Digital Environ

User's Manual

Strand Lighting

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Chapter 1
Introduction and Assistance

This manual provides information on the installation and operating procedures for Digital Environ cabinets.

Manual Organization

This manual contains the chapters shown below, plus an Index.

Introduction (chapter 1) - tells you about the organization of this manual, plus definitions and conventions used. Also tells you how to get technical help if necessary.

Operational Features (chapter 2) - gives an overview of the operational features of this product.

Hardware Description (chapter 3) - gives an overview of the hardware and how it works together.

Installation (chapter 4) - tells you about the installation requirements for the dimmer cabinet. This chapter shows pinouts for externally accessible connectors, cable types and lengths, and (where applicable) setup information.

Basic Trouble-shooting (chapter 5) - tells you how to begin trouble-shooting if you have problems with dimmers or the cabinet.

Periodic Maintenance (chapter 6) - lists the steps which should be taken to keep the equipment running at its best.

Reference (chapter 7) - provides a reference for setting up the programmable processor module.

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Definitions

This manual uses the following definitions throughout:

20A dimmer = 2.4Kw dimmer at 120VAC.

50A dimmer = 6Kw dimmer at 120VAC.

100A dimmer = 12Kw dimmer at 120VAC.

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 Identifier See "Name."

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.

Cue The process of recalling a preset from its memory location and putting the result on stage.

Preset, Memory, and Cue are often used interchangeably.

Curve The relationship between a control level and the actual dimmer output. Also known as "Dimmer Law."

Dimmer Law See "Curve."

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

Default The original factory settings.

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.** Each preset has its own fade time.

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

Memory Storage location for preset information.

Mux Abbreviation of the word "Multiplex." Multiplex systems transmit data (usually dimmer information) from a lighting controller to a dimmer cabinet via a single external cable rather than via a pair of wires for each dimmer.

Name A unique idintification string containing up to five upper case letters or numbers which you can assign to each dimmer. The name may be the same as the dimmer number, or may be a string used to indicate circuit location, phase, etc. This feature is useful for SWC or SV90.

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 stations, the Digital Environ processor module stores 8 programmable presets per room for up to 16 rooms. For SWC controllers, the Digital Environ processor module stores 99 programmable presets. Preset 0 (ZERO) is always a blackout.

Preset Fade Time **See "Fade Time."** .

Rack Number **A number used to uniquely identify each dimmer cabinet in a multiple cabinet 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 lighting control. 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 from the remainder if required. Each room is separately 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 Digital Environ cabinet simultaneously. A hand held controller lets you program and recall all 99 presets, and control individual dimmers. 8 and 16 channel pushbutton stations let you recall any 8 or 16 of the 99 presets at each station. Please contact Strand Lighting or see the System Wide Control User's Manual for details on how SWC works.

SV90 Software that runs under MS-DOS or PC-DOS and lets you set up certain Strand Lighting dimming cabinets and racks (including Digital Environ). Please contact Strand Lighting or see the SV90 User's Manual for more details on how this software works.

Conventions

The following additional conventions are used in this manual.

LEVEL — Shows the actual push-button labelled "LEVEL." This is used wherever possible without requiring special text formatting.

ON — (all capital text) shows to the status of a function or switch, as in "Turn the switch ON."

Input — (text with first letter capitalized) shows the name of a function or menu, or mode of operation (e.g., Input menu).

Technical Assistance

Digital Environ cabinets require a minimum of maintenance and servicing.

Problems

If equipment fails to operate properly upon installation, or under normal load and temperature conditions, and basic trouble-shooting procedures are not effective, please contact Strand Lighting Field Service at the office serving your area. Strand Lighting will issue a Return Goods Authorization before the return of any defective materials. This allows tracking of returned equipment, and speeds its return to you.

Technical Questions

For technical questions regarding setup, operation, or maintenance of this equipment, please contact the Strand Lighting Field Service office serving your area.

Parts Purchases

For purchase of spare parts or documentation, please contact the Strand Lighting office serving your area.

Comments and Suggestions

For comments regarding equipment functions and/or possible improvements, or for comments on this manual, please call or write to the Marketing Manager at the Strand Lighting office serving your area.

Addresses

Addresses for all of the Strand Lighting offices are shown on the reverse side of the manual title sheet.

Chapter 2

Operational Features

This chapter presents the basic operational features of the Digital Environ cabinet.

Configuration

Each cabinet has provision for up to 24 dimmers or non-dims. The small cabinet can be fitted with up to 6 power modules, each with 1, 2, or 4 circuits. The large cabinet can be fitted with up to 12 power modules, but can only accomodate 1 and 2 circuit power modules.

The processor module supports 24 digital outputs to drive single, dual and quad power modules. In addition, two 0 to +10 volt analog outputs (at 1mA maximum) are provided for auxiliary control capability (e.g. the Electronic Fluorescent Ballast Controller).

The following configuration items are usually programmed in the factory or at the time of commissioning, but can easily be reprogrammed by the user if required.

- Language: English, French, German
- Dimmer assignments: The arrangement of Single, Dual or Quad power modules for each module position is programmed. From this information, dimmers and analog outputs are given sequential dimmer numbers to simplify programming of other features.
- Cabinet number: 1 - 99. Used for System Wide Control

Input & Output Protocol

The following control protocols are be supported by Digital Environ

- Outlook control stations
- Multiplex Input - DMX512
- Optional 2nd Multiplex Input - DMX512
- 26 Analog inputs - 24 for internal dimmers, 2 for external equipment.
- 2 Analog outputs for external equipment.
- System Wide Control

Signals can appear at all inputs at the same time, and are processed on a highest takes precedence basis (see figure 14 on page 40). All control terminations are via screw terminal connectors.

Programming

Several additional functions are generally accessed or programmed in the field by the user as required:

- Maximum output voltage (per dimmer): 50-250 volts e.g. Set to 105V for extended lamp life.
- Minimum level (per dimmer): 0% - 25% e.g. Set to 10% for safety purposes.
- Room and channel Patching (for Outlook control stations).
- Each dimmer and analog output can be patched to any valid DMX or D54 address number for both the standard multiplex input A (Mux A) and optional multiplex input B (Mux B).
- Each dimmer and analog output is automatically assigned in sequence to one of 26 analog inputs.
- Circuit ID--used for SWC or SV90.
- Individual assignment of dimmers as non-dims with threshold levels programmable between 1%-99%.
- Response curve assignment per dimmer: Linear Power, Square, S-Curve, Fluo Elec (for electronic fluorescent balasts) and Fluo Mag (for magnetic fluorescent balasts). The two fluorescent settings also let you set the top end voltage and the bottom end cutoff voltage.
- Dimmer response: 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.
- Record and recall presets (1-8, ON and OFF per room for Outlook, and 0-99 per cabinet for System Wide Control).
- Define Preset Number or "Hold" condition on Mux failure.
- Define power-up preset per cabinet for Digital Network Control.
- Dimmer control assignment to "Input" (Outlook preset, SWC preset, Mux A, Mux B, or Analog) or to a fixed level (0% - 99% or "Full").
- Calibrate top set between 7 and 13 volts for analog inputs.
- Calibrate top set between 5 and 10 volts for analog outputs.
- Set LCD contrast.
- Cabinet self tests.
- Viewable error log.

System Wide Control (SWC)

A method of programming and controlling more than one Digital Environ cabinet simultaneously. A hand held controller lets you program and recall all 99 presets, and control individual dimmers. 8 and 16 channel pushbutton stations let you recall any 8 or 16 of the 99 presets at each station. Please contact Strand Lighting or see the System Wide Control User's Manual for details on how SWC works.

Dimming Characteristics

Regulation

Each dimmer, with circuitry in the Digital Environ processor module, regulates output voltage with changes in the AC line from 85 to 250 volts RMS. The maximum output voltage is limited to the input voltage.

Output

- The output response curve can be set to Linear Power, Square, S-Curve, Fluo Elec (for electronic fluorescent balasts) and Fluo Mag (for magnetic fluorescent balasts). The two fluorescent settings also let you set the top end voltage and the bottom end cutoff voltage.
- The output waveform is a variable conduction angle 120VAC sine wave.
- The output waveform risetime is at least 350 microseconds.
- Dimmer response can be adjusted to fast (30ms), normal (100ms) or slow (300ms). This determines a dimmers 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.

Efficiency

The power efficiency of the dimmer is a minimum of 95% at full load.

Dimmer Level Retention

The microprocessor can be set to maintain current dimmer levels ("Status Quo" memory) if there is a loss of control signal (i.e., when you turn the control console OFF). It can also be set to go to a specific preset 10 seconds after loss of the control signal with a user specified fade time. This feature can be turned OFF if required.

Servicing

The Digital Environ dimming cabinet is designed to be easily serviced in the field. It incorporates:

- Replaceable processor module.
- Rapidly replaceable SSR modules.

Chapter 3

Hardware Description

The Digital Environ cabinet is a wall mounted steel enclosure 6" (152mm) deep and 30" (762mm) wide. It is available as a "small" cabinet 36" (914mm) high or "large" cabinet 72" (1829mm) high. The small cabinet includes 2" (51mm) mounting flanges at the top and bottom of the cabinet. The large cabinet includes a mounting flange on top and support legs on the bottom of the cabinet. The Digital Environ cabinet is finished in thermally set powdercoat gray paint.

Each dimmer cabinet includes all of the necessary internal wiring for 6 (small cabinet) or 12 (large cabinet) power modules and the processor module. Power feed connections, load wiring, and control wiring are provided by the contractor.

Cabinets

Each cabinet has provision for up to 24 dimmers or non-dims. The small cabinet can be fitted with up to 6 power modules. Power modules can be single (one circuit per module), dual (two circuits per module) or quad (four circuits per module) modules. The large cabinet can be fitted with up to 12 power modules, but can only accomodate single and dual power modules.

All internal power and signal connections are factory wired. Power feed connections are in the upper left of the corner of the cabinet. Load connections are at the right edge of the cabinet. Connections to the power feed block are wired for three phase use, and need to be modified for use with single phase feeds. Control connections are on the distribution board in the lower left corner of the cabinet.

One (small cabinet) or two (large cabinet) fans are provided in the lower right corner of the cabinet to maintain the temperature of all components at proper operating levels with all dimmers under full load, as long as ambient room temperature does not exceed 35°C. Fans are ON whenever a dimmer signal is present on any input and are automatically turned OFF 5 minutes after control to all dimmers is turned OFF.

The space in which this equipment is located must be maintained at temperatures not exceeding 40°C while the equipment is in operation.

The front of the cabinet includes the following controls and inputs:

- An "XLR" style connector for connecting the SWC Hand Held Controller.
- A "Panic" switch - to turn selected dimmers ON full. The switch is illuminated when panic is active.
- A "Normal" switch - to turn the panic function OFF.

Processor Module

The processor module, accessible on the front panel of the cabinet, is made of a face plate and control card. The processor module has a membrane keypad and LCD display to let you program many advanced features. For a complete list of commands, please see Chapter 9.

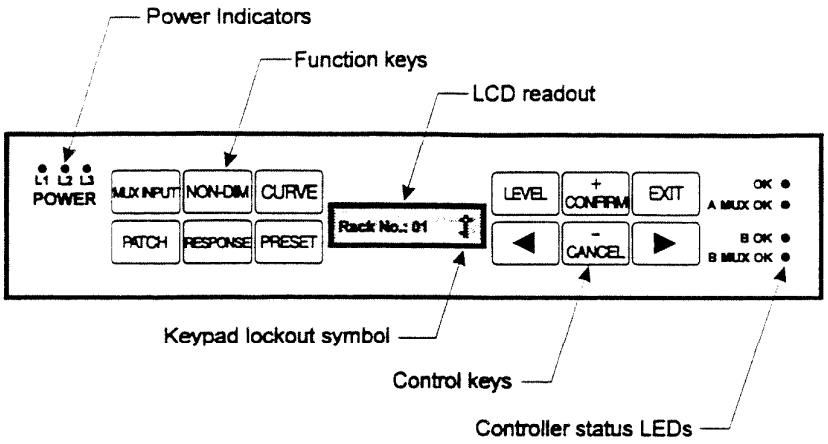


Figure 1. Processor Module

Processor Module Front Panel

The following functions and indicators are on the processor module face plate:

- Phase Indicators: A (L1), B (L2), C (L3).
- OK LED (processor OK).
- A MUX OK LED (Mux A signal exists).
- B OK LED (Mux B fitted and OK).
- B MUX OK LED (Mux B signal exists).
- Keypad for programming the available functions.
- Liquid Crystal Display for programming and viewing processor module functions and status.

Processor Module Electronics

The Digital Environ processor module can accept Digital Network Control (Outlook), DMX512 or D54 multiplexed signals, SWC control, and up to 26 analog inputs.

The processor module electronics contains all circuitry required to decode the incoming signals and produce 24 phase-synchronized, pulse width modulated control signals to drive the SSRs and 2 analog output signals to drive external equipment. Incoming signals are combined on a "highest takes precedence" basis.

The electronics are powered from all three phases. The processor will continue to work even if any two phases fail.

Power Modules

Power modules are the rugged, high power switching section of the Digital Environ dimming system, and contain one, two, or four dimmers, 1 or two non-dims, or one constant circuit. Each dimmer consists of a circuit breaker, solid state relay (SSR), and choke. Non-dims do not contain a choke, but have a non-dim controller mounted to the SSR.

The SSR for each dimmer contains optical isolation circuitry, control circuitry, and two silicon controlled rectifiers (SCRs) encapsulated in epoxy. It uses low level signals (10mA, 3-24V) from the processor module to switch the incoming power (up to 50A, 120/220VAC) ON and OFF at high speed. The amount of time per cycle that the dimmer is ON determines the output power level.

The dimmer choke slows down the time it takes the dimmer to switch ON during each cycle and helps to minimize radio frequency interference.

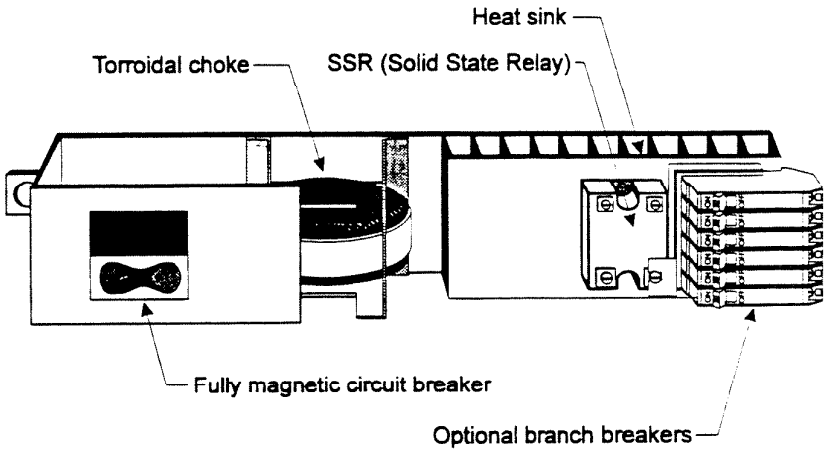


Figure 2. Typical Digital Environ Power Module

(6.0Kw power module shown)

Efficiency

The power efficiency of Digital Environ dimmers is at least 95% at full load.

Power Module Types

Power modules are available in the following configurations for 110/120VAC.

- 1.8Kw quad power module w/terminal block (S.L. #72004)
- 2.4Kw single power module w/terminal block (S.L. #72001)
- 20A single non-dim w/terminal block (S.L. #72009)
- 2.4Kw single fluorescent power module w/terminal block (S.L. #72006)
- 2.4Kw dual power module w/terminal block (S.L. #72002)
- 2.4Kw dual power module w/CB mounting (S.L. #72003)
- 20A dual non-dim w/terminal block (S.L. #72010)
- 2.4Kw dual non-dim w/CB mounting (S.L. #72011)
- 2.4Kw dual fluorescent power module w/terminal block (S.L. #72007)
- 6.0Kw single power module w/CB mounting (S.L. #72005)
- 6.0Kw single fluorescent power module w/CB mounting (S.L. #72008)
- 50A single non-dim w/CB mounting (S.L. #72012)
- 50A single constant circuit w/CB mounting (S.L. #72013)

Output circuit breakers must be purchased separately.

Power modules are available in the following configurations for 220VAC.

- 2.2Kw single power module w/terminal block (S.L. #72021)
- 2.2Kw single non-dim w/terminal block (S.L. #72029)
- 2.2Kw single fluorescent power module w/terminal block (S.L. #72026)
- 2.2Kw dual power module w/terminal block (S.L. #72022)
- 2.2Kw dual power module w/CB mounting (S.L. #72023)
- 2.2Kw dual non-dim w/terminal block (S.L. #72030)
- 2.2Kw dual non-dim w/CB mounting (S.L. #72031)
- 2.2Kw dual fluorescent power module w/terminal block (S.L. #72027)
- 5.5Kw single power module w/CB mounting (S.L. #72025)
- 5.5Kw single fluorescent power module w/CB mounting (S.L. #72028)
- 5.5Kw single non-dim w/CB mounting (S.L. #72032)

Output circuit breakers must be purchased separately.

Power module Accessories

Accessory kits are available to convert selected power modules from their standard output configuration if required.

- Terminal strip mounting kit for 6.0Kw power modules (S.L. #76800)
- Circuit breaker mounting kit for six 1-pole breakers (S.L. #76801)
- Circuit breaker mounting kit for three 2-pole breakers (S.L. #76802)
- 15A 1-pole Circuit breaker kit w/six 1-pole breakers (S.L. #76803)
- 15A 2-pole Circuit breaker kit w/three 2-pole breakers (S.L. #76804)
- 20A 1-pole Circuit breaker kit w/six 1-pole breakers (S.L. #76805)
- 20A 2-pole Circuit breaker kit w/three 2-pole breakers (S.L. #76806)
- Quad Power module Harness (S.L. #76807)

Chapter 4
Installation

Preparation

Before installing your Digital Environ cabinets, you should carefully consider the environment in which the equipment is to be installed, the power feeding the equipment, and the required cable runs.

Environmental Considerations

To maximize equipment life, and minimize the chance of failures, the following environmental requirements should be met:

- Temperature -- 35°C (104°F).
- Humidity -- 10%-90% relative humidity maximum, no condensation.

Caution

Dimmer efficiency is at least 95%. Since the remainder of the energy is dissipated as heat, they should be installed in a room with adequate ventilation to dissipate a heat load equivalent to 5% of the maximum load the dimmer cabinets will handle.

Power Requirements

Digital Environ cabinets can be powered by three wire plus neutral, three phase power or two wire plus neutral, single phase power. The maximum power requirements shown below assume cabinets are fully loaded with 50A power modules. Actual power requirements may be less depending on the power modules installed.

Three phase power

- 100A per phase maximum for small cabinets.
- 200A per phase maximum for large cabinets.

Single phase power

- 150A per phase maximum for small cabinets.
- 300A per phase maximum for large cabinets.

Warning

Do not set up this equipment with power applied. Make sure that your incoming power is disconnected before proceeding.

Do not provide 220VAC power to 120VAC units, as damage may result.

Plan Cabinet Positioning

Digital Environ cabinets can be placed just about anywhere as long as adequate space is provided in front and below the cabinets to allow air circulation for cooling. You should be careful not to obstruct the bottom of the cabinet, since this is where the cooling fans are located.

Warning

This equipment is intended for indoor use only.
Utilizer dans endroit a L'abri.

For CSA approval when mounting over a combustible surface, a floor plate of at least 1.44mm galvanized or 1.6mm uncoated steel extended at least 150mm beyond the equipment on all sides must be installed.
Lorsque L'appareil est installe sur ou au-dessus d'une surface combustible, on doit prevoir une plaque d'acier galvanise d'au moins 1.44mm ou une plaque d'acier sans revetement de 1.6mm se prolongeant sur au moins 150mm tout autour de l'appareil.

Plan Conduit Layout

The location of conduit runs and their entrance to the cabinet is important and should be carefully planned before cutting holes or attaching conduit. Figure 3 shows the allowed entry areas for the various types of wiring.

Caution

***Do not** run power feed or load wires in the same conduit or wireway as control wiring.*

***Do not** run wiring from other unrelated equipment (e.g., the building security system) in the same conduit with Digital Environ wiring.*

***Do not** enter control wires from dimmer cabinet locations marked for load or power wires, and vice versa. These locations are chosen to minimize electrical interference between various sections of the system.*

***Do not** run wiring in ways other than shown on system riser diagram. Digital Environ systems are designed to be installed in a specific manner.*

***Do not** substitute plastic conduit for metal where conduit is called for. Metal conduit acts as a ground and shield.*

***Do not** substitute shielded wiring for unshielded wiring or conduit. Changes in transmission line capacitance can cause problems with the control signals.*

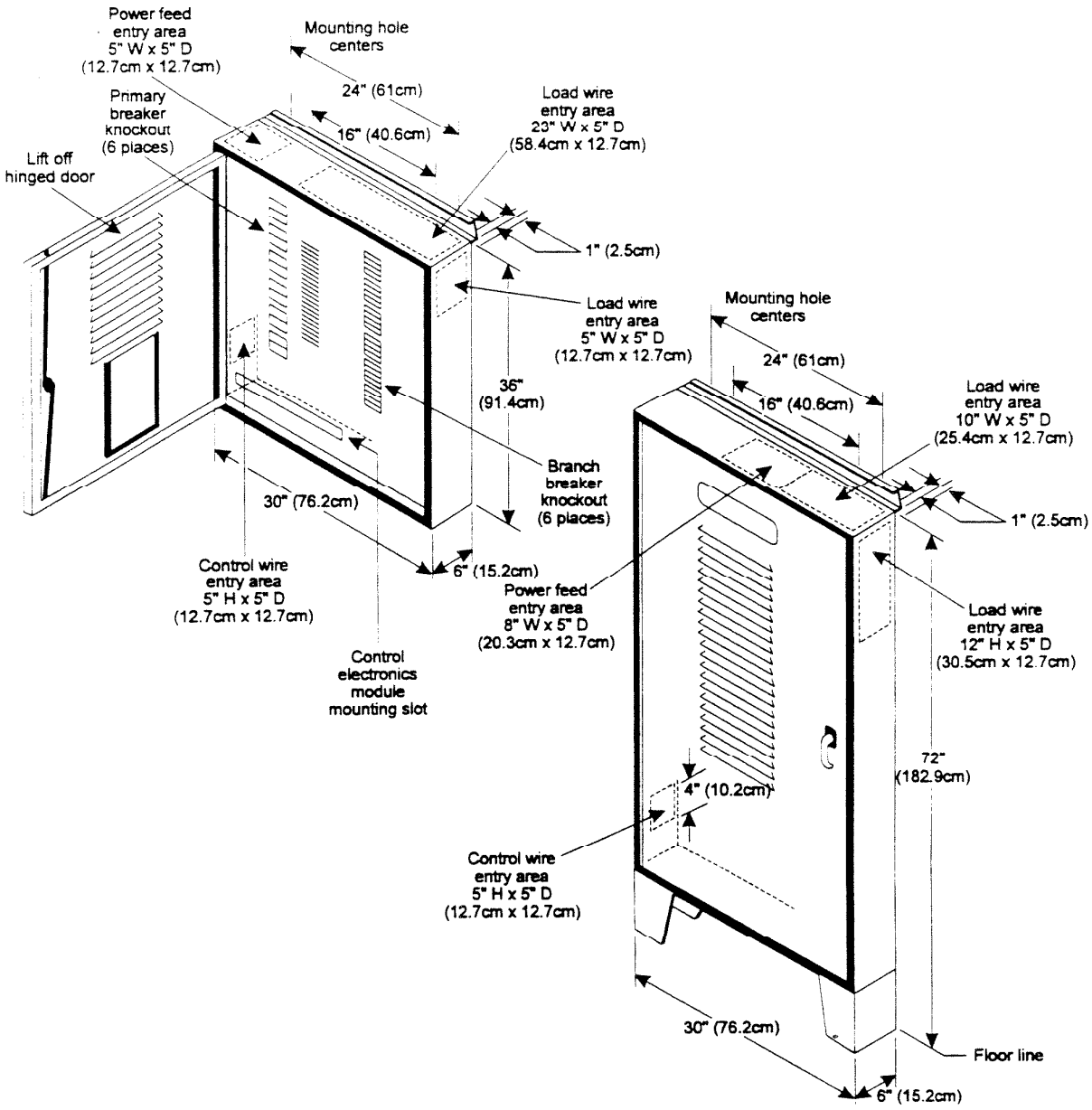


Figure 3. cabinet Dimensions

Installation

Once you have determined that all required conditions for the installation will be met, you can install the cabinets.

Mount Cabinet

The large cabinet has mounting feet that support its weight. It is anchored at the top with two 3/8 inch bolts through a bracket drilled for 16 and 24 inch stud centers.

The small cabinet is hung on the wall with four 3/8 inch bolts (two at the top, and two at the bottom). Mounting brackets are drilled for 16 and 24 inch stud centers.

Cut Conduit Entrance Holes

Cut conduit entrance holes as required. Use only the areas specified by stick-on labels.

1. Remove lift off hinged door and cabinet inner panel.
2. Mask off the processor and power supply areas to prevent metal chips from falling inside modules during cutting.
3. Cut conduit entrance holes in specified areas.
4. Clean any metal chips from cabinet and remove masking from the processor and power supply.

Connect System Grounds

Each cabinet has a ground lug for earth ground termination. Connect a separate ground wire from this terminal to a valid earth ground.

> ***Do not rely on building conduit for earth ground.***
> ***Do not rely on structural steel for earth ground unless you have verified that it is a valid earth ground.***

If you suspect that system cabinets are wired to different grounds, connect all cabinets with a ground wire (8AWG or larger) and connect one cabinet only to a known valid earth ground.

Connect Power Wiring

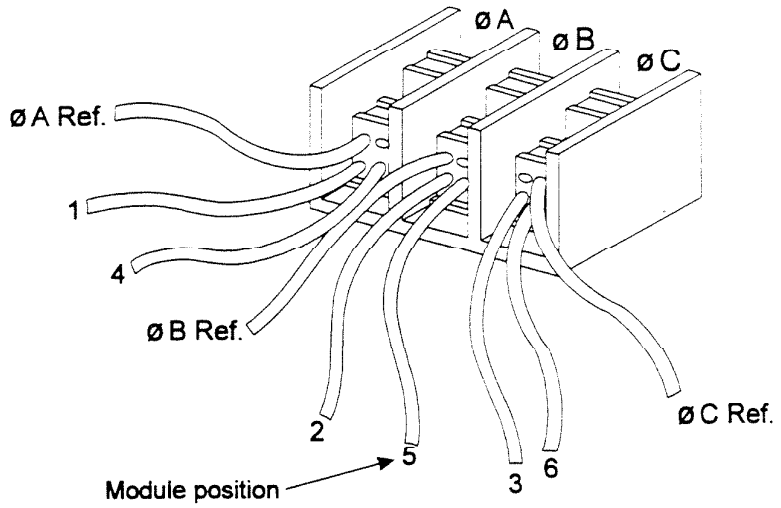
Main power feed connections are at main feed terminal block in upper left portion of cabinet. The neutral feed is connected to neutral bus on the right-hand side of cabinet. Feed cable should enter from the top of the cabinet through designated access areas only.

Cabinets are usually shipped pre-wired for three phase power. If the cabinet is to be installed with single phase (3-wire) power, and was not shipped from the factory wired as such, please see Figure 4 and Figure 5.

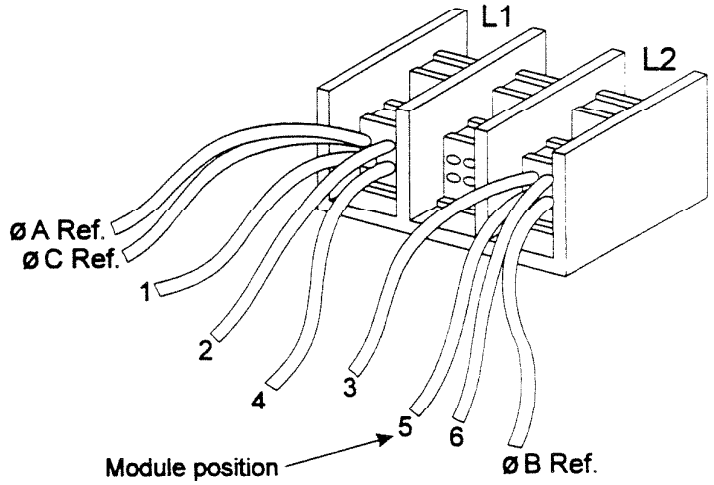
Maximum feed wire size is:

- Large cabinet: 400MCM
- Small cabinet: 2/0

Three Phase 4-wire Standard
(100 Amps maximum per phase)



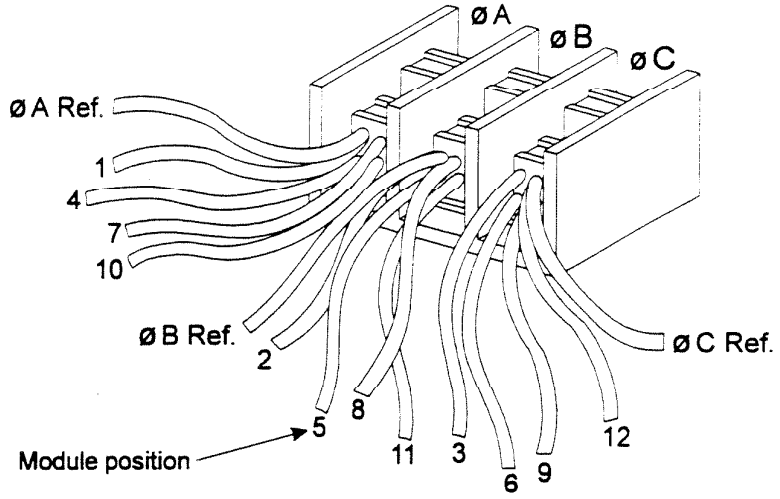
Single Phase 3-wire Conversion
(150 Amps maximum per phase)



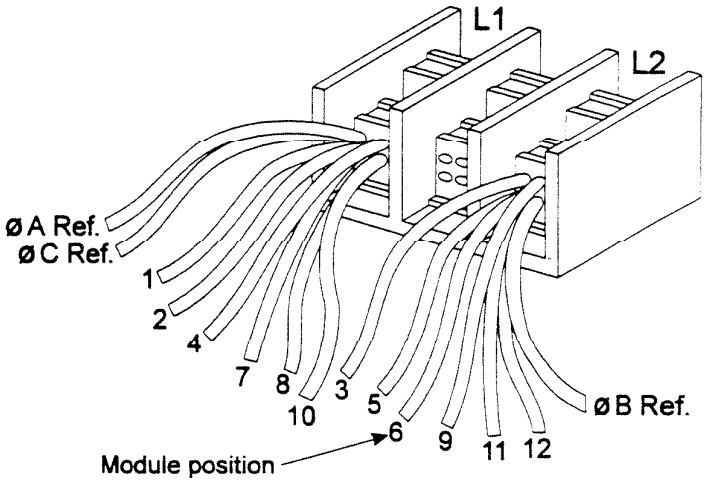
Block is Strand Part #1-100017-000 (Marathon #1423570)
Input Range is #2/O - #12 copper or aluminum

Figure 4. Small Cabinet Power Phase Wiring

Three Phase 4-wire Standard
(200 Amps maximum per phase)



Single Phase 3-wire Conversion
(300 Amps maximum per phase)



Block is Strand Part #1-100024-000 (Marathon #1433552)
Input Range is 400 MCM - #6 copper or aluminum

Figure 5. Large Cabinet Power Phase Wiring

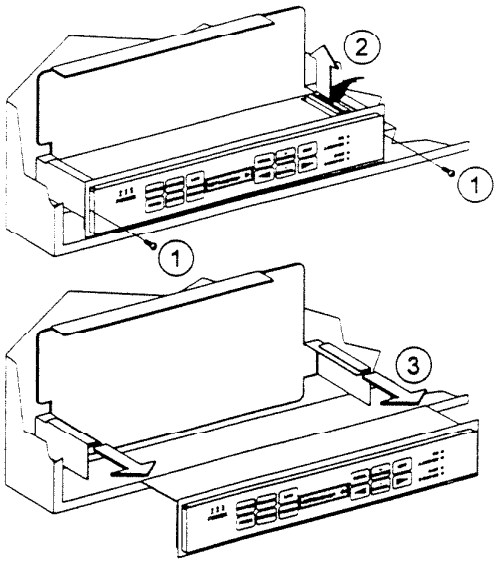
Connect Quad Harness

The Auxiliary control wire harness (S.L. #76807) is required only if you have a small Digital Environ cabinet with Quad power modules (S.L. #72004).

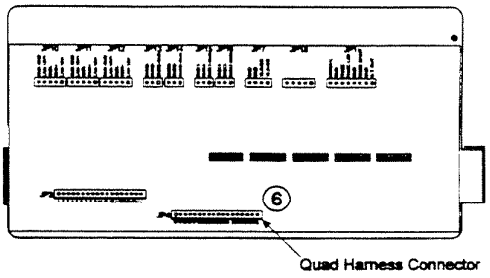
Warning

Always make sure power to the cabinet is OFF before removing or installing a Digital Environ processor module.

1. Remove two flat head screws on the front of the processor module.
2. Disconnect any analog wiring by unplugging the terminal strip from the processor module.
3. Slide the processor module straight out from the chassis about 3" (75mm), giving you enough space to disconnect the control signal cables, the 3-phase power cable, and the power block cables.
4. Note the positions of all connectors and disconnect them from the processor module.

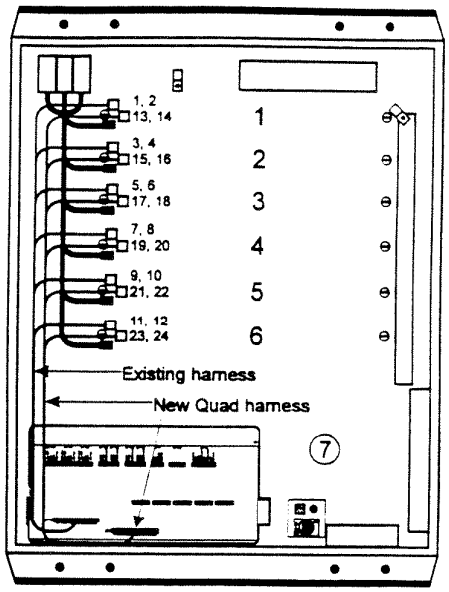


5. Slide the processor module the rest of the way out of the rack and place to one side
6. Plug the single in-line connector on the Quad Module Harness into JP4 on the distribution board.



7. Route the harness along the bottom and left side of the cabinet so that individual power module connectors are adjacent to the connectors in the factory wired harness.
8. Tie-wrap the new harness to the existing factory harness.
9. Replace the processor module. Make sure that you connect all cables to the correct plugs.

Remember to set the module map for Quad dimmers when you do the rack setup (see Set Module Map on page 82).



Connect Panic Wiring

Panic wires are connected to PANIC terminals on JP1 of the distribution board (see Figure 6 for terminal locations). Wiring instructions are included on the riser diagram in your system drawing package. If you do not have a system drawing package, wire the PANIC and NORMAL switches as shown in Figure 7. You can use the PANIC/NORMAL terminals and momentary contact switches to activate panic, and/or use the PANIC MAINT terminal and a maintained dry contact switch or relay.

When more than one cabinet is installed in a system you can connect either type of panic (or both) in parallel across more than one cabinet. All cabinets that are connected in parallel will then be activated by a single switch. This means that you can have a separate panic station for each room, using the momentary terminals, and connect the maintained terminal in parallel across all cabinets to have a system-wide panic (possibly controlled by your fire alarm system).

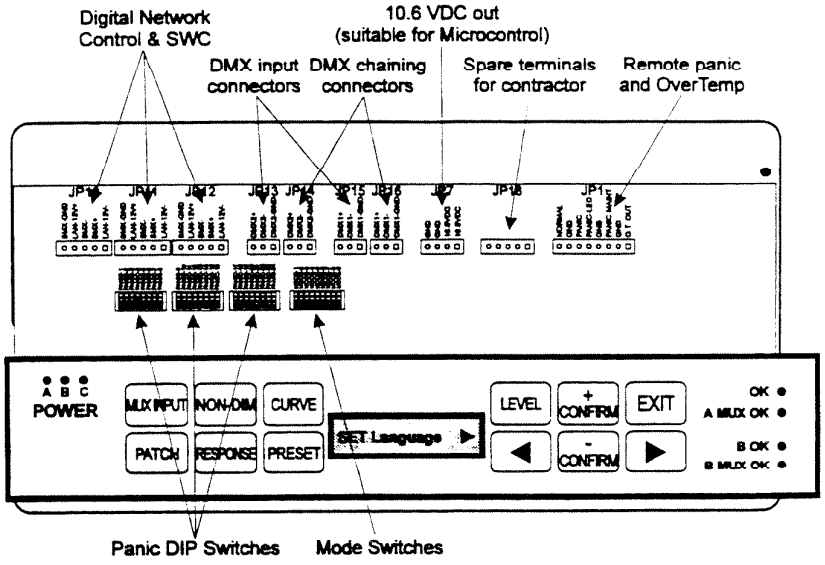


Figure 6. Control Terminal Locations

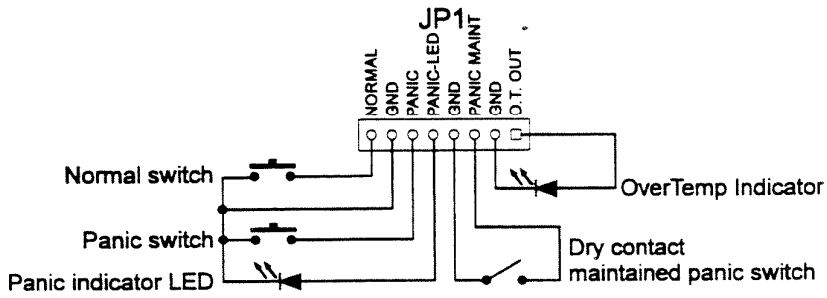


Figure 7. Panic & OverTemp Wiring

Connect OverTemp Wiring

OverTemp wires are connected between the O.T OUT and GND terminals on JP1 of the distribution board board (see Figure 6 for terminal locations). Wiring instructions are included on the riser diagram in your system drawing package. If you do not have a system drawing package, wire the OverTemp indicator as shown in Figure 7.

To provide a system-wide OverTemp indicator you must connect the OverTemp terminals in all appropriate cabinets together.

Connect Digital Network Control Wiring

Digital Network Control wiring from stations such as Outlook is connected to JP10 through JP12 on the distribution board board (see Figure 6 for terminal locations). Wiring instructions and appropriate wire gauge sizes are provided on the system riser diagram. DO NOT land two sets of wires on any control terminal unless shown in the riser diagram. Most control station runs are daisy-chained, and must not be paralleled at the distribution board. All control wiring should enter at the lower left-hand corner of cabinet.

Wherever possible, control station runs should be single pulls directly from the first control station in a daisy chained run. If connections must be made in a junction box due to length of run or other considerations, these connections must be soldered prior to installation of the wire nut. These are not power connections. They are electronic interconnections which feed data directly to a microprocessor in the processor module. Poor connections may cause problems by introducing electronic noise into the system, resulting in poor system operation. Table 1 shows the control station wire color codes.

Table 1. Outlook Control Station Wiring Summary

Cable: Belden 9773 or equal.
Max Length: 1000 feet (300m - daisy chained runs only).
Connector: Terminal block in dimmer rack. Unpluggable terminal block on stations.

Term. #	Station Terminal Label	Signal Name	Comments	Pairs	
4	V +	POWER +	control station power +	pair 1	
1	V -	POWER -	control station power -		
2	LAN +	LAN DATA+	network signal true	pair 2	
3	LAN -	LAN DATA-	network signal complement	pair 3	
5					
6	SCRN	SCREEN		Screen wire	

The terminals for connecting the network signal lines may be labelled DATA+ and DATA-, LAN+ and LAN-, or SMX+ and SMX-, depending on the control system to which you are connecting the station. Consult your system diagrams or risers.

DMX512 Dimmer Control Wiring

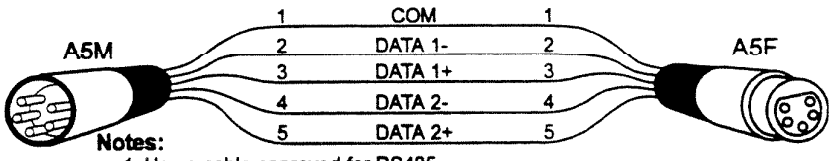
The two types of connections provided in Strand Lighting equipment for DMX512 dimmer control signals are the XLR style connector and terminal blocks. Unless otherwise specified, cabinets use terminal block connections and control consoles use XLR style connectors (see Table 2). DMX512 connections in Digital Environ cabinets are made on JP15 and JP16 (Mux A connections) or JP13 and JP14 (Mux B connections). Please see Figure 6 for terminal locations on the distribution board.

Table 2. DMX512 Control Inputs

Cable:	Belden 9841, 9842, or equal.
Max Length:	Standard RS485 electrical characteristics apply, including line driver and receiver characteristics, line loading, and multi-drop configurations.
Connector:	Terminal block in fixed cabinets and racks. "XLR" style connector on moveable racks and packs, and on control consoles.

XLR Pin #	Terminal Label	DMX Signal	Comments	Pairs	Wire Color
1	DMX1-GND	COMMON	Dimmer Common (shield)		shield
2	DMX1-	DATA 1-	Dimmer Link Complement	pair 1	black
3	DMX1+	DATA 1+	Dimmer Link True		red
4	Not used	DATA 2-	Optional #2 Data Link Complement	pair 2	black
5	Not used	DATA 2+	Optional #2 Data Link True		white

DATA 1- and DATA 1+ are one twisted pair. Common is tied to the cable shield. There are multiple DMX terminals, labeled DMX1-, DMX2-, DMX3-, etc. The above table shows only the DMX1 terminal set.



Notes:
1. Use a cable approved for RS485
2. For electrical characteristics, including driver and receiver selection, line loading, and multi-drop configurations, see RS485 specification.

Figure 8. DMX512 Dimmer Control Extension Cable

DMX512 Terminations

DMX512 connections are digital data connections (EIA Standard RS-485) and must be properly terminated. In multiple cabinet systems, make sure that the cabinet farthest away from the console (and only this cabinet) is terminated. The termination jumpers are located at the top edge of the Distribution board.

- The termination jumper for Mux A is jumper LK3.
- The termination jumper for Mux B is jumper LK2.

Analog Control

The Digital Environ processor module has an analog input for each control channel. This control signal is piled on to the dimmer levels from the selected incoming protocol. These signals are input through two pluggable terminal blocks on the top of the processor module.

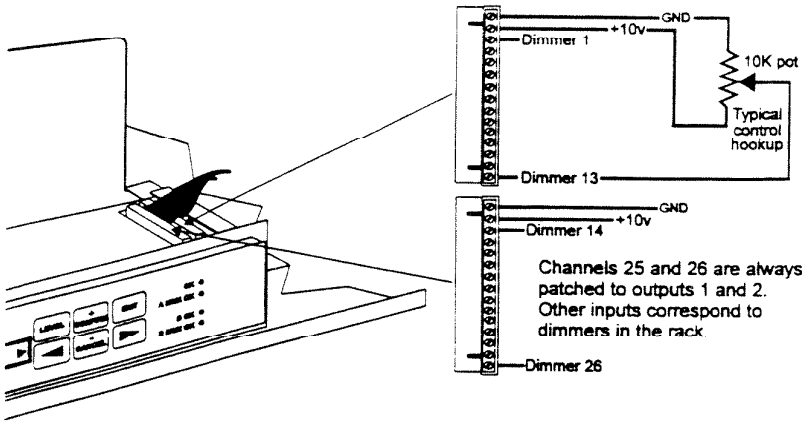


Figure 9. Typical Analog Hookup

For Microcontrol connections, see your riser diagram or system drawing package.

Mode Switch Settings

The 8-position Mode DIP switch allow various control parameters to be changed as required.

Table 3. Mode Switch Settings

Position/ Condition	Effect
Position 1-4 ON	**reserved--these switches must be ON.**
Position 5 ON	**cabinet is small (can hold up to 6 power modules)**
Position 5 OFF	cabinet is large (can hold up to 12 power modules)
Position 6 ON	single phase operation (two wire plus neutral)
Position 6 OFF	**three phase operation (three wire plus neutral)**
Position 7-9 OFF	**reserved--these switches must be OFF.**

Factory default settings are shown in bold.

Install Branch Breakers or Terminal Block Kits

Some power modules are stocked only in terminal block or branch breaker configuration. Conversion kits and instructions are supplied separately. Conversions should be made prior to module installation.

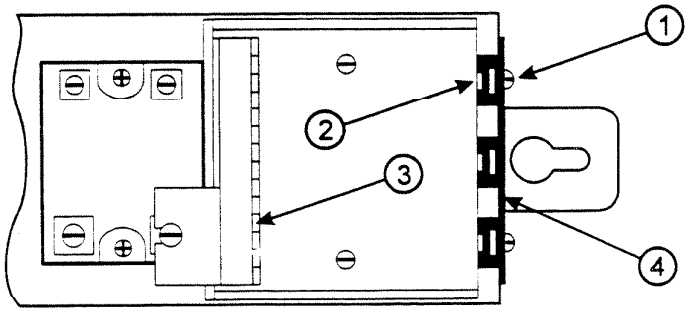
Mount Power Modules

1. Remove power module and mounting screws from shipping carton. If a power module is equipped for branch breakers, breaker knockout plugs are included.
2. Install mounting screws in holes located at all module locations in cabinet. Refer to circuit schedule for correct module locations. Place all mounting screws prior to module installation.
3. Place power modules and tighten mounting screws to secure. Modules install easiest if the lowest power module as shown on the system drawings is installed first.
4. Remove module power feed insulator and re-strip power feed wires for module locations which are to be connected. Insulators are shipped on wire ends for safety. Wire harness ends are pre-numbered to indicate the correct power module location.
5. Connect power module power feed wires to copper screw lugs on the power module.
6. Install control wire plug connectors to the power modules. Wire harness ends are pre-numbered to show the appropriate power module location.

Install Branch Breakers

Power module branch breakers are packaged separately and must be contractor installed on the power module.

Branch breakers are stab-in General Electric THQP series. Incandescent power modules accommodate up to 6 single-pole breakers (3 breakers per dimmer on dual power modules). Fluorescent power modules with only one dimmer accommodate up to 3 two-pole breakers. Dual fluorescent power modules are available only with terminal strip outputs.



1. Loosen clip screws.
2. Place circuit breaker foot tabs under clip.
3. Engage line side of circuit breaker with copper bus.
4. Hold clip down and tighten screws.

Connect Load Wires

Load neutral wires are connected to the neutral bus on right side of cabinet.

Load wires are connected directly to the power module terminal block or branch breakers. Branch breaker identification is shown in Figure 10 on page 26. Terminal block identification is shown in Figure 11 on page 27.

All load wiring should enter at the top right-hand corner of the cabinet. Under no circumstances should load and control wiring be placed in the same conduit or raceway.

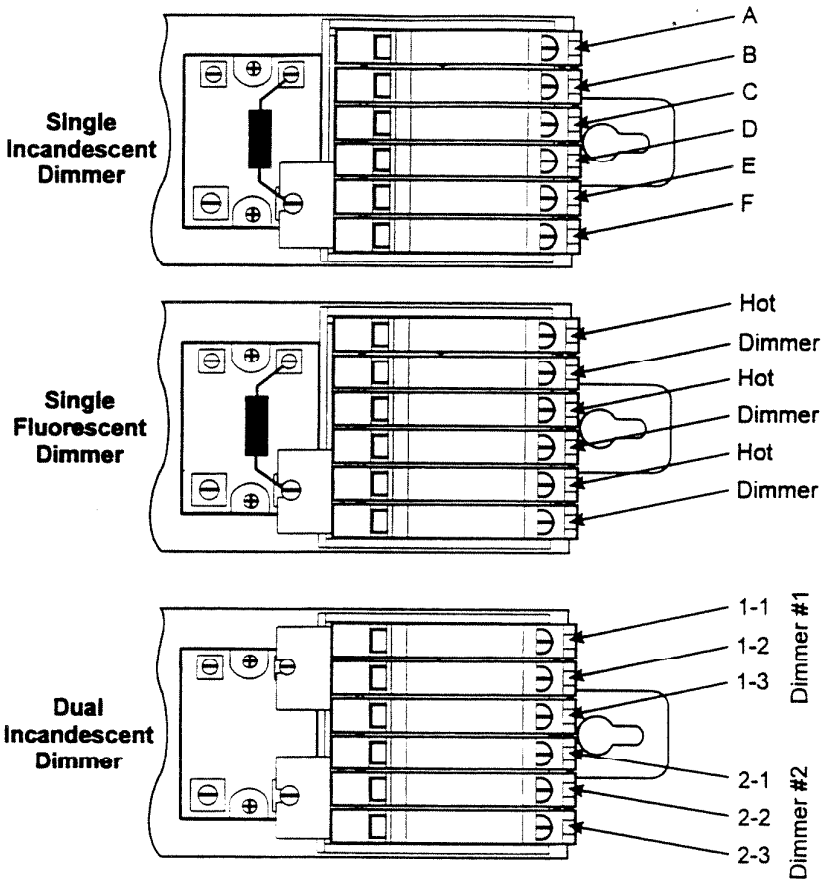


Figure 10. Branch Breaker Identification

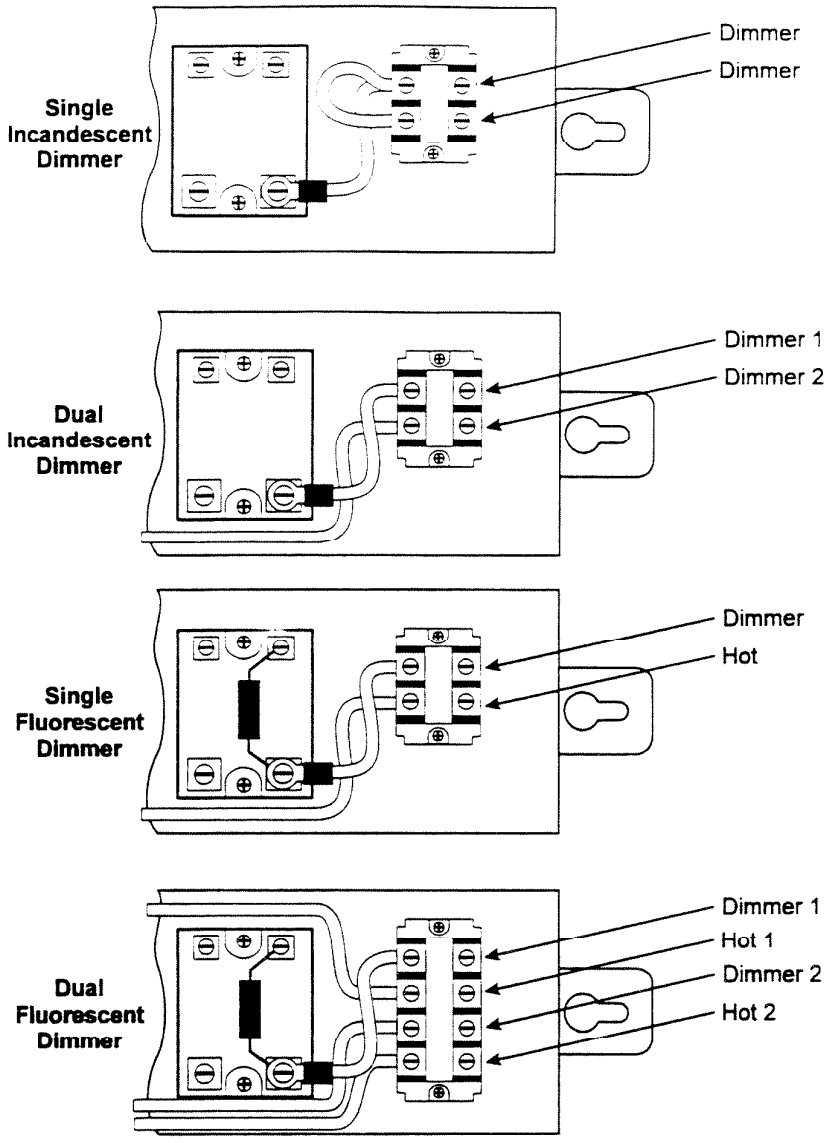


Figure 11. Terminal Block Identification

Hardware Setup

Once you have finished you must set up the system as required for proper phasing, Panic operation, etc.

Check All Wiring

Before applying power to the system you should double-check all of your wiring.

1. Check that all terminals and mechanical fixings are secured.
2. Check for stray wire strands and make sure wires are correctly restrained and not in contact with metal edges or obstructing the power module ventilation paths.
3. Check earth connections.
4. Double-check Neutral connections and positively verify phase orientation at the input busbars. Ensure that Neutral has not been confused with a phase - connecting the unit "across the phases" will do severe damage.
5. Make sure all power module control cables are connected.
6. Make a full safety inspection of all load wiring.

Select Dimmers for Panic

Panic turns on any single dimmer, combination of dimmers, or all dimmers, bypassing system electronics.

Select panic for a dimmer using DIP switches located on the distribution board (see Figure 6). Each cabinet has 24 panic switches (three eight-pole DIP switches). Dimmers with switches in the up (ON) position are switched ON when you activate panic, regardless of their control station settings. Dimmers with panic select switches in the down (OFF) position are not affected when panic is activated. Cabinets are shipped with all switches in the up (ON) position.

To activate panic:

1. Activate a maintained switch or relay connected to the PANIC MAINT terminal to turn selected dimmers in all connected cabinets ON.
2. If the processor module is installed, press PANIC on the cabinet to turn selected dimmers in the cabinet ON.
3. Remove the processor module to turn selected dimmers in the cabinet ON.

To deactivate panic:

1. Deactivate a maintained switch or relay connected to the PANIC MAINT terminal to turn selected dimmerps in all connected cabinets OFF.
2. If the processor module is installed, press NORMAL on the cabinet to turn selected dimmers in the cabinet OFF.
3. Re-install the processor module to turn selected dimmers in the cabinet OFF.

Make sure that the reason for removing the processor module has been repaired, and turn power to the rack OFF while installing the module.

Set Correct Phasing

Correct phasing for the processor module is set on the distribution board. Mode switch 6 (switch 6 of DIP switch S1 on the distribution board) must be ON for single phase systems and OFF for three phase systems. This switch is on the distribution board.

Close the Cabinet

Once all internal settings are completed, and all wiring checked, you can close the cabinet.

1. Clean out any installation debris from the cabinet.
2. Remove inner panel circuit breaker knockouts as required before installing power modules and branch breakers. For power modules without secondary branch breakers, remove only the primary circuit breaker knockouts.
3. Plug any open spaces around branch breakers with the breaker knockout plugs provided.
4. Place inner panel and secure with screws provided.
5. Install the cabinet door.

Apply System Power

Systems purchased without Field Service commissioning (turn-on) are now ready for system power. For such systems, follow the steps below. If commissioning is required, a notice appears on the riser diagram that the system should not be energized without a factory technician present. Call and request scheduling for commissioning as early as possible. Due to heavy scheduling requirements, the normal time required for proper scheduling is at least two weeks. Please mail back the enclosed commissioning request sheet. Early receipt will help insure that your turn-on requirements are met.

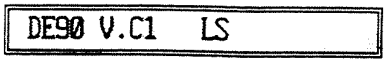
1. Check power to make certain that it is correctly rated per system riser. If not, correct before proceeding.
2. Apply power to system.
3. If system does not function properly, follow the Trouble-shooting Guide starting on page 31. If these steps fail, or for assistance with replacement parts, please call Strand Lighting directly.

System Tests

Once you have applied power, there are a number of indicators that you should check before proceeding with cabinet setup.

Startup

When the cabinet is switched ON, a number of self-tests are run and the system displays the following message for a few seconds:



This display shows the software version (C1 in this example) and the cabinet type (large single phase cabinet in this case). Cabinet type codes are:

LT = large three phase cabinet
LS = large single phase cabinet
ST = small three phase cabinet
SS = small single phase cabinet

The default display appears as soon as this software check is complete.

If either of these displays fail to appear, switch the power OFF immediately and check the installation again. If all wiring seems correct, call Strand Lighting.

After Startup

1. Make sure that the **L1**, **L2**, and **L3** LED's are lit and are the same intensity if you have a three phase supply, or that the **L1** and **L3** LED's are lit and are the same intensity if you have a single phase 3-wire supply.
2. Make sure that the **OK** LED is lit and is not flashing.

IMPORTANT

If any of the LEDs do not illuminate, switch the power OFF immediately and check the installation again.

3. Refer to the *Setup* chapter and set up the variable parameters on the cabinet as required.
4. Switch on all load circuit breakers.
5. Connect a suitable luminaire to each outlet and check every dimmer using the LEVEL control facility, a suitable control console, or System Wide Control. Investigate and correct any malfunctions you find.

Chapter 5

Processor Module Setup

This chapter gives the basics of how to set up the dimmer cabinet and how to use the programming features of the Digital Environ processor module. For a discussion of each specific menu and its submenus, please see the *Command Reference* chapter.

Power up Display

When the cabinet is switched ON, a number of self-tests are run and the system displays the following message for a few seconds:

This display shows the software version (C1 in this example) and the cabinet type (large single phase cabinet in this case). Cabinet type codes are:

LT = large three phase cabinet
LS = large single phase cabinet
ST = small three phase cabinet
SS = small single phase cabinet

The default display appears as soon as this software check is complete.

At this display, you can use CONFIRM *and* CANCEL *to increase or decrease the contrast of the LCD.*

Indicators

Digital Environ has 7 green LED indicators to indicate its status. The B OK and B MUX OK LED's are part of the optional Mux B processor.

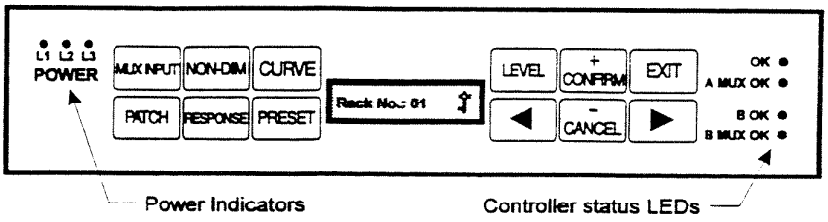


Figure 12. LED Indicators

L1, L2, L3 — Phase Power present at Processor Unit. Only L1 and L3 will light for single phase 3-wire systems.

O.K. — The main processor is running. A flashing condition indicates that over temperature has been detected in the cabinet.

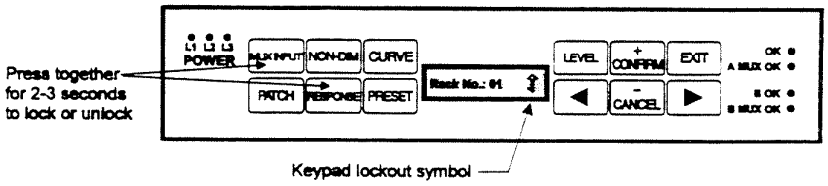
B OK — The optional multiplex receiver B processor is fitted and running.

A MUX OK / B MUX OK — Valid multiplex signals are being received at the Mux A or Mux B input.

Keypad Lock

To avoid tampering by unauthorized personnel, Digital Environ includes a security mechanism indicated by a key (⚷) on the right side of the display. If this key is present, you must press MUX INPUT + RESPONSE simultaneously and hold them for about 2 seconds to unlock the system before any of the keys will respond. The factory default setting for the security lockout is OFF.

When activated, the lock is automatically re-enabled after 10 minutes with no keyboard input.



Navigating the System

You can access a range of programmable features through the use of the dimmer cabinet's keypad and 16 character display. The menu system is designed to minimize multi-level menus and keep operation simple. Menus can be presented in French, German, or English. English is the default language and this text assumes that English is selected.

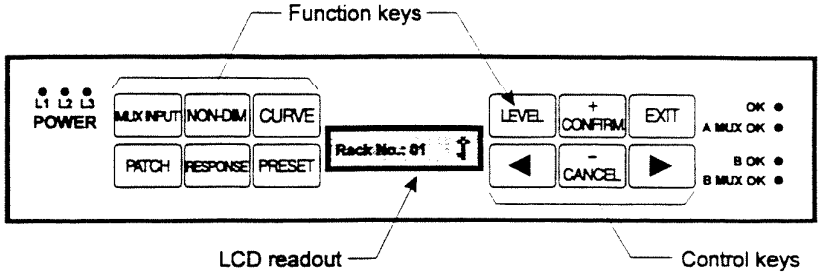


Figure 13. Keypad Layout

The six keys on the left of the processor module and the LEVEL key on the right select functions which are controlled by the control keys listed below. While you are in any function menu, you cannot select another function until you return to the top level menu.

◄ and ► let you go to a sub-menu, move between fields, or move along a large numeric field. A flashing cursor shows which field is selected.

+ CONFIRM and - CANCEL are used to adjust a numeric field shown in the display or to scroll between possible fixed options.

EXIT leaves an option or menu and records any changed data in non-volatile memory. Some options require positive confirmation with + CONFIRM. You will be prompted if confirmation is required.

Basic Setup

Although each cabinet is shipped with most parameters set at usable defaults (see Table 4) you need to at least check some of programmable settings at this time.

Table 4. Processor Module Defaults

Parameter	Factory default
MUX INPUTS	DMX512
NON-DIM	All dimmers =Off (no Non-dims)
CURVE	All dimmers = Square
PATCH	Start address of dimmer 01=0001
RESPONSE	All dimmers = Medium
OUTLOOK PRESET	Preset 0 = On power-up, no Outlook peset will be activated.
SWC PRESET	Preset 0 = Should a Mux failure occur, all dimmers will fade to blackout after a period of 10 seconds.
LEVEL	Dimmers take levels from control inputs (Mux, analog etc). Every time the dimmer system is switched on, even if a LEVEL was set previously, it will always respond to the control inputs.
LOCK	OFF
MAXIMUM VOLTAGE	120V
MINIMUM LEVEL	OFF
RACK #	01
MODULE MAP	All power modules are quad for small cabinets and dual for large cabinets.

You should check the following setups at this time:

- The *Module Map* item in the **SET* menu (see page 35) lets you set the types of power modules in the cabinet
- The *MaxVoltage* item in the **SET* menu (see page 38) lets you set the maximum output voltage for dimmers.
- If you will be using SWC or SV90, the *Rack no.* item in the **SET* menu (see page 36) lets you set the cabinet number of the dimmer cabinet. This feature is necessary only if you have multiple dimmer cabinets.
- For multiplex control (DMX512), the *Start No* item in the *Patch* menu (see page 37) lets you set the starting multiplex number for the cabinet.
- For Digital Network Control (e.g., Outlook) the *Dim.xx=Rmxx,Chxx* item in the *Patch* menu (see page 59) lets you assign a dimmer to control channels in each room.

Other parameters you may wish to set at this time are:

- The *Language* item in the **SET* menu (see page 83) lets you specify menus in English, French, or German.
- The *Min Level* item in the **SET* menu (see page 85) lets you set a minimum level for each dimmer. This can be used to keep some emergency lights ON all the time.
- The *Defaults* item in the **SET* menu (see page 86) lets you reset the processor module to factory defaults (see Table 4).
- The *Key Lock* item in the **SET* menu (see page 87) lets you turn the security lockout feature ON or OFF.

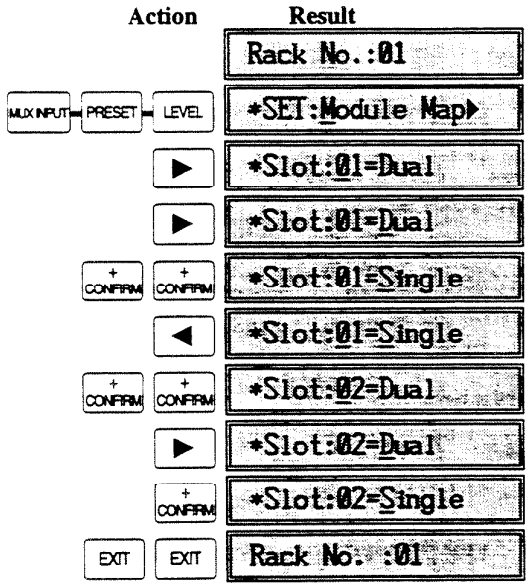
Set the Module Map

Before you can properly control dimmers, you need to tell the processor module what types of power modules are installed in the cabinet. The factory set defaults are:

- Small cabinet = all power modules are "Quad"
- Large cabinet = all power modules are "Dual"

The following example sets the first two slots of a large cabinet to single dimmer/non-dim modules.

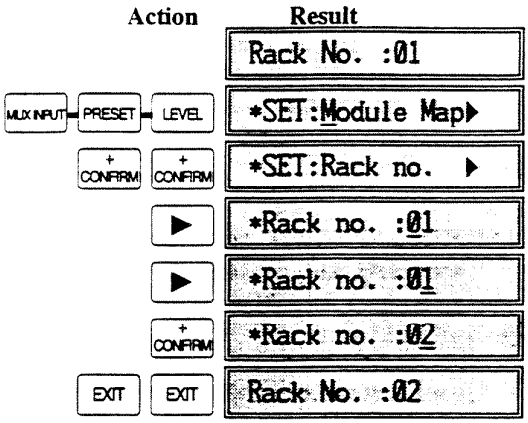
If the lockout symbol (⚷) appears on the LCD display, press [MUX INPUT]+[RESPONSE] *and hold about two seconds to unlock the processor module.*



Set the Cabinet Number

For Multiple cabinet installations that will be using the System Wide Controller or a computer running SV90 software, you must set a unique cabinet number for each cabinet.

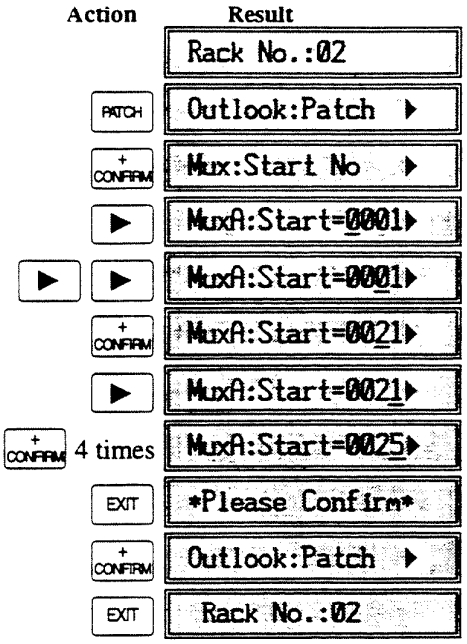
The following procedure sets the cabinet number to "2".



Set the Starting Mux Number

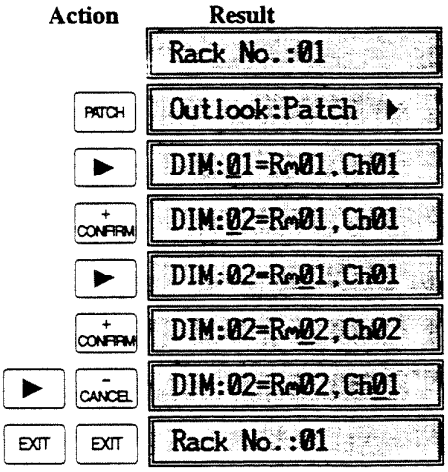
For multiple cabinet installations each dimmer must be assigned to a unique Mux signal number. Any dimmers with the same Mux signal number will be controlled together.

The following procedure sets cabinet #2 so that Mux signal #25 controls the first dimmer in the cabinet. Other dimmers are consecutively numbered. You can individually set Mux control assignments using the *Patch* menu if necessary (see page 59).



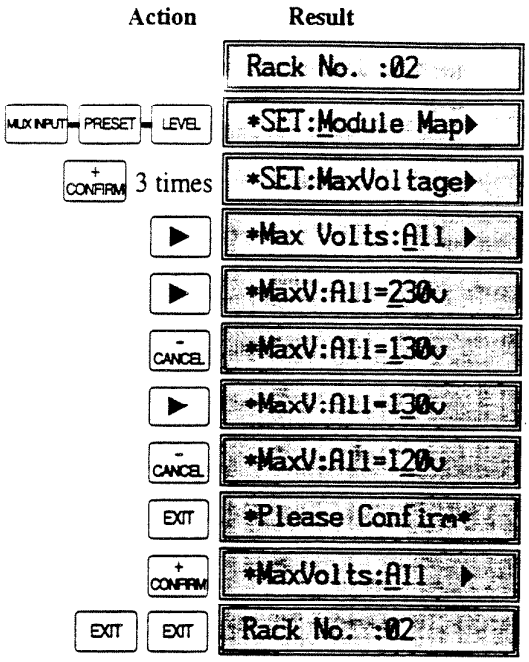
Set the Outlook Patch

If you are using Outlook (or compatible) controllers you can patch dimmers to specific channels in specific rooms. To set dimmer 2 in rack 1 to channel 1 in room 2, follow the steps below.



Set the Maximum Output Voltage

Unless the cabinet uses 220VAC input, you will need to set the maximum voltage for the dimmers to the correct number. To set the maximum voltage for all dimmers to 120VAC, follow the steps below.



Chapter 6

Trouble-shooting

This chapter provides basic trouble-shooting procedures for the Digital Environ cabinet. It does not provide comprehensive maintenance data, but allows you to solve simple problems which may occur, and helps to provide Strand Lighting with initial data when these procedures are not effective.

For best system operation, do a routine check and cleaning once each 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 this cleaning are seldom required. In case of problems, and in order to save time and aggravation, follow the procedures outlined here before calling Strand Lighting. Observe what happens at each step. These steps answer the first questions a Strand Lighting Service Representative will ask. The person actually doing the tests should call Strand Lighting in order to avoid miscommunication. All service except dimmer and mechanical components should be performed by subassembly replacement.

This chapter contains the following main sections:

Understanding the Control Signal Path

The following diagram illustrates the control signal flow throughout the Digital Environ cabinet. It is included here to show how each of the programmable settings interrelates.

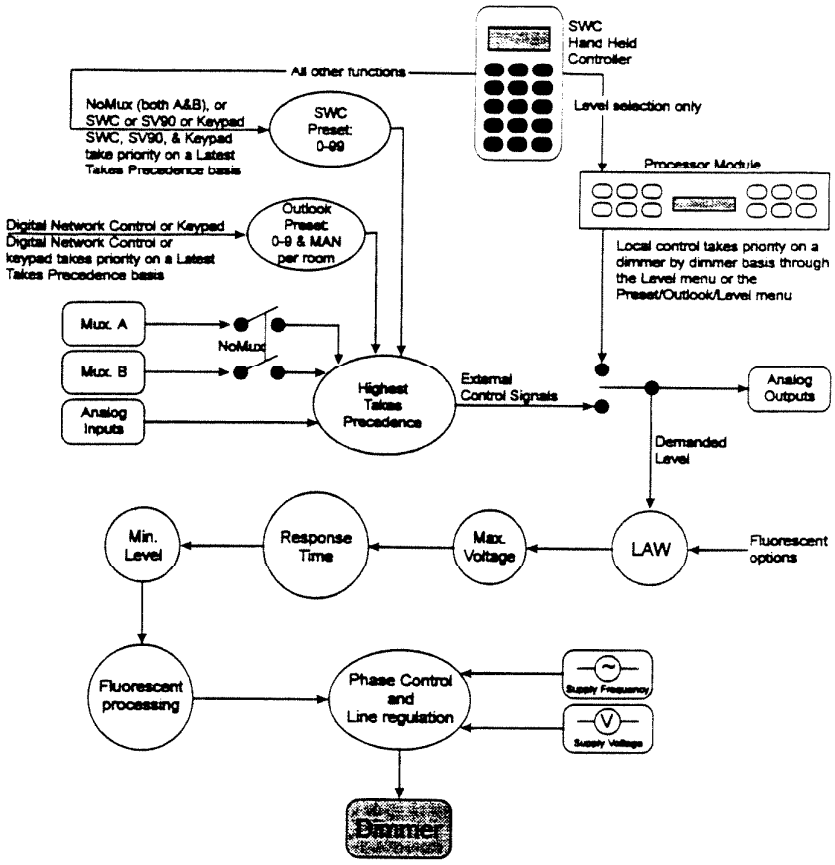


Figure 14. Control Signal Path Diagram

There are several important features of the above diagram:

1. The Outlook presets, SWC presets, Mux A, Mux B, and analog inputs are active on a highest takes precedence basis. You can have signals from all 5 sources contributing to the output.
2. If a NoMux preset is assigned, and your only source of levels is from the SWC presets, the system will fade to black if there is no Mux A or Mux B signal.
3. The local cabinet keypad overrides all external control signals.
4. The Analog outputs are independent of the law, max. voltage, response time, min level, and fluorescent functions. It is assumed that the external dimmer will perform these functions.
5. The cycle-by-cycle voltage and frequency compensation built into the system software.

Replacing Major Parts

Dimmers can easily be repaired in the field. The Digital Environ processor module is a field replaceable subassembly, though you must remove the front panel of the cabinet to replace it. You should not attempt to repair the processor module in the field.

Servicing Power Modules

Power modules can be serviced by turning power OFF to their cabinet and removing them from the cabinet. Power module components can easily be replaced in the field. To maximize SSR service life, use a heat transfer compound between the SSR and heat sink when replacing SSRs.

Warning

Always turn power to the cabinet OFF before removing or installing power modules.

Replacing the Processor Module

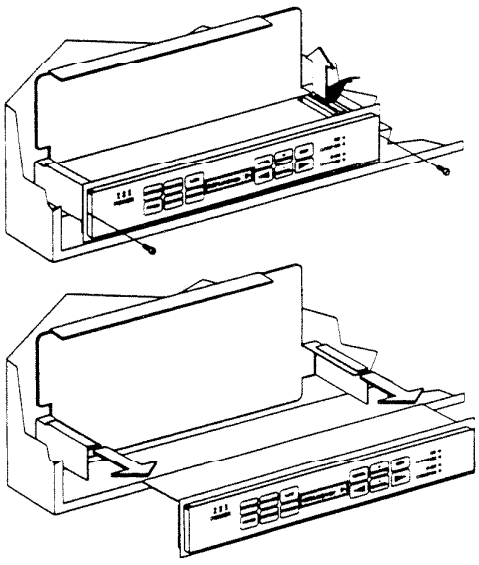
The processor module can be replaced or upgraded to new software in the field if necessary.

Removing the Processor Module

Warning

Always turn power to the cabinet OFF before removing or installing a processor module.

1. Turn power to the cabinet OFF.
2. Remove the hinged door and the front panel of the cabinet.
3. Remove two flat head screws on the front of the processor module.
4. Disconnect any analog wiring by unplugging the terminal strip from the processor module.
5. Slide the processor module straight out from the chassis about 3" (75mm), giving you enough space to disconnect the control signal cables, the 3-phase power cable, and the power block cables.



6. Note the positions of all connectors and disconnect them from the processor module.
7. Slide the processor module the rest of the way out of the cabinet.

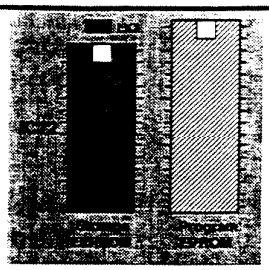
Reconfiguring the Processor Module

All programmable parameters are held in a non-volatile memory device (EEPROM), IC 12, on the Processor Unit PCB. Since this device is socketed, you can "transplant" it into an exchange unit and avoid re-configuring the unit manually.

> ***The memory device is Static Sensitive. Do not attempt removal and replacement without using proven anti-static precautions, such as an earthed wrist strap and earthed anti-static working surface. If you are in any doubt, do not proceed.***

1. Ensure anti-static precautions have been taken.
2. Gently lever out EEPROM, IC12
3. Repeat above two steps with exchange unit.
4. Swap devices over. Make sure that the device is oriented correctly, see left.

Front of Processor Unit



The replacement unit will now have the "personality" of the previous one, and will require no setting up.

> *The operating program is stored in the EPROM, IC16 next to the EEPROM, IC12. Yu can upgrade the software by swapping this device. Refer to the Issue Notes supplied for any compatibility issues.*

Replacing the Processor Module

Replacement of the processor module is the reverse of removel.

1. Carefully position the processor module in the guides and slide it halfway back into the cabinet.
2. Connect all cables except the analog inputs to the correct plugs.
3. Slide the processor module the remainder of the way into the cabinet and gently press it into the Distribution board connectors.
4. Connect any analog input connectors you removed.
5. Replace the two flat head screws on the front of the processor module.
6. Replace the front panel of the dimmer cabinet
7. Turn power to the cabinet back ON.

Isolating Parts

In case of failures in the system, you can expedite fault isolation by considering the following categories of malfunctions:

- Major system problems common to all dimmers or to a whole phase.
- Dimmer problems common to a single processor module.
- Dimmer problems not related by phase or processor module.

Establish fault location by interchanging processor modules or Power modules as required. You can swap modules between cabinets or within a cabinet. Correct the problem by module replacement once you have identified the defective component.

Warning

The dimmer cabinet must be powered down before removing or inserting processor modules. See under "Processor Module Replacement" earlier in this chapter for removal and installation procedures.

System Problems

None of the lights will come ON throughout the system.

- Cabinet power is turned OFF.
- Cabinet is in OverTemp shutdown mode.
- If power is ON and no MUX OK light is ON in any cabinet the Mux cable is probably at fault. Check the connectors at each end, and, using a ohmmeter, check that the signal(s) and shield are not shorted. If they are not shorted, then the most likely cause is an open circuit somewhere along the line.
- Make sure that the Mux protocol has been selected correctly
- Make sure that the Mux start number and patch are correct

Some lights can't be turned off.

Since Digital Environ dimmers take their level control signal from multiple locations, you need to make sure that none of the control signals are present. Some possible control sources follow:

- The PANIC switch is ON.
- Presets are being called up from a handheld control or wall station.
- Dimmer level has been set from a handheld control or from the processor keyboard.
- The NoMux preset is being called up because the cabinets have not detected MUX (wiring fault etc.).
- A preset may be ON via the PRESET VIEW facility.
- MIN LEVEL may be set for a particular dimmer. There is no way to turn OFF a dimmer with a min level set.

If all control signals appear to be OFF the problem may be a bad SSR in a power module. Swap the power module or SSR to verify the problem.

The lights flash or become erratic. The MUX OK LED goes ON and OFF erratically.

This problem may be caused by one Mux signal wire being loose or disconnected. It is most often seen with DMX512 installations. Both DMX512 signal connections and ground (screen) must be connected to all dimmer cabinets and the control desk. A common installation fault with DMX512 is the reversal of the two signal connections, or a signal connection and screen. Check that all cables have the correct wiring.

An additional problem can be caused by either over terminating the line, or not terminating the line at all. Make sure that the cabinet farthest away from the console (and only this cabinet) is terminated. The termination jumpers are located at the top edge of the Distribution board.

- The termination jumper for Mux A is jumper LK3.
- The termination jumper for Mux B is jumper LK2.

The lights very 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 (lifts etc.) can cause mains disturbances or corruption of control signals. The Digital Environ processor module is highly immune to such problems, but in extreme cases interference can occur.

If time is available, use the Level menu to set ALL dimmers to a given (low) level from the processor module keypad. This isolates the 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 re-route 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.

The handheld control or wall station operates erratically.

The wiring between the dimmer cabinets and control system is similar to the handheld or wall station wiring. The same rules as above apply.

PANIC is not working.

- No DIP switches are in the "ON" position. Turn ON the appropriate DIP switches.
- Improper Panic station wiring. Check wiring from Panic station.

Cooling fan is not working.

- No dimmers are activated by a control station. Bring up at least one dimmer or turn the cooling fan ON.

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.

Cannot control dimmers from a single control station.

- Incorrectly wired control station. Check wiring from control station to cabinet
- 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.

One cabinet 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 Mux control. The dimmer reverts to normal control at power up, thus power cycling is a quick way to check. Equally, 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 cabinet. Loose neutral connections in particular cause havoc!

Some dimmers don't appear to work.

Use the LEVEL key to check dimmer operation.

- If the dimmer fails to work, and all load wiring and connected load has been tested, then the power 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.

Check the dimmer patch in the control desk if applicable.

Make sure that the *Module Map* in the **Set* menu is correct.

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 cabinet to the same curve and voltage (see above) to rectify the problem.

Lights don't reach 100% intensity.

MaxVoltage is set incorrectly. Please see page 84 for how to change this setting.

Individual Dimmer Problems

Problems related to individual dimmers are due to one of the following:

- Dimmer Circuit Breaker is OFF
- Burned out lamp in fixture.
- Defective or disconnected load wiring.
- Defective dimmer (probably the SSR)
- Defective processor module (probably the output driver section)

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

Check for a bad dimmer by setting all panic enable switches OFF except for the suspect dimmer. Then enable panic. This puts 12VDC directly to the SSR input of the dimmer. If the dimmer stays OFF, it is probably bad.

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 cabinet and the processor module are seated correctly.

Check for a bent pin on the rear connectors of the processor module. Straighten if necessary.

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

Fluorescent Dimmer Problems

Before trouble-shooting 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 page 79).

For any additional information on fluorescent dimming, please refer to the Strand Lighting fact sheet *A Guide to Fluorescent Dimming*.

Parts Drawings

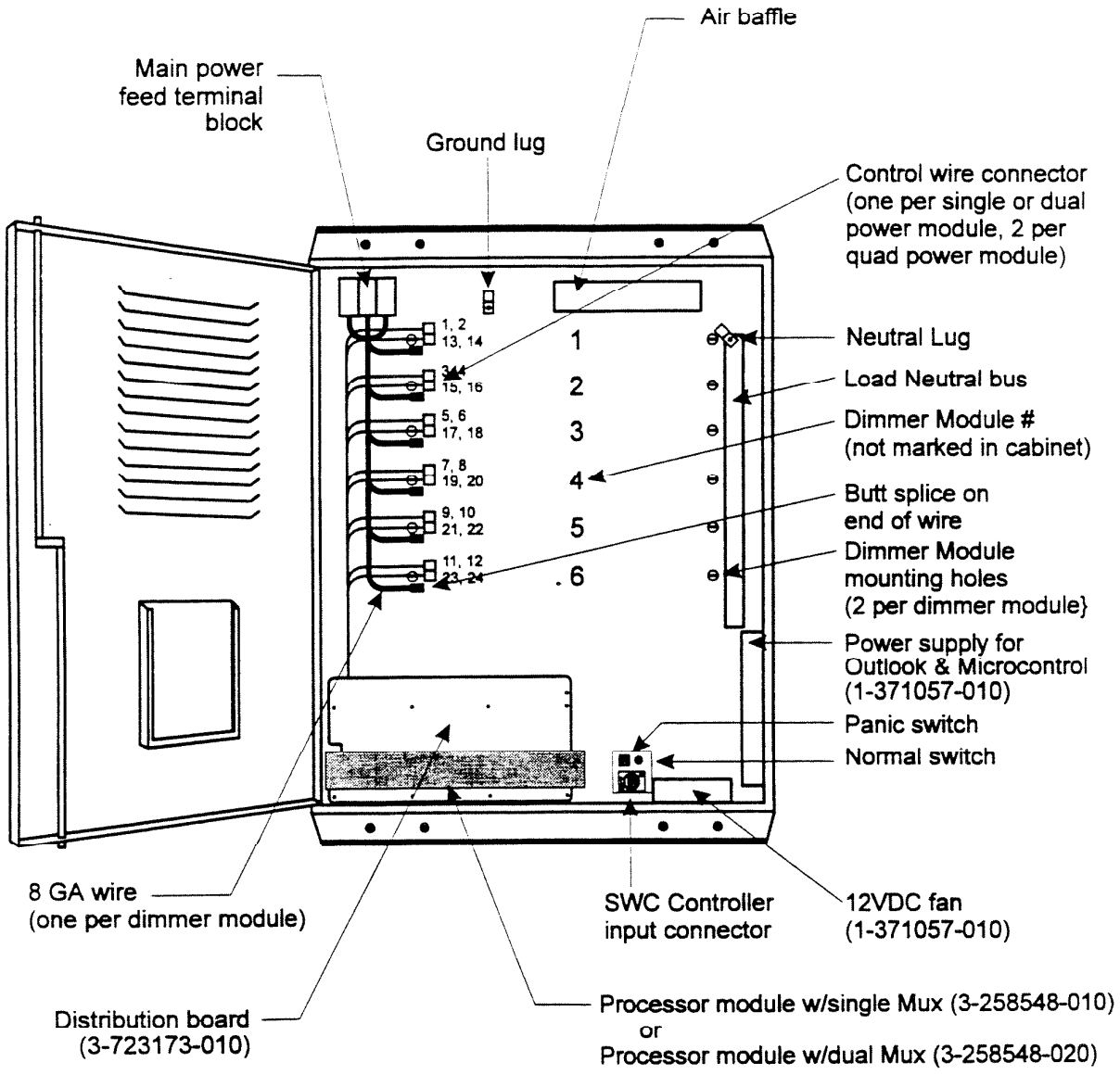


Figure 15. Digital Environ--Small Cabinet

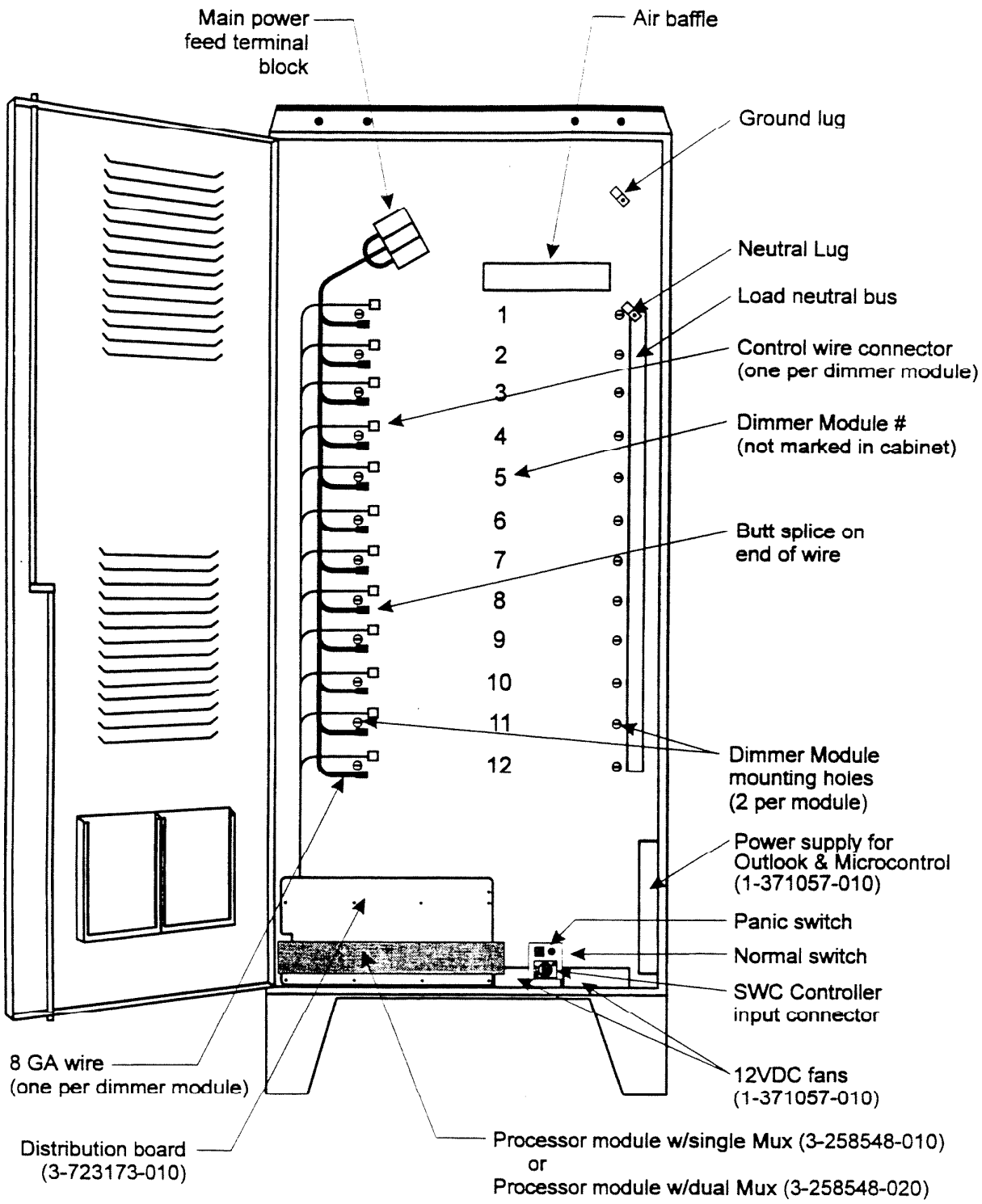


Figure 16. Digital Environ–Large Cabinet

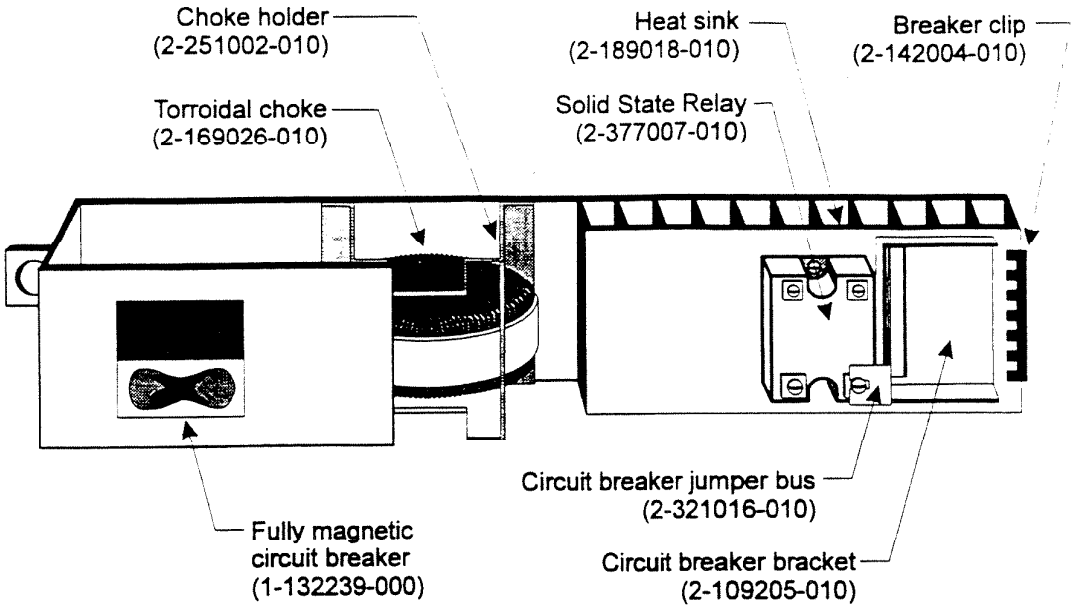


Figure 17. 6.0 Kw Power Module

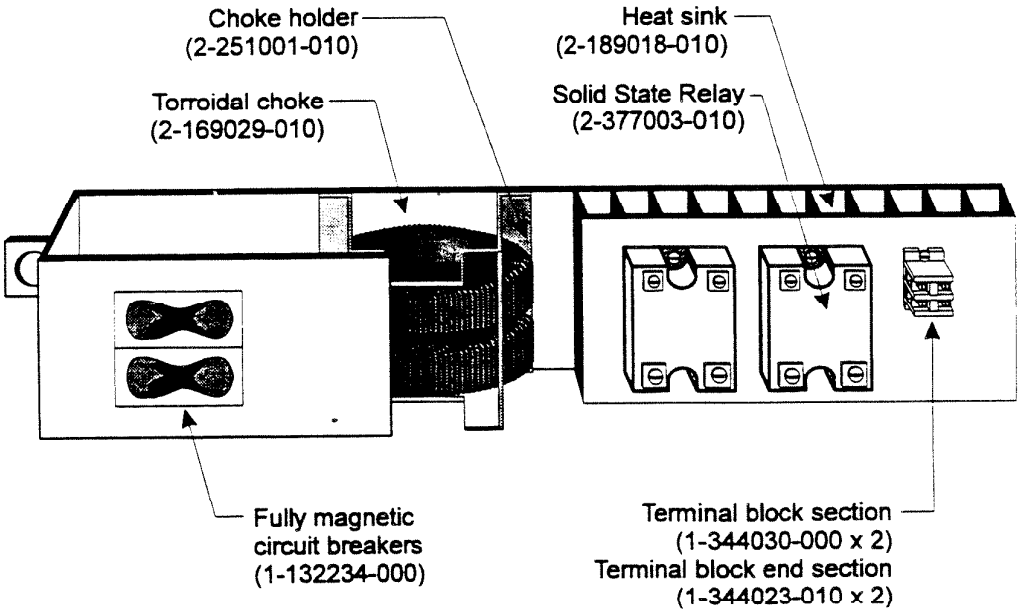


Figure 18. 2.4Kw Power Module

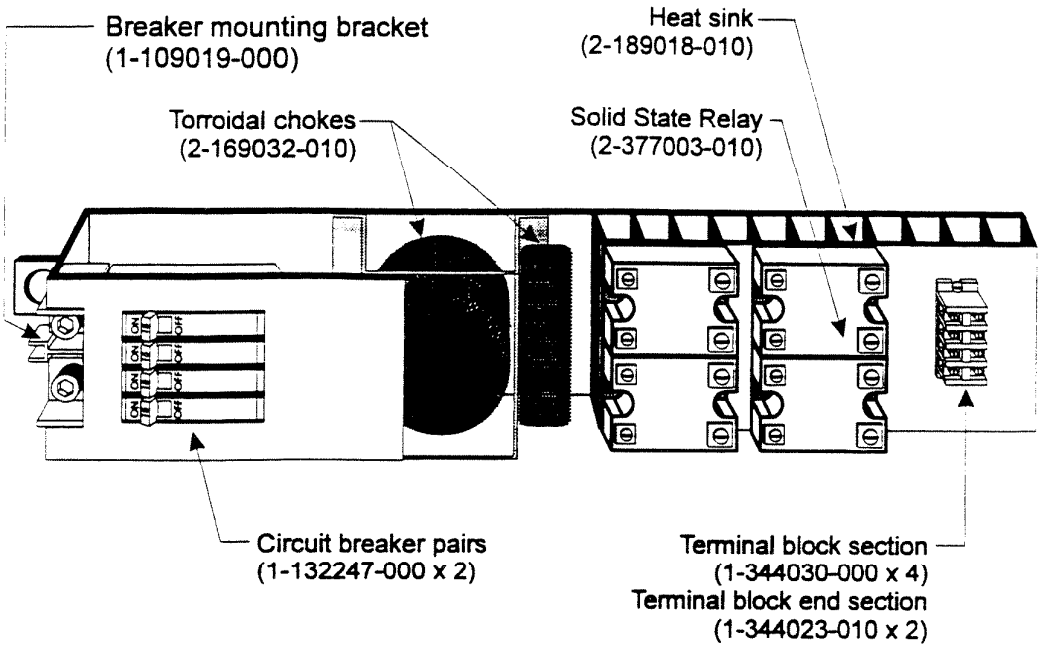


Figure 19. Quad Power Module

Chapter 7

Periodic Maintenance

Periodic maintenance should be done every six (6) to twelve (12) months, depending on the environmental conditions. Although a detailed discussion of this procedure is beyond the scope of this manual, basic checklists are provided to show what is involved. Users wishing to do these procedures on their own should consult Strand Lighting Field Service.

1. Disconnect the dimmer cabinet from power or turn power to the dimmer cabinet OFF.
2. Inspect the dimmer cabinet 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 cabinet while power to the cabinet is shut down.
4. Reconnect the cabinet, turn power to the system ON, and make sure all dimmers work correctly. Check the Panic switches in the cabinets to make sure they turn ON the selected dimmers.
5. Make certain that the fan(s) are operational. If not, trouble-shoot as necessary and replace or repair the defective fan or electronics.
6. Make certain that ventilation to the cabinet has not been blocked. Fully loaded dimmers produce 2%-4% of their rated capacity as waste heat while in operation. If the dimmer cabinet overheats, the OVERTEMP sensor will shut the system down, leaving all rooms controlled by the overheated cabinet in the dark.
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.

   For best effect the lights for the dimmers should be ON when you do this.

Chapter 8

Command Reference

This chapter is organized alphabetically by menu name, and gives details on how to select and program all of the Digital Environ programmable features using the cabinet keypad and display.

Curve Menu

There are 3 incandescent and 2 fluorescent dimming curves which you can assign to Digital Environ dimmers for compatibility with other dimmers or specific application requiremtness. The factory default is SQUARE.

Set Incandescent Dimmer Curves

The following graphs illustrate the relationship between input signal and output voltages for the different incandescent curves. In general, you can use SQUARE for T.V. requirements, LINEAR for theatre use, and S-CURVE for architectural installations or when you need to match older dimmers.

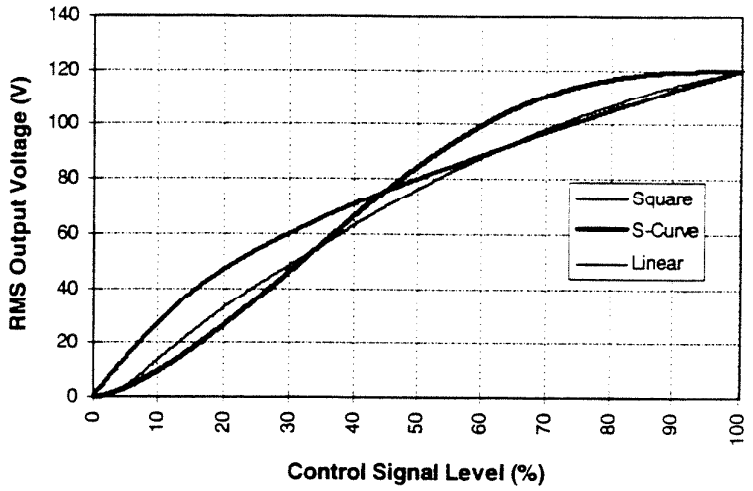


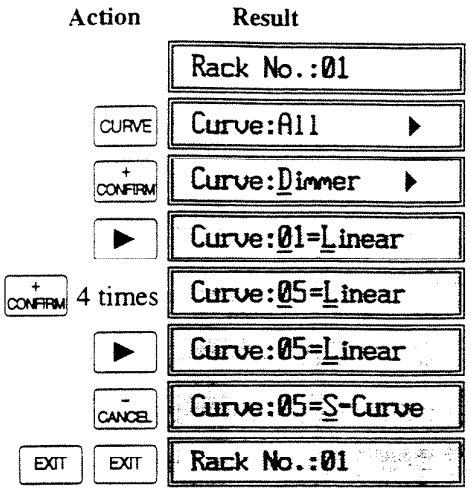
Figure 20. Incandescent Dimming Curves (with 120V nominal supply)

Separate dimming curves are supplied for use with magnetic or incandescent fluorescent fixtures. You should set these correctly for best results from your installed fixtures.

To set all dimmers to "Linear", follow the setps below.

Action	Result
	Rack No.:01
CURVE	Curve:All
▶	Curve:All=Square
- CANCEL	Curve:All=Linear
EXIT	*Please Confirm*
+ CONFIRM	Curve:All
EXIT	Rack No.:01

To set one dimmer to "S-Curve", follow the steps below.



Set Fluorescent Dimmer Curves

The Digital Environ cabinet supports both magnetic and electronic (phase controlled) fluorescent ballasts. For optimum performance you should set the appropriate fluorescent curve for each of your fluorescent dimmers.

For magnetic ballasts using the standard Digital Environ fluorescent power modules this setting is not necessary if the fluorescent curve was set in the power module when your system was installed. Consulet Strand Lighting Field Service if you have questions about how this setting should be used in your system.

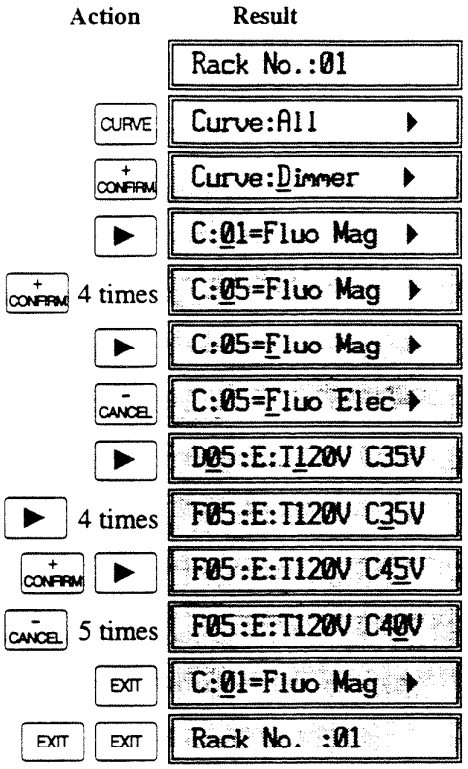
Fluorescent lamps operate best when the dimmer response is set to "Slow" (see page 79 for setting dimmer response).

For additional information on Fluorescent Dimming refer to the Strand Lighting fact sheet *A Guide to Fluorescent Dimming*.

To set all dimmers to "Magnetic", follow the steps below.

Action	Result
	Rack No.:01
CURVE	Curve:All ▶
▶	C:All=Linear
CANCEL	C:All=Fluo Mag ▶
▶	All:M:T120V C80V
▶ 3 times	All:M:T120V C40V
CANCEL	All:M:T120V C30V
▶	All:M:T120V C30V
CONFIRM 5 times	All:M:T120V C35V
EXIT	*Please Confirm*
CONFIRM	C:All=Fluo Mag ▶
EXIT	*Please Confirm*
CONFIRM	Curve:All
EXIT	Rack No.:01

To set one dimmer to "Electronic" with a maximum output voltage of 120V and a low end cutoff of 40V, follow the steps below. For an explanation of how and why these settings are required, refer to the Strand Lighting Fact Sheet *A Guide to Fluorescent Dimming*.



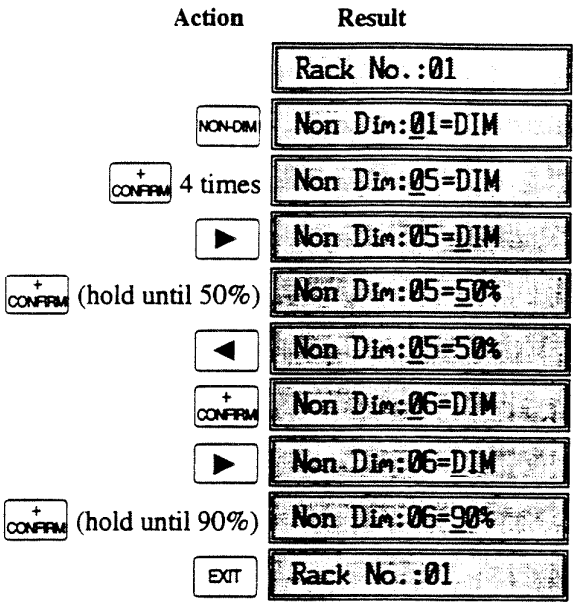
Input Menu

The Mux input protocol is fixed at DMX512 in Digital Environ systems. This menu only shows shows you whether or not you have the second multiplex input (Mux B) installed.

Non-Dim Menu

The *Non-Dim* menu lets you assign "Non-Dims." Non-Dims remain at ZERO when the controller is below the set threshold percentage, and at FULL when the controller is above the threshold.

The example below sets dimmer 5 to Non-Dim with a threshold of 50% and dimmer 6 to Non-Dim with a threshold of 90%.



Patch Menu

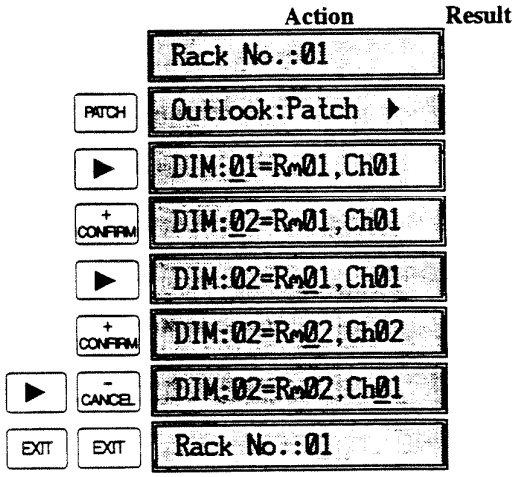
The PATCH function lets you allocate dimmer numbering according to your own requirements.

- The **Outlook:Patch** option lets you assign each dimmer to a channel in a room.
- The **Mux: Start** option lets you patch all dimmers in the cabinet sequentially after the specified *Start Number*.
- The **Mux:Dimmer** option lets you assign each dimmer to a specified multiplex number.
- The **Mux:Circuit ID** option allows you to assign your own dimmer numbers or names independently of the *Start Number* or *Dimmer patch*. It is important only for use with the System Wide Controller or with SV90 software. The facility allows you to 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.

All of the Mux functions are duplicated in MuxB if you have the second Mux input card installed.

Set the Outlook Patch

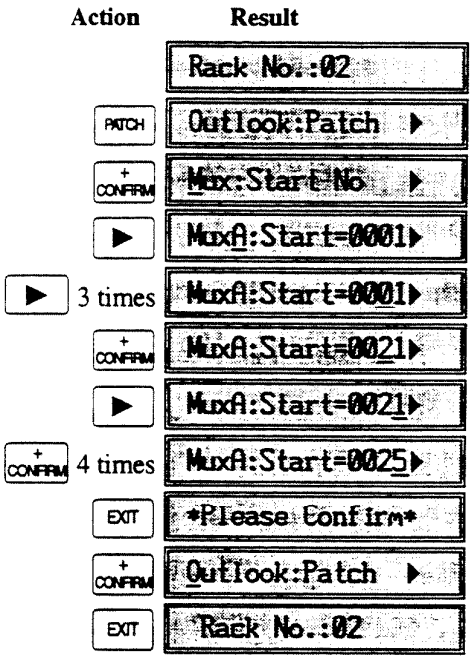
If you are using Outlook (or compatible) controllers you can patch dimmers to specific channels in specific rooms. To set dimmer 2 in rack 1 to channel 1 in room 2, follow the steps below.



Set Start Mux Number

In order to assure that all controls operate separate dimmers, multiple cabinet installations require that each cabinet is uniquely numbered and dimmers assigned accordingly. Even in single cabinet systems you may wish to have the numbering for your Digital Environ cabinet start at some number other than "1," particularly if the cabinet is being used as houselights and you wish to control them from a stage lighting console.

In most systems, dimmers are numbered consecutively through the dimmer cabinets. The first dimmer in a cabinet is set to one number higher than the last dimmer in the previous cabinet. The following example assumes that the first cabinet has 24 dimmers controlled by 24 consecutive Mux signals, and sets the first Mux signal for the second cabinet to 25.

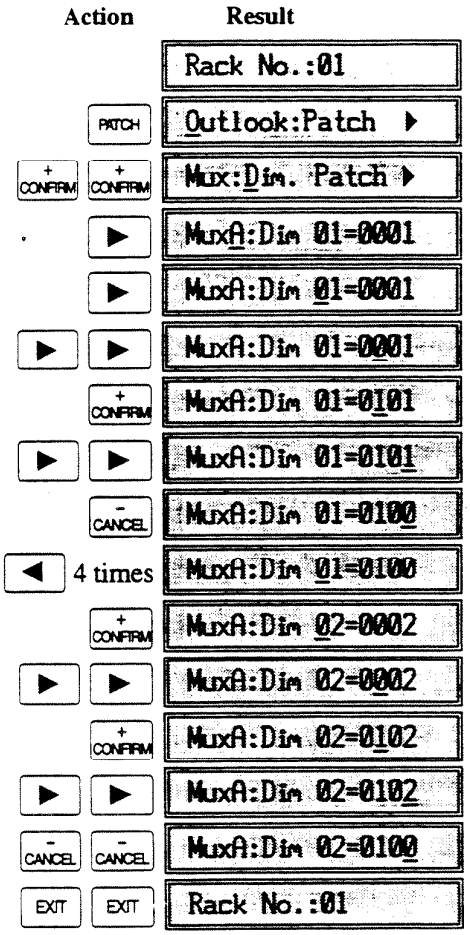


The Mux address will change as the dimmer number is changed showing the address that the dimmer is patched to. Remember that any changes to the patch will be seen on the lighting output immediately.

Patch Multiple Dimmers on a Mux Signal

You can patch more than one dimmer to be controlled by one Mux signal if required. This lets you group various sets of lights if required. the following example patches dimmers 1 and 2 to Mux signal 100. Unless you patch some other dimmer to Mux signals 1 and 2, neither of these signals will control any dimmers.

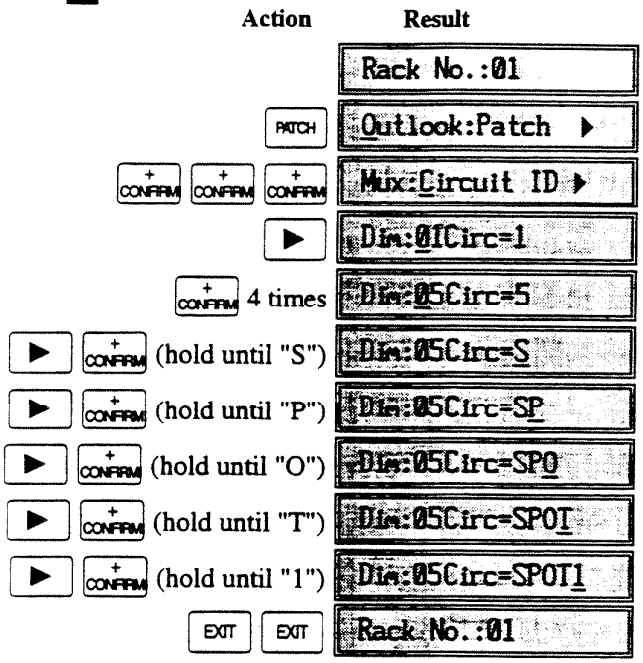
When using the D54 protocol, you must set the Mux: Start Number to the lowest Mux address that you want to patch any dimmer to. When using the Mux:Patch facility, the software will not let you set any dimmer to an address more than 52 higher than this number.



Set Circuit ID

The Circuit ID feature on Digital Environ lets you give dimmers 5-character identification names or numbers. Giving dimmers Circuit ID's will prove useful when Digital Environ is used with the optional System Wide Controller or a PC running SV90 software. Both of these optional control methods will let you control large numbers of dimmers easily and remotely.

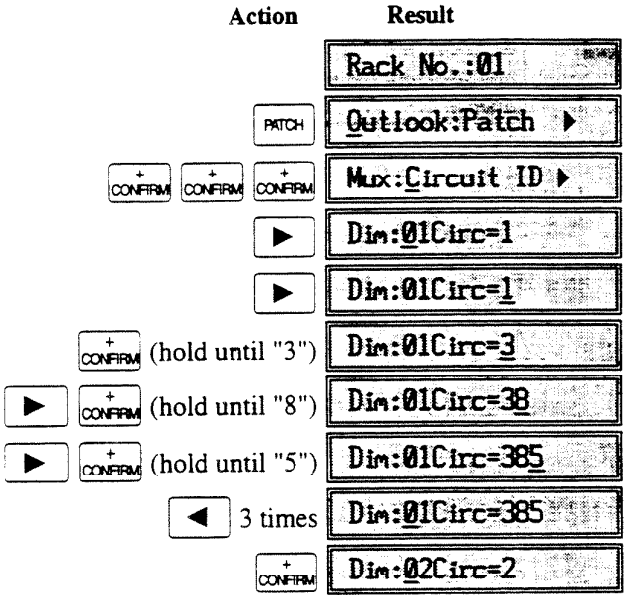
If you are using the System Wide Controller you are limited to 4 digit numbers for the circuit designation.



The Circuit ID feature can often let you control Digital Environ dimmers from multiple sources, even if those sources do not call the dimmers by the same numbers.

In the following example, a 24 dimmer Digital Environ cabinet is being added to an existing installation with 512 dimmers. The total number of dimmers (536) exceeds the capacity of a DMX512 link. The control console's second Mux output must be used, driving dimmers 513-1024. However, there is no implicit number carried in the Mux signal to tell the new dimmer cabinet that it is receiving signals 513-1024. To the Digital Environ cabinet this signal appears as 1-512 again.

If you set the Circuit ID's for dimmers 1-24 to 513-536 and the Mux Start number to 1, the dimmers can be controlled by the main control console as 1-24 and from the SWC Hand Held Controller or the Digital Environ front panel as circuits 513-536.



Repeat assigning a new name to each dimmer in the cabinet. Once you are done with all dimmers, press EXIT EXIT to get back to the default screen.

Preset Menu (Outlook)

There are 8 user programmable Outlook presets per room (1-8). Preset 0 is a non-recordable blackout state, preset 9 is all dimmers full ON, and MAN is the current slider settings being received from an active Outlook control station. When you record a preset, you record the actual dimmer levels as they appear in your room. If you are using the SWC Hand Held Controller, please see under *Preset Menu (SWC)*. Outlook presets and SWC presets are completely separated, and separately controlled, even though they can control the same dimmers.

Any of the Outlook presets may be "viewed" and added to the dimmer output in a 'Highest Takes Precedence' (HTP) manner from the cabinet keypad, or, remotely from an Outlook control station. When you select an Outlook preset, it will crossfade from any previously selected outlook preset (or from a blackout) in the programmed fade time.

Since Preset View operates on a Highest Takes Precedence (HTP) basis with other control inputs (e.g. from a lighting desk), if an SWC preset has been left 'on view' it will not be possible to subsequently fade down the dimmers from the other control locations. To avoid problems, always turn the preset OFF after use.

Record an Outlook Preset

You can record the composite dimmer output to an Outlook preset or to an SWC preset. You can save completely different information in the two sets of presets if you wish. Outlook control stations are limited to 8 presets per room.

1. Set up the desired lighting state first using any control means.
2. Follow the procedure as shown.
3. Repeat for any other presets that are required.

To record the current dimmer output to Outlook preset 2 in room 2, follow the steps below:

Action	Result
	Rack No.:01
PRESET	Outlook Presets
▶	Preset View
+ CONFIRM	Preset Rec.
▶	Rec:Rm01 Pre01
+ CONFIRM	Rec:Rm02 Pre01
▶	Rec:Rm02 Pre01
+ CONFIRM	Rec:Rm02 Pre02
EXIT	*Please Confirm*
+ CONFIRM	Preset View
EXIT	Rack No.:01

View an Outlook Preset

You can activate the dimmer levels of any Outlook preset by "viewing" the preset.

> *Don't forget--Preset View changes the lighting levels by activating the preset. It is not a "blind" viewing facility.*

To activate Outlook preset 2 in room 2, follow the steps below:

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
▶	Preset View ▶
▶	Rec:Rm01 Pre01
+ CONFIRM	Rec:Rm02 Pre01
▶	Rec:Rm02 Pre01
+ CONFIRM	Rec:Rm02 Pre02
EXIT EXIT	Rack No.:01

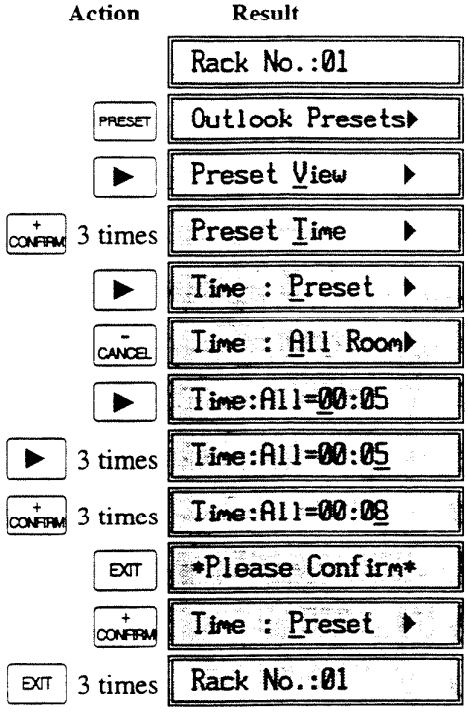
To turn off Outlook presets in room 2, follow the steps below:

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
▶	Preset View ▶
▶	Rec:Rm02 Pre02
▶	Rec:Rm02 Pre02
- CANCEL - CANCEL	Rec:Rm02 Pre00
EXIT 3 times	Rack No.:01

Set Preset Fade Times

You can set the fade time (up to 10 minutes) for all Outlook presets in all rooms, for all pesets in a specified room, or for one preset at a time.

To set the fade time for all presets in all rooms to 8 seconds, follow the steps below.



To set the fade time for all presets in room 1 to 4 seconds, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▸
▶	Preset View ▸
+ CONFIRM 3 times	Preset Time ▸
▶	Time : Preset ▸
+ CONFIRM + CONFIRM	Time : Room ▸
▶	Room:01=00:05
▶ 4 times	Room:01=00:05
- CANCEL	Time:All=00:04
EXIT	*Please Confirm*
+ CONFIRM	Time : Preset
EXIT 3 times	Rack No.:01

To set the fade time for preset 2 in room 1 to 1 second, follow the steps below.

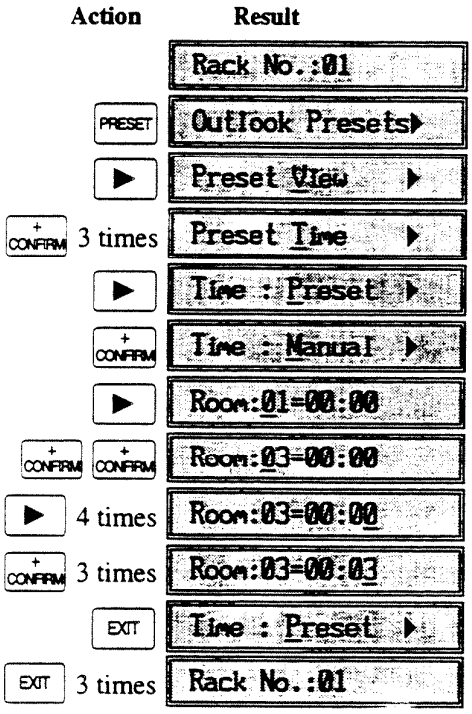
Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
▶	Preset View ▶
+ CONFIRM 3 times	Preset Time ▶
▶	Time : Preset ▶
▶	Rm01:Pre01=00:04
▶ 5 times	Rm01:Pre01=00:04
- CANCEL 3 times	Rm01:Pre01=00:01
EXIT	Time : Preset
EXIT 3 times	Rack No.:01

Set Manual Fade Times

Manual fade time is set per room. The default for this parameter is ZERO seconds. With a ZERO time set, when you press "Manual" on an Outlook slider station the lighting instantly fades from the current level to the levels 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.

Setting the fade times for all presets in all rooms or all presets in one room will not change the manual fade time. If you move a slider while a manual fade is in progress the lighting levels will instantly conform to the current slider levels.

To set the manual fade time for room 3 to 4 seconds, follow the steps below.



Set the Power Up Preset

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 ZERO, which sets the entire system to a blackout on power-up.

To assign preset 5 as the Power Up preset, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▸
▶	Preset View ▸
- CANCEL	Power Up Preset▸
▶	Power up to 00
+ CONFIRM 5 times	Power up to 05
EXIT 3 times	Rack No.:01

Set Channel Levels

This function lets you test individual dimmers and loads directly from the keypad by selecting their room & channel number, regardless of the signals being received from inputs.

Since this overrides the control inputs, including the Presets, it is possible to completely disable any or all of the dimmers. This is not a safety switch off mechanism however. It is easy to forget to set the dimmers back to INPUT, giving rise to unexpected lack of control.

Normally this control is set to All=Input, which lets the Mux input, analog inputs, and presets control the dimmer levels. Minimum Dimmer Level and Maximum Voltage set in the *SET menu take overall precedence over settings made in this menu. This control is reset to All=Input whenever the cabinet is powered up.

This control may also be used to control dimmers recording into SWC and Outlook presets in architectural situations where there is no conventional lighting control system available.

To set room 2 channel 4 to 50%, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
▶	Preset View ▶
+ CONFIRM + CONFIRM	Channel Levels ▶
▶	Rm02Chan01=Input
▶	Rm02Chan01=Input
+ CONFIRM 3 times	Rm02Chan04=Input
+ CONFIRM	Rm02Chan04=Input
+ CONFIRM (hold until "50%")	Rm02Chan04=50%
EXIT 3 times	Rack No.:01

Preset Menu (SWC)

There are 99 user programmable SWC presets per system. Preset 0 is a non-recordable blackout state. When you record a preset, you record the actual dimmer levels as they appear on stage or in your rooms. If you are using Outlook controllers, please see under *Preset Menu (Outlook)*. Outlook presets and SWC presets are completely separated, and separately controlled, even though they can control the same dimmers.

Any SWC preset can be "viewed" and added to the dimmer output in a Highest Takes Precedence (HTP) manner from the cabinet keypad, or, remotely from the SWC Hand Held Controller or from a PC running SV90 software. When you select an SWC preset, the system crossfades from any previously selected SWC preset (or from a blackout).

Since Preset View operates on a Highest Takes Precedence (HTP) basis with other control inputs (e.g. from a lighting desk), if an SWC preset has been left 'on view' it will not be possible to subsequently fade down the dimmers from the other control locations. To avoid problems, always turn the preset OFF after use.

Record an SWC Preset

To record the composite dimmer output to SWC Preset 3, follow the steps below.

1. Set up the desired lighting state first using any control means.
2. Follow the procedure as shown.
3. Repeat for any other presets that are required.

To record the current dimmer output to SWC preset 3, follow the steps below:

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
+ CONFIRM	SWC Presets ▶
▶	Preset View ▶
+ CONFIRM	Preset Rec. ▶
▶	Preset Rec.: 01
+ CONFIRM + CONFIRM	Preset Rec.: 03
EXIT	*Please Confirm*
+ CONFIRM	Preset View ▶
EXIT EXIT	Rack No.:01

View an SWC Preset

You can activate the dimmer levels of any SWC preset by "viewing" the preset.

> *Don't forget--Preset View changes the lighting levels by activating the preset. It is not a "blind" viewing facility.*

To activate SWC preset 3, follow the steps below:

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
+ CONFIRM	SWC Presets ▶
▶	Preset View ▶
▶	Preset View:Off
+ CONFIRM 3 times	Preset View: 03
EXIT 3 times	Rack No.:01

To turn off SWC presets, follow the steps below:

Action	Result
	Rack No.:01 ▶
PRESET	Outlook Presets▶
+ CONFIRM	SWC Presets ▶
▶	Preset View ▶
▶	Preset View: 03
- CANCEL 3 times	Preset View: Off
EXIT 3 times	Rack No.:01

Set the NoMux Preset

The NoMux preset is the preset the system will fade to if you lose the Mux signal. What happens to the dimmers if the Mux signal is lost depends on the NoMux setting.

0	System fades to black on loss of Mux signal.
1-99	System fades to selected preset on loss of Mux signal.
Hld	System holds current levels on loss of Mux signal.

The default setting is NoMux=0. NoMux=Hld is a useful safety feature in live performance situations.

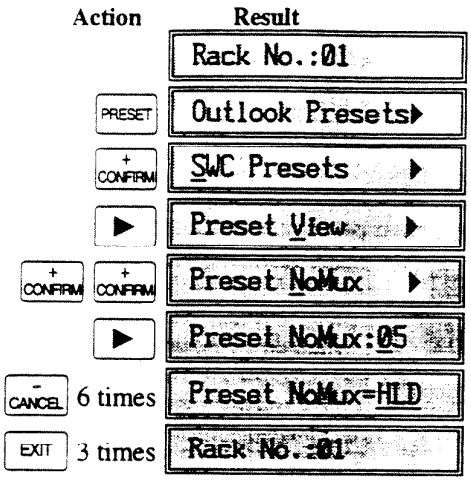
Caution

Setting NoMux 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, and once the desk is turned off, the dimmers are susceptible to noise pickup on the Mux Input. This can leave the dimmers unexpectedly ON. If you set NoMux to HOLD, make sure unattended dimmers are turned off.

To assign preset 5 as the 'backup 'state, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
+ CONFIRM	SWC Presets ▶
▶	Preset View ▶
+ CONFIRM + CONFIRM	Preset NoMux ▶
▶	Preset NoMux:00
+ CONFIRM 4 times	Preset NoMux=05
EXIT 3 times	Rack No.:01

To set the system to hold levels on loss of Mux signal, follow the steps below.



Set Fade Time

You can set the fade time for all SWC presets in the cabinet or for one preset at a time. To set the fade time for all presets to 1 second, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▸
+ CONFIRM	SWC Presets ▸
▶	Preset View ▸
+ CONFIRM 3 times	Preset Time ▸
▶	Time : All ▸
▶	Time : All 00:05
▶ 3 times	Time : All 00:05
- CANCEL 4 times	Time : All 00:01
EXIT	*Please Confirm*
+ CONFIRM	Time : All
EXIT	Preset View ▸
EXIT	Outlook Presets▸
EXIT	Rack No.:01

To set the fade time for preset 4 back to 5 seconds, follow the steps below.

Action	Result
	Rack No.:01
PRESET	Outlook Presets▶
+ CONFIRM	SWC Presets ▶
▶	Preset View ▶
+ CONFIRM 3 times	Preset Time ▶
▶	Time : All ▶
+ CONFIRM	Time : Preset ▶
▶	Time : 00=00:01
+ CONFIRM 4 times	Time : 04=00:01
▶ 4 times	Time : 04=00:01
+ CONFIRM 4 times	Time : 04=00:05
EXIT	Time : All
EXIT 3 times	Rack No.:01

Response Menu

The response speed of a dimmer is the rate at which it responds to an increase or decrease in its control level. Digital Environ provides "Medium" (100mS), "Fast" (30mS) 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.

Set Response for All Dimmers

The following example sets the response of all dimmers to "Fast."

Action	Result
	Rack No.:01
RESPONSE	Response:All ▶
▶	Res:All=Medium
+ CONFIRM	Res:All=Fast
EXIT	*Please Confirm*
+ CONFIRM	Response:All ▶
EXIT	Rack No.:01

Caution

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.

Set Response for One Dimmer

The following example sets the response of dimmer 8 to "Slow."

Action	Result
	Rack No.:01
RESPONSE	Response:All ▶
+ CONFIRM	Response:Dimmer▶
▶	Res:01=Fast
+ CONFIRM 7 times	Res:08=Fast
▶	Res:08=Fast
+ CONFIRM	Res:08=Slow
EXIT EXIT	Rack No.:01

Set Level Menu

This function lets you test individual dimmers and loads directly from the keypad by selecting their room & channel number, regardless of the signals being received from inputs.

Since this overrides the control inputs, including the Presets, it is possible to completely disable any or all of the dimmers. This is not a safety switch off mechanism however. It is easy to forget to set the dimmers back to INPUT, giving rise to unexpected lack of control.

Normally this control is set to All=Input, which lets the Mux input, analog inputs, and presets control the dimmer levels. Minimum Dimmer Level and Maximum Voltage set in the *SET menu take overall precedence over settings made in this menu. This control is reset to All=Input whenever the cabinet is powered up.

This control may also be used to control dimmers recording into SWC and Outlook presets in architectural situations where there is no conventional lighting control system available.

To set all dimmers to 50% follow the steps below.

Action	Result
	Rack No.:01
LEVEL	Set Level:All ▶
▶	Set:All=Input
+ CONFIRM	Set:All=Off
+ CONFIRM (hold until 50%)	Set:All=50%
- CANCEL (hold until "Input")	Set:All=Input
EXIT EXIT	Rack No.:01

To set dimmers 5 and 8 to 90% follow the steps below.

Action	Result
	Rack No.:01
LEVEL	Set Level:All ▸
+ CONFIRM	Set Level:Dimme▸
▶	Set:01=Input
+ CONFIRM 4 times	Set:05=Input
▶	Set:05=Input
+ CONFIRM (hold until "90%")	Set:05=90%
◀	Set:05=90%
+ CONFIRM (hold until "8")	Set:08=Input
▶	Set:08=Input
+ CONFIRM (hold until "90%")	Set:08=90%
EXIT EXIT	Rack No.:01

*Set Menu

The *Set menu lets you access system functions for initial setup. To access the *SET menu you must press MUX INPUT + PRESET + LEVEL and hold it for about 4 seconds.

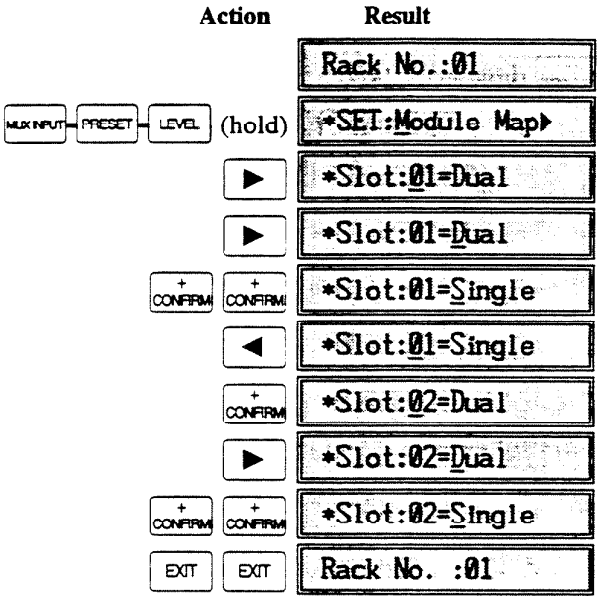
> *If the lockout symbol (↕) appears on the LCD display, press MUX INPUT + RESPONSE and hold about two seconds to unlock the processor module.*

Set Module Map

Before you can properly control dimmers, you need to tell the processor module what types of power modules are installed in the cabinet. The factory set defaults are:

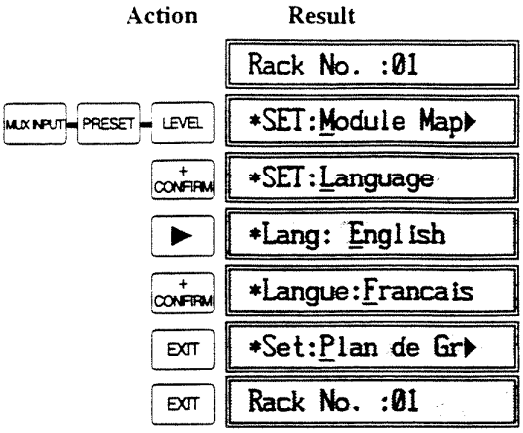
- Small cabinet = all power modules are "Quad"
- Large cabinet = all power modules are "Dual"

The following example sets the first two slots of a large cabinet to single dimmer/non-dim modules.



Set Language

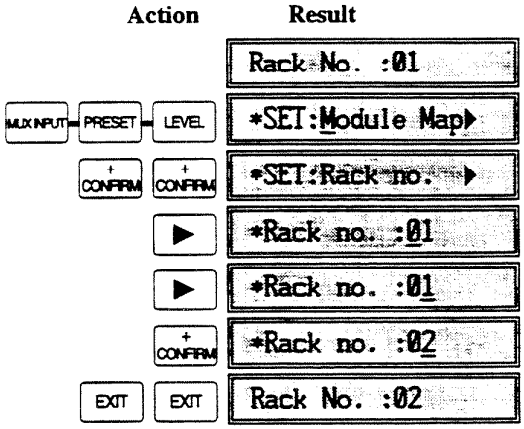
The language used for messages can be set to English, French and German. Once changed, all subsequent messages will be displayed in the selected language. The factory default setting is English.



This has set the display language to French. The rest of this manual assumes that you set the language back to English at this time.

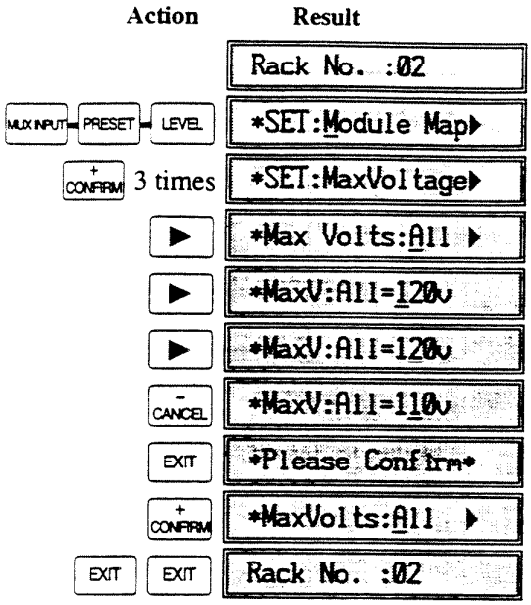
Set Cabinet Number

For multiple cabinet installations you must set a unique cabinet number for each cabinet.

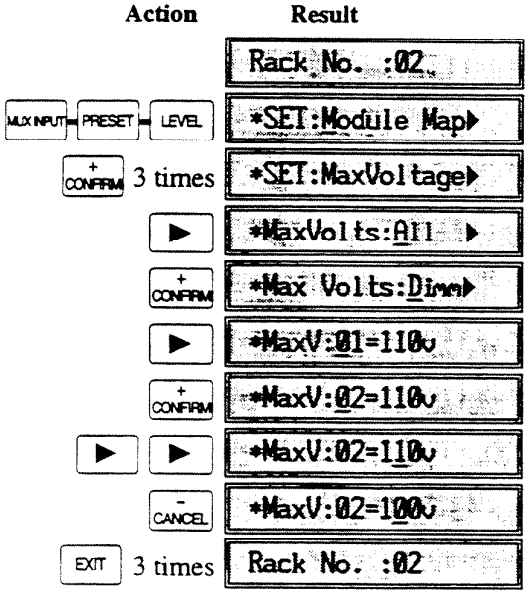


Set Maximum Output Voltage

You can set a maximum voltage for any or all dimmers. For instance, you can set the maximum voltage lower than the rated voltage of your lamps for improved lamp life. To set the maximum voltage for all dimmers to 120VAC, follow the steps below.

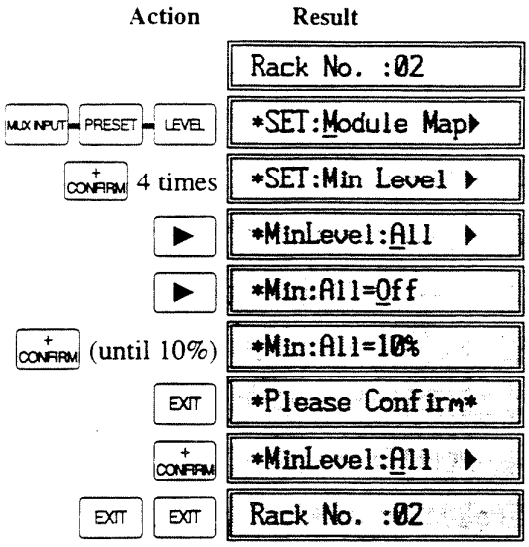


To set the maximum voltage for one dimmer one dimmer to 110VAC after having set all dimmers to 120VAC, follow the steps below.

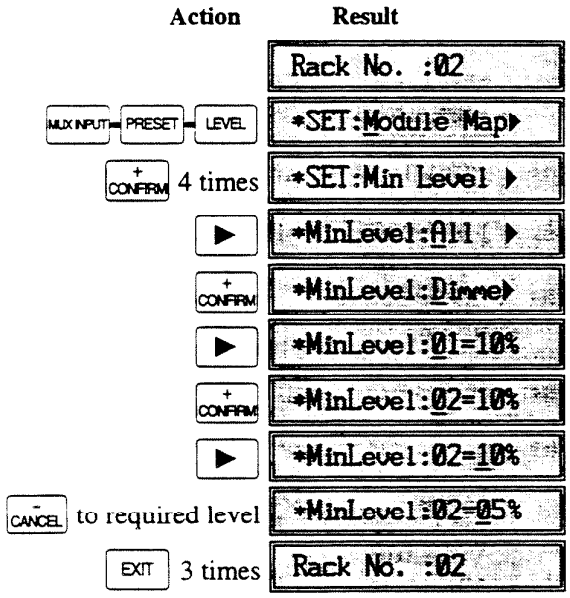


Set Minimum Dimmer Levels

You can set a minimum level for any or all dimmers. This can be used for security/safety lighting or as a preheat for your lamps. To set the minimum level for all dimmers, follow the steps below.



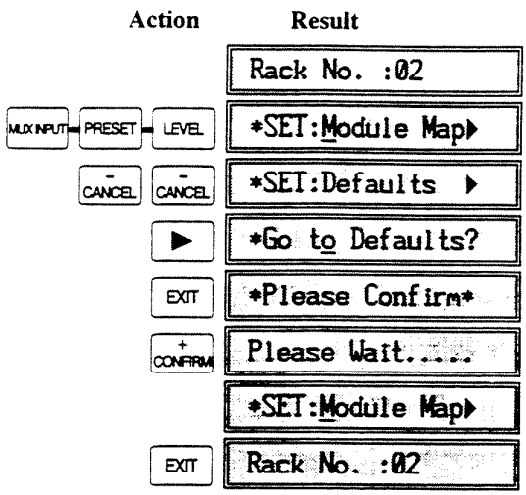
To set the minimum level for one dimmer after having set all dimmers to 10%, follow the steps below.



Return the Cabinet to Default Values

You can return the entire system to its defeults if required.

Be careful. This setting returns all programmed settings to their factory defaults.



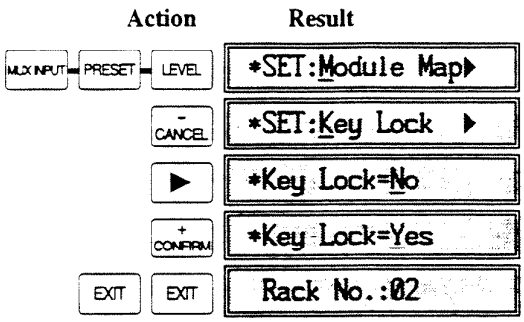
Since some of the defaults may not be appropriate for your system, you should always check all default settings after you use this function. When first switched on from new, or when set to defaults, the system will default to the following states:

Parameter	**Factory default**
MUX INPUTS	DMX512
NON-DIM	All dimmers =Dim (no Non-dims)
CURVE	All dimmers = Square
PATCH	Start address of dimmer 01=0001
RESPONSE	All dimmers = Medium
OUTLOOK PRESET·	Preset 0 = On power-up, no Outlook peset will be activated.
SWC PRESET	Preset 0 = Should a Mux failure occur, all dimmers will fade to blackout after a period of 10 seconds.
LEVEL	Dimmers take levels from control inputs (Mux, analog etc). Every time the dimmer system is switched on, even if a LEVEL was set previously, it will always respond to the control inputs.
LOCK	OFF
MAXIMUM VOLTAGE	120V
MINIMUM LEVEL	OFF
RACK #	01
MODULE MAP	All power modules are dual for large cabinets and Quad for small cabinets.

Set Key Lock Status

To avoid tampering by unauthorized personnel, Digital Environ includes a security mechanism indicated by a key (⚷) on the right side of the display. If this key is present, you must press MUX INPUT + RESPONSE simultaneously and hold them for about 2 seconds to unlock the system before any of the keys will respond. The factory default setting for the security lockout is OFF.

The following procedure shows how to turn the security lockout ON.



The lock becomes active if no buttons are pressed for 10 minutes or if you turn power to the rack OFF and then back ON.

*Service Menu

The service menu provides a way to calibrate some functions in the system and for Field Service to get information from the system. You may be asked to go into this menu if you are having problems with the system. To enter the menu, press MUX INPUT + PATCH + CURVE and hold for several seconds.

User Messages

Sometimes, the software may produce an unexpected message, due to external or internal reasons. Each "Error" has a unique number and is logged internally in non-volatile memory. If a message should appear, write down the number that appears and call your Strand Lighting service agent or dealer. Press EXIT to clear the message.

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