Strand CD-80® Racks
CD-3000+ Upgrade Dimming Control System Specifications

1.0 CD-3000+- GENERAL

CD-3000+ is a direct retrofit kit specifically designed for facilities with existing Strand CD80® dimmer rack(s) requiring new, reliable, and cost-effective control electronics.

CD-3000+ is designed to upgrade existing dimmer installations to current dimming technology with options equaling or exceeding those of most new dimming systems.

CD-3000+ has been designed with pin-to-pin compatibility with OEM factory wiring for ease of installation. Facilities can upgrade to this state-of-the-art technology in minutes with only a screwdriver. The **CD-3000+** is ETL listed and complies fully with UL 508 and CSA 22.2 safety approvals. Engineered with both the installer and end-user in mind, the **CD-3000+** incorporates the following features:

1.1 An LCD user interface for ease of set up and monitoring. All programming shall be via a user-friendly, intuitive, and self-prompting menu structure. No PC or special software will be required.

1.2 Modular design of the unit shall make any potential service requirements fast and easy with no requirement for an on-site service call. The **CD-3000+** shall have only one plug-in control module. This single control module shall contain all ancillary control electronics for the dimmer rack.

1.3 Dimmer control outputs shall be designed for precise and reliable control of the existing CD80® dimmer modules. It shall never be necessary to adjust ramp circuits for proper dimmer output.

1.4 The **CD-3000+** shall accept dual independent DMX512 as digital data protocol inputs allowing industry wide compatibility with modern control consoles. Both DMX inputs shall be independently opto-isolated from all other control circuitry, as well as from the DMX output ports. An internal protocol manager shall allow priority management or merging of both DMX inputs.

1.5 An optional Ethernet node shall support a wide range of communication protocols. Automatic recognition will permit interface to most popular lighting control protocols. It shall not be necessary to assign protocol.

1.6 An infrared LED link shall be provided on the control module face panel. This interface will permit hard copy printouts of all programmed data via an optional handheld infrared printer.

1.7 A separate long-life air filter and grill assembly shall provide a means for easy and routine maintenance.

1.8 A set of three (3) high output; low noise fans shall provide maximum cooling of the dimmer rack by concentration of airflow directly upwards on the vertical columns of dimmer module heat sinks.

1.9 Rack thermal protection shall be employed via a mechanical relay interface to the existing two CD80® rack OEM thermal sensors. An active stage one over-temp input shall illuminate a red warning LED, while a stage two over-temp input shall cause an immediate disconnect of all dimmer control outputs.

2.0 ELECTRONIC CONTROL MODULE

Control electronics shall be contained in one plug-in tray and shall provide the following features:

2.1 The **CD-3000+** control electronics shall be capable of controlling up to 96 dimmers in the CD80® dimmer cabinet. Advanced state-of-the-art voltage regulation hardware and software will ensure >1% all dimmer outputs. The **CD-3000+** will operate with a voltage input range of 85-264VAC at 50 or 60Hz.

2.2 The **CD-3000+** control module shall be capable of memorizing and storing up to 20 presets in the form of a DMX "snapshot" or individually programmed via the keypad. Scene playback shall be seamless on loss of DMX as well as allowing high resolution fades between all 20 scenes. Each scene shall have a selectable fade time from 0-99 seconds.

2.3 The DMX512 input ports shall accept two independent sources of DMX512 data protocol simultaneously from the system control console(s) or architectural control unit(s). The DMX inputs shall comply with USITT DMX512-A (ANSI E1.11 - 2008), standard protocol for digital data control.

2.4 It shall be possible to assign (patch) any dimmer control signal to any module position in the cabinet, thereby allowing dimmer modules of any rating to be used in the same cabinet.

2.5 The **CD-3000+** control electronics shall be possible to "back up" all system configuration data. All data shall be protected from power failure by EEROM for a minimum of 100 years.

2.6 The **CD-3000+** shall contain a removable memory dongle to facilitate remote or offsite backup of all system configuration and ease of future firmware upgrades. Control module swaps will be easy and fast with no loss of rack programming or system parameters.

2.7 The ECU module shall accept up to 4 (four) analog inputs with the ability to be assigned to any of the 96 dimmer outputs in the system. Each analog input shall be selectable as either "Normal" mode (0-10VDC input) for dimmed applications or "Load Shed" mode (5VDC trigger) for power management interface to building management systems (BMS). The analog inputs shall function in a pile-on or HTP mode with the DMX control signal.

2.8 Dedicated dry contact inputs shall be provided for BMS, HVAC, security, and fire alarm. Active security input shall "flash" any programmed dimmer outputs to a selectable level at a rate of 1Hz. Active fire alarm input shall bring any programmed dimmers to a selectable level and override all incoming control data.

2.9 Each individual dimmer in the dimmer cabinet shall be capable of being assigned one of five dimmer curves: incandescent square law curve, direct curve, linear curve, LD curve for custom LED drive or non-dim (adjustable threshold with 5% hysteresis).

2.10 The face of the control module shall include an LCD display and momentary push buttons for function select, parameter setting and feature monitoring. All programming shall be via a user-friendly, intuitive, and self-prompting menu structure. It shall not be necessary to use a PC or any external programming device to configure or set up any function of the **CD-3000+**.

2.11 The **CD-3000+** control module shall employ the "system-on-a-chip" advanced digital electronic technology. Such electronic circuitry shall permit real time signal monitoring and status LED indication to allow easy setup and remote troubleshooting. The **CD-3000+** shall permit configuration/monitoring of the following within the CD80® dimmer rack:

1. SCENESET Enable and set up 20 different backup scenes.
2. FADETIME Set the fade time for the 20 scenes from 0 to 99 seconds.
3. SNAPSHOT Record incoming DMX "looks" (DMX levels) into the backup scenes.
4. DIM TEST Test the dimmer outputs one at a time, or all at once.
5. MONITOR View the control level to each dimmer output.
6. ADDRESS Set the DMX start address.
7. DMX MODE Configure the mode of the on-board DMX protocol manager.

2 RM SET Set the 2 Room assignment for each of the dimmer outputs.

9. DMXA TRM Enable or disable termination on the DMX A input.
10. DMXB TRM Enable or disable termination on the DMX B input.
11. DMX O/P Configure the on-board DMX protocol manager for Offset or Patch mode.
12. DMXA PAT Patch the 96 dimmer (PWM) outputs to any DMX A input channel.
13. DMXB PAT Patch the 96 dimmer (PWM) outputs to any DMX B input channel.

14. SH TIME Set the DMX status hold time from 0 to 99 minutes or infinite.
15. DC PATCH Configure the dimmer to channel patch for the dimmer rack.
16. DIM CURV Configure the dimmer curve for each output.
17. ND-LEVEL Set the non-dim trigger level threshold for each output.
18. VOUT LIM Set the minimum and maximum output for each dimmer.
19. ANA MODE Configure the analog inputs for normal or load shed mode.
20. ANA PAT Patch the analog inputs to any combination of control channels.
21. ANA TEST View the control level for each of the analog inputs.
22. ANA BLOC Enable or disable the analog inputs when DMX is being received.
23. STANDBY Enable or disable the power savings standby mode.
24. OC MODE Configure the input trigger parameters for the open collector output.
25. AUX IN Select which scene the auxiliary input will trigger/enable.
26. SCENEMOD Enable or disable scene mode and the auxiliary input.
27. S-ALARM Select the level and control channels triggered by the security alarm input.
28. F-ALARM Select the level and control channels triggered by the fire alarm input.
29. Ø-PATCH Set the zero-cross phase reference for each dimmer control output circuit.
30. POLARITY Display the PWM output polarity the system is set for.
31. LINE V View the RMS line voltage for each power phase.
32. LINE F View the line frequency of phase A.
33. CTL TEMP View the temperature of the microcontroller.
34. RTIME View the total run time of the microcontroller.
35. HARD-KEY View the microcontroller's unique six-character hard-key code.
36. SERIAL# View the microcontroller's unique six-character silicone serial number.
37. VERSION View the microcontroller's firmware version.
38. RESTORE Restore parameters saved in the EEPROM memory module.
39. BACKUP Backup parameters and save them in the EEPROM memory module.
40. PRINTOUT Print various system configuration settings using a handheld infrared printer.
41. DEFAULTS Set various system configuration settings to the factory default.
42. LCD VIEW Adjust the contrast of the LCD Display for optimum viewing.

2.12 The **CD-3000+** control module shall include a green LED indicator for power supply and microprocessor status. The LED, when illuminated, shall indicate normal operation, and when flashing shall indicate a hardware fault. A power supply or power failure shall cause the LED to extinguish.

2.13 The **CD-3000+** control module shall include three green LED's for phase detection and two yellow LED's for data receive indication. Loss of accurate phase detect signal and/or invalid DMX512 data shall cause the corresponding LED to extinguish.

2.14 The **CD-3000+** control module shall include two red LED's for active alarm status or dimmer rack over temperature. Active inputs shall cause the corresponding LED to illuminate.

2.15 A reset push-button shall be included on the face of the module. Resetting the unit, whether by the reset button or power-up shall not affect any stored parameters or presets, and dimmer outputs shall automatically return to their former status without any noticeable change.

2.16 It shall be possible to "Lock" and "Unlock" the programming keypad of the **CD-3000+** ECU module to protect all programmed system data.

2.17 The **CD-3000+** shall incorporate fan control circuitry designed to allow for an additional five (5) minutes of air evacuation from the dimmer cabinet with loss of input control signal.

2.18 All printed circuit boards (PCB's) shall be FR4/G10 with a UL 94V-0 Flame Class Rating.

2.19 The entire assembly shall be ETL listed and comply fully with UL 508 and CSA 22.2 safety approval standards.

Specifications subject to change without notice.
CD80® is a registered trademark of Strand Lighting.

JOHNSON SYSTEMS INC.
1923 Highfield Cres. S.E., Calgary, Alberta T2G 5M1 Canada
Phone: (403) 287-8003 • Fax: (403) 287-9003

info@johnsonsystems.com