Strand
LIGHTING

Operator's Guide
SLD96 Dimmer Rack

FINAL DRAFT

Definition of Terms

This manual uses the following terms throughout:

channel — Device controlling a dimmer or group of dimmers. Historically, there is a physical controller (such as a slider) for each channel. On most current control systems, channels are numbers accessed by a numeric keypad. Each channel can control multiple dimmers.

circuit — Connection device and wiring for powering a lighting fixture from a dimmer.

circuit ID — A unique four-digit numeric identity which you can assign to each dimmer. The circuit ID may be the same as the dimmer number, or may be a number used to indicate circuit location, phase, channel number, etc. This feature is useful for system wide control and Reporter™ PC functions.

crossfade — A fade which contains both an up-fade and a down-fade. Also may refer to any fade where the levels of one cue are replaced by the levels of another cue.

dimmer — Device controlling power to a lighting fixture. Two lights on the same dimmer cannot be separately controlled.

default — The original factory settings.

DMX — A protocol used to transmit data (usually dimmer information) from a lighting controller to a dimmer rack via a single cable rather than via a pair of wires for each dimmer.

fade — A gradual change in stage levels from one set of intensities ("look") to another.

fade time — The time it takes for dimmer levels to go from their current levels to the levels in the selected preset, or DMX value. Each preset has its own fade time.

level — A numerical value used to express the "brightness" of a dimmer. Usually shown as %.

patch — Historically, the process of physically connecting circuits to dimmers. Now usually refers to electronic assignment of dimmers to channels.

phase — The three phases of the mains supply to which the dimmers are connected are identified as phase 1, phase 2, and phase 3 in Europe and phase A, Phase B, and Phase C in the US.

preset — A pre-defined setup of intensities for a set of channels, stored in memory for later replay. For Outlook applications, the SLD96 processor module stores 8 programmable presets per room for up to 16 rooms. For SWC applications, the processor module stores 99 programmable presets. Preset 0 (ZERO) is always a blackout.

profile — The relationship between a control level and the actual dimmer output. Also known as 'dimmer law' or 'curve'.

rack number — A number used to uniquely identify each dimmer rack in a multiple rack system. Rack numbers are set from the front panel of the processor module, and are usually set by the installation engineer.

room — An area separately defined for purposes of architectural lighting control (e.g., Outlook control stations). This is usually either a room in the traditional sense (an indoor enclosed area) or a portion of a room which can be partitioned off. Each room may be separately and simultaneously controlled by the system.

SSR — (Solid State Relay) A power control device used in Strand dimmers that contains two silicon control rectifiers (SCRs), control circuitry, and optical isolation circuitry.

SWC — (System Wide Control) A method of programming and controlling more than one dimmer rack simultaneously. A hand held controller lets you program and recall all 99 presets, and control individual dimmers. 8 and 16 channel push-button stations, and an A/V interface, let you recall any 8 or 16 of the 99 presets at each station. Please contact Strand Lighting or see the *System Wide Control Data Sheet* or *System Wide Control User's Manual* for details on how SWC works.

Reporter — There are two reporting products which can operate in conjunction with the SLD96 Dimmer Racks. Reporter Software, is a standalone package that runs under Microsoft Windows and lets you set up certain Strand Lighting dimming cabinets and racks (including SLD96 racks). Please contact Strand Lighting for details. The Reporter application software for Strand 300 and 500 series lighting control consoles provides the facilty to record and display the status of all lights and to record rack-based backup cues.

X Cross — The point in time when each individual phase passes through zero.

Contents

The manual describes the operation and setup of the dimmer rack. It does not contain information about installing the rack. The installer should refer to the separate SLD96 Installation Manual for detailed information concerning installation and wiring of the dimmer rack. The installer should, however, refer to the *Programming the SLD96 Dimmer Rack* section in this manual to carry out the initial setup procedures, referred to in the *Commissioning* section of the Installation Manual and where necessary refer to the *Basic Troubleshooting* section at the back of this manual.

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Section 1 - General

<table>
<tr><td>**Summary Specification**</td><td colspan="2">**SLD96 Dimmer Rack**</td></tr>
<tr><td></td><td>Capacity:</td><td>48 Dimmer Modules (dual or single)</td></tr>
<tr><td></td><td>Supply:</td><td>90 to 264VAC, 3-phase, neutral + earth (Delta on request), 47 to 63 Hz</td></tr>
<tr><td></td><td>Max Current</td><td>800 amps per phase</td></tr>
<tr><td></td><td>Dimensions:</td><td>Width 600mm (23.62in), Height 2050mm (80.70in), Depth 475mm (18.70in)</td></tr>
<tr><td></td><td>Weight:</td><td>With 48 dual dimmers, power unit and two rack processors - 350kg (771.6 lbs)
Without dimmer modules, rack processors and power unit - 200kg (440.9 lbs)</td></tr>
<tr><td></td><td>Busbar Rating:</td><td>100kA fault current</td></tr>
<tr><td></td><td>Control Circuit Isolation:</td><td>Opto Isolation between high voltage and control electronics is rated at 2500VAC. Control inputs are also isolated from the processor at 2500VAC, offering double optical isolation between the controller and the high power circuits.</td></tr>
<tr><td></td><td>Storage Temperature:</td><td>-40°C to 70°C</td></tr>
<tr><td></td><td>Operating Temperature:</td><td>0-40°C</td></tr>
<tr><td></td><td>Storage Humidity:</td><td>0% to 95% RH, non-condensing</td></tr>
<tr><td></td><td>Operating Humidity :</td><td>10% to 95% RH, non-condensing</td></tr>
</table>

SLD96 Dimmer Modules

Status reporting modules are available in 120V and 230V supply voltages in the following variants (unless otherwise stated):

Note: *All 15, 20 and 25 A modules are dual modules and all 50 and 100 A modules are single modules.*

Module	Part No.
15A Single Pole Dimmer	75700
15A Two Pole Dimmer	75701
15A Single Pole Dimmer	75702
15A Two Pole Hi-Rise Dimmer	75703
15A Single Pole Hi-Rise RCD Module	75704
15A Single Pole Non-Dim Contactor *	75705
15A Two Pole Non-Dim Contactor *	75706
15A Single Pole Non-Dim RCD Module	75707
20A Single Pole Dimmer	75710
20A Two Pole Dimmer Module	75711
20A Single Pole Hi-Rise Dimmer	75712
20A Single Pole Non-Dim Contactor **	75715
20A Dual Pole Non-Dim Contactor **	75716
20A Single Pole Non-Dim RCD Module	75717
25A Single Pole Dimmer	75720
25A 2 Pole Dimmer Module	75721
25A Single Pole Hi-Rise Dimmer	75722
25A Two Pole Hi-Rise Dimmer	75723
25A Single Pole Hi-Rise RCD Module	75724
50A Single Pole Dimmer	75730
50A Two Pole Dimmer Module	75731
50A Single Pole Hi-Rise Dimmer	75732
50A Two Pole Hi-Rise Dimmer	75733
50A Single Pole Hi-Rise RCD Module	75734
100A Single Pole Dimmer Module	75740

* 230V only

** 120V only

Rise Time at 20A:	120V normal dimmers = 500μs
	120V Hi-rise dimmers = 800μs
Rise Time at 15A	230V normal dimmers = 225μs
	230V Hi-rise dimmers = 400μs

Non-Dim   20A relay with no choke

RCD   Residual Current Device with circuit protection.

Circuit Protection: Appropriately sized fully magnetic circuit breaker of
                     10,000 AIC (15 & 20A), 5000 AIC (25 & 50A) fault
                     current rating @120V..

Output Voltage: At full load under normal operating conditions, voltage
                     loss in a dimmer will not exceed 3 volts. The maximum
                     output voltage for each dimmer can be limited through
                     a software setting.

Load Regulation: Dimmers will maintain their output within +/- 1% of the
                     set output with load changes from 1kW to the
                     maximum rating of the dimmer.

Line Compensation: The system will regulate the dimmer outputs to within
                     1V over operating voltage range. Each individual
                     dimmer is separately regulated.

Efficiency: The power efficiency of the dimmer is a minimum
                     of 97% at full load. Maximum full load dimmer loss
                     is 3V RMS. The power efficiency of contactor non-
                     dims is 99%.

DC Component   Less than 1 volt with tungsten loads from 60w to
of Output: the maximum rating of the dimmer, at all control
                     levels.

Input Response Time: The response time (time between OFF and 100%)
                     is selectable. The values are fast (30msec),
                     medium (100msec), and slow (300msec). The default
                     is medium (100msec).

Rack Components

The SLD96 dimmer rack can house up to 48 dual dimmer modules (96 dimmers) or 48 single dimmer modules or a combination of single and dual modules.

The rack unit also houses a power supply module and a plug-in digital Rack Processor Module (RPM) used to program and store the setup and preset data for each dimmer and to report on rack and load status to a console or remote PC. .
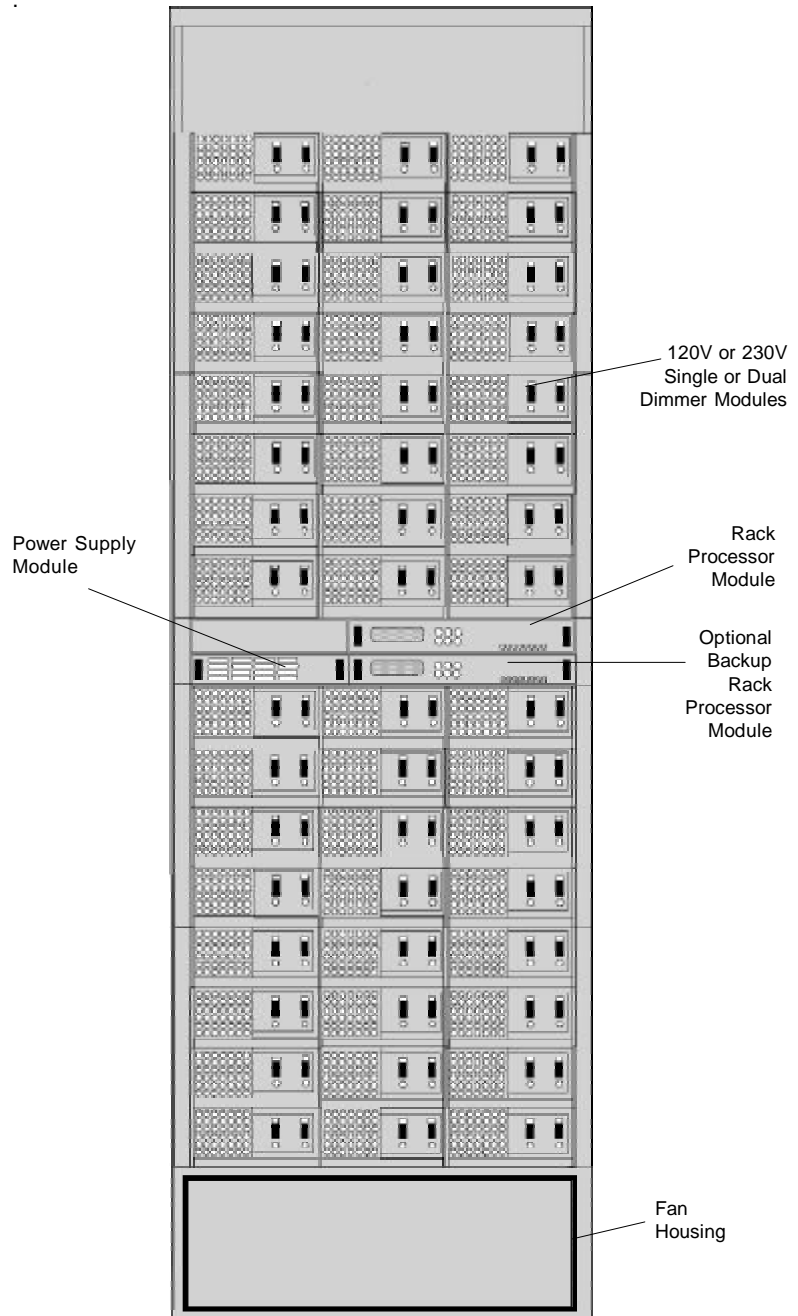

Fig 1 - SLD96 Rack Layout (doors removed)

Danger

Two lockable, ventilated doors offer security and safety protection for the dimmer modules, while providing operator access to the rack processor unit(s).

The rack contains high voltages. Access to and configuration of the dimmer modules should only be permitted to technically qualified and experienced personnel.

<u>Dimmer Modules</u>   All dimmer modules are designed to be easily inserted and removed from the dimmer rack and have the following protection.

- The mechanical arrangement of the rack and modules prevents the insertion of a module into a load termination connector corresponding to a smaller capacity.
- Dimmer module thyristor drives are automatically turned off in the event of the temperature exceeding a preset threshold.
- Each dimmer is protected by a fully magnetic circuit-breaker of the appropriate current rating and rated for 100% switching duty. All circuit breakers are UL , cUL and CE recognized devices.

Solid State Relays (SSRs) are encapsulated units with isolated firing circuits and two silicon controlled rectifiers (SCRs). Isolation between power and control lines is 2.5kV.

SLD96 dimmer modules are designed to provide the following performance characteristics:

- Capable of 'hot patching' cold, incandescent loads up to the full rated capacity with the control signal at full ON.

- The dimmer power efficiency is at least 97% at full load with a no load loss of 3V RMS for 120V, 20A dimmer modules.
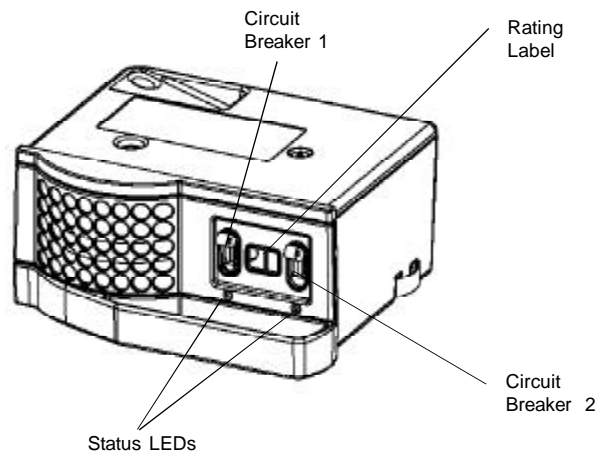

Fig 2 - Dual Dimmer Module

All SLD96 dimmer modules, including contactor non-dims are load status reporting. Each dimmer reports a range of parameters to the rack processor module. The processor uses this information to create fault and diagnostic data used in the Dimmer Event Log.

Dimmer LEDs   A green status LED is located under each breaker on all dimmer modules. These LEDs perform a number of functions, as follows:

Luminaire Intensity: The brightness of the LED represents the intensity of luminaire(s) controlled by the dimmer output.
All LEDs Flashing: The panic button has been pressed or the processor module has failed or is not fitted.
All LEDs on a Vertical Column Flashing: Loss of AC Supply to that column of dimmers.
Individual LED(s) Flashing: Dimmer Overtemperature Warning
LED(s) Off: Luminaire at 0% intensity or dimmer shutdown on overtemperature.

Power Supply Unit   The Power Supply Unit supplies power to the cooling fans, Rack Processor Unit(s) and all low voltage electronic controls within the SLD96 Rack. It also supplies power to external Outlook and SWC wall stations, if used.

Rack Processor Module(s)   The plug-in, fully digital, Rack Processor Module contains the main operator controls and displays comprising an LCD, associated menu keys and status LEDs.
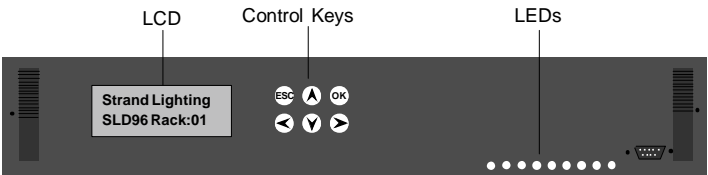

Fig. 3 - Rack Processor Module

An optional second Rack Processor Module can be plugged into the processor assembly to provide full Redundant Tracking Backup (RTB). The backup processor automatically tracks all setup, preset and other commands of the main RPM and will automatically take over all communication and dimming controls in the event of a failure of the main processor. Where a backup processor is not specified, a blanking plate is fitted.

Each Rack Processor Module has a 2-line x 16-digit backlit LCD and menu keys permitting the operator to select menu functions displayed on the LCD. A total of nine LEDs display the following conditions.

Normal Conditions (green LED)   Abnormal Conditions (red LED)

- Rack OK   - Overtemperature
- DMX A OK   - Panic
- DMX B OK   - Dimmer Event
- Phase 1 OK
- Phase 2 OK
- Phase 3 OK

If Reporter supervision is specified, your contractor will have wired a signal cable from the dimmer rack(s) to a remote PC running Strand Lighting's Reporter software. This will enable you to set up the rack remotely and monitor the status of all racks in your lighting system. Alternatively, if you are using a Strand 300 or 500 series lighting control console with Console Reporter installed, your console will report on the status of all dimmers in the SLD96 rack(s) and will provide the facility to set up backup cues.

An RS232 connector is fitted at the front of the Rack Processor Module to permit connection of a local Reporter PC if required. When using the RS232, the Reporter link from the rack to the Reporter PC is disabled.

Rack Ventilation

Adequate ventilation must be provided in order to maintain an ambient operating temperature within the range 0 to 40ºC and humidity of 10-90% non-condensing. Special attention should be paid to the need to maintain ambient temperature within these limits when racks are located in a small room.

Air flow is from the bottom of the rack, as shown in the diagram, supplied to an air plenum at the rear of the rack, by two axial fans and exhausted through the vents in the front of each dimmer module.

Removal of a dimmer module will affect the pressurisation of the air plenum at the rear of the rack. Removed modules should be either replaced with spare modules or the slots filled with blank modules.

The optional Reporter software, will report the current fan speed setting (Fan Fixed or Fan Variable) and any fan failure. Overtemperature conditions are also indicated locally at the rack processor module by means of a warning LED. If the fan speed is set to Variable, an overtemperature condition will automatically set both fans to full On until the module temperature reduces below the threshold.

The fixed speed fan setting is for situations where changes in ambient noise are a problem. With this setting, the fans are always full On when the dimmers rack is On.

The variable speed fan setting minimizes noise and maximizes fan life. With this setting, the fan speed is automatically adjusted so that the fan speed increases with the percentage intensity of the highest dimmer output. If only one dimmer is at full On, the fan output for both fans is full On. Increases in fan speed take 1 minute with this setting, while decreases in fan speed take 10 minutes. Fans are automatically turned Off when no dimmers are in use.

Note: *Activation of a Panic button, or Automatic Panic, (link LK8 on Termination Board set to automatic panic and the Processor Module(s) removed) will automatically set the cooling fans to full speed continuously.*
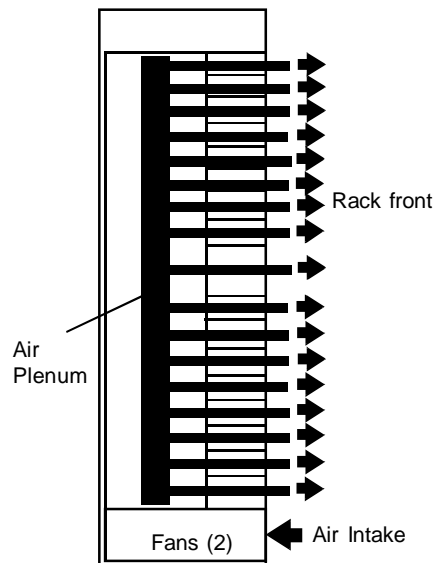
Rack front

Air Plenum

Fans (2)

Air Intake

Fig. 4 - Rack Ventilation.

Section 2 - Operational Features

Rack Configuration The following configuration items are usually programmed during commissioning, but can also be reprogrammed by the user.

- Processor module display is set to English, French, German, or Spanish.

- Rack number (1-99). This number is used by the Reporter software.

- Panic selection and configuration

- Maximum output voltage (per dimmer): 50-250 volts (e.g. set to 105V for extended lamp life).

- Minimum level (per dimmer): 0% - 100% (e.g. set to 10% for aisle lights or large lamp preheat).

- Room and channel Patching (for applications using Outlook)

- Each dimmer can be patched to any valid DMX512 address number for the standard input A (DMX A) or input B (DMXB)

- Circuit ID—used by SWC and Reporter software.

- Record and recall presets (1-8, ON and OFF per room for Outlook control, and 0-99 per rack for System Wide Control).

- Define Preset Number or "Hold" condition on DMX failure.

- Define power-up preset per rack for Outlook architectural presets.

- Set LCD contrast.

- Error log accessible from the processor module or Reporter software.

- Dimmer reporting enable/disable .

Dimmer Configuration Since the control electronics for all dimmers is in the processor module, several configuration items, traditionally associated with the dimmer module can be set in the processor module.

- The output response profile can be set to Linear, Square, S-Curve, Fluo Elec (for electronic fluorescent ballasts), Fluo Mag (for magnetic fluorescent ballasts), and Non-Dim. The two fluorescent settings let you set the top end voltage and the bottom end cutoff voltage. The Non-Dim setting lets you set the turn-on threshold for the non-dim. Five additional user programmable profiles are available through the *Rack Config* menu or from the optional reporter software.

- Dimmer response (per dimmer): fast (30ms), normal (100ms) or slow (300ms). This determines a dimmer's rate of response to a change in control level. Slow is usually set for large tungsten loads to reduce filament inrush, medium or fast for small loads.

- Dimmer control assignment (per dimmer) to the "combined" levels of Outlook preset, SWC preset, DMX A, DMX B, and analog ("Input") or to a fixed level (0% - 99% or "Full"). The way in which the various input levels combine is also determined on a per dimmer basis by setting the dimmer DMX mode.

- A special smoothing algorithm is applied to small level changes to maintain smooth fades with long fade times.

Control Inputs   The following control inputs are available for SLD96 dimmer control.

- DMX A and B inputs.
- Twelve analog inputs patchable to any dimmer.
- Mains Input
- Remote Panic Input

Control Outputs and Communication Lines   The following outputs and communication lines are available from the SLD96 processor assembly.

- Variable fan speed control available to minimize acoustic noise.
- Master/Backup Processor communication line
- Two Sbus communication lines to control up to 96 dimmers
- Supervisor communication line between rack and Reporter PC
- Communication lines suitable for use with Outlook™ and compatible architectural control stations.
- Communication lines suitable for use SWC (system wide control) for remote preset panels, A/V interface, and hand held programmer.
- RS232 port for local PC running Reporter, enabling setup, playback, show memory storage, and operating software upgrades.

Load Status Reporting   All SLD96 dimmer modules, including contactor non-dims are reporting modules. These dimmers report many dimmer status items back to the processor. The processor can then determine a wide range of faults and diagnostic data. Reported items include:

- Module type
- Module output current
- Module temperature

In addition, the module output voltage is calculated by the rack processor

Safety Features   In order to minimize the impact of failures to any part of the SLD96 racks, a number of security features are provided with, or are optional with, SLD96 racks.

Standard security features for SLD96 racks are:
- Convection cooling of all components with fan assist.
- 2 fans for redundancy in case of one fan failure.
- Module over-temperature warning.
- Module shutdown at 5° C above warning level.
- The processor module can be set to hold the last dimmer levels forever, or to fade to a specified SWC preset after a preset interval in cases of DMX signal failure.
- Setup data is stored in non-volatile RAM.
- 2500V opto-isolation of DMX A and DMX B inputs, SWC input, Outlook input, Reporter input.
- All, or selected dimmers in a rack can be set to either Off or full On when the external Panic button is pressed.
- Automatic Panic on removal or failure of processor module. In racks with two processor modules, both modules must be removed, or have failed, to activate Panic.
- Keypad lock.

Optional safety features for SLD96 racks include:

- Redundant tracking backup (requires a second processor module fitted to the rack).
- Backup processor automatically tracks the master processor and takes over control of the dimmer rack on failure of the master processor

Reporter software lets you store setup data off-line.

SWC (System Wide Control)

SWC lets you control multiple SLD96 racks from a single location. A hand held controller lets you program and recall all 99 presets, and control individual dimmers. 8 and 16 channel push-button stations let you record or recall any 8 or 16 of the 99 presets at each station. An audio visual interface is also available to activate presets from external contacts. Contact Strand Lighting or see the *System Wide Control User's Manual* for details on how SWC works.

Outlook

Outlook is a comprehensive family of control stations designed for architectural applications needing a simple, flexible control solution with minimal installation and cabling costs. These control stations can access, modify, and recall lighting levels stored in the SLD96 processor module. Outlook control station features and options include:

- Control up to 16 separate rooms, with up to 15 channels per room
- 8 preset scenes plus ON and OFF for each room
- Manual sliders (3, 6, 9, or 15 sliders per station) for direct control of individual circuits
- Record facility for saving slider levels for future push-button recall
- Programmable fade times between 0 and 4 minutes from Outlook control stations or 0 to 10 minutes from the processor module or Reporter software
- Record lockout facility for playback-only operation
- 1, 4, and 8 preset push-button stations
- Audiovisual interface
- Room combine stations for room partitioning

Reporter Software

Reporter software running on a PC under Microsoft Windows lets you control multiple SLD96 racks. This software lets you remotely program all processor features, plus lets you download an additional 5 user programmable dimmer curves.

Reporter software lets you access the raw load status information returned from the dimmers, plus other information including:

- Dimmer DMX mode
- Dimmer level (%)
- Dimmer load (W), load deviation, no load, and overload conditions
- Input line voltage per phase
- DMX A and DMX B input fail
- Rack overtemperature warning and shutdown

Reporter software also lets you access the dimmer log

Contact your Strand Lighting representitive or see the *Reporter Software User's Manual* for more details on how this software works.

Console Reporter Software

Console Reporter is a standard software package for use with Strand's 500 and 300 Series consoles and GeniusPro and Lightpalette software. It is used to monitor and report temperature, electronic status and system and load information for all SV Series dimmers, including the SLD96 dimmer rack. This facility allows the user to know the status of all lamps on a rig and to record rack-based backup cues simply and easily. Refer to the user documentation supplied with your Strand lighting control console.

# Section 3 - Programming the SLD96 Dimmer Rack

Controls and Displays

You can access the range of SLD96 programmable features using the Rack Processor Module's keypad and 16 character, 2 line display. Menus can be shown in French, German, Spanish, or English. English is the default language. It is assumed in this manual that English has been selected.

LCD   Control Buttons   LEDs

Strand Lighting
SLD96 Rack 01
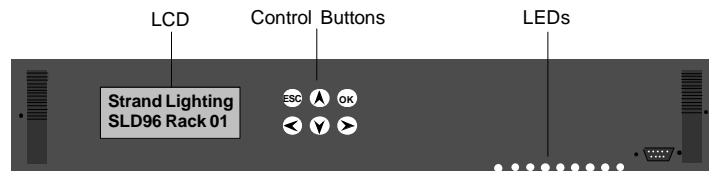
The six control buttons, in conjunction with the 16 character, 2-line LCD allow you to scan through the various menus and options and to set the programmable features of the SLD96 Dimmer Rack.

The Key Lock Feature
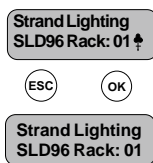
To avoid accidental, or unauthorized use of the keys, you can lock the keypad. This feature is enabled and disabled in the *Rack Configuration* menu, *Set Processor Key Lock* option. When the option is enabled, the processor keys are locked automatically after 10 minutes with no keyboard input. When disabled, the keys are unlocked. The factory default setting for this option is disabled. When locked, a system locked symbol is displayed on the LCD.

Strand Lighting
SLD96 Rack: 01

(ESC)   (OK)

Strand Lighting
SLD96 Rack: 01

When the keys are locked, you must press and hold the (ESC) and (OK) keys simultaneously for about 2 seconds before any of the keys will respond. Unless the *Set Processor Key Lock* option is disabled, the keys will again lock after 10 minutes of no key activity.

Using the Menu Keypad

The display, shown above, will be displayed by default if no rack processor keys are pressed for a period of 10 minutes, unless one or more error conditions have occurred. If more than one error has occurred, they are displayed continuously in sequence.

Pressing the (A) or (V) keys will cycle through the *Status Menu*. This menu shows a summary of the main rack statistics.

In general the rack processor keys are used to perform the following menu functions:

(➤)   Selects a sub-menu, or moves an underline screen cursor to the next field, or next digit of a field. Displays with sub-menus have a ➤ in the lower right-hand corner

(◄)   Moves an underline screen cursor to the previous field, or the previous digit of a field

(▼)   Selects the next option in a menu, or next option in a selected field.

(▲)   Selects the previous option in a menu, or previous option in a selected field.

(OK)   In fields that are not changed live as you adjust the field value, pressing (OK) sets the selected value. When **ALL** is selected as a field option, you must use (OK) to action the change. The (OK) key is also used to confirm a changed value, where confirmation is required.

(ESC)   Returns the display to the previous menu level. If you have made changes, you may be prompted to confirm the changes before leaving the menu level. Press (OK) to confirm, or (ESC) again to ignore changes.

Field Types   There are three different types of field used in SLD96 displays.

- Display fields
- Selection fields
- Scrolling fields

Display fields
Display fields are used to display fields that cannot be changed or to show a title field. When you use the ◁ or ▷ keys to move the cursor within a display, the cursor will skip display fields.

Selection Fields
When the cursor is located below the character of a selection field, you can use the ▽ or △ keys to change the field to one of the legitimate values permitted for the field. Selection fields can have text values, numeric values or both. Text values permitted in otherwise numeric fields are Off, Full and '-', (meaning 'none').

Scrolling Numeric fields
When the cursor is located below one of the digits of a numeric field, you can use the ▽ or △ keys to change digit to one of the legitimate values permitted for that field digit. You can also use the ◁ or ▷ keys to move the cursor to another digit in the field and use the ▽ or △ keys to change its value. Text values for scrolling numeric fields include Off, Full, '-' (meaning 'none') and Hold.

The Status Log   The Status Log allows you to quickly check the status of the rack, using the ▽ and △ keys to display each parameter in turn.

In the event of one or more error conditions occurring, the status display will automatically show the Error Log, (refer to the Error Log, page 44). In the event of a Dimmer Event occurring, the Event Log will automatically be displayed, (refer to Dimmer Event Reporting, page 30). Multiple errors, or events are auto-scrolled.

The Status log for each rack, lists the rack number and software version number, together with the information shown in the example.

The example shown is for a rack called Rack 1 running v1.0 software. A backup rack processor is fitted and is tracking the master processor. This rack processor is the master and is enabled. There are 96 dimmers. There is a DMXA input, but no DMXB input. There are voltages/currents of 236V/80A, 234V/76A and 232V/122A on phases 1, 2 and 3 respectively at 50Hz . There are no errors or dimmer events logged.

Note: When the backup and main processor are functioning, both displays should show "Tracking." When the system is properly tracking, data is continuously copied from the "Enabled" processor (Master) to the "Disabled" processor (Backup). Phase current will always be 0 (zero) on the processor that is "Tracking,"

The Status Log will return to the default display 5 seconds after the last press of the ▽ or △ key.
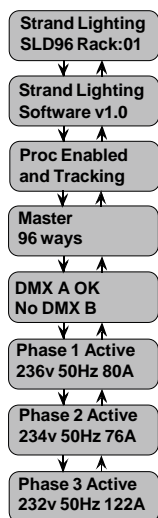
```
Strand Lighting
SLD96 Rack: 01
```

Default Display

To enter the *Main* menu press the ▷ key from any of the status displays.

```
Strand Lighting
SLD96 Rack:01
    ↓ ↑
Strand Lighting
Software v1.0
    ↓ ↑
Proc Enabled
and Tracking
    ↓ ↑
Master
96 ways
    ↓ ↑
DMX A OK
No DMX B
    ↓ ↑
Phase 1 Active
236v 50Hz 80A
    ↓ ↑
Phase 2 Active
234v 50Hz 76A
    ↓ ↑
Phase 3 Active
232v 50Hz 122A
```

Main Menu

The *Main* menu lets you access all the other sub menus for configuring the SLD96.

Setting Dimmer Levels
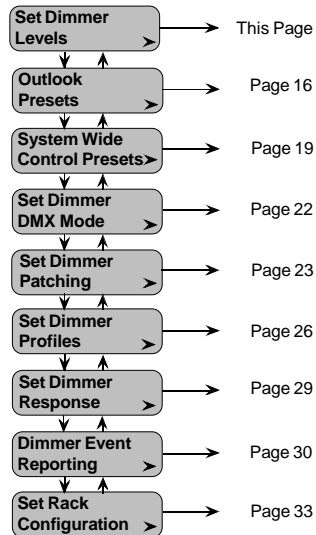
The *Set Dimmer Levels* menu lets you set individual dimmers and loads directly from the processor module, regardless of the signal being received from presets and other inputs.

Set Dimmer Levels ➤	→	This Page
Outlook Presets ➤	→	Page 16
System Wide Control Presets➤	→	Page 19
Set Dimmer DMX Mode ➤	→	Page 22
Set Dimmer Patching ➤	→	Page 23
Set Dimmer Profiles ➤	→	Page 26
Set Dimmer Response ➤	→	Page 29
Dimmer Event Reporting ➤	→	Page 30
Set Rack Configuration ➤	→	Page 33

The default setting is '**All=Input**'. This setting lets the input signals from DMX Inputs, Analog Inputs and Presets control the level of all dimmers in the rack.

Warning: *Since setting the values of individual, or all dimmers to a value other than '**Input**' overrides the control inputs, including presets, you can easily lose control of dimmers by forgetting to set them back to 'Input'. The levels set in this menu are remembered even when you shut down the rack.*

You can use the *Set Levels* menu to set dimmer levels to record SWC and Outlook Presets where there is no conventional lighting control system.
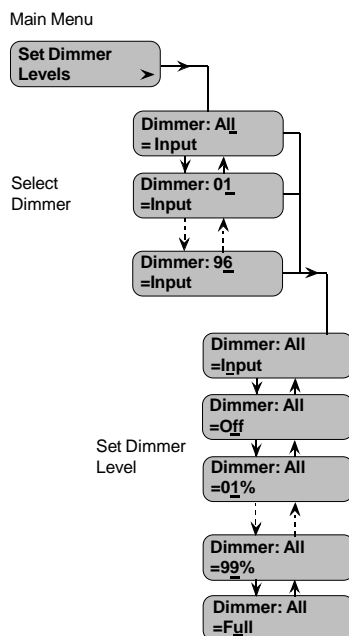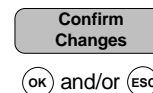
Setting the Level for All Dimmers
You can temporarily set the value of all dimmers in the rack to Off, Full, or any percentage value between 1% and 99%. Select *Set Dimmer Levels* from the *Main Menu* and press ➤ twice. Use the (▼)or (▲) keys to set the level of **All** dimmers.

When you change the level of **All** dimmers in this way, you must press (OK) to action the change.
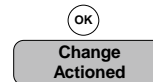
(OK)
Change Actioned

When you press (ESC) to return to the *Main* menu, you will be asked to confirm the change to the level of **All** dimmers. Press (OK) to confirm, or (ESC) to cancel.

Confirm Changes
(OK) and/or (ESC)

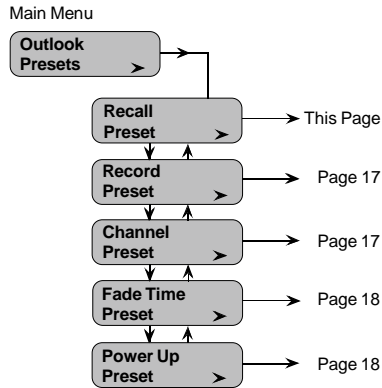Setting the Levels of Individual Dimmer(s)
You can set the level of individual dimmers to Off, Full or any value between 1% and 99% by selecting *Set Dimmer Levels* from the *Main* menu, pressing the (➤) key and using the (▼) or (▲) keys to select the required dimmer number. You can then set the selected dimmer to a level by pressing (➤) and using the (▼)or (▲) keys.

Note: *A cursor (_) is shown on the LCD to identify the field which will be modified when you press the (▼) or (▲) key. You can use the (◄) or (➤) keys to move the cursor between fields. You can also use the (◄) key to move the cursor to the left within a field, allowing you to increment/decrement the value faster.*

Changes to the levels of individual dimmers are actioned immediately and remain at the set level until a new value is set, or until the level is set back to the default level (**Input**). It is not necessary to press (OK) to action the change and no confirmation is necessary when you press (ESC) to return to the *Main* menu.

Note: *Setting the value of **All** dimmers will override any value set for individual dimmers*

Main Menu

Set Dimmer Levels ➤

Select Dimmer

Dimmer: All = Input
Dimmer: 01 =Input
Dimmer: 96 =Input

Set Dimmer Level

Dimmer: All =Input
Dimmer: All =Off
Dimmer: All =01%
Dimmer: All =99%
Dimmer: All =Full

The Outlook Presets Sub Menu

The *Outlook Presets* sub-menu provides the facility to set all of the preset values associated with the Outlook architectural lighting control stations.

Note: Before setting the Outlook Presets, ensure that each dimmer is assigned to a channel in a room. Refer to Patching, page 23.

There are 10 Outlook Presets per room. Eight of them (1-8) are user programmable. Preset 0 is a non-recordable blackout state (OFF), preset 9 is all dimmers full ON and MAN is the current slider setting being received from an active slider control station.

When you record a preset, you record the actual dimmer levels as they appear in the room.

Outlook Presets and SWC Presets are completely separated, and separately controlled, even though they may control the same dimmer. If you are using the SWC hand-held controller, SWC push-button controllers, or SWC A/V interface, refer to the *System Wide Control Presets* sub-menu, page 19.

Outlook Presets can be recalled and added to the dimmer output on a 'highest takes precedence' (HTP) basis either from the processor module, or from a control station. Selecting a preset crossfades the output of the Outlook preset processor from the previously selected preset to the new preset in the programmed fade time.

Note: Outlook Presets are not the only source of control in a SLD96 dimmer. If a dimmer has control input from other sources, the Dimmer DMX Mode setting for each dimmer determines what signals appear at the dimmer. If a dimmer is ON from another source, you may not be able to fade it OFF using Outlook Presets. In addition, the dimmer levels are affected by Max Voltage and Min Level settings.
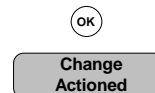

Recalling Outlook Presets
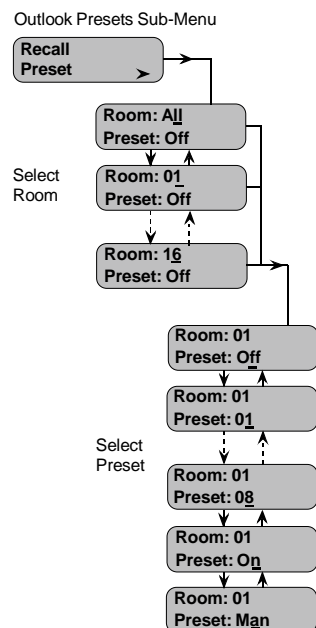
You can recall one of the preset lighting states at any time.

Note: 'Recall Preset' changes the live lighting state by activating the Outlook Preset. It is not a 'blind' viewing facility.
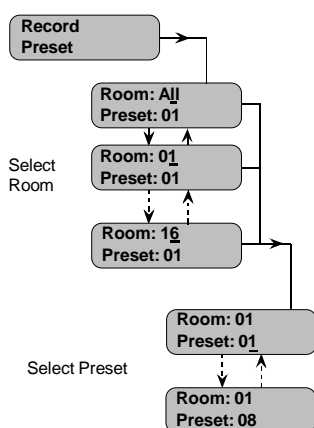
To recall a recorded Outlook Preset, select *Recall Presets* from the *Outlook Presets Sub-Menu* and press ➤ . To recall a preset lighting state, first select the room number (1-16), or **All** Rooms using the (⋀) or (⋁) keys, then press (➤)and use the (⋀) or (⋁) keys to select the preset number (1-8) or set the selected room lights to ON (all room lights On), OFF (all room lights Off) or MAN (room lights controlled by the room slider). The default setup is all dimmers set to OFF.

Note: The lighting state for the selected room will not change until you press (ok) *on the processor module. You are not required to confirm changes to the Recall Preset menu.*
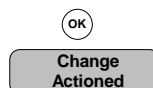
Recording Outlook Presets

Record Preset

Select Room

Room: All Preset: 01

Room: 01 Preset: 01

Room: 16 Preset: 01

Select Preset

Room: 01 Preset: 01

Room: 01 Preset: 08

You can record the current dimmer output to any of the eight recordable Outlook Presets per room. Firstly, set up the lighting state, using any means of control. Select *Record Preset* from the *Outlook Presets* sub-menu and press (➤). Select **All**, or use the (⋎) or (⋏) keys to select the room number (1-16). Press (➤) and allocate a preset number to the lighting state (1-8) using the (⋎) or (⋏) keys.

After you set the preset for **All** rooms or an individual room, you must press (OK) to action the change. You are not required to confirm changes to the *Record Preset* menu.
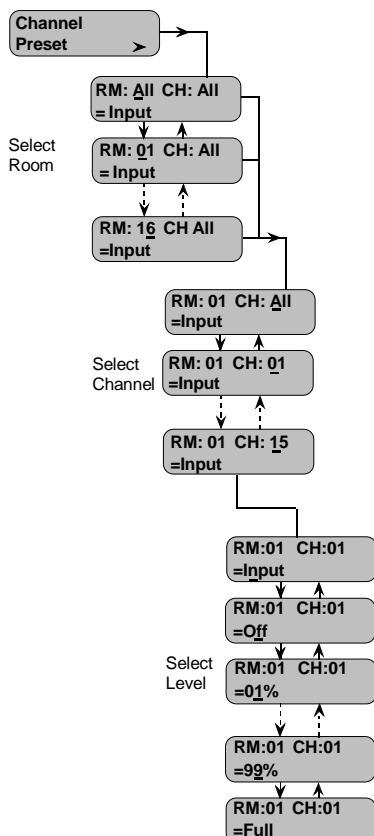
(OK)

Change Actioned

Repeat this procedure to set the preset lighting state for each room.

Press (ESC) to return to the *Main* menu

Setting Outlook Channel Presets

Outlook Presets Sub-Menu

Channel Preset ➤

Select Room

RM: All CH: All = Input

RM: 01 CH: All = Input

RM: 16 CH All =Input

RM: 01 CH: All =Input

Select Channel

RM: 01 CH: 01 =Input

RM: 01 CH: 15 =Input

RM:01 CH:01 =Input

RM:01 CH:01 =Off

Select Level

RM:01 CH:01 =01%

RM:01 CH:01 =99%

RM:01 CH:01 =Full

You can set channel presets directly from the processor module by selecting a room number, channel number and setting the channel level. This facility lets you test individual dimmers and loads regardless of the signal controlling them.

Warning: *Since setting the values of individual, or all dimmers to a value other than 'Input' overrides the control inputs, including presets, you can easily lose control of dimmers by forgetting to set them back to 'Input'.The levels set in this menu are remembered even when you shut down the rack.*

Normally, all channel levels, in all rooms are set to '**Input**' and presets control the dimmer levels. The relationships of the inputs to each other are determined by the *Dimmer DMX Mode* setting. Refer to Page 22.

The Channel Levels setting can be used to control dimmers recording into SWC and Outlook presets where there is no conventional lighting control system.

To set channel levels, select *Channel Preset* from the *Outlook Presets Sub-Menu* and press (➤). Use the (⋏) or (⋎) keys to select a room number (1 to 16) or **All** Rooms, then press (➤) again and use the (⋏) or (⋎) keys to select the channel within the selected room (1 to 15). Finally, press (➤) again and use the (⋏) or (⋎) keys to select the required level . You can set the level of the selected channel(s) to Off, Full or any value between 1 and 99%. Alternatively, you can set the channel(s) to Input. In this case the channel is controlled by the incoming control signal.

If you change the levels of **All** channels in **All** rooms, or **All** channels in one room, you are required to press (OK) before the change will take place.
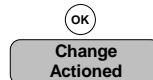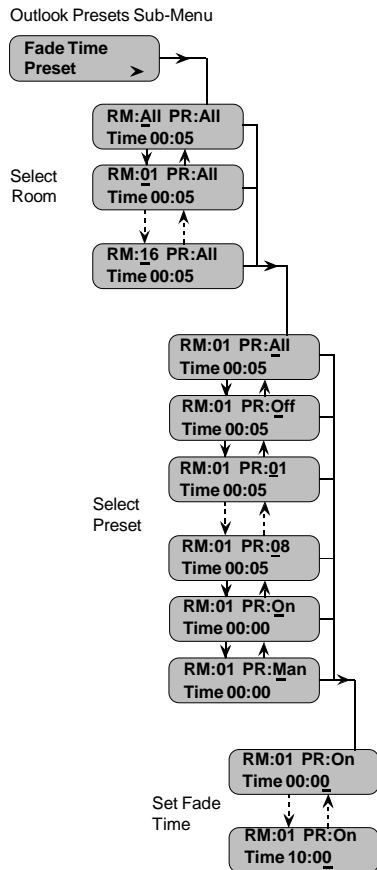
(OK)

Change Actioned

When you press (ESC) to return to the *Main Menu*, you will be asked to confirm the change to the level of all dimmers. Press (OK) to confirm, or (ESC) to cancel.
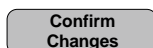
Confirm Changes

(OK) and/or (ESC)

When you change the level of one channel in one room, the change takes place immediately. You are not required to press (OK) or to confirm the change.

Setting Outlook Fade Times

Outlook Presets Sub-Menu

```
Fade Time
Preset      ➤

RM:All PR:All
Time 00:05

Select      RM:01 PR:All
Room        Time 00:05

RM:16 PR:All
Time 00:05

RM:01 PR:All
Time 00:05

RM:01 PR:Off
Time 00:05

RM:01 PR:01
Time 00:05

Select      RM:01 PR:08
Preset      Time 00:05

RM:01 PR:On
Time 00:00

RM:01 PR:Man
Time 00:00

RM:01 PR:On
Time 00:00
Set Fade
Time        RM:01 PR:On
Time 10:00
```

You can set the fade time (up to 10 minutes) for all Outlook presets in all rooms, for all presets in a specified room, or for one preset at a time, by using the *Fade Time Preset* menu option. The default fade time for all presets (except Manual Faders) is 5 seconds.

To set a fade time for the manual faders, select the MAN setting in the Preset (PR) field. Manual fade time is set per room. With a zero second (default) time set, when you press 'Manual' or 'Take Control' on an Outlook slider station, the lighting instantly fades from the current level to the level set on the sliders. If a manual fade time is programmed, the channels fade from their current levels to the slider levels in the programmed time.

To set the fade time, choose *Fade Time Reset* from the *Outlook Presets* menu and press ➤ . If you wish to set the fade time for all rooms and all presets, press the ➤ key until the cursor is located under the time field. You can then set a fade time from 00.00 to 10.00 minutes in one second increments. Alternatively, use the ◄ key to move the cursor to the left, allowing you to increment the fade time value faster.

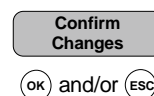To set the fade time for all presets in a room, move the cursor using the ➤ or ◄ key until it is positioned under the room field (RM). You can then select a room number from 1 to 16 using the ▼ or ▲ keys.

To set a fade time for a particular preset, move the cursor using the ➤ or ◄ keys until the cursor is positioned under the Preset field (PR). You can then select a preset number from 1 to 8 using the ▼ or ▲ keys, or set the preset to Off or Manual
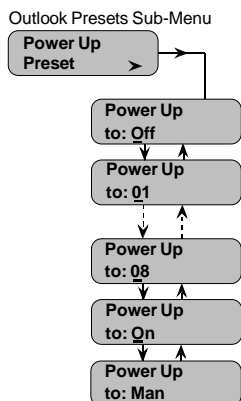
If you change the fade time of **All** presets in **All** rooms, or **All** presets in one room, you are required to press (OK) before the change will take place.
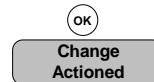
```
(OK)
Change
Actioned
```

When you press (ESC) to return to the *Main Menu*, you will be asked to confirm the change to the level of all dimmers. Press (OK) to confirm, or (ESC) to cancel.

```
Confirm
Changes
(OK) and/or (ESC)
```

Setting the Outlook Power Up Preset

Outlook Presets Sub-Menu

```
Power Up
Preset     ➤

Power Up
to: Off

Power Up
to: 01

Power Up
to: 08

Power Up
to: On

Power Up
to: Man
```

You can select an Outlook preset that will always appear when the system is powered up (e.g., after a power failure). The default preset is Off which sets the entire system to a blackout on power-up. However, you can set the preset from between 1 and 8. On power up all rooms will fade up to the selected preset.

Alternatively, you can set the power up preset ON (all lights full On) or MAN (set by the room sliders).

The No DMX SWC preset can act as an overall system power-up preset if desired. If a No DMX preset and a Power Up preset are assigned, the dimmer levels will be combined according to the *Dimmer DMX Mode* settings.

To set the power up preset condition, select *Power Up Preset* from the *Outlook Preset Menu* and press ➤ . You can then use the ▼ or ▲ keys to select a preset (1-8) or to set the power up condition to Off, On or Manual.

The power up preset takes effect the next time that the system is powered up. You are not required to press (OK) or to confirm the setting.

System Wide Control Presets

Main Menu

```
System Wide
Control Presets➤
        │
        ▼
    Recall          ────➤  This Page
    Preset    ➤
        ↕
    Record          ────➤  ThisPage
    Preset    ➤
        ↕
    No DMX          ────➤  Page 20
    Preset    ➤
        ↕
    Fade Time       ────➤  Page 20
    Preset    ➤
        ↕
    No DMX          ────➤  Page 21
    Mode      ➤
```
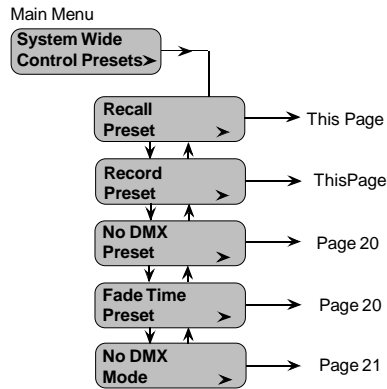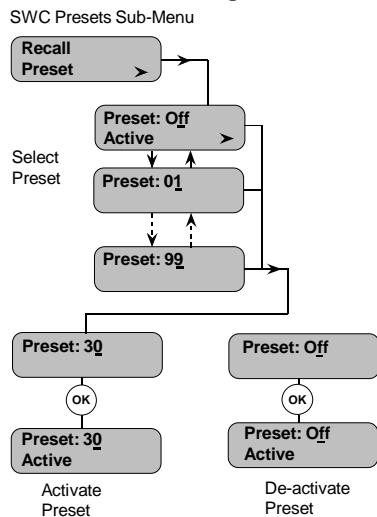
There are 99 user-programmable System Wide Control (SWC) presets per system. Preset 0 is a non-recordable blackout state.

Outlook presets and SWC preset are completely separated and separately controlled, even though they can control the same dimmer. For information on Outlook Presets, refer to page 16.

Any SWC preset can be added to the dimmer output on a highest takes precedence (HTP) basis, by activating it from a processor module, remotely from the SWC hand-held controller, or remotely from a PC running the Reporter software. When you activate an SWC preset, the system crossfades from any previously selected SWC preset (or from a blackout).

Note: SWC Presets are not the only source of control in a SLD96 dimmer. If a dimmer has control input from other sources, the Dimmer DMX Mode setting for each dimmer determines what signals appear at the dimmer. If a dimmer is ON from another source, you may not be able to fade it OFF using SWC Presets. In addition, the dimmer levels are affected by Max Voltage and Min Level settings.
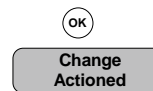
Recalling SWC Presets

SWC Presets Sub-Menu

```
Recall
Preset    ➤
            │
            ▼
        Preset: Off
        Active    ➤
            ↕
Select  Preset: 01
Preset
            ⋮
        Preset: 99
```

```
Preset: 30              Preset: Off
    │                       │
  (OK)                    (OK)
    ▼                       ▼
Preset: 30              Preset: Off
Active                  Active

Activate                De-activate
Preset                  Preset
```

You can activate the dimmer levels of any one SWC preset using the *Recall Preset* menu option.
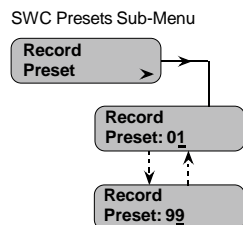
Note: 'Recall Preset' changes the live lighting state by activating the selected SWC Preset. It is not a 'blind' viewing facility.

Select *Recall Preset* from the *SWC Presets* sub menu and press the (➤) key . By default all presets are Off (**Preset: Off Active**). Using the (▼) or (▲) keys, select one of the 99 SWC presets to activate, then press (OK) to activate the preset. The selected preset will be activated immediately and will fade to the preset level in the recorded fade time. You are not required to confirm the command.
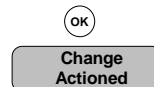
```
          (OK)
      ┌──────────┐
      │  Change  │
      │ Actioned │
      └──────────┘
```

To switch off the recalled SWC preset, select **Preset:Off** and press (OK)

Recording SWC Presets

SWC Presets Sub-Menu

```
Record
Preset    ➤
            │
            ▼
        Record
        Preset: 01
            ⋮
        Record
        Preset: 99
```
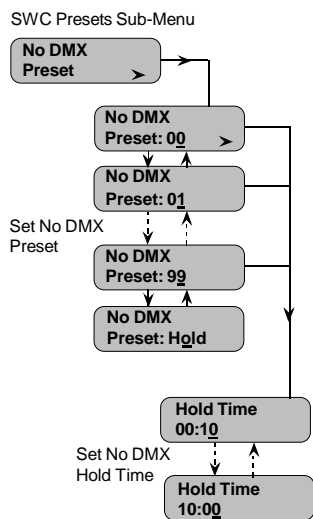
You can record the current dimmer output to any of the 99 recordable SWC Presets. Firstly, set up the lighting state, using any means of control, then press (➤) when *System Wide Control Presets* is displayed in the *Main* menu. Use the (▼) or (▲) keys to select 'Record Preset' then set each preset to a particular lighting state using the (▼) or (▲) keys.

To record a preset, you must press (OK) . You are not required to confirm changes to the Record Preset menu.

```
          (OK)
      ┌──────────┐
      │  Change  │
      │ Actioned │
      └──────────┘
```

Press (ESC) to return to the *Main* Menu.

**Setting the SWC
No DMX Preset**

SWC Presets Sub-Menu

No DMX
Preset ➤

No DMX
Preset: 00 ➤

No DMX
Preset: 01

Set No DMX
Preset

No DMX
Preset: 99

No DMX
Preset: Hold
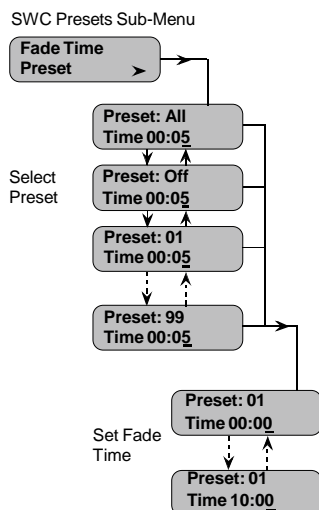
Hold Time
00:10

Set No DMX
Hold Time

Hold Time
10:00

The No DMX Preset is the lighting state that the system will fade to in the event of loss of the DMX signal. You can set the No DMX preset to any of the 99 SWC presets or to 'Hold'. When set to 'Hold', the system holds the current levels on loss of DMX signal. The Hold Time sub-menu is disabled if this option is selected. The default setting is **No DMX=00** (blackout). **No-DMX=Hold** is a useful safety feature in live performance situations.

Note: *Setting No DMX to Hold may cause problems if the dimmers are left ON after the control desk is turned OFF. Many desks produce unwanted signals as the power fails. When the desk is turned OFF, the dimmers are therefore susceptible to noise pick-up on the DMX Input, which can leave the dimmers unexpectedly ON. If you set No DMX to Hold, ensure that unattended dimmers are turned OFF.*

To set the No DMX Preset, select *No DMX Preset* from the *SWC Presets* sub-menu and press ➤ to show the No DMX options. Use the (Ⅴ) or (Ʌ) keys to set the No DMX preset, which can be any of the recorded presets from 00 (blackout) to 99, or Hold.

If you have selected an option, other than Hold, you can then set a Hold Time (default = 10 seconds), which determines how long the last condition will be held before fading to the No DMX Preset. To set the Hold Time, Press ➤ and use the (Ⅴ) or (Ʌ) keys to set a time between 10 seconds and 10 minutes. When setting the No DMX Hold Time, you can use the (ᐊ) key to position the underline cursor below tens of second or minutes. The set preset and hold time will take effect immediately. You are not required to press (OK) , or confirm the command.
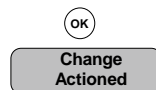
Setting the SWC Fade Time

SWC Presets Sub-Menu

Fade Time
Preset ➤

Preset: All
Time 00:05

Select
Preset

Preset: Off
Time 00:05

Preset: 01
Time 00:05

Preset: 99
Time 00:05

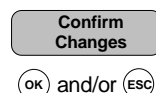Preset: 01
Time 00:00

Set Fade
Time

Preset: 01
Time 10:00

You can set the fade time for all SWC presets in the rack or for individual presets. The default is all presets with a fade time of 5 seconds.

To set the SWC preset fade time, select *Fade Time Preset* from the *SWC Presets* sub-menu and press (➤) to show the *Preset Fade Time* options. If you wish to change the fade time for all SWC presets, press (➤) to move the underline cursor to the time field, otherwise, use the (Ⅴ) or (Ʌ) keys to select a preset number (01-99). You can use the (ᐊ) key to move the cursor to the left-hand digit, if required. One of the preset options is OFF. If selected, all, or individual SWC Preset(s) will have no fade time. To set the fade time, press (➤) to position the underline cursor under the time fields and use the (Ⅴ) or (Ʌ) keys to set a fade time of between zero (00:00) and ten minutes (10:00).

When you set the SWC fade time for **All** presets, you must press the (OK) key to activate the change.
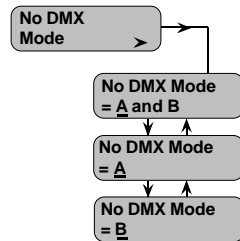
(OK)

Change
Actioned

When you press (ESC) to return to the *Main Menu*, you will be asked to confirm the change to SWC fade time. Press (OK) to confirm, or (ESC) to cancel.

Confirm
Changes

(OK) and/or (ESC)

Setting the SWC No DMX Mode

SWC Presets Sub-Menu

```
┌──────────────┐
│ No DMX       │──────────┐
│ Mode       ➤ │          │
└──────────────┘          │
        ┌──────────────────┐
        │ No DMX Mode      │
        │ = A and B        │
        └──────────────────┘
              ↓  ↑
        ┌──────────────────┐
        │ No DMX Mode      │
        │ = A              │
        └──────────────────┘
              ↓  ↑
        ┌──────────────────┐
        │ No DMX Mode      │
        │ = B              │
        └──────────────────┘
```
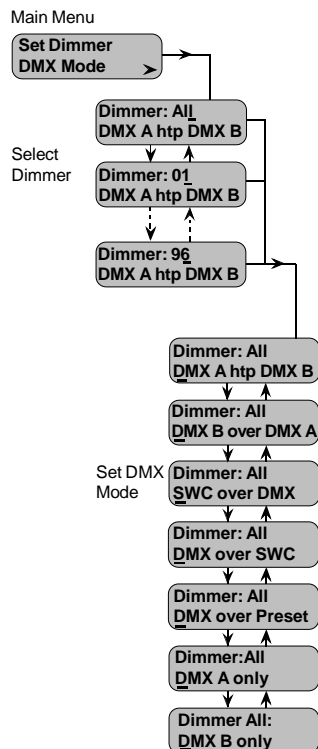
You can apply the No DMX Preset in the event of a loss of signal from DMX A or DMXB, or both by setting the No DMX Mode.

To set the No DMX Mode, select *No DMX Mode* from the *SWC Presets* sub-menu and press ⊙ to display the mode options. Use the Ⓨ or Ⓐ keys to select the mode option required.

The set mode will take effect immediately. You are not required to press ⓄⓀ, or confirm the command.
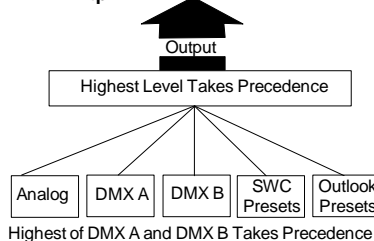
The default No DMX Mode is A and B

Dimmer DMX Mode

Set Dimmer DMX Mode ➤

Dimmer: All DMX A htp DMX B

Select Dimmer

Dimmer: 01 DMX A htp DMX B

Dimmer: 96 DMX A htp DMX B

Dimmer: All DMX A htp DMX B

Dimmer: All DMX B over DMX A

Set DMX Mode **Dimmer: All SWC over DMX**

Dimmer: All DMX over SWC

Dimmer: All DMX over Preset

Dimmer: All DMX A only
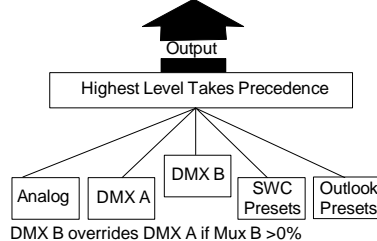
Dimmer All: DMX B only

You can set the way in which the various control inputs interact with each other to produce the dimmer output signal as shown below:

DMX A htp DMX B
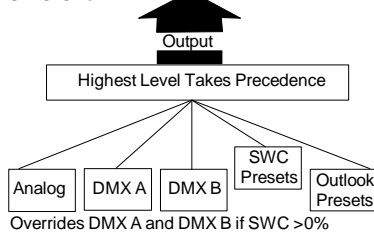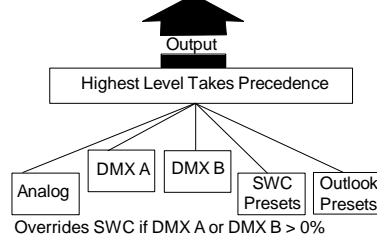
Output

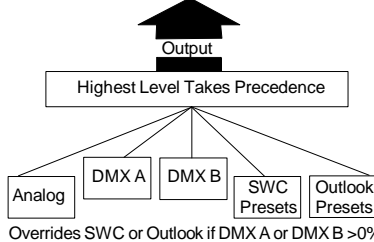Highest Level Takes Precedence

Analog | DMX A | DMX B | SWC Presets | Outlook Presets

Highest of DMX A and DMX B Takes Precedence

Mux B over Mux A

Output

Highest Level Takes Precedence

Analog | DMX A | DMX B | SWC Presets | Outlook Presets

DMX B overrides DMX A if Mux B >0%

SWC Over DMX

Output

Highest Level Takes Precedence

Analog | DMX A | DMX B | SWC Presets | Outlook Presets

Overrides DMX A and DMX B if SWC >0%

DMX Over SWC

Output

Highest Level Takes Precedence

Analog | DMX A | DMX B | SWC Presets | Outlook Presets

Overrides SWC if DMX A or DMX B > 0%

DMX Over Pres

Output

Highest Level Takes Precedence

Analog | DMX A | DMX B | SWC Presets | Outlook Presets

Overrides SWC or Outlook if DMX A or DMX B >0%

DMX A Only

Output

Highest Level Takes Precedence

Analog | DMX A | SWC Presets | Outlook Presets

DMX B not used

DMX B Only

Output

Highest Level Takes Precedence

Analog | DMX B | SWC Presets | Outlook Presets
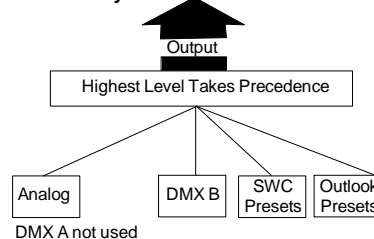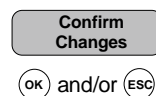
DMX A not used

To set the dimmer DMX Mode, select *Set Dimmer DMX Mode* from the *Main Menu* and press ⧁ to display the DMX Mode options. Use the ⊻ or ⊼ keys to apply the DMX mode to '**All**' dimmers or to a selected dimmer, then press the ⧁ key and use the ⊻ or ⊼ keys to select a DMX Mode option. If you have changed the DMX Mode for an individual dimmer, you do not require to press ⊙ᴷ, or to confirm the change. If however, you have changed the DMX Mode for **All** dimmers, you must press the ⊙ᴷ key to action the change.

⊙ᴷ

Change Actioned
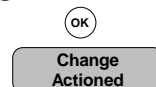
When you press ⊖ˢᶜ to return to the *Main* menu, you are also required to confirm the DMX Mode change to **All** dimmers by pressing ⊙ᴷ to confirm, or ⊖ˢᶜ to cancel the command.
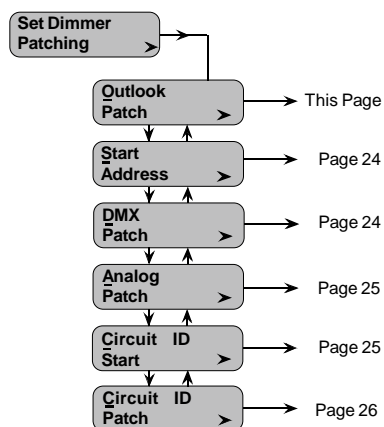
Confirm Changes

⊙ᴷ and/or ⊖ˢᶜ

Set Dimmer Patching

Main Menu

```
Set Dimmer
Patching      ➤
```

```
Outlook
Patch      ➤    ──➤ This Page
```

```
Start
Address    ➤    ──➤ Page 24
```

```
DMX
Patch      ➤    ──➤ Page 24
```

```
Analog
Patch      ➤    ──➤ Page 25
```

```
Circuit  ID
Start      ➤    ──➤ Page 25
```

```
Circuit  ID
Patch      ➤    ──➤ Page 26
```
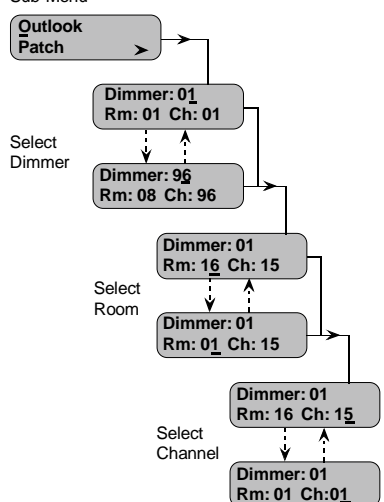
The Set Dimmer Patching sub-menu lets you assign dimmer numbers according to your own requirements.

The Outlook Patch

Set Dimmer Patching
Sub-Menu

```
Outlook
Patch      ➤
```

Select Dimmer

```
Dimmer: 01
Rm: 01 Ch: 01
```
```
Dimmer: 96
Rm: 08 Ch: 96
```

Select Room

```
Dimmer: 01
Rm: 16 Ch: 15
```
```
Dimmer: 01
Rm: 01 Ch: 15
```

Select Channel

```
Dimmer: 01
Rm: 16 Ch: 15
```
```
Dimmer: 01
Rm: 01 Ch:01
```

If you are using Outlook (or compatible) controllers, you can patch dimmers to specified channels in specific rooms. The Outlook Patch options allow you to set up the association between individual dimmers and channels within rooms.

To set up the Outlook patch, select *Outlook Patch* from the *Set Dimmer Patching* sub-menu and press ➤ to display the Outlook Patch options. Use the (∨) and (∧) keys to select a dimmer number, then press ➤ and use the (∨) and (∧) keys to select a room. Press ➤ again, and use the (∨) and (∧) keys to select a channel.

The Outlook Patch will take effect immediately. You are not required to press (ok), or confirm the command.

By default, all dimmers are set to Room 16, Channel 15

Start Address

Set Dimmer Patching
Sub-Menu

Select
Mux Input

Select
Start
Address
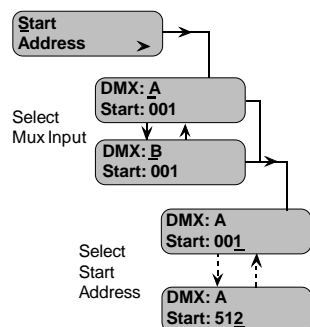
The *Start Address* option lets you patch all dimmers in the rack sequentially after the specified *DMX Start* number. This is an easy way to assign the DMX patch without going through the slow process of assigning each dimmer individually

In most systems, dimmers are numbered consecutively throughout the system. The first dimmer in a rack is set to one number higher than the last number in the previous rack.
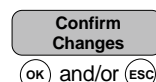
To set the DMX Start Address, select *Start Address* from the *Set Dimmer Patching Sub-Menu* and press (>) to display the Start Address options.

Use the (∨) or (∧) keys to select either DMX A or DMX B, then press (>) to set the start address.

Use the (∨) or (∧) keys to select the start address for the DMX output. You can use the (<) key to position the underline cursor under digits to the left in order to set a high start address. Press (OK) to action the starting address for the DMX output.
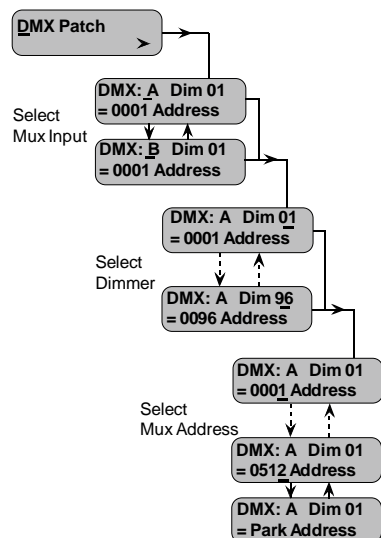
(OK)
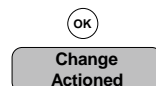
**Change
Actioned**

You can then repeat the process by setting a start address for the other DMX input, as required. When you press (ESC) you will be required to confirm the changes by pressing (OK) or cancel the changes by pressing (ESC) again.

**Confirm
Changes**

(OK) and/or (ESC)

Patching Dimmers to DMX Signals

Set Dimmer Patching
Sub-Menu

Select
Mux Input

Select
Dimmer

Select
Mux Address

You can patch one or more dimmers to be controlled by one DMX signal. This lets you reassign dimmers to different DMX signals or group various sets of dimmers to be controlled by one DMX signal.

To patch dimmers to DMX signals, select *DMX Patch* from the *Set Dimmer Patching Sub-Menu* and press (>) to display the DMX Patch options.

Use the (∨) or (∧) keys to select either DMX A or DMX B, then press (>) to set the dimmer number.

Use the (∨) or (∧) keys to select the dimmer number for the DMX input. You can use the (<) key to position the underline cursor under digits to the left in order to set a high dimmer number. You can then assign a DMX address to the dimmer number by pressing (>) and using the (∨) or (∧) keys, and (<) key to position the cursor, as necessary.

When you have set the DMX assignment for the dimmer, press (OK) to action the change. You can the proceed to patch other DMX inputs to dimmers

(OK)

**Change
Actioned**
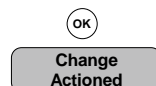
*Note: You can unpatch dimmers by setting the DMX field to **Park** (press (∨) when the DMX address field is set to 0001).*

When you have completed assigning DMX signals to dimmers, press (ESC) to return to the *Set Dimmer Patching* Sub-Menu. You will be required to confirm the changes by pressing the (OK) key to confirm or (ESC) to cancel.

**Confirm
Changes**

(OK) and/or (ESC)
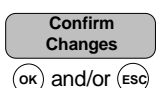
Patching Dimmers to Analog Signals

You can patch one or more dimmers to be controlled by any of the 12 analog inputs. Dimmers patched to analog signals can also be patched to DMX signals.

Patching a signal to an analog input does not unpatch it from any DMX signals.

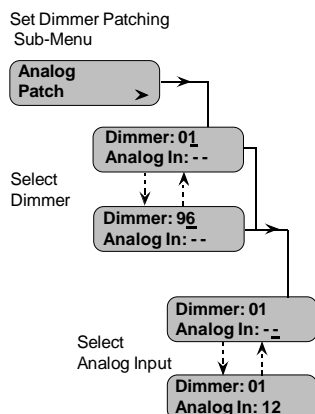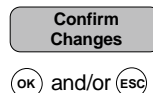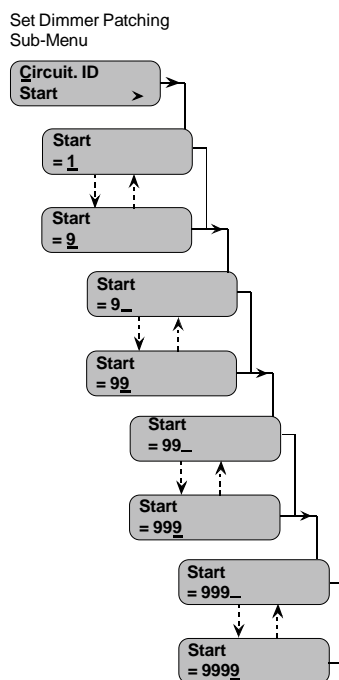**Set Dimmer Patching Sub-Menu**

```
Analog
Patch          ➤
```

Select Dimmer

```
Dimmer: 01
Analog In: - -
      ⋮
Dimmer: 96
Analog In: - -
```

Select Analog Input

```
Dimmer: 01
Analog In: - -
      ⋮
Dimmer: 01
Analog In: 12
```

To patch an analog input to a dimmer, select *Analog Patch* from the *Set Dimmer Patching* sub-menu and press ➤. Use the ⱱ or ⋀ keys to select the dimmer to which the analog input has to be patched, then press ➤ and use the ⱱ or ⋀ keys to select the analog input (1-12). Press OK to action the setting.

```
   OK
Change
Actioned
```
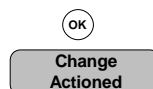
You can then repeat the process for other analog inputs, as required. When you press ESC you will be required to confirm the changes by pressing OK or cancel the changes by pressing ESC again.

```
Confirm
Changes
OK and/or ESC
```

Circuit ID Start

Set Dimmer Patching Sub-Menu

```
Circuit. ID
Start      ➤

Start
= 1
   ⋮
Start
= 9

Start
= 9_
   ⋮
Start
= 99

Start
= 99_
   ⋮
Start
= 999

Start
= 999_
   ⋮
Start
= 9999
```

The *Circuit ID Start Number* option lets you set a four-digit starting circuit number for each rack in order to uniquely identify each dimmer in a multiple rack installation. When you enter a Circuit ID Start number for the rack, the software automatically numbers the remaining circuits in the rack from the Circuit ID start number. This is an easy way to set up a rack so that the circuit IDs are offset by a fixed amount from the DMX addresses.

If it is assumed that there are 90 dimmers in the first rack of a four rack installation, 96 in the second, 92 in the third and 94 in the fourth, you would leave the circuit ID Start number for the first rack at the default value of 1, set the start number for the second rack to 91, the third to 188 and the fourth to 281.

When each dimmer is allocated a unique circuit number in this way, all dimmers can report any malfunction to the Reporter PC software or to the GeniusPro/Lightpalette console reporter application.

To set a Circuit ID Start number, select *Circuit ID* from the *Set Dimmer Patching* sub-menu and press ➤ to display the Circuit ID Start display. Use the ⋀ or ⋀ keys to set the first digit of the four digit start number (1 to 9). Press ➤ again and use the ⱱ or ⋀ keys to set the next digit of the start number (0 to 9). Press ➤ again and use the ⱱ or ⋀ keys to set the next digit of the start number. Press ➤ again and use the ⱱ or ⋀ keys to set the next digit of the start number. Press OK to action the setting.

```
        OK
Change       Start
Actioned     =1234
```

When you press ESC to return the *Circuit ID Start* display you will be required to confirm the changes by pressing OK or cancel the changes by pressing ESC again.

```
Confirm
Changes
OK and/or ESC
```
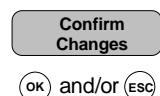
Patching Circuit IDs
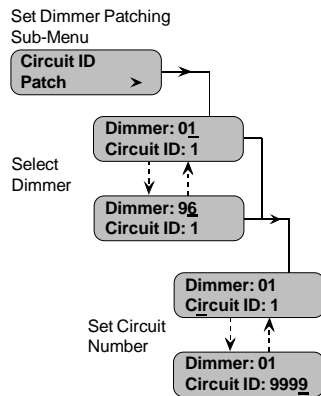
The *Circuit ID* option lets you assign your own four-digit dimmer numbers independently of the *Start Number* or *Dimmer patch*.

It is important only for use with the SWC hand held controller or with the Reporter software. This facility lets you use your desk's channel numbering scheme, or even a geographic numbering scheme, (e.g. 100, 101, 102... 110, 111, 112 etc. when remotely controlling dimmers in a complete system.
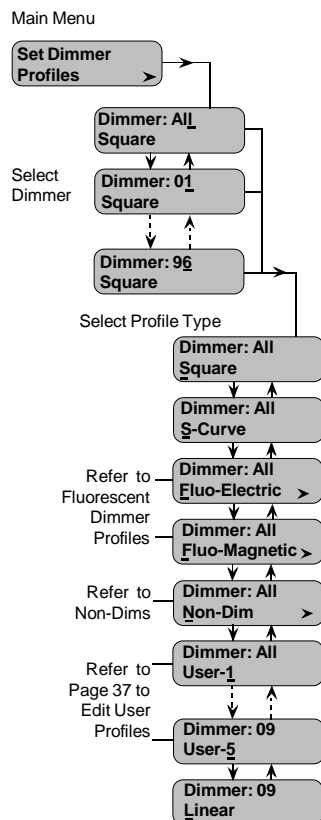
To patch a circuit ID, select *Circuit ID Patch* from the *Set Dimmer Patching* sub-menu and press ⊙ . Use the Ⓥ or Ⓐ keys to set the dimmer number, then press ⊙ to move the underline cursor to the Circuit Number field. Setting the Circuit Number field is similar to setting the Start Number field.

Repeat the above procedure for other dimmer numbers, then press Ⓔ⒮⒞ to return to the *Circuit ID Patch* display. You are not required to press Ⓞ⒦ or to confirm these settings.

Set Dimmer Patching Sub-Menu

Circuit ID Patch ➤

Select Dimmer

Dimmer: 01 Circuit ID: 1

Dimmer: 96 Circuit ID: 1

Dimmer: 01 Circuit ID: 1

Set Circuit Number

Dimmer: 01 Circuit ID: 9999

Dimmer Profiles

There are three incandescent, two fluorescent and one non-dim profile programmed into the SLD96, which you can assign to dimmers for compatibility with other dimmers or specific application requirements. You can also set one of five user-defined curves. The factory default is Square.

To set a dimmer profile, select *Set Dimmer Profiles* from the *Main* menu and press ⊙ to display the *Dimmer Profiles* options. Set the dimmer profile to apply to **All** dimmers, or use the Ⓥ or Ⓐ keys to select an individual dimmer number.

Press ⊙ and use the Ⓥ or Ⓐ keys to set the dimmer profile to Square, Fluo-Electric, Fluo-Magnetic, Non-Dim, One of the five user-defined profiles or Linear.

When you have set the dimmer profile, press Ⓞ⒦ before proceeding to make any further changes to the dimmer profiles.
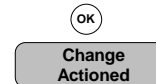
Ⓞ⒦

Change Actioned

If you have made profile changes to **All** dimmers and press Ⓔ⒮⒞ to return to the *Main* menu. You will be required to confirm the changes made by pressing Ⓞ⒦ or to cancel the changes by pressing Ⓔ⒮⒞

Confirm Changes

Ⓞ⒦ and/or Ⓔ⒮⒞

Main Menu

Set Dimmer Profiles ➤

Select Dimmer

Dimmer: All Square

Dimmer: 01 Square

Dimmer: 96 Square

Select Profile Type

Dimmer: All Square

Dimmer: All S-Curve

Refer to Fluorescent Dimmer Profiles — **Dimmer: All Fluo-Electric** ➤

Dimmer: All Fluo-Magnetic ➤

Refer to Non-Dims — **Dimmer: All Non-Dim** ➤

Refer to Page 37 to Edit User Profiles — **Dimmer: All User-1**

Dimmer: 09 User-5

Dimmer: 09 Linear
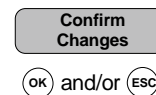
Incandescent Dimmer Curves

The graph below illustrates the relationship between input signals and output voltages for the incandescent profiles. In general, you can use Square for TV requirements, Linear for theatre use and S-curve for architectural installations, or when you need to match older dimmers.
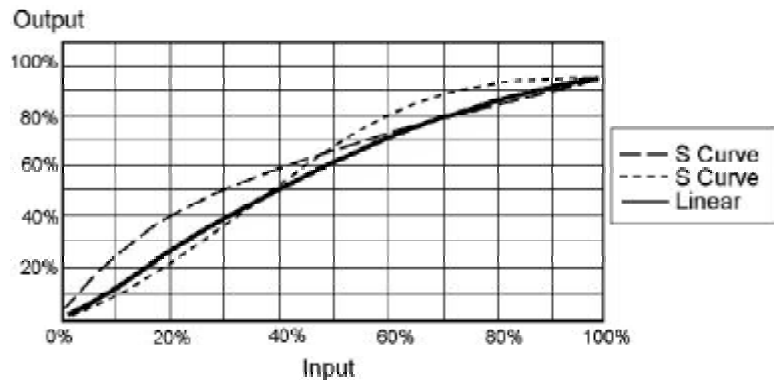
Separate dimming profiles are supplied for use with magnetic and incandescent fluorescent fixtures. You should set these correctly for best results from your installed fixtures.

Fluorescent Dimmer Profiles

The SLD96 rack supports both magnetic and electronic (phase-controlled) fluorescent ballasts. For optimum performance, you should set the appropriate fluorescent profile for each of your fluorescent dimmers. The setting for top end voltage and cutoff voltage are done the same way for magnetic and electronic ballast curves.
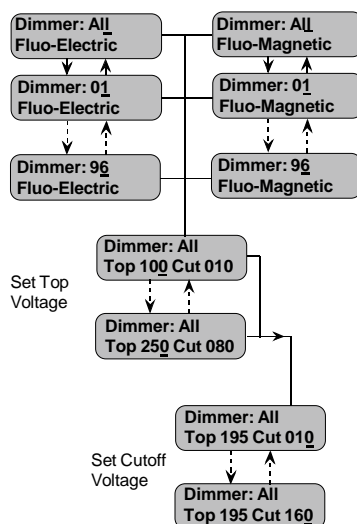
Fluorescent lamps operate best when the dimmer response is set to 'Slow' (refer to page 29 for setting dimmer response).

To set a fluorescent dimmer profile, select **All**, or set a dimmer number to which the profile should apply. Press ⊳ to position the cursor under the dimmer profile type. Press ⌄ or ⌃ until '**FluoElectric**' or '**FluoMagnetic**' is displayed. Press ⊳ and use the ⌄ or ⌃ keys to set the Top Voltage (**Top**) between 100 and 250volts. Press ⊳ and use the ⌄ or ⌃ keys to set the Cutoff Voltage (**Cut**), between 10 and 160 volts. Default is Top = 195, Cut = 080

When you have set the top and cutoff voltages, press ⊙ⱼ before proceeding to make any further changes to the dimmer profiles.

Dimmer Profiles Sub-Menu

Set Top Voltage

Set Cutoff Voltage

(ok)

Change Actioned
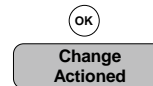
If you have made profile changes to **All** dimmers and press (ESC) to return to the *Main* menu. You will be required to confirm the changes made by pressing (ok) or to cancel the changes by pressing (ESC)

Confirm Changes

(ok) and/or (ESC)
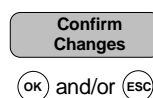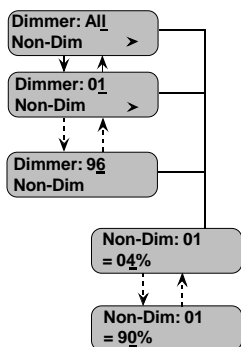
Note: If the fluorescent ballasts require a heater circuit, you will need to connect the heater circuit to a separate non-dim or contactor and then patch the non-dim to the same channel as the fluorescent dimmer circuit. The FluoMag setting delays the start-up of the dimmed circuit to allow for a separate heater circuit to turn on first.

Dimmer Profiles Sub-Menu

```
┌─────────────────┐
│ Dimmer: All     │
│ Non-Dim      ➤  │←┐
└─────────────────┘ │
        ↕           │
┌─────────────────┐ │
│ Dimmer: 01      │ │
│ Non-Dim      ➤  │←┤
└─────────────────┘ │
        ⋮           │
┌─────────────────┐ │
│ Dimmer: 96      │ │
│ Non-Dim         │─┘
└─────────────────┘
        │
┌─────────────────┐
│ Non-Dim: 01     │
│ = 04%           │
└─────────────────┘
        ⋮
┌─────────────────┐
│ Non-Dim: 01     │
│ = 90%           │
└─────────────────┘
```

Non-Dims

You can assign a non-dim profile to a dimmer, thereby providing the facility to set a threshold percentage. Non-dims remain at ZERO when the controller is below the threshold percentage and at FULL when the controller is above the threshold voltage.

Note: In order to keep dimmers from turning ON and OFF with slight voltage fluctuations, if the controller is set to the threshold value, non-dims are actually turned ON about 2% above the threshold percentage, and not turned OFF until about 2% below the threshold percentage.

When a dimmer is detected by the software as being a contactor non-dim, it is automatically set with a non-dim profile type.

There is a slight difference between the way contactors act and the way dimmers act when set to Non-Dim. When dimmers are set to Non-Dim, they are still affected by the *Max Voltage*, *Min Level* and *Response Time* settings. When set as a contactor, these settings are not applied.

To set a Non-Dim threshold, select **All**, or set a dimmer number to which the threshold should apply. Press (➤) to position the cursor under the dimmer profile type. Press (▼) or (▲) until '**Non-Dim**' is displayed, then press (➤) and use the (▼) or (▲) keys to set the threshold percentage value

When you have set the threshold percentage, press (ok) before proceeding to make any further changes to the dimmer profiles.

(OK)
```
┌─────────────────┐
│ Change          │
│ Actioned        │
└─────────────────┘
```
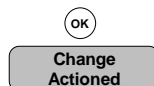
Once you have made all the changes to the dimmer profiles, press (ESC) to return to the *Main* menu. You will be required to confirm the changes made by pressing (ok) or cancel the changes by pressing (ESC)

```
┌─────────────────┐
│ Confirm         │
│ Changes         │
└─────────────────┘
```
(OK) and/or (ESC)
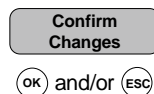
User-Defined Profiles

The five User-Defined profiles can be set up and edited using the *Edit User Profiles* option in the Rack Configuration Sub-Menu. (Refer to page 37)

Dimmer Response

Main Menu

Set Dimmer
Response ➤

Dimmer: All
Medium

Select
Dimmer

Dimmer: 01
Medium

Dim: 96
Medium

Dimmer: All
Medium

Set
Response

Dimmer: All
Fast

Dimmer: All
Slow
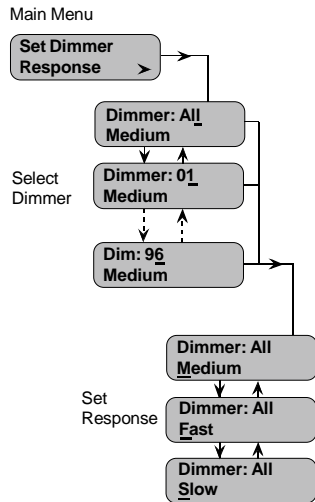
The Response Speed of a dimmer is the rate at which it responds to increases or decreases in the control level. The SLD96 dimmer rack provides 'Fast' (30ms). 'Medium' (100ms) and 'Slow' (300ms) response times, which you can assign to all dimmers, or to any single dimmer. 'Slow' is generally used for large lamp loads (e.g., 5kW fittings, such as QuartzColor Pollux), while 'Fast' is used for the small lamp loads that you might use in a chase effect.

Note: The 'Fast' setting, together with the accuracy of digital dimmers can cause very high inrush currents to flow. These may damage large lamp filaments and cause circuit breakers to trip. Only set dimmers to FAST if necessary for a particular effect.

To set the Dimmer Response, select *Dimmer Response* from the *Main* menu, then press ➤ to set the response. Select 'All' or use the Ⓥ or Ⓐ keys to select an individual dimmer to which the selected response should apply.

When you change the Dimmer Response for **All** dimmers, you are required to press Ⓞⓚ before the change is actioned.

Ⓞⓚ
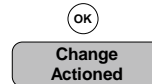
Change
Actioned

When you press Ⓔⓢⓒ to return to the *Main* menu, you will be required to confirm the change of response to **All** dimmers by pressing Ⓞⓚ or Ⓔⓢⓒ to cancel the change.

Confirm
Changes

Ⓞⓚ and/or Ⓔⓢⓒ
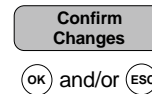
Dimmer Event Reporting
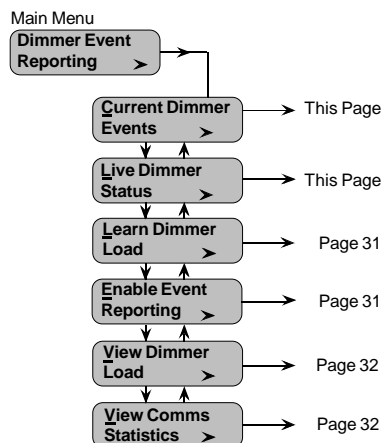
The Event Report menu lets you see the current events for each dimmer, the current dimmer status profile statistics, and communications statistics, lets the system "Learn" the load characteristics of installed dimmers and lets you turn event reporting ON or OFF for any or all dimmers.

The defined dimmer events, in priority order, are shown below. The persistence rating is the length of time an event must remain in order to be reported. This minimizes false event reports. The settings for the various thresholds are under the *EventRep Config* item in the *Calibration Menu*.

Event Mnemonic	Description	Persistence
OVERHEAT	Dimmer temperature >70° C	3 secs
NO_LOAD	Output current < load profile min. threshold and no load threshold	3 secs
OVERLOAD	Output current > dimmer maximum rating	10 secs
LOW_LOAD	Output current < load profile min. threshold	3 secs
HIGH_LOAD	Output current > load Profile max. threshold	3 secs

```
Strand Lighting
SLD96 Rack 01
```

With no dimmer events logged and no errors in the Error Log, the display will show the default display.

```
2 Dimmer
Events
```

The Current Event
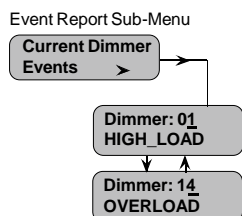
When dimmer events are logged, the display will change to show the number of dimmer events. In addition the Dimmer Event LED on the front of the rack processor module will be illuminated.

The number of events shown is automatically updated as new events occur. Dimmer events include insertion and removal of dimmer modules, dimmer overload, etc.

Pressing the ⊙ key when *Dimmer Event Reporting* is selected from the *Main Menu* will display the *Dimmer Event Reporting* menu. Pressing the ⊙ key again will display the *Current Dimmer Event* option. Pressing the ⊙ key again will show the current dimmer event. If more than one event has been logged, you can display each event in turn using the ⊙ or ⊙ keys.

Note: If more than one event has been logged for a particular dimmer, only the most important event is displayed.

Live Status
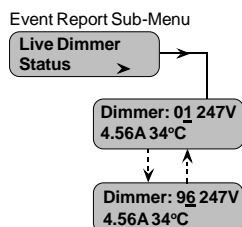
You can check the status of all dimmers in the rack using the *Live Status* menu option. The live status display shows the voltage, current and temperature of each dimmer in turn.

Pressing ⊙ when *Live Status* is shown in the *Event Report* sub-menu will display the voltage, current and temperature for dimmer number 01. Use the ⊙ or ⊙ keys to scan through the dimmer numbers in the rack.

Note: The settings for the various thresholds associated with the Event Report are set up in the Event Report Configuration options in the Calibration sub-menu. Refer to page 42.

Learning Dimmers

```
┌──────────────────┐
│ Learn Dimmer     │
│ Load        ➤    │
└──────────────────┘
        │
        ▼
┌──────────────────┐
│ Learn Dimmer     │
│ All: Sets        │
└──────────────────┘
        │
        ▼
┌──────────────────┐
│ Learn Dimmer     │
│ 01: - - - -      │
└──────────────────┘
        ┆
        ▼
┌──────────────────┐
│ Learn Dimmer     │
│ 96: - - - -      │
└──────────────────┘
```
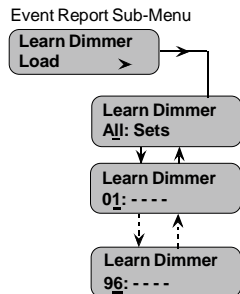
Some of the parameters reported by the processor module about dimmers (e.g., HIGH_LOAD) require a baseline measurement system. This is known as 'Learning' the dimmer load. You can learn any or all of the dimmer loads in a rack using the *Learn Dimmer Load* function in the Event Report Sub Menu.

Note: Learning the loads can be very beneficial in a fixed environment where the loads are not moved around very much (such as in a long-running show or a saturated rig in a TV studio), as it gives you the ability to detect a failure of 1 lamp in 10 in a parallel arrangement, but it requires considerable operational discipline to use the feature in a situation where loads are moved around, such as repertory theatre. Without learning the loads, all reporting features are available with the exception of load error detection and cable compensation. Please be aware that you are getting the majority of the benefit of this advanced system without the need to learn loads!

Pressing ➤ when *Learn Dimmer Load* is shown in the *Event Report Sub-Menu* will initially display '**Learn Dimmer, All Sets**'. To learn the parameters of all dimmers in the rack, press the (OK) key. You will be asked to confirm the command. Press (OK) to learn the dimmer loads.

When you learn loads by 'All Sets', the rack processor takes control of 1/4 of the dimmers in the rack at the same time, increasing their level to full and then fading to zero over about 2 minutes. When the first 1/4 complete their fade, it goes on to the next 1/4 and so on. The voltage and current recorded at 100% is used to calculate the wattage of the loads. This procedure will take about 10 minutes.

Alternatively, you can learn the loads on selected dimmers using the (∨) or (∧) keys to select the dimmer number, followed by the (OK) key to learn the loads.

When you press (ESC) to return to the *Main Menu*, the display will show 'Change Actioned'

```
┌──────────────────┐
│     Change       │
│    Actioned      │
└──────────────────┘
```

Note: You can 'Unlearn' a dimmer using the Clear Learned Loads function. Refer to Page 38.

Enabling/Disabling Dimmer Event Reporting

```
┌──────────────────┐
│ Enable Event     │
│ Reporting  ➤     │
└──────────────────┘
        │
        ▼
┌──────────────────┐      Select
│ Dimmer: All      │      Dimmer
│ Disabled         │
└──────────────────┘
        │
        ▼
┌──────────────────┐
│ Dimmer: 01       │
│ Disabled         │
└──────────────────┘
        ┆
        ▼
┌──────────────────┐
│ Dimmer: 96       │
│ Disabled         │
└──────────────────┘
        │
        ▼
┌──────────────────┐      Set
│ Dim: 01          │      Reporting
│ Disabled         │      Status
└──────────────────┘
        ▲
        │
┌──────────────────┐
│ Dim: 01          │
│ Enabled          │
└──────────────────┘
```
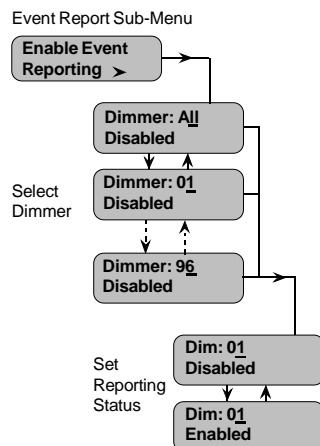
You can enable or disable event reporting on all dimmers or only on selected dimmers using the *Enable Reports* function in the *Event Report Sub Menu*. This function enables you to turn off reporting for dimmers you already know have a problem.

Pressing ➤ when *Enable Reports* is displayed will display the currently set condition. If **All** dimmer event reporting is **Enabled**, all dimmer events will be logged. If **All** dimmer event reporting is **Disabled**, no dimmer events will be logged. To change the reporting status for All dimmers, press the ➤ key again to move the cursor to the bottom line and press the (∨) or (∧) key to change the condition.

You can change the event reporting status of individual dimmers by using the (∨) or (∧) keys to select a dimmer number, pressing ➤ and using the (∨) or (∧) keys to set the reporting status for the selected dimmer.

When you change the condition of **All**, or individual dimmer reporting, you must press (OK) to action the change.

```
         (OK)
┌──────────────────┐
│     Change       │
│    Actioned      │
└──────────────────┘
```

In addition, when you press (ESC) to return to the *Event Report* sub-menu, you are required to confirm changes made to the *Enable Reports* menu item by pressing (OK) to confirm or (ESC) to cancel the changes made.
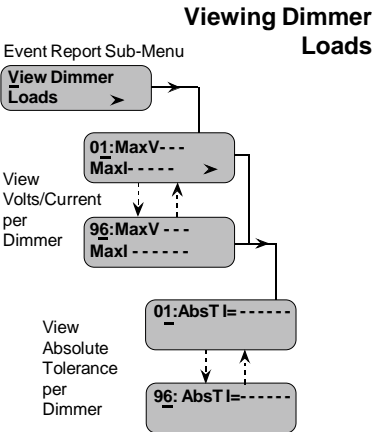
Confirm Changes

(OK) and/or (ESC)

Viewing Dimmer Loads

Event Report Sub-Menu

View Dimmer Loads ➤

**01:MaxV - - -
MaxI - - - - -** ➤

View Volts/Current per Dimmer

**96:MaxV - - -
MaxI - - - - -**

View Absolute Tolerance per Dimmer

01:AbsT I= - - - - - -

96: AbsT I= - - - - - -

You can view but not edit the current load statistics, determined when you use *Learn Dimmer*, by using the *View Dimmer Loads* menu item in the *Event Report* menu. The first entry shows MV (maximum voltage) and MI (maximum current). Pressing (➤) from this display will show the AbsT (absolute tolerance of the current used for calculation load deviations).

AbsT is a percentage of MI (default is 5%), so this tells you the minimum current deviation that the dimmer will detect. For example, if MI is 10A and the AbsT percentage is 5%, then the minimum current deviation the dimmer will detect is 500mA.

To view the load statistics, press (➤) when *View Dimmer Profiles* is displayed in the *Event Report Sub-Menu*. Initially the Maximum Voltage and Maximum Current for Dimmer 01 is displayed. Pressing (➤) will display the absolute tolerance for dimmer 1. You can return to the voltage and current display by pressing (ESC)

You can view the load statistics for all other dimmers in the rack by using the (▼) or (▲) keys to select the dimmer numbers.

Since this is a view only option, you are not required to confirm anything when you press (ESC) to leave the menu option.

Communication Statistics

Event Report Sub-Menu

View Comms Statistics ➤

**Event-1
0690   6764**

**Backup
024C   0000**

**Reporter
227B   2218**
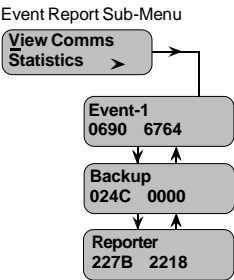
This menu option is used mainly by Strand service engineers to analyse communication traffic between the dimmers and the event log, between the master processor and the backup processor and between the currently active processor and the Reporter software.

To display the communication statistics, press (➤) when *View Comms Statistics* is shown in the *Event Report Sub-Menu*. Use the (▼) or (▲) keys to swap between Event, Reporter and Backup statistics. All displays comprise two hexadecimal numbers (send and receive).

Since this is a view only option, you are not required to confirm anything when you press (ESC) to leave the menu option.
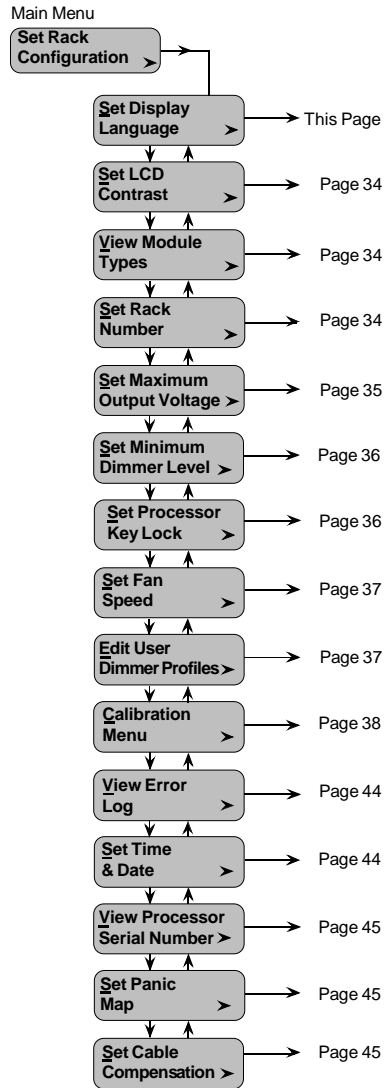
The Rack Configuration Sub-Menu provides access to system functions for initial setup.

Main Menu

Set Rack Configuration ➤

Set Display Language ➤ → This Page

Set LCD Contrast ➤ → Page 34

View Module Types ➤ → Page 34

Set Rack Number ➤ → Page 34

Set Maximum Output Voltage ➤ → Page 35

Set Minimum Dimmer Level ➤ → Page 36

Set Processor Key Lock ➤ → Page 36

Set Fan Speed ➤ → Page 37

Edit User Dimmer Profiles ➤ → Page 37

Calibration Menu ➤ → Page 38

View Error Log ➤ → Page 44

Set Time & Date ➤ → Page 44

View Processor Serial Number ➤ → Page 45

Set Panic Map ➤ → Page 45

Set Cable Compensation ➤ → Page 45

Setting the Display Language

Rack Configuration Sub-Menu

Set Display Language ➤

Language English

Language Espanol

Sprache Deutsch

Language Francais
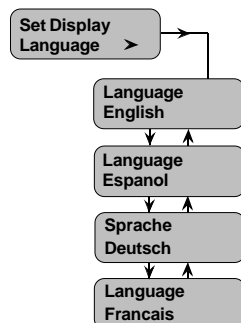
By default, all LCD text is displayed in English. However, you can change the display language to Spanish, German or French using the *Set Language* option of the Rack Configuration Sub-Menu.

To set the display language, select *Set Language* from the *Rack Configuration* sub-menu and press (➤) Use the (ᵧ) or (ᴀ) keys to select the required language

The change of display language takes effect immediately. There is no need to press (ok) to confirm the command.

Setting the LCD Contrast

Rack Configuration Sub-Menu

```
LCD
Contrast   ➤
        │
        ▼
Contrast
=0%
        ⇅
Contrast
=Full
```
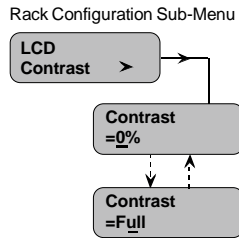
You can set the LCD contrast to suit the lighting conditions at the dimmer rack. By default, the contrast is set to 50%. The visible range will vary according to the environmental conditions.

To set the LCD contrast, select *LCD Contrast* from the *Calibration* sub-menu and press ⊙. Use the Ⓥ or Ⓐ keys to set the required contrast level.

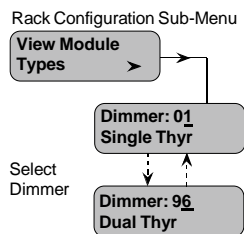## Viewing Module Type

Rack Configuration Sub-Menu

```
View Module
Types      ➤
        │
        ▼
Dimmer: 01
Single Thyr
        │
Select  ▼
Dimmer
Dimmer: 96
Dual Thyr
```

The type of module installed in each slot in the SLD96 rack is automatically detected when the dimmer is installed. This menu is view only.

If there is no module in a slot the dimmer number will be reported as 'Not Present'.

Note: *Slots are numbered left to right and top to bottom. Each of the 48 slots in the rack is numbered as if the slot contained a dual module, i.e., all racks are numbered 1 to 96. When a single module is located in a slot, the Dimmer is allocated two adjacent module numbers. The same module type will be reported for each module number.*

Slot types are displayed as follows:

Dual Thr (Thyristor)	Dual Contact (Contactor)
Single 50A Thr (Thyristor)	Dual Perm (Permanent PS)
Single 100A Thr (Thyristor)	

Note: *Dual modules may be 15A, 20A or 25A*

To view the slot type select *Slot Type* from the *Rack Configuration Sub-Menu* and press ⊙. The slot type for dimmer 1 is displayed initially.

Use the Ⓥ or Ⓐ keys to display the dimmer type for another dimmer from 2 to 96.

Press ⒺⓈⒸ to return to the *Rack Configuration Menu*.

Setting the Rack Number

Rack Configuration Sub-Menu

```
Set Rack
Number   ➤
        │
        ▼
RackNumber
01
        ⇅
Rack Number
999
```
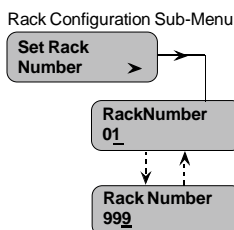
For multiple rack installations using the Reporter software, GeniusPro/Lightpalette Reporter software application or a SWC hand-held controller, you must set a unique rack number for each dimmer rack so that you can identify racks from the controller.

To set a rack number, select *Set Rack Number* from the *Rack Configuration Sub-Menu* and press ⊙ to display the rack number. The default rack number is 01, however, you can set any number between 01 and 999 using the Ⓥ or Ⓐ keys and the ⊙ and ⊙ keys to move the cursor left or right.

Setting the Maximum Output Voltage

Rack Configuration Sub-Menu

```
┌─────────────────┐
│ Set Maximum     │───┐
│ Output Voltage➤ │   │
└─────────────────┘   │
                      ▼
        ┌─────────────────┐
        │ Maximum Voltage │
        │ Dim:All=230V    │
        └─────────────────┘
Select          ↕
Dimmer  ┌─────────────────┐
        │ Maximum Voltage │
        │ Dim: 01= 230V   │───┐
        └─────────────────┘   │
                ↕             │
        ┌─────────────────┐   │
        │ Maximum Voltage │   │
        │ Dim: 96 = 230V  │───┤
        └─────────────────┘   │
                              ▼
             ┌─────────────────┐
             │ Maximum Voltage │
             │ Dim: Al l= 20V  │
             └─────────────────┘
Set Max Volts        ↕
             ┌─────────────────┐
             │ Maximum Voltage │
             │ Dim: Al l= 250V │
             └─────────────────┘
```
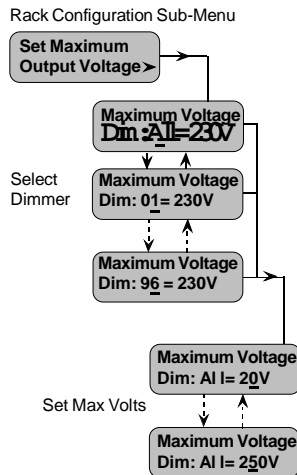
You can set a maximum output voltage for any or all of the dimmers in the rack. For instance, you can set the maximum voltage lower than the rated voltage of your lamps for improved lamp life. If you have lamps or other equipment which operate at a lower line voltage, you can set the output from the dimmer to an appropriate voltage for the devices.

The maximum output voltage is applied to all dimmers and dimmers assigned as non-dims. It is not applied to contactor non-dims. You cannot use contactor non-dims for devices which need a maximum output voltage setting.

Note: This function sets the dimmer output voltage, not the maximum control level applied to the dimmer.
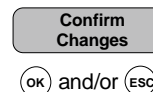
Caution: Be careful when using a maximum output voltage with dimmers set for PANIC. When panic is activated, full output voltage appears at the output of any dimmer or non-dim set for PANIC, regardless of how the maximum output voltage is set.

To set the maximum output voltage, select *Set Maximum Voltage* from the *Rack Configuration Sub-Menu* and press ⟩ . To set the maximum voltage for all dimmers, press ⟩ again and use the ⓥ or ⒶА keys to set a voltage between 20 and 250 volts. (The default maximum voltage is 230V or 120V). To set a maximum voltage for a particular dimmer, ensure that the cursor is under the All field and use the ⓥ or ⒶA keys to select the required dimmer number. When you have selected the dimmer, press ⟩ and use the ⓥ or ⒶA keys to set the maximum voltage.

When you set the maximum voltage for **All** dimmers, you must press (ок) to action the change.
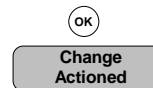
```
              (OK)
        ┌──────────────┐
        │   Change     │
        │   Actioned   │
        └──────────────┘
```

When you press (ESC) to return to the Configuration Sub-Menu, you will be required to confirm the change of maximum voltage for all dimmers by pressing (ок) or press (ESC) to cancel the change.

```
        ┌──────────────┐
        │   Confirm    │
        │   Changes    │
        └──────────────┘
       (OK) and/or (ESC)
```

Setting the Minimum Level

Rack Configuration Sub-Menu

```
Set Minimum
Dimmer Level ➤
    │
    ▼
Minimum Level
Dim: All = Off
    ↕
Minimum Level
Dim: 01 = Off
    ⋮
Minimum Level
Dim: 96 = Off
```

Select Dimmer

```
Minimum Level
Dim: 01=Off_
    ↕
Minimum Level
Dim: 01=01%
    ↕
Minimum Level
Dim: 01=99%
    ↕
Minimum Level
Dim: 01=Full
```

Set Min Level
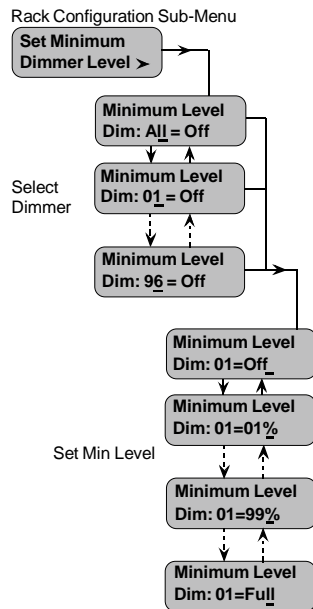
You can set a minimum level for any or all dimmers. This can be used for security/safety lighting in locations where a minimum light level is required under all circumstances. This function can also be used as a preheat for large lamps. Minimum levels are displayed in control percentage.

Note: This function sets the minimum control level applied to the dimmer, not the minimum dimmer output voltage.

To set the minimum level, select *Set Minimum Dimmer Level* from the Rack Configuration Sub-Menu and press ➤. To set the minimum level for All dimmers, press ➤ again and use the (Y) or (A) keys to set the level to between 01% and 99% or to Off or Full.

To set the minimum level for individual dimmers, ensure that the cursor is under **All** and use the (Y) or (A) keys to select a dimmer number. Press ➤ and use the (Y) or (A) to set the minimum level between 1% and 99% or to Off or Full.
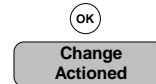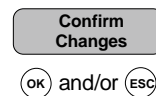
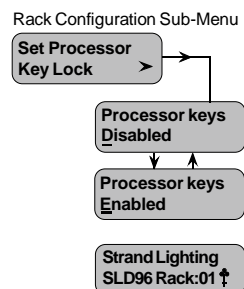If you have set **All** dimmers to a minimum level, you must press (OK) to action the change.

```
(OK)
Change
Actioned
```

When you press (ESC) to return to the Configuration Sub-Menu, you will be required to confirm the change of minimum level for all dimmers by pressing (OK) or press (ESC) to cancel the change.

```
Confirm
Changes
(OK) and/or (ESC)
```

Setting the Processor Key Lock

Rack Configuration Sub-Menu

```
Set Processor
Key Lock        ➤
    │
    ▼
Processor keys
Disabled
    ↕
Processor keys
Enabled

Strand Lighting
SLD96 Rack:01 ↕
```

A safety system is incorporated in the SLD96 Processor Module to lock the processor keys, thereby preventing tampering by unauthorised personnel. When the keys are locked, a key symbol is displayed on the right-hand side of the LCD on the default display only. Under this condition, the keys are inoperable unless you press (OK) and (ESC) simultaneously, and hold them for about two seconds to release the key lock.

When enabled, the key lock will automatically lock the keys if no keys are pressed for a period of ten minutes. When disabled, the keys are always unlocked. The default setting is **Key Lock Disabled**.

To set the Key Lock status, select *Set Processor Key Lock* from the *Rack Configuration* Sub-Menu and press ➤. Use the (Y) or (A) keys to set the key lock to Enabled or Disabled.

When set to enabled, keys are not locked and the key lock symbol is not displayed on the default display until ten minutes after the last key is pressed.

Fan Speed Control

Rack Configuration Sub-Menu

```
Set Fan
Speed        ➤
```
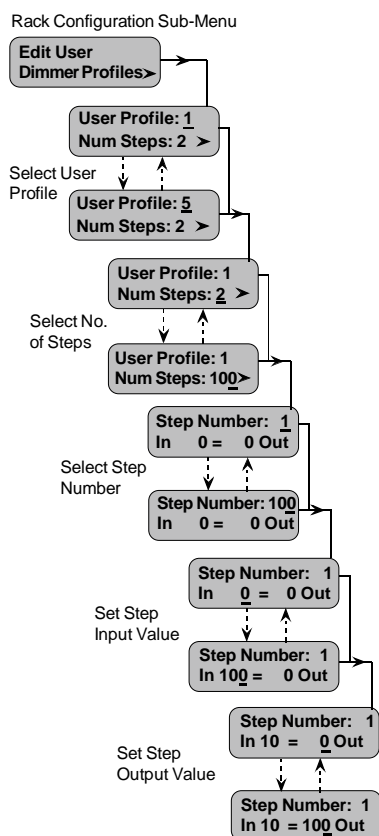
```
Fan Speed
Variable
```

```
Fan Speed
Fixed
```
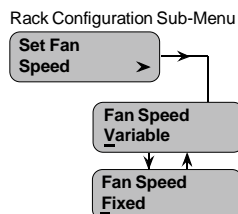
You can set the speed of the cooling fans to vary automatically according to the measured rack temperature, or to run at full speed continuously. Under normal operating conditions, the fans should be set to variable speed as this will normally reduce noise and current consumption.

To set the fan speed, select *Fan Speed Control* from the *Rack Configuration* Sub-Menu and press ➤. Use the (Y) or (A) key to set the fan speed control to Fixed or Variable.

Note: Activation of a Panic button, or Automatic Panic, (link LK8 on Central Termination Card set to automatic panic and the Processor Module(s) removed), or detection of a module overtemperature condition, will automatically set the cooling fans to full speed continuously.

Editing User Profiles

Rack Configuration Sub-Menu

```
Edit User
Dimmer Profiles ➤
```

Select User Profile

```
User Profile: 1
Num Steps: 2  ➤
```
```
User Profile: 5
Num Steps: 2  ➤
```

Select No. of Steps

```
User Profile: 1
Num Steps: 2  ➤
```
```
User Profile: 1
Num Steps: 100 ➤
```

Select Step Number

```
Step Number:  1
In   0 =   0 Out
```
```
Step Number: 100
In   0 =   0 Out
```

Set Step Input Value

```
Step Number:  1
In   0 =   0 Out
```
```
Step Number:  1
In 100 =   0 Out
```

Set Step Output Value

```
Step Number:  1
In 10 =   0 Out
```
```
Step Number: 1
In 10 = 100 Out
```

This function allows you to set up or edit the five user-defined dimmer profiles which may be applied in the Set *Dimmer Profiles* function of the *Main Menu*. (Refer to page 26). You can set input and output values for up to 100 steps for each user profile.

These curves initially contain 2 steps, at 0% and at 100%. To change a user profile from its default, specify the profile number, then the number of steps, then edit the value for each of the steps.

When you first specify the number of steps the software creates the steps spaced evenly between 0% and 100%. Both 0% and 100% are counted as steps. To create a profile divided equally into 4 parts you need to specify 5 steps. As you enter new values, the software linearly interpolates between each pair of adjoining steps. To get a smooth profile, you will need to enter a considerable number of steps.

To set up, or edit user profiles, select *Edit User Dimmer Profiles* from the *Rack Configuration* sub-menu and press ➤. Use the (Y) or (A) keys to select the User Profile to be set/edited, then press ➤. Set the number of steps in the profile using the (Y) or (A) keys, then press ➤ to select the step number to be entered/edited. Press ➤ and use the (Y) or (A) keys to set the input percentage for the selected step. Press ➤ and use the (Y) or (A) keys to set the output percentage value for the selected step. Repeat for each step of the user profile.

When you have set all the step values for a user profile, you must press (OK) to action the change.
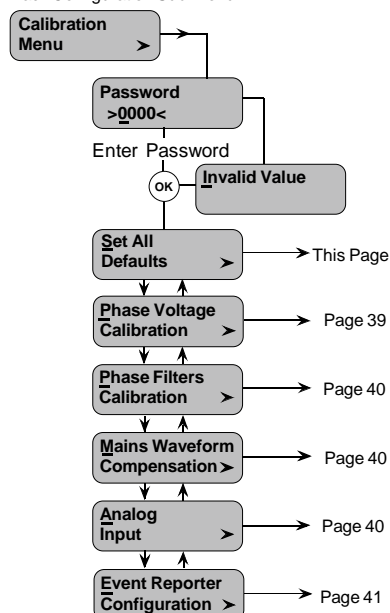
(OK)

```
Change
Actioned
```
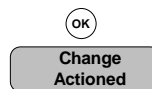
In addition, when you press (ESC) to return to the *Rack Configuration* sub-menu, you are required to confirm changes made to the *Edit User Profiless* function by pressing (OK) to confirm or (ESC) to cancel the changes made.

```
Confirm
Changes
```

(OK) and/or (ESC)
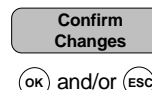
The Calibration Menu

Rack Configuration Sub-Menu

```
Calibration
Menu          ➤ ┐
                │
                │
Password        │
>0000<  ┐       │
        │       │
Enter Password  │
        │       │
 ┌──┐  Invalid Value
 │OK│ ─┤
 └──┘  └──────────────┘
        │
Set All
Defaults      ➤ ──➤ This Page
   │↕
Phase Voltage
Calibration   ➤ ──➤ Page 39
   │↕
Phase Filters
Calibration   ➤ ──➤ Page 40
   │↕
Mains Waveform
Compensation  ➤ ──➤ Page 40
   │↕
Analog
Input         ➤ ──➤ Page 40
   │↕
Event Reporter
Configuration ➤ ──➤ Page 41
```

The functions contained within the *Calibration Menu* are protected by a four-digit password. The *Calibration Menu* will not be displayed unless the password is entered.
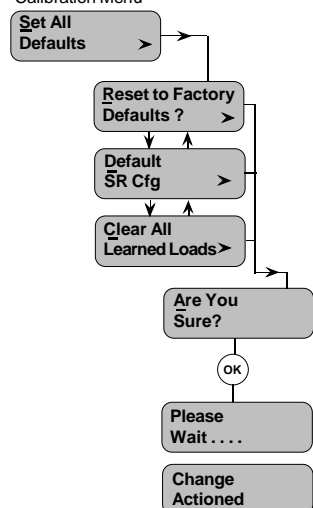
To enter the *Calibration* menu, select *Calibration Menu* from the *Rack Configuration* sub-menu and press (➤). Use the (Y) or (A) keys to enter each digit of the password, pressing the (➤) key to move to the next digit. When you have keyed in the four digits of the password, press (OK) to enter the password. If an incorrect password is entered, you will be unable to enter the *Calibration Menu*. Re-enter the password.

The SLD96 Dimmer Rack password is **2606**

The Calibration Menu is normally used only by a service representative of Strand Lighting. You should not make any changes to the options available in this menu unless advised to do so by Strand Lighting.

Setting All Defaults

Calibration Menu

```
Set All
Defaults      ➤ ┐
                │
Reset to Factory
Defaults ?    ➤ │
   │↕           │
Default         │
SR Cfg        ➤ │
   │↕           │
Clear All       │
Learned Loads ➤ ┘
      │
Are You
Sure?
      │
    ┌──┐
    │OK│
    └──┘
      │
Please
Wait . . . .
      │
Change
Actioned
```

This option enables you to reset the system to the factory default settings, clear all the learned load profiles, or set only the event report configuration limits to their factory defaults.

To set the defaults, select *Set All Defaults* from the *Calibration Menu* and press (➤). Use the (Y) or (A) keys to select the option required and press (OK). You will be asked to confirm the command by pressing (OK) again.

The **Default SR Cfg** option lets you set only the defaults for the Event Report Configuration. The default tolerances for the EventReport Configuration are shown below.

The '**Clear Learned Loads**' option can be used if you decide that learning loads is too time consuming due to frequently changing loads. Clearing the learned loads will return the system to a simple load/no load sensing system.

The factory default settings are as follows:

Event Log Tolerances

|	
Load % Tolerance	10% of rated load
Load Absolute Tolerance	5% of measured load.
No Load Threshold	188mA.
Overload Threshold	110%.
Fade Rate Limit	1000mv/sec

Dimmer Defaults
  Dimmer Level   All = Input. Dimmers take level from control inputs.
  Profile   All dimmers = square
  Response   All dimmers = medium
  Max Voltage   230V/110V
  Min Level   Off
  Fluorescent Topset   120V for 120VAC racks, 195V for 230V racks
  Fluorescent Cutoff   40V for 120VAC racks, 80V for 240V racks
  Non-Dim Threshold   5%
  Dimmer DMX Mode   A htp B

Rack Defaults
  Rack Number   1
  Rack Language   English
  Fan Speed   Variable
  Processor Enabled   Yes
  DMX Fail Preset   Off. On DMX fail, dimmers fade OFF after 10 secs.
  DMX Fail Hold Time   10 secs.
  Keypad Lock Enable   Disabled
  DMX Protocol   DMX512 (DMX A and DMX B)
  DMX Patch   1...n sequential (DMX A and DMX B)
  User Profiles   1:1 exact linear
  Waveform Compensation   On
  Analogue Patch   All inputs disabled and unpatched
  Circuit ID Patch   1, 2, 3...n for both DMX A and DMX B
  SWC Fade Time   5 secs.
  SWC Preset Level   0
  SWC Preset Number   0 (blackout)
  SWC Manual Levels   0
  Outlook Fade Time   5 secs., except ON Preset, which is 0 secs.
                          Manual fade time default is also 0 secs.
  Outlook Preset Levels   P1=All Dimmers 100%, P2=85%, P3=70%, P4=60%
  Outlook Power Up   Preset 0. On power-up, no Outlook Preset activated.
  Outlook Patch   All dimmers Room 16, Channel15
  Outlook Room Links   All rooms unlinked
 Panic Map   All dimmers set to Panic=Off

Phase Voltage Calibration
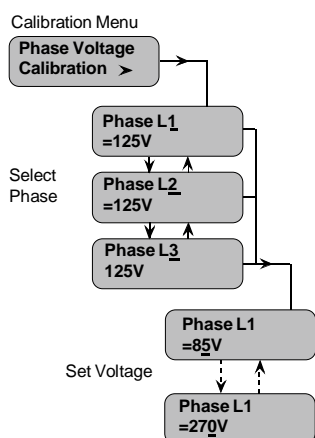
This function allows you to set the voltage of each phase of the supply against the measured voltage

Calibration Menu

Phase Voltage
Calibration ➤

Select
Phase

Phase L1
=125V

Phase L2
=125V

Phase L3
125V

Set Voltage

Phase L1
=85V

Phase L1
=270V

To view the voltage on each phase, select *Phase Voltage Calibration* from the *Calibration* menu and press (➤). Use the (∨) or (∧) keys to check the voltage on each phase. To set the phase voltage to the measured voltage, select each phase and press (➤) . Use the (∨) or (∧) keys to set the voltage for the selected phase.

When you have set the phase voltage for each phase, press (ok) to action the change.

(ok)

Please
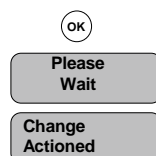Wait . . . .

Change
Actioned
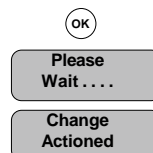
Important Note: *Do not adjust the Phase Voltage unless specifically advised to do so by a representative of Strand Lighting*

Phase Filters Calibration

Calibration Menu

Phase Filters
Calibration ➤

Press OK
to Action
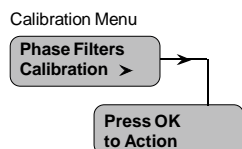
This function ensures that the processor module zero crossover time is synchronized with the mains. You must **not** activate this while a DMX signal is connected. To calibrate the phase filters, select *Phase Filters Calibration* from the *Calibration* menu and press ⟨➤⟩. Press ⟨OK⟩ to calibrate the input phase filters .

⟨OK⟩

Please
Wait

Change
Actioned

Important Note: Do not calibrate the Phase Filters unless specifically advised to do so by a representative of Strand Lighting

This function is designed to compensate for deformations in the shape of the supply waveform. The default setting is On.

Waveform Compensation

Calibration Menu

Mains Waveform
Compensation ➤

Mains Waveform
Compenstaion: On

Mains Waveform
Compensation: Off
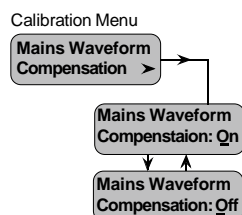
To change the status of the Waveform Compensation, select *Mains Waveform Compensation* from the *Calibration Menu* and press ⟨➤⟩, then use the ⟨Y⟩ or ⟨A⟩ keys to set the status either On or Off.

When you press ⟨ESC⟩ to return to the *Calibration Menu*, you will be required to confirm the change by pressing ⟨OK⟩ or press ⟨ESC⟩ to return the previous condition.

Confirm
Changes

⟨OK⟩ and/or ⟨ESC⟩
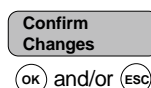
Important Note: Do not change the Waveform Compensation status unless specifically advised to do so by a representative of Strand Lighting

Analog Input

Calibration Menu

Analog
Input   ➤

Calc   99%
RawM 95%

⟨OK⟩

Calc 100%
RawM 95%
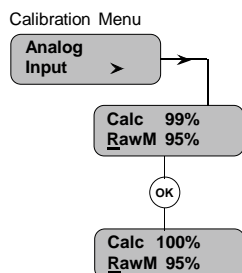
This function allows you to set the Analog Input scaling factor such that a 100% output from the analog controls will be correctly read as 100% by the rack processor module. This factor is normally set on site during commissioning.
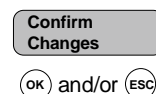
Two values are displayed as shown:

- '**RawA**' is the unscaled average of Analog Input channels 1 and 2.
- '**Calc**' is the RawM value scaled by the current Analog Input scaling factor.

To recalculate the analog input scaling, set analog inputs 1 and 2 to FULL and proceed as follows:

To set the analog input scaling, select *Analog Input* from the *Calibration* menu and press ⟨➤⟩. The display will show the current **RawA** and **Calc** values. To recalibrate, press ⟨OK⟩. The analog input scaling factor will be recalculated and the **Calc** value displayed as 100%

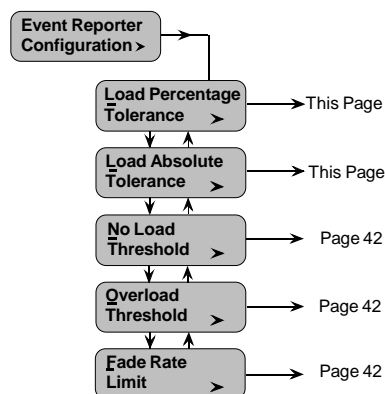⟨OK⟩

Change
Actioned
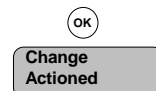
When you press ⟨ESC⟩ to return to the *Calibration Menu*, you will be required to confirm the new scaling factor by pressing ⟨OK⟩ or press ⟨ESC⟩ to return the previous scaling factor

Confirm
Changes

⟨OK⟩ and/or ⟨ESC⟩

Event Report Configuration

Calibration Menu

Event Reporter Configuration ➤

Load Percentage Tolerance ➤ → This Page

Load Absolute Tolerance ➤ → This Page

No Load Threshold ➤ → Page 42

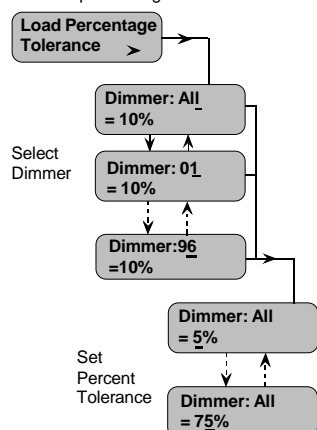Overload Threshold ➤ → Page 42

Fade Rate Limit ➤ → Page 42

The *Event Report Configuration* Menu allows you to set the tolerances for the various parameters that are monitored by the dimmers. Any parameter which is measured as being outside the tolerance limits set in this function will result in a dimmer event being reported in the event log.

Please contact Strand Lighting if you think that any of these parameters need to be changed.

The *Event Report Configuration* menu is a sub-menu within the *Calibration* menu and is accessed by selecting *Event Report Configuration* from the *Calibration* menu.

Load Percentage Tolerance

Event Report Configuration Sub-Menu

Load Percentage Tolerance ➤

Select Dimmer

Dimmer: All = 10%

Dimmer: 01 = 10%

Dimmer:96 =10%

Dimmer: All = 5%

Set Percent Tolerance

Dimmer: All = 75%

This function allows you to set a load tolerance of between 5 and 75% of rated load for all dimmers, or selected dimmers within the rack. To set the load tolerance , select *Load % Tolerance* from the *Event Report Configuration* sub-menu. To set the Load % Tolerance for All dimmers, press (➤) twice and use the (Λ) or (V) keys to set the tolerance to between 5 and 75%. To set the tolerance for an individual dimmer, use the (V) or (Λ) keys to select the dimmer number and then press (➤) and use the (V) or (Λ) keys to set the tolerance for the selected dimmer.

Press (OK) to action the change.

(OK)
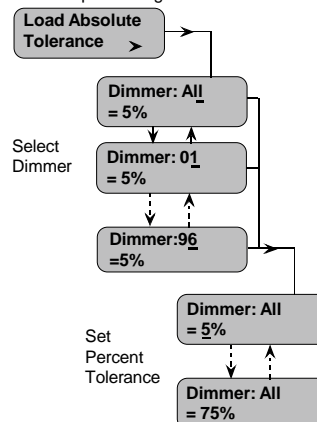Change Actioned
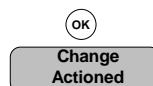
Note: *The default Load % Tolerance is 10% of rated load*

Load Absolute Tolerance

Event Report Configuration Sub-Menu

Load Absolute Tolerance ➤

Select Dimmer

Dimmer: All = 5%

Dimmer: 01 = 5%

Dimmer:96 =5%

Dimmer: All = 5%

Set Percent Tolerance

Dimmer: All = 75%

This function allows you to set a load tolerance of between 5 and 75% of the measured load for all dimmers, or selected dimmers within the rack. To set the load tolerance select *Load Absolute Tolerance* from the *Event Report Configuration Sub-Menu.* To set the Load Absolute Tolerance for All dimmers, press (➤) twice and use the (V) or (Λ) keys to set the required tolerance. To set the tolerance level for an individual dimmer, press (➤) and use the (V) or (Λ) keys to select the dimmer number and then press (➤) and use the (V) or (Λ) keys to set the required tolerance for the selected dimmer.

Press (OK) to action the change.

(OK)
Change Actioned
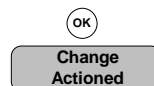
Note: *The default Load Absolute Tolerance is 5% of measured load.*

No Load Threshold

```
No Load
Threshold  ➤

Dimmer: All
= 188mA

Dimmer: 01
= 188mA

Dimmer: 96
=188mA

Dimmer: All
= 94mA

Dimmer: All
= 50000mA
```
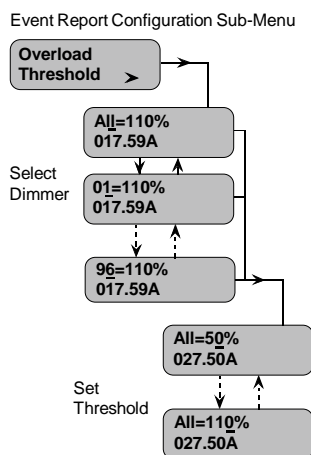
Select
Dimmer

Set
Threshold
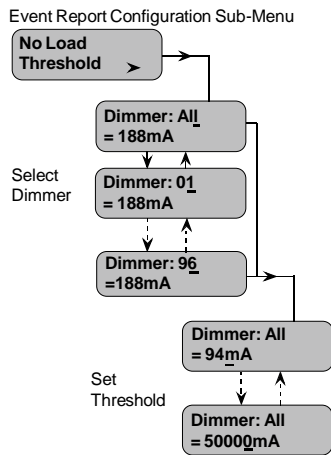
This function allows you to set up a threshold current value for all dimmers, or selected dimmers, below which a 'No Load' event report will be logged. To set the load threshold for **All** dimmers, select *No Load Threshold* from the *Event Report Configuration* sub-menu and press ⊳ twice. Use the (▼) or (▲) keys to set the current threshold for all dimmers between 188 and 50000mA. To set a No Load Threshold for an individual dimmer, use the (▼) or (▲) keys to select the dimmer number and then press ⊳ and set the threshold for the selected dimmer using the (▼) or (▲) keys.

Press (ok) to action the change.

```
      (OK)
   Change
  Actioned
```
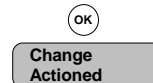
***Note:** The default No Load Threshold is 188mA.*

Overload Threshold

```
Overload
Threshold  ➤

All=110%
017.59A

01=110%
017.59A

96=110%
017.59A

All=50%
027.50A

All=110%
027.50A
```
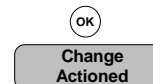
Select
Dimmer

Set
Threshold

This function allows you to set up a threshold percentage value for all dimmers, or selected dimmers above which an 'Overload' event report will be logged. To set the overload threshold for all dimmers, select *Overload Threshold* from the *Event Report Configuration* sub-menu and press ⊳ twice . Use the (▼) or (▲) keys to set the Overload Threshold for all dimmers between 50 and 110%. To set an Overload Threshold for an individual dimmer, use the (▼) or (▲) keys to select the dimmer number and then press ⊳ and set the threshold % for the selected dimmer using the (▼) or (▲) keys.

The percentage value set is shown as a current value, being the set percentage of the measured current at full load.

Press (ok) to action the change.

```
      (OK)
   Change
  Actioned
```

***Note:** The default Overload Threshold is 110%.*

Fade Rate Limit

```
Fade Rate
Limit  ➤

Dimmer: All
=1000mV

Dimmer: 01
=1000mV

Dimmer: 96
=1000mV

Dimmer: All
=0100mV

Dimmer: All
=9900mV
```

Select
Dimmer

Set Fade
Rate Limit
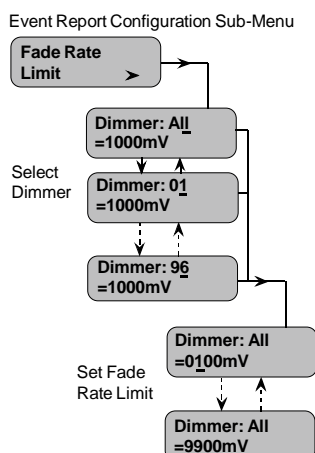
This function lets you set up a fade rate limit for all dimmers, or individual dimmers based on the demanded output voltage level. The fade rate limit can be set between 100mV and 9900 mV per second, representing the maximum rate of change of output voltage per second.

To set the limit, select *Fade Rate Limit* from the *Event Report Configuration* sub-menu and press ⊳ . To set the Fade Rate Limit for all dimmers, press ⊳ again and use the (▼) and (▲) keys to set the limit to a value between 100mV and 9900mV. To set the Fade Rate Limit for an individual dimmer, use the (▼) or (▲) keys to select a dimmer number and then press ⊳ and use the (▼) or (▲) keys to set a limit.

Press (ok) to action the change.
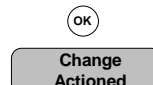
```
      (OK)
   Change
  Actioned
```

Viewing the Error Log
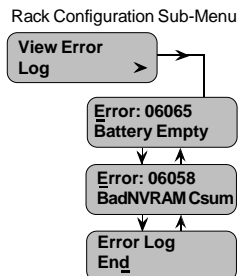
Rack Configuration Sub-Menu

```
┌─────────────────┐
│ View Error      │
│ Log        ➤    │
└─────────────────┘
        │
┌─────────────────┐
│ Error: 06065    │
│ Battery Empty   │
└─────────────────┘
        ↕
┌─────────────────┐
│ Error: 06058    │
│ BadNVRAM Csum   │
└─────────────────┘
        │
┌─────────────────┐
│ Error Log       │
│ End             │
└─────────────────┘
```

The software within the dimmer rack continuously monitors the system for faults and will immediately display an error code on the LCD in the event of a fault condition occurring. Each error has a unique error number and is logged internally and in non-volatile memory. (Refer to *Error Log* in the Basic Trouble-shooting Section, page 45)

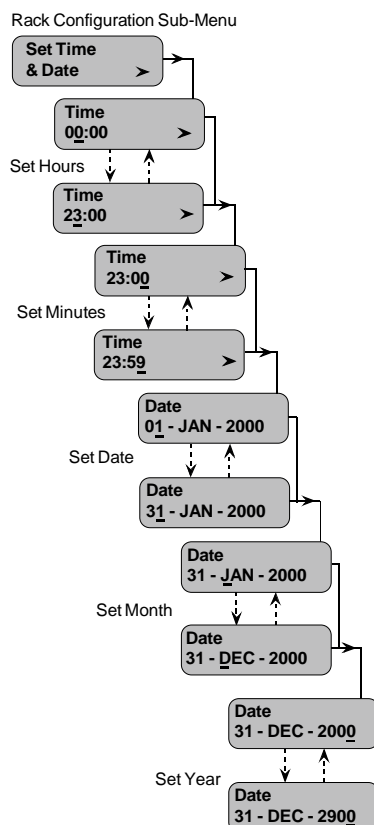If an error occurs when you are in any of the menus, the error will be displayed automatically when you press (ESC) to exit the menu. When an error is displayed, you should always press (∀) to display any other current faults until **Error Log End** is displayed. When you press (ESC) to escape from the error log, the display will ask if you wish to clear the error log. Press (OK) to clear the error log, or (ESC) if you want to leave the error(s) in the log.

(ESC)

```
┌─────────────────┐
│ Clear Error     │
│ Log?            │
└─────────────────┘
```

(OK) or (ESC)
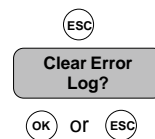
You can view the error log at any time by selecting *View Error Log* from the *Rack Configuration* sub-menu and pressing (➤) .

Setting the Time and Date

Rack Configuration Sub-Menu

```
┌─────────────────┐
│ Set Time        │
│ & Date     ➤    │
└─────────────────┘
        │
┌─────────────────┐
│ Time            │
│ 00:00      ➤    │
└─────────────────┘
   Set Hours  ↕
┌─────────────────┐
│ Time            │
│ 23:00      ➤    │
└─────────────────┘
        │
┌─────────────────┐
│ Time            │
│ 23:00      ➤    │
└─────────────────┘
  Set Minutes ↕
┌─────────────────┐
│ Time            │
│ 23:59      ➤    │
└─────────────────┘
        │
┌─────────────────┐
│ Date            │
│ 01 - JAN - 2000 │
└─────────────────┘
   Set Date  ↕
┌─────────────────┐
│ Date            │
│ 31 - JAN - 2000 │
└─────────────────┘
        │
┌─────────────────┐
│ Date            │
│ 31 - JAN - 2000 │
└─────────────────┘
  Set Month  ↕
┌─────────────────┐
│ Date            │
│ 31 - DEC - 2000 │
└─────────────────┘
        │
┌─────────────────┐
│ Date            │
│ 31 - DEC - 2000 │
└─────────────────┘
  Set Year  ↕
┌─────────────────┐
│ Date            │
│ 31 - DEC - 2900 │
└─────────────────┘
```

This function lets you set the system time and date, ensuring that all system reporting is time-stamped correctly. System time is set in 24 hour mode.

To set the time and date, select *Set Time & Date* from the *Rack Configuration* sub-menu and press (➤).

Note: *You must press* (OK) *after each change, e.g., press* (OK) *after changing the time and after changing the date, otherwise the change will not be recorded.*

(OK)

```
┌─────────────────┐
│ Change          │
│ Actioned        │
└─────────────────┘
```
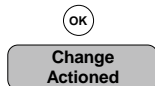
Use the (∧) or (∀) keys to change the hour display, or press (➤) to position the cursor under the minutes display and set the minutes using the (∧) or (∀) keys.

To set the date, press the (➤) key. The currently set date will be displayed. To adjust the date of the month, use the (∧) or (∀) keys. To adjust the month, press (➤) and use the (∧) or (∀) keys.

To set the year, press (➤) and use the (∧) or (∀) keys.

Note: *The system date will automatically change to the 29th February after midnight on the 28th of February each leap year.*

Viewing the Serial Number

Rack Configuration Sub-Menu
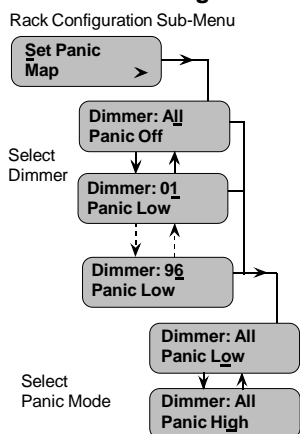
View Processor Serial Number ➤

Processor Serial Number 12300000
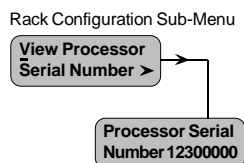
You can check the serial number of your rack processor module by selecting *View Serial* from the *Rack Configuration* sub-menu and pressing (➤)

This is a view only function and cannot be changed. Press (ESC) to return to the *Rack Configuration* sub-menu.

Setting the Panic Map

Rack Configuration Sub-Menu

Set Panic Map ➤

Dimmer: All Panic Off

Select Dimmer

Dimmer: 01 Panic Low

Dimmer: 96 Panic Low

Dimmer: All Panic Low

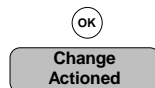Select Panic Mode

Dimmer: All Panic High

This function lets you set dimmers which will be set to full On or Off when Panic is activated. Panic takes precedence over all other control inputs, and will set the dimmer output to Off or full On irrespective of the Maximum Voltage setting for the dimmer.
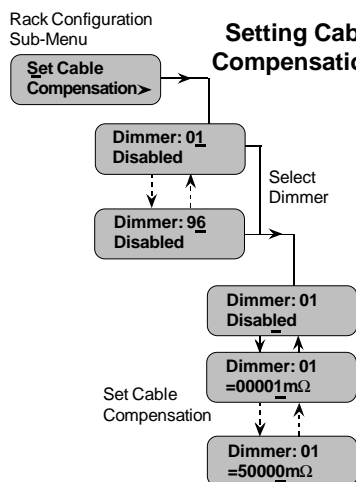
To select dimmers and set them for Panic activation, select *Set Panic Map* from the *Rack Configuration* sub-menu and press (➤). Select **All** dimmers, or use the (ᵛ) or (ᴧ) keys to select a particular dimmer number (1 to 96) within the rack., Press (➤) and use the (ᵛ) or (ᴧ) keys to select Panic status (On or Off)

Important Note: The Panic states of On and Off are positive states controlled by Automatic Panic, or an external Panic switch. If a dimmer is set to 'Panic Off' the output is positively driven from its current value to 0%. Likewise, if a dimmer is set to 'Panic On' the output is positively driven to 100% as the result of panic activation. On and Off should not be interpreted as panic enable/disable.

When you set the Panic status for a dimmer, you must press (OK) to action the change.

(OK)

Change Actioned

Rack Configuration Sub-Menu

Setting Cable Compensation

Set Cable Compensation ➤

Dimmer: 01 Disabled

Select Dimmer

Dimmer: 96 Disabled

Dimmer: 01 Disabled

Dimmer: 01 =00001mΩ

Set Cable Compensation

Dimmer: 01 =50000mΩ

The *Cable Compensation* menu lets you set cable resistance (in milliohms) for each dimmer. To activate cable compensation, you must 'Learn' the dimmer loads so that the system knows what current will be drawn at each specified dimmer level, and therefore what voltage to add to the dimmer.

The default setting for cable compensation is **Disabled**.

To set the cable compensation for selected dimmers, select *Cable Compensation* from the *Rack Configuration* sub-menu and press (➤). Use the (ᵛ) or (ᴧ) keys to select a dimmer and press (➤). You can now set the cable compensation to a value between 00001mΩ and 50000mΩ using the (ᵛ) or (ᴧ) keys.
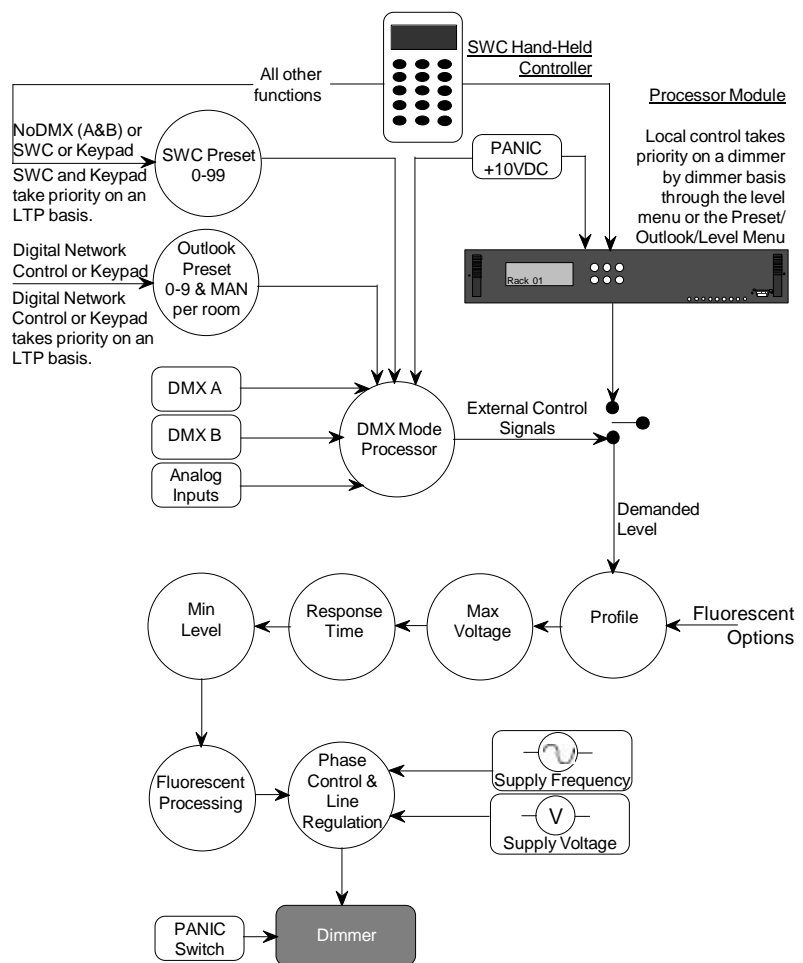
Section 4 - Basic Troubleshooting

General

This section provides basic troubleshooting procedures for the SLD96 dimmer racks. It does not provide comprehensive maintenance data, but allows you to solve simple problems and helps Strand Lighting with initial data when these procedures are not effective.

For best system operation, do a routine check and cleaning once per year, unless the operating environment is unusually harsh or dirty. Please consult Strand Lighting Field Service if you are in doubt about the frequency of maintenance required for your system. Service and maintenance operations other than routine checks and cleaning are seldom required. In case of problems, and in order to save time, follow the procedures outlined in this section before calling Strand Lighting. Take note of the results of each step, as you will be asked this information if you require to call a Strand Lighting service representative. In order to avoid miscommunication, ensure that the person contacting Strand Lighting is the person doing the tests. All service, except dimmer and mechanical components should be performed by sub-assembly replacement.

Control Signal Flow

The following diagram illustrates the control signal flow through the SLD96 rack. It is included to show how each of the programmable settings interrelate.

Failure and Status LEDs

The LEDs on the front of each Rack Processor Module are the first level of diagnostics and provide immediate visual status indication. The nine LEDs on the front of the Processor Module indicate the following:

⬤ **Active** (green):   This Rack Processor Module is controlling the dimmers. The backup Rack Processor Module LED will be extinguished unless a failure of the master processor causes automatic changeover.

⬤ **Phase 1** (green):
⬤ **Phase 2** (green):   Indicates that power on each phase is present and
⬤ **Phase 3** (green):   in tolerance
⬤ **DMX A** (green):
⬤ **DMX B** (green):   Indicates that MUX inputs are present and OK
⬤ **Module Event** (red):   Indicates an Error on a dimmer module.
⬤ **Overtemp** (red):   Flashing indicates a temperature warning.
⬤ **Panic** (red):   Panic mode activated.

Dimmer LEDs

A green status LED is located under each breaker on all dimmer modules. These LEDs perform a number of functions, as follows:

Luminaire Intensity: The brightness of the LED represents the intensity of luminaire(s) controlled by the dimmer output.
All LEDs Flashing: The Panic button has been pressed or loss of AC supply to the dimmer rack processor.
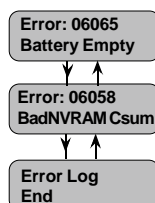All LEDs on a Vertical Column Flashing: Loss of AC supply to that column of dimmers.
Individual LED(s) Flashing: Dimmer Overtemperature Warning
LED(s) Off: Luminaire at 0% intensity or dimmer shutdown on overtemperature.

Error Log

The software within the dimmer rack continuously monitors the system for faults and will immediately display a fault message on the LCD, and optional Reporter PC in the event of a fault condition occurring. Each error has a unique error number, as shown in the following table, and is logged internally and in non-volatile memory.

```
┌──────────────────┐
│ Error: 06065     │
│ Battery Empty    │
└──────────────────┘
       ↕
┌──────────────────┐
│ Error: 06058     │
│ BadNVRAM Csum    │
└──────────────────┘
       ↕
┌──────────────────┐
│ Error Log        │
│ End              │
└──────────────────┘
```

Warning: An error appearing in the error log indicates a serious problem, which should be reported to Strand Lighting. Do not ignore error log entries. Write down the error number, find the software version and contact your Strand Lighting service agent, or dealer.

If an error occurs when you are in any of the menus, the error will be displayed automatically when you press (ESC) to exit the menu. When an error is displayed, you should always press (▶) to display any extended error descriptions and (▼) to display other current faults until **Error Log End** is displayed. When you press (ESC) to escape from the error log, the display will ask if you wish to clear the error log. Press (OK) to clear the error log, or (ESC) if you want to leave the error(s) in the log.

(ESC)

```
Clear Error
Log?
```

(OK) or (ESC)
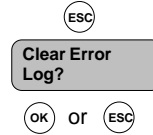
Note: The top line of an error display always show 'Error', followed by the error number. The bottom line of the display shows an abbreviated description of the error. If this description is more than 16 characters, it will be continued onto a second display. To show the continuation of an error description, press (➤).

You can view the error log at any time by selecting *View Error Log* from the *Rack Configuration Sub-Menu* and pressing (➤) (Refer to page 43)

<u>Error Messages</u> The following pages provide a list of possible error messages, together with a desciption of the error.

Code	Message	Description
	Error Status Messages	
	Invalid Error Code	Invalid error code
	Error nnnnn (see codes below)	Error string
	Tests OK	All Tests OK
	Please Birth!	Please Birth!
	Release EXIT key	Release EXIT key
	Finished testing	Finished testing
	Error Log Empty	Error Log Empty
	Error Log End	Hit Error Log End
	Error Log Start	Hit Error Log Start
	Testing ... Wait	Tests in progress
	Test OK	Test passed
	Setting Database	Initialising Db
	Setting Arch Db	Initialising Architecture Db
	Clear Error Log?	Clear Error Log?
	Upgrade SR Cfg	Upgrading FRP Db
	Error Messages	
04224:	A/D Timeout	A/D faulty
04225:	A/D Timeout	A/D faulty
04226:	Dghtr ID Unknown	Daughter ID Unknown
04227:	Conf Lvn Unknown	Config Link Unknown
04228:	Volt RtgChanged > MaxVoltsReset	Volt Rating Changed
04229:	Wiring Changed > SlotMap Reset	Wiring Type Changed
04230:	Phasing Changed > SlotMap Reset	Phases Fitted Changed
04231:	RackTypeChanged > SlotMap Reset	Rack Type Changed
04233:	Main ID Unknown	Main Processor ID Unknown
04234:	Co Proc Reset	Co Processor Reset
04235:	Co Proc Missing	Co Processor Missing
04480:	LCD Failed	LCD failure
04481:	ANSI error	Invalid escape sequence
05632:	Invalid Db Rqst > nn nn nn nn nnnn	Invalid database request
05762:	Clock Access	TOY Clock access error

n=number, c= character

Code	Message	Description
06016:	I2C bus error	I2C bus error
06017:	R/W FailCalib > EEAdd: nnW:nnR:nn	EEPROM write error
06020:	RT ClockStopped	Real Time Clock stopped
06021:	RT ClockFast	Real Time Clock running fast
06022:	Proc A/D NotConv	Processor A/D not converting
06023:	Proc A/DFailure > Half-Way=n.nnV Min:n.nnMax:n.nn	Processor A/D failure on reading Half-Way signal
06024:	A/D No Conv	A/D not converting
06025:	A/DFailure Half-Way=n.nn Min:n.nnMax:n.nn	A/D failure on reading Half-Way signal
06026:	A/D No Conv	A/D not converting
06027:	A/DFailure > Half-Way=n.nnV Min:n.nn Max:n.nn	UPP5 A/D failure on reading Half-Way signal
06028:	An.InputMuxFail > An.Mux n = n.nnV Min:n.nnMax:n.nn	Analogue Input Multiplexer failure
06029:	PrecRectBoard n > Reading=n.nnV Min:n.nnMax:n.nn	Precision Rectifier on Board 1/2 error
06030:	Real RMSMainsEr Phase n=nnnV Min:nnnVMax:nnnV	Real RMS mains input error
06031:	LCD ContRegistr > Reg:nn W:nnR:nn	LCD Controller Test write/read error
06032:	Battery Not Det > Reading=n.nnV Min:n.nnMax:n.nn	Battery missing

06033:	X-Cross GrossEr >
	  Phase n nnn.nHz
	  nnn.nHz nnn.nHz
		Zero Cross gross error

06034:	X-Cross Not Sym > Phase n O:nnnnusE::nnnnus	Zero Cross not symmetrical
06035:	X-Cross MainsEr > Phase n nnn.nHz nnn.nHz nnn.nHz	Zero Cross Mains error
06036:	Panic IPStuckLo	Panic test input signal stuck low
06037:	Panic IPStuckHi	Panic test input signal stuck high
06038:	ExtCon nn StuckLo	External Contact signal stuck low
06039:	ExtCon nn StuckHi	External Contact signal stuck high
06040:	10V ISO Level > Reading =n.nnV Min:n.nnMax:n.nn	Isolated 10V level error
06041:	An.In nn StuckLo	Analogue Input stuck low
06042:	An.In nn StuckHi>DimOutnn	Analogue Input stuck high
06043:	Bad Ser.Config.	Serial setup given wrong configuration data
06044:	RS232 No Tx > Tx c	RS232 no transmitter activity
06045:	RS232 No Rx > Tx c Rx c	RS232 no receiver activity

n=number, c= character

Code	Message	Description
06046	RS232 NoRxNow TX c Rx c	RS232 data received when not expected
06047	RX232 Rx Bad Tx ccccccccccccc Rx ccccccccccccc > Tx Data cccccccc Rx Data cccccccc	RS232 corrupt data received
06048	RS485 No Tx Tx c	RS485 no transmitter activity
06049	RS485 No Rx	RS485 no receiver activity
06050:	RS485 Rx Bad > Tx c Rx c Tx Data c > Rx Data c	RS485 corrupt data received
06055:	Bad EE Csum > Now:nn Ref:nn	EEPROM calculated checksum does not match stored value
06056:	BadFLASHCsum > Now:nnnnRef:nnnn	FLASH calculated checksum does not match stored value
06058:	BadNVRAMCsum > PnnAnnnnW:nnR:nn	Bad NVRAM checksum
06059	FLASH no NMI	FLASH NMI not detected during write
06060:	FLASH NMI det.	FLASH NMI was incorrectly detected
06061:	FLASH Bad wrt	FLASH write was bad
06063:	SRAM Pattern > A:n:nnnnW:nnR:nn	SRAM pattern test failure
06064:	NVRAM Pattern > A:n:nnnnW:nnR:nn	NVRAM pattern test failure
06065:	Battery Empty > Reading=n.nn Min:n.nnMax:n.nn	Battery empty
06066:	RT ClockNo Int	No real time clock interrupt detected
06067:	Main CalData ??	Main calibration data may be suspect
06068:	Fan1 outError	Fan1 test error
06069:	Fan2 outError	Fan2 test error
06070:	X-Cros n Timeout	Zero Cross n timeout error
06071:	MFilt n Error	Mains Filter error
06072:	Pwr FailStuckLow	Power Fail input stuck low
06075:	NVRAM no NMI	NVRAM NMI not detected during write
06076:	NVRAM NMI det.	NVRAM NMI was incorrectly detected
06077:	An.In nnStuckHi > An.Out nn	Analogue input stuck high
06078:	SlaveTx No Tx	Slave tx error
06079:	SlaveRx No Rx	Slave rx timeout error
06080:	SlaveRx Bad > Tx Data cccccccc Rx Data cccccccc	RS485 corrupt data received
06082:	SlaveClkStuck Lo	Slave clock line stuck low
06083:	SlaveClkStuck Hi	Slave clock line stuck high
06084:	SlaveRstStuck Lo	Slave reset stuck low
06085:	SlaveRstStuck Hi	Slave reset stuck high

n=number, c= character

Code	Message	Description
06087:	FanFailnStuckLo	Fan Fail input stuck low
06088:	FanFailnStuckHi	Fan Fail input stuck high
06089:	PANIC swStuckHi	Panic input stuck high
06090:	PANIC swStuckLo	Panic input stuck low
06091:	An.In nn Shorted > DimOut nn	Analogue Input Shorted
06404:	NMI Detected > Ad=n nnnn	Unexpected NMI
06658:	In delay=nnnnnn > Lo/Hi=nnnn/nnnn	Phase delay out of range
06659:	EEP LoadError	Can't load from calibration EEPROM
06660:	EEP SaveErro	Can't save to calibration EEPROM
06661:	EEP CsumError	Invalid checksum in calibration EEPROM
06662:	CAL CsumError	Invalid checksum in main calibration EEPROM
06663:	CAL DataUpdated	Cal Data updated from EEP
10170:	StackRAMfailPat	Stack RAM pattern test failure
10496:	A/D busy	A/D stuck busy
10497:	Invalid opcode > Ad=n nnnn	Invalid opcode
10498	Stack under > Ad=n nnnn	Stack underflow
10499	Stack overflow > Ad=n nnnn	Stack Overflow
10500:	Assert failed > File: cccccccccc Line: nnnn	Assert failed
17282	smx: ccb not rd	smx: ccb not ready
21377	smx init lnk	smx: link
21379:	smx: init sys	smx: init. system
23168:	Wbox nnnn	Wall box Error
23296:	Reporter nnnn	Reporter Error
23552:	Arch Err nnnn	Architecture Wbox Error
26241:	Wdog nn timeout	Watchdog timed out

n=number, c= character

Startup Errors

If you are installing a system that has been on-site for a long period of time (more than 5 months), have a new rack processor module which has been on the shelf at Strand Lighting, or have had the dimmer rack turned OFF for a long period of time, the battery may be low. You may get an error #06065 (battery empty), or this error with an additional error #06058 (bad NVRAM checksum)

Battery Empty
This error by itself informs you that the battery is low (less than 3.0VDC). If you do not also have the error #06058, no information has been lost. Clear the error log and leave the dimmer rack ON for at least 12 hours.

Bad NVRAM Checksum
This message informs you that the data stored in non-volatile RAM on the processor daughterboard has been corrupted. The message will appear if the battery voltage drops below 2.2VDC. At this level, data cannot be maintained. When the system is powered up, the memory is checked to make sure that it has not changed. If it has, the system automatically resets all data to the default values. You will need to reprogram the rack if this message is displayed.

Loading New Software

SLD96 software is stored in Flash ROM and can be updated on site from a PC running MS-DOS. In order to perform a software reload, you require the following items:
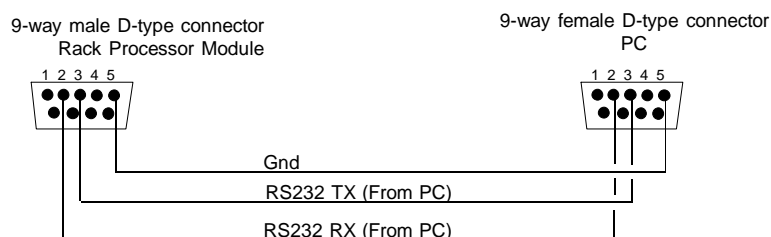
- An SLD96 rack processor module.
- An IBM compatible PC, preferably 80386 or better, with COM1 or COM2, serial port.
- An RS232 serial reload cable.

The following files must be in the same directory on the PC.
- RELOAD.EXE
- MAINLOAD.HEX
- FLASH.DEV
- MICRO.DMP
- MINI.DMP
- The SLD96 software (dmos.s2 and dcos.s2)

Connecting the PC to the SLD96 Rack Processor Module

Connect the processor to the PC using a standard PC serial extension cable (9-way male 'D' type connector to 9-way female 'D' type connector).

9-way male D-type connector
Rack Processor Module

9-way female D-type connector
PC

1 2 3 4 5

1 2 3 4 5

Gnd

RS232 TX (From PC)

RS232 RX (From PC)

Put the SLD96 Rack into Reload Mode

1. Press ⓪
2. Then hold down ⓪ and press ⓪
3. Then hold down ⓪ and ⓪ and press ⓪

When the rack processor module is in reload mode, the LCD will be blank.

Caution: When reloading software on a rack with a backup rack processor module, the backup module must be disabled by disconnecting it. Entering reload mode automatically enables the rack processor module and would cause electrical contention or even damage if the backup module was left connected.

Start to Reload Software

1. Turn the PC ON and make sure that it is in DOS
2. Switch to the directory that contains the reloaded software.

3. Type '*reload / COMn / baudrate / c dmos.s2*' where:
   - *n* is the COM port to which the system is connected (1, 2, 3 or 4)
   - *Baudrate* is the data transfer rate (e.g., 38400, 19200, 9600).
     Example: **reload /com1 /38400 /c dmos.s2**
     Note*: Some slow PCs may only support 9600 baud. 386 or better PCs should support 38400. This speed is recommended for fast reload.*
   - The /c flag suppresses confirm prompts. You can skip this flag if you want to watch the progress of the reload more carefully.

Press Enter to start the reload process. At 38400 baud this will take less than five minutes.

If error messages are displayed during reloading, note them down carefully and contact your nearest Strand Lighting service department.

Replacing Major Parts

The modular design of the SLD96 dimmer racks and the immediate visual identification of a faulty module by means of the processor module LEDs and LCD allows for rapid replacement of a faulty module while the system is in operation. The system is designed so that any failure will usually disable, at most, a single dimmer, or rack processor module.

Replacing Dimmer Modules

Dimmer modules may be removed after turning OFF the circuit breaker(s) for the module, without the need to turn OFF the dimmer rack. You can replace the dimmer module with one of the same rating and type to verify that the problem is in the dimmer module and not in the rack, lamp, or load wiring.

To replace a dimmer module:

1. Turn OFF the circuit breaker(s) on the suspect dimmer module.
2. Pull the dimmer module straight out of the dimmer rack
3. Fit the replacement dimmer module by firmly pushing it into its slot.

Replacing a Rack Processor Module

Rack processor modules may be unplugged live and replaced in an emergency, however, the rack should normally be switched off for this operation.

If you have only a single rack processor module fitted in your dimmer rack, but have more than one rack, you may be able to substitute a module from a less important rack for a faulty module in a critical rack, otherwise you will have to fit a new module.

Note: *When you refit and power up the replacement rack processor module an error message (error 666s - Csum updated) will be displayed. This is normal and indicates that the software has recognised the new processor module.*

If you have Reporter software and have saved the configuration information for the rack , you can download the configuration information from the PC to the replacement rack processor module. (Refer to the *Reporter* manual)

Fault Finding

If a failure occurs, you can speed up fault isolation by considering the following categories of malfunction.

- Major rack problems common to all dimmers or to a whole phase.
- Dimmer problems associated with a single dimmer
- Dimmer problems not related by phase or rack

Establish the fault location by interchanging dimmer modules as required. You can swap modules between racks or within a rack providing they are of the same type and rating.

Rack Faults <u>Symptom:</u> ***None of the lights will come on***
<u>Check 1:</u> Check that the '**Power** ' LED is illuminated. If not, check that power to the rack is not isolated.
<u>Check 2:</u> Check that the rack is not in overtemperature shutdown mode. (Overtemperature red LED illuminated on Rack Processor Module.
<u>Check3:</u> Check that '**DMX A'** and/or '**DMX B'** LED(s) are illuminated, as appropriate. If not, check connectors are secure at both ends, and, using an ohmmeter, check that the signal(s) and shield are not shorted. If they are not shorted, the most likely cause is an open circuit somewhere along the line.
<u>Check 4:</u> Check that mux protocol is correctly set.
<u>Check 5:</u> Check that the DMX start number and/or patch are correctly set.

<u>Symptom:</u> ***Some lights cannot be turned off***

Since the SLD96 Dimmer Racks take their level control signals from multiple sources, you need to make sure that none of the signals are present. Some possible sources are:

<u>Check 1:</u> Check that the lights are not controlled by a PANIC switch and the switch is turned ON
<u>Check 2:</u> Check that presets are not being called up from a hand-held control or wall station.
<u>Check 3:</u> Check that the dimmer level is not being set manually from the rack processor module.
<u>Check 4:</u> Check that an Outlook or SWC preset controlling the lights is not switched ON.
<u>Check 5:</u> Check that a minimum level is not set for the dimmer. You cannot switch OFF a dimmer with a minimum level set.
<u>Check 6:</u> Check that the '**DMX A'** and '**DMX B'** LEDs are illuminated, as appropriate. Loss of DMX signal may have caused the lights to go into No DMX preset.
<u>Check 7:</u> Check that the Outlook power-up preset is not set for the dimmers in question.

If all control signals appear to be OFF the problem may be a faulty dimmer module. Check using the rack keypad **Set Level** menu to isolate the module from all external control. Swap the dimmer module to verify the problem.

<u>Symptom:</u> ***The lights flash or become erratic. The DMX A or DMX B LED goes ON and OFF erratically.***

Problems can be caused by over-terminating the line, or not terminating the line at all. Make sure that the last rack in the control run, and only this rack, is terminated.

Symptom: ***The lights occasionally flash or misbehave.***

This may be caused by interaction with other systems. Try to isolate the occurrence of the problem and tie it in with activity in other parts of the building. Arc welding or unsuppressed motors (elevators, other large motors, etc.) can cause mains disturbances or corruption of control signals. The SLD96 processor module is highly immune to such problems, but in extreme cases interference can occur.

If you can leave all dimmers ON long enough for one of the disturbances to happen, use *Set Level* in the **Main** menu to set All dimmers to a given (low) level from the processor module keypad. This isolates the external control signals and allows observation of the dimmers alone. If the problem still occurs, then it is a mains-borne interference. The solution will be to reroute the feeder cables to another supply (if at all possible), or suppress the offending equipment. If, however, the problem goes away, then it may be in the signal wiring (see above), the routing of the wiring (make sure it is not near noisy equipment), or a fault in the control desk

Symptom: ***The hand-held control or wall station operates erratically.***
  The wiring between the dimmer racks and control system is similar to the hand-held or wall station wiring. The same rules as before apply.

Symptom: ***Panic state not activated on Panic***
· Check Panic Map settings
· Improper Panic station wiring. Check wiring from Panic station.

Symptom: ***Cooling fans are not working.***
· Check the fans by setting *Fan Speed Control* in the **Rack Config** menu to Fixed. The fans should come ON immediately. When this setting is Variable, the fan speed is automatically adjusted so that the fan speed increases with the percentage intensity of the highest dimmer output. If only one dimmer is at full On, the fan output for both fans is full On Make sure that the fan connector is firmly connected.

Symptom: ***Cannot control dimmers from a single control station.***
· Incorrectly wired control station. Check wiring from the control station to the rack.
· Defective control station. Swap control station with a known good control station to verify problem. Replace the defective station.
· Defective processor module. Replace the processor module.

Symptom: ***Cannot control dimmers, but PANIC is working.***
· Incorrectly seated processor module. Reseat the processor module.
· Possible bent pin on the processor module rear connectors if unit has been removed or replaced.
· Defective processor module. Replace the processor module.

Symptom: ***One rack doesn't work properly, the others do.***

This can be caused by the wiring faults as described above. It may also be caused by incorrect programming. It is quite easy to set a dimmer to a level from the keypad, and in so doing disable DMX control. Setting the level from the keypad verifies electrical operation of the dimmer regardless of control system.

An extreme example of a wiring fault is a loose power connection to the rack. Loose neutral connections in particular cause havoc!

Symptom: ***Some dimmers don't appear to work.***

Use the **Set Level** menu to check dimmer operation.

• If the dimmer fails to work, and all load wiring and connected load has been tested, then the dimmer module will require service.

- If the dimmer works from the keypad, but not from the control desk, check that the START NUMBER or PATCH are set correctly.

Make sure that the Dimmer DMX Mode and Profile settings for the dimmer are correct.

Symptom: *Lights don't appear to track each other in fades.*
This can be caused by using different dimming curves on each dimmer or setting dimmers to different max. output voltages. The keypad can be used to set ALL dimmers in a rack to the same profile and voltage to rectify the problem.

Symptom: *Lights don't reach 100% intensity.*
Max Voltage is set incorrectly. Refer to *page 35*.

Individual Dimmer Problems

Problems related to individual dimmers are due to one of the following:
- Dimmer Circuit Breaker is OFF
- Load wiring is disconnected
- Burned out lamp in fixture
- Too much load on dimmer caused circuit breaker to trip
- Short circuit in load wiring or fixture caused circuit breaker to trip
- Defective dimmer (probably the thyristor block)

Load circuits are protected by single pole, fully magnetic circuit breakers in the dimmer module. These safeguard the thyristors in case of a dimmer overload or short-circuit in the load. Although you can quickly reset a circuit breaker to turn a circuit back ON, you should always first determine what caused the circuit breaker to trip.

Although the circuit breakers are rated for continuous operation at full nominal current, occasional "nuisance" tripping may occur when running a dimmer close to or at its rated maximum load, especially in improperly ventilated dimmer rooms.

Make sure that the problem is not in the load or load wiring by shifting the load to another dimmer.

Verify the bad power module by swapping it with an identical known good unit. If the problem moves, replace or repair the power module.

Make sure that all of the connectors between the dimmer rack and the processor module are seated correctly.

Check for bent pins on the rear connectors of the processor module.

Check for problems in any external analog circuitry by measuring the DC voltage from the suspected analog input to GND. When the dimmer is supposed to be at 100%, this voltage should be about +10VDC (subject to the calibration programmed for that input).

Reporting Problems

Before troubleshooting for specific troubles which may be encountered with dimmer reporting, all other power module problem categories should be investigated.

Symptom: *Reporter dimmer keeps generating load profile errors.*

The load profile % and abs tolerances have probably been set too tight. Set them back to default by using the "Default SR Config" option in the *Set All Default* item of the **Rack Config** menu. If this fails, try widening these variables a little at a time until the problem goes away. Please consult Strand Field Service for how to adjust these variables.

Symptom: *Reporter dimmer keeps generating Thyristor O/C or S/C messages.*

The voltage % and abs tolerances have probably been set too tight. Set them back to default by using the "Default SR Config" option in the *Set All Default* item of the **Rack Config** menu. If this fails, try widening these variables a little at a time until the problem goes away. Please consult Strand Field Service for how to adjust these variables.

Symptom: *Can't control a dimmer, though it has output*

The dimmer is currently being learnt.

Fluorescent Dimmer Problems

Before troubleshooting for specific troubles which may be encountered with fluorescent circuits, all other power module problem categories should be investigated.

Fluorescent lamps operate best when the dimmer response is set to "Slow." See *Dimmer Curves Menu* for how to change this setting.

Periodic Maintenance

Periodic maintenance should be done every six to twelve months, depending on the environmental conditions. Full details of maintenance procedures are beyond the scope of this manual. However, a basic check list is provided summarizing the procedures. User's wishing to carry out periodic maintenance themselves, should contact Strand Lighting field service for details.

1. Disconnect the rack from power or turn OFF power to the rack.
2. Inspect the dimmer rack for loose connections and build-up of dust which may impede air flow. Tighten any loose connections found at this time.
3. Vacuum out any excessive dust build-up in the dimmer rack, while power to the rack is shut down.
4. Reconnect the rack, turn ON power and make sure that all dimmers work correctly. Check the Panic switch to make sure that they turn ON the selected dimmers.
5. Make sure that the fans are operational. If not, trouble shoot as necessary and replace or repair the defective fan.
6. Make sure that ventilation to the rack has not been blocked.
7. Exercise all circuit breakers by turning them ON and OFF several times. The arc produced when the circuit breakers engage and disengage will clean corrosion and dust off of the contacts. The lights for the dimmers should be ON when you do this.

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