



**.1 General Information**

- .1 Lecture theatres and teaching spaces that require dimming controls or controls using Crestron audio-visual interface shall be provided with a networked lighting control system with DMX communication interface..

**.2 Acceptable Manufacturers**

- .1 Lutron Electronics Co. Inc. or approved equal.
- .2 All lighting control equipment - dimming panels, switching panels, dimming ballasts, control panel and controls - shall be manufactured by a single manufacturer.

**.3 Panels**

- .1 The networked lighting control system shall be installed in a panel which is completely pre-wired by the manufacturer. These panels and components are to be U.L.C. or CSA marked as appropriate.
- .2 Panels are dedicated feed through type and are not required to contain branch circuit protection. Branch circuit power is obtained from the associated power panel. Refer to the Dimmer/Switch System details.
- .3 Panels shall be cooled via free-convection, unaided by fans, and capable of continuous operation to all of these section specifications within an ambient temperature range of 0°C (32°F) to 40°C (104°F).
- .4 Control Panels shall be able to control a “scene” or “preset” is a specific look or mood created by different lighting zones set at different intensities. A “zone” is one or more lighting circuits, which are controlled together as a group.
- .5 In the event that any of the communication lines to any of the dimmer and/or relay panels is interrupted for any reason, the lights controlled by those panels shall remain at their current levels until the interruption is cleared. In the event of a control station failure or interruption of a communication line to any of the controls, the lights controlled by those stations shall remain at their current levels. The control system shall have non-volatile memory backup that can store all system data for one year minimum. It shall not be necessary to reboot the system manually nor use any tape or floppy disk/hard drive to restore the system once power has been restored - system shall automatically return to its previous state. The main processor shall be protected by an integral isolation transformer and shall meet the ANSI/IEEE specification for transient protection.
- .6 Control Panel: Lutron Cat. # GRAFIK EYE 3000 System.
- .7 Dimmer Panels shall be constructed of dimmer modules with four circuit dimmer modules rated 20A (16A continuous) at 120V per circuit. Module shall be capable of controlling incandescent, tungsten, magnetic low voltage and neon/cold cathode sources directly. Module shall be capable of controlling fluorescent (using dimming ballasts) and electronic low voltage sources (using electronic transformers) directly. All dimmers shall be voltage regulated so that a  $\pm 10\%$  variation in line voltage shall cause no more than a  $\pm 5\%$  variation in load voltage when dimmer is operating at 40V (5% light output). Filtering shall be provided in each dimmer so that the current rise time shall be at least 350 $\mu$ sec at 50% rated dimmer capacity as measured from 10-90% of the load current waveform at a 90° conduction angle, and at no point rise faster than 30 $\mu$ A/msec. Manufacturers shall note that additional filters may be required to meet this specification. These filters need not be integral to the dimming module, but must be integral to the dimming cabinet.

**.4 Controls**

- .1 The control panel shall have a built-in dry contact A/V interface for monitoring emergency stand-by power status and activating full brightness scene. Lutron Cat. #GRXAV.



**Construction Standards**

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- .2 Wallstation Controls shall be 2-button remote wall station: for activation of pre-programmed scenes at control panel. Lutron Cat. #SJ2BSL C-Touch remote activator. White finish complete with lockable cover. Wall stations are to be provided on the wall at the front of all lecture theatres and teaching spaces as well as in the lecture booth. Stations shall also be provided at the entrance of lecture and teaching space to provide a preset scene for entering and accessing the space safely.
  - .3 In large lecture theatres, lighting shall be controlled in banks running front to back and side-to-side. Control of lamps individually in each luminaire is preferred over dimming.
  - .4 All digital control stations shall be provided with a lockable front hinged cover.
  - .5 Provide 5-50mm conduit from instructor's console to control booth.
  - .6 Provide 25mm conduit from instructor's console to motorised shade operators for low-voltage control wiring.
- .5 Programming**
- .1 Pre-programming is to be completed by Lutron prior to delivery.
  - .2 Final programming of dimmer system is to be done by Lutron once system is substantially complete.
- .6 Field Quality Control**
- .1 Testing and Inspection: complete system is to be tested and inspected in accordance with manufacturers recommendations.
  - .2 One copy of the test results is to be provided to electrical design Consultant and one copy is to be included in each maintenance manual.
- .7 Spare Parts**
- .1 Two (2) dimmer modules
- .8 Field Quality Control**
- .1 On completion of installation, manufacturer representative shall be notified to carry out site inspection and report any inconsistencies to the [Department Representative] [Consultant].