to the next column, doing the same: top to bottom.
3. Secondary controls, menus, and submenus then appear "on demand" as "soft" buttons in the touch panel based on choices made by pressing a hard button. This follows people's natural skimming style: periphery first (the left and right hard-button panels), followed by the content in the central field (the touch panel).

Article CTSG-016; Version 1; Last Revised 10/22/2019

## Status Bar (CTSG-017)

The status bar will be always visible at the bottom of the touch panel. It will include the current time of day (12 hour time); and annunciators to show whether No Show or No Sound is selected.

Article CTSG-017; Version 1; Last Revised 11/16/2020

## Nesting Menus in Layers (Drilldown) (CTSG-018)

A philosophy in User Experience best practices is to keep structures as flat as reasonably possible, without being excessively flat. In most cases we try to keep our control panels structure only a couple layers deep.

If used, there must be a clearly labeled "Previous Page" button, and other things would need to be locked out while the submenu is active.



## Fonts and Colors (CTSG-019)

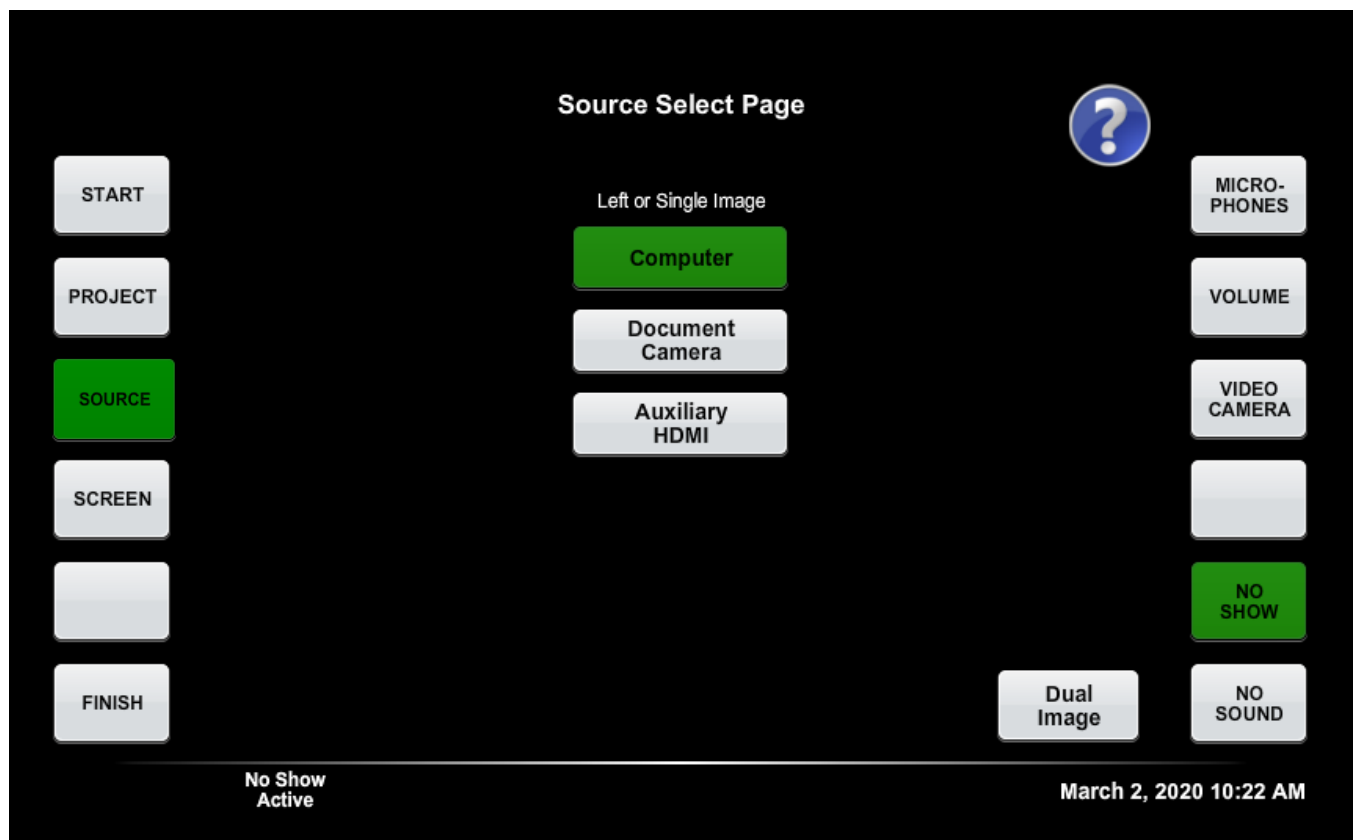
1. In order to uphold User Experience best practices on color and fonts, colors used should be intuitive in the context, color impairments should be considered, and fonts should be limited to 1 or 2 styles that are easy to read. Examples: red generally indicates stop, off, or extreme; green can mean go, on, or within a set limit; yellow is generally used to indicate caution, or near a set limit." Avixa provides additional guidance on color usage. It is not absolute, but it is a valuable guide.
2. For multiple button selections with only one permissible choice (e.g., selecting the primary audiovisual source), the button the user selects must appear depressed to be very clear the choice has been made. When one is selected, the non-selected buttons must be in a raised state. Any buttons that are not appropriate for the context or not an allowable option must be grayed out.
3. Flashing text must be used sparingly for imperatives, emphasis, in-transit states, or vital messages.
4. When raising the volume the color must go from green to yellow to red to indicate the volume is reaching the upper limit.
5. TU Standard Settings:
  - a. Font – Arial
  - b. Main Titles – 14 Bold
  - c. Button Column Titles – 14
  - d. Button Text – 11
  - e. Other Text – 11
  - f. Alias setting: Anti-Aliased

## Hard Buttons (CTSG-020)

1. The following "hard" buttons must be present:
  - a. Start – Press to begin using the system, wakes up screen. Must be the only button that can be pressed when at the splash screen.
  - b. Project – Press to lower screen and turn on the projector or display
  - c. Source – Displays the list of sources available in the room
  - d. Screen – Displays manual screen controls
  - e. Finish – Press to turn system off
  - f. Microphones – Press to select whether to use microphones if room is equipped



- g. Volume – Press to change the volume of the system
  - h. Video Camera (formerly Record) – Press to access the Camera Control Page if room has PC-connected camera.
  - i. No Show – Press to temporary stop sending image to projector or display
  - j. No Sound – Press to temporarily mute the system. If the system is muted, press to unmute the system. Pressing the volume up or down buttons must also unmute the system.
    - i. "No Sound" function must mute all audio coming from the system including any microphone currently set to "Use." All current "Use" or "Don't Use" states must be cached at this point.
    - ii. When "No Sound" is turned off, all microphones should be restored to the cached "Use" or "Don't Use" state they were in prior to "No Sound" being activated.
    - iii. Un-muting any source by pressing the "mute" button or changing the volume must explicitly place "No Sound" to the "not on" state. Cached states are to be overwritten the next time "No Sound" is set to "on".
2. Hard buttons must display a "feature not available" message if not applicable to the room. See "Camera Control Page" for rooms without cameras in Appendix A.
  3. "Hard" buttons must show green feedback when selected. Buttons must stay green as long as panel is on that page (i.e. Volume button remains green while on Volume Control Page). No Show & No Sound must stay green while enabled as shown in the example below:



4. Pressing any hard button (or the screen itself) must wake the screen if the touch panel is in sleep mode



5. For the TSW-770/760/752/750 Touch Panel, the hard buttons must control the following functions:
  - a. Power Button = Emulate the START/FINISH buttons
  - b. Home Button = Emulate the SOURCE button
  - c. Light Button = Title: "Lighting Control Page" Text: "Lighting control is not available in this room"
  - d. Arrow Up = Main volume up. Pressing the volume up or down buttons must also unmute the system.
  - e. Arrow Down = Main volume down. Pressing the volume up or down buttons must also unmute the system.

Article CTSG-020; Version 1; Last Revised 11/16/2020

## Soft Buttons (CTSG-021)

Please see Appendix A

Article CTSG-021; Version 1; Last Revised 5/18/2012

## Defaults on System Start (CTSG-022)

1. No Sound active during system start-up and shut down

2. Mute microphone ("Don't Use" position), mic stays in "Don't Use" position until toggled to "use" by client
3. MP3 muted during start up then unmutes like rest of system
4. Volume at default level (60-65 decibels when measured from the center of the room). Use the following white noise generator to test this: <http://onlinetonegenerator.com/noise.html>. Computer/individual device volume must be at 100% during this test if applicable. All auxiliary connections must be tested with an iPhone.
5. Podium computer must be selected as the source (or laptop if no podium computer)
6. TV must be tuned to CNN unless stated otherwise
7. All buttons (Hard and soft) must be locked out during the startup and shut down of the system.
8. Date and time in lower right hand corner must be in the following format on all pages: July 18, 2012 12:00 (make sure text box is large enough to accommodate September). Time must be synced with the network.
9. Crestron Touch Panel screen must not go to sleep or automatically adjust brightness while system is on
10. On system start-up, all flat panel displays must default to the appropriate input setting in order to display the default source (Computer) even if someone manually changes the input on the display
11. Volume knobs on the front of Crestron equipment must be disabled.
12. The Document Camera must be off when the system starts. The Document Camera and lamp must come on when the "Document Camera" source is selected.

Article CTSG-022; Version 1; Last Revised 3/17/2021

## Source Page (CTSG-023)

The Source Page must be laid out in the same order as the example below (exclude any source that is not available in that room):

1. Computer
2. Laptop (VGA)
3. Document Camera
4. DVD
5. Auxiliary
6. TV
7. Auxiliary HDMI
8. Wireless Input'
9. ClearTouch (Access built-in Android OS)

Source column headings must be as follows:

Dual Image rooms: "Left or Single Image" and "Optional Dual Image"

Rooms with two physical displays: "Display 1" and "Display 2"

Rooms with two physical projectors: "Projector 1" and "Projector 2"

The "Optional Dual Image" column is only displayed when the "Dual Image" button is pressed (a single source column must be shown at all other times). The "Dual Image" button must remain green when activated and pressing it again would deactivate it and the second column would go away.

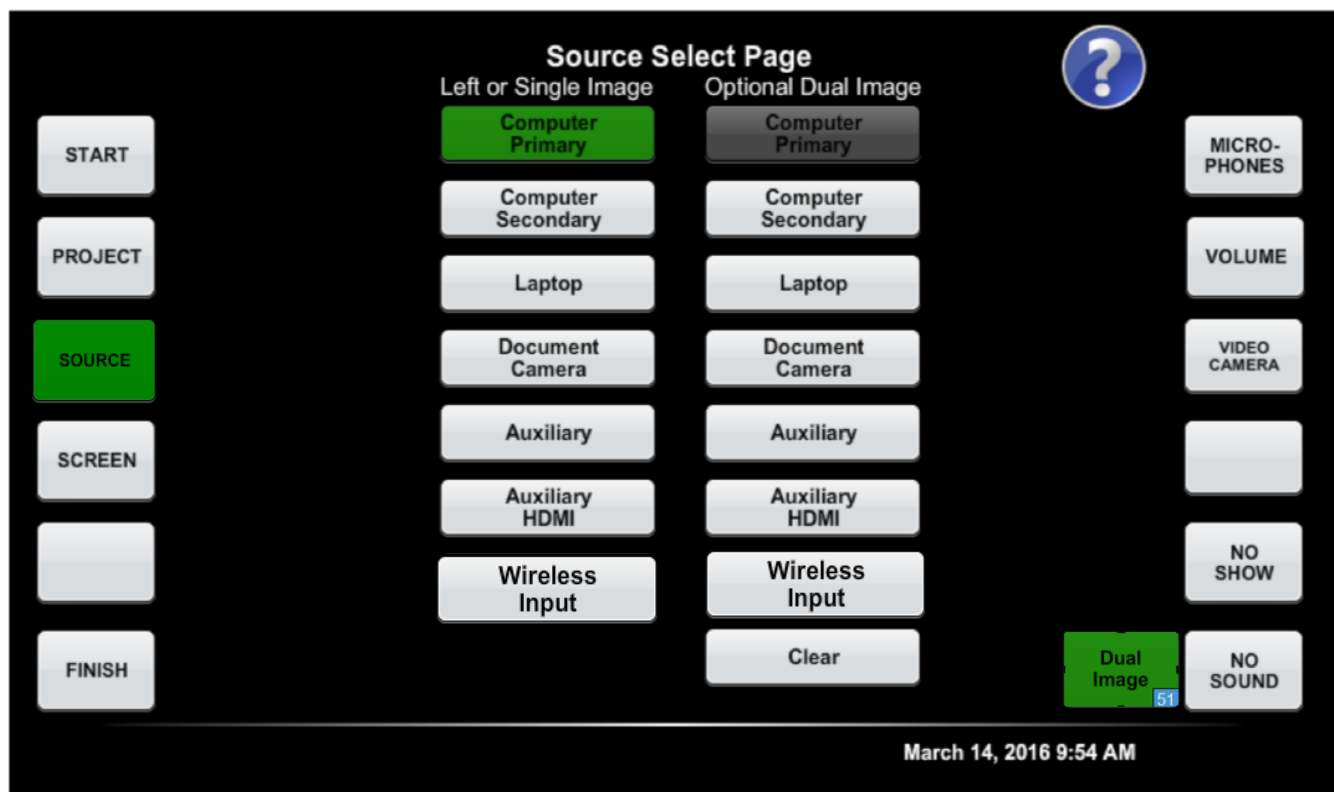
Here is an animation of what the behavior looks

like: [https://webapps.towson.edu/classroomtechnology/web\\_documents/dualimage2.gif](https://webapps.towson.edu/classroomtechnology/web_documents/dualimage2.gif)

Rooms that are combinable with other rooms must use the same naming standard but only show currently selectable sources. This is accomplished through a partition sensor or through manual selection at system start up if a partition sensor is not a viable option for the space.

If the podium computer had dual monitors, a “Secondary Monitor” Button must be placed directly below the “Computer” button to allow either image to be shown to any display in the room. There must always be an “Auxiliary HDMI” Button separate from the “Laptop” (VGA) button. All other sources must be hidden unless present in the system including dual display options if dual image is not available. Image Adjust side button must be hidden on digital sources where no adjustments are possible (i.e. HDMI, DVI, other fully digital sources). Fully digital systems (i.e. Crestron DMPS3-4K-350-C) will not have VGA or composite video inputs and no image adjust options available on any source. Left and right image source list must mirror each other (button must be blacked out on opposite source list when selected). On rooms with single source display, “Clear” button must be removed. In rooms with ClearTouch displays, a source button must be added to access the Android OS, this must also be counted as part of the device usage report.

Left and right image must be stage left and stage right, meaning the instructor’s left and right while facing the students. (<http://plays.about.com/od/basics/ss/stageright.htm>)



# Security

## Locks (CTSG-024)

1. Compartment with AV rack must lock separately from computer compartment
2. Computer compartment must not be lockable (unless absolutely needed to be secured)
3. AV rack lock must be a non-electronic combo lock (no-batteries)
4. Core drilling must be used for new buildings, otherwise locking wall plates/receptacles must be used
  - a. OTS has identified the following model to use with AV wall plates that contain DM, Control, and Speaker cable connections:
  - b. The wall box must be labeled "Specialty Ports Do Not Disconnect"

SKU	DESCRIPTION
<a href="#">AI-DBP2</a>	Arlington Industries Medium-Sized, Vertical Mount Dri-Box Adapter w/ Non-Metallic Dual Gang Base- White

- c. Red Crestron network cables must be secured to the networking wall ports using this model of lock:

SKU	DESCRIPTION
<a href="#">PAN-PSL-DCPL-RD</a>	Panduit-"Package of 10" Flush Mount RJ45 Plug Lock-in Devices and One Installation/Removal Tool

Article CTSG-024; Version 1; Last Revised 10/22/2019

## Sonic Shock (CTSG-025)

1. Sonic Shock alarms must be attached to the following equipment items, unless otherwise specified in a statement of work: projectors, large screen displays, and all podium equipment (document cameras, media players, Crestron processors). For equipment located on or inside a podium a single Sonic Shock alarm must be used and the cable looped through the applicable items.
2. The Sonic Shock must be mounted in document camera drawer (if equipped).
3. DVD/Blu-ray need not be alarmed IF it is rack mounted with security screws.
4. Sonic Shocks must be attached to SMART podiums and all-in-one PCs/Macs.
5. If there is a reason to locate the Sonic Shock elsewhere (e.g. not in the drawer), an exception must be requested through TU.
6. Sonic Shock Stickers must be affixed to projector.
7. Sonic Shock keys must all be keyed to the TU master.

Article CTSG-025; Version 1; Last Revised 11/16/2020

## Classroom (CTSG-026)

1. It is recommended that swipe Locks must be installed on main classroom entrance
2. All keys (i.e. podium) must be turned over to Manager of Classroom Technology.
3. It is recommended that classrooms that feature computer labs or other expensive equipment have an alarm that requires a code for access.

Article CTSG-026; Version 1; Last Revised 10/16/2019

## AV Rack (CTSG-027)

1. Use security screws to rack-mount equipment
2. Racks that are outside of podiums must have their own keyed locks
3. All rack equipment that is capable of having a password must have one (Crestron controllers, routers, etc.)

Article CTSG-027; Version 1; Last Revised 10/22/2019

# Networking

## Crestron Network Cables (CTSG-028)

All Crestron processors must be connected to network ports using RED network cables. This will help quickly identify which cable runs to the Crestron for installation and troubleshooting purposes.

Article CTSG-028; Version 1; Last Revised 6/1/2012

## Information Needed (CTSG-029)

1. Please see Crestron Worksheet for information needed to add Crestron equipment on the TU Network:  
[Crestron Worksheet](#)
2. Once a port is configured the red Crestron network cable must remain plugged into the same port and port must be labeled with a "C".
3. All Crestron processors must have the following DNS servers entered in settings: 10.20.1.5 and 10.20.1.6

Article CTSG-029; Version 1; Last Revised 10/22/2019

## **Routers/Switches (CTSG-030)**

1. Any switches being used in the podium must first be approved by Towson University's network group.
2. Items such as computers and Crestron equipment cannot be plugged into the same switch since they use different VLANs. Only one VLAN can be assigned to a switch/router so all devices must match this VLAN.
3. Red network cables must be used to connect the router/switch to the wall port if a Crestron device is connected to the router/switch.
4. Routers/Switches must not be plugged into any other port besides the one that was specifically configured for it or it could pose a security threat to the TU network.

Article CTSG-030; Version 1; Last Revised 10/22/2019

## **VLAN (CTSG-031)**

1. All Crestron processors must be on VLAN 541
2. All video conference equipment (i.e. Cisco C40) and Digital Signage must be on VLAN 540
3. All Wireless Input devices must be on VLAN 539
4. All scheduling panels must be on VLAN 542
5. All Computers and Cable Cubby network ports must be on the Learning Spaces VLAN.
6. All devices must follow standard host name scheme.

Article CTSG-031; Version 1; Last Revised 3/13/2020

## **Wall Ports (CTSG-032)**

1. All Network ports must be installed with locking wall plates so that cables cannot be unplugged
2. All DM cables that have RJ-45 style connectors must also have locking wall plates so that cables cannot be unplugged

Article CTSG-032; Version 1; Last Revised 11/16/2020

## **Crestron Fusion RV (CTSG-033)**

1. All Crestron systems must be connected to Crestron Fusion RV
2. All Crestron systems must have an Xpanel loaded on the Crestron Fusion RV server
3. All Crestron systems must have the "device usage" module loaded to report on all sources listed in the source column on the Crestron touch panel and "dual image" functionality.

## Crestron Code (CTSG-034)

1. The latest version of the un-compiled Crestron processor and touch panel code must be uploaded to the Crestron code share ([\\\\customshare\\cclt\\$](\\\\customshare\\cclt$)) every time a change to the system is made following the guidelines outlined in the instruction document located on the share.
2. A wiring diagram must be uploaded to the Crestron code share ([\\\\customshare\\cclt\\$](\\\\customshare\\cclt$)) every time a change to the system is made.
3. All serial numbers must be uploaded to the Serial Number SharePoint site:  
<https://tu.sharepoint.com/sites/cclt/Lists/Towson%20University%20Serial%20Number%20Spreadsheet/AllItems.aspx>

Article CTSG-034; Version 1; Last Revised 10/22/2019

## Appendix A

### Crestron Touch Panel: Soft Buttons TSW-770/760/750/752 (CTSG-035)

1. Splash Screen

Logo must point to live web graphic located here, logo must be immediately visible and be set to refresh at least once a day in the event of a logo change:

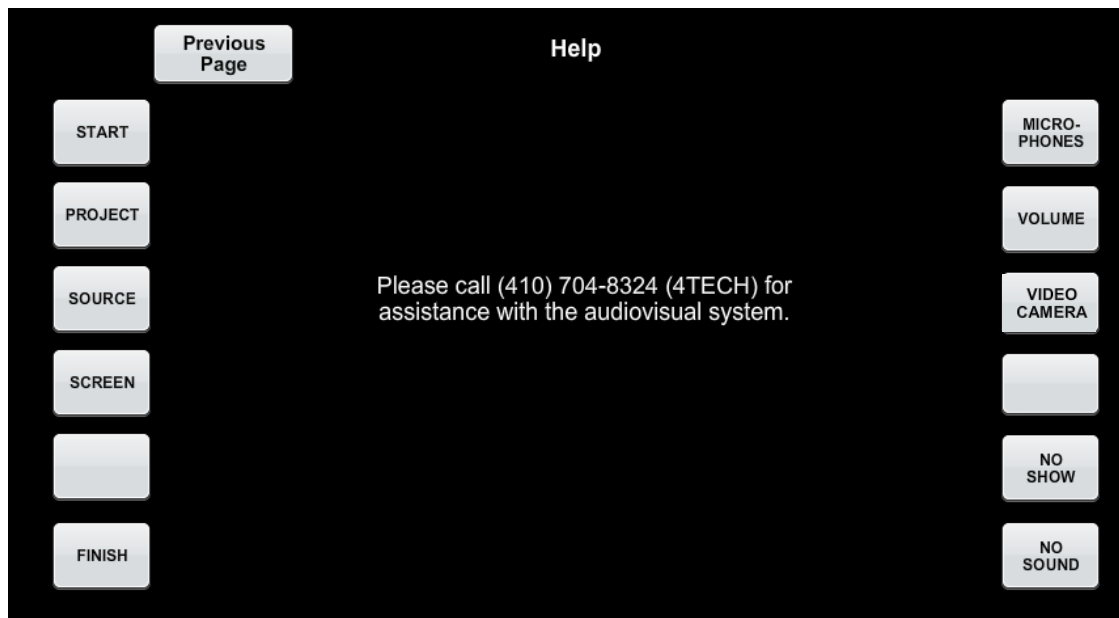
[https://webapps.towson.edu/classroomtechnology/web\\_documents/TowsonUlogo.png](https://webapps.towson.edu/classroomtechnology/web_documents/TowsonUlogo.png)





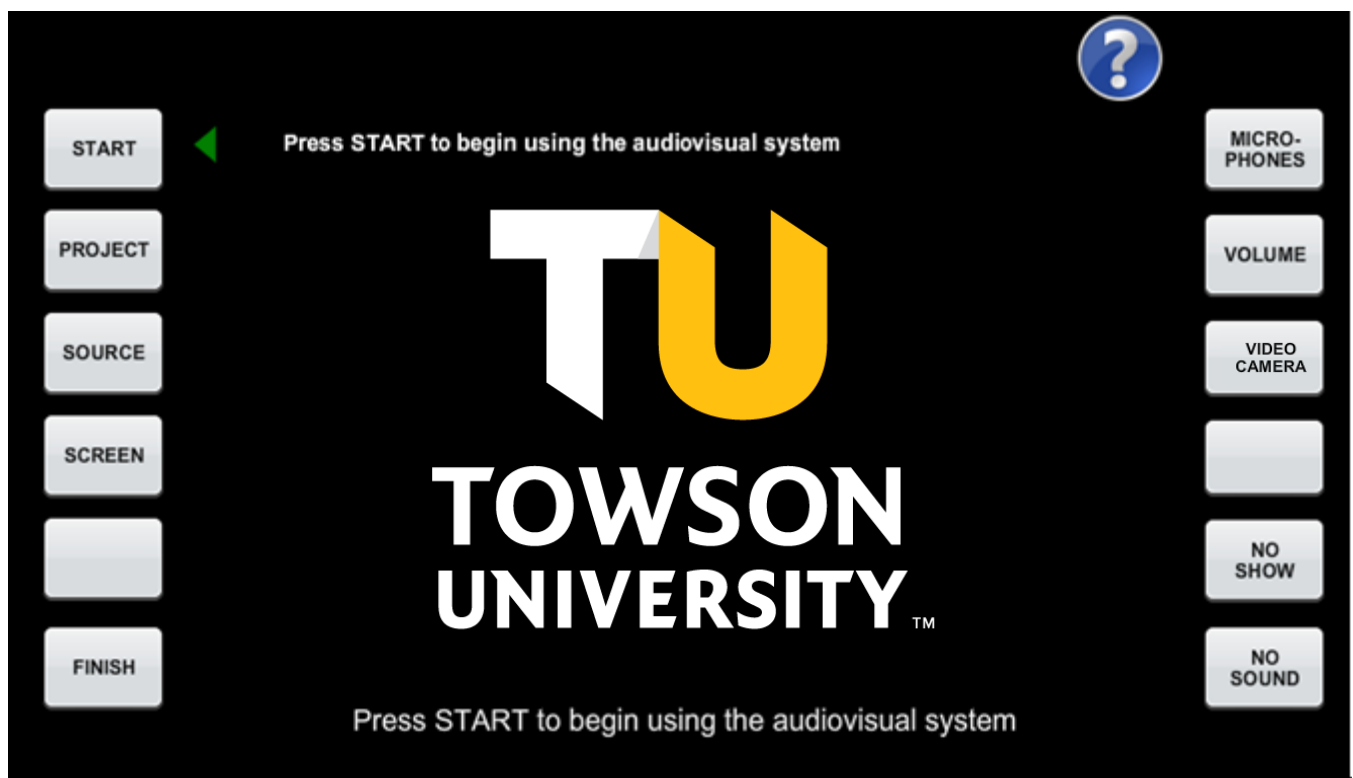
## 2. Help Screen

This page is displayed when the Help (?) button is pressed.



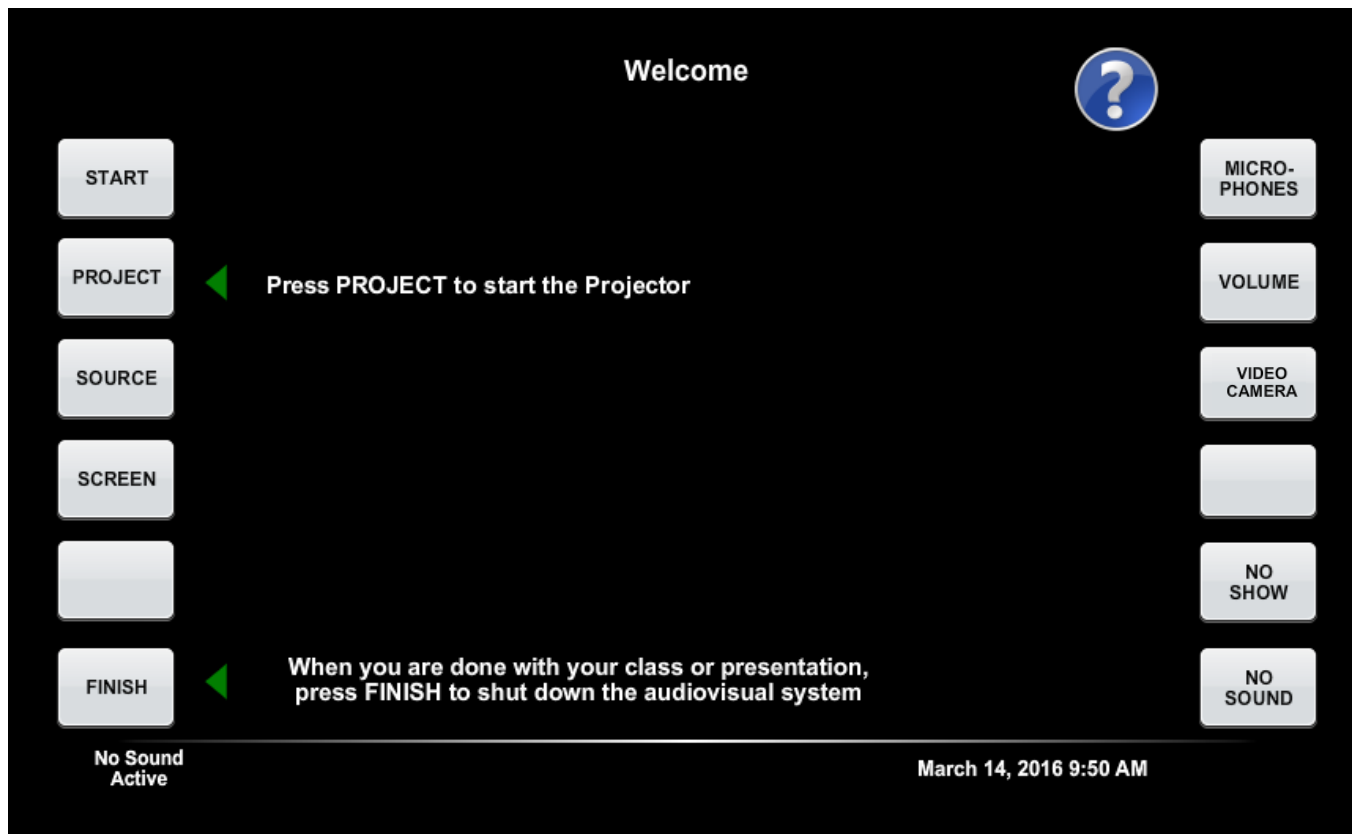
## 3. Wrong Button Screen

If button other than "START" is pressed this screen must appear. The arrow/message must disappear 10 seconds later if no further action is taken.



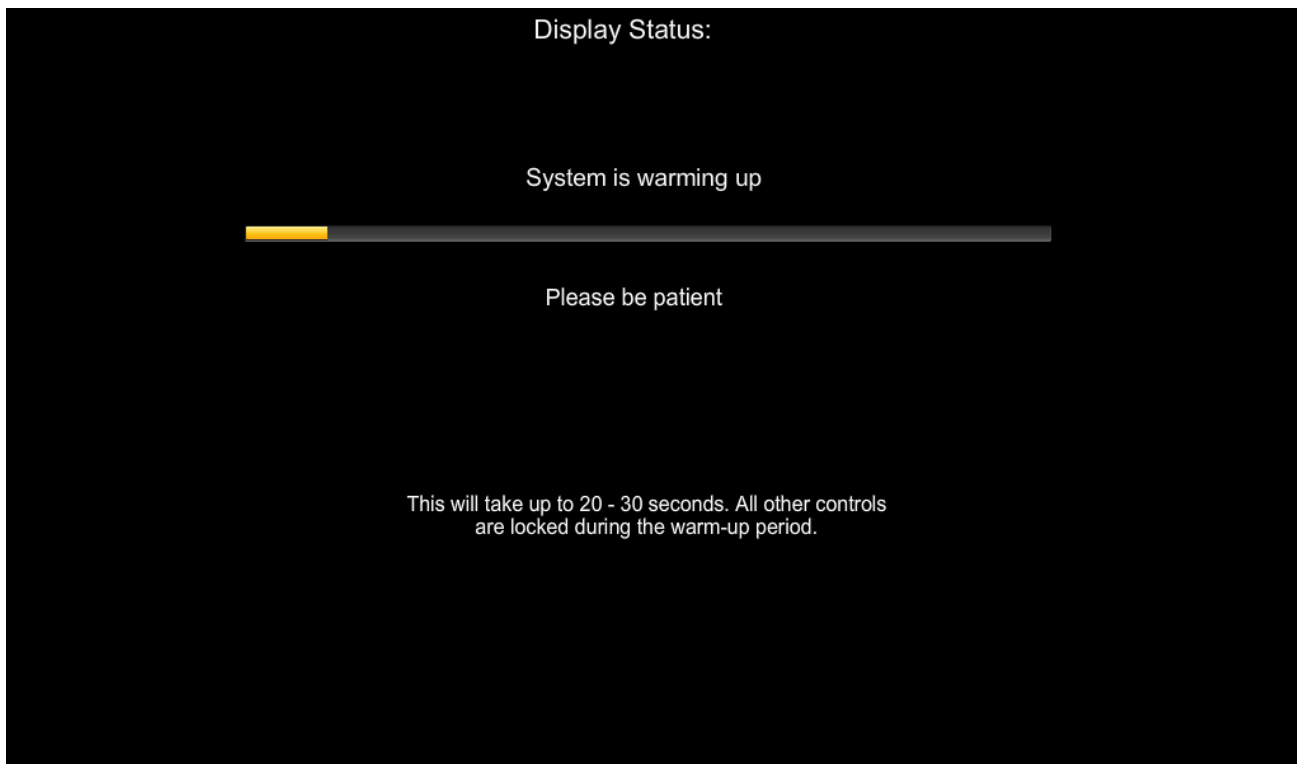
4. Welcome screen

If the START button is pressed and the user does not press PROJECT to continue with startup it must return to the splash screen in 30 seconds.

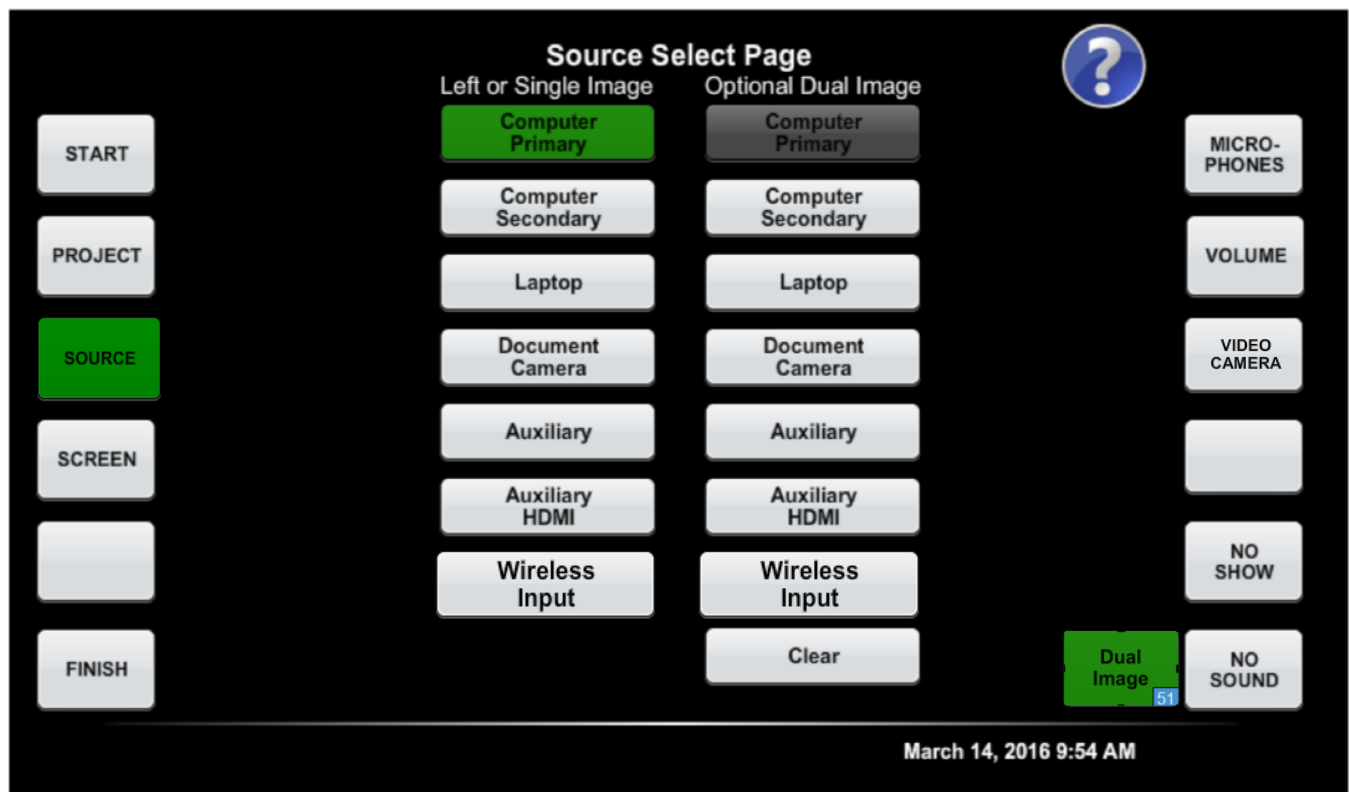


5. Display Status

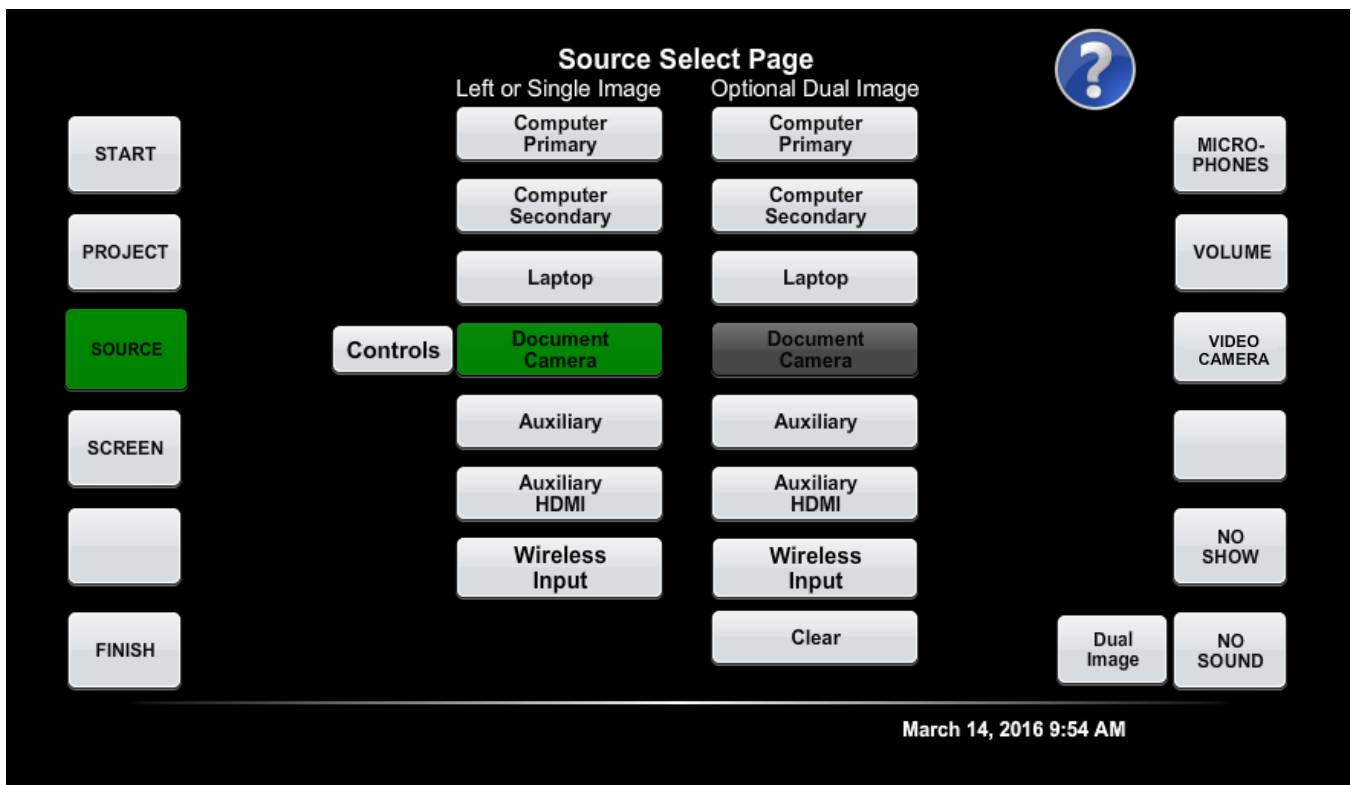
Status bar must be adjusted to go as quickly as possible on a projector by projector basis depending on startup time



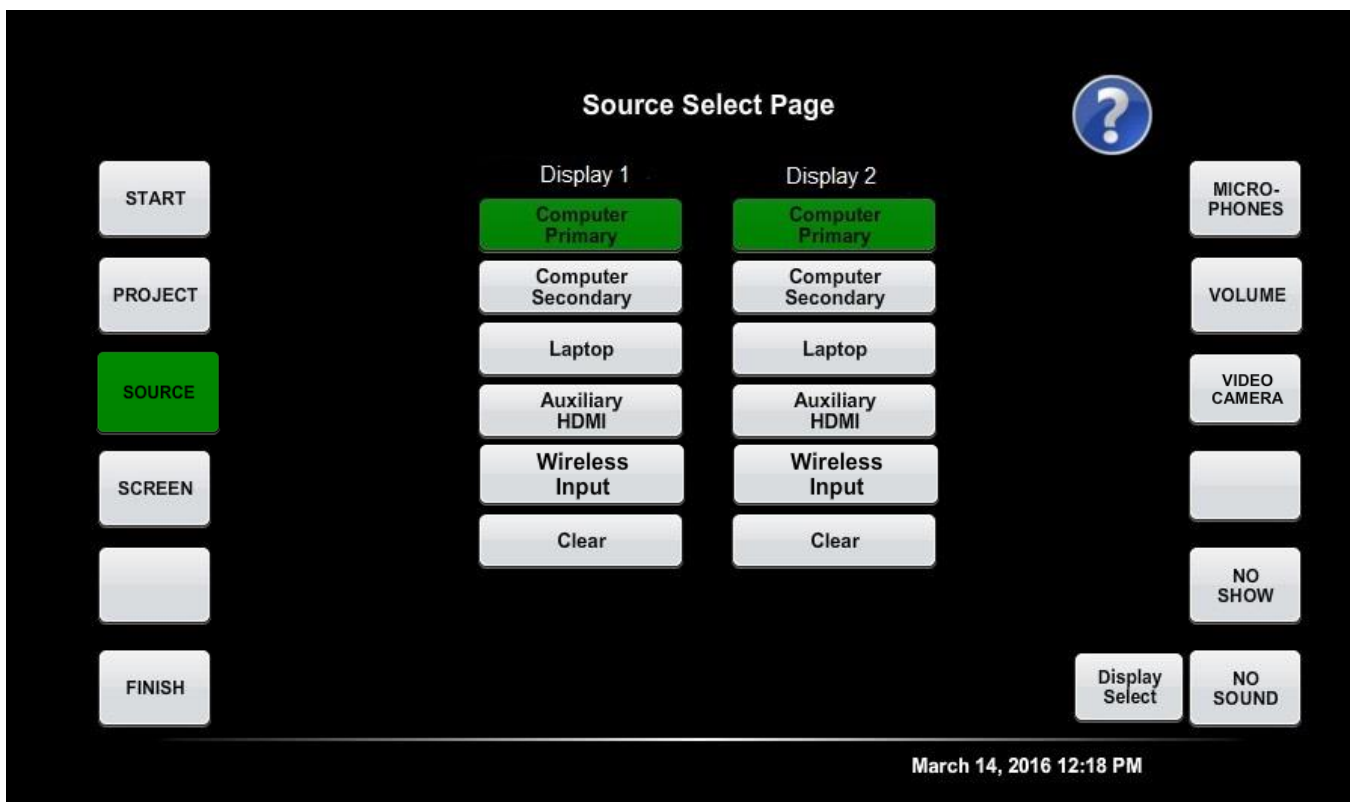
6. Source Select Page  
Source Select Page w/ Dual Image Enabled



7. Control fly out



8. Source Select page for rooms with two displays. If a room has two “main” displays, the display to the audience’s left (stage right) is “Display 1” and the display to the audience’s right (stage left) is “Display 2”
- “Computer Secondary” displays the second monitor of an instructor computer that has a dual monitor setup

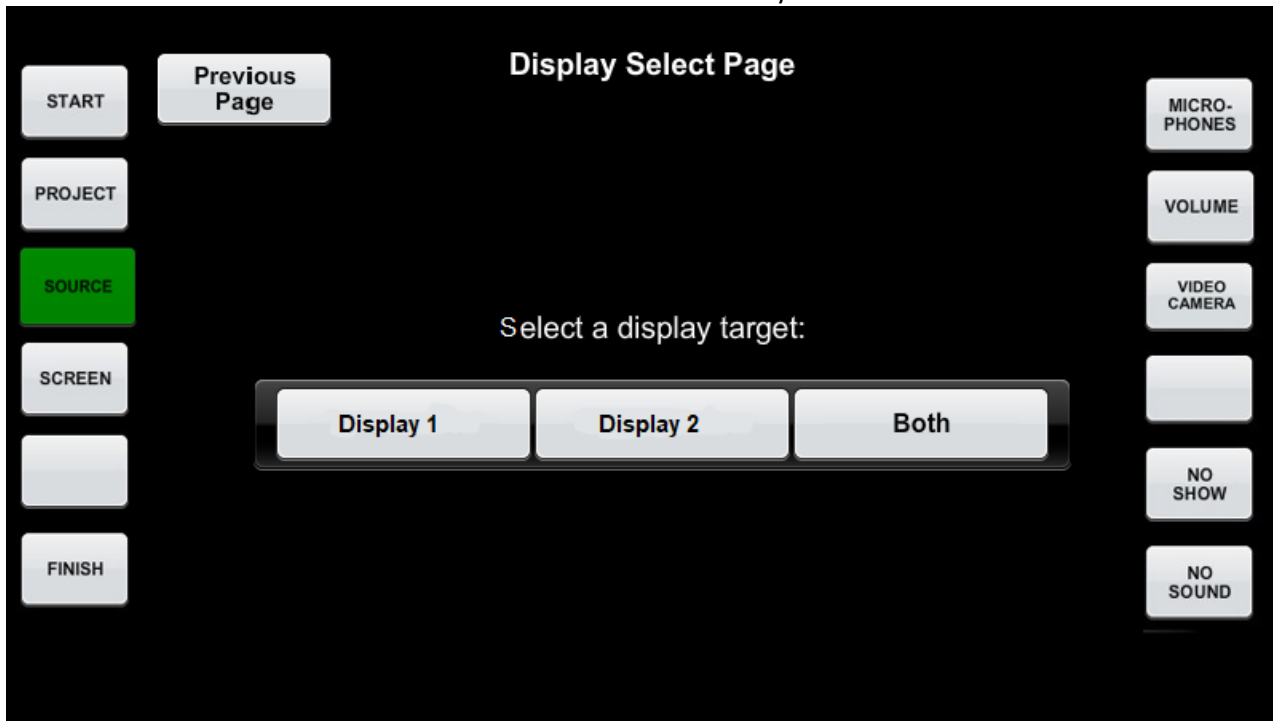


## 9. Display Select Page

Appears when pressing START>PROJECT or "Display Select" on the source page

Buttons should be labeled as follows

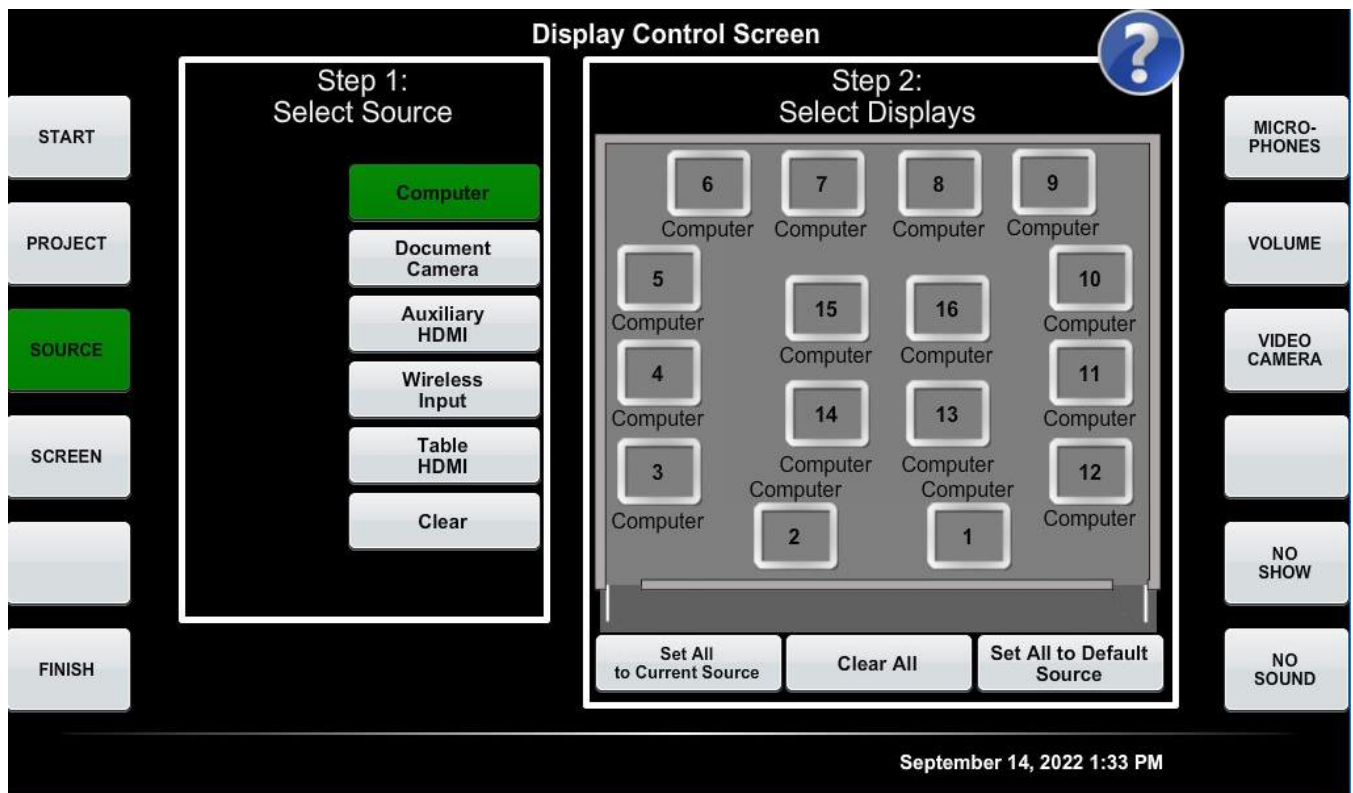
- Flat Panel - "Display"
- Projector - "Projector"
- ClearTouch or other interactive panel = "Interactive Display"
- If there is more than one of the same kind they should be labeled "1" and "2"



## 10. Display Control Screen

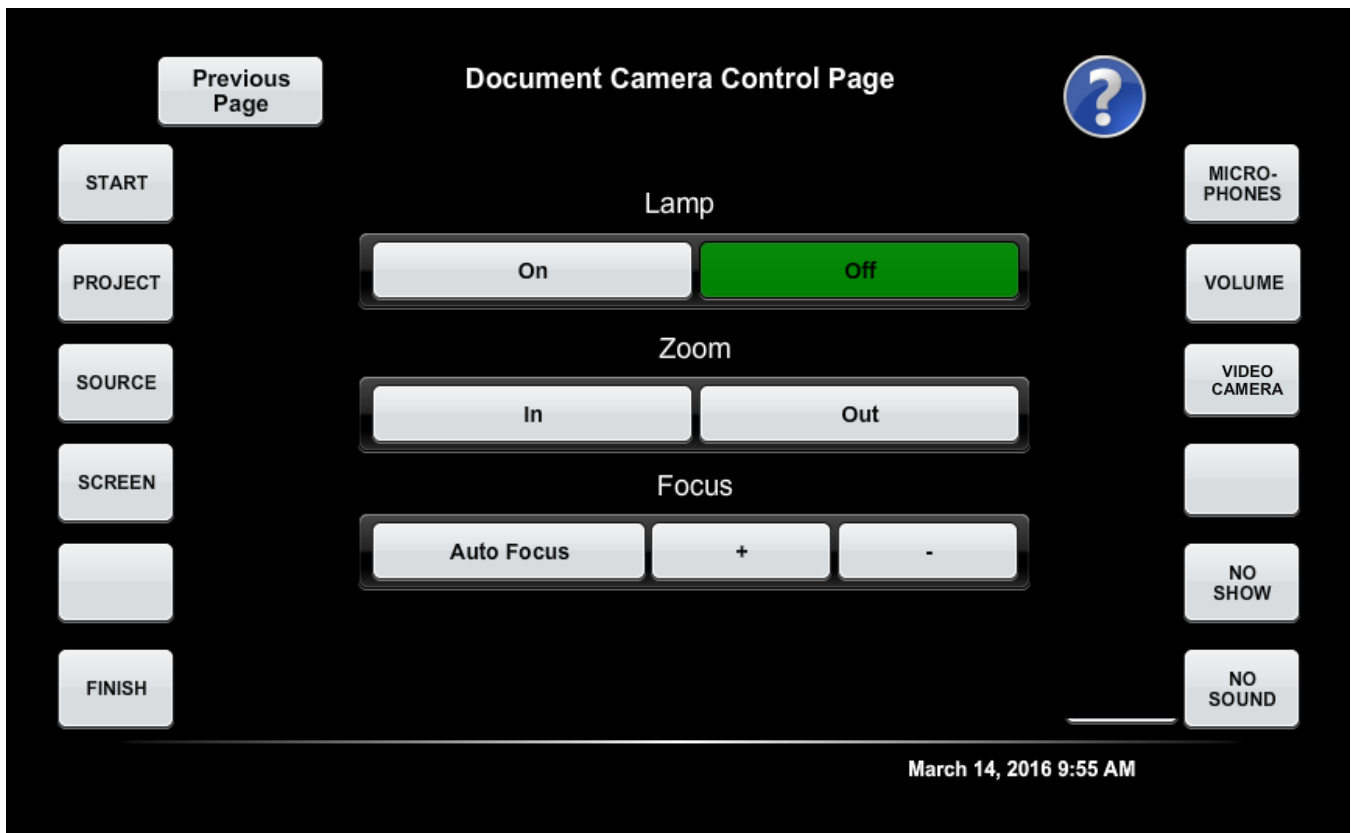
(This replaces the normal source select page for rooms with three or more displays)

- Background graphic must be customized to match the layout of the room
- Display icons must be located on the layout to match their actual location in the room
- Displays must be labeled by number in a clockwise pattern starting with the "main" Display 1
- Display 1 must be the default display on system start up (Display 1 must be on and display "Computer")
- The current source must be displayed below the display icon (The text "Off" must be displayed if no source is routed)
- Any sources must be routable to any display
- Source must not change until a display icon or "Set All" button is pressed
- The "No Show" button must put all displays into "No Show" (sometimes called AV Mute or "Eco") mode (black screen) and return them to the last active source when pressed again. It must not turn them off.
- When a display is cleared through the "Clear" button, the display must switch to AV Mute mode so it has a black screen and displays the "Off" text below the display icon since no source is routed. If display is not capable of this, it must turn off.



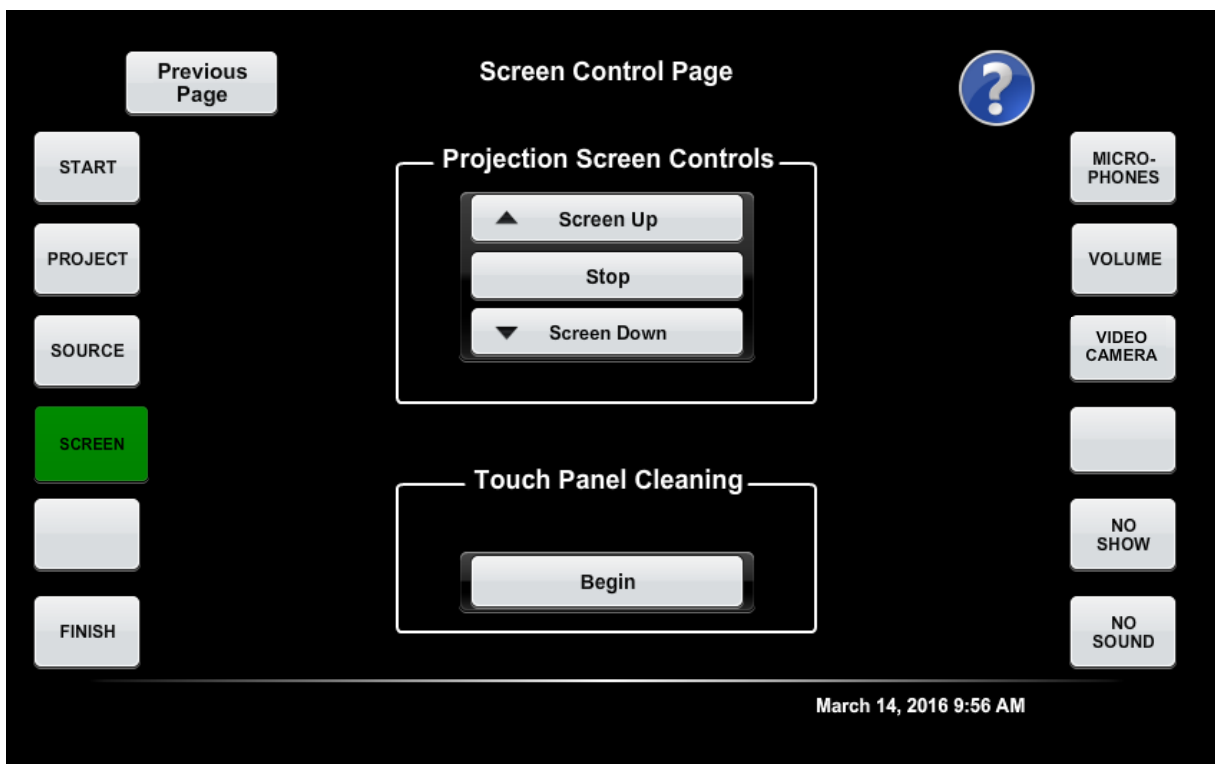
#### 11. Document Camera controls

Where focus is not manually adjustable, the +/- buttons should be left out and the "auto focus" button centered



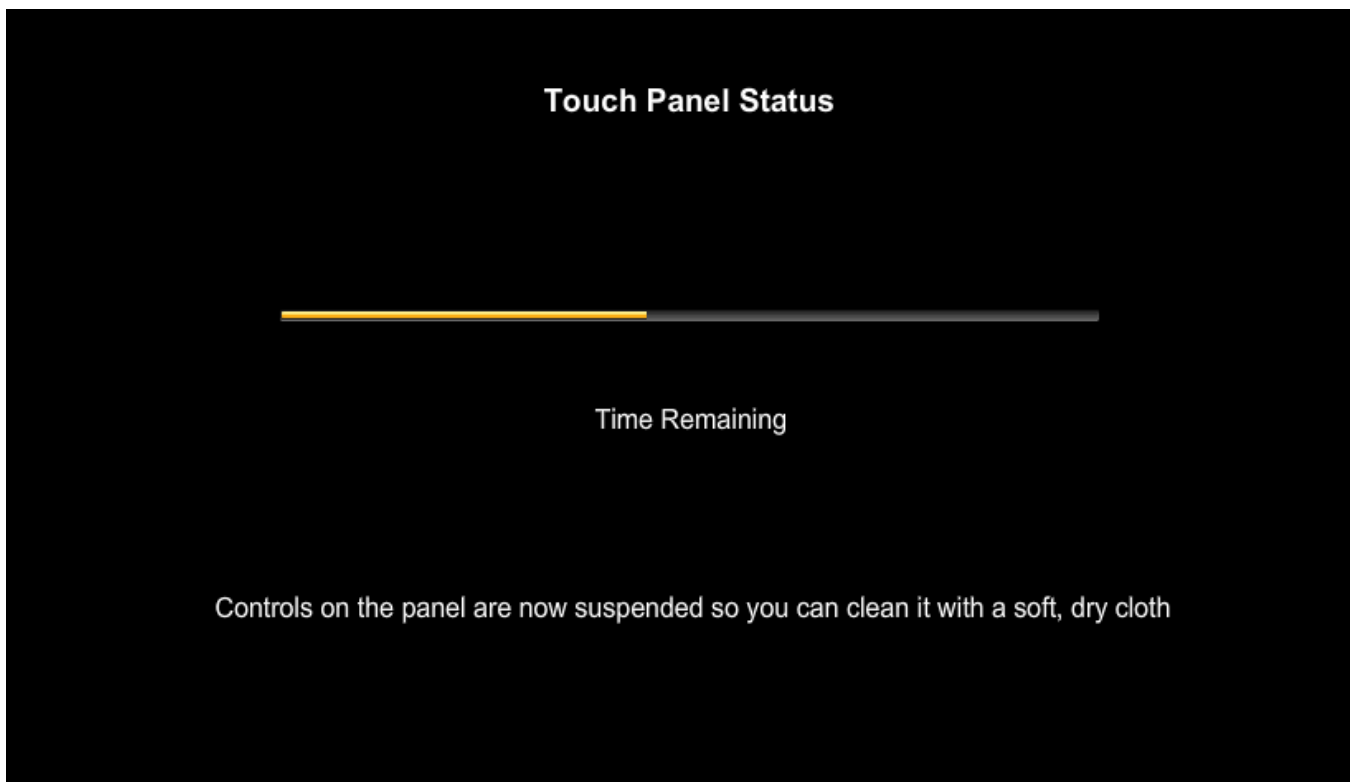
## 12. Screen Control page

- Buttons must turn green when depressed for feedback. All must return to their normal white color when not being pressed.
- In rooms without electric screens, only the "Touch Panel Cleaning" section is available.
- Begin Button must be press and held for 3 second before initiating



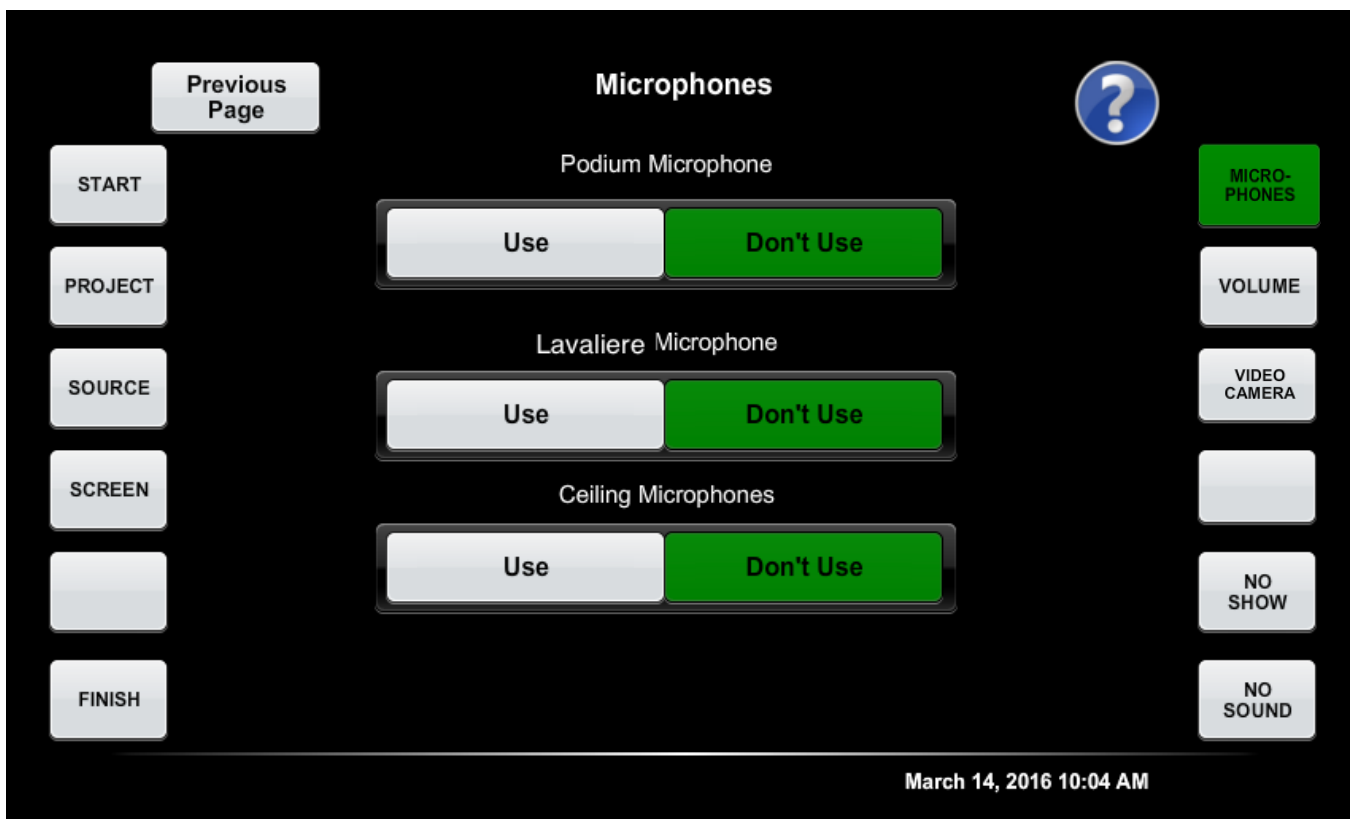
### 13. Touch Panel Cleaning page

Starts status bar and locks out all buttons



### 14. Microphones page

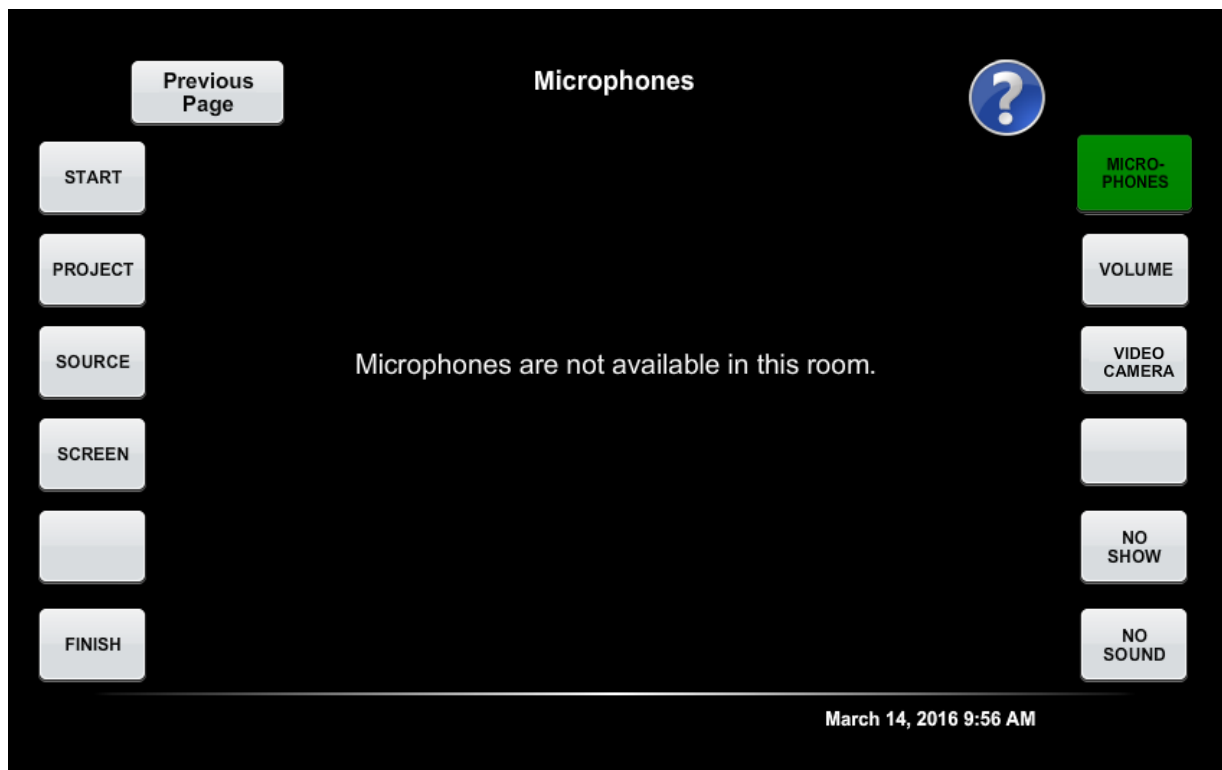
(must add set of identical buttons titled "Handheld Microphone" if one is present in the room)





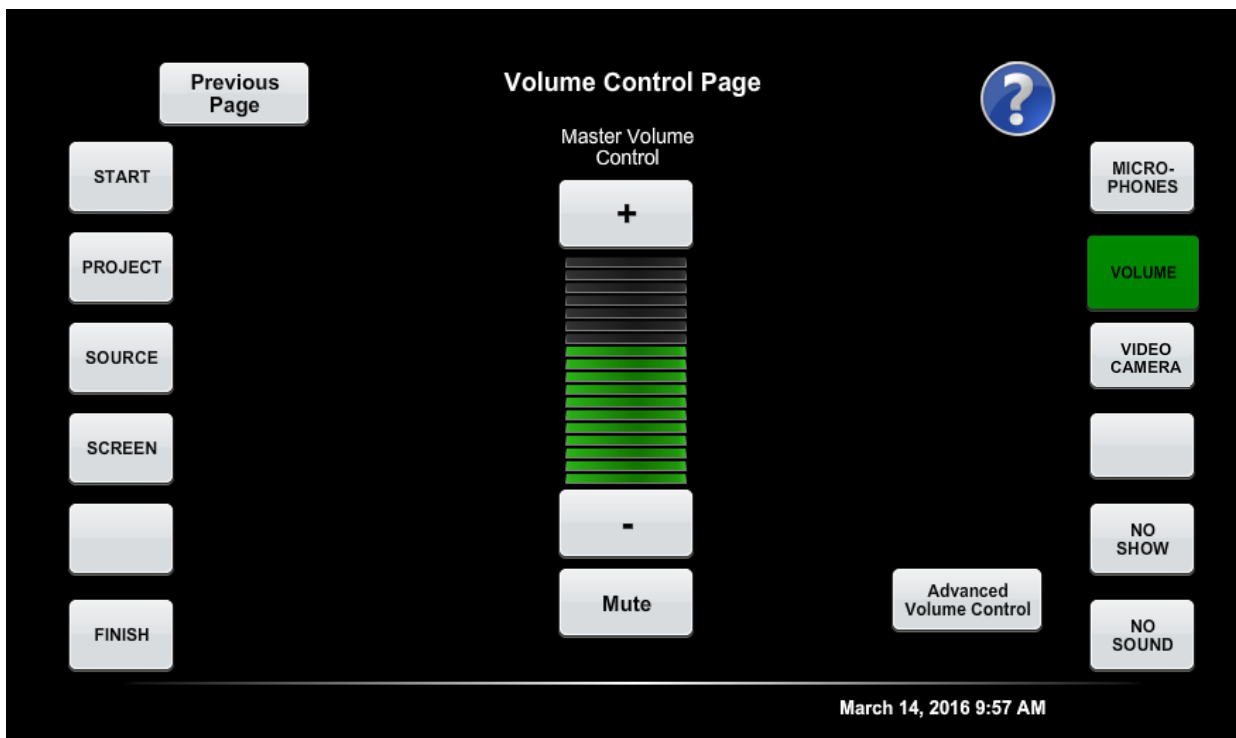
15. Microphones page in room without mics

(If no Microphones are installed, page must read: "Microphones are not available in this room". If non-controllable microphones are installed, page must read "Microphone control is not available in this room")



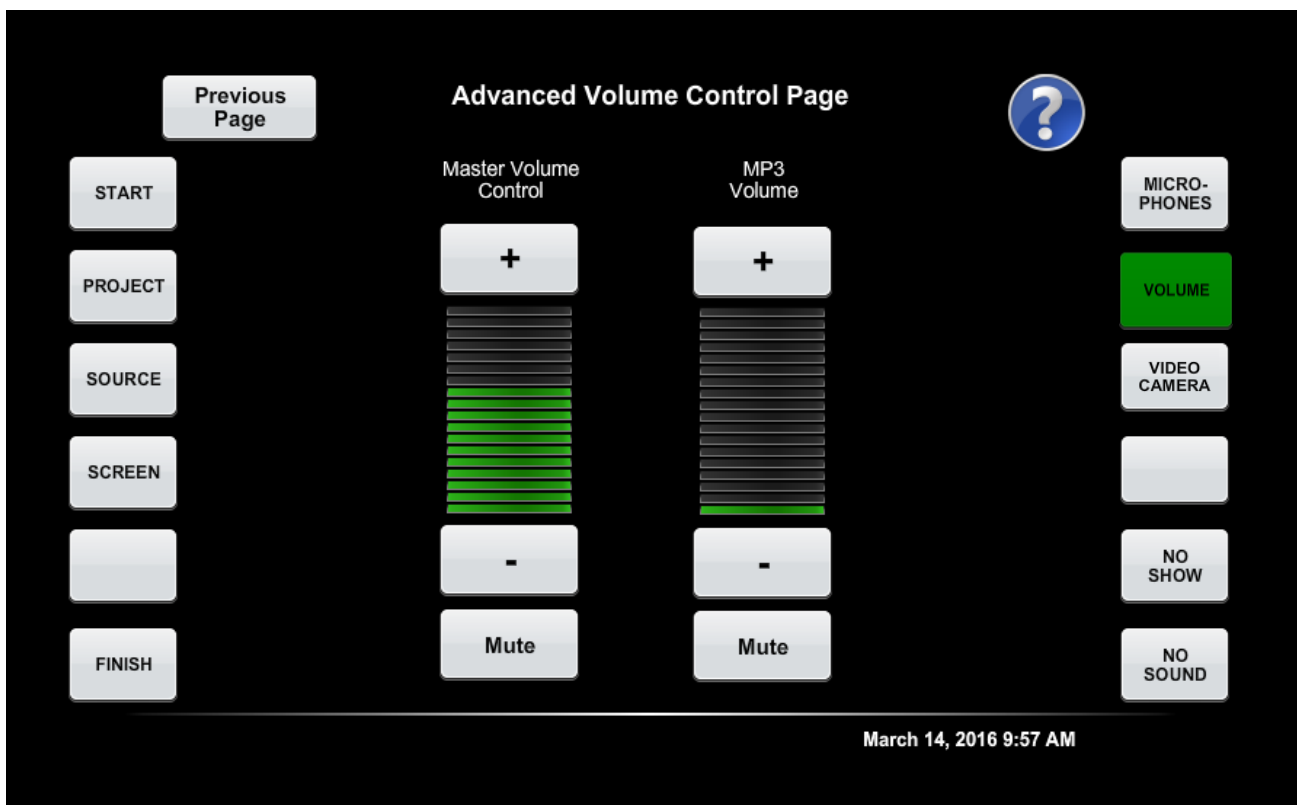
16. Volume page

(when raising the volume the color must go from green to yellow to red). Pressing the volume up or down buttons must also unmute the system. Master Volume must audibly raise and lower the volume level of all sources including MP3 but it will not affect the fader. The Master mute button must mute all sound including MP3.

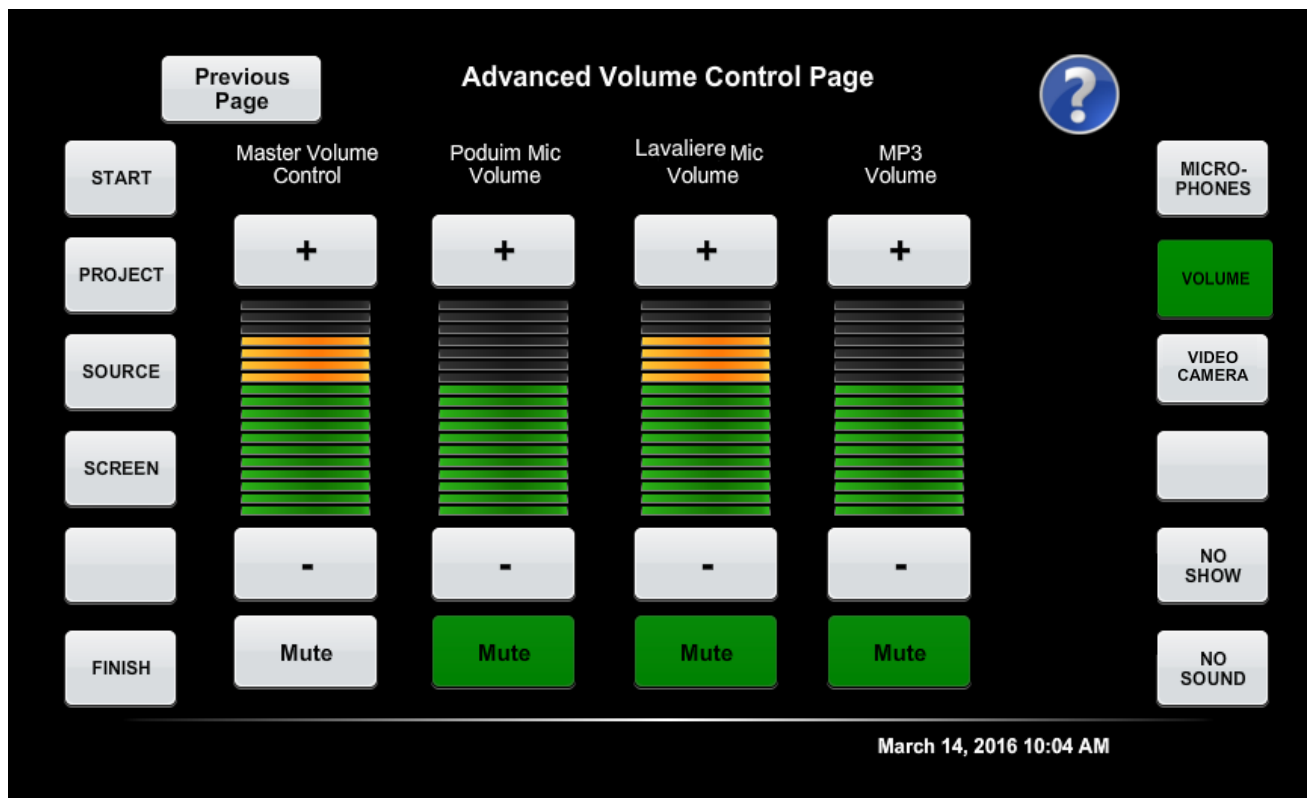


17. Advanced Volume Control page

(when raising the volume the color must go from green to yellow to red). Pressing the volume up or down buttons must also unmute the system. Master Volume must audibly raise and lower the volume level of all sources including MP3 but it will not affect the fader. Master mute button must mute all sources including MP3.

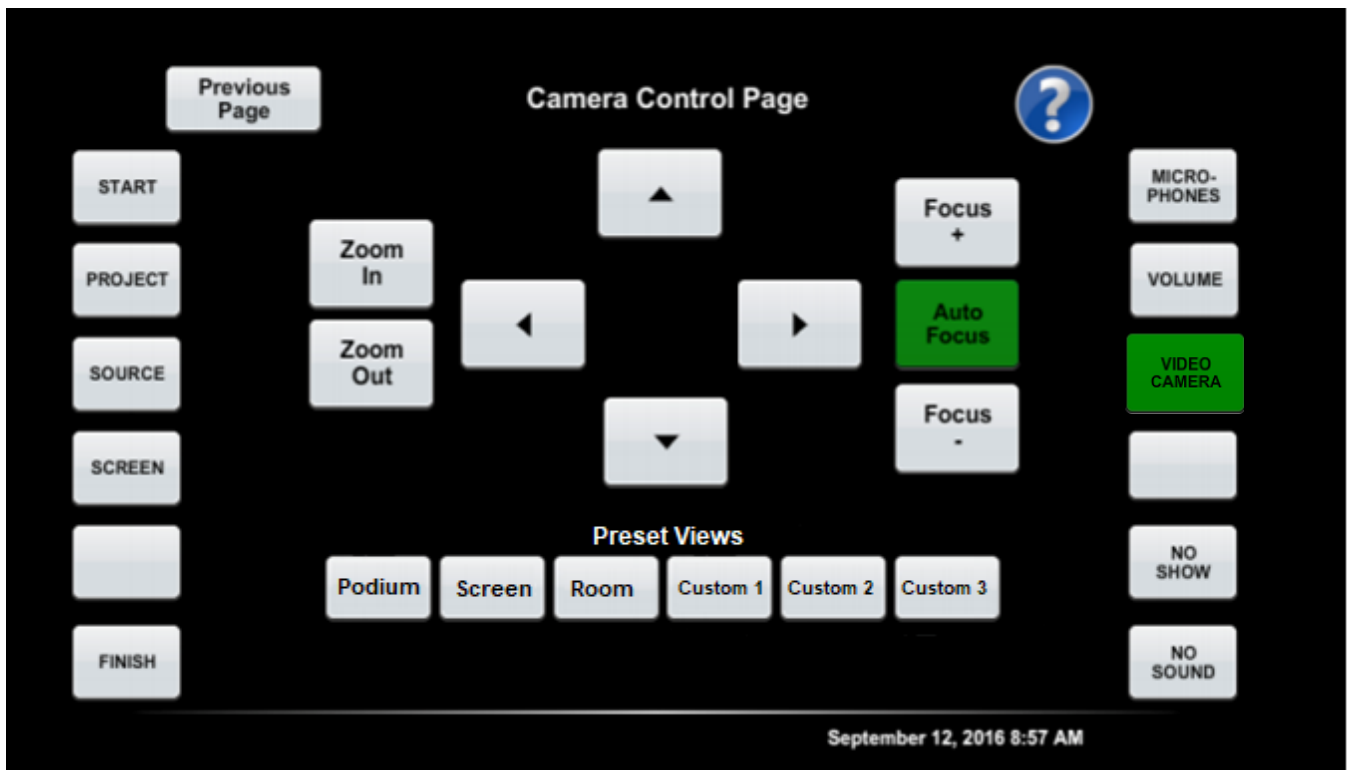


18. Advanced Volume Control page in room with microphones

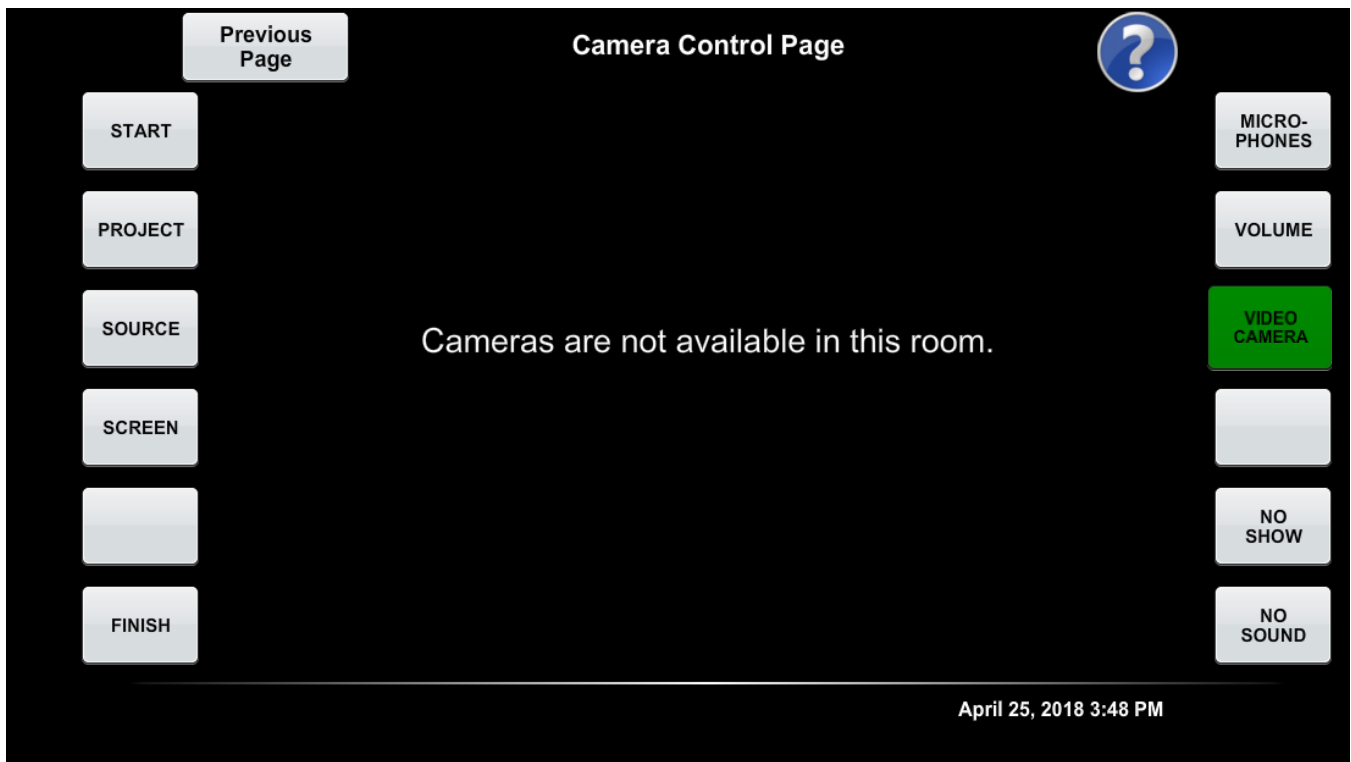


#### 19. Video Camera (formerly Record) Page

- a. Presets 1-3 must be set to the following positions and must remain static even if the system is restarted, these are programmed by holding down the button for 15 seconds to save the current camera position.
  - i. Preset 1 (Podium): Zoomed in view of instructor at podium
  - ii. Preset 2 (Screen): Zoomed in view of projection screen/whiteboard/main display area
  - iii. Preset 3 (Room): Zoomed out view of entire room
- b. Presets 4-6 (Custom 1-3) must remain static even if the system is restarted, these are programmed by holding down the button for 15 seconds to save the current camera position.
- c. Rooms with multiple cameras must be labeled by number in a clockwise pattern starting with the camera at the front of the room mounted closest to the instructor podium (Camera 1). This naming scheme must also be used on the configuration page of each camera so the computer USB will recognize it under the same name.



20. Video Camera (formerly Record) page in room without camera

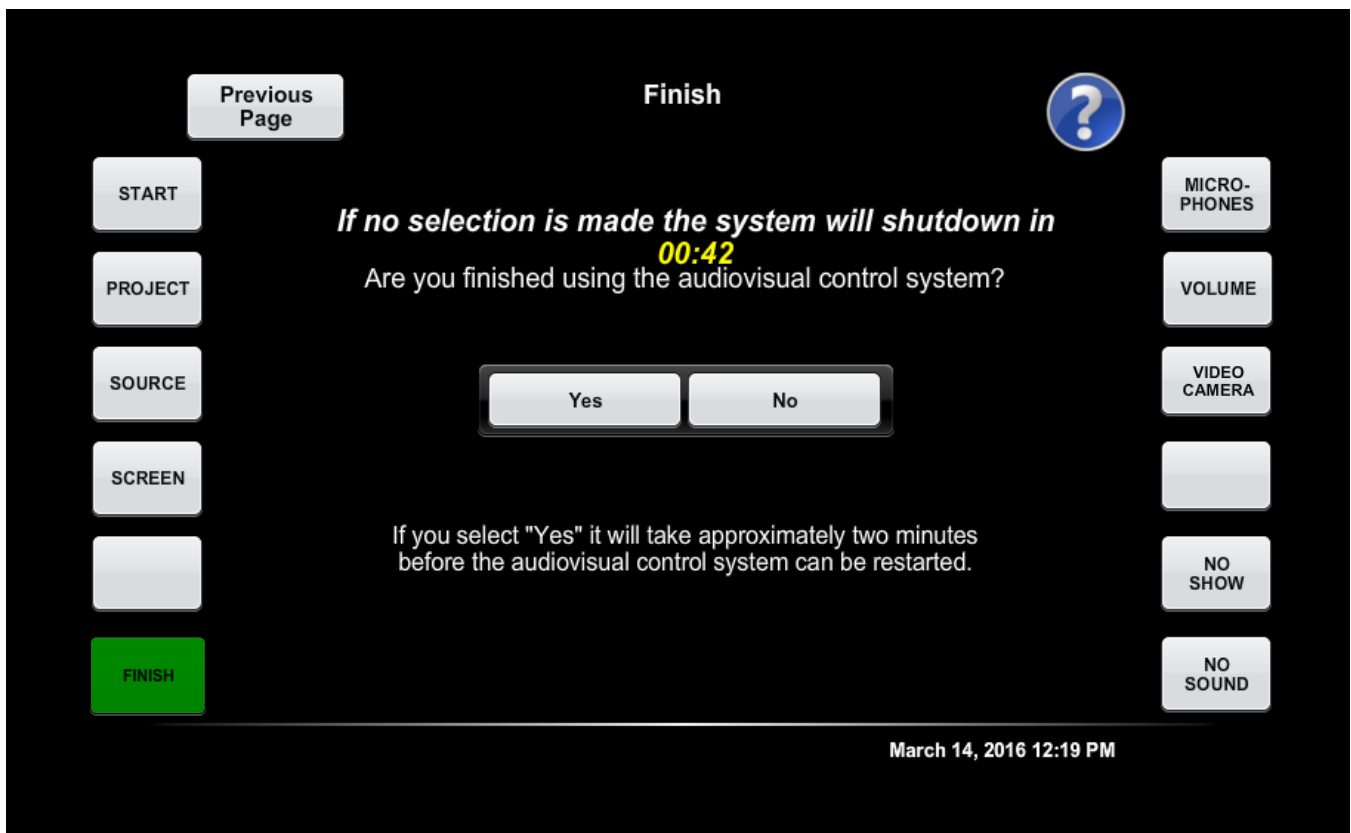


## 21. TV Control Page



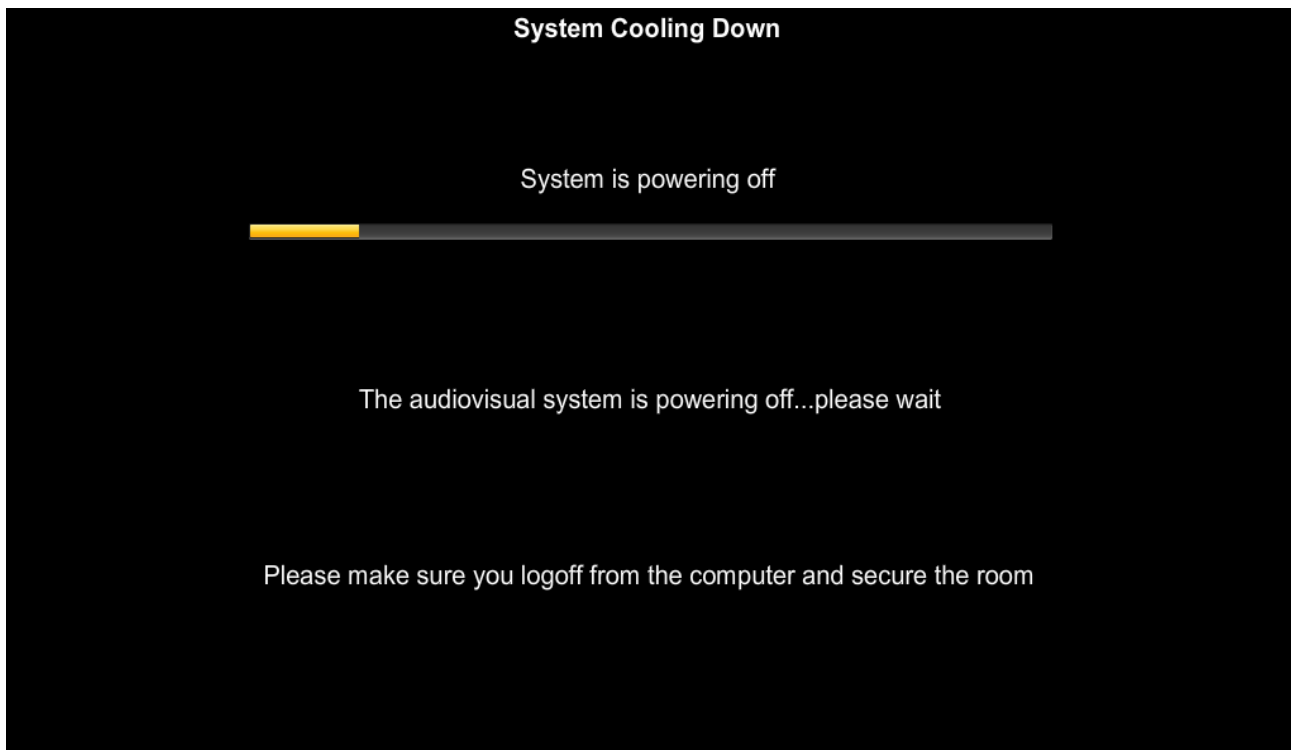
## 22. Finish Page

A 60 countdown begins and the system automatically shuts down if nothing is pressed.



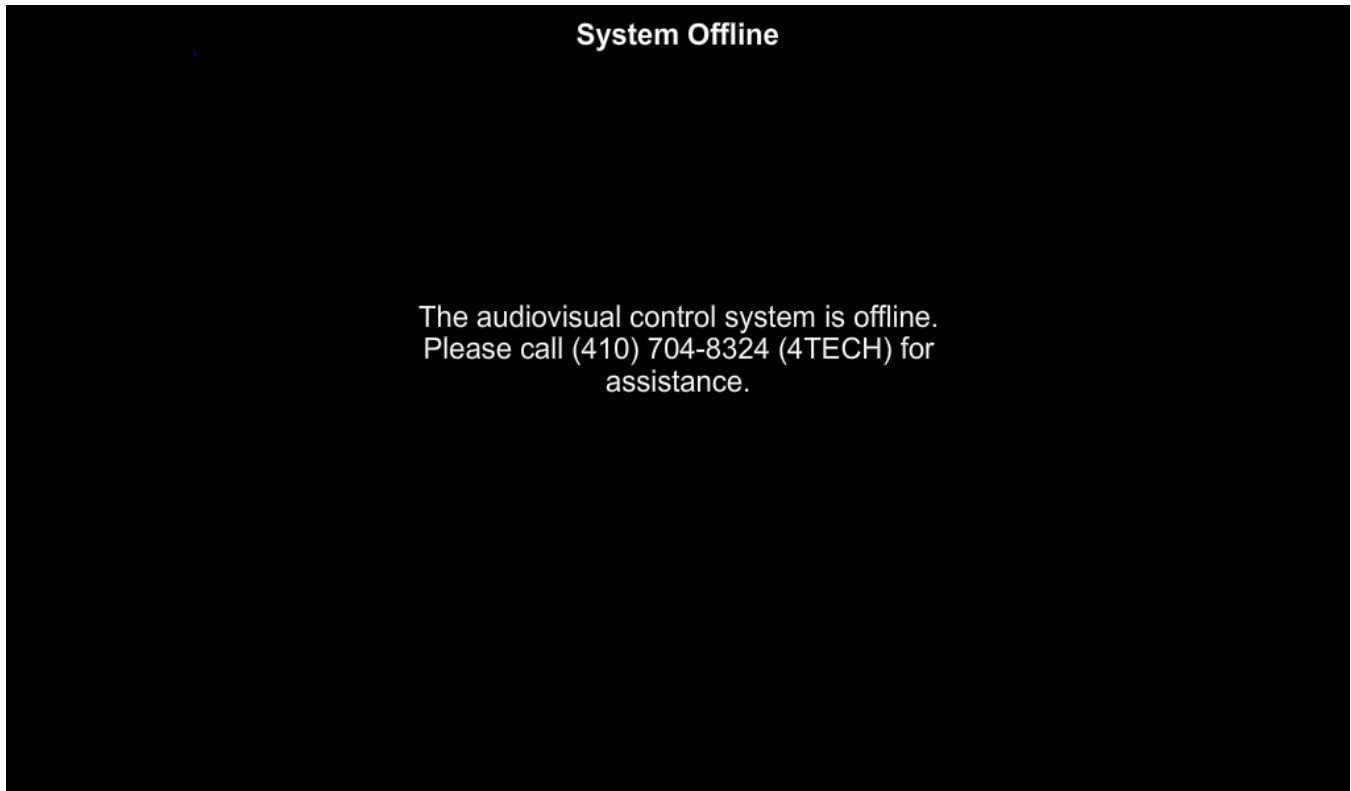
### 23. Power off page

Status bar must be adjusted on a room by room basis and take about the same amount of time as it takes for the longest projector or display in the room to safely shut down




### 24. System Offline Page

(Appears if touch panel loses its network connection)



25. For rooms that require an "Audio Only" Option

"Audio Only" button is added between the "Project" and "Source" buttons



START

PROJECT

AUDIO ONLY

SOURCE

SCREEN

FINISH

Press START to begin using the audiovisual system


MICRO-PHONES

VOLUME

VIDEO CAMERA

NO SHOW


NO SOUND



# TOWSON UNIVERSITY™

Press START to begin using the audiovisual system

Welcome



START

PROJECT

AUDIO ONLY

SOURCE

SCREEN

FINISH

Press PROJECT to start the video projector

Select "AUDIO ONLY" if you dont need the projector

When you are done with your class or presentation, press FINISH to shut down the audiovisual system

MICRO-PHONES

VOLUME

VIDEO CAMERA


NO SHOW

NO SOUND

No Sound Active

No Show Active

MASTER VOLUME



October 30, 2014 10:56 AM



Source Select Page

START

PROJECT

CD CONTROL

SOURCE

SCREEN

FINISH

Projector Image

Computer

Laptop

Document Camera

DVD

Auxiliary

Auxiliary HDMI

Smart Board Image

Computer

Laptop

Document Camera

DVD

Auxiliary

Auxiliary HDMI

Controls

Controls

MICRO-PHONES

VOLUME

VIDEO CAMERA

NO SHOW

NO SOUND

Display Select

No Sound Active

No Show Active

MASTER VOLUME

October 30, 2014 10:57 AM

Advanced Volume Control Page

Finish

Master Volume Control

MP3 Input Volume

CD/Tape Volume

+

-

Mute

+

-

Mute

+

-

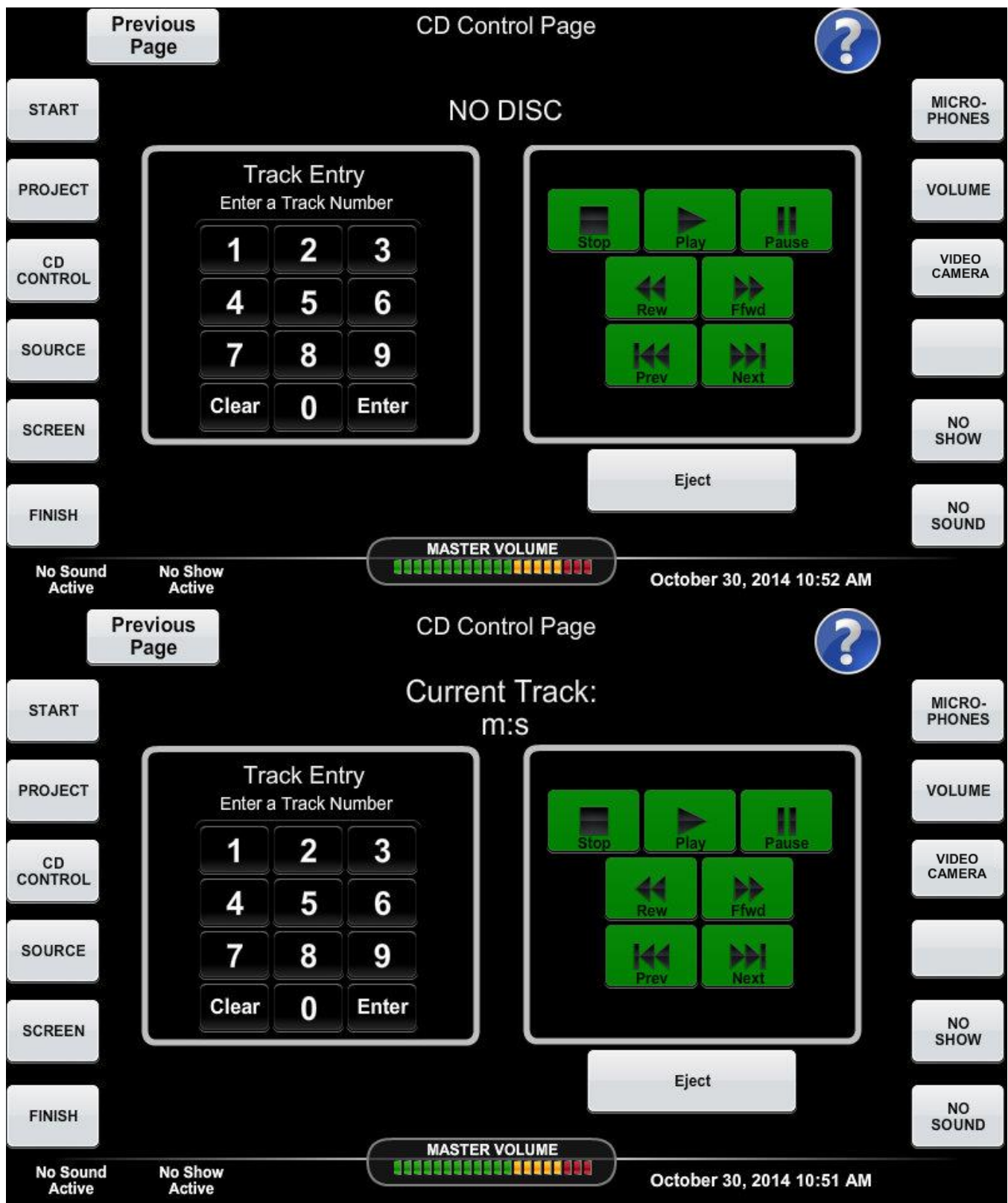
Mute

CD Controls

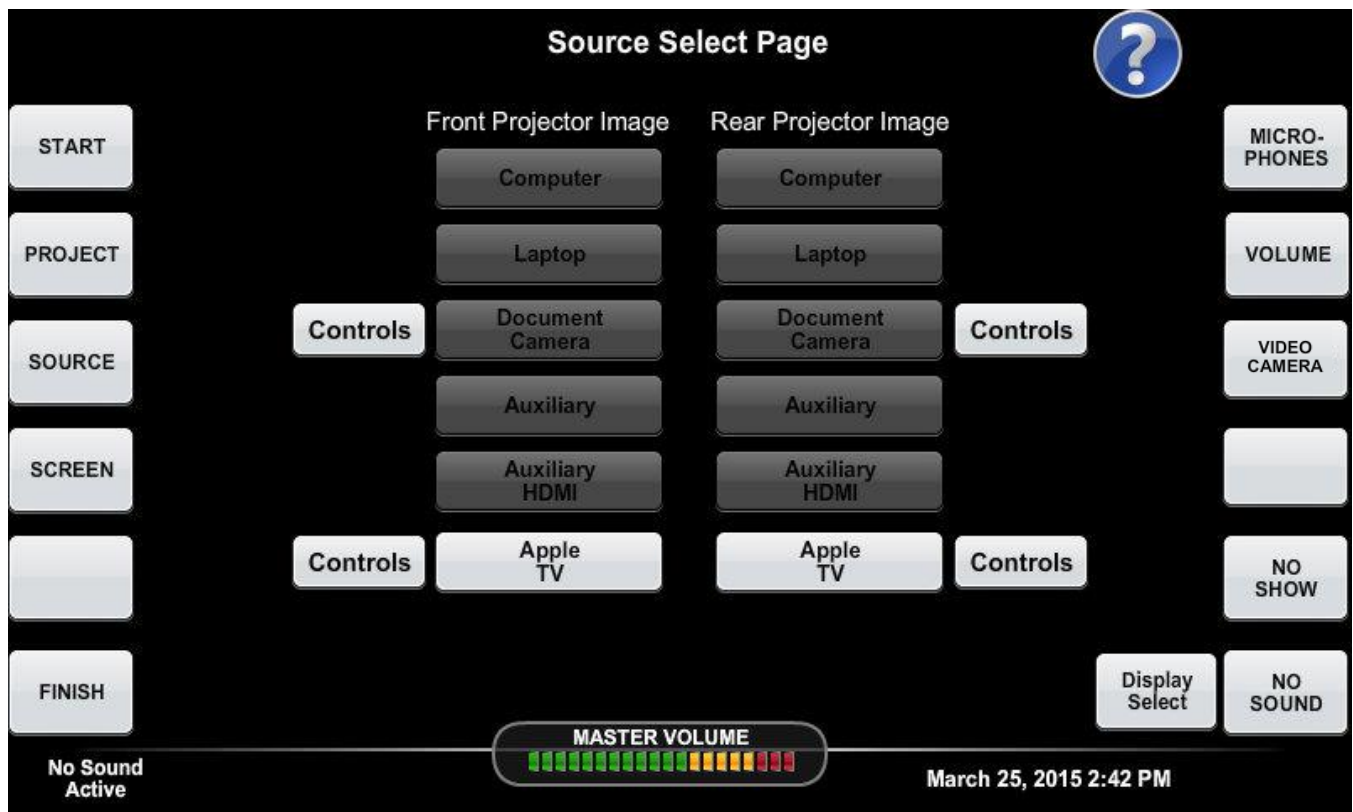
No Sound Active

No Show Active

October 30, 2014 10:58 AM



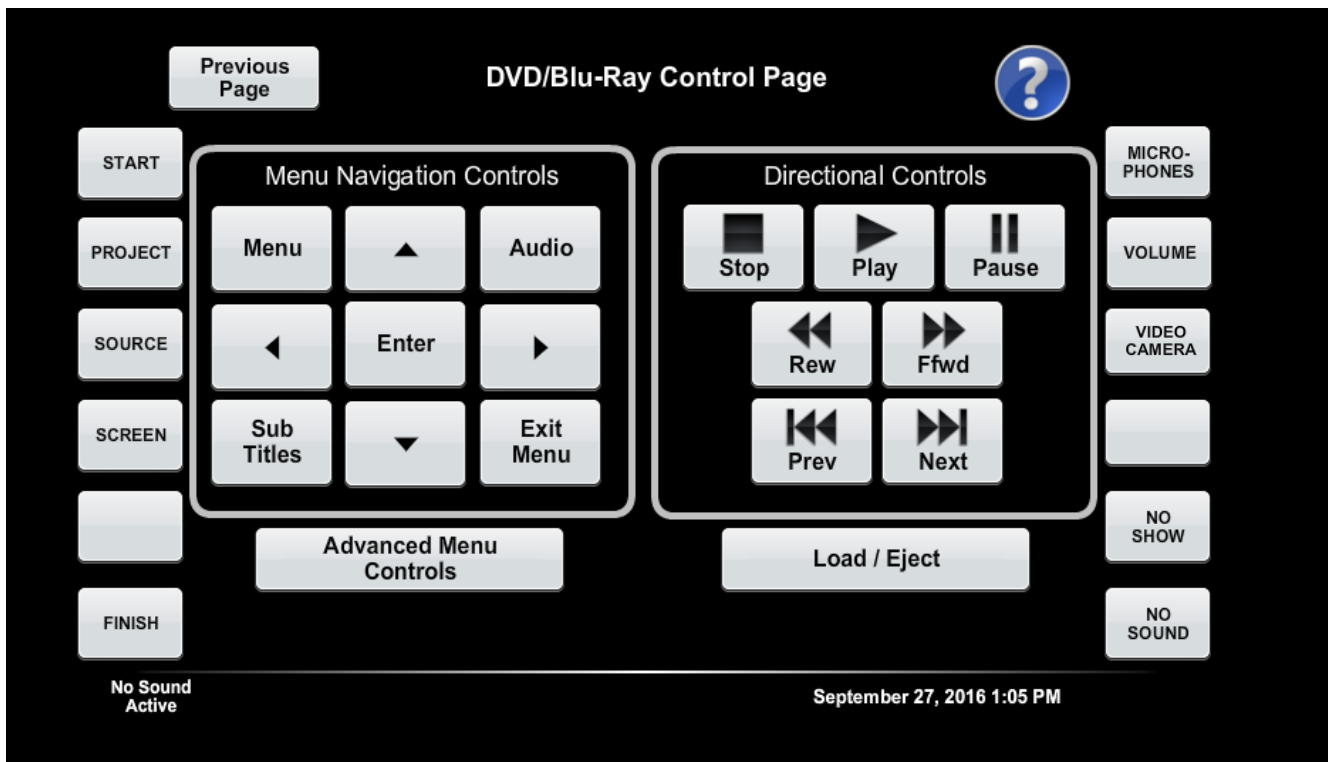
26. Apple TV Source button



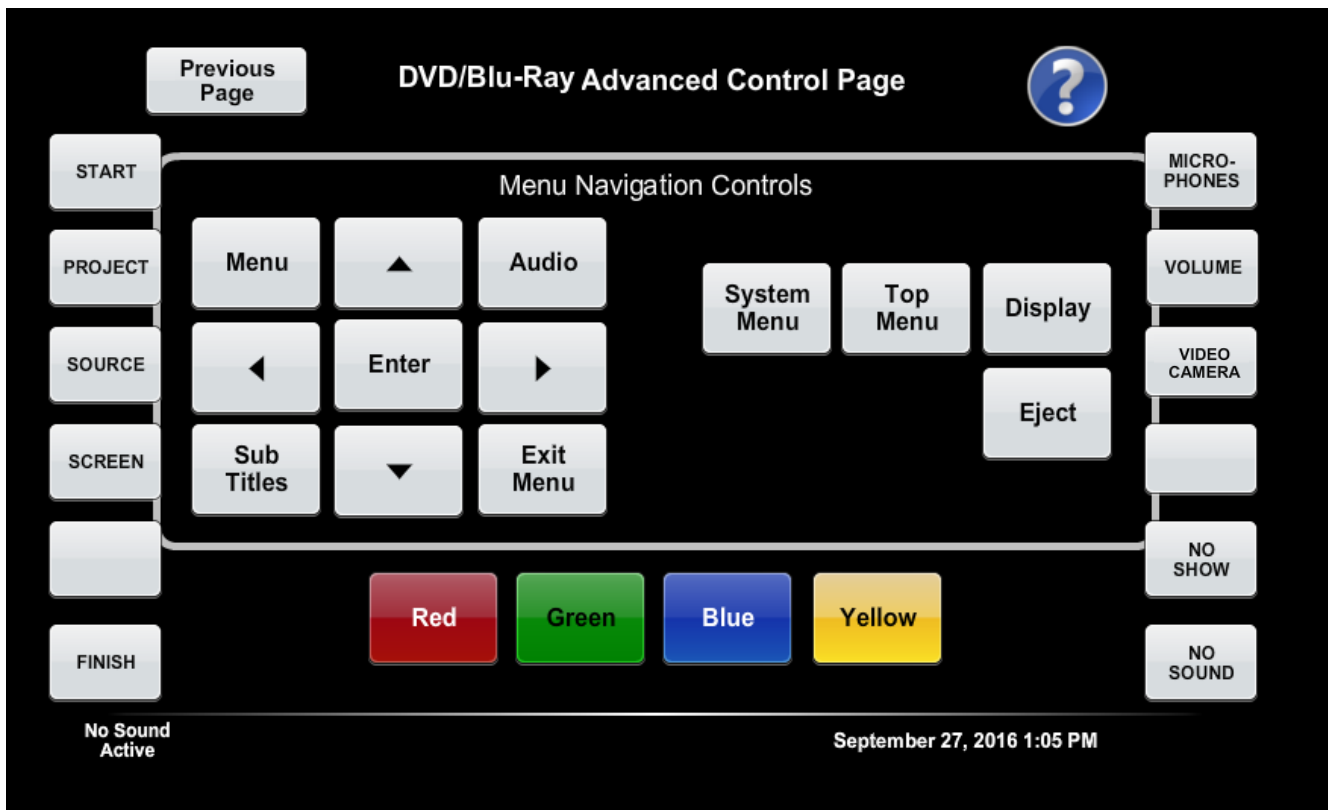
27. Apple TV Controls



28. DVD Control Page



29. DVD Advanced Control Page



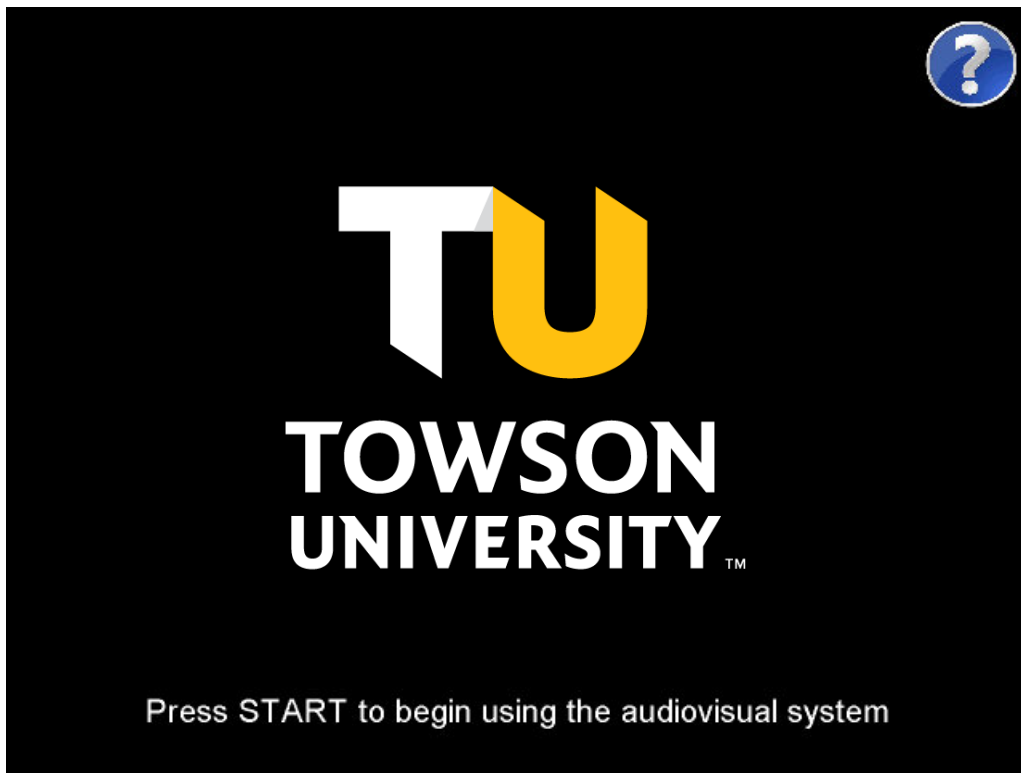
30. Video Wall Control page



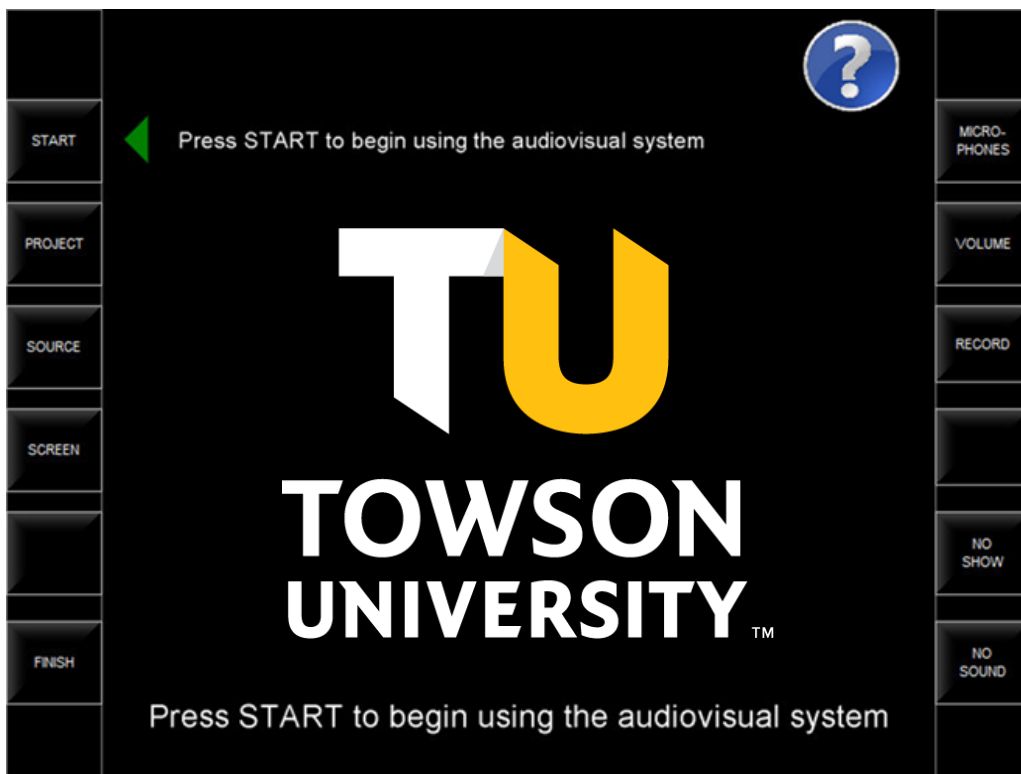
Article CTSG-035; Version 1; Last Revised 7/11/2022

### Crestron Touch Panel: Soft Buttons TPS-6L (CTSG-036)

1. Splash Screen



2. This screen must appear if a hard button other than START is pressed. The extra arrow must disappear 10 seconds later if no further action is taken.

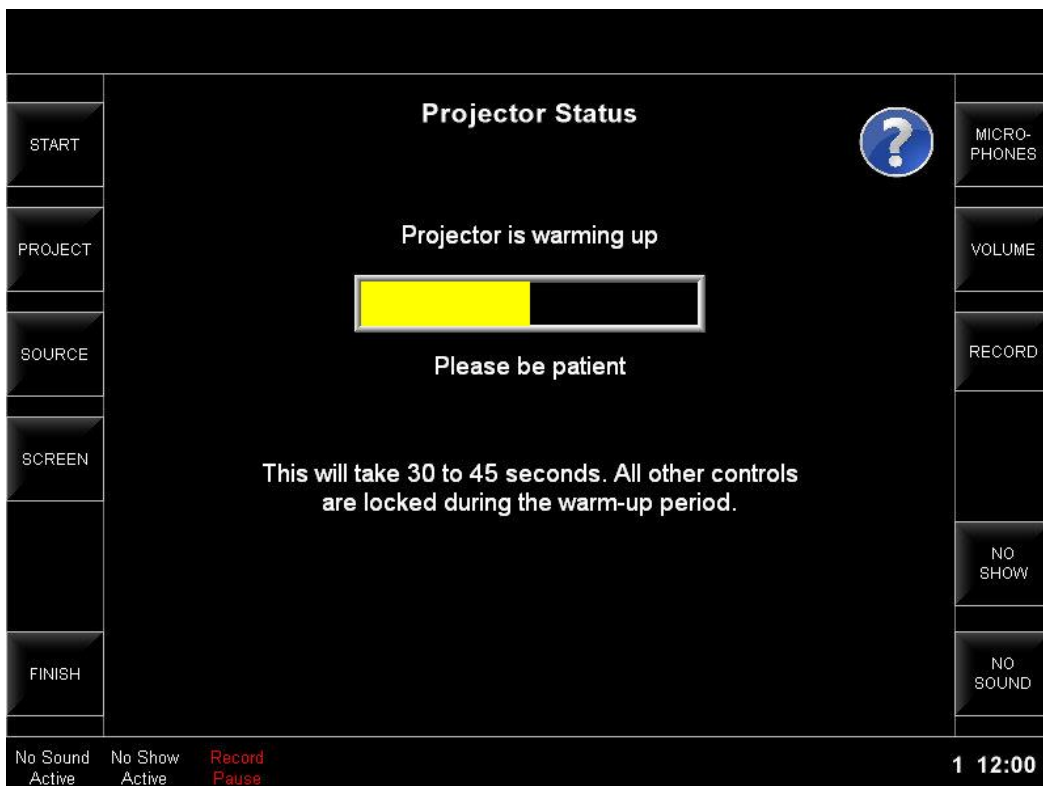


3. Start (If the START button is pressed and the user does not press PROJECT to continue with startup it must return to the splash screen in 30 seconds.)



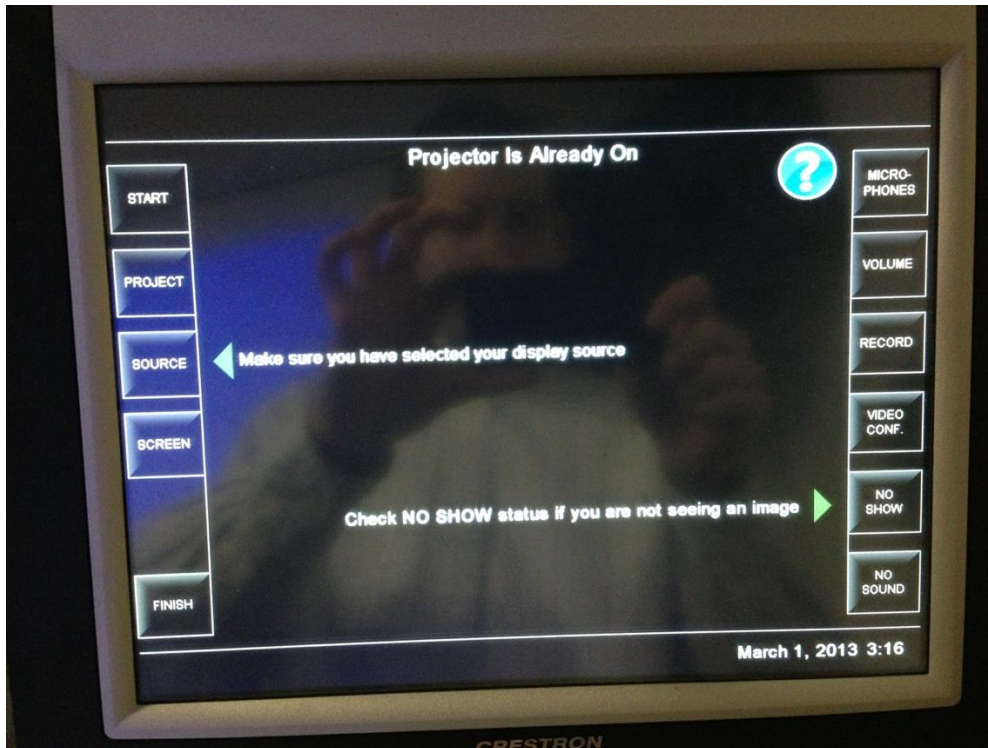
4. Projector Power on

Status bar must be adjusted on a room by room basis and take about the same amount of time as it takes for the longest projector or display in the room to safely shut down

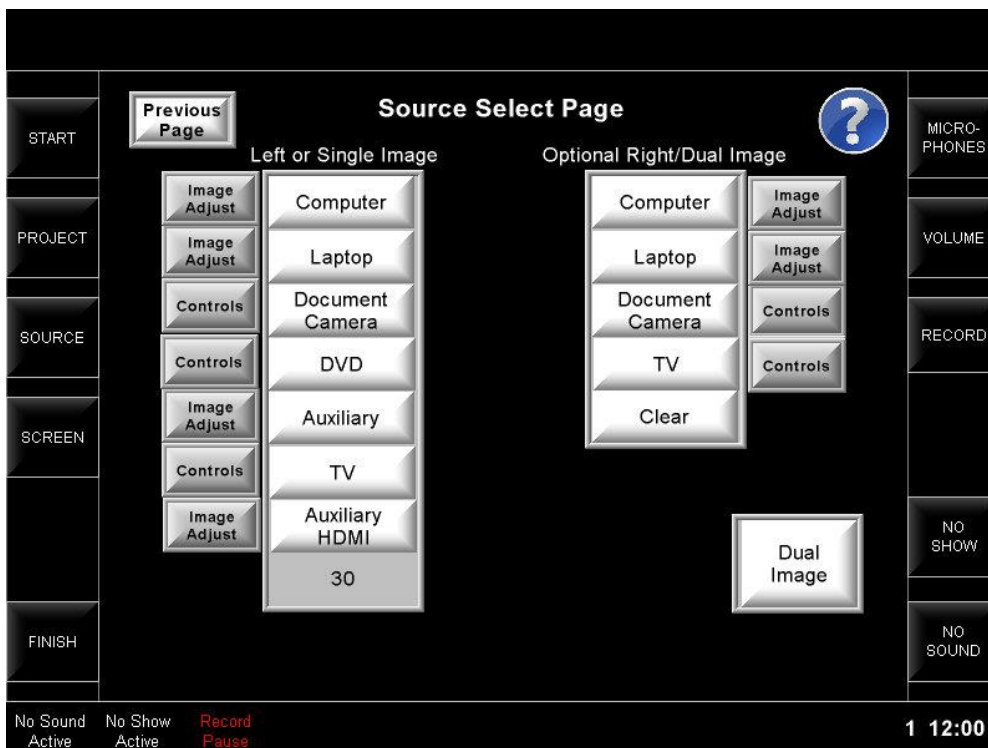




5. Projector already on page



6. Source Select Page (Digital sources will not have “image adjust” sub-pages). Note: The “Optional/Dual Image” column must list all sources on systems that use a TV One dual image processor. The screen shot below was taken from a system using the dual image function built into the projector.



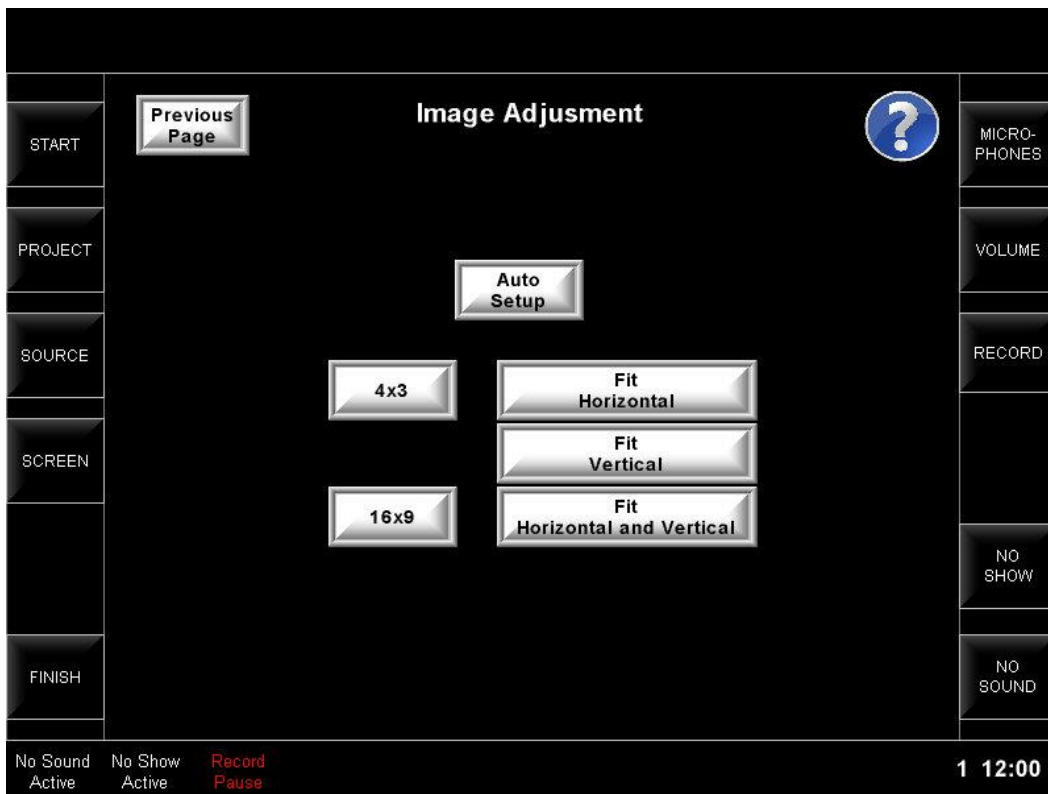
7. Screen Control Page (Must not be available if no electric screen)

- Buttons must turn green when depressed for feedback. All must return to their normal white color when not being pressed.

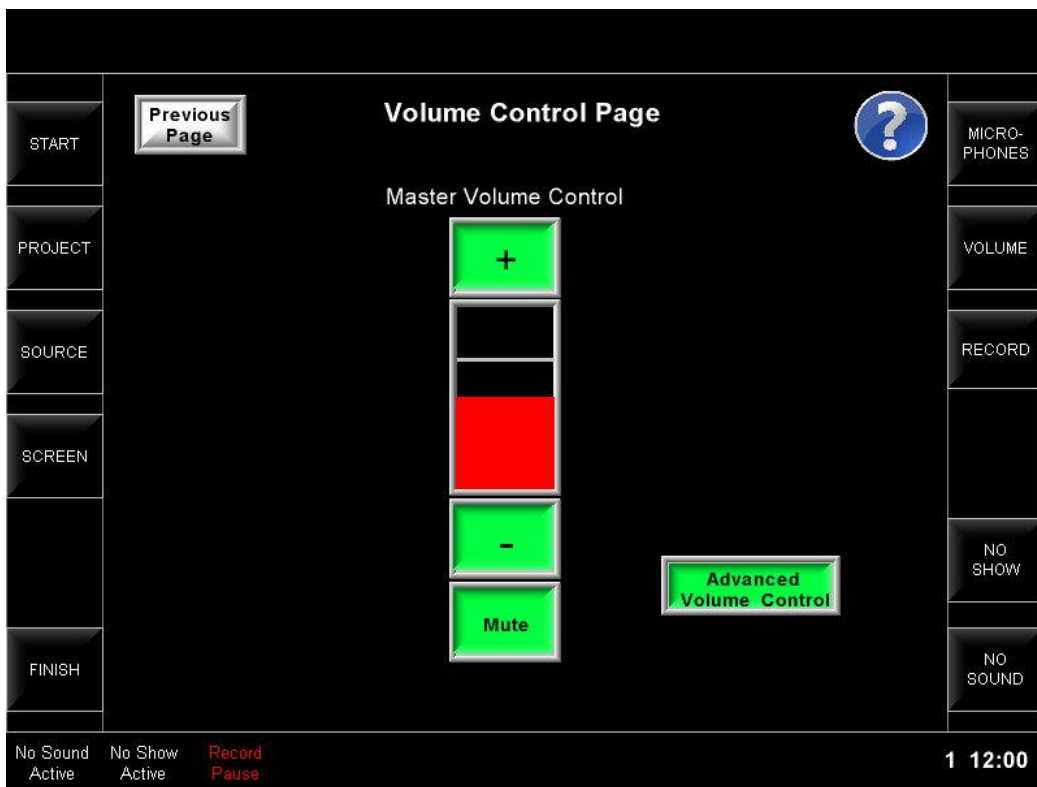




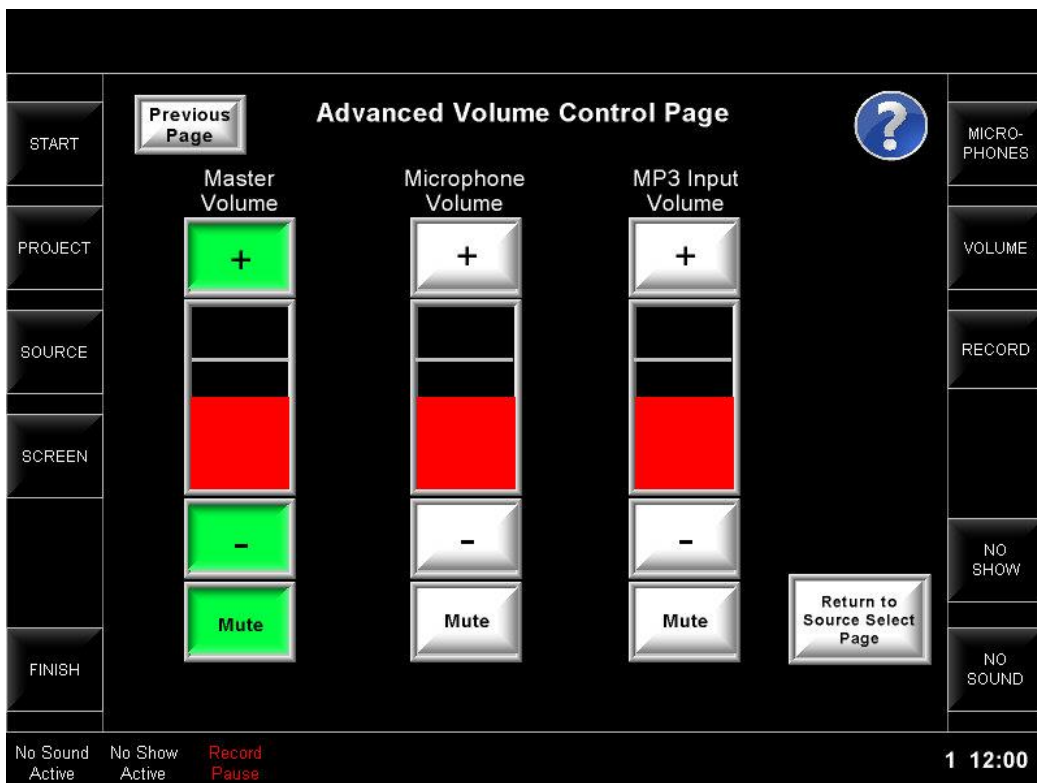
8. Image Adjust (Analog systems only)



9. Volume (when raising the volume the color must go from green to yellow to red). Pressing the volume up or down buttons must also unmute the system.



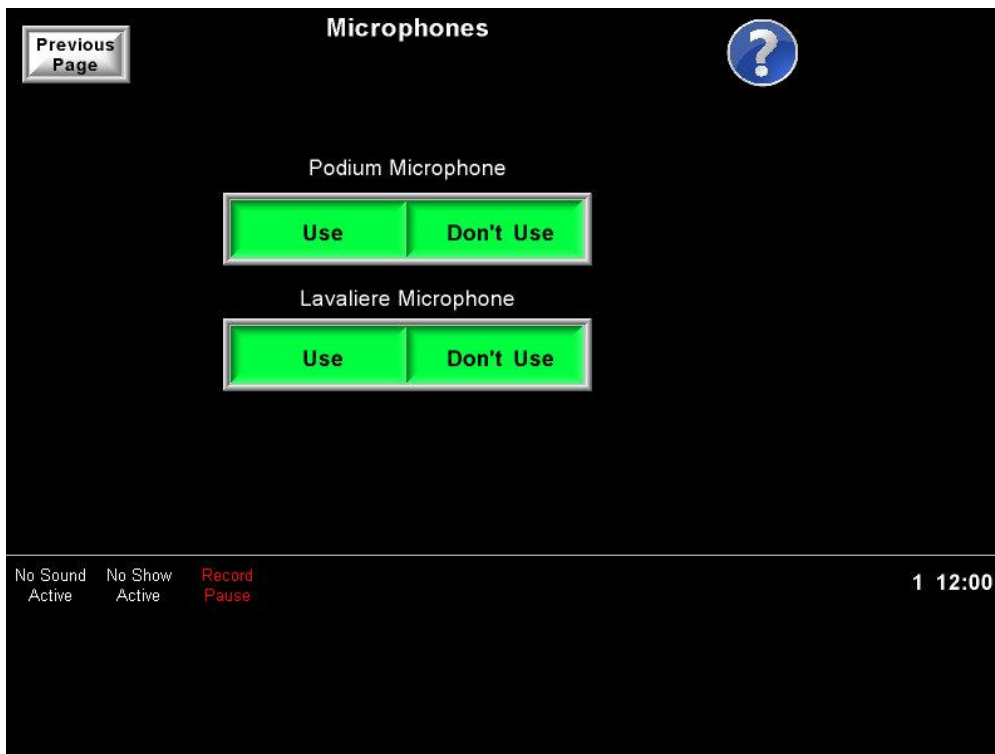
10. Advanced Volume (when raising the volume the color must go from green to yellow to red). Pressing the volume up or down buttons must also unmute the system.



11. Podium Microphone (If no Microphones are installed, page must read: "Microphones are not available in this room". If non-controllable microphones are installed, page must read "Microphone control is not available in this room")



12. Wireless Microphone (must add third set of identical buttons titled "Handheld Microphone" if one is present in the room)



13. Video Camera (formerly Record) (if no camera present)

## Recording Control Page

Recording is not available in this room.

14. Record Password (see manager for code)

Previous  
Page

### Enter Passcode

Please enter a valid password to gain access  
to the recording controls

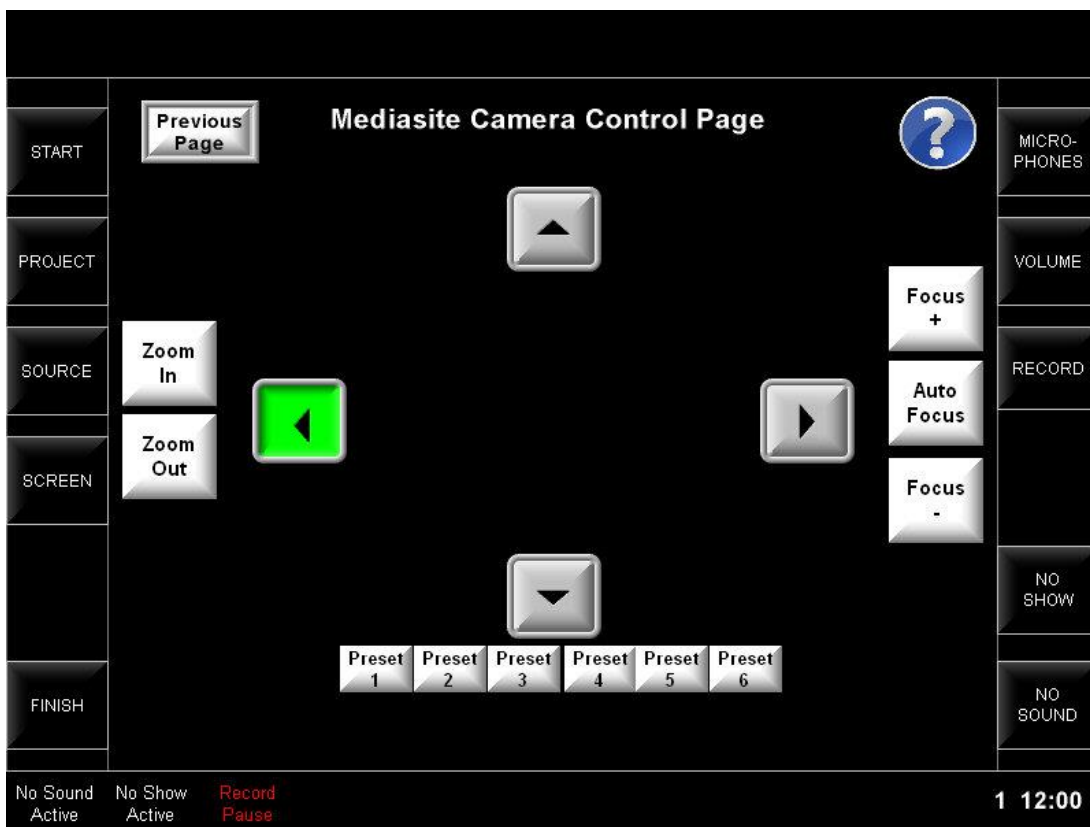
20

1	2	3
4	5	6
7	8	9
Clear	0	Back Space

15. Record (For Cisco Only)



16. Camera Control Page (preview of video must appear behind camera controls)



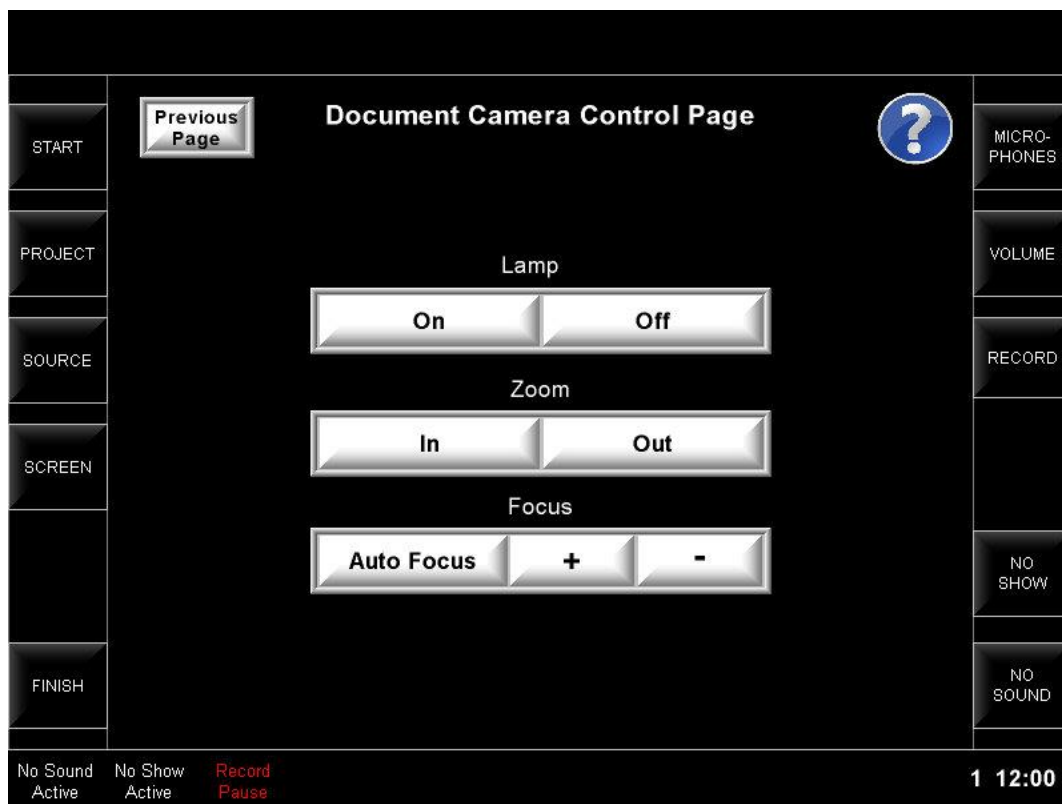
17. Stop Recording (For Mediasite Only)



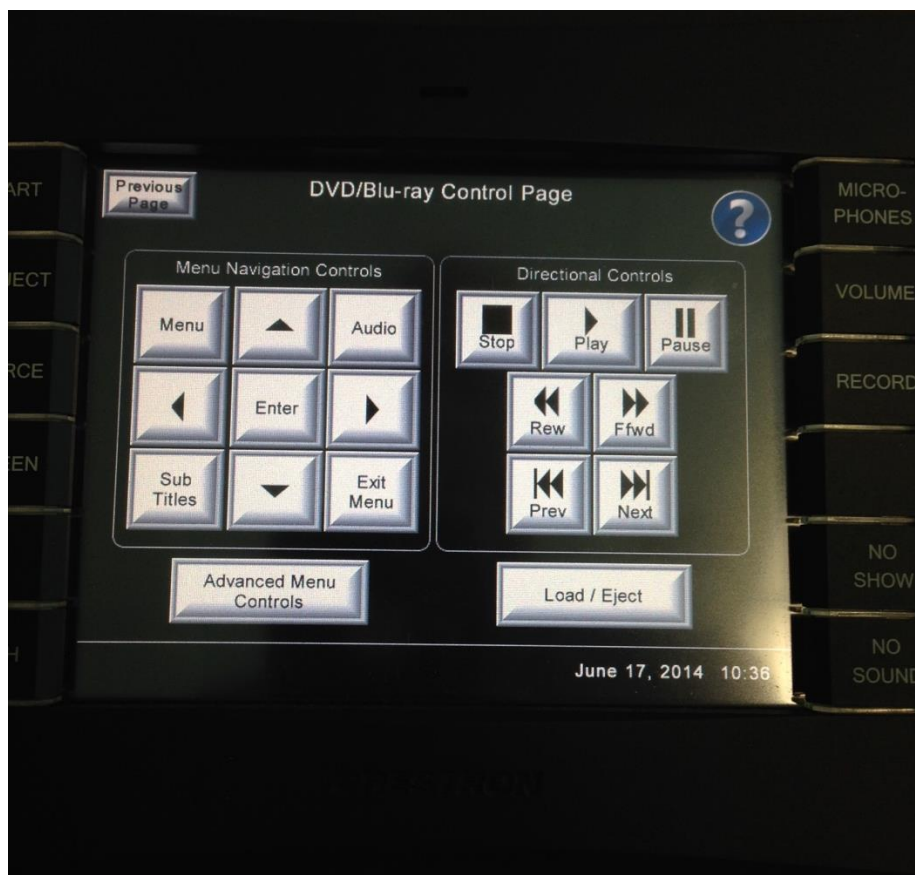
18. Stop Recording (For other solutions)



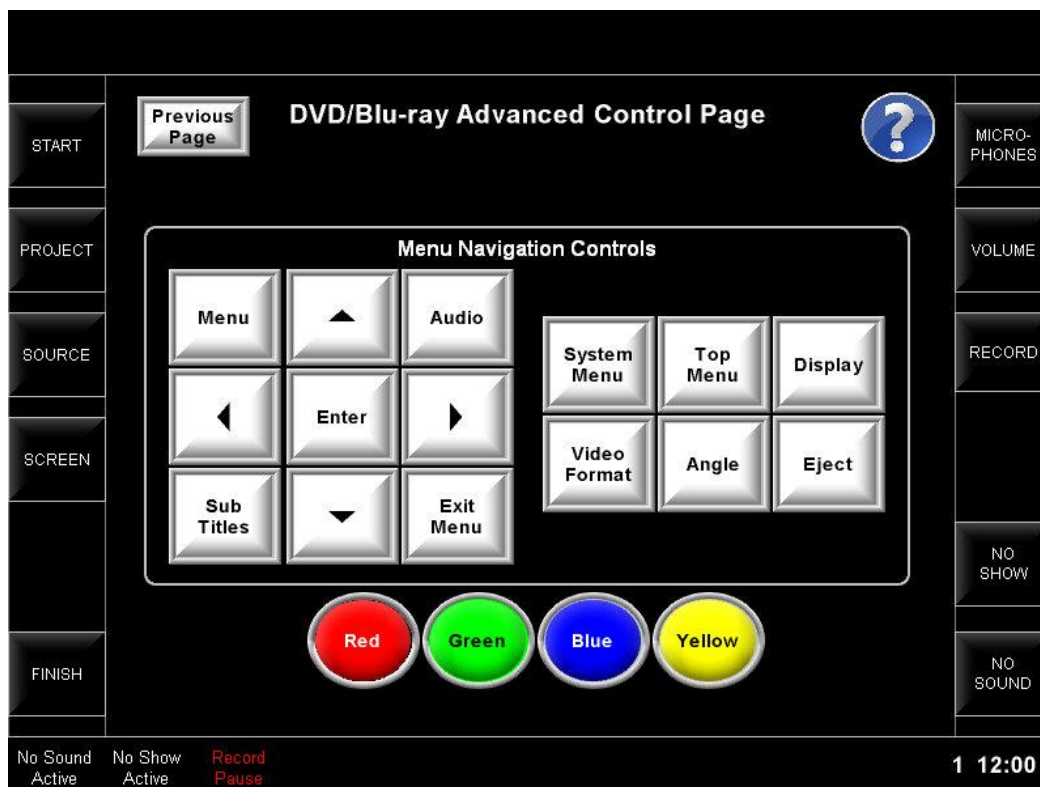
19. Document Camera Control Page (Only include if doc camera can be controlled by the Crestron)



20. DVD/Blu-ray Control Page



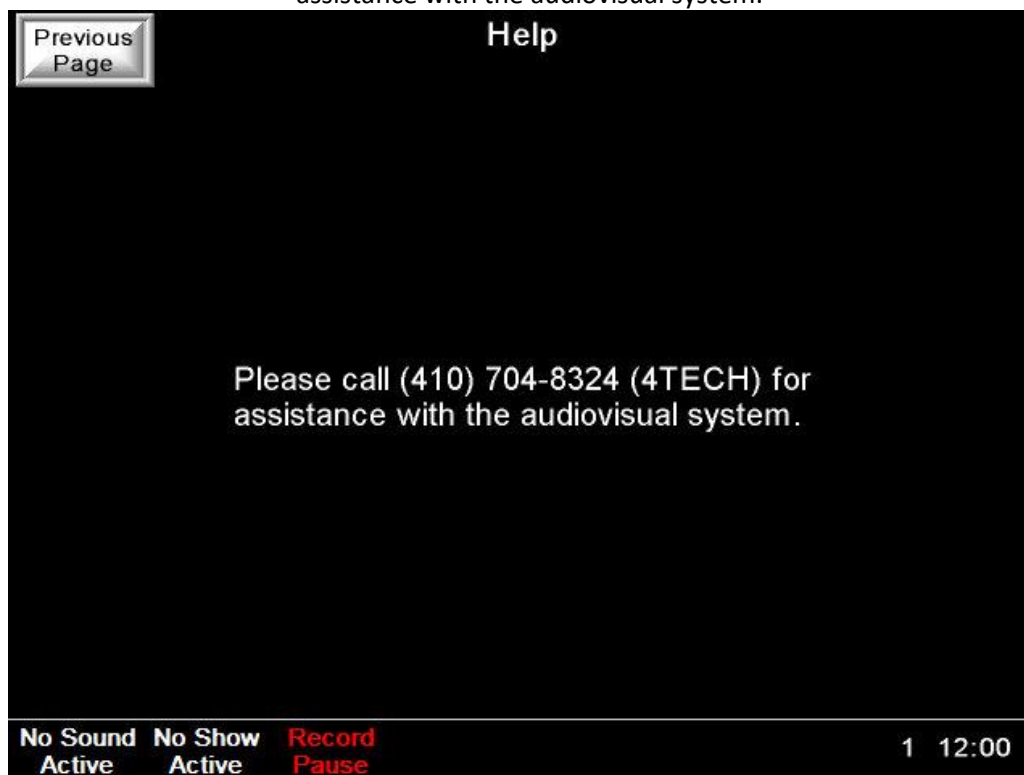
21. DVD/Blu-ray Advanced Control Page



## 22. Help

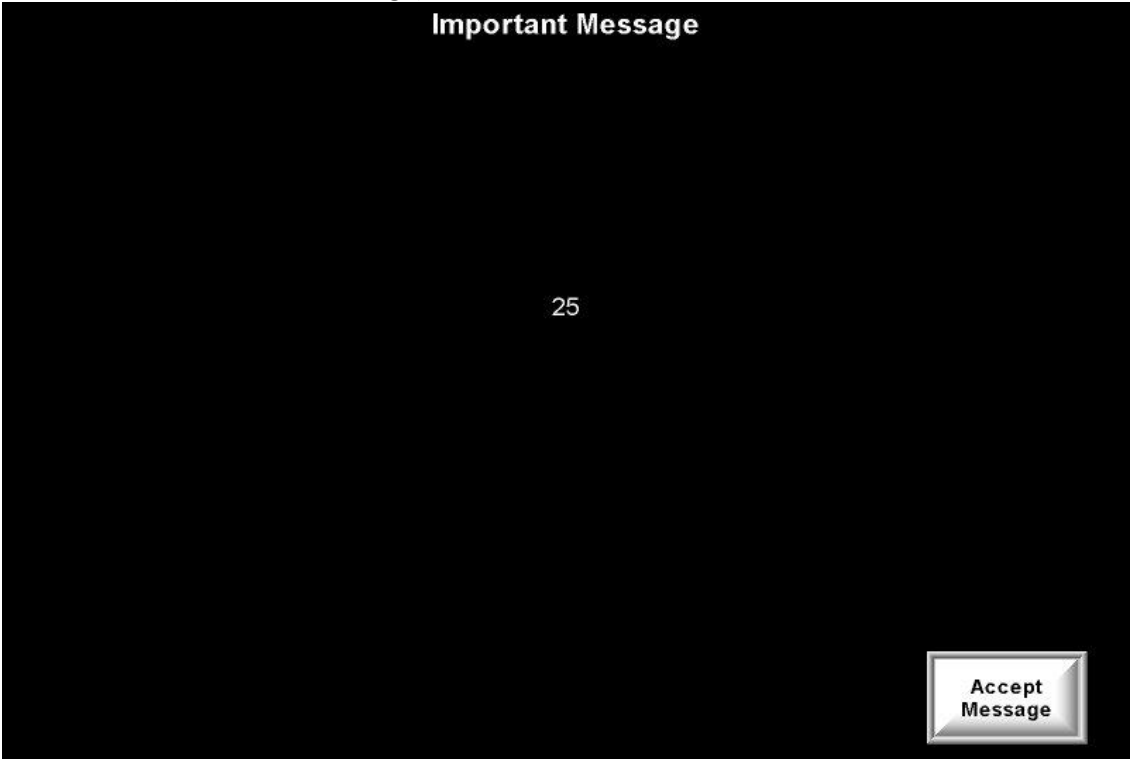
- a. The Help button must display the following text:

Please call (410) 704-8324 (4TECH) for assistance with the audiovisual system.

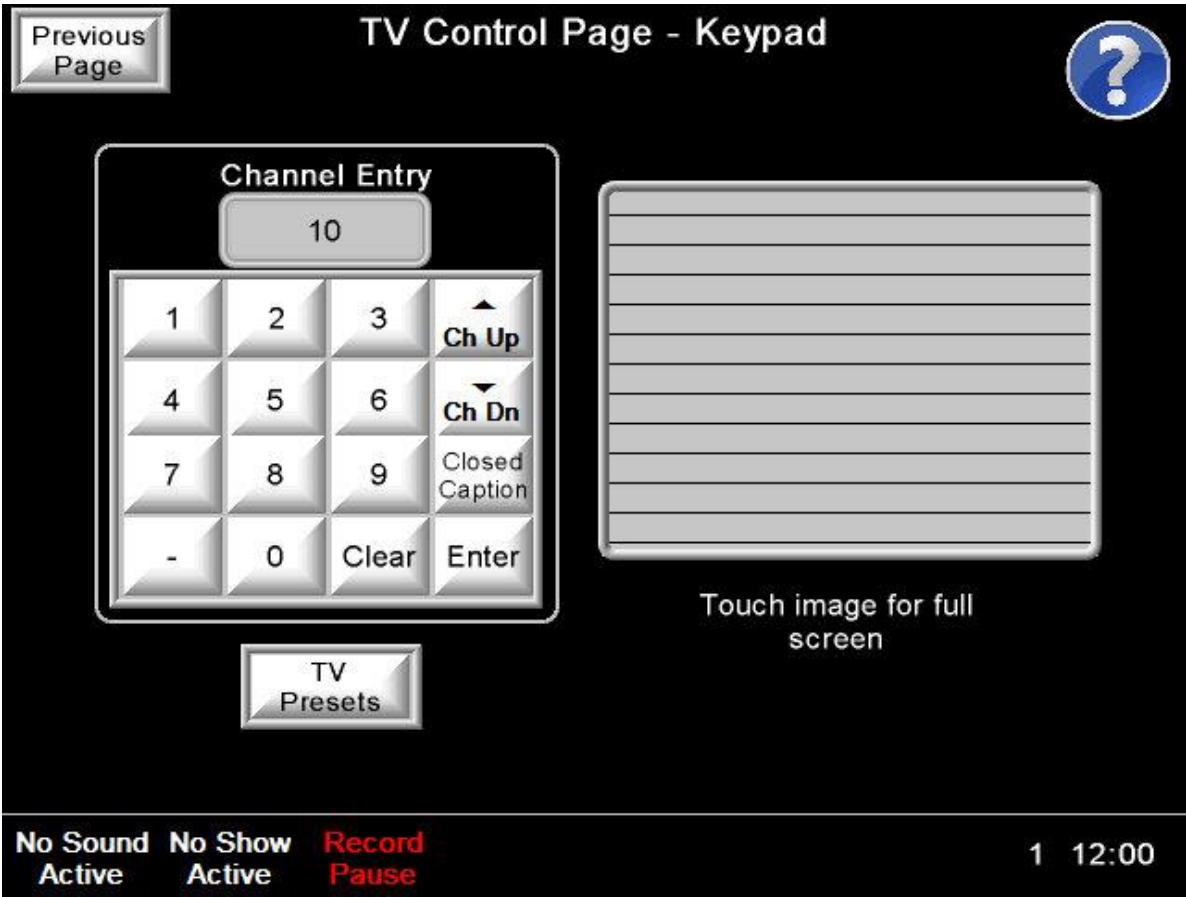




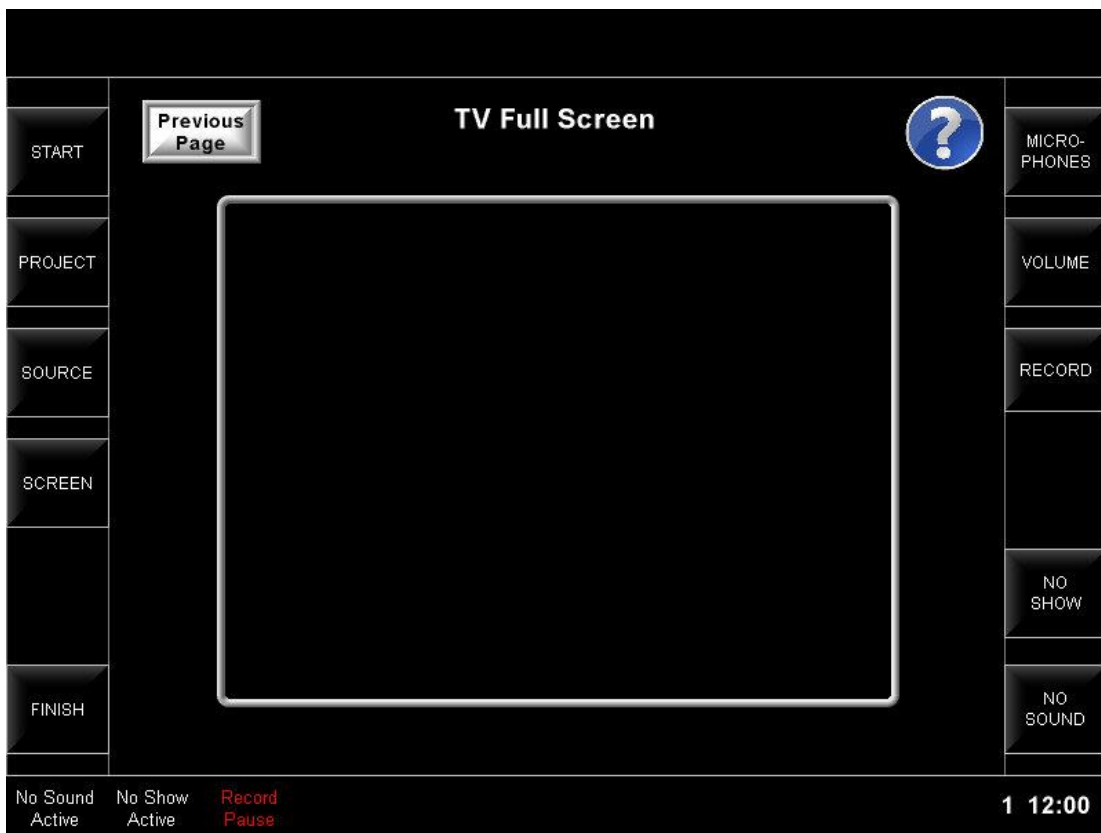
24. Fusion RV (Roomview Message)



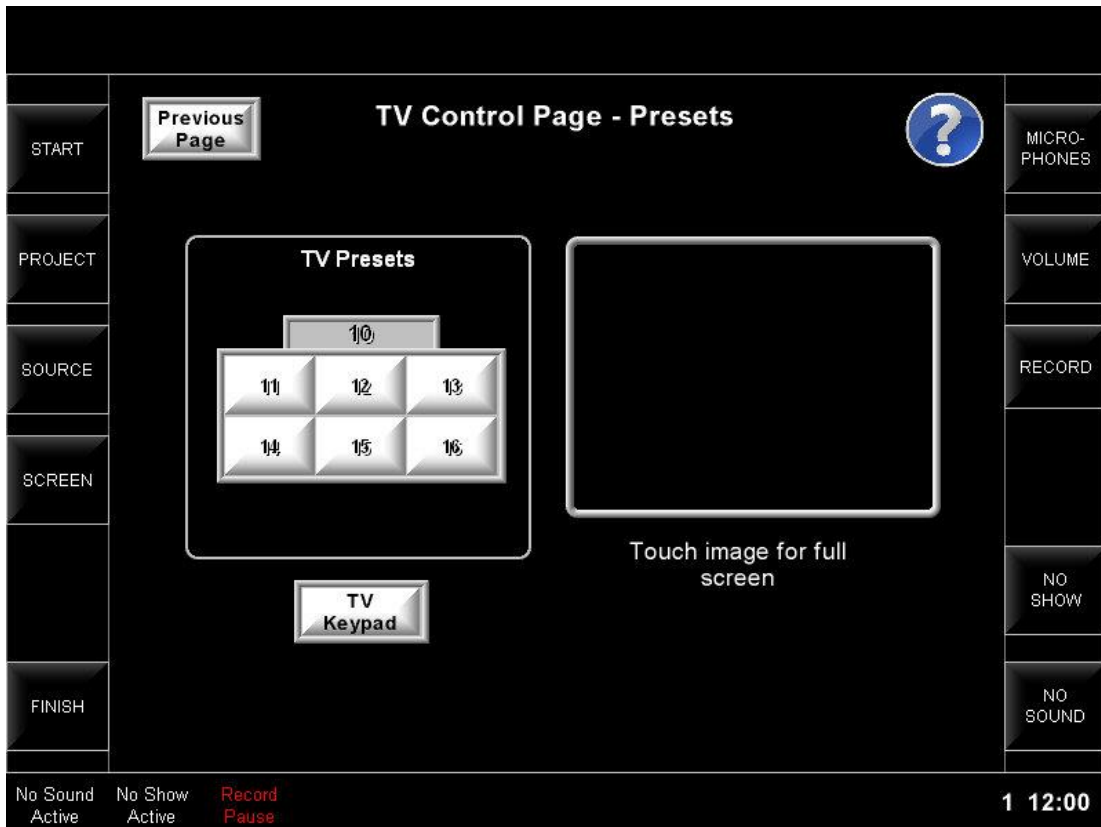
25. TV



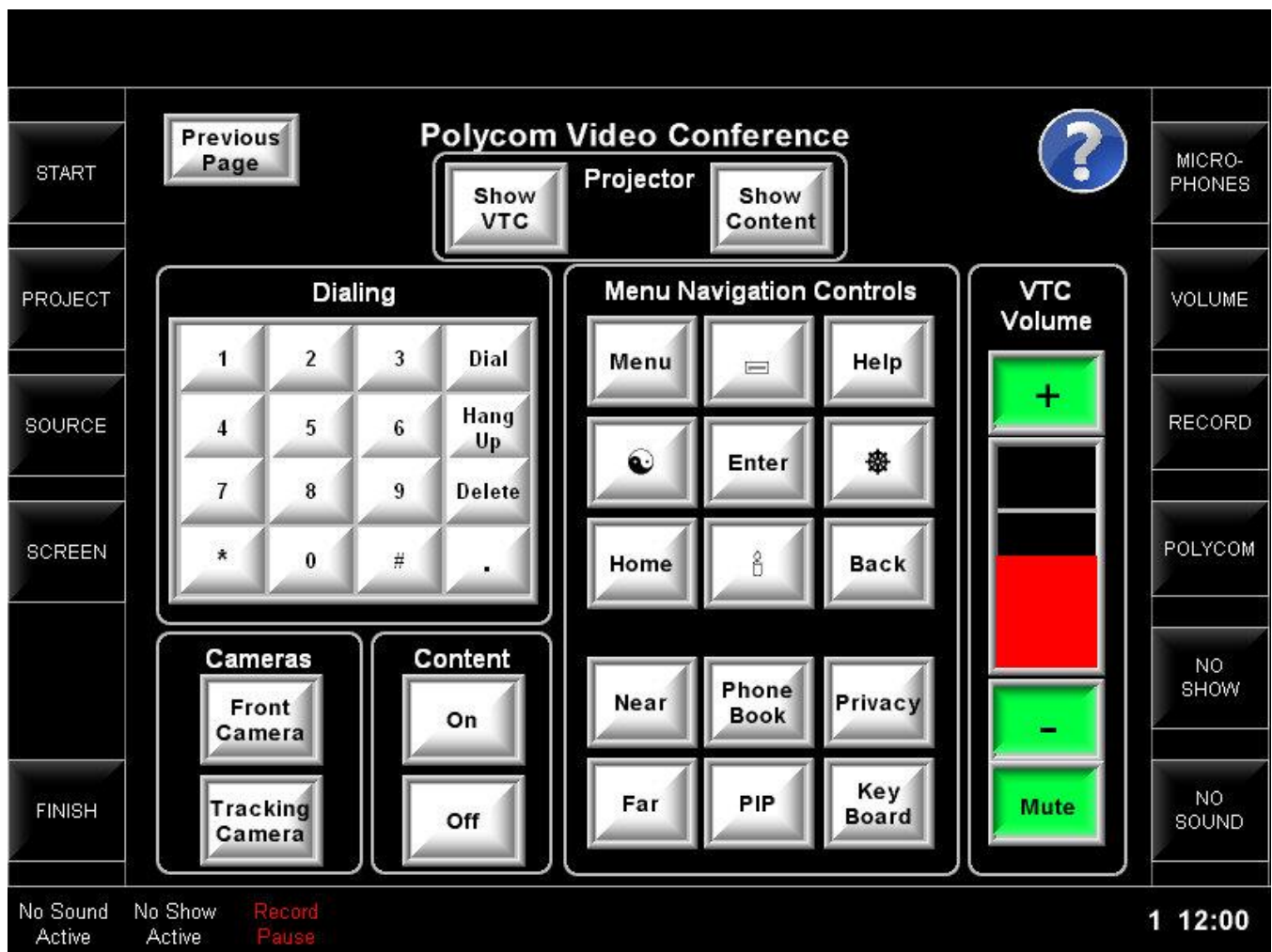
26. TV Full Screen



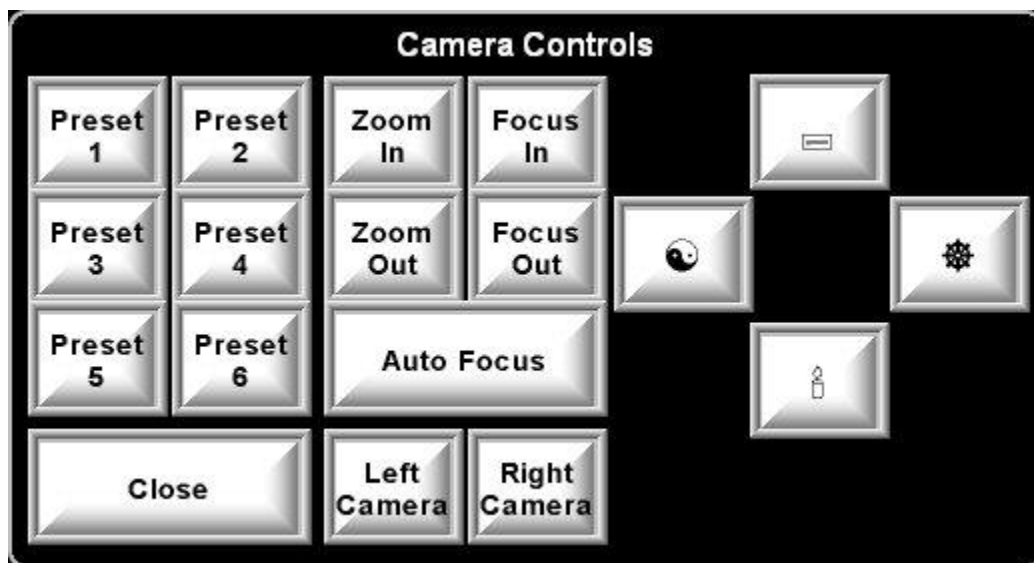
## 27. TV Presets



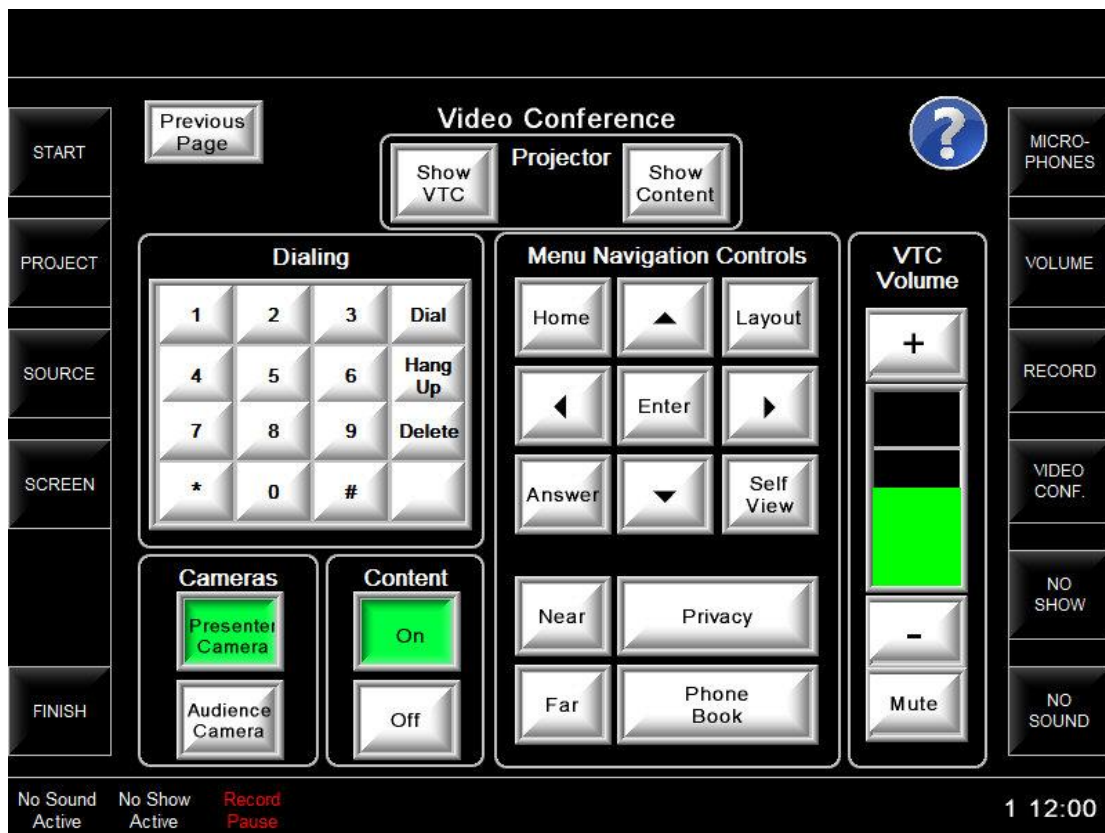
## 28. Video Conference (For Polycom Only)



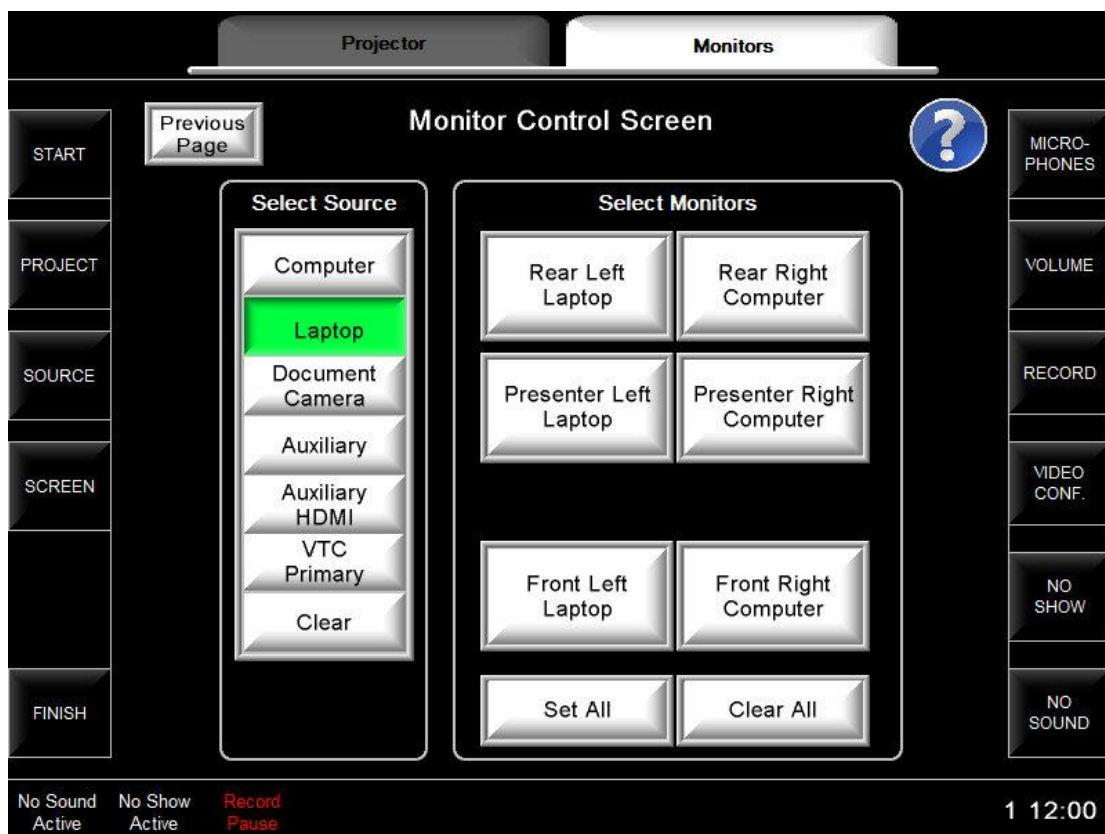
31. VTC Camera Controls



32. Video Conference (For Cisco Only)



33. Monitor Control Tab



34. Finish (Note: "Yes" must automatically be selected after 1 minute of inactivity)

Previous Page

Finish

?

Are you finished using the audiovisual control system?

Yes

No

If you select "Yes" it will take approximately two minutes before the audiovisual control system can be restarted.

No Sound Active

No Show Active

Record Pause

1 12:00

35. Goodbye (Status bar must be adjusted on a projector by projector basis and go as quickly as safely possible)

START

PROJECT

SOURCE

SCREEN

FINISH

Projector Cooling Down

System is powering off

The audiovisual system is powering off...please wait

Please make sure you logoff from the computer and secure the room

MICRO-PHONES

VOLUME

RECORD

NO SHOW

NO SOUND

No Sound Active

No Show Active

Record Pause

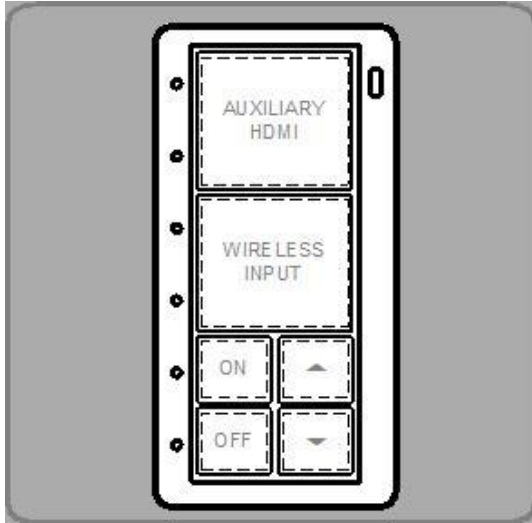
1 12:00

## Appendix B

### Crestron Push-Button Systems: Hard Buttons (CTSG-037)

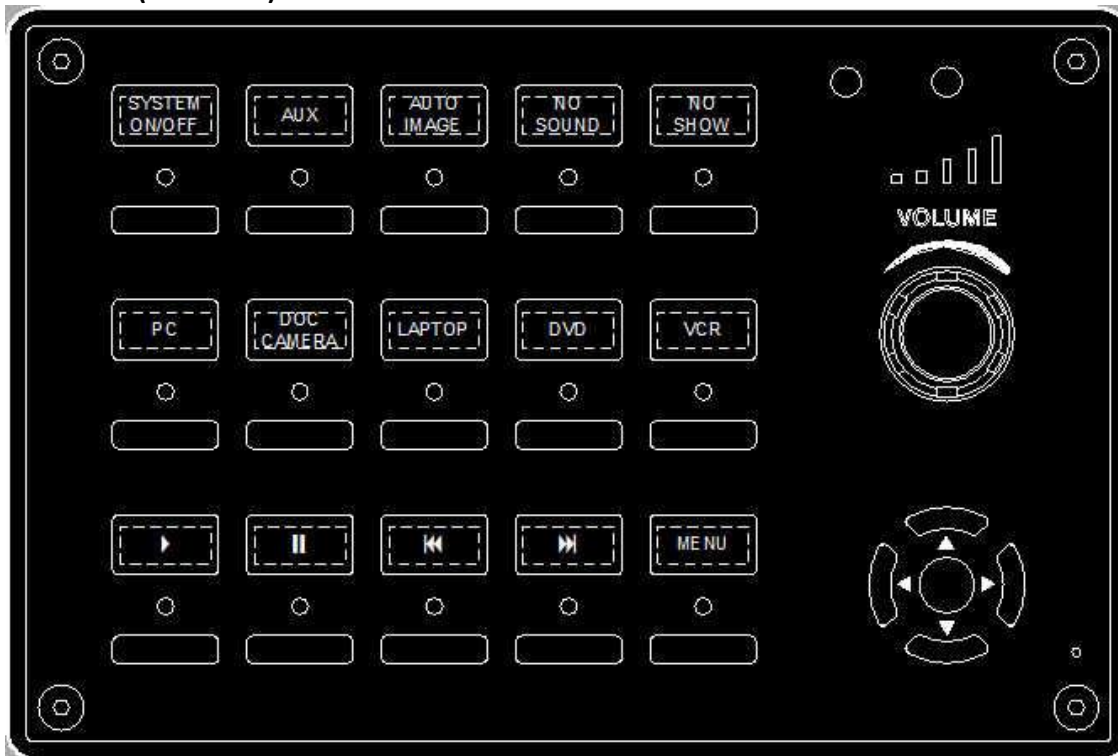
#### 1. Current Standard:

##### a. Cameo C2N-CBD-P-W-T



#### 2. Previous Standard:

##### a. MP-B20 (MPC-M20)



#### A. Types of Crestron push-button systems

- a. MP-M series require a separate MPS system:  
MP-B10

MP-B20

- b. MPC-M series do not require a separate MPS system:
    - MPC-M10
    - MPC-M20
  - c. The 10 series has 10 select buttons, two rows
  - d. The 20 series has 15 select buttons on three rows and 5 navigational buttons
- B. Color of panel
- a. The Crestron push-button systems are available in black or white.
  - b. The black system must be used in all cases unless otherwise specified by TU
  - c. The body, faceplate and mount must all be of the same color
- C. Color of inserts
- a. On black push-buttons the printed inserts must be black with white lettering
  - b. On white push-buttons the printed inserts must be white with black lettering
  - c. On any buttons not used the insert must be filled with a blank that matches the color of the faceplate
- D. Style of inserts
- a. The lettering on the inserts must be in all caps and be centered on space
  - b. Two lines are used but only if required by the length of text
- E. Screws on faceplate
- a. The screws on the push-button faceplate must be the screws designed for the system and must match in color
- F. Which panel to use
- a. The Crestron MP-B20 is the standard that must be used for most installations
  - b. The MPC-M20 must only be used when it is not feasible to also install a MPS
  - c. MPC-M10, or MP-B10 must only be used in Tier 1 installations where there is only a wall port and no DVD/VCR to be controlled
- G. Standard buttons
- First Row
- a. SYSTEM ON/OFF – Turns the system and projector on and defaults to PC as the main source, press again to turn system and projector off. If system is equipped with an electric screen this button must also raise and lower it.
  - b. AUX – Switches to the analog composite video source
  - c. AUTO IMAGE – Automatically adjusts image on analog sources must be turned into an HDMI source button on digital systems
  - d. No Sound – Press to temporarily mute the system.
    - a. Pressing the volume up or down buttons must also unmute the system.
    - b. "No Sound" function must mute all audio coming from the system including any microphone currently set to "Use." All current "Use" or "Don't Use" states must be cached at this point.
    - c. When "No Sound" is turned off, all microphones should be restored to the cached "Use" or "Don't Use" state they were in prior to "No Sound" being activated.
    - d. Un-muting any source by pressing the "mute" button or changing the volume must explicitly place "No Sound" to the "not on" state. Cached states are to be overwritten the next time "No Sound" is set to "on".
  - e. No Show – Press to temporary stop sending image to projector

#### Second Row

- f. PC – Switches to the computer source
- g. DOC CAMERA – Switches to the document camera
- h. LAPTOP – Switches to the laptop connection
- i. DVD – Switches to the DVD player
- j. VCR – Switches to the VCR

#### Third Row

- k. Play symbol – Press to start playing a DVD or VHS tape, press again to stop
- l. Pause symbol – Press to pause a DVD or VHS tape
- m. Rewind symbol – Press to skip rewind VHS tape or skip backwards on a DVD
- n. Fast Forward symbol – Press to skip forward on a VHS tape or DVD
- o. MENU – Brings up the DVD menu
- p. Directional buttons control DVD navigation functions

Article CTSG-037; Version 1; Last Revised 7/24/2019

## Appendix C

### Podium Drawings (CTSG-038)

1. Adjustable Height – Left Shelf



# CUSTOMER APPROVAL SHEET (NSDS)

Please Email/Fax Approval back to Sales Rep

Product Type: Custom	Quote#: 197366/Dale
Item #: 55178-20112	Phantom Product Ref Item #: 55178-20103
Description: Honors Lectern, Surround, CC700, 1.75"Dia. Hole, FMFMB	

Variable	Outcomes	
Laminate	Fusion Maple 7909-60 T1	
Edgeband	Fusion Maple 3MM	
Metal Finish	Black	
Lectern Style/OB Cutouts:	Surround	
Shelf	Flip Up Shelf Left	
Rack Options	Slide-In Rack Cube	
Logo Panel Option	NONE	
Installed Cove Pwr Module:	None	
Cove Color	No Cove/Color was Selected	
Custom/Additional Cutouts:	Worksurface Cutout CUSTOM CC700 & 1.75" Dia. Hole	Conceptual Drawing

Cut Out Details(1): CC700	
Cut Out Details(2): 1.75" Dia. Hole	
Shock Mount for Shure Mic	
Logo: n/a	
Original Artwork	

## Other Notes:

1) Location of CC700 to fit into cutout in secondary worksurface (2018 Lookbacks)

2)

3)

**\*\* Internal Use Only\*\***

[Spectrum Industries | Office and Educational Furniture](#)

0143609 (0119309 CUSTOM)

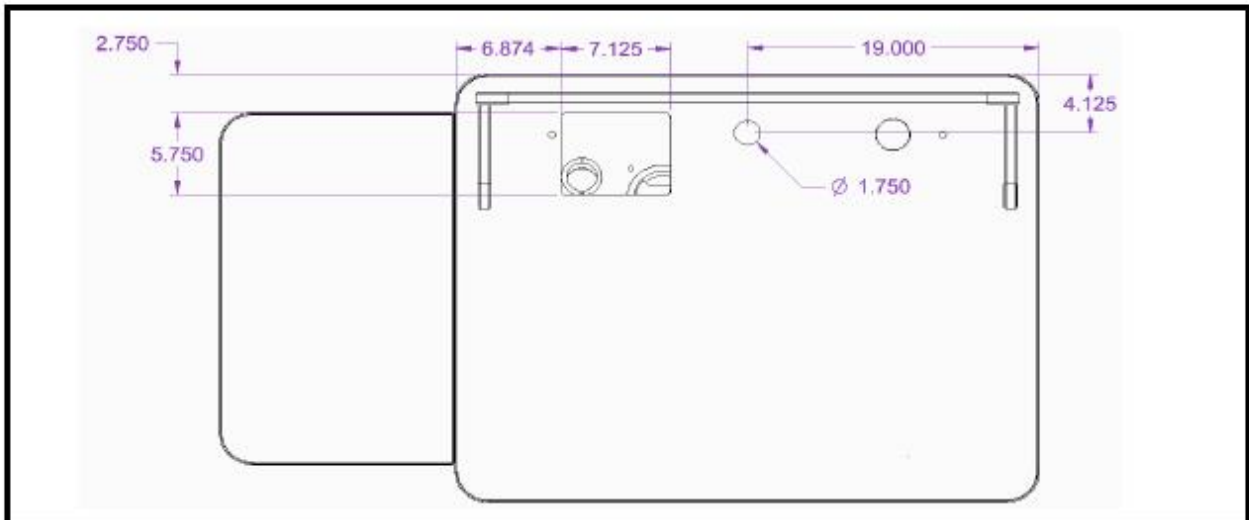
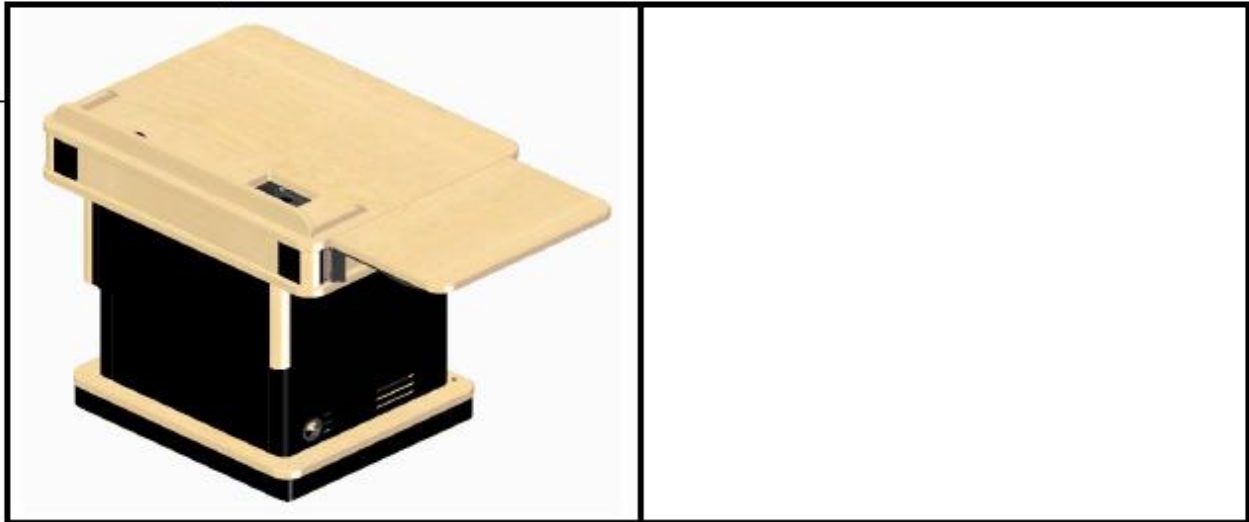
**SPECTRUM INDUSTRIES INC.**

925 First Ave P.O. Box 400 Chippewa Falls, WI 54729 Ph. 1-800-235-1262 Fax 1-800-335-0473

E-mail: [spectrum@spectrumfurniture.com](mailto:spectrum@spectrumfurniture.com) Web site: [www.spectrumfurniture.com](http://www.spectrumfurniture.com)

Item# 55178-20112

Description Honors Lectern, Surround, CC700, 1.75"Dia. Hole, FMFMB



***By signing the Customer Approval Sheet the customer agrees that all changes listed above are correct.***

***No orders for non-standard products will be accepted without a signed Customer Approval Sheet.***

***Please submit both pages of this approval sheet when returning to Spectrum.***

***\*\*Non-standard products are non-returnable, non-refundable and can require a lead time of up to 6-12 weeks depending on the complexity of the changes and the time of year.\*\****

Approved By: \_\_\_\_\_

(signature)

Date: \_\_\_\_\_

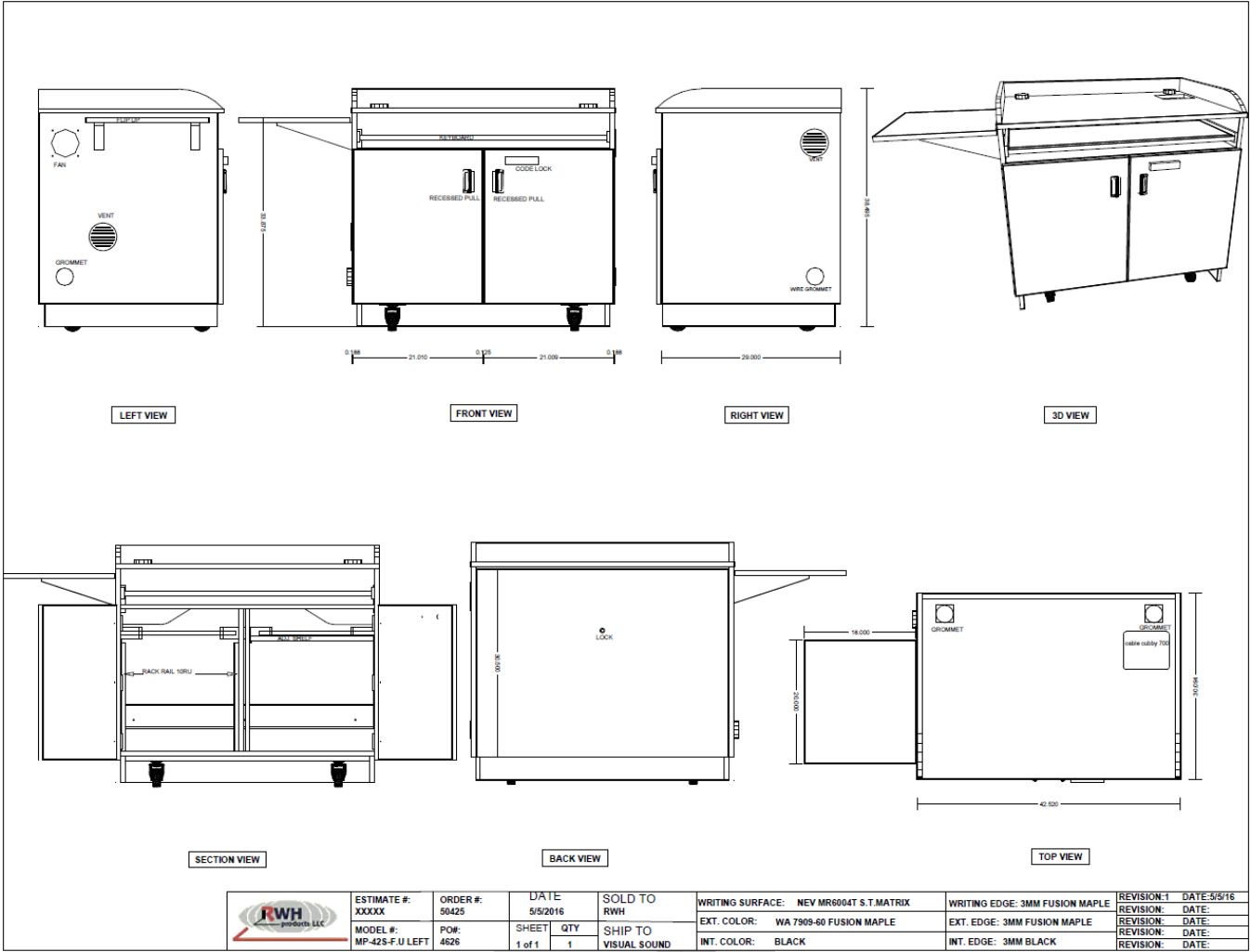
(print name)

**SPECTRUM**  
**INDUSTRIES INC.**

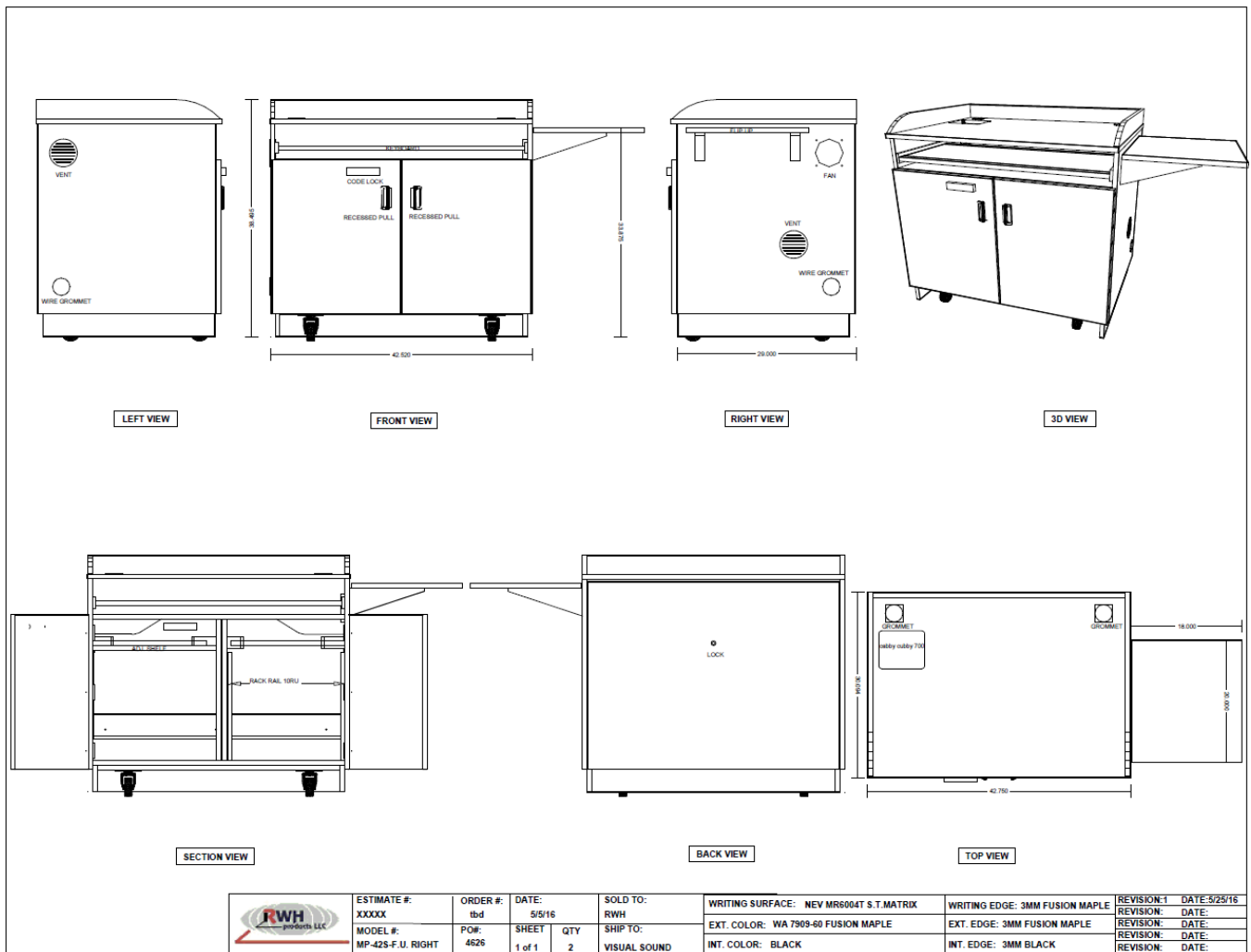
925 First Ave. P.O. Box 400 Chippewa Falls, WI 54729 Ph. 1-800-235-1262 Fax 1-800-335-0473

E-mail: spectrum@spectrumfurniture.com Web site: www.spectrumfurniture.com

2. Left Shelf



3. Right Shelf



Article CTSG-038; Version 1; Last Revised 10/22/2019

## Credenza Drawings (CTSG-039)

MPRC28

42"w X 30"h X 23"d Rack credenza

(2) sets of RRF-14 rack rails

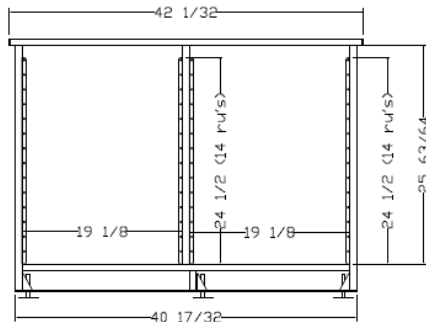
color: wa fusion maple 7909-60 w/matching 3mm pvc

qty: 3

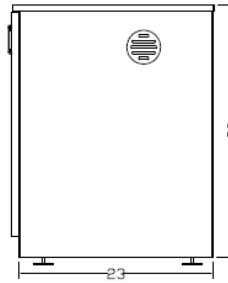
est: 2034 po:  
visual sound PO#

sold to: RWH

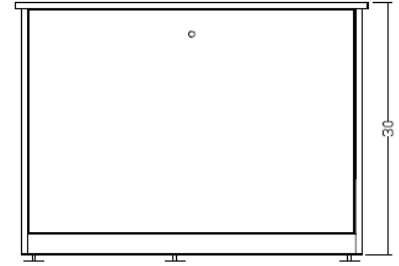
ship to: Hartford Community Coll



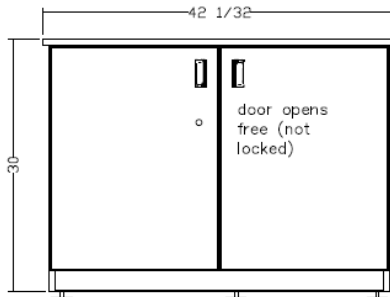
FRONT SECTION



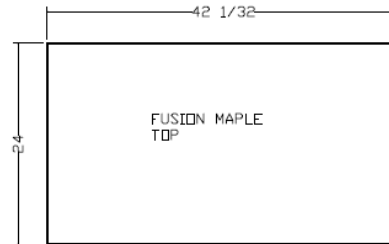
RH SIDE VIEW



BACK VIEW



FRONT VIEW



TOP VIEW

Article CTSG-039; Version 1; Last Revised 5/21/2012

\*Any changes from this design or questions must be directed to Brian Raley at [braley@towson.edu](mailto:braley@towson.edu).

## Appendix D

## Appendix E

## Device Configuration Information (CTSG-042)

Mersive SolsticePod

1. Display Tab
  - a. Under "Naming and Discover"
    - i. Display Name: Room collection code-SolsticePod (i.e. CK0008-SolsticePod)

- b. Under “Access Control”
    - i. Access Control: Check Screen Key (unless moderated mode is desired by the client)
  - c. Under “Resource Restriction”
    - i. Check everything including “Enable AirPlay Discovery Proxy”
  - d. Under “System”:
    - i. Set Admin password to standard
    - ii. Update host name to match display name
- 2. Network tab
  - a. Under “Wireless Settings”
    - i. Uncheck “enable”
- 3. A “Wireless Input” button must be added to the Crestron touch panel if applicable.

#### Crestron AirMedia

In rooms with Crestron control systems, the programming must be updated to add a button to the source list on the Crestron touch panel labeled “Wireless Input”. The button must have the same size, color, and font size as all other sources.

The network port must be on the 539 VLAN.

On the management interface of the AirMedia device the following settings must be made:

- i. Set Admin Password (See manager for password)
- ii. Code must be set to Random (Device Setup>Code>Random)
- iii. Host names must consist of the Collection Code with “-AirMedia” added to the end (i.e. CK0006-AirMedia) (Network Setup> Host Name> Collection Code-AirMedia)
- iv. The display of the IP address must be turned off (Network Setup>Display of IP address> Off)

#### **Disable the built-in DHCP server**

- Right click and save the configuration file to your desktop: [am-100\\_dhcp\\_server\\_off.conf](#) (55 bytes)
- Load the downloaded configuration file to the AirMedia via the 'System Configuration' section of the AM-100 web interface.
- Once completed, the DHCP server will no longer be running on the AM-100.

**c. Apple TV** allows clients to wirelessly project from Apple devices such as MacBooks, iPhones, and iPads. In rooms with Creston control systems, the programming must be updated to add a button to the source list on the Crestron touch panel labeled “Wireless Input”. The button must have the same size, color, and font size as all other sources. Controls must also be added (see image in Appendix A).

The Apple TV must be plugged into a network port on the 539 VLAN

On the menu interface (accessed by pressing the menu button on the remote) the following settings must be made:

- i. The device name must be changed to follow the standard naming convention: Collection Code-AppleTV (i.e. HH0313-AppleTV) (Settings>General>Name>Custom)
- ii. The time zone must be set correctly (Settings>General>Time Zone)
- iii. The serial number must be collected and entered into the TechInfo database (Settings>General>About)
- iv. Set Sleep time to “Never” (Settings>General>Sleep)
- v. Set Screen Saver to “Never” (Settings>Screen Saver>Start After)
- vi. Set AirPlay security to “Onscreen Code” (Settings>AirPlay>Security)
- vii. Turn on Conference room Display (Settings>AirPlay>Conference Room Display)
- viii. Turn on Restrictions (Settings>General>Restrictions)
- ix. Passcode (set to standard)
- x. AirPlay Settings (set to “Ask”)
- xi. Turn on Automatic Updates (Settings>System>Software Updates)

### **Tracking Log**

11/09/2018 – Updated all instances of DMPS3-4K-300-C to DMPS3-4K-350-C  
1/11/2019 – Updated fire alarm/annunciator restrictions  
1/24/2019 – Updated logos  
2/07/2019 – Updated Adjustable Height Podium documentation  
4/08/2019 – More clearly defined “No Sound” functionality  
5/15/2019 – New dual image standard  
6/20/2019 – New Cable Cubby standard  
7/24/2019 – Added Cameo C2N-CBD-P-W-T  
8/26/2019 – Updated Display Select Page  
11/11/2019 – Added Updated Display Control Page  
11/26/2019 – Added camera presets, Interactive Display heading, default source switching, and Cleartouch Source button.  
2/14/2020 – Tweaked Camera Control Page Preset Buttons (CTSG-34)  
3/10/2020 – Added “hard” button feedback when selected update (CTSG-020)  
7/1/2020 – Added clarification to master volume, volume level testing, and document camera power on standards.  
10/1/2020 – Moved dual image to optional add on  
10/6/2020 – Added networked power conditioner  
10/28/2020 – Added Crestron 770 touch panel  
3/10/2021 – Removed “Return to Source Select Page” button from “Advanced Volume Control Page” to allow for additional volume bar  
3/17/2021 – Added information about touch panel auto brightness settings and camera labels  
9/8/2021 – Updated Display Select Page  
9/9/2021 – Updated Power up/Power off screens  
2/24/2022 – Updated standard projector list with 4K models  
7/11/2022 – Updated equipment list, added conference room standards, added video wall touch panel layout  
12/7/2022 – Updated Cisco Room Kit Plus to Cisco Room Kit EQ  
2/27/2023 – Added USB Cable Cubby connection for laptop connection to VTC  
11/30/2023 – Updated Liberty Ring standard