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*Unity Rack Consultant specification.*

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The lighting dimming and control system shall be a complete rack cabinet, dimming and power control system. Each control cabinet shall be floor mounted and stand-alone and consist of a top mounted power distribution panel, a hot swappable control module and up to 8 blank module spaces for power control racks. The cabinet may be a 48-way cabinet allowing: 1 power distro, 1 control module and up to four (4) power control racks OR be a 96-way cabinet allowing: 1 power distro, 1 control module and up to eight (8) power control racks.

The power feed shall enter the cabinet from the top via a configurable access panel. This access panel shall allow for different cable gauges and provide cable grommets to retain the power feed cables and ABS plastic covers to provide protection from debris ingress from above. Cabinets that do not provide for individual cable glands and cable sizes shall not be accepted.

The power distribution panel shall allow for connection of the main power feed cables – Phase cables x 3 and Neutral cable x 1, to be bolted directly onto the distribution busbars using suitable cable lugs. The earth shall connect directly to the cabinet frame by means of a cable lug.

The distribution panel shall provide three (3) individual phase presence indication neons, three (3) fuses, each rated at 6.3A to power the control module and either four or eight (cabinet size dependant) 3-pole 63A D-Curve circuit breakers to provide electrical isolation and overload protection for each power module slot. Systems that connect the power pack modules directly to the incoming mains without a circuit breaker in between shall not be accepted.

The cabinet shall have a standard 19" opening and shall conform to the rack unit sizing according to the 19" rack specification, being that 1RU is 44.45mm high (1 ¾ Inches). The cabinet shall be either 45RU in size for the 96-way cabinet or be 27RU in height for the 48-way system. Cabinets that do not conform to the 19" rack mount specification will not be accepted.

The control module shall be a 3RU removable rack module. It shall slide in from the front of the cabinet and mate with suitable power and signal connectors in the rear of the cabinet as it is pushed fully into place. Two front-accessible CAMLOC style rack locks shall be turned to their lock position which will physically lock the unit into place and will electrically enable the module. Systems that do not have a locking mechanism for the control module, or that use screws/bolts for this task shall not be accepted.

The control unit shall receive multiple universes of DMX over two separate DMX ports. Each DMX port shall be fully RDM capable. An RJ45 connector shall allow the control unit to receive Ethernet based TCP/IP signalling for Art-Net and sACN protocol conversion to the DMX ports. Systems with a single DMX input or that require additional interfaces for ethernet shall not be accepted

The control unit shall utilise a full colour TFT 18cm capacitive multi-touch screen for all user control. A GUI based menu system will allow the user to configure each dimmer channel as an individual channel. There shall be a method to select individual channels either from the GUI or by pressing a button corresponding to the desired channel directly on the dimmer / switch rack. Control modules that do not use full colour, multi-touch screens shall not be accepted.

The Control Unit shall automatically detect and configure / reconfigure detected racks within its cabinet. The control unit shall allow connection to a wide area network via the Ethernet connection and TCP/IP connection. This connection will permit remote monitoring / configuration and alerts over the wide area network back to a central control location.

The Control Unit shall be hot-swappable without causing any change in output levels of the power pack modules. Systems that require dual redundant control modules will not be accepted. The cabinet shall be able to receive and process DMX data on DMX port 1, even if the Control Module is not present. Systems that require a Control Module to operate from DMX will not be accepted.

The power packs shall be available on a range of types and configurations. The types shall consist of dimming/switching modules, switching only modules and LED drive/dimming/switching modules. Systems that do not provide all three options shall not be accepted.

The current rating of each pack is to be to a maximum of 16A with the standard rear mating and termination panel. A rating of 25A shall be available as a keyed rear mating and termination panel and power module combination. The standard power pack shall be 12 channels of control at the rated current. Smaller channel numbers shall be available again with the use of a keyed rear mating and termination panel and power module combination.

All power packs, regardless of type shall be housed in a 4RU enclosure constructed of a combination of powder coated and plated steel. The standard switch modules shall be available in 12 channels at either 6, 10 or 16A current rating per channel. A 6-channel 25A module shall be available to be used with a specially keyed rear mating and termination panel. Systems that do not allow for all these options shall not be accepted.

All power packs shall have an RGB Led and momentary contact pushbutton switch located immediately above the RCBO device associated with each channel to allow for status and mode indication and setting. Modules that do not provide an RGB LED and push button switch directly above each RCBO shall not be accepted.

All power packs shall have two RGB Status LEDs to show the communication connection status and module readiness. Each module shall have two CAMLOC switches which will both physically lock the module in home position and prevent its removal and to electrically power the module down so as to facilitate live or active removal. Modules that do not have a locking mechanism, or that use screws/bolts as the only method of locking shall not be accepted.

Each of the 12 (6) circuit breakers in all power packs shall be an RCBO (Residual Current circuit Breaker with Overload) and shall be of a thermal-magnetic type and rated at 6KA breaking current. Power packs that use fuses or thermal only or magnetic only circuit breakers for protection, or do not provide earth fault protection shall not be accepted.

Switching modules shall provide clean switching of mains power via a relay in combination with a zero-cross detection switching circuit, to ensure that the relay is never switched with voltage present. Systems that do not provide guaranteed zero-cross switching shall not be accepted. This zero-cross switching circuit shall also be used when the relay is de-energised, to ensure that there is no arcing of relay contacts. Systems that switch the relay under load shall not be accepted.

Dimming modules shall provide both conventional phase control dimming, as well as zero-cross detection switching. When used in switching mode, there must be a direct path from mains input to output, without any modification of the mains waveform. Systems that do not bypass the inductor and/or semiconductor power control devices when switched shall not be accepted.

Dimming modules shall actively control the semiconductor power control devices via individual pulse transformers. Systems that use opto-couplers shall not be accepted.

LED dimming modules shall provide phase controlled dimming of dimmable LED fixtures without any special wiring or other circuitry. Systems that require additional circuitry to dim LED fixtures shall not be accepted. LED dimming modules shall also be configurable in software for conventional phase control dimming, as well as zero-cross detection switching. When used in switching mode, there must be a direct path from mains input to output, without any modification of the mains waveform. Systems that do not bypass the inductor and/or semiconductor power control devices when switched shall not be accepted.

Dimming modules shall actively control the semiconductor power control devices via individual pulse transformers. Systems that use opto-couplers shall not be accepted. All low voltage signals to the cabinet shall enter through the top panel and terminate on a terminal strip at the top of the cabinet. Ethernet shall connect directly to the control module RJ45 connector.

The cabinet system shall be the LSC Unity cabinet system available from LSC Lighting Systems.