CD-3000

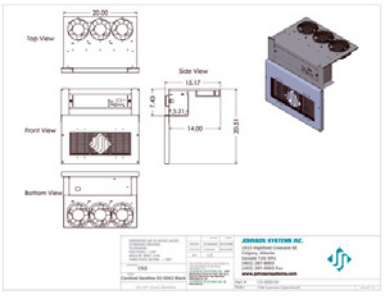
A Brain Transplant for your CD-80®

- Replaces the old CD80® electronic card cage with new “next generation” control electronics. Upgrades any vintage of CD80® rack in minutes.
- Compatible with O.E.M. dimmer rack wiring for fast easy installation.
- Unique power saving “stand-by” mode reduces power consumption to less than 1 Watt. Compliance with the I.E.A.’s “One Watt Initiative”. A “Green” dimmer rack!
- Unique “lamp warming” feature lowers the in-rush current to the dimmer by up to 70% resulting in increased lamp filament life.
- 96 Hi-resolution digital outputs with individual dimmer profile selection.
- Dual opto-isolated DMX512 inputs with built in protocol manager.
- Analog and dedicated dry contact BMS inputs for interface with HVAC, security and fire alarms.
- “Load Shed” inputs for power management and photocell interface.
- LCD user interface for ease of set up and monitoring. Site programmable via a user-friendly, intuitive and self-prompting menu structure. No laptop computer or special software is required!
- Dimmer rack thermal shutdown protection.
- Modular design with a single “plug-in” module.
- Optional Ethernet node supports a wide range of communication protocols including Net2, Strand, ArtNet, ACN (Net3) and Pathport.
- Removable memory dongle permits remote/off site backup of configuration data and ease of future firmware upgrades.
- Up to 10 year product warranty available!

The CD-3000 is a next generation retrofit electronics package designed specifically for any vintage of Strand CD80® dimmer rack. The CD-3000 will replace the aging control electronics of the existing CD80® dimmer rack making system replacement completely unnecessary. This full-featured, ETL listed state-of-the-art unit provides a low cost digital interface to any of today’s modern lighting communication protocols.

Designed to install in minutes with only a single screw driver, this elegant package has been designed for longevity and reliability with the end-user in mind. Intuitive LCD user interface combined with a single modular design makes the CD-3000 extremely user-friendly and easily serviceable. Advanced next generation hardware and software designs reduce stand-by power consumption to less than 1 Watt, allowing for compliance with the International Energy Agency’s “One Watt Initiative” for standby power consumption. CD-3000 will provide a “Green” dimmer rack!

Full featured, hi-resolution dimming with lightning fast response. Exclusive “lamp warming” techniques extends lamp life considerably. An environmentally and financially responsible solution that offers unsurpassed high performance in a matter in minutes!



JOHNSON SYSTEMS INC.
“PROFESSIONAL LIGHT CONTROL PRODUCTS”

1923 Highfield Crescent S.E.
Calgary, Alberta, Canada T2G 5M1
tel: 403.287.8003
fax: 403.287.9003
e-mail: info@johnsonsystems.com
website: www.johnsonsystems.com

CD-3000 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 CD-3000 will offer compliance with the International Energy Agency's "One Watt Initiative" on stand-by power requirements (please refer to U.S. Executive Order #13221). Standby power on CD-3000 controlled dimmer racks shall not exceed 1 Watt.

1.2 CD-3000 shall employ a unique "lamp warming" feature that extends lamp life by limiting the in-rush current to cold lamp filaments by up to 70%.

1.3 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.

1.4 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.

1.5 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.

1.6 The CD-3000 shall accept dual independent DMX 512-A 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.

1.7 An optional Ethernet node shall support a wide range of communication protocols including Net2, Strand, ArtNet, ACN (Net3) and Pathport. Automatic recognition will permit interface to most popular lighting control protocols. It shall not be necessary to assign protocol.

1.8 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 hand held infrared printer.

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

1.10 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.

1.11 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 if 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 off site back up 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 four dimmer curves: incandescent square law curve, direct curve, linear curve, 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 devise 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 setup 20 different backup scenes.
2. **FADETIME**	Set the fade time for each of the 20 scenes from 0 to 99 seconds.
3. **SNAPSHOT**	Record 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.
8. **2 RM SET**	Set the two 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 maximum RMS output voltage for each dimmer.
19. **REGULATE**	Enable or disable the dimmer output voltage regulation.
20. **ANA MODE**	Configure the analog inputs for normal or load shed mode.
21. **ANA PAT**	Patch the analog inputs to any combination of control channels.
22. **ANA TEST**	View the control level for each of the analog inputs.
23. **ANA FLTR**	Apply a noise filter on the analog inputs of up to 1 Volt.
24. **ANA BLOC**	Enable or disable the analog inputs when DMX is being received.
25. **STANDBY**	Enable or disable the power savings standby mode.
26. **TEST INC**	Set the test increment units to percent or hexadecimal.
27. **OC MODE**	Configure the input trigger parameters for the open collector output.
28. **AUX IN**	Select which scene the auxiliary input will trigger/enable.
29. **SCENEMOD**	Enable or disable scene mode and the auxiliary input.
30. **S-ALARM**	Select the level and control channels triggered by the security alarm input.
31. **F-ALARM**	Select the level and control channels triggered by the fire alarm input.
32. **Ø-PATCH**	Set the zero-cross phase reference for each dimmer control output circuit.
33. **WARMING**	Turn the "lamp warming" feature on or off.
34. **POLARITY**	Set the PWM output control polarity. Locked for factory use only!
35. **LINE V**	View the RMS line voltage for each power phase.
36. **LINE F**	View the line frequency of phase A.
37. **REM TEMP**	View the temperature of the remote temperature sensor.
38. **CTL TEMP**	View the temperature of the microcontroller.
39. **RTIME**	View the total run time of the microcontroller.
40. **HARD-KEY**	View the microcontroller's unique six-character hard-key code.
41. **SERIAL#**	View the microcontroller's unique six-character silicone serial number.
42. **VERSION**	View the microcontroller's firmware version.
43. **EEPROM**	View the type of EEPROM memory module plugged in.
44. **FW-LOAD**	Load new firmware into the MADD-96 via the EEPROM memory module.
45. **RESTORE**	Restore parameters saved in the EEPROM memory module.
46. **BACKUP**	Backup parameters and save them in the EEPROM memory module.
47. **PRINTOUT**	Print various system configuration settings using a hand held infrared printer.
48. **DEFAULTS**	Set various system configuration settings to the factory default.
49. **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 detect 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 these 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 in order 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 (PBC'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.

Model	Application
CD-3000-AE	Strand CD80® AMX or Advanced Electronic (AE) permanent installation racks.
CD-3000-AE-48RR	Strand CD80® AMX or Advanced Electronic (AE) 48 channel rolling racks
CD-3000-AE-96RR	Strand CD80® AMX or Advanced Electronic (AE) 96 channel rolling racks
CD-3000-SV	Strand CD80® Supervisor (SV) permanent installation racks
CD-3000-SV-48RR	Strand CD80® Supervisor (SV) 48 channel rolling racks
CD-3000-SV-96RR	Strand CD80® Supervisor (SV) 96 channel rolling racks
CD-3000-C21	Strand C21 permanent installation racks

JOHNSON SYSTEMS INC.
"PROFESSIONAL LIGHT CONTROL PRODUCTS"
1923 Highfield Crescent S.E.
Calgary, Alberta, Canada T2G 5M1
tel: 403.287.8003
fax: 403.287.9003
e-mail: info@johnsonsystems.com
website: www.johnsonsystems.com