NCS Multimedia Technology Packages 2008

INSTALLATION AND WIRING OF FORMAL TEACHING SPACES

1.0 VIDEO DATA PROJECTOR MOUNTS & SCREENS (Where required)

The majority of classrooms require ceiling mounts. Other rooms have projection booths which may require ceiling mounts or floor mounts using pipes depending on the projection angle. Screen size (width) should be approximately:

screen width = distance from screen to last seat /4

Screens up to 6' in width will be manually operated and must be Da-lite Model C.

Screens which are 7' to 12' in width must be electrically operated and must be Dalite Cosmopolitain Electrol.

Electric screens must be anchored to ceiling slab; if this is not possible, screen brackets must be attached to a ¾" piece of plywood the width of the screen. Plywood must then be secured to gypsum walls using a minimum of 8 toggle bolts.

1.1 The projector mounts must be installed at an appropriate distance from screen, so that the correct image size is approximately in the middle of the zoom range of current projectors or other projector specified for the room.

1.2 These mounts must be at a vertical height, so that the projector lens is level with the top edge of the screen surface or at a position prescribed by the projector manufacturer, with the keystone adjustment set to 0.

1.3 These mounts must be secured to the ceiling so that if a false or suspended ceiling exists, it is not part of the support. In other words, ideally, mounts should be secured to slab or other secure surface with appropriate fastenings e.g. Lag Bolts

1.4 These mounts must be also attached to projector & ceiling, using security anchors and locks security PC tabs supplied by NCS.

1.5 For maintenance purposes, these mounts must not block access to lamps and filters and must allows changing the projector lamp and filter cleaning without removing the projector from the mount.

Crestron Quick Media Installation

The standard installation in classrooms with one data projector and two VGA sources

will be the QM-RMCRX-BA processor with a QM-WMC Media wall plate switched by either a CEN-DB12-B key pad or a TPS 3100L Touchpanel.

All programming code will become the property of McGill University after the warranty period expires.

2.0 Wall cabinet (See diagram) & existing rooms

The cabinet is made by an NCS supplier and is shown in the diagram.
This cabinet will be positioned at a suitable location in the front of the room.
Power will be provided inside the cabinet by a duplex outlet for a DVD/VCR and to the area above the cabinet with a second duplex outlet for a computer or other audio visual equipment.

Bottom of cabinet must be installed 30 inches from the floor to respect handicap access norms.

3.0 Connectors and Cables

3.1 Audio cable connectors shall be either of the Canare model F series or Neutrik X series. XLR chassis mounts will be of the Neutrik D series.

3.2 Video connectors should be of the Canare BNC type model RJ-BCJR or RCA type model RJ-R chassis mounts.

The RGBHV cable will be of the type Extron BNC-5 Mini HR with BNC male Mini HR crimp connectors.

3.3 Video connectors should be standard 75 ohm crimped male BNC connectors & HD-15 (high density 15 PIN) male adapter cables of appropriate length.

3.4 Audio and video cables must be good quality from either Belden or Delco.

3.5 RJ45 chassis connectors on cabinet plate must be used for telephone & network. This must be coordinated with the McGill Computing Centre.

3.6 Wiring from wall cabinet to ceiling should be done when necessary inside a conduit of appropriate size (either metal or plastic) and routed in an aesthetically pleasing manner so as not to destroy any existing architecture.
All cables should have enough slack to be able to service the projector filters and lamps without having to disconnect the cables.
Additionally a flexible plastic tube as used in all other classrooms of sufficient length containing all necessary cables must be adapted to the wall box from the cabinet to allow connection to a laptop computer.

This tube will contain the following cables:
Computer audio cable stereo male and a DB15 male to male VGA cable of sufficient length for the room.

4.1 IR Control

Is to be used to control a DVD/VCR combo player.

4.2 RGB Automatic Switcher

Where requested an RGB auto switcher of the type… Kramer VP 211DS (grey) should be installed in a convenient location (Power 110VAC) to facilitate more than one computer input. Most classroom projectors have only one input.

5.2 Security

PROJECTORS AND LARGE SCREENS (plasma and LCD) **MUST BE SECURED** with a Security anchor and cable (Securtech) and **must** be equipped with an alarm system (PCTab) connected to McGill security. The installer must also secure the data projector to the slab or ceiling using Securtech security cable, anchor and padlock that they will purchase.

Projectors and plasma and LCD screens are to be tagged and registered with the STOP system.

Installer must also secure document cameras to the podium using Securtech security cable, puck and padlock supplied by NCS

6.1 Electrical

The projector must have an 110vac outlet on or inside the ceiling, switched with a Leviton 1201-L series key switch on the wall, near the cabinet, to allow projector reset.

The VCR cabinet should have an outlet inside for the VCR and IR, plus another above the cabinet for a laptop or other AV equipment.

CLASSROOM ELECTRICAL SYSTEMS

All electrical equipment (including contactors, lighting fixtures, dimmers, etc.) should be of selected brands, models, and specifications to conform to campus standards (see Design Guidelines for McGill University).

A. All conduits should be of continuous EMT electrical metallic tubing (conduit) type material where possible.

1. Areas and situations where EMT is not possible, junction boxes or flexible conduit should be installed only by prior approval of the University.

2. Junction boxes should not be located in hidden or inaccessible corners.

3. All conduit should be at least 1” inside diameter or larger. Larger conduit is generally installed to ensure space for expansion.

B. Low voltage cables (e.g. audio, video, and control cables) are all required to run in a separate ¾” conduit from any AC wiring.

C. All conduit and electrical circuits should have the same ground reference.

D. All audio, video, computer and control electrical circuits should be fed from "clean" legs from the transformer free of high inductive loads. There should be no elevator motors, compressor motors, blower motors, etc. on the side of the power transformer that feeds the media equipment.

E. All electrical control circuits (per classroom) should come to a single location.

1. This location should be large enough for the lighting contactor cabinet, and when there is control of the lights from a faculty workstation podium, a NEMA type l box that contains the low voltage media control system. This NEMA box of adequate capacity must be fitted with internal threaded studs to accept the panel that the control modules are mounted on.

2. The location should be convenient for maintenance and secure from vandalism.

3. If possible this location should be isolated from the classroom to eliminate repair and contactor noise.

F. A/C outlets on a separate circuit should be provided inside the classroom for the media equipment (i.e. data projectors, portable VCR's, laptops, audio amplifiers, etc.).

1. There should be at least one duplex outlet on each wall, as well as on the front, classroom side, of the projection booth. In larger rooms which have fixed seating on risers, an outlet should be provided in the face of the first riser (centered in the room) for overhead projectors, and on the face of a riser midway back in middle of seating (centered in the room).

2. The number and locations of outlets will increase with the size of the room. Consult the Instructional Multimedia Services (NCS) for specific requirements pertaining to outlet quantity for audio-visual equipment.

G. Whenever possible power and audio/video outlets shall not be floor mounted to avoid the intrusion of water and debris. Outlets shall be mounted on the rear stage wall and/or the front stage wall or other vertical surfaces (such as the risers of tier seating).

H. Video Projection - Provide continuous 120V A/C power to the video projector, and a conduit to the projector control station at the front of the classroom and to the projection (or control) booth. This conduit houses a keyed A/C switch, type Leviton 1201-1L to be used to reset the projector in case of lock up.

I. In classrooms with dimmable lighting (Lightolier or Lutron), provisions must be made for the appropriate control interface with the Crestron control unit.

J. In the case of motorize blinds, a control interface will also be required for the Crestron.

7.1 FACULTY LECTERN

All lecterns/podiums are designed and ordered by NCS.

The Faculty Lecterns for small classrooms should consist of either a small free-standing podium, or a small podium resting on the lecturer's desk.

All lecterns must be secured to floor.

For large classrooms and Lecture Halls, the lecterns should house controls of audio/visual and public address systems. It should also contain the document camera, DVD/VCR player, contained in a secure locking cabinet. As with the other standardized media packages, the objectives in designing and building the Faculty Lecterns remain a self-service operation, simple, intuitive, with an easy to use interface, off-the-shelf technology, flexibility for integration of future technology, high reliability and fast repair response and to promote interaction with the students. Because of the complexity of these criteria NCS designs all podiums.

8.1 CLASSROOM MEDIA EQUIPMENT PACKAGES

McGill has defined standard "Media Packages" of audio-visual equipment for classrooms. Media Package l should be provided for small classrooms; Media Package 2 for medium and large classrooms; and Media Package 3 for Lecture Halls. These media packages are designed as the minimum audio-visual packages that support teaching requirements for particular classroom sizes.

Media Packages are developed and refined with five principles in mind. First, **ease of use**. All equipment purchased, instructions for use posted, and installations are done with long term 'ease of use' a primary consideration. Second, **ease of operation** is important. Faculty will be expected to independently use audio-visual equipment that has been installed in the classrooms. Third, **off-the-shelf technology** is important. Equipment must be use proven and easily interchangeable to permit maximum 'up time' of our classrooms. Fourth, the media packages must **allow for future technology** to be integrated as new products and concepts become available. Finally, the media packages and their individual components must allow for **high reliability and fast repair**. In McGill classrooms that have audio-visual equipment installed, a presenter on our campus will find a standard media package that incorporates these principles.

Where a sound system is installed that allows microphone usage, an **assistive listening device** is desirable. FM systems are preferred over infrared systems. The McGill University Standards for Barrier-Free Access requires that for Lecture Halls with fixed seating, an assistive listening system must be permanently installed. All FM systems should be on the same crystal frequency, since McGill is providing portable receivers to students with hearing disabilities.

The following equipment lists give the equipment requirements for each media package. This equipment is provided by McGill, however classrooms must be designed to accommodate the particular specified media package and meet the Teaching Space Group norms. In addition, the basic elements of a Media Package 3 are listed below so that rooms may be designed to accommodate such workstations.

Since needs and teaching styles vary greatly, each room's requirements will be different; but the following will be the minimum requirements for any classroom:

Media Package 1 (seminar and meeting rooms of less 20 seats and less than 20 f. X 20 f)

1 50 inch Plasma screen mounted on a cabinet

1 flexible plastic tube as used in all other classrooms
of sufficient length containing all necessary cables
to allow connection to a laptop computer.
Security system (PC tabs, alarm, locking cables)
1 Telephone /network jack

No automation

Media Package 1 Option:
1 DVD player
Mounting on the Plasma screen on the wall with an AV plate on the wall.

Media Package 2 (Small classrooms 1 to 60 seats)

1 Crestron push button automation system with web access for remote operation
1 Video/ data projector (native resolution 1024 x 768)
1 Projection screen
1 Overhead projector
1 Overhead projector cart
1 DVD player
1 Equipment on wall mounted cabinet or in small optional podium
1 Telephone /network jack
2 LAN connection1: one for the laptop and one for the automation (Crestron) remote access 1 Security system (PC tabs, alarm, locking cables)

Media Package 2 Options:
Document camera
Sympodium writing tablet
Small mobile podium

Media Package 3 (Medium and large classrooms 60 to 100 seats)

This size of room has a lot of different layouts.

1 Crestron touch screen automation system with web access for remote operation1 Video data projector (native resolution 1024 x 768)
1 Projection screen
1 DVD/VCR combo player

1 Document camera

1 Equipment in podium/ box on wall or booth

1 Telephone/network connection
2 LAN connections: one for the laptop and one for the automation (Crestron) remote access
1 Security system (PC tabs, alarm, locking cables)
1 Overhead projector
1 Overhead projector cart

Media Package 3 Options:

1 Wireless microphone
1 Audio amplifier with speaker(s)
2nd Video data projector and 2nd projection screen
1 standard mobile podium

Media Package 4 (Lecture Halls 100 seats and more)

This package is a custom installation, which includes the following equipment:

Crestron touch screen automation system with web access for remote operation

1 Video data projector (native resolution 1024 x 768)
1 DVD/VCR combo player

1 Equipment in podium/ box on wall or booth

1 Public address system (mono)
1 Motorized projection screen with controls
1 Document camera

1 Mcgill standard podium with handicap access

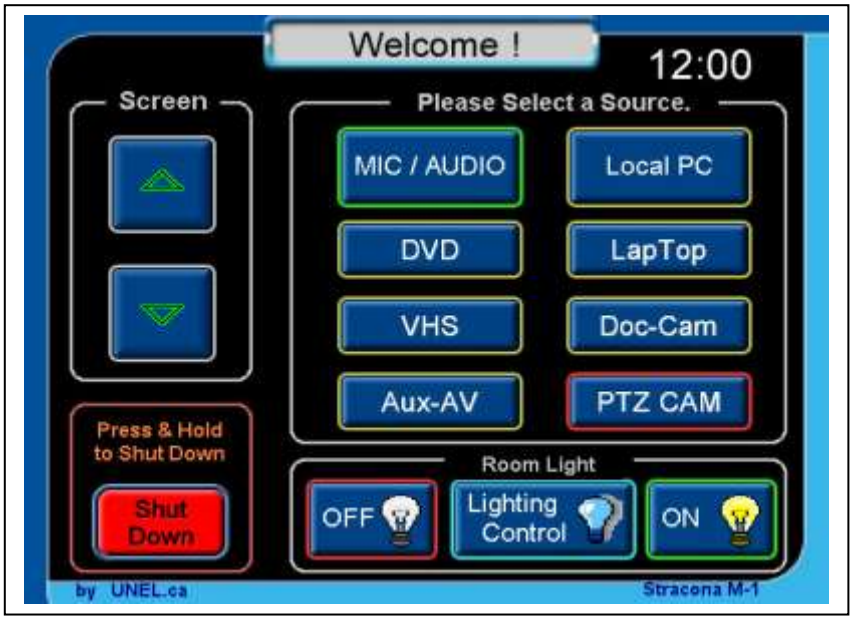
1 mobile podium
1 Telephone installation/network connection
2 LAN connection
- 1: for the laptop
- 1; for the mobile podium
- 1 ; for the automation (Crestron) remote access

1 Security system (PC tabs, alarm, locking cables)
- 2nd projection screen and 2nd Video data projector

1 Overhead projector
1 Overhead projector cart

Note: 1- When there are 2 projectors and 2 screens, the inputs will be controlled separately and a
2- Due the variety of platforms and software, Faculties are to provide and support computers as required.
3- For all fixed media packages, a small lamp or light strip is necessary, adjacent to the equipment, to illuminate control panels and consoles.

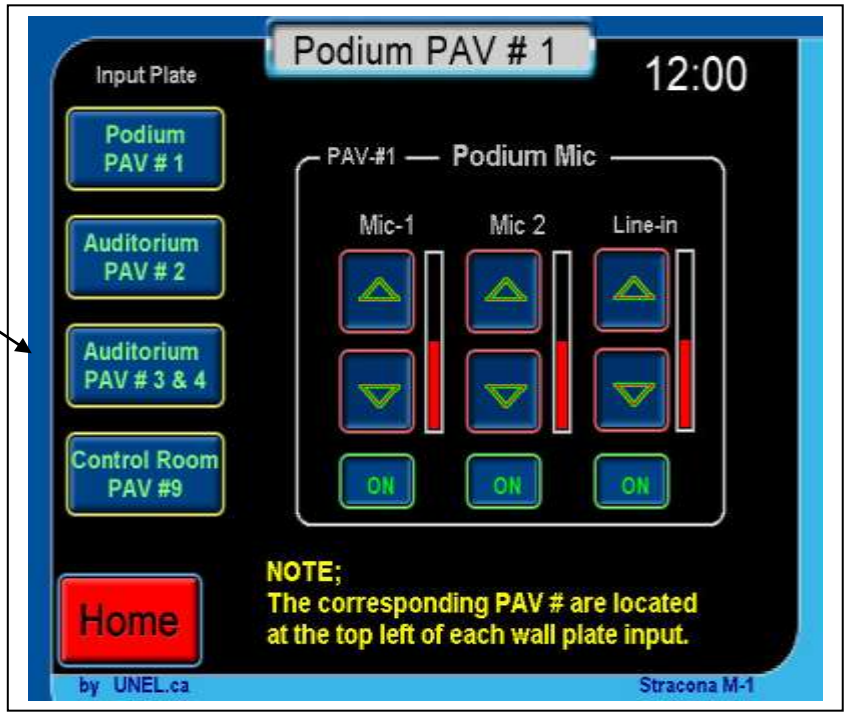
9.1 LECTURE HALLS MAIN CRESTRON STANDARDS



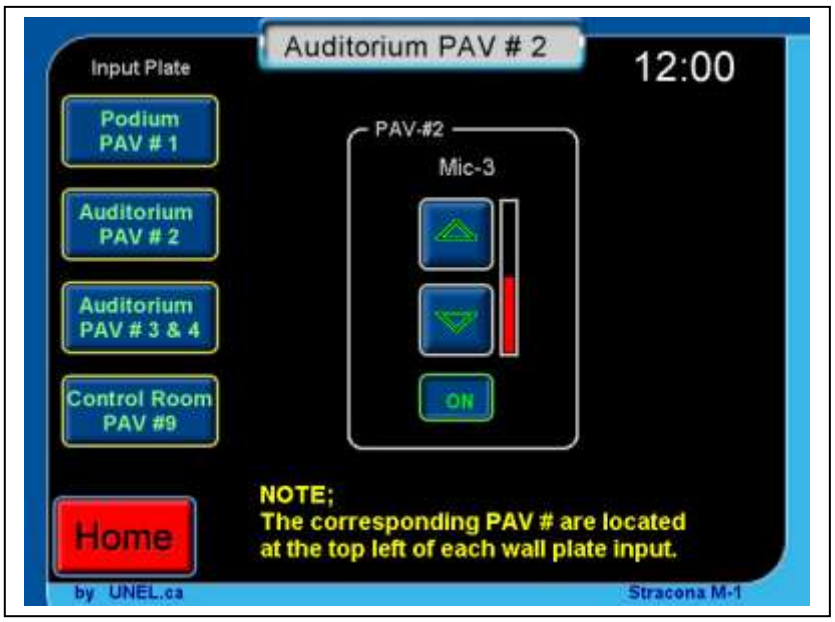
MIC/AUDIO CRESTRON SCREEN

MIC 3 BELOW CHALKBOARD
ON LEFT OF CENTER DIVIDER

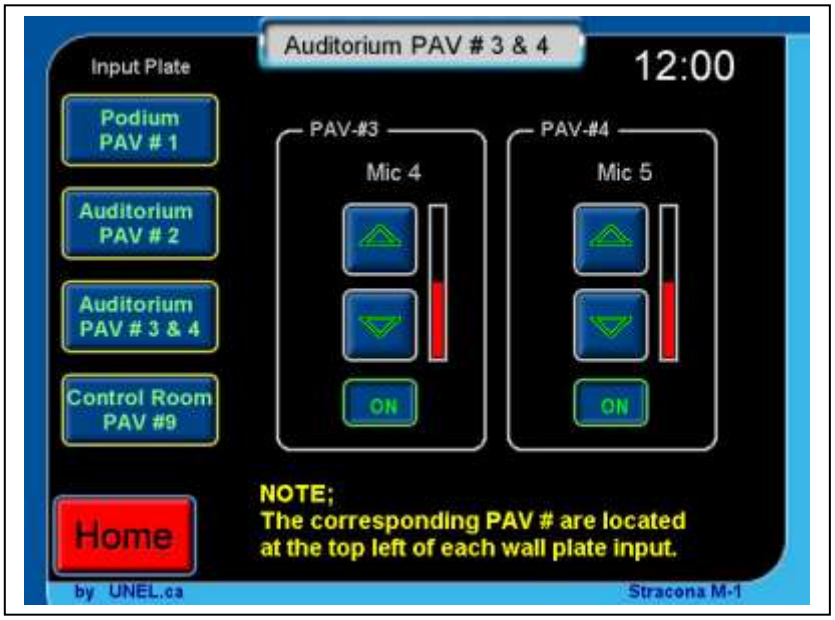
MIC 4 & 5 AILES MICS
MICS ARE BEHIND 7TH SEAT FROM FRONT OF ROOM



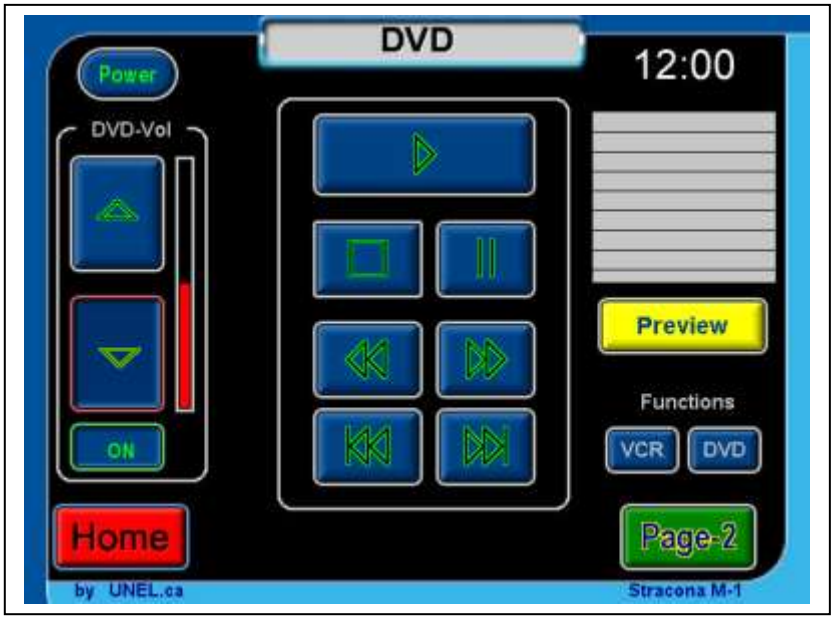
MIC 3 VOLUME CONTROL CRESTRON
SCREEN (MIC CONNECTOR IS BELOW
CHALKBOARD TO THE LEFT
OF THE CENTER CHALKBOARD DEVIDER)



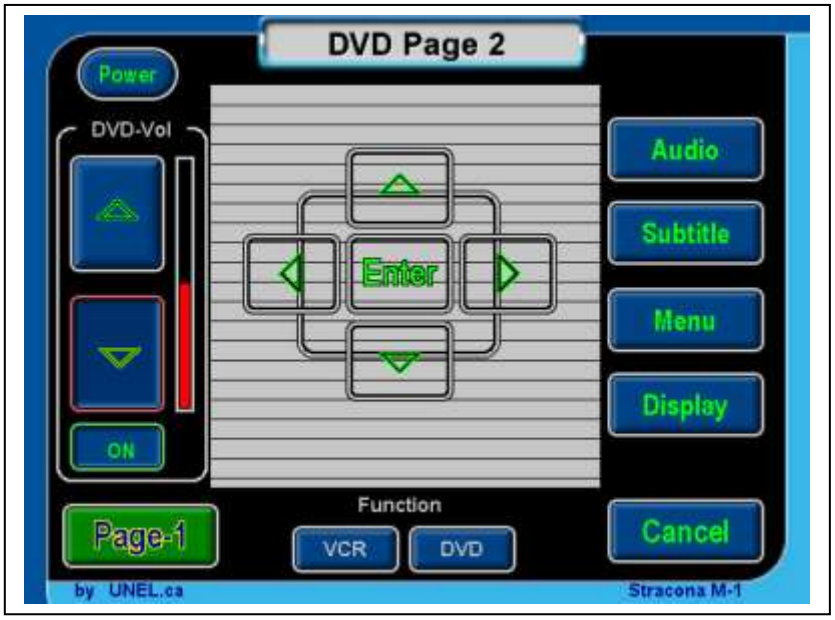
MIC 4 & 5 (AISLES MICS) VOLUME CONTROL CRESTRON SCREEN
MICS CONNECTORS ARE BEHIND 7TH SEAT
FROM FRONT OF ROOM



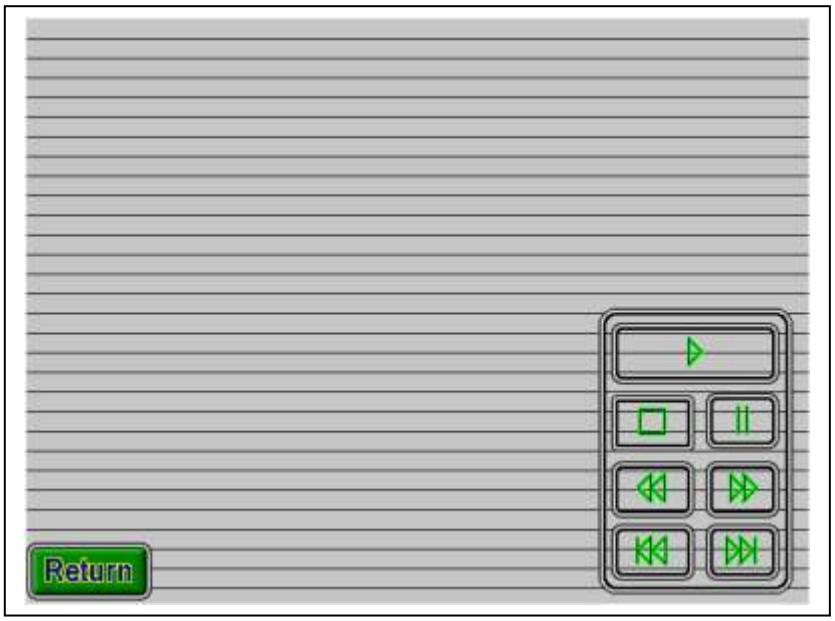
DVD CRESTRON SCREEN 1



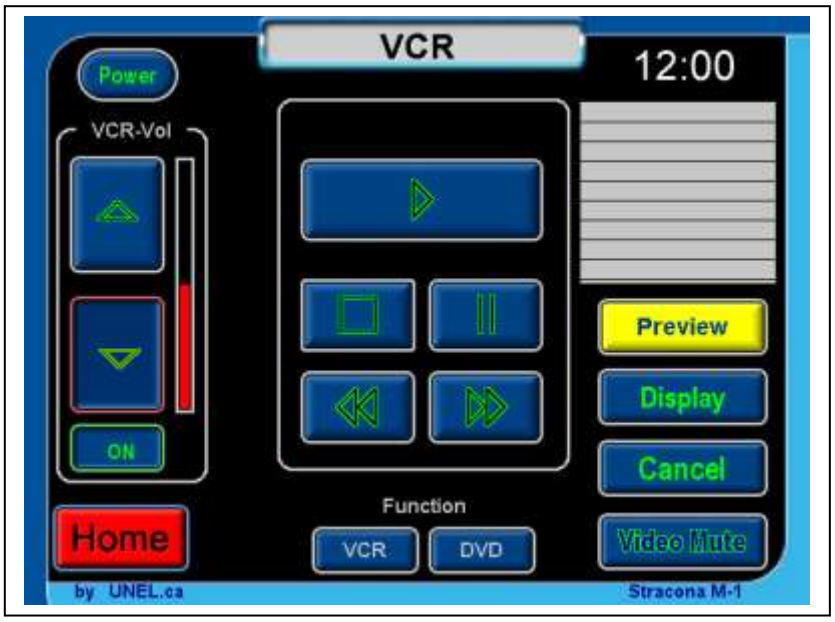
DVD CRESTRON SCREEN 2



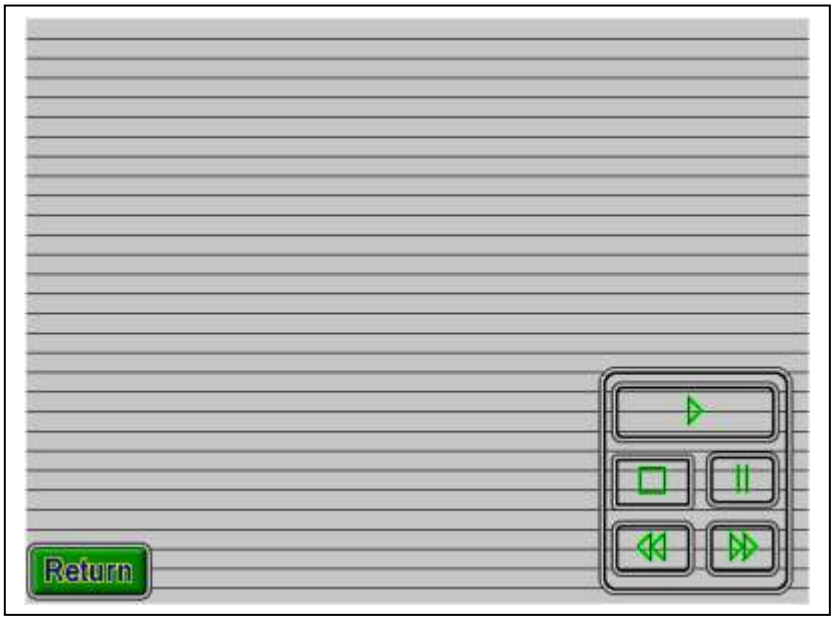
DVD CRESTRON PREVIEW SCREEN



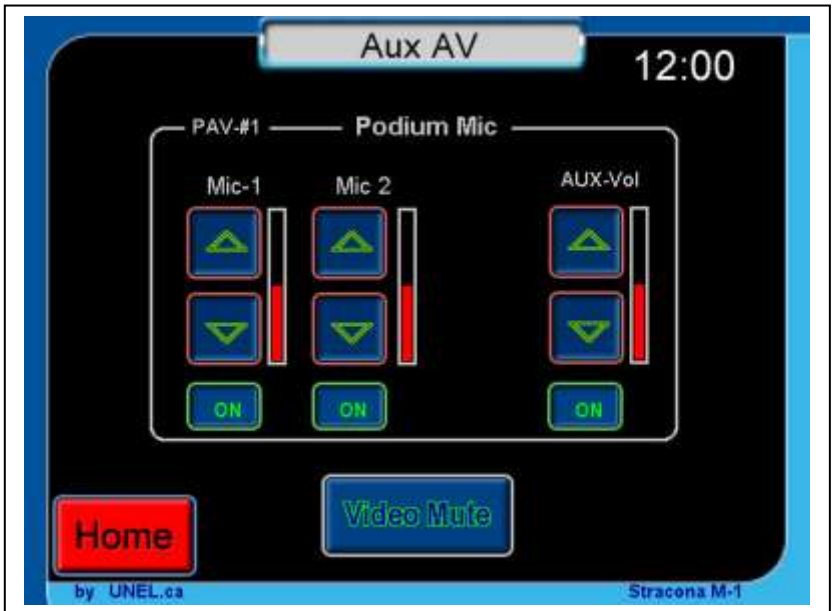
VCR CRESTRON SCREEN



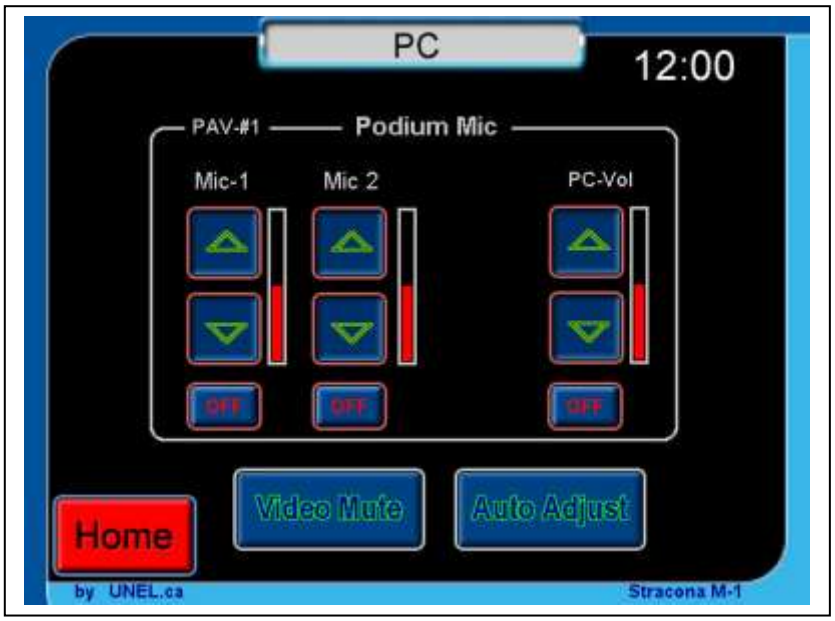
VCR CRESTRON PREVIEW SCREEN



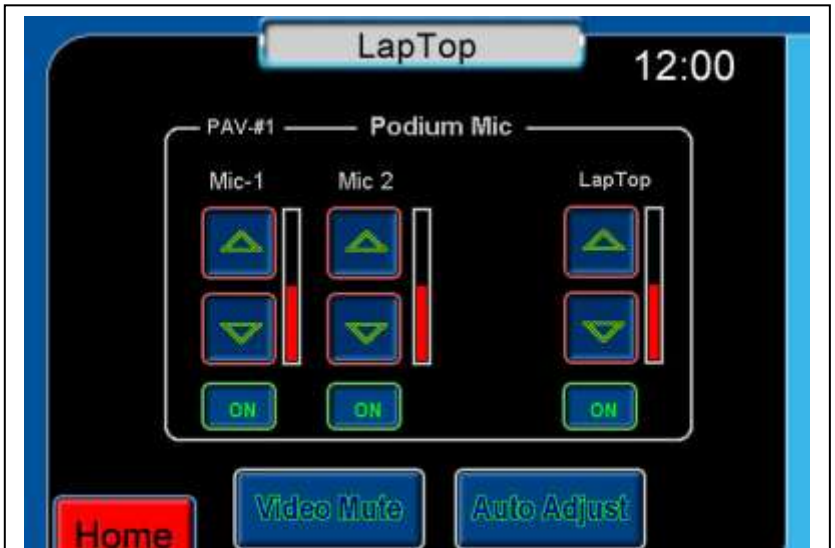
AUX INPUT CRESTRON SCREEN



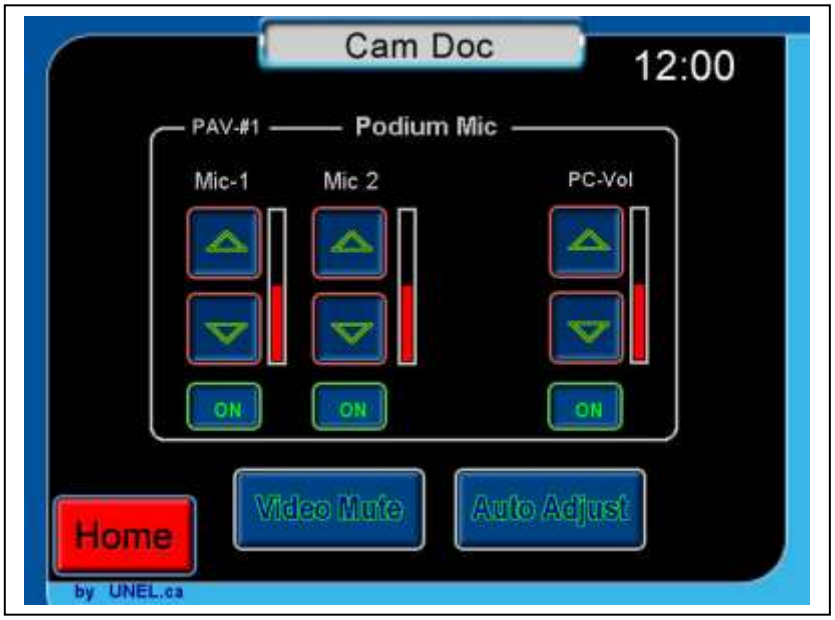
LOCAL PC CRESTRON SCREEN



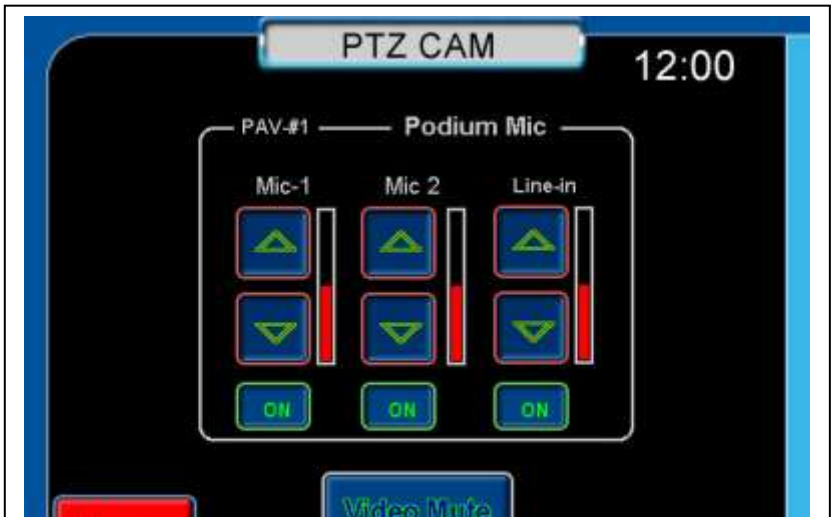
LAPTOP CRESTRON SCREEN



DOCUMENT CAMERA CRESTRON SCREEN



PTZ CAMERA CRESTRON SCREEN



LIGHTING CRESTRON SCREEN

WARM UP CRESTRON SCREEN

SHUT DOWN CRESTRON SCREEN

This document partly is based on:

"CLASSROOM GUIDELINES for the Design and Construction of Classrooms at the University of California, Santa Cruz"
by Janis L. Dickens and David J. Tanza
Modified for use at McGill University