Suggested List Price: U.S. $20.00

Impact

Abridged Operations Manual

This abridged manual is identical to the full manual except that it does not contain the tutorial section. The full manual (see boxed part number below) ships with the console.

Strand Lighting

This Manual	2-450054-020
Boxed Manual (full manual)	8652
Manual in Binder (full manual)	3-450054-010
Revision Level:	D1
Revision Date:	07/07/91
Written By:	D. Lammers

The material in this manual is for information purposes only and is subject to change without notice. Strand Lighting assumes no responsibility for any errors or omissions which may appear in this manual. For comments and suggestions regarding corrections and/or updates to this manual, please contact your nearest Strand Lighting office or write to the Technical Publications Manager at the Rancho Dominguez office.

El contenido de este manual es solamente para información y está sujeto a cambios sin previo aviso. Strand Lighting no asume responsabilidad por errores u omisiones que puedan aparecer. Cualquier comentario, sugerencia o corrección con respecto a este manual, favor de dirijirlo a la oficina de Strand Lighting más cercana o escribir al Director de Publicaciones Técnicas a la oficina de Rancho Dominguez, California.

Le matériel décrit dans ce manuel est pour information suelement e est sujet à changements sans préavis. La compagnie Strand Lighting n'assume aucune responsibilité sur toute erreur ou omission inscrite dans ce manuel. Pour tous commentaires ou suggestions concernaut des corrections et/ou les mises à jour de ce manuel, veuillez s'll vous plait contacter le bureau de Strand Lighting le plus pros ou écrire au gérant publications techniques au bureau de Rancho Dominguez.

Strand Lighting offices:

The phone numbers shown below do not include country code or other international access data. Please consult your own phone service for proper international access procedures.

U.S. West Coast: 18111 South Santa Fe Ave., Rancho Dominguez, CA 90221 U.S.A. Tel: (213) 637-7500 Fax: (213) 632-5519
U.S. East Coast: 20 Bushes Lane, Elmwood Park, NJ 07407 U.S.A. Tel: (201) 791-7000 Fax: (201) 791-3167
Canada: 2430 Lucknow Dr., Unit 15, Mississauga, Ontario L5S 1V3 Canada Tel: (416) 677-7130 Fax: (416) 677-6859
England: 22 Grant Way (off Syon Lane), Isleworth, Middlesex TW7 5QD England Tel: 081-560-3171 Fax: 081-568-2103
Asia: 802 Houston Centre, 63 Mody Road, Tsimshatsui East, Kowloon, Hong Kong Tel: 3-685-161 Fax: 3-694-890
Australia: 264-270 Normanby Road, South Melbourne, Victoria 3205 Australia Tel: 3-646-4522 Fax: 3-646-5020
France: 26 Villa Des Fleurs, 92400 Courbevoie, France Tel: 1-478-86666 Fax: 1-433-37175
Germany: P.O. Box 4449, 3300 Braunschweig, West Germany Tel: 5-331-30080 Fax: 5-331-78883
Italy: 80 Via delle Gardenie (Pontia Vecchia KM 33,400), 00040 Pomezia-Roma, Italy Tel: 6-919-7123/4/5/6 Fax: 6-919-7136

Table of Contents

List of Figures

List of Tables

1

Introduction and Assistance

This manual provides information on the operating procedures for Impact Control Consoles. This manual covers the operation of Hardware version 2 with software version 3.0.0 and greater. If you have version 1 hardware, the illustrations may not exactly match the descriptions in this manual. If you have software earlier than version 3.0.0 some of the operations described may not function on your equipment.

Manual Organization

This manual contains 9 chapters as 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 console.

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

System Layout (chapter 4) - shows you the main elements of the system, and what they do.

Installation (chapter 5) - tells you about the installation requirements for the console and peripherals. This chapter shows pinouts for externally accessible connectors, cable types and lengths, and (where applicable) setup information.

Basic Trouble-shooting (chapter 6) - tells you how to begin trouble-shooting if you have problems with the console. Since actual internal repair of the console is beyond the scope of this manual, this chapter shows only the basic steps you can take without having to replace parts, and before you call for help from Strand Lighting.

Periodic Maintenance (chapter 7) - lists the steps which should be taken to keep the console running at its best.

Reference (chapter 8) - shows the command and actions possible with the console. This chapter is organized alphabetically by topic for easy reference.

Tutorial (chapter 9) - is a step by step learning session to familiarize you with the console.

Index

Definitions

This manual uses the following definitions throughout:

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

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

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.

Group A group of channels which you can use as a single entity to control dimmers or help create cues. In Impact, groups contain the same channel data as like numbered cues.

Patch Historically, the process of physically connecting circuits to dimmers. Now usually refers to electronic assignment of dimmers to channels. "Patch" does not refer to assignment of channels to cues or submasters.

Preset A pre-defined setup of intensities for a set of channels, stored in memory for later replay.

Memory Storage location for preset information.

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

Note 

Preset, Memory, and Cue are often used interchangeably.

Inhibitive Submaster A controller (usually a linear slider controller) which allows manual subtraction of levels from cues on stage.

Scene master A controller (usually a linear slider controller) which allows additive manual control of cues or channels. Each channel is allowed to be in any number of scene masters. An overlapping, additive submaster.

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

Up-fade The portion of a fade which involves only channels which are increasing in level.

Down-fade The portion of a fade which involves only channels which are decreasing in level.

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.

Bump An instantaneous change in stage levels from one set of intensities ("look") to another.

Independent In Impact, channels which have been set by the WHEEL or keypad while in the *Stage* display remain independent on stage at that level until the operator clears them from independent. Independent channels are displayed with reverse video levels in the *Stage* display.

Level Source Any fader or controller, either physical or electronic, from which the level of a channel is derived. In Impact, the level sources which determine actual channel levels are the Faders (A, B, C, D), submasters, and independent. For channels which are not on independent, channel level is the highest reading from the Faders or Submasters. For channels on independent, channel level is the level set by the WHEEL or keyboard.

Macro A series of keystrokes or commands which can be recalled using a shorter command sequence. In Impact, macros are recorded from keystrokes and are recalled using a SEQ key and number combination.

Set-up Set-ups let you record the configuration of the playback windows for later automatic loading. This allows complex cue sequences and effects to be run automatically, or with minimum effort.

Conventions

Impact shows channel status associated with light level setting, recording, and playback as described when each display format is presented. In general, the following color rules apply.

- **Blue** channel levels are unchanged from previous cues.
- **Amber** channel levels are moving up.
- **Magenta** channel levels are moving down
- **Black** channel levels with white background are on independent.
- **White** channel levels with a red flashing background are being limited by cue 0.1.
- **Black** channel numbers with brown background are selected for modification.

The following additional conventions are used in this manual.

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

Shaded keys are in the Memory keypad.

Shaded number keys are in the Memory keypad.

Unshaded number keys are in the Level keypad.

The shaded **NEXT** key is in the Memory keypad.

The unshaded **NEXT** key is in the Level keypad.

The **NEXT** key in the Display keypad is labelled "DISPLAY NEXT."

SUBS (Helvetica small caps, bold) refers to the actual push-button labelled "SUBS" when used in paragraph text. Where a push-button has a two word label, an underline character is used between words to show that they belong to the same keycap label (e.g., **A_CANCEL**). Where the same label appears on more than one key, the keypad name precedes the keycap name to avoid confusion (e.g., **LEVEL_NEXT, MEMORY_NEXT, DISPLAY_NEXT**). Also refers to a named item such as the **WHEEL** or **FADER A**.

[list] (text in square brackets) refers to something you must enter as a series of keystrokes.

- [#] refers to a number from either numeric keypad.
- [l#] refers to a number entered on the Level keypad.
- [level] refers to a channel level entered on the Level keypad.
- [c list] refers to a channel list entered on the Level keypad.
- [m#] refers to a number entered on the Memory keypad.

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

Preview (italic Times text with first letter capitalized) shows a word or phrase which actually appears on the screen, or which is the name of a chapter or section, as in *Execute* window, *Preview* display, *Tutorial* chapter, or *Modify Cues* section.

Technical Assistance

Impact control consoles require a minimum of maintenance and servicing. The console includes a diagnostic routine to simplify field trouble-shooting of any problems which may arise.

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 an RGA (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 (see reverse side of manual title sheet for addresses and phone numbers).

Parts Purchases

For purchase of spare parts or documentation, please contact Strand Lighting Customer Service in the Rancho Dominguez office.

Comments and Suggestions

For comments regarding equipment functions and/or possible improvements, please call or write to the Control and Dimming Product Manager at the Rancho Dominguez office.

For comments on this manual, please write to the Technical Publications Manager at the Rancho Dominguez office.

2

Operational Features

This chapter presents the basic operational concepts you will need to know to operate the Impact console. The following two chapters present a detailed description of the console layout, with a description of each push-button, and a screen by screen description of the basic commands available. If you need more detail on any of the commands, please consult Reference chapter (chapter 8). If you need a short, step by step tutorial on Impact operation, please see the Tutorial chapter (chapter 9). Impact has the following operational characteristics.

Impact uses solid-state memory for rapid storage and retrieval of cues and set-ups. A total of 960 blocks of memory are available. Sophisticated memory compression techniques allow maximum use of available memory. A cue can occupy between 1 and 7 blocks, depending on its composition, with an average of 2 blocks being used. Each set-up definition takes 1 block. This allows an average of 400 cues plus submaster assignment definitions and set-up definitions to be recorded. Data is accessible at any time in either Stage (live) or Preview (Blind) Mode for playback or modification. The system is micro-processor based, and programmed specifically for processing and control of performance lighting. Operator interface is provided by a special purpose keyboard in the console and an optional hand held Remote Control.

- Capability of viewing and modifying patch by either dimmer or channel.
- 100 "Super Cues" allow automatic and simultaneous initiation of a series of events and pages of Submaster loads.
- 2 electronic and one manual dipless crossfader allow overlapping cues.
- Macros allow recording of a series of keystrokes for easy later recall.
- "Multi-View" lets you view Stage and Preview data simultaneously.

2

Operational Features

This chapter presents the basic operational concepts you will need to know to operate the Impact console. The following two chapters present a detailed description of the console layout, with a description of each push-button, and a screen by screen description of the basic commands available. If you need more detail on any of the commands, please consult Reference chapter (chapter 8). If you need a short, step by step tutorial on Impact operation, please see the Tutorial chapter (chapter 9). Impact has the following operational characteristics.

Impact uses solid-state memory for rapid storage and retrieval of cues and set-ups. A total of 960 blocks of memory are available. Sophisticated memory compression techniques allow maximum use of available memory. A cue can occupy between 1 and 7 blocks, depending on its composition, with an average of 2 blocks being used. Each set-up definition takes 1 block. This allows an average of 400 cues plus submaster assignment definitions and set-up definitions to be recorded. Data is accessible at any time in either Stage (live) or Preview (Blind) Mode for playback or modification. The system is micro-processor based, and programmed specifically for processing and control of performance lighting. Operator interface is provided by a special purpose keyboard in the console and an optional hand held Remote Control.

- Capability of viewing and modifying patch by either dimmer or channel.
- 100 "Super Cues" allow automatic and simultaneous initiation of a series of events and pages of Submaster loads.
- 2 electronic and one manual dipless crossfader allow overlapping cues.
- Macros allow recording of a series of keystrokes for easy later recall.
- "Multi-View" lets you view Stage and Preview data simultaneously.

3

Hardware Description

Impact is micro-processor based, and programmed specifically for processing and control of performance lighting. The operator interface is provided by a special purpose keyboard in the console and an optional hand held Remote Control.

A single Impact console can drive up to 960 dimmers on 350 control channels. Impact consoles can be daisy-chained to either provide full backup capabilities, or to provide control of up to 2880 dimmers on 960 control channels.

Main Console

The Main Console ("Desk") contains all electronics necessary for the functioning of the Impact in a single compact desktop unit.

Basic Elements

- High Resolution Analog RGB Color Monitor.
- 3.5" 720KB (1MB unformatted) floppy disk drive.
- Menu driven access to all system configuration functions.
- Proportional Patching.
- Limit Buffer to set maximum channel limits.
- Infinite special effects flexibility through cue chaining.
- All major components are mounted to a common base plate.
- All Input/Output connectors are mounted on the rear of the console.
- 20 scene masters and 4 inhibitive submasters.
- Scene master and inhibitive submaster bump buttons.
- Multiple dimmer output protocols.
- Drives up to 960 dimmers on 350 control channels.
- Can be chained with additional consoles to control up to 2880 dimmers on up to 999 control channels.
- Printer connector and internal hardware standard.
- Printer optional.
- Hand held Remote Control ("Focus Remote", or "Riggers Remote") optional.
- Remote Console optional.
- Full backup optional.
- Remote Monochrome Video Monitor optional.

Electrical

- 120 VAC @ .6A 50/60Hz -or- 220 VAC @ .3A 50/60Hz. Power supply must be factory modified for 220VAC and/or 50Hz units.
- Good console earth ground is important.
- Cue Memory retention for a minimum of 3 days after power failure.
- Clock Memory retention for 3-5 years.
- Critical system configuration data is stored in EEPROM for indefinite storage.

Mechanical

- All main console functions are built into a single system box.
- Console sits on table, with separate Color Monitor.

Environment

- 35°C maximum ambient temperature, 80% humidity maximum (non-condensing).
- Standard computer anti-static precautions should be taken.
- Air should be free of dust and smoke.

Output Protocols

- USITT AMX192 (Strand Lighting CD80).
- USITT DMX512.
- Colortran C-156.
- Entertainment Technology Inc. E-NET.
- Electro Controls EC-MUX (software version 2.0.3 and later - requires external RS-485 to EC QD converter).
- Optional D54 (Strand Lighting 3 wire multiplex - replaces AMX192 outputs).

Cable Lengths

- AMX192 Dimmer cable = Belden 9156 or equal
  1500 feet maximum
- DMX512 Dimmer cable = Belden 9841 or 9842
  Alpha 5271 or 5272
  1000 feet maximum
- Remote control cable = Belden 9773
  2500 feet maximum
  Branching runs are not allowed
- Remote Console cable = Belden 9773
  2500 feet maximum
  Branching runs are not allowed
- External Monochrome Video = RG-59/U
  1000 feet maximum
  Branching runs are not allowed
- Extensions are not allowed on color video.

Printer (optional)

- Okidata 82A, 182, or equivalent.
- 25 foot cable supplied if printer is purchased from Strand Lighting.
- Protocol: EIA RS-232C, 9600 baud, 8 bit with 1 stop bit, even parity enabled. See Appendix D or consult Strand Lighting for more details.
- Printer electronics, rear panel connector, and software are included as standard in the console.
- Printer connector contains input pins for remote macro control.

Remote Control (optional)

- Wired remote control at up to 2500 feet.
- 14 character alphanumeric display.
- 92 character memory.
- Controls all console functions except potentiometers.
- Protocol: EIA RS-485, 300 baud, with 1 start bit (logic zero), 7 data and 1 parity bit, and 2 stop bits.
- Operates on rechargeable Ni/Cd batteries for up to 8 hours between charges.
- Includes battery charger (center pin of charging jack is positive).

Remote Console/Full Backup (optional)

- Remote control up to 2500 feet.
- Completely redundant electronics - acts as a full backup.
- All functions except potentiometers will operate on the remote.
- Fully tracks all "Master" console functions.

4

System Layout

An Impact control system consists of one or more desktop control consoles ("Desks") with one monitor each, one or more remote consoles with one monitor each, and an optional hand held Remote Control. Each console contains a disk drive, Console keyboard, playback controls, a submaster module, connections to the detached color monitor, dimmers, and other consoles, and the processor and memory for the system. This chapter shows the basic layout for each of these items.

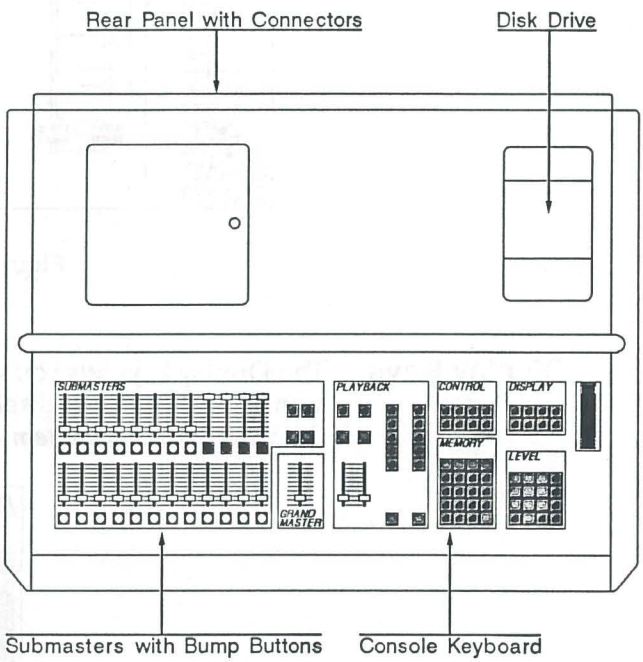


Figure 1. Basic Console Layout

Disk Drive

The disk drive is in the upper right corner of the console and is used to load main memory from a pre-recorded disk or record main memory to an initialized disk. This can serve as an archive for saving show data, or as a backup in case of problems, or both.

Console Keyboard

The right half of the console contains the Console keyboard, which provides recording and playback control using a number of logically grouped keypads. The main key groupings are discussed individually below, and are labelled as shown in figure 2.

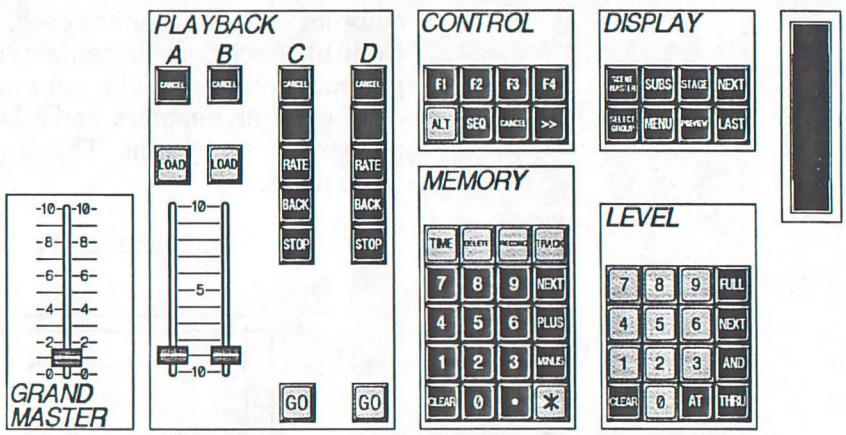


Figure 2. Console Keyboard

Display Keys

The Display keys lets you select the display which is shown on the monitor. The various display types are discussed in more detail later in this chapter under *System Monitors*.

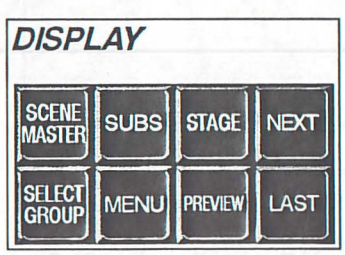


Figure 3. Display Keys

SCENE MASTER	Opens the *Display Scene Master* window for selecting a Scene Master.
SELECT GROUP	Opens the *Select Group* window for selecting a group.
STAGE	Selects the *Stage* (live) display.
MENU	Selects the *System* menu.
SUBS	Selects the *Submaster* display.
PRE VIEW	Selects the *Preview* display
DISPLAY NEXT	Lets you page forward through the displays.
DISPLAY LAST	Lets you page backward through the displays.

Level Keys

The Level keys lets you select and set levels for individual channels.

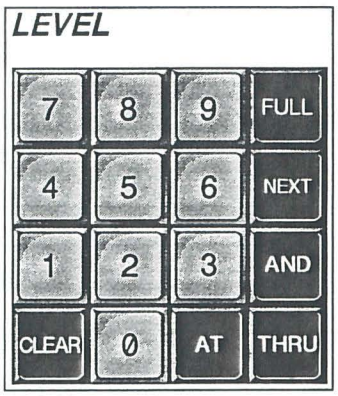


Figure 4. Level Keypad

[0] (0 through 9) inputs the numerical value as a channel number.

[CLEAR] Lets you clear a channel selections. If there are no currently selected channels, this button clears all channels from Independent status.

[AT] Lets you assign levels to channels in the Stage, Preview and Scene displays, and to dimmers while patching (e.g., **1 THRU 4 AT 7 5**)

[AT] [AT] Sets the selected channels to OFF rather than ZERO.

[ALT]-[AT] Sets all channels except the selected channels to ZERO.

[FULL] Sets level at FULL (100% or FF) when setting channel and dimmer levels.

[ALT]-[FULL] Sets selected channels to OFF (rather than to ZERO).

[NEXT] Selects the channel after the currently selected channel. Starts at last selected channel.

[ALT]-[NEXT] Sets the next channel to FULL and clears the level of the previous channel (channel check function).

[AND] Lets you select a random series of channels or dimmers, (e.g., **1 AND 5 AND 8**).

[ALT]-[AND] Selects all channels in Preview with a level greater than ZERO and puts them on stage.

[THRU] Lets you select a range of channels and dimmers. This key can be used with **AND**.

[ALT]-[THRU] Selects all channels with an on stage level greater than ZERO in the *Stage* or *Preview* display.

Control Keys

The Control keys select the Function Keys and provide combination keys for using with special functions.

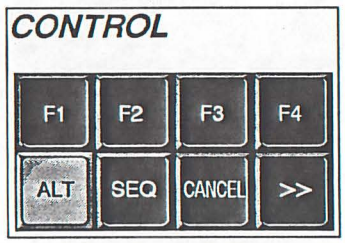


Figure 5. Control Keys

F1 (F1 through F4) are context sensitive keys. The functions of these keys change, and are always displayed on the bottom row of the System monitor.

Table 1 shows the functions of these keys in various contexts.

Table 1. Function Key Designations

Key	In Preview or Stage mode	In Patch mode
F1	Load Set Up	In Channel
F2	Next Set Up	Sel Channel
F3	Pause	Non-dim
F4	Multi-View	Dimmer

ALT This is a shift key which gives other keys additional functions.

It is always shown with the key it modifies (e.g., **ALT+THRU**). You must press **ALT** and keep it pressed while pressing the second key.

SEQ This is a shift key used with **A_LOAD, B_LOAD, INHIB_LOAD, C_GO,** and **D_GO** to turn sequencing ON, and with **RECORD** and the numeric keys to record and play back macros.

It is always shown with the key it modifies (e.g., **SEQ+A_LOAD**). You must press the **SEQ** key and hold it down while pressing the second key.

CANCEL Lets you cancel actions when you are in a window.

>> Acts as a TAB between fields in a window.

ALT + >> Acts as a reverse TAB in a window.

Memory Keys

The Memory keys lets you perform functions related to memory (cues).

Figure 6. Memory Keys

[0] (0 through 9) inputs the numerical value as a memory (cue) number.

[TIME] Lets you set fade times, delays, and the *Execute* specification for cues.

[DELETE] Lets you delete cues from memory.

[ALT] + [DELETE] Lets you delete set-ups from memory.

[RECORD] Lets you record or re-record cues, in both *Stage* and *Preview* displays.

[ALT] + [RECORD] Lets you record set-ups rather than cues.

[SEQ] + [RECORD] Lets you record macros rather than cues. If a macro is already being recorded, stops the recording process.

[TRACK] Lets you record channels and force the system to record the new levels in subsequent cues until a different level is encountered.

[CLEAR] Lets you clear incorrectly entered numeric values, along with the *Preview* buffer.

[.] Decimal point. Lets you specify non whole number cues.

[NEXT] Loads the next highest cue into the *Preview* buffer.

[PLUS] Lets you specify the next cue number when recording, pile multiple cues onto the same electronic fader, or specify an Up-fade delay for a cue, depending on context.

[MINUS] Lets you specify the previous cue number, subtract the channels in a cue from current stage levels on an electronic fader, or clear the Delay Up-Fade flag (+), depending on context.

[*] Close window command (also called **EXECUTE** in this text). This must be pressed to close windows and terminate commands in many cases.

Level/Rate Wheel

The Level/Rate Wheel (or **WHEEL**) normally lets you adjust levels for selected channels. While you are pressing **C_RATE** or **D_RATE**, the **WHEEL** lets you control the fade rate of the selected fader.

Playback Control

The Playback control lets you play back previously recorded cues.

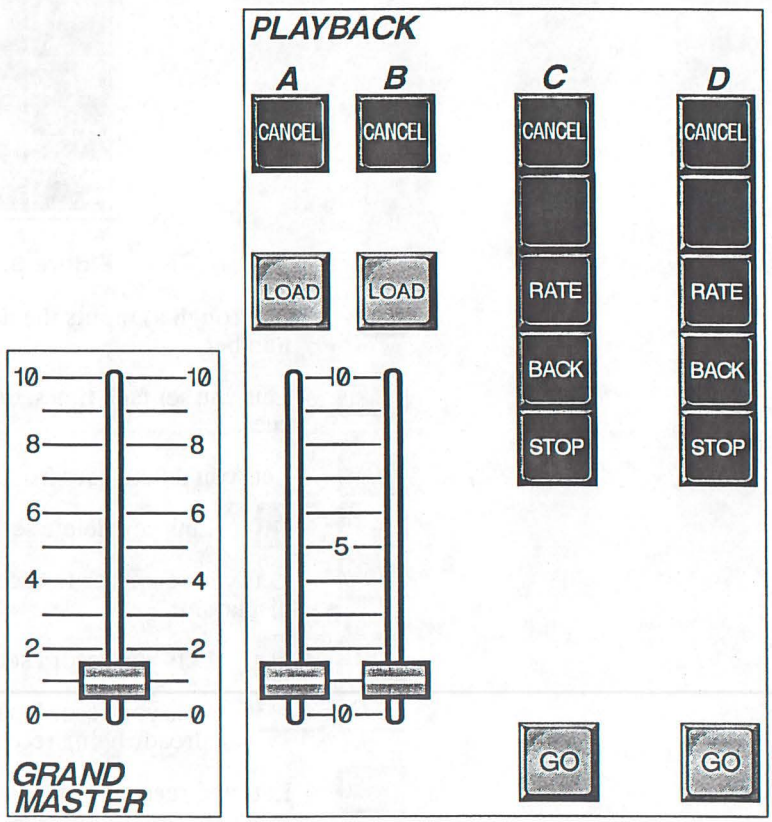


Figure 7. Playback Control

Grand Master

The Grand master is a proportional master over all console output except independent channels. Channel output is at maximum when slider is at FULL. Maximum levels for channels may be defined in cue 0.1. A graph representing the Grand Master level appears in the *GM* (Grand Master) window.

Manual Faders

FADER A/B allows manual crossfading or pile-on of cues. Throughout this text, **FADER A/B** refers to the combined fader. Where fader handle movement is indicated, **FADER A/B** refers to movement of both handles at the same time. **FADER A** or **FADER B** refers to the respective half of **FADER A/B**, and to movement of only one of the fader handles. A graph representing **FADER A/B** status appears in the *A/B* window.

Loads a cue specified by the Memory keys onto **FADER A**.

Turns sequencing for **FADER A/B** ON or OFF (alternate action).

Loads a cue specified by the Memory keys onto **FADER B**.

Turns sequencing for **FADER A/B** ON or OFF (alternate action).

Cancels the current cue on **FADER A**, putting a blackout onto the fader.

Cancels the current cue on **FADER A**, putting a blackout onto the fader.

Cancels the current cue on **FADER B**, putting a blackout onto the fader.

Cancels the current cue on **FADER B**, putting a blackout onto the fader.

The faders (**FADER A** and **FADER B**) allow manual control of cues.

Electronic Faders

The two separate electronic faders let you fade from levels in one cue to levels in another cue. You can specify separate times for the up-fade (increasing level channels) and down-fade (decreasing level channels).

Loads and starts a cue specified by the Memory keys onto **FADER C**.

Turns the sequencing function for **FADER C** ON or OFF (alternate action).

Loads and starts a cue specified by the Memory keys onto **FADER D**.

Turns the sequencing function for **FADER D** ON or OFF (alternate action).

Stops a crossfade on **FADER C**. Restarts the cue if pressed again.

Stops a crossfade on **FADER D**. Restarts the cue if pressed again.

Backs **FADER C** into the previous cue in about 1 second. It is possible to back-up through the entire cue sheet using this button if sequencing for the Fader is ON.

Backs **FADER D** into the previous cue in about 1 second. It is possible to back-up through the entire cue sheet using this button if sequencing for the fader is ON.

Lets you use the **WHEEL** to control the fade rate on **FADER C** (only while it is pressed).

Lets you use the **WHEEL** to control the fade rate on **FADER D** (only while it is pressed).

Fades **FADER C** to a blackout in the recorded time. It will bump **FADER C** to a blackout if pressed twice in succession (double-click).

Fades **FADER C** to a blackout in the recorded time. It will bump **FADER C** to a blackout if pressed twice in succession (double-click).

D CANCEL — Fades **FADER D** to a blackout in the recorded time. It will bump **FADER D** to a blackout if pressed twice in succession (double-click).

ALT + D GO — Fades **FADER D** to a blackout in the recorded time. It will bump **FADER D** to a blackout if pressed twice in succession (double-click).

Submaster Module

24 Submasters let you submaster groups of channels, and "bump" the channel levels associated with a submaster. There are 20 scene masters (submasters 1-20) and 4 inhibitive submasters (submasters 21-24) in this module. Scene masters can be *Normal* (levels add, or pile-on to stage levels), *eXclude from Record* (a *Normal* submaster which is ignored by all recording functions), or *Solo* (a *Normal* Submaster in which pressing the Bump Button causes all other submaster potentiometer levels to be momentarily forced to ZERO). Inhibitive submasters subtract from stage levels for assigned channels.

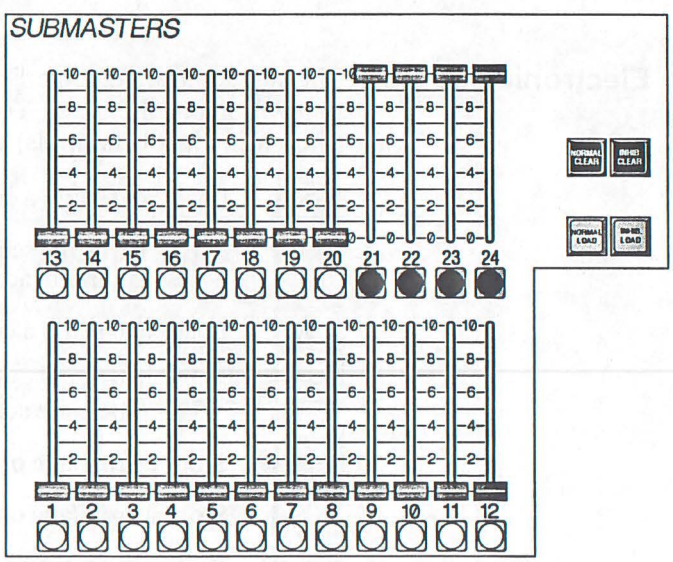


Figure 8. Submasters

NORMAL LOAD lets you load a cue into a scene master.

NORMAL CLEAR lets you clear cues from scene masters.

INHIB. LOAD loads the current Preview cue into the *Inhibitive* buffer.

INHIB. CLEAR clears the cue from the *Inhibitive* buffer.

Submaster Controllers

Channels assigned to submasters are at maximum required levels when the submaster is at its upper limit, and OFF when the submaster is at its lower limit.

Submaster Bump Buttons Allows for immediate ON of the selected submaster. If the Submaster is in *Solo* mode, this forces the potentiometer levels of all other submasters OFF. Other submaster bump buttons are still active.

System Monitor

The detached monitor shows system status data for the operator. Figure 9 shows the *Stage* display.

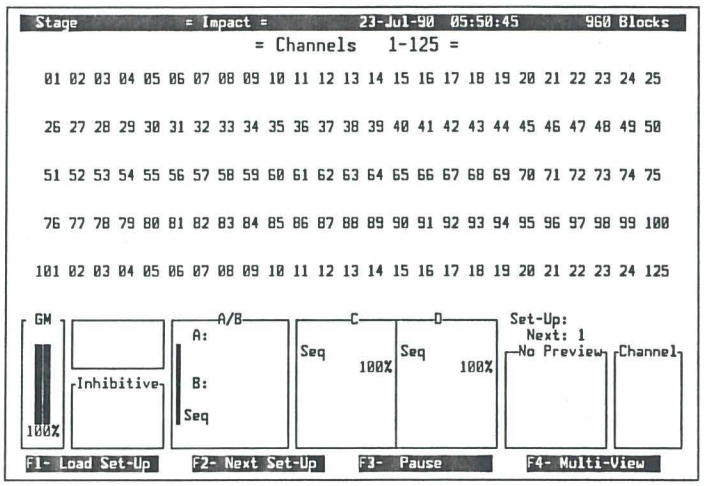


Figure 9. System Monitor Layout

The system monitor is divided into 4 basic sections.

- The upper box of the display shows various system information, including the name of the display, the software revision level, the amount of memory left, and the date and time.
- The center box of the display shows the current data or menu.
- The bottom box of the display shows submaster, fader, and memory status.
- The last line of the display shows the current Function Key assignments.

5

Installation

Environment

All computer equipment is vulnerable to environmental extremes. The following precautions are recommended to ensure reliable operation:

- **Temperature** -- 0-35°C (32-100°F)
- **Humidity** -- 85% relative humidity maximum, no condensation.
- **Dust** -- Good office environment. Smoking in the vicinity of the console is not recommended. Dirty air is particularly detrimental to the long term reliability of computer equipment, since it clogs the fan and ventilation ports, and damages the mechanical components in the disk drive.

Caution 

Do Not operate Impact in direct sunlight.

Do Not operate Impact on surfaces which block the ventilation slots on the bottom (e.g., rugs).

Cover the top of the console and monitor when they are not in use. This prevents dust from collecting in the box and in the faders.

Power

The console should be connected to a 120VAC, 60Hz, 15A power source (Catalog #8990) or a proper 220VAC hookup (Catalog #8990-220 or 8990UK-220).

The power source must have a good earth ground connection. This maintains electrical safety, provides an accurate ground reference for driving system outputs, and minimizes system sensitivity to static discharge.

Primary power should be exclusively for the console and not used for other devices such as power tools, motors, transformers, or dimmers.

Note 

Turning off the console is equivalent to disconnecting it from the power source. Although memory is maintained for at least 3 days without power, you should always save data to disk before turning the system OFF.

Console Hookup

The Impact console has a variety of connectors arranged conveniently along the rear of the unit. Connections to the console may be made directly or through wall mounted junction boxes with appropriate connectors linked by **metallic** conduit. All cable runs must include proper serial cable termination for the protocol in use.

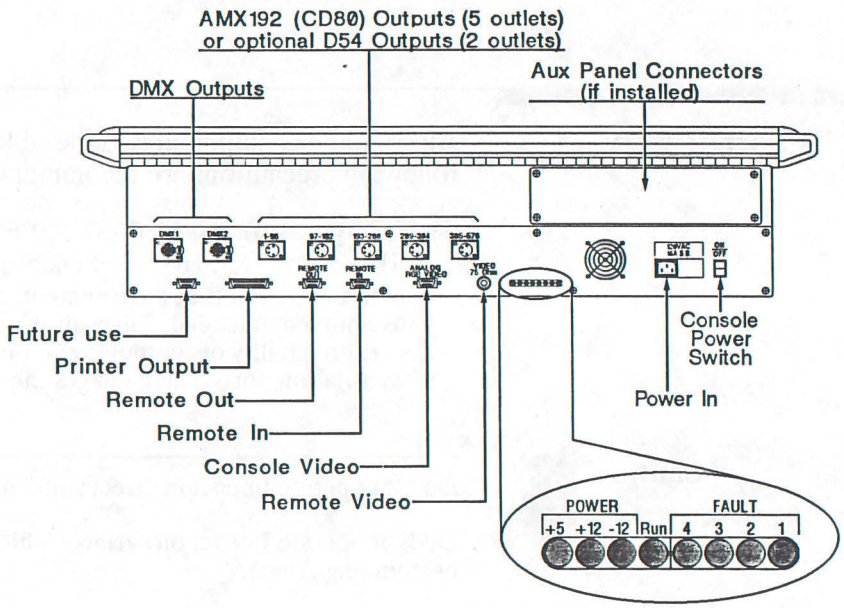


Figure 10. Console Connectors and Cabling

Remote Input

The Remote In connector lets you accept control signals from a hand held remote controller or another console. The configuration of this input depends on settings in the *Config* menu. The charts below are intended only to help you with the physical console hookup. Please see under *Serial Keyboard Interface* and *Portable Remote Interface* in the *Reference* section of this manual for additional details.

Table 2. Remote Input

Cable: Belden 9773 - no branching runs Max Length: 2500 feet (all EIA RS-485 restrictions also apply) Connector: Male DB9 connector on console Signal Type EIA RS-485 - speed and data bit specifications depend on console setup.		
Pin #	Signal	Comments
1	GND	Cable Shield
2	GND	Cable Shield
3	OUT+	Transmit true to remote
4	OUT-	Transmit complement to remote
5	+12VDC FUSED	+12VDC for remote power
6	+12VDC FUSED	+12VDC for remote power
7	N.C.	
8	IN+	Receive true from remote
9	IN-	Receive complement from remote

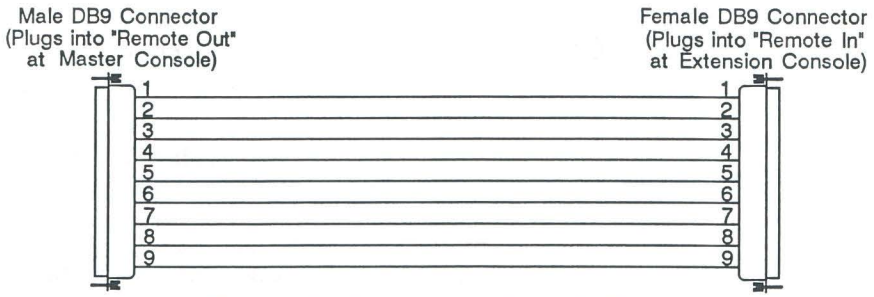


Figure 11. Console to Console Cable

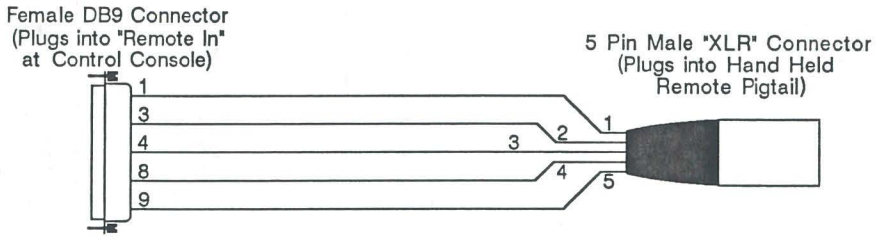


Figure 12. Hand Held Remote Adaptor

Note

The control cable must be a single run with no branches. If multiple outlets are required, you must make sure that there is some way to keep the data line properly terminated at all times. Please contact Strand Lighting if you have any additional questions.

Remote Output

The Remote Out connector lets you control other consoles for backup purposes or for controlling additional dimmers.

Table 3. Remote Out Connector

Cable: Belden 9773 Max Length: 2500 feet (all EIA RS485 restrictions also apply) Connector: Male DB9 connector		
Pin #	**Signal**	**Comments**
1	GND	Cable Shield
2	GND	Cable Shield
3	IN+	Receive true from remote
4	IN-	Receive complement from remote
5	N.C.	
6	N.C.	
7	N.C.	
8	OUT+	Transmit true to remote
9	OUT-	Transmit complement to remote

Multiple Console Hookup

Impact electronics and software allows up to three consoles to be chained together for expansion purposes. This is accomplished through connections to the Remote Input and Remote Output connectors on the rear of the console. Up to three additional consoles may be connected as slave units to form a fully redundant backup.

Full Backup

Two consoles can be used in parallel to allow fully redundant backup of the system electronics where even a small amount of down-time in case of a failure is unacceptable. If required, the backup unit may be located remotely, and may act as a remote console as well.

1. Decide which of the two units is to be the master.
2. Connect the Remote Output connector of the master unit to the Remote Input connector of the slave unit. Note that it is still possible to use a portable remote hooked into the Remote Input connector of the master unit.
3. Set *Console Mode* in the master unit *Config* menu to *Normal* and in the slave unit *Config* menu to *Expansion*. The slave unit keyboard will still function, but all fader, scene master, and inhibitive submaster levels will be taken from the "Master" console.
4. Set the number of local and global channels and the channel origin identically in both consoles.
5. Set the number of dimmers, First 6KW, dimmer output protocol, and patching identically in both consoles.
6. Program your show using the master console. Commands will be transferred to the slave console as they are taken.
7. In case of problems with the master console transfer dimmer output connectors and the portable controller cable from the master console to the slave console and change the settings of *Console Mode* and *Rem. In* in the *Config* menu.

System Expansion

It is possible to expand a system using Impact consoles to use up to 999 channels and 2880 dimmers. This requires the use of three consoles in parallel, each connected to a separate dimmer bank.

1. Decide which of the units is to be the master.
2. Connect the Remote Output connector of the master unit to the Remote Input connector of the first slave unit, and the Remote Output connector of the first slave unit to the Remote Input connector of the second slave unit. Note that it is still possible to use a portable remote hooked into the Remote Input connector of the master unit.
3. Set *Console Mode* in the master unit *Config* menu to *Normal* and in the slave unit *Config* menus to *Expansion*. The slave unit keyboard will still function, but all fader, scene master, and inhibitive submaster levels will be taken from the master console.
4. Set the number of local and global channels as required. The Global parameter is the highest channel number in use across all consoles, and must be set the same in all consoles for global channel selection to work correctly. Local channels are the number of channels (maximum 350) controlled by the console. This parameter can be different for all three consoles if required. If there are more than 350 channels, make sure that the origin is set correctly in each console. Regardless of how this is set, all channels defined in the system will be accessible from the master console. Although the same channel numbers may be used in all consoles, channels that are unique to a console can only address the dimmers in that console. For all channels to access all dimmers, set global and local channels to 350 (or less) in all three consoles, and the origin to 1 in all three consoles.
5. Set number of dimmers, First 6KW, dimmer output protocol, and patching as appropriate in each console. Note that dimmer numbers always start from 1 in each console. The dimmer outputs are connected to separate banks of dimmers, each of which may use a different dimmer protocol.
6. Program show using the "Master" console. Commands will be transferred to the "Slave" console as they are taken.
7. To save and retrieve system data, there must be a disk in all consoles.

Dimmer Hookup

Impact is designed to drive dimmers which conform to the USITT AMX192 Dimmer Signal Specification, the USITT DMX512 Dimmer Signal Specification, the C-156 Dimmer Signal Specification (Colortran), and the E-NET Dimmer Signal Specification (Entertainment Technology, Inc.). XLR style connectors are used for all dimmer outputs.

Note

Although you cannot output multiple protocols at the same time from an Impact. All consoles can handle the listed protocols.

An adapter which allows use of the EC-MUX (Strand Electro Controls) protocol is available.

An optional version of the console which can drive dimmers conforming to the 3-wire Strand D54 specification is also available. The D54 oututs replace the AMX192 outputs in this version of the console.

AMX192 Control Wiring

The three types of connections provided in Strand Lighting equipment for the AMX192 signal are the XLR style connector, the TA4/TY4 Series Mini-SwitchCraft connector, and terminal blocks. Unless otherwise specified, CD80 Racks use terminal block connections. Pin assignments are shown in Table 4.

Table 4. AMX192 Control Outputs

Cable: Belden 9156 or equal
(may use Belden 8723 for adapters under 100 feet long)
Max Length: 1000 feet (daisy chaining allowed - no branching runs)
Connector: Terminal block, "XLR" style connector, or SwitchCraft TA4/TY4 series connector in dimmer rack.
"XLR" style connector, or SwitchCraft TA4/TY4 series connector in extension outlets.
"XLR" style connectors on console.

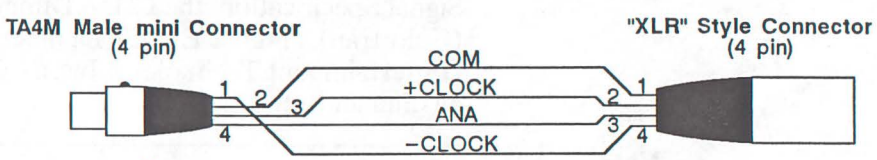
XLR Pin	TA4/TY4 Pin #	Terminal Pin #	Signal	Comments	Belden 8723	Belden 9156
4	1	1	CLOCK -	Clock Complement	Green	Black
2	3	3	CLOCK +	Clock True	White	White
1	2	2	COMMON	Analog Common	Black	Black
3	4	4	ANALOG	Multiplexed Analog	Red	Red

Note

CLOCK+ and CLOCK- are one twisted pair. Analog and Common are one twisted pair.

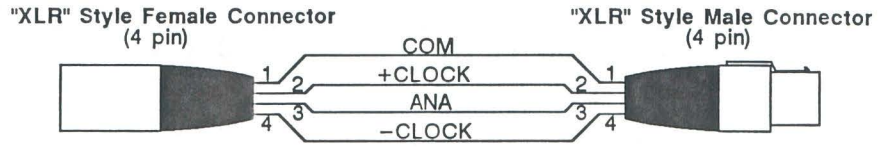
Interconnection between equipment with different plug types requires an adapter cable. The plugs on this adapter are not connected pin to pin. See figure 13 for proper adapter wiring.

Short extensions of the multiplex signal, where TA4/TY4 connectors are used, are made with Belden cable #8723 (2 pairs of shielded 24 gauge wire). **Do not use this cable for runs greater than 100 feet.** All other runs (in or out of conduit) are made with Belden #9156 (2 pairs of unshielded 18 gauge wire). The maximum allowable distance from the control console to the last dimmer cabinet is 1000 feet.



Notes:
1. Use Belden 8723 Cable.
2. Sex of "XLR style connector depends on application.
3. Maximum adapter length = 100 feet.

Figure 13. XLR to TA4 Series Adapter



Notes:
1. Use Belden 9156 Cable
2. Maximum extension length = 1000 feet (including all adapters).

Figure 14. AMX192 Extension Cable

DMX Control Wiring

The two types of connections provided in Strand Lighting equipment for the DMX signals (DMX512, C-156, E-NET, ECMUX) are the XLR style connector and terminal blocks. Unless otherwise specified, dimmer racks use terminal block connections and consoles and dimmer packs use "XLR" style connections. Pin assignments are shown in Table 5.

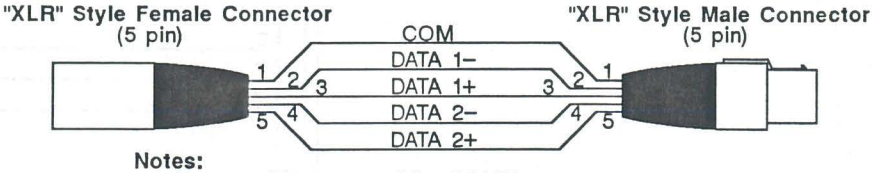
Table 5. DMX512 Control Outputs

Cable: Belden 9841 or 9842 or equal
(any cable approved for RS422/RS485 use)
Max Length: Standard RS485 electrical characteristics apply, including line driver and receiver characteristics, line loading, and multi-drop configurations.
Connector: Terminal block in dimmer rack.
"XLR" style connector in control equipment.

XLR Pin	Terminal Pin #	Signal	Comments
1	CMNA(B)	COMMON	Dimmer Common (shield)
2	DMXA(B)-	DATA 1-	Dimmer Drive Complement
3	DMXA(B)+	DATA 1+	Dimmer Drive True
4	Not used	DATA 2-	Optional Second Data Link Complement
5	Not used	DATA 2+	Optional Second Data Link True

Note

DATA 1- and DATA 1+ are one twisted pair. Common is tied to the cable shield.



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 15. DMX512 Extension Cable

Printer Hookup

The printer supplied by Strand Lighting for Impact is an Okidata ML182 with the super high speed serial interface installed. This interface is necessary for the on-board buffer, and not for its extra speed.

Printer Cable

Table 6 shows the pinouts, cable, and connector types used in the Printer cable.

Table 6. Console Output to Serial Printer

Cable: Multi-conductor jacketed (no shield)
Max Length: 50 feet
Connector: Female DB25 connector (on console)
Signal Type: EIA RS232, 9600 baud, 8 bit with 1 stop bit, even parity, busy indicated by MARK level on DSR.

Pin #	Signal	Comments
3	RS232 TX	RS232 transmit
7	GND	ground
20	DSR	Data Signal Ready

Table 7. Printer Serial Input

Cable: Multi-conductor jacketed (no shield)
Max Length: 50 feet
Connector: DB25 connector (on printer)
Signal Type: EIA RS232, 9600 baud, 8 bit with 1 stop bit, even parity, busy indicated by MARK level on DSR.

Pin #	Signal	Comments
3	RS232 TX	RS232 transmit
7	GND	ground
20	DSR	Data Signal Ready

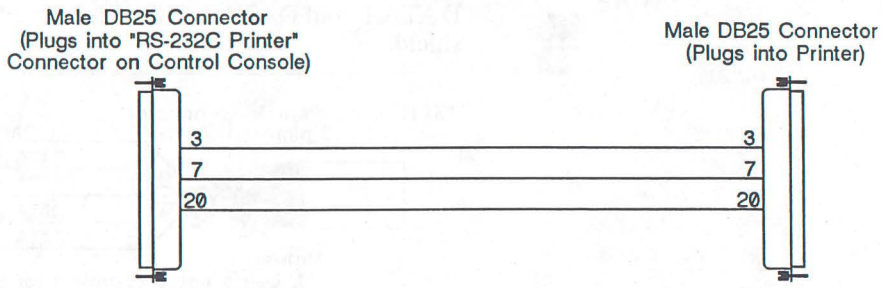


Figure 16. Printer Control Cable Hookup

Printer Configuration

Configure an Okidata 182 with super high speed serial interface for use with Impact by removing the switch access cover on the upper rear of the printer and setting the circuit board and serial interface switches as shown in figure 17.

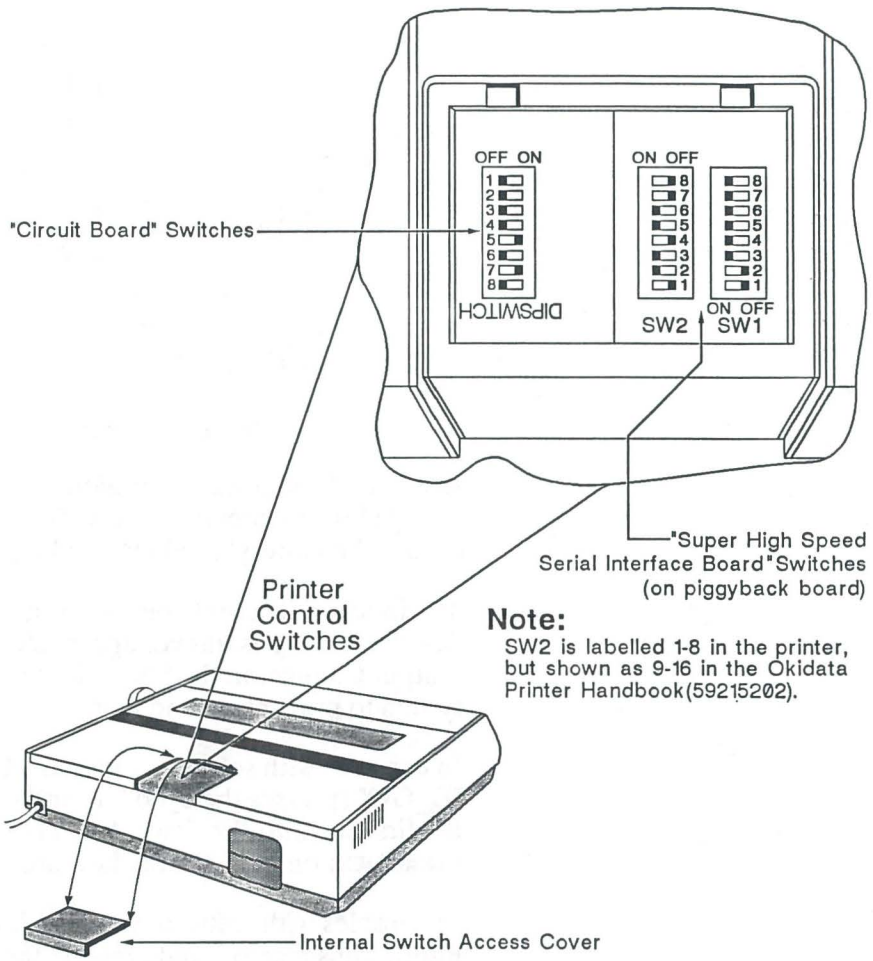


Figure 17. Okidata 182 Switch Configuration

Remote Macro Hookup

Impact (software versions 2.0.3 and later) lets you hook up 2 external switches to the printer cable if required.

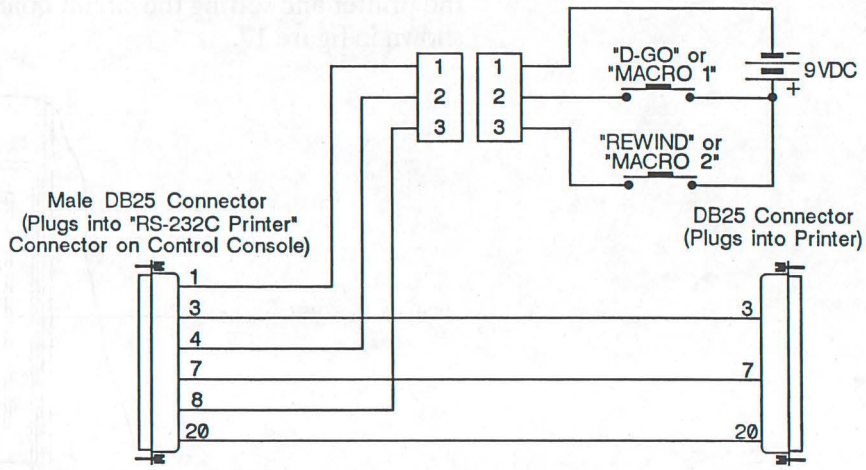


Figure 18. Remote Macro Cable Hookup

A standard 9 volt transistor battery is probably the easiest source of voltage for this circuit. Since virtually no current is drawn by the circuit, the battery should last as long as its shelf life.

The inputs will accept voltages from 5VDC to 24VDC from other devices, as long as this voltage is referenced only to pin 1 of the Printer Output Connector. It should float relative to the rest of the Impact system to prevent ground loops.

In consoles with software versions 2.0.3 through 2.0.5 the contacts are "D_GO" (presses the **D_GO** button) and "REWIND PREVIEW" (puts the first cue into Preview). Rewind Preview is the same as pressing **CLEAR NEXT** on the Memory keypad.

In consoles with software versions 3.0.1 or greater pressing the **MACRO_1** button runs macro 1 and pressing the **MACRO_2** button runs macro 2. You can thus remotely control any function which you can program into these two macros.

Console Video

Impact generates RGB analog video signals compatible with EIA RS-170 video standards.

Video Hookup

Table 8 shows the pinouts, Strand Lighting color codes, and allowed lengths for the video cable.

Warning

Connecting a monitor which is not set up for analog inputs may damage the Impact, the monitor, or both.

Table 8. Console Video Cable Specifications

Cable: Supplied cable only
Max Length: 50 feet (without repeaters), no branches
Connector: 9 pin compatible with NEC PGA

Pin #	Signal	Comments
1	RED signal	Analog red signal - 1.0V(p-p)
2	GREEN signal	Analog green signal - 1.0V(p-p)
3	BLUE signal	Analog blue signal - 1.0V(p-p)
4	N.C.	Not used
5	N.C.	Not used
6	RED ground	Analog red ground
7	GREEN ground	Analog green ground
8	BLUE ground	Analog blue groung
9	GND	Shell

Note

The RED, GREEN, and BLUE lines carry composite sync. This pinout conforms to the NEC PGA (Professional Graphics Adapter) pinout.

Video Signal Specifications

The color video output from Impact is in the form of an electrical current. Unless a monitor terminated at 75 ohms to ground on each signal is connected, or a dummy terminator plug with 75 ohm resistors is installed, no video signal voltage will be produced. The unit is designed to produce a 1.0V (peak-to-peak) signal into a 75 ohm load. Some additional information is shown below.

- Composite Video, RGB with sync on all three signals
- White Level, 1.0V (p-p) into 75 ohms
- Black Level, 0.3V (p-p) into 75 ohms
- Sync tips at ground
- Horizontal Frequency = 19.23 kHz
- Horizontal Front Porch = 2 microseconds
- Horizontal Sync Width = 5 microseconds
- Horizontal Back Porch = 12 microseconds
- Vertical Frequency = 54 Hz
- Vertical Front Porch = 400 microseconds
- Vertical Sync Width = 150 microseconds
- Vertical Back Porch = 750 microseconds

Note

If the monitor is an NEC MultiSync which has a "TTL/ANALOG" input switch on the rear, the switch should be in the ANALOG position. The horizontal and vertical size and centering controls on the top of the unit may be used to correctly position the image on the CRT, while the brightness and contrast controls may be used to produce the best picture under the prevalent lighting conditions.

Remote Video

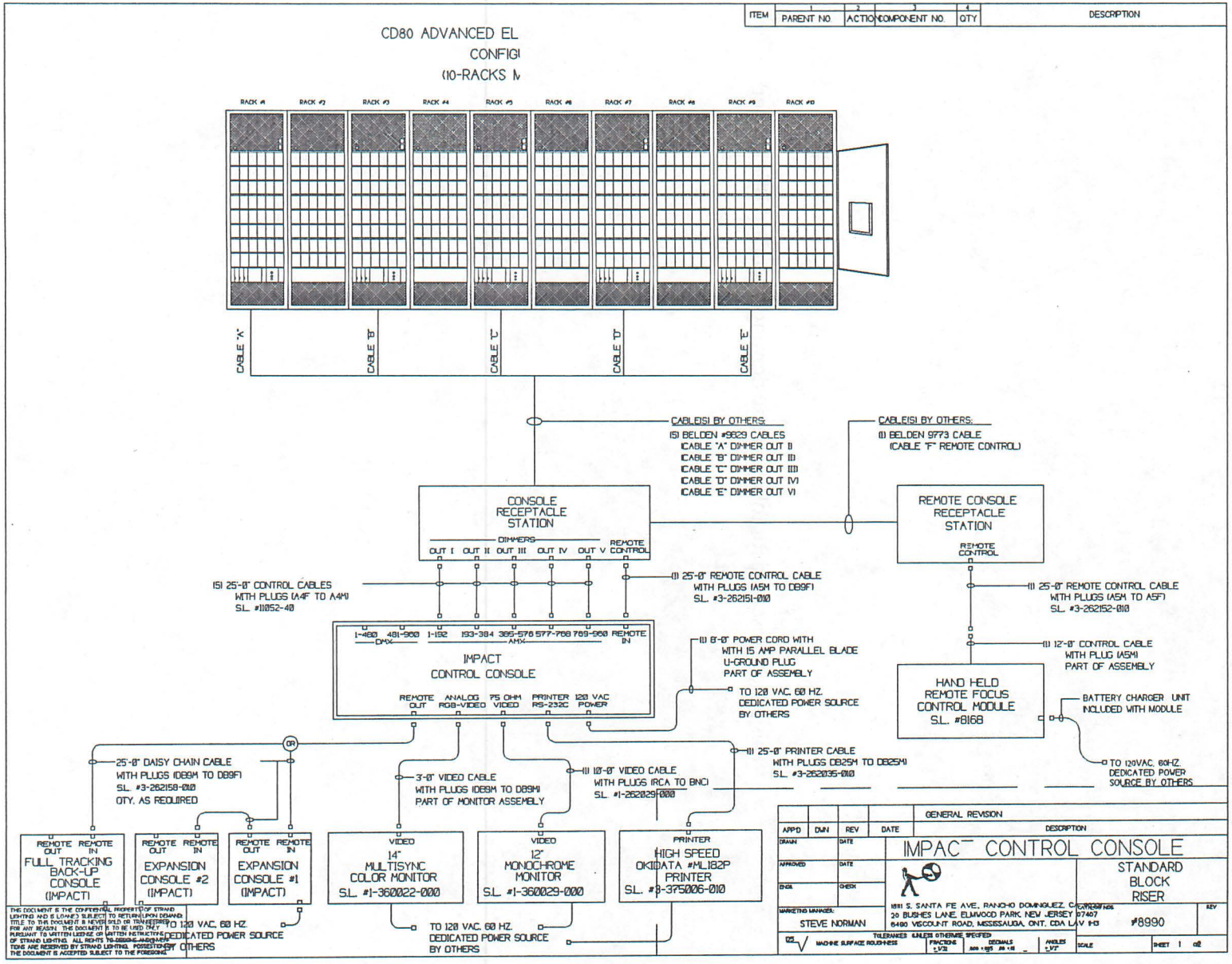
Impact generates a composite 75 Ohm video signal for remote distribution if required

Table 9. Remote Video Cable Specifications

Cable: RG-59U 75 Ohm video co-ax cable
Max Length: 500 feet (without repeaters), no branches
Connector: Female RCA Phono jack

Pin #	Signal	Comments
Shield	GND	Signal ground - video shield
Center	VIDEO	Video signal

This page is reserved for folded B size drawing "Standard Block Riser"


ITEM | PARENT NO. | ACTION | COMPONENT NO. | QTY | DESCRIPTION
CD80 ADVANCED EL
CONFIGU
(10-RACKS M
RACK #1
RACK #2
RACK #3
RACK #4
RACK #5
RACK #6
RACK #7
RACK #8
RACK #9
RACK #10
CABLE 'A'
CABLE 'B'
CABLE 'C'
CABLE 'D'
CABLE 'E'
CABLE(S) BY OTHERS:
(5) BELDEN #9829 CABLES
(CABLE "A" DIMMER OUT I)
(CABLE "B" DIMMER OUT II)
(CABLE "C" DIMMER OUT III)
(CABLE "D" DIMMER OUT IV)
(CABLE "E" DIMMER OUT V)
CABLE(S) BY OTHERS:
(1) BELDEN 9773 CABLE
(CABLE "F" REMOTE CONTROL)
CONSOLE RECEPTACLE STATION
DIMMERS
OUT I OUT II OUT III OUT IV OUT V
REMOTE CONTROL
REMOTE CONSOLE RECEPTACLE STATION
REMOTE CONTROL
(5) 25'-0" CONTROL CABLES WITH PLUGS (A4F TO A4M) S.L. #11052-40
(1) 25'-0" REMOTE CONTROL CABLE WITH PLUGS (A5M TO DB9F) S.L. #3-262151-010
(1) 25'-0" REMOTE CONTROL CABLE WITH PLUGS (A5M TO A5F) S.L. #3-262152-010
1-480 DMX
481-960
1-192
193-384 AMX
385-576
577-768
769-960
REMOTE IN
IMPACT CONTROL CONSOLE
(1) 8'-0" POWER CORD WITH WITH 15 AMP PARALLEL BLADE U-GROUND PLUG PART OF ASSEMBLY
TO 120 VAC, 60 HZ. DEDICATED POWER SOURCE BY OTHERS
(1) 12'-0" CONTROL CABLE WITH PLUG (A5M) PART OF ASSEMBLY
HAND HELD REMOTE FOCUS CONTROL MODULE S.L. #8168
BATTERY CHARGER UNIT INCLUDED WITH MODULE
TO 120VAC, 60HZ DEDICATED POWER SOURCE BY OTHERS
REMOTE OUT
ANALOG RGB-VIDEO
75 OHM VIDEO
PRINTER RS-232C
120 VAC POWER
OR
25'-0" DAISY CHAIN CABLE WITH PLUGS (DB9M TO DB9F) S.L. #3-262158-010 QTY. AS REQUIRED
3'-0" VIDEO CABLE WITH PLUGS (DB9M TO DB9M) PART OF MONITOR ASSEMBLY
(1) 10'-0" VIDEO CABLE WITH PLUGS (RCA TO BNC) S.L. #1-262029-000
(1) 25'-0" PRINTER CABLE WITH PLUGS (DB25M TO DB25M) S.L. #3-262035-010
FULL TRACKING BACK-UP CONSOLE (IMPACT)
EXPANSION CONSOLE #2 (IMPACT)
EXPANSION CONSOLE #1 (IMPACT)
VIDEO
14" MULTISYNC COLOR MONITOR S.L. #1-360022-000
VIDEO
12" MONOCHROME MONITOR S.L. #1-360029-000
PRINTER
HIGH SPEED OKIDATA #ML182P PRINTER S.L. #3-375006-010
TO 120 VAC, 60 HZ. DEDICATED POWER SOURCE BY OTHERS
TO 120 VAC, 60 HZ. DEDICATED POWER SOURCE BY OTHERS
THE DOCUMENT IS THE CONFIDENTIAL PROPERTY OF STRAND LIGHTING AND IS LOANED SUBJECT TO RETURN UPON DEMAND. TITLE TO THIS DOCUMENT IS NEVER SOLD OR TRANSFERRED FOR ANY REASON. THE DOCUMENT IS TO BE USED ONLY PURSUANT TO WRITTEN LICENSE OR WRITTEN INSTRUCTIONS OF STRAND LIGHTING. ALL RIGHTS TO DESIGNS AND MOVEMENTS ARE RESERVED BY STRAND LIGHTING. PORTIONS OF THE DOCUMENT IS ACCEPTED SUBJECT TO THE FOREGOING.
GENERAL REVISION
APP'D | DWN | REV | DATE | DESCRIPTION
DRAWN
APPROVED
ENGR
CHECK
MARKETING MANAGER: STEVE NORMAN
IMPAC™ CONTROL CONSOLE
STANDARD BLOCK RISER
1681 S. SANTA FE AVE., RANCHO DOMINGUEZ, CA 90221
20 BUSHES LANE, ELMWOOD PARK, NEW JERSEY 07407
6490 VISCOUNT ROAD, MISSISSAUGA, ONT. CDA L4V 1H3
#8990
REV
TOLERANCES UNLESS OTHERWISE SPECIFIED
MACHINE SURFACE ROUGHNESS
FRACTIONS ±1/32
DECIMALS .XXX ±.005 .XX ±.01
ANGLES ±1/2°
SCALE
SHEET 1 of 2

IMPC-BR1.DWG

This page is reserved as the back side of the folded B size block diagram (see previous page).

6

Basic Trouble-shooting

This chapter provides the user with basic maintenance and trouble-shooting procedures for Impact. It does not provide comprehensive maintenance data, but rather helps the user to solve simple problems and provide Strand Lighting with initial data if these procedures do not work.

Power-Up Self-Tests

When Impact is turned ON, it does a series of tests on its internal electronic systems. If any problems are encountered, an error message is shown on the monitor, and an error code is shown on the back panel LEDs.

Table 10 shows the Impact startup error codes.

Table 10. Startup Error Codes

LEDs Run 4 3 2 1	Code	Failure
B 0 0 0 0	--	Normal Operation
0 1 0 0 0	01	EPROM read failure
0 0 1 0 0	02	Workspace RAM failure
0 1 1 0 0	03	CRT Controller failure
0 0 0 1 0	04	Video RAM failure
0 1 0 1 0	05	TMS 9901 failure
0 0 1 1 0	06	Interrupt Mask failure
0 1 1 1 0	07	DMA Controller failure
0 0 0 0 1	08	Disk Controller failure
0 1 0 0 1	09	Dual UART #1 failure
0 0 1 0 1	0A	Dual UART #2 failure
0 1 1 0 1	0B	A/D Converter failure
0 0 0 1 1	0C	Keyboard not detected
0 1 0 1 1	0D	Real Time Clock failure
1 0 0 0 0	10	Cue RAM Bank 1 failure
1 1 0 0 0	11	Cue RAM Bank 2 failure
1 0 1 0 0	12	Cue RAM Bank 3 failure
1 1 1 0 0	13	Cue RAM Bank 4 failure
1 0 0 1 0	14	Cue RAM Bank 5 failure
1 1 0 1 0	15	Cue RAM Bank 6 failure
1 0 1 1 0	16	Cue RAM Bank 7 failure
1 1 1 1 0	17	Cue RAM Bank 8 failure
1 0 0 0 1	18	Cue RAM Bank 9 failure
1 1 0 0 1	19	Cue RAM Bank 10 failure
1 0 1 0 1	1A	Cue RAM Bank 11 failure
1 1 1 0 1	1B	Cue RAM Bank 12 failure
1 0 0 1 1	1C	Cue RAM Bank 13 failure
1 1 0 1 1	1D	Cue RAM Bank 14 failure
1 0 1 1 1	1E	Cue RAM Bank 15 failure
1 1 1 1 1	1F	Cue RAM Bank 16 failure
1 1 1 1 1	1F	Kernel failure
0 = OFF	1 = ON	B = BLINKING

You can use the video display to distinguish between a kernel failure and a RAM bank 16 failure. A RAM bank 16 failure will have the standard power-up error message on the monitor. A kernel failure will have no display on the monitor.

If an error of this type appears, write down the error code and call Strand Lighting Field Service. If the error detected on power-up is non-fatal (i.e., the console still seems to be running) you may attempt normal operation by pressing **EXECUTE**. Correct system operation cannot be guaranteed if a power-up error is ignored.

Trouble-shooting Checklist

Many apparent problems in complex systems such as the Impact console are due to conditions which are unrelated to the console electronics or to operator error. If you have problems, run through the following checklist before searching for possible failures in the console.

1. Check power at the outlet. Is it present, and the correct voltage?
2. Is the console plugged in and turned ON?
3. Check the input power fuse (in the power entry block). Is it good? Is it the correct size and rating?
4. Check the power LEDs on the back panel. Are all three LEDs ON?
5. Did the console fail a power-up self test? These tests are fully described later in this chapter.
6. Is the monitor plugged in and turned ON?
7. Is the video cable connected to the console and to the monitor?
8. Are the monitor's configuration switches set correctly (see Appendix B for more information).
9. Is the monitor's brightness control correctly set?
10. Are all cables plugged to the proper connectors?
11. Is the printer plugged in and turned ON?
12. Check the system configuration:
    - Is the correct dimmer type selected?
    - Is the correct mode (Normal/Expansion) selected?
    - Are the correct numbers of dimmers and channels specified?
    - Is the system patched correctly, or at all?
    - Is the Remote In port configured correctly?
    - Are submaster modes set correctly?
13. Is the Grand Master down?
14. Is an inhibitive submaster down?
15. If an operation gave an unexpected result try it again slowly. Check the manual to make sure you clearly understand the operation of the function.

If the system still does not work properly, proceed to the user confidence tests.

User Confidence Tests

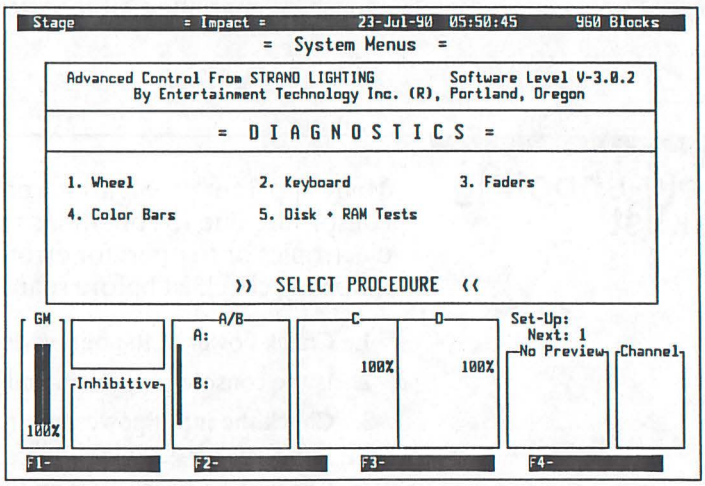
Impact contains an extensive set of user confidence diagnostic tests. These are intended for use when a fault is believed to exist within the Impact console itself. When doing these tests, keep a careful record of the results so that this data can be given to Field Service if required.

All user confidence tests are invoked from the *Diagnostics* menu.

Press

MENU 7

to see the Diagnostics menu.



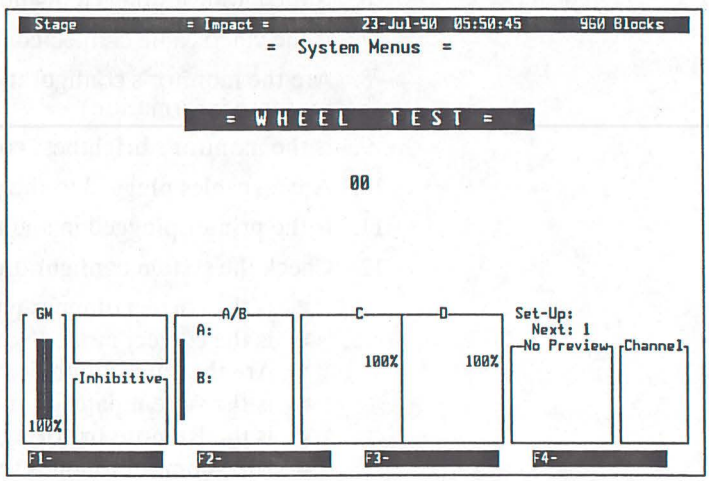
Wheel Diagnostics

Wheel diagnostics let you check the output of the **WHEEL**.

Press

MENU 7 1

to see the Wheel Test screen.



Rotating the **WHEEL** increments or decrements the hexadecimal number on the screen. The **WHEEL** action should be smooth and uniform.

You can exit to the system by pressing any Display key or return to the *Diagnostics* menu by pressing **CANCEL**.

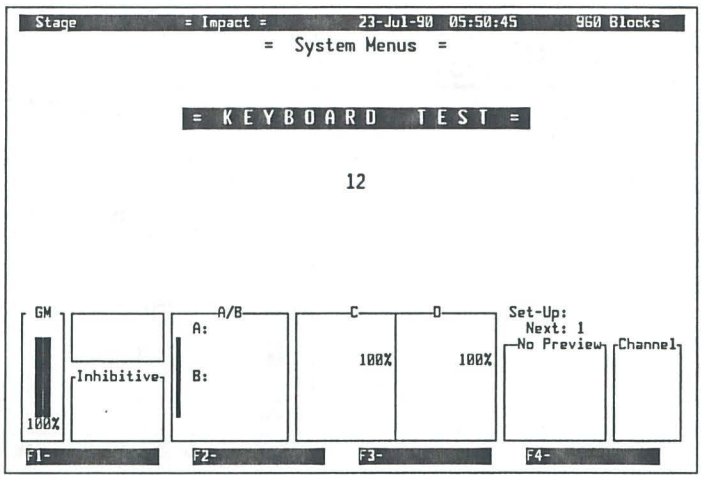
Keyboard Diagnostics

Keyboard diagnostics let you make sure that all of the basic keys are actually outputting a signal. Scene master and Inhibitive Submaster Bump Buttons are not checked by this test.

Press

MENU 7 2

to see the Keyboard Test screen.



Each push-button displays a unique hexadecimal number on the screen, which should appear when the button is pressed, and should not change until another button is pressed. If the correct code appears, it means that the selected key is outputting and that the central processor is correctly interpreting the keyboard message. Figure 19 shows the correct keyboard scan codes.The **ALT** and **SEQ** keys cannot be tested in this manner. The **CANCEL** key will return you to the *Diagnostics* menu. The **SUBS**, **STAGE**, **MENU**, and **PREVIEW** keys will return you to the selected display.

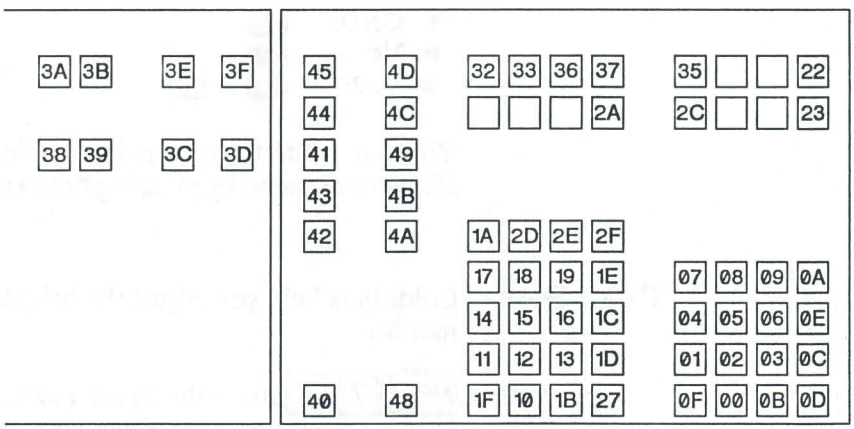


Figure 19. Keyboard Diagnostic Codes

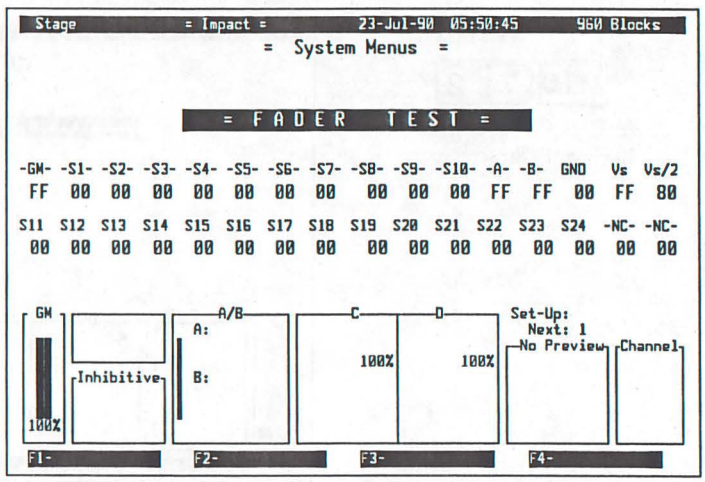
Fader Diagnostics

Fader diagnostics let you make sure that all faders are functional, that they fade through their full range, and that the fade is smooth.

Press

MENU 7 3

to see the Fader Test screen.



Each fader has its own hexadecimal numeric display. The display should be *00* when the fader is at the bottom of it's travel and FF when the fader is at the top of its travel. The action of the fader should be smooth and uniform with all possible values between these extremes.

The displayed value may "flicker" between two adjacent numeric values (i.e., 7D and 7E). It is an error for the value to flicker between some number and 00 or FF, or if the faders interact with each other.

The three extra values monitor the power supply, and should read:

- GND: 00
- Vs: FF
- Vs/2: 7F or 80

You can exit to the system by pressing any Display key or return to the *Diagnostics* menu by pressing **CANCEL**.

Color Bars

Color bars help you adjust the brightness and contrast controls for the monitor.

Press MENU 7 4 to see the 16 color bars. Adjust the color and contrast controls on your monitor as required.

You can exit to the system by pressing any Display key or return to the *Diagnostics* menu by pressing **CANCEL**.

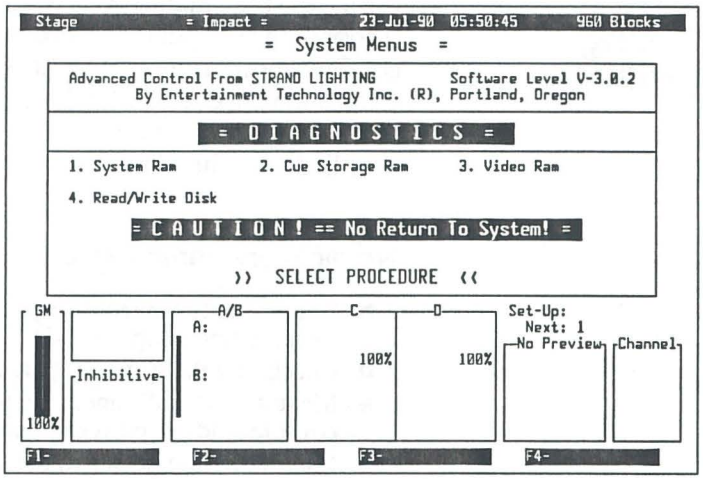
Disk and RAM Tests

The disk and RAM tests let you verify that your system memory and your disk drive are functioning correctly.

Press

MENU 7 5

to see the Disk and Ram test selections.



Warning

These tests start immediately when you make a selection. Once a test starts the only way to re-enter the operating system is by turning the console OFF and then back ON. Make sure that you have a disk copy of important data before starting these tests.

It is good practice to do a Clear System and Clear Patch after these routines are run.

Press 1 to test the system workspace RAM. A pass count and an analysis of any write/read errors is displayed.

Press 2 to test the blocked cue storage RAM. Cues, Set-Ups, and Patch are destroyed. A pass count and an analysis of any write/read errors is displayed.

Press 3 to test the screen RAM. A pass count and an analysis of any write/read errors is displayed.

Press 4 to write and read back all locations on a disk. Destroys all data on the disk. Disk must be formatted before it can be used again. Error messages show type of error encountered.

If any of these tests fail, call Strand Lighting Field Service.

Dimmer Addressing Problems

If the console appears to function correctly, but lights on stage are not responding as expected, there may be problems with the system configuration or the connection between the console and dimmer bank. The following check list will help narrow down the problem location. For a complete diagnosis of dimmer problems, refer to the manual supplied with the dimmers.

No dimmers come ON, or dimmers flash erratically.

- Check that the correct output type for the dimmers in use has been selected (menu option 4-5)
- Check that the system is patched (menu options 1 or 2).
- Make sure that dimmers are plugged to the correct connectors on the console, and are correctly connected at the dimmer bank.
- Make sure that power to the dimmer bank is ON.

Some or all CD80 type dimmers float to full.

- Check the dimmer parameters in the configuration data (menu option 4-3). Make sure that both Dimmer Count and First 6K are set correctly for your installation.
- If a block of 192 dimmers is affected, check for cabling problems. Make sure all cable are connected correctly at both ends. Check any exposed cable runs for physical damage. Try interchanging two dimmer cables at the console. If the same block of dimmers is afflicted after the swap, the problem is in the cabling or dimmer bank. If the problem moves to another block of dimmers, the output of the Impact may be defective.

Control of dimmers is shifted by a fixed offset.

- Make sure that dimmer cables are plugged to the correct connectors.
- If AMX192 output is selected, make sure that the First 6K parameter is set correctly.
- Make sure that any dimmer address switches are set correctly (consult dimmer bank manual for this information).

Control of dimmers is incorrect.

- Make sure that the system is correctly patched (menu options 1 or 2).
- If AMX192 output is selected, make sure that the First 6K parameter is set correctly.

Some dimmers cannot be controlled, or act as non-dims.

- Make sure that the system is correctly patched (menu options 1 or 2).
- If AMX192 output is selected, make sure that the First 6K parameter is set correctly.

Dimmers do not go to FULL.

- Make sure that the system is correctly patched (menu options 1 or 2).
- If AMX192 output is selected, make sure that the output is correctly calibrated (see *AMX192 Output Calibration* earlier in this chapter).

CD80 dimmers reach full output too soon.

- Make sure that the AMX192 output is correctly calibrated (see *AMX192 Output Calibration* earlier in the *Periodic Maintenance* Chapter).

7

Periodic Maintenance

Impact is designed to give years of trouble free operation with a minimum of maintenance. The only regular maintenance required is cleaning of the monitor and system box. An installation which uses AMX192 output protocol (CD80 dimmers) may also need occasional re-calibration to assure that the dimmer outputs accurately reflect the levels set in the console.

Cleaning the System

Clean the monitor and system box with a slightly dampened soft cloth. DO NOT apply water or cleaning solution directly to the Impact console or video monitor.

If dust accumulation on the monitor is a problem, use a commercially available CRT cleaning kit, which contains a fluid which helps minimize static build-up on the CRT surface.

AMX192 Output Calibration

The maximum analog level to the dimmers may be adjusted if you have the AMX192 output protocol selected (menu option 4-5).

Enter a default patch

Use menu option 3 to set the patch to its default settings.

Turn channels ON

Set channels 1 through 192 to FULL.

Measure AMX output

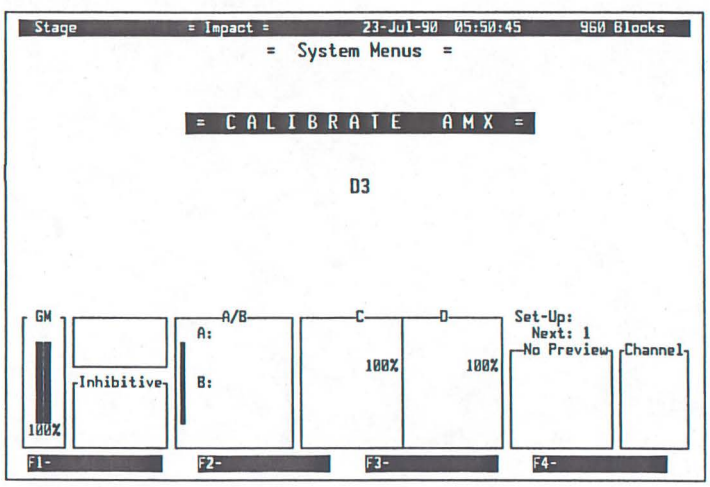
Measure the voltage between "ANALOG" and "COMMON" on the AMX192 cable #1 at the dimmer bank, not at the back of the console (see Appendix C for correct pin numbers).

If the measured voltage is 5.0VDC, no adjustment is necessary. Otherwise, continue with this procedure.

Press

MENU 7 ALT-AT

to see the Calibrate AMX menu with the default calibration value.



Adjust calibration Slowly rotate the WHEEL to adjust the value of the calibration parameter. When the analog voltage measured at the dimmer bank reaches exactly 5.0VDC, the console output is set correctly.

Save new value Press [*] to save the new calibration value or [CANCEL] to quit and restore the old calibration value.

8

Reference

Impact commands are divided into logical groupings and accessed from appropriate menus and displays which appear on the monitor.

Impact commands are keystroke sequences terminated by a logical end of command (as with channel level entries), by pressing a direct action button such as **A_LOAD** (**FADER A** assignment button), or by pressing **EXECUTE** (*). Most incorrect entries will do nothing. Entries which may cause unwitting changes in memory carry a flag and require a confirmation by the operator.

This reference section is arranged alphabetically by topic. Since each display has its own reference you can easily look up the allowed functions for each display.

Channel Check

You can run a quick channel check to make sure your dimmers are functioning and lights are functioning and still focused by using the Channel Check feature while you are in the *Stage* display.

ALT + NEXT

Brings the next channel to FULL, releasing the current channel from independent. If there is no channel selection the first channel to be brought to FULL is channel 1.

Channel Control

You can control channels by selecting them individually or as a group, and then applying level commands to the list or changing their levels with the **WHEEL**.

Selection lists consist of selectors which let you select items for the list and commands which let you specify levels for items in the list.

Selectors

0 through 9 let you select individual channels.

SELECT GROUP [#] * lets you use a cue as the source of levels for the channel selection list (e.g., **SELECT_GROUP 1 *** selects cue 1 channels and puts them into the current buffer at their recorded levels). Proportional levels are maintained if you adjust these channels with the **WHEEL**. If you set a new level with the keypad, all selected channels will go to the new level (e.g., **SELECT_GROUP 1 * AT 50** selects group 1 channels and sets them to 50%). You can use **AND** and **THRU** with this command (e.g., **25 AND SELECT_GROUP 10 * AT 50** selects channel 25 and the channels in cue 10 and sets them to 50%).

AND lets you select random multiple channels (e.g., **1 AND 3 AT 7 0**).

THRU lets you select a range of channels (e.g., **1 THRU 5 AT 5 0**).

Note

You can use **THRU** and **AND** in the same selection list (e.g., **1 THRU 5 AND 8 THRU 10 AT 7 0**).

Commands

These commands let you control or modify channel levels. End of command is assumed when you have entered two digits of a level or press **FULL** or **ALT-FULL**.

[selection list]

Selects the listed channels without changing their levels. If you modify the levels of the selected channels while in the *Stage* display, they are also made independent.

[selection list] AT [level]

Selects the listed channel(s), sets them to the specified level,, and makes them independent.

[selection list] AT AT

Selects the listed channel(s), sets them to OFF (not ZERO), and makes them independent.

[selection list] FULL

Selects the listed channel(s), sets them to FULL, and makes them independent.

[selection list] ALT-FULL

Selects the listed channel(s), sets them to OFF (not ZERO), and makes them independent.

[selection list] ALT-AT

Sets all but the listed channels to ZERO (Remainder Dim Function).

CLEAR

Deselects all selected channels if there is a selection list.

Channel Limits

You can set channel limits (maximum channel levels) by establishing a cue 0.1 with the limits as the channel levels. Whenever there is a cue 0.1 the contents of this cue will define the maximum channel level.

Limited channels will show up with their channel level in white lettering with flashing red background.

Independent channels will override the channel limiting.

Add Channel Limits

To add channel limits record a cue 0.1. Channels with a level of OFF are ignored in the limit cue (i.e., have no limit set). To limit a channel to a level that will not be visible on stage, write a limit of 01.

Modify Channel Limits

To modify some channel limits, examine cue 0.1 in Preview, adjust the levels as required, and then re-record the cue.

Delete Channel Limits

To delete all channel limits delete cue 0.1. To delete only some of the channel limits set the levels for those channels in cue 0.1 to FULL and re-record cue 0.1.

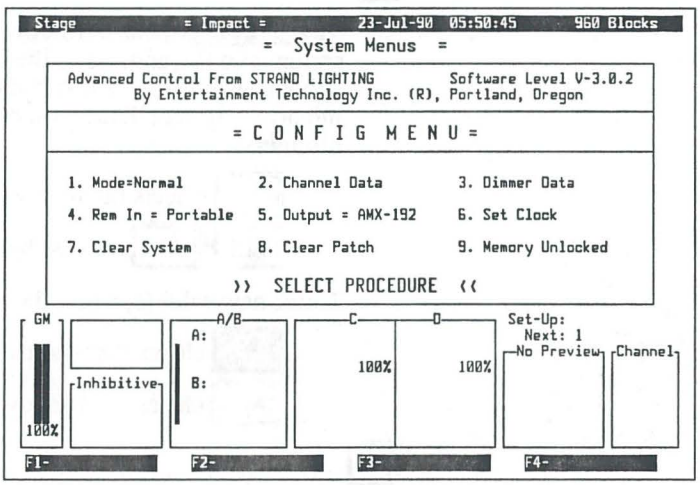
Config Menu

The *Config* menu lets you set all of the system configuration parameters for your installation.

Press

MENU 4

to see the Config menu.



System Configuration

1

1. **Mode =** selects whether the console is a normal or expansion console (alternate action). **Mode = Normal** means this is the master console. **Mode = Expansion** means this is a slave console. System default on cold start is **Mode = Normal**.

Caution

The console mode changes immediately when you press 1.

If you accidentally change the console mode you can easily change it back by selecting this menu item again.

2

2. Channel Data opens a window for setting the number of channels in this console, the first console channel number, and the number of channels in the system. This can be done without clearing memory. System default on cold start is 96 local and global channels, starting with channel 1.

≫ selects the next field for modification.

ALT + ≫ selects the previous field for modification.

Enter new value(s) while the appropriate field is highlighted.

* closes the window and records your changes.

CANCEL closes the window without recording changes.

3

3. Dimmer Data opens a window for setting the number of dimmers in the system and the address of the first 6KW dimmer (relevant only in systems using AMX192 output). This can be done without clearing memory. System default on cold start is 384 dimmers with no 6KW dimmers.

≫ selects the next field for modification.

ALT + ≫ selects the previous field for modification.

Enter new value(s) while the appropriate field is highlighted.

* closes the window and records your changes.

CANCEL closes the window without recording changes.

4

4. Rem In = selects whether the Remote Input connector is expecting input from another console or from the portable Hand Held Remote (alternate action). Rem In = Serial means remote input is from another console. Rem In = Portable means remote input is from the Hand Held Remote. System default on cold start is Rem In = Portable.

Caution

The Remote Input mode changes immediately when you press 4.

If you accidentally change the Remote Input mode you can easily change it back by selecting this menu item again.

[5]

5. Output = selects the output protocol to dimmers (rotating action). Each press of the 5 key selects the next output protocol on the list.

Selections for U.S. versions are are Output = AMX192 (for CD80), Output = DMX512, Output = C-156 (for Colortran Dimmers), Output = E-NET (for Entertainment Technology dimmers), and Output = EC-MUX (for Electro Controls dimmers). System default on cold start is Output = AMX192.

Selections for U.K. versions are are Output = D54 (for Strand U.K. D54 protocol) and Output = DMX512. System default on cold start is Output = D54.

Caution

The output protocol changes immediately when you press [5].

If you accidentally change the output protocol you can easily change it back by selecting this menu item again enough times to bring the required protocol back.

[6]

6. Set Clock highlights the *Set Clock* option and the first field in the *Clock* display.

Use [NEXT] or [NEXT] to select the next clock display field for modification.

Use [PLUS] and [MINUS] to set each item.

Use [*] to record your changes.

Use [CANCEL] to exit the clock setting routine without recording changes.

Memory Configuration

[7]))'*' to Confirm(([*]

7. Clear System erases all cues, set-ups, and macros. It does not change any configuration parameters, and does not erase patch.

))'*' to Confirm((warns that pressing **EXECUTE** clears all memory. Press **CLEAR** to cancel your request or **EXECUTE** to clear all memory.

[8]))'*' to Confirm(([*]

8. Clear Patch clears patch (no assignments). Does not affect other parts of memory.

))'*' to Confirm((warns that pressing **EXECUTE** clears patch information. Press **CLEAR** to cancel your request or **EXECUTE** to clear patch.

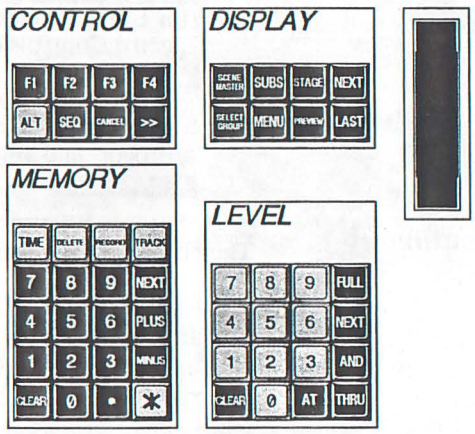
[9]))'*' to Confirm(([*]

9. Memory Unlocked locks/Unlocks memory and library storage functions (alternate action).

))'*' to Confirm((warns that pressing **EXECUTE** changes the memory lockout status. Press **CLEAR** to cancel your request or **EXECUTE** to change the memory lockout status.

Console Keyboard

The Console keyboard provides all basic input and recording functions in a compact, easy to use layout.



The Console keyboard lets you select channels and cues, set and record levels as required, change the on-screen display, and set or change system configuration. The functions of each of the keys in this group are described in this chapter under the appropriate display.

Contact Closure ("AV") Interface

Starting with software version 2.0.5, all Impact models have inputs which allow remote contact closures to press certain buttons in the console. This feature allows very complicated lighting shows to be supervised by simple event-sequencing controllers. Version 2.0.5 allows control of **FADER D** and the Preview buffer. This implementation easily facilitates the simple sequencing of cues, but requires the careful use of set-ups to execute more complicated plots. Starting with version 3.0.1, these contact closure inputs execute macros, making virtually any console operation available for external control.

Two general purpose input pins on the RS-232 Printer port have been re-defined as contact closure inputs. The port is now defined as follows:

Pin	Function
1	Safety Ground
2	Receive Data
3	Transmit Data
4	**D_GO** or **MACRO_1** key input
5	RTS output
6	DTR output
7	Signal Ground
8	**REWIND PREVIEW** or **MACRO_2** key input
20	DSR input (Printer handshake)

The two key inputs have very simple definitions. In version 2.0.5 and above, **D_GO** has exactly the same effect as pressing the **D_GO** on the main keyboard. **REWIND PREVIEW** forces the Preview buffer back to the lowest numbered recorded cue. It has exactly the same effect as pressing **CLEAR NEXT** on the memory keypad. In version 3.0.1, the two inputs execute the indicated keyboard Macro.

To remotely "press" either of these two keys you must supply a voltage in the range +5Vdc to +24Vdc to either Pin 4 or Pin 8 of the Printer Port. A 9V transistor battery is an excellent source for this voltage. Since there is virtually no current drawn by these inputs, a battery in this application should last the full duration of it's shelf life.

Caution

This voltage must be referenced to Pin 1 only. It should float relative to the rest of the Impact system in order to prevent ground loops.

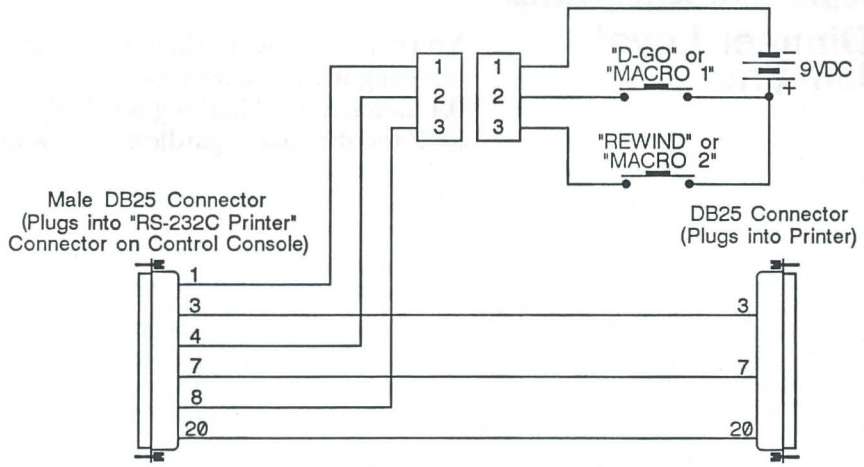


Figure 20. Remote Macro Cable Hookup

The version 2.0.5 implementation assumes that the **FADER D** will be used in SEQ mode, that 'Rewind Preview' will select the first cue to execute, and **D_GO** will be used to execute each cue in order. You can set the top of a show for this mode of operation by creating the following cues and set-ups:

Set Cues:

0.5 All channels off and all times at 0 - Executes Set-up 0.5
0.9 All channels off and all times at 0 - Executes nothing. (Blackout Cue)
1.0 First cue of show.

Make Set-up:

0.5 Loads Cue 0.9 to **FADER A, FADER B, FADER C,** and **FADER D,** puts **FADER D** in SEQ mode, and loads cue 1 into Preview.

To start a show:

1. Press REWIND_PREVIEW to load Cue 0.5 into Preview.
2. Press D_GO. Cue 0.5 runs instantly and then executes set-up 0.5, which then loads Cue 0.9 into all faders, places FADER D in SEQ mode, and loads cue 1 into Preview.
3. Press D_GO to start cue 1 on FADER D and load the next cue into Preview.

   Successive presses of D_GO will execute the show's cues in order.

In consoles with software version 3.0.1 or greater you can accomplish the same thing by defining Macro 1 as D_GO and Macro 2 as CLEAR NEXT on the Memory keypad. You can also start any other function which you can program into a macro.

Dimmer Level Limiting

You can limit the maximum dimmer level of any or all dimmers by patching them at a specific level. Unlike channel level limiting with cue 0.1, dimmer level limiting is calculated with the patching data and will limit the **dimmer** regardless of how the channel is being controlled.

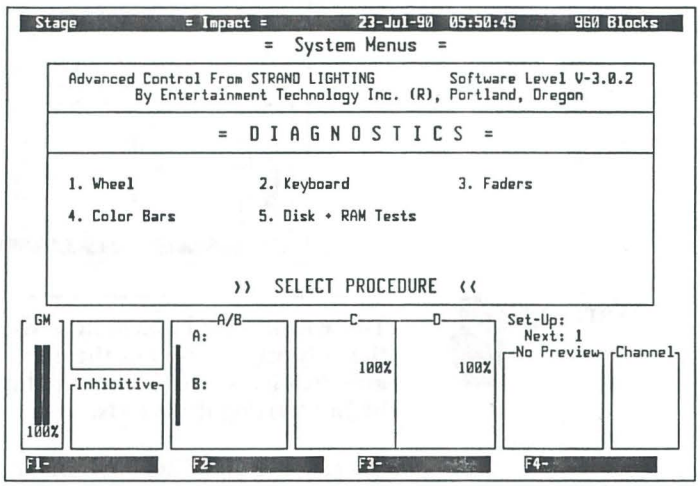
Diagnostics Menu

Impact contains an extensive set of user confidence diagnostic tests. which are intended for use when a fault is believed to exist within the Impact console itself. When doing these tests, keep a careful record of the results so that this data can be given to Field Service if required.

Press

MENU 7

to see the Diagnostics menu.



1

1. **Wheel** shows the *Wheel Test* display.

Rotating the **WHEEL** increments or decrements the hexadecimal number on the screen. Action should be smooth and uniform.

2

2. **Keyboard Diagnostic** shows the *Keyboard Test* display.

Each keyboard push-button displays a unique hexadecimal number on the screen, which should appear when the button is pressed, and should not change until another button is pressed. This test does not check submaster bump buttons.

3

3. **Fader Diagnostic** shows the *Fader Test* display. When a fader is at the bottom of it's travel, its display should read *00*. When the fader is at the top of it's travel, its display should be *FF*. The fader action should be smooth and uniform between these extremes.

4

4. **Color Bars** displays 16 color bars to aid in adjusting brightness and contrast controls.

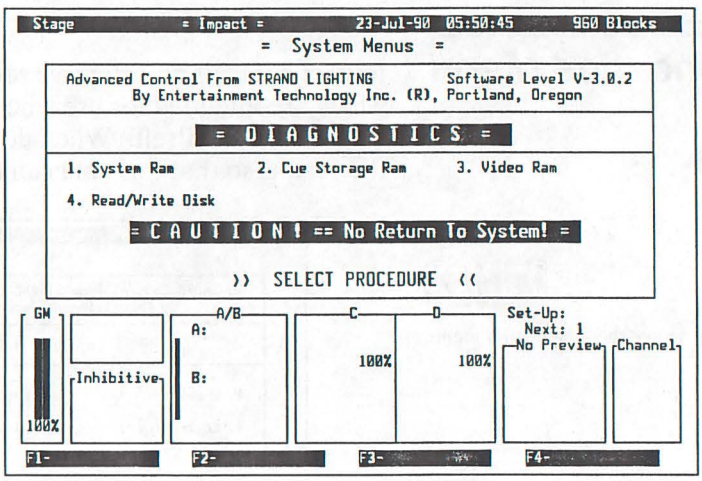
5

5. **Disk + Ram Tests** lets you run tests to make sure that your system memory and your disk drive are functioning correctly.

Press

MENU 7 5

to see the Disk and Ram test selections.



Warning

These tests start immediately when you make a selection. Once a test starts the only way to re-enter the operating system is by turning the console OFF and then back ON. Make sure that you have a disk copy of important data before starting these tests.

You should do a Clear System and Clear Patch after these routines are run.

MENU returns you to the *System* menu.

Using any other display change key will get you back to the selected display.

1

1. System RAM tests the system workspace RAM. A pass count and an analysis of any write/read errors is displayed.

2

2. Cue Storage RAM tests the blocked cue storage RAM and displays a pass count of any write/read errors. Cues, Set-Ups, Macros, and Patch, and several configuration parameters are destroyed. You can easily re-load them from disk when the test is done.

3

3. Video RAM tests the screen RAM. A pass count and an analysis of any write/read errors is displayed.

4

4. Write/Read Disk writes and reads back all locations on a disk, destroying all existing data. The disk must be formatted before it can be used again. Error messages show the type of error (if any) encountered.

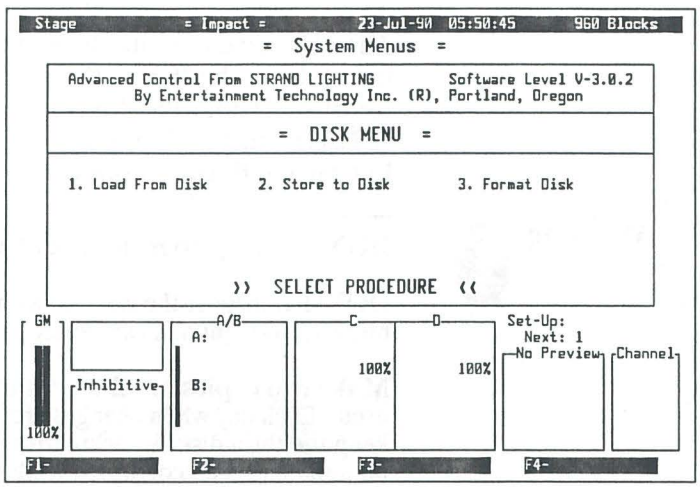
Disk Menu

The Disk menu lets you read and write from floppy disk, and format disks for use in Impact consoles.

Press

MENU 6

to see the Disk menu.



Library Storage

1))'*' to Confirm((*

1. **Load From Disk** loads system memory from a pre-recorded disk.

))'*' to Confirm((warns that pressing **EXECUTE** writes over existing data in memory. Press **CANCEL** to cancel your request or **EXECUTE** to load memory.

2))'*' to Confirm((*

2. **Store To Disk** stores information in memory to a disk.

))'*' to Confirm((warns that pressing **EXECUTE** writes over existing data on the disk. Press **CANCEL** to cancel your request or **EXECUTE** to write to disk.

3))'*' to Confirm((*

3. **Format Disk** formats a disk and executes disk diagnostics. You must format all new disks before using them.

))'*' to Confirm((warns that pressing **EXECUTE** erases existing data on the disk. Press **CANCEL** to cancel your request or **EXECUTE** to format the disk.

Handling Floppy Disks

Disks supplied with this equipment are hard shelled micro floppy disks. Since Impact has a disk initialization procedure, any industry standard 3-1/2 inch double sided, double density disk can be formatted for library use.

The disk drive operates like an automotive cassette deck. With no disk in the drive, the "EJECT" button is flush with the drive. When you insert a disk into the drive, it is "grabbed" and pulled inside, and the "EJECT" button pops out. To remove the disk, press the "EJECT" button and the disk pops out.

Warning

DON'T attempt to remove a disk while the red disk drive LED is ON.

DON'T transport the console with a disk in the disk drive. The "EJECT" button sticks out and can be accidentally hit and damaged.

Make two copies of all essential data. A rotation of three disks should be used. Each day when changes are made, make two copies of current data and keep the third disk as backup from the previous day. This way, even if memory has been corrupted while making the changes, the backup disk only needs one days worth of modifications.

DON'T leave disks unprotected. Always place disks in protective container when not in use.

DON'T force disks into drives. If resistance is encountered, find and fix the cause before insertion.

DON'T store disks where temperature exceeds 100°F.

DON'T store disks in areas of large magnetic fields. **If your dimmer racks are in the same room as the console, keep disks as far away from the dimmer racks as possible. Never place disks next to or on top of operating stage dimmers. Data will be lost**

DON'T power console up or down with disk installed in drive. Power spikes can alter data on disks.

DON'T smoke while handling disks or operating a console with a disk installed in the drive.

DON'T count on a disk manufacturers lifetime guarantee and ignore the above cautions. Some manufacturers guarantee data recovery, but meanwhile your show data is out of reach.

Disks do not last forever. As they wear out, they may generate data errors. Check manufacturers recommended life span and retire disks before they cause damage to show data. A "lifetime" warranty simply means that the manufacturer will replace the disk, and/or try to recover its data, if there are problems.

Effects

Special Effects (chases) in Impact are created by linking cues and using the Next Execution function to define the looping sequence.

Generally you use the *Execute* functions which pull data directly from memory (rather than through the *Preview* display) to link cues you are using in an effect:

- *Next Highest Cue* - automatically starts the next highest cue in the current fader directly from memory (without first putting it in the *Preview* buffer).
- *Cue Number* ___.__ - automatically starts the specified cue in the current fader directly from memory (without first putting it in the *Preview* buffer).
- *Set-Up Number* ___.__ - automatically loads the specified Set-Up.

Since there are no branching options, you must manually start a new cue sequence in the fader to stop any repeating effect. If the duration of the effect is tied to cues in the other fader it is possible to automatically load and execute the effect stop cue as part of that sequence. For an example of setting up an effect, please see the *Effects* section in the tutorial.

Execute Specification

You can use an *Execute* specification to tell the system what it should do when it completes a cue. The following *Execute* specifications are available:

- No execute specification - stops cue execution at the end of the current cue
- *Cue in Preview* - automatically starts the cue in the *Preview* buffer.
- *Next Highest Cue* - automatically starts the next highest cue in the current fader directly from memory (without first putting it in the *Preview* buffer).
- *Cue Number* ___.__ - automatically starts the specified cue in the current fader directly from memory (without first putting it in the *Preview* buffer).
- *Set-Up Number* ___.__ - automatically loads the specified Set-Up.

Hand Held Remote Control

A hand held Remote Control is available for Impact. All functions which do not need faders and wheels are duplicated on this unit, or can be duplicated using the ALT button. Operation of these functions through the Remote Control is essentially the same as through the Control Console.

The *Rem. In* function in the *Config* menu must be set to *Portable* for the portable remote unit to function.

This unit contains an 8-hour Ni/Cd battery. For maximum battery life, charge the battery for 8 hours, then unplug the charger and store the unit. To keep the battery from developing a "memory" of its discharge parameters, occasionally allow the battery to fully discharge before re-charging, or run the battery through at least 10 full discharge cycles before beginning normal use.

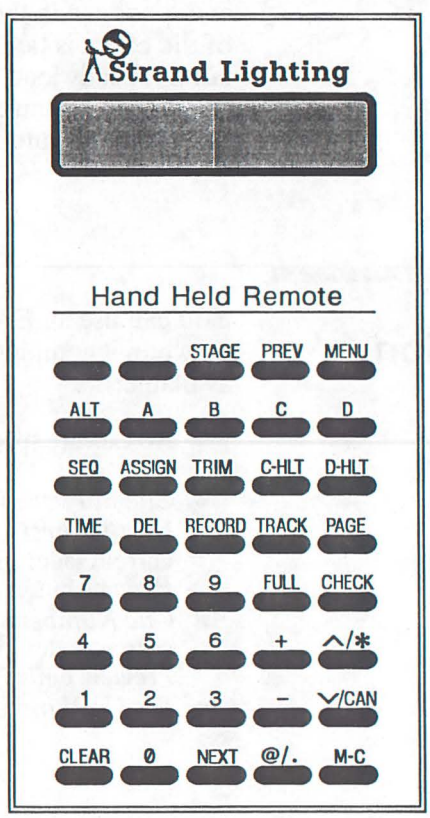


Figure 21. Hand Held Remote Control

Keyboard Function Summary

Since there are a limited number of keys available on the Remote Control, a Memory/Channel mode toggle is implemented (for the Remote Control keys only) which allows access to both the Channel and Memory keys with only one set of number keys. When Impact is switched ON, the remote keypad is in the Channel mode. To change modes, press **M_C.**

The following table shows the key legends on the portable remote, and the main keyboard functions which they access:

Table 11. Portable Remote Key Functions

Key Label	Main Console Key In Channel Mode	In Memory Mode	In Window Mode
STAGE	STAGE	STAGE	N/A
PREV	PREVIEW	PREVIEW	N/A
MENU	MENU	MENU	N/A
ALT	ALT	ALT	ALT
A	A_LOAD	A_LOAD	LOAD A
B	B_LOAD	B_LOAD	LOAD B
C	C_GO	C_GO	GO C
D	D_GO	D_GO	GO D
SEQ	SEQ	SEQ	SEQ
ASSIGN	LOAD_SCENE	LOAD_SCENE	LOAD SCENE
TRIM	LOAD_INHIB	LOAD_INHIB	LOAD INHIB
C-HLT	C_STOP	C_STOP	STOP C
D-HLT	D_STOP	D_STOP	STOP D
TIME	TIME	TIME	TIME
DEL	DELETE	DELETE	DELETE
RECORD	RECORD	RECORD	RECORD
TRACK	TRACK	TRACK	TRACK
PAGE	NEXT PAGE	NEXT PAGE	>>
7	LEVEL_7	MEMORY_7	7
8	LEVEL_8	MEMORY_8	8
9	LEVEL_9	MEMORY_9	9
FULL	FULL	FULL	FULL
CHECK	CHECK	CHECK	CHECK
4	LEVEL_4	MEMORY_4	4
5	LEVEL_5	MEMORY_5	5
6	LEVEL_6	MEMORY_6	6
+	AND	PLUS	PLUS
*	WHEEL up	WHEEL up	*
1	LEVEL_1	MEMORY_1	1
2	LEVEL_2	MEMORY_2	2
3	LEVEL_3	MEMORY_3	3
-	THRU	MINUS	MINUS
CAN	WHEEL down	WHEEL down	CANCEL
CLEAR	CLEAR	CLEAR	CLEAR
0	LEVEL_0	MEMORY_0	0
NEXT	NEXT	NEXT	NEXT
@	AT	.	.
M-C	Memory mode	Channel mode	Channel mode

Note

ALT and **SEQ** in the portable remote have a latching action. First press **ALT** or **ALT**, then press the key to modify. The shift mode only affects the keystroke immediately following. To press two shifted keys in a row, press the shift key before each key to modify. To put **FADER C** and **FADER D** in Sequence Mode, press **SEQ+C_GO SEQ+D_GO.**

CHECK is the same as **ALT+LEVEL_NEXT** on the keyboard, and lets you do a quick channel check.

You can access the function keys (F1-F4) as follows:

- ALT+1 = F1
- ALT+2 = F2
- ALT+3 = F3
- ALT+4 = F4

You can access additional fader control keys as follows:

- ALT+A = A_CANCEL
- ALT+B = B_CANCEL
- ALT+C = C_CANCEl
- ALT+D = D_CANCEL
- ALT+C_HLT = C_BACK
- ALT+D_HLT = D_BACK
- ALT+ASSIGN = CANCEL_SCENE
- ALT+TRIM = CANCEL_INHIB

Groups

Groups let you treat multiple channels as though they are a single channel for control purposes. In Impact, groups are a way to use cues as though they are single channels. The contents of a group is identical to the cue with the same number. To change the contents of a group you must re-record the cue.

Selects the channels in the group (cue), at the levels recorded in the cue, and puts them into the current buffer. This command works when you are in the Preview, Stage, or Scene display.

These channels now act just like channels selected in any other manner.

Macros

Macros let you record a series of keystrokes which you can later replay by using a SEQ key and number combination. Macros can help you with any repetitive task which you can perform using commands and keystrokes on the Impact console.

Macros are created by recording a series of keystrokes. You can access twenty macros from the Impact keyboard by using SEQ with the digit keys in the two numeric keypads. SEQ-LEVEL_1 is Macro 1, SEQ-LEVEL_9 is Macro 9, SEQ-LEVEL_0 is Macro 10, SEQ-MEMORY_1 is Macro 11, SEQ-MEMORY_9 is Macro 19, and SEQ-MEMORY_0 is Macro 20.

Initiates the macro recording if you are not currently recording a macro.

= Macro Started = appears in the status bar at the top of the screen while macro recording is in progress.

Aborts the macro recording if you are currently recording a macro.

= Macro Aborted = appears in the status bar at the top of the screen if you abort macro recording.

[keystroke series]

Enters the series of keystrokes you wish to automate.

Records the macro and assigns it the selected number if you are currently recording a macro.

= Recorded = appears in the status bar at the top of the screen when you finish recording a macro.

Runs the selected macro if you are not currently recording a macro.

= No Macro = appears in the status bar at the top of the screen if you use a number for which there is no macro recorded.

Erases the selected macro.

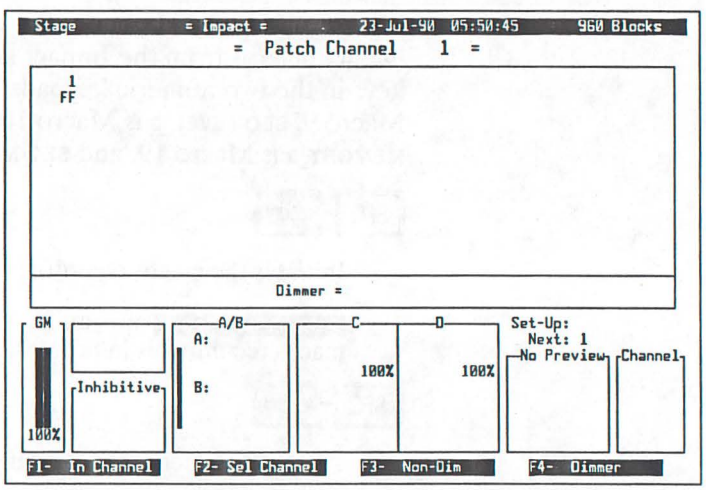
Patch by Channel Display

The *Patch by Channel* display lets you see all dimmers assigned to a selected channel, and change the patching if required. It also lets you set maximum dimmer levels (proportional patching) for each dimmer as required.

Press

MENU 1

to see the Patch by Channel display.



Function Keys

F1 Sel Channel F2 In Channel F3 Non-Dim F4 Dimmer

Display Control

DISPLAY NEXT displays data for the next channel. Rolling the WHEEL UP will also accomplish this.

DISPLAY LAST displays data for the previous channel. Rolling the WHEEL DOWN will also accomplish this.

Select Channel

F2 [#] *

F2 Sel Channel selects the display for the specified channel. For 3 digit channel numbers the command terminator (*) is assumed.

Patch by Channel

[list] F1 [#] *

F1 In Channel patches the listed dimmer(s) to the specified channel without changing the maximum levels of any of the dimmers.

[list] F1 CLEAR *

F1 In Channel unpatches the listed dimmer(s) from their channel assignments.

[list] F1 [#] AT [level]

F1 In Channel patches the listed dimmer(s) to the specified channels with a maximum level.

Assign Maximum Levels to Dimmers

[list] AT [#]

Assigns/modifies the maximum level for the listed dimmer(s) without changing their channel assignment.

[list] AT FULL

Returns maximum level of the listed dimmer(s) to 100% (clears proportional patch).

Assign Non-Dim Status

F3 [list] F1 [#] AT [level]

F3 Non-Dim and F1 In Channel assigns Non-Dim status to a dimmer. The level then indicates the firing level of the Non-Dim.

F4 [list] F1 [#] AT [level]

F4 Dimmer and F1 In Channel assigns dimmer status to a non-dim.

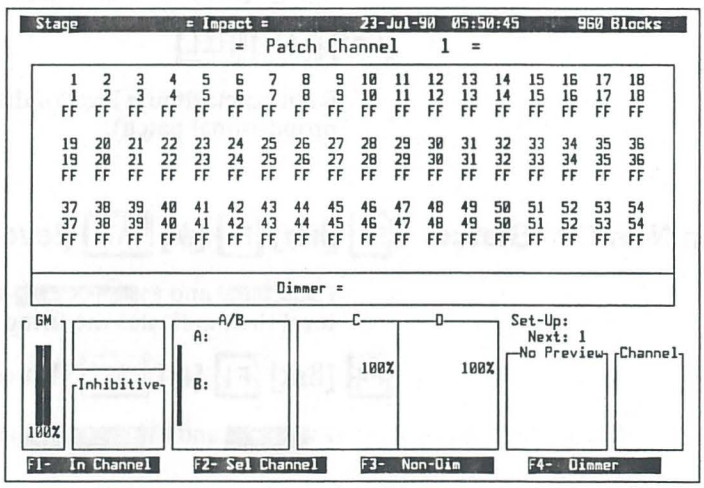
Patch by Dimmer Display

The *Patch by Dimmer* display shows the channel to which each dimmer is patched. This display shows 54 dimmers at a time.

Press

MENU 2

to see the Patch by Dimmer display.



Function Keys

F1 Sel Channel F2 In Channel F3 Non-Dim F4 Dimmer

Display Control

DISPLAY NEXT displays data for the next channel. Rolling the WHEEL UP will also accomplish this.

DISPLAY LAST displays data for the previous channel. Rolling the WHEEL DOWN will also accomplish this.

Flag Channel Assignments

F2 [#] *

F2 Sel Channel flags all dimmers assigned to the specified channel. Press CLEAR to un-flag dimmers. For 3 digit channel numbers the command terminator (*) is assumed.

Patch by Dimmers

[list] F1 [#] *

F1 In Channel patches the listed dimmer(s) to the specified channel without changing the maximum levels of any of the dimmers.

[list] F1 CLEAR *

F1 In Channel unpatches the listed dimmer(s) from their channel assignments.

[list] F1 [#] AT [level]

F1 In Channel patches the listed dimmer(s) to the specified channels with a maximum level.

Assign Maximum Levels to Dimmers

[list] AT [#]

Assigns/modifies the maximum level for the listed dimmer(s) without changing their channel assignment.

[list] AT FULL

Returns maximum level of the listed dimmer(s) to 100% (clears proportional patch).

Assign Non-Dim Status

F3 [list] F1 [#] AT [level]

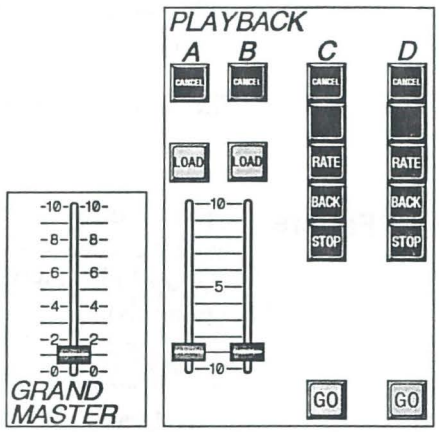
F3 Non-Dim and F1 In Channel assigns Non-Dim status to a dimmer. The level then indicates the firing level of the Non-Dim.

F4 [list] F1 [#] AT [level]

F4 Dimmer and F1 In Channel assigns dimmer status to a non-dim.

Playback Controls

Playback commands use direct action keys and do not require [*] for completion of the command. They will work from any mode.



Grand Master

The grand master is a proportional master over all console output except independent channels. Channel output is at maximum when slider is at FULL. A graph representing the grand master level appears in the *GM* (Grand Master) window.

Manual Faders

Manual **FADER A/B** allows manual crossfading or pile-on of cues. Throughout this text, **FADER A/B** refers to the combined fader. Where fader handle movement is indicated, **FADER A/B** refers to movement of both handles at the same time. **FADER A** or **FADER B** refers to the respective half of **FADER A/B**, and to movement of only one of the fader handles. A graph representing **FADER A/B** status appears in the *A/B* window.

[m#] [A LOAD]

Loads the cue specified by the Memory keys onto **FADER A**.

[m#] [B LOAD]

Loads the cue specified by the Memory keys onto **FADER B**.

[A CANCEL]

Cancels the current cue on **FADER A**, putting a blackout onto the fader.

[ALT] + [A LOAD]

Cancels the current cue on **FADER A**, putting a blackout onto the fader.

[B CANCEL]

Cancels the current cue on **FADER B**, putting a blackout onto the fader.

ALT + B LOAD

Cancels the current cue on **FADER B**, putting a blackout onto the fader.

SEQ + A LOAD or SEQ + B LOAD

Turns sequencing for **FADER A/B** ON or OFF (alternate action).

The faders (**FADER A** and **FADER B**) allow manual control of cues.

Electronic Faders

There are two separate electronic faders which let you fade from levels in one cue to levels in another cue. You can specify separate times for the up-fade (increasing level channels) and down-fade (decreasing level channels).

[m#] C GO

Loads and starts a cue specified by the Memory keys onto **FADER C.**

[m#] D GO

Loads and starts a cue specified by the Memory keys onto **FADER D.**

C STOP

Stops a crossfade on **FADER C.** Restarts the cue if pressed again.

D STOP

Stops a crossfade on **FADER D.** Restarts the cue if pressed again.

C BACK

Backs **FADER C** into the previous cue in about 1 second. It is possible to back-up through the entire cue sheet using this button if sequencing for the Fader is ON.

D BACK

Backs **FADER D** into the previous cue in about 1 second. It is possible to back-up through the entire cue sheet using this button if sequencing for the Fader is ON.

C RATE

Lets you use the **WHEEL** to control fade rate on **FADER C** while it is pressed.

D RATE

Lets you use the WHEEL to control fade rate on FADER D while it is pressed.

[illegible]

Fades FADER C to a blackout in the recorded time. It will bump **FADER C** to a blackout if pressed twice in succession (double-click).

ALT + C GO

Fades **FADER C** to a blackout in the recorded time. It will bump **FADER C** to a blackout if pressed twice in succession (double-click).

Fades **FADER D** to a blackout in the recorded time. It will bump **FADER D** to a blackout if pressed twice in succession (double-click).

Fades **FADER D** to a blackout in the recorded time. It will bump **FADER D** to a blackout if pressed twice in succession (double-click).

Turns sequencing for **FADER C** ON or OFF (alternate action).

Turns sequencing for **FADER D** ON or OFF (alternate action).

Portable Remote Interface

The Impact Portable Remote Interface is a low speed serial channel which allows a remotely located hand held data terminal of limited capability to access most of functions of the Impact console. Since a limited number of keys are available on such terminals, many of the keycodes change function depending on the state of the machine. In addition, a special Memory/Channel mode is implemented for the remote terminal only which allows it to access both Level and Memory functions with only one set of number keys. When Impact is switched-on the remote keypad is in the Channel mode.

Portable Remote operation is selected with the following menu options:

- Menu 4-1: Mode = **Normal**.
- Menu 4-4: Rem In = **Portable**.

This setting is appropriate for a stand alone console or the first console in a daisy chained system. Pot values are taken from the console's own keyboard. The Remote In port is configured for a hand held data terminal. Both local and remote keystrokes are transmitted out the Remote Output port. The Grand Master bargraph display is labeled *GM*.

Keyboard Function Summary

Since there are a limited number of keys available on the Remote Control, a Memory/Channel mode toggle (for the Remote Control keys only) allows access to both the Level and Memory keys with only one set of number keys. When Impact is switched ON, the remote keypad is in the Channel mode. To change modes, press **M_C**.

Table 12 shows the keycodes recognized on the Portable Remote Channel. Table 11 shows the main keyboard functions which they access.

Table 12. Portable Remote Interface Key Codes

Key Label	Key Code
STAGE	0D
PREV	20
MENU	30
ALT	32
A	33
B	34
C	35
SEQ	36
ASSIGN	37
TRIM	38
C-HLT	39
D-HLT	41
TIME	42
DEL	43
RECORD	44
TRACK	45
PAGE	46
7	47
8	48
9	49
FULL	4A
CHECK	4B
4	4C
5	4D
6	4E
+	4F
*	50
1	51
2	52
3	53
-	54
CAN	55
CLEAR	56
0	57
NEXT	58
AT	59
M-C	5A

Note

ALT and **SEQ** in the portable remote have a latching action. First press **ALT** or **SEQ**, then press the key to modify. The shift mode only affects the keystroke immediately following. To press two shifted keys in a row, press the shift key before each key to modify. To put **FADER C** and **FADER D** in Sequence Mode, press **SEQ+C_GO SEQ+D_GO.**

The **UP_ARROW** and **DOWN_ARROW** keys perform the same function as the Wheel on the main keyboard.

CHECK is the same as **ALT+LEVEL_NEXT** on the main keyboard.

You can access the function keys (F1-F4) as follows:

- **ALT+1 = F1**
- **ALT+2 = F2**
- **ALT+3 = F3**
- **ALT+4 = F4**

You can access additional fader control keys as follows:

- ALT+A = A_CANCEL
- ALT+B = B_CANCEL
- ALT+C = C_CANCEl
- ALT+D = D_CANCEL
- ALT+C_HLT = C_BACK
- ALT+D_HLT = D_BACK
- ALT+ASSIGN = CANCEL_SCENE
- ALT+TRIM = CANCEL_INHIB

Programming Notes:

The Impact Portable Remote Interface is designed around the premise that the remote data terminal display will indicate to the operator what mode the keypad is in. If using a computer to remotely operate an Impact via this channel it may be necessary to transmit extra keycodes to ensure that the remote number keypad is in the desired state.

To ensure that the remote keypad is in the memory mode the following sequence would be transmitted:

Codes:	Result:
55	CANCEL - terminates any window which may be open.
0D	STAGE - puts the system in Stage mode.
44	RECORD - opens an arbitrary window. (Guarantees action of MEM/CHA key.)
5A	MEM/CHA - changes the keypad to Channel mode.
55	CANCEL - terminates the Record window.
5A	MEM/CHA - changes the keypad to Memory mode.

To then call up a cue and execute it on a timefader the following sequence would be transmitted:

Codes:	Result:
56	CLEAR - clears any previous cue number.
52	2 - loads Preview with cue 2.
47	7 - loads Preview with cue 27.
34	C_GO - starts cue 27 on FADER C.

Reasons to use the Portable Remote Interface in a remotely controlled system instead of the others described in this document include the low baud rate which is easily generated by standard computer systems and the fact that only single bytes need be transmitted to simulate each keystroke.

Table 13. Hand Held Remote Input Pins

Cable: Belden 9941 - no branching runs
Max Length: 1500 feet (all EIA RS-485 restrictions also apply)
Connector: 5 pin "XLR on remote.
Signal Type EIA RS-485 - 1200 Baud, 7 data bits, 1 stop bit, even parity enabled.

Pin #	Signal	Comments
1	GND	Cable Shield
2	OUT+	Receive true from console
3	OUT-	Recieve complement from console
4	IN+	Transmit true to console
5	IN-	Transmit complement to console

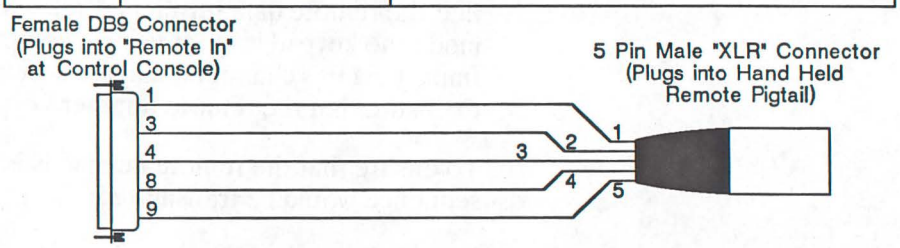


Figure 22. Hand Held Remote Adaptor

Note

The control cable must be a single run with no branches. If multiple outlets are required, you must make sure that there is some way to keep the data line properly terminated at all times. Please contact Strand Lighting if you have any additional questions.

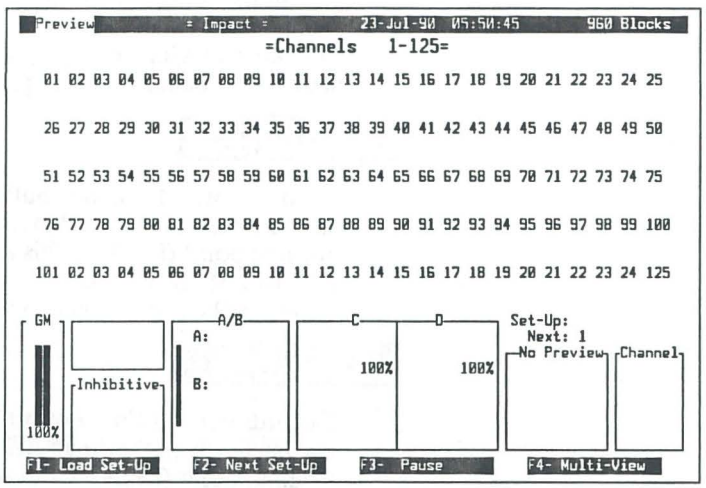
Preview Display

The *Preview* display lets you look at and modify levels for the cue in the *Preview* buffer rather than the cue on stage. You can modify a cue here and then put it on stage without recording if you want to make temporary changes. The *Preview* display shows 125 channels at a time.

Press

PRE VIEW

to see the Preview display



Function Keys

F1 Load Set-UP F2 Next Set-UP F3 Pause F4 Mutli-View

Display Control

DISPLAY NEXT displays the next page of 125 dimmers.

DISPLAY LAST displays the previous page of 125 dimmers.

Channel Control

All standard channel control commands are available while you are in the *Preview* display. See *Channel Control* in this chapter for more details.

CLEAR

Releases (deselects) all selected channels from *Preview* buffer control.

Record Cues

Cues can be recorded from levels in the *Preview* buffer whenever the *Preview* display is active.

RECORD [m#] *

Records current *Preview* buffer levels to the specified cue. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

RECORD PLUS *

Records current *Preview* buffer levels to the next number cue after the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.2), this advances the cue number one decimal place (i.e., to 1.3). If the cue in preview is a whole number (i.e., 1), this advances the cue number to the next whole number (i.e., to 2).

RECORD MINUS *

Records current *Preview* buffer levels to the last number cue before the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.3), this decrements the cue number one decimal place (i.e., to 1.2). If the cue in preview is a whole number (i.e., 2), this decrements the cue number by one whole number (i.e., to 1).

TRACK [m#] *

Records current *Preview* buffer levels to the specified cue and insures that the new levels track through subsequent cues until a change in levels is present. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

TRACK PLUS *

Records current *Preview* buffer levels to the next whole number cue after the cue currently in the *In Preview* window, and insures that the new levels track through subsequent cues until a change in levels is present.

TIME

Accesses the fade time, delay time, and next execution information for modification. On the first press the system highlights the up-fade time in the *In Preview* window, which can then be modified using the Level or Memory keys. Subsequent presses of **TIME** move the highlighting to the next time function and record the one just entered. The last press of **TIME** completes the entry and closes the *Execute* window.

When you record a delay time the system assumes a down-fade delay. To cause an up-fade delay press **PLUS** while you are in the delay field. A "+" appears after the delay time. To change back to a down-fade delay, press **MINUS** while you are in the delay time field.

Re-Record Cues

Re-recording cues is the same as initial recording except that the time information is taken from the old cue, and not from the system defaults.

Modify Cue Parameters

You can modify cue parameters (fade time, delay, next execute) in the same manner as they were initially recorded.

Copy/Delete Cues

DELETE [m#] *

Deletes the specified cue.

Press CANCEL instead of * to quit without deleting.

To copy a cue blind to a new number, put the cue into the *Preview* buffer and record it with a new number.

Temporary Cue Modification

You can make temporary modifications to a cue by modifying it while it is in the *Preview* buffer and **not** recording it. When the cue is loaded and activated, the modifications will appear on stage. The next time the cue is accessed the temporary changes will be gone.

Set-ups

All Set-up functions are active in this display.

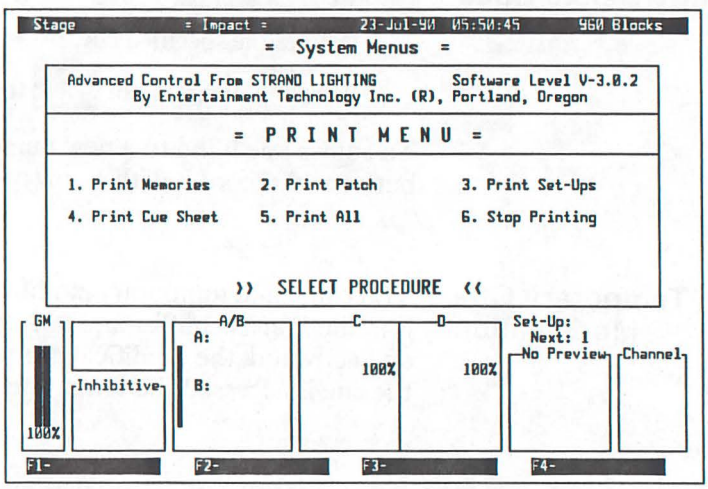
Print Menu

The *Print* menu lets you access print commands for hard copy output of your cues and other show information. Printing is a background task in software versions 2.0.3 and later, which means that it can proceed while the operator is doing other things.

Press

MENU 5

to see the Print menu.



Print Hard Copy 1

1. **Print Memories** opens a *Range To Print* window for specifying starting and ending cues to print. This function prints the time and next execution parameters and all channel levels for selected cues.

   ≫ selects the next field for modification.

   * closes the window and starts printing.

   When the last data is sent to printer, **=Printing Finished=** appears on screen.

   CANCEL closes the window without printing.

2

2. **Print Patch** prints a hard copy of the patch table. When the last data is sent to printer, **=Printing Finished=** appears on screen.

3

3. **Print Set-ups** opens a *Range To Print* window for specifying starting and ending set-ups to print.

   ≫ selects the next field for modification.

   * closes the window and starts printing.

   When the last data is sent to the printer, **=Printing Finished=** appears on screen.

   CANCEL closes the window without printing.

4. Print Cue Sheet opens a *Range To Print* window for specifying starting and ending cues to print. This function prints only the time parameters and next execution parameters for selected cues.


selects the next field for modification.


closes the window and starts printing.

When the last data is sent to the printer, =Printing Finished= appears on screen.


closes the window without printing.

5. Print All prints all system data and all cues (procedures 1-4). When the last data is sent to the printer, =Printing Finished= appears on screen.

6. Stop Printing stops output to the printer. =Cancelled! = appears on screen to show that the console has cancelled printing. Printing will not stop until the data buffer in the printer (if any) is empty.

Remote Control

The high degree of flexibility built into the Impact console provides the end user many options for assembling a remotely or automatically controlled lighting system. The three categories of remote control currently available are:

- the Serial Keyboard Interface (see page 82)
- the Contact Closure "AV" Interface (see page 53)
- the Portable Remote Interface (see page 61)

Each of these interfaces has a distinct set of features which suit it to particular types of applications.

The Serial Keyboard and Portable Remote are both connected to the Remote In port. The contact closures are connected to the RS-232 Printer Port. The Remote In port is configured by a system menu and an internal DIP switch to accommodate whatever remote device is attached. The contact closure inputs are active at all times and are treated as local keys.

The remote interfaces have been added and refined through a series of software revisions. The Portable Remote Interface and the Normal and Expansion modes of the Serial Keyboard Interface are present on all Impact software versions. The Contact Closure "AV" Interface was added in version 2.0.5. The Remote Control mode of the Serial Keyboard Interface was added in version 2.0.6. Remotely executable Macros and a receiver FIFO were added in version 3.0.1.

Scene Display

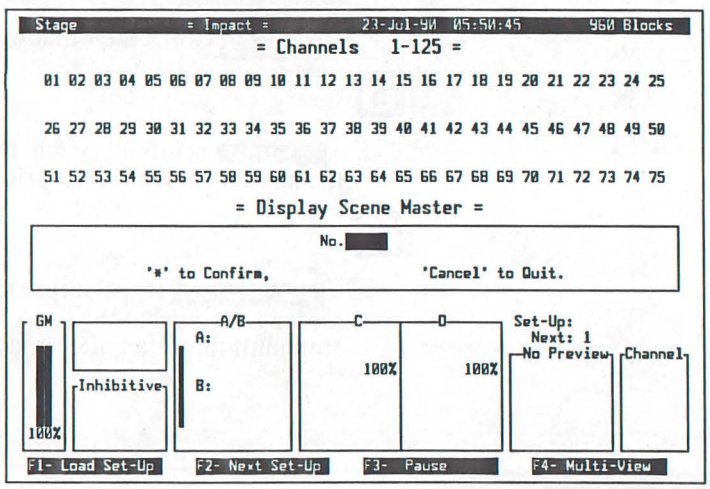
The *Scene* display lets you directly modify individual channel levels in a scene master and record the changes if required. You can modify the scene master levels regardless of their original source.

When Impact is turned OFF it remembers only the cue numbers assigned to each scene master. Any changes in a scene master which you wish to save must be recorded into a cue.

Press

SCENE MASTER

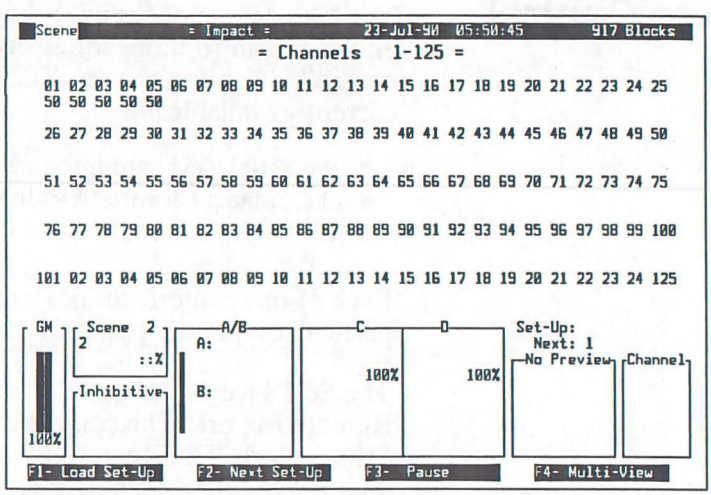
to open the Display Scene Master window.



Press

[#] *

to select a specific scene master for modification.



Function Keys

F1 Load Set-UP F2 Next Set-UP F3 Pause F4 Mutli-View

Display Control

DISPLAY NEXT displays the next page of 125 dimmers.

DISPLAY LAST displays the previous page of 125 dimmers.

Channel Control

All standard channel control commands are available while you are in this display. See *Channel Control* in this chapter for more details.

CLEAR

Releases (deselects) selected channels from *SceneMaster* buffer control.

Record Cues from Scene Master Levels

You can record cues from scene master levels when the *Scene* display is active. Recorded levels are not affected by the current setting of the scene master controller.

RECORD [m#] *

Records current scene master levels to the specified cue. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

RECORD PLUS *

Records current scene master levels to the next number cue after the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.2), this advances the cue number one decimal place (i.e., to 1.3). If the cue in preview is a whole number (i.e., 1), this advances the cue number to the next whole number (i.e., to 2).

RECORD MINUS *

Records current scene master levels to the last number cue before the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.3), this decrements the cue number one decimal place (i.e., to 1.2). If the cue in preview is a whole number (i.e., 2), this decrements the cue number by one whole number (i.e., to 1).

TRACK [m#] *

Records current scene master levels to the specified cue and insures that the new levels track through subsequent cues until a change in levels is present. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

TRACK PLUS *

Records current scene master levels to the next whole number cue after the cue currently in the *In Preview* window, and insures that the new levels track through subsequent cues until a change in levels is present.

TIME

Lets you set the fade time, delay time, and next execution setting of the cue in the *In Preview* window. On the first press the system highlights the up-fade time, which can then be modified using the Level or Memory keys. Subsequent presses of **TIME** move the highlighting to the next time function and record the one just entered. The last press of **TIME** completes the entry and closes the *Execute* window.

When you record a delay time the system assumes a down-fade delay. To cause an up-fade delay press **PLUS** while you are in the delay field. A "+"

appears after the delay time. To change back to a down-fade delay, press **MINUS** while you are in the delay time field.

Set-ups All Set-up functions are active in this display.

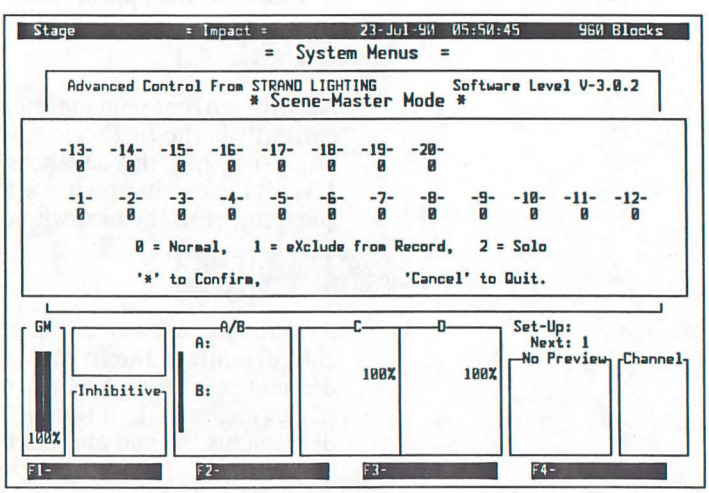
Scene Master Mode Window

The *Scene Master Mode* window lets you set whether a Scene master will be *Normal* (pile-on), *eXclude from Record* (submaster levels will be ignored by any record function), or *Solo* (all other Scene masters go OFF when its Bump button is pressed).

Press

MENU 9

to see the Scene Master Mode window.



Display Control

≫ selects the next field for modification.

ALT + ≫ selects the previous field for modification.

* closes the window and records your changes.

CANCEL closes the window without recording changes.

Change Scene Master Mode

For each scene master (submasters 1-20) the operational mode can be set to *Normal*, *eXclude from Record*, or *Solo*.

0

0 = Normal sets the highlighted scene master to be a standard pile-on controller.

1

1 = eXclude from Record sets the highlighted scene master to be a standard pile-on controller for on-stage lights, but completely non-existent as far as the recording functions are concerned.

2

2 = Solo sets the highlighted Scene master to be a standard pile-on controller, except that when its Bump button is pressed it forces all other Scene master levels to ZERO.

Serial Keyboard Interface

The Impact Serial Keyboard Interface was designed primarily as a tool for linking several consoles into one system for purposes of channel expansion or redundant backup. It was not originally intended to provide a general purpose command port. However, many institutions have found this interface useful in assembling automated entertainment systems. The information presented here is provided so that a creative system programmer can communicate basic commands to an Impact console.

Impact implements multiple console communications via an RS-485 (RS-422) data link. Data transmitted over this link is interpreted as though it had come from a serial keyboard. Incoming data is received by the Remote In port and keyboard activity is re-transmitted over the Remote Out port. In this fashion several consoles may be "daisy chained" together with the keyboard of the first console in the chain used to control the entire system.

Since this protocol was developed primarily for linking together machines running at nearly identical speeds, there was originally no buffering of incoming data. On Impact versions prior to 3.0.1, this limits the practical data transmission rate for keystrokes to the refresh rate of the machine. The following limitations on transmission rates are recommended for all 1.x.x and 2.x.x versions:

- Keystrokes: 15 keys per second.
- Pots: None.
- Encoders: None.

Starting with version 3.0.1 a 15 keystroke input buffer has been added to the serial port receiver so that short keystroke burst transmissions can be accepted. The keystrokes are still consumed at approximately the rate shown above.

Operational Modes

There are three variations of the Serial Keyboard Interface: Normal, Expansion, and Remote Control. Normal and Expansion operate at 125K baud. Remote Control operates at 9600 baud.

125k Baud Normal Operation:

Normal operation is selected with the following menu options:

Menu 4-1: Mode = Normal
Menu 4-4: Rem In = Serial

This setting is for a stand-alone console or the first console in a daisy chained system. Pot values are taken from the console's own keyboard. The Remote In port is configured for a full function remote keyboard. Both local and remote keystrokes are transmitted out the Remote Out port. The Grand Master bargraph display is labeled *GM*.

125k Baud Expansion Operation:

Expansion operation is selected with the following menu options:

Menu 4-1: Mode = Expansion
Menu 4-4: Rem In = Serial

In addition, DIP switch SW2-1 on the Impact main printed circuit board must be OFF.

This setting is for a secondary console in a daisy chained system. The Remote In port accepts keyboard, pot and encoder data from another Impact console. Pot values are taken from the Remote In port only. The console's own pots are ignored. Only remote keystrokes are transmitted out the Remote Out port. Local keystrokes are recognized by the local machine only (Useful for bringing machines into sync with each other). The Grand Master bargraph display is labeled *EX*.

9600 Baud Remote Control Operation:

Remote Control operation is selected with the following menu options:

Menu 4-1: Mode = Expansion
Menu 4-4: Rem In = Serial

In addition, DIP switch SW2-1 on the Impact main printed circuit board must be ON.

This setting is for a console being controlled by a third party "Show Control" computer. It is functionally identical to the Expansion mode of operation except for the baud rate setting of the Remote In port. The Remote Out port remains configured at 125k Baud so that other consoles in Expansion mode may be daisy chained to the Remote Control console.

Protocol Specification: In all three modes of operation, transactions consist of two byte transmissions. The first byte always has the high order bit set (negative), and contains an identifying tag for the second byte. The second byte always has the high order bit clear and contains a seven bit data value (key code, pot value, etc.). Each transaction is independent and bears no particular relationship to those which come before or after it. Codes which are not specified in this document are reserved for special functions and should not be used. Data bytes received without valid header bytes preceding are ignored.

Header Byte

The first byte is called the Header Byte and has three fields:

FIELD:	Flag	Data Group	Data ID
BITS:	{7}	{654}	{3210}

These fields combine to form the following list of valid header bytes:

Summary of Valid Header Bytes:

80 Keyboard, no shift keys
84 Keyboard, 'Alt' shift
88 Keyboard, 'Seq' shift
8C Keyboard, 'Alt' + 'Seq' shift

90 Grand Master
91 Submaster 1
92 Submaster 2
93 Submaster 3
94 Submaster 4
95 Submaster 5
96 Submaster 6
97 Submaster 7
98 Submaster 8
99 Submaster 9
9A Submaster 10
9B 'A' Fader
9C 'B' Fader

A0 Channel level Encoder
A3 'C' Rate Encoder
A4 'D' Rate Encoder
A5 Page Scroll Encoder

B0 Submaster 11
B1 Submaster 12
B2 Submaster 13
B3 Submaster 14
B4 Submaster 15
B5 Submaster 16
B6 Submaster 17
B7 Submaster 18
B8 Submaster 19
B9 Submaster 20
BA Submaster 21
BB Submaster 22
BC Submaster 23
BD Submaster 24

Data Byte

The Second byte of each transaction is the Data Byte and is composed of two fields:

FIELD:	Flag	Data
BITS:	{7}	{6543210}

Flag field (1 bit):

Always logic zero.

Data field (7 bits):

Keyboard:
0 - 7F: Key Codes.

Pots (either group):
0 - 7F: Processed pot values.

Encoders:
0 - 3F: Encoder value, positive move.
40 - 7F: Encoder value, negative move.

(Note: this is a 7 bit, 2's compliment number)

Table 13 shows the keycodes which Impact will acknowledge. Each code must be preceded by a header byte of value 80h, 84h, 88h, or 8Ch. The header byte identifies the code as belonging to the keyboard group and indicates if either shift key has been pressed.

Note

A few keys have different definitions between the original and studio Impact models. Also, with the release of version 3.0.1, Impact is available only with the features of the studio model, but is simply labeled Impact. In the following table, the first column relates to all version 1.x.x consoles, and version 2.x.x non-studio consoles. The second column relates to version 2.x.x studio consoles and all version 3.x.x consoles.

Table 14. Main Keyboard Key Codes

Code	Ver 1.X.X Software	Ver. 2.X.X & later	Code	(ver 1.X.X)	
00	LEVEL_0	LEVEL_0	40	C_GO	C_GO
01	LEVEL_1	LEVEL_1	41		
02	LEVEL_2	LEVEL_2	42	C_STOP	C_STOP
03	LEVEL_3	LEVEL_3	43	C_BACK	C_BACK
04	LEVEL_4	LEVEL_4	44		
05	LEVEL_5	LEVEL_5	45	C_CANCEL	C_CANCEL
06	LEVEL_6	LEVEL_6	46		
07	LEVEL_7	LEVEL_7	47		
08	LEVEL_8	LEVEL_8	48	D_GO	D_GO
09	LEVEL_9	LEVEL_9	49		
0A	FULL	FULL	4A	D_STOP	D_STOP
0B	AT	AT	4B	D_BACK	D_BACK
0C	AND	AND	4C		
0D	THRU	THRU	4D	D_CANCEL	D_CANCEL
0E	LEVEL_NEXT	LEVEL_NEXT	4E		
0F	LEVEL_CLEAR	LEVEL_CLEAR	4F		Macro Record (V301)
10	MEMORY_0	MEMORY_0	50		
11	MEMORY_1	MEMORY_1	51		
12	MEMORY_2	MEMORY_2	52		
13	MEMORY_3	MEMORY_3	53	Next Set-up	Next Set-up
14	MEMORY_4	MEMORY_4	54		
15	MEMORY_5	MEMORY_5	55		
16	MEMORY_6	MEMORY_6	56		
17	MEMORY_7	MEMORY_7	57		
18	MEMORY_8	MEMORY_8	58	D Go (V205)	Macro 1 (V301)
19	MEMORY_9	MEMORY_9	59	Rewind Preview (V205)	Macro 2 (V301)
1A	TIME	TIME	5A		
1B	.	.	5B		
1C	PLUS	PLUS	5C		
1D	MINUS	MINUS	5D		
1E	MEMORY_NEXT	MEMORY_NEXT	5E		
1F	MEMORY_CLEAR	MEMORY_CLEAR	5F		
20			60		
21			61		
22	DISPLAY_NEXT	DISPLAY_NEXT	62		
23	DISPLAY_LAST	DISPLAY_LAST	63		
24	MENU	MENU	64		
25	STAGE	STAGE	65		
26	PREVIEW	PREVIEW	66		
27	*	*	67		
28	CANCEL	CANCEL	68		Macro 1 (V301)
29			69		Macro 2 (V301)
2A	>> (tab right)	>> (tab right)	6A		Macro 3 (V301)
2B			6B		Macro 4 (V301)
2C			6C		Macro 5 (V301)
2D	DELETE (W)	DELETE (W)	6D		Macro 6 (V301)
2E	RECORD (W)	RECORD (W)	6E		Macro 7 (V301)
2F	TRACK (W)	TRACK (W)	6F		Macro 8 (V301)
30			70		Macro 9 (V301)
31			71		Macro 10 (V301)
32	F1	F1	72		Macro 11 (V301)
33	F2	F2	73		Macro 12 (V301)
34	SUBS	SUBS	74		Macro 13 (V301)
35		SCENE-MASTER (W)	75		Macro 14 (V301)
36	F3	F3	76		Macro 15 (V301)
37	F4	F4	77		Macro 16 (V301)
38	SUB_ASSIGN_LOAD	NORMAL_LOAD(W)	78		Macro 17 (V301)
39	SUB_LEVEL_LOAD	INHIBITIVE_LOAD	79		Macro 18 (V301)
3A	SUB_ASSIGN_CANCEL	NORMAL CLEAR (W)	7A		Macro 19 (V301)
3B	SUB_LEVEL_CANCEL	INHIBITIVE_CLEAR	7B		Macro 20 (V301)
3C	A_LOAD	A_LOAD	7C		Macro 21 (V301)
3D	B_LOAD	B_LOAD	7D		Macro 22 (V301)
3E	A_CANCEL	A_CANCEL	7E		Macro 23 (V301)
3F	B_CANCEL	B_CANCEL	7F		Macro 24 (V301)

(W): Opens a Window. (V205): Available starting with version 2.0.5.
(V301): Available starting with version 3.0.1.

Programming Notes:

In order to control Impact from another computer it is necessary to construct what amount to be keyboard macros which are transmitted to the console over this serial link.

For example, the following would be required to call up Cue 27 and execute it on the 'C' fader:

Codes:	Result:
80 1F	MEMORY_CLEAR - clears the Preview buffer.
80 12	MEMORY_2 - loads cue 2 into Preview.
80 17	MEMORY_7 - loads cue 27 into Preview.
80 40	C_GO - starts cue 27.

Since the numeric keypads and the function keys re-map as the machine moves between windows, menus, and other displays, it would be advisable to put the machine in a known state and then always return it to that state when each operation is complete. For instance if the machine had been in the Main menu when the above data was transmitted it would have gone to a patch display, started to repatch dimmer 7, and then loaded whatever happened to be in Preview to FADER_C.

Remote Execution of Impact Macros:

With the release of version 3.0.1, Impact now implements the recording and execution of keyboard macros. These macros are recorded into main system memory along with the cues and set-ups, and may be played back with a single keystroke.

In order to maintain maximum flexibility, the Macro functions have been assigned to a series of keycodes which are not directly accessible from the main keyboard. The internal keyboard scanner detects the SEQ shifted keys and translates them to Macro keys before they are passed on to the regular keyboard handler. This means that to execute Macro 1 from a remote computer it is necessary to send the code

80 68 Macro 1

rather than

88 01 SEQ+LEVEL_1

Similarly, the dedicated Macro Record keycode must be used to initiate a macro record operation instead of SEQ+RECORD.

You will also notice that there are 24 Macro execute keys defined in the table, 4 more than are accessible from the main keyboard. These are, in fact, legitimate Macros. The only limitation on them is that they are only accessible through the serial port. They cannot be recorded, deleted or executed from the main keyboard.

Electrical Protocol: When in Normal or Expansion mode the Remote In port configuration is 125K Baud, 8 Data Bits, Even Parity Enabled, and 1 Stop Bit.

When in the Remote Control mode the Remote In port configuration is 9600 Baud, 8 Data Bits, Even Parity Enabled, 1 Stop Bit

Table 15. Remote Input

Cable: Belden 9842 or Alpha 5272
Max Length: 2500 feet (all EIA RS485 restrictions also apply)
Connector: Male DB9 connector

Pin #	Signal	Comments
1	GND	Cable Shield
2	GND	Cable Shield
3	OUT+	Transmit true to remote
4	OUT-	Transmit complement to remote
5	+12VDC FUSED	+12VDC for remote power
6	+12VDC FUSED	+12VDC for remote power
7	N.C.	
8	IN+	Receive true from remote
9	IN-	Receive complement from remote

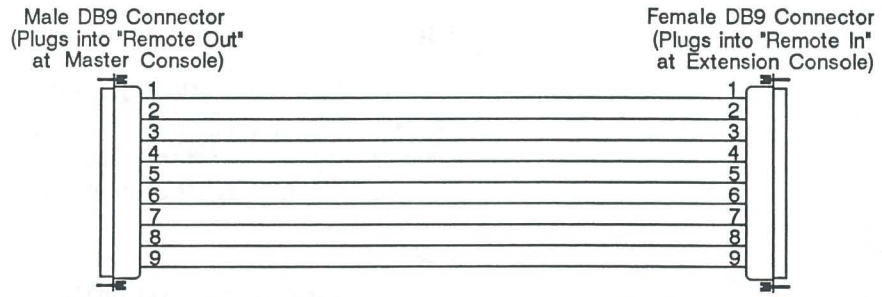


Figure 23. Console to Console Cable

Set-ups

Set-ups let you record the configuration of the playback windows for later automatic loading. This allows complex cue sequences and effects to be run automatically, or with minimum effort.

Set-ups save the following information:

- Sequence flags for A/B, C, D, and Inhibitive.
- Stop flags for C and D.
- Rate flags for C and D.
- Cue number for A, B, C, D, Inhibitive, Preset, and all 20 Scenemasters.

Loading a Set-up sets all of the flag and rate parameters to the values they had when the Set-up was recorded. Cue number parameters are loaded only if they are non-zero. If you want a fader to be unaffected by a Set-up, it should be clear when you record the Set-up.

The PAUSE function suppresses the auto-follow so that a Set-up can be correctly recorded. It is only necessary if the Set-up is to start a sequence of automatically executing cues.

F3

Pauses cue execution so you can set up and record a set-up.

ALT + RECORD [m#] *

Records the current contents of the playback windows for later loading.

F2

Loads and starts the set-up shown beside *Next:*.

F1 [#] *

Loads and starts the specified set-up.

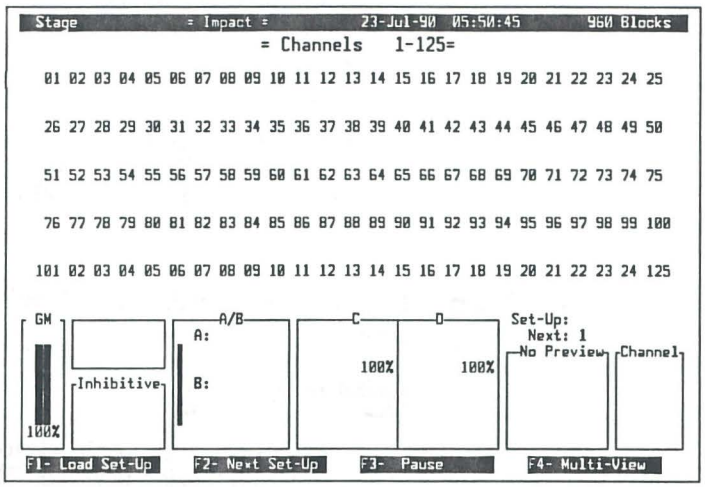
Stage Display

The *Stage* display lets you look at and modify levels for the cue on stage. The *Stage* display shows 125 channels at a time.

Press

STAGE

to see the Stage display.



- **Blue** channel levels are unchanged from previous cues.
- **Amber** channel levels are moving up.
- **Magenta** channel levels are moving down
- **Black** channel levels with white background are on independent.
- **White** channel levels with a red flashing background are being limited by cue 0.1.
- **Black** channel numbers with brown background are on the **WHEEL**.

Function Keys

F1 Load Set-UP F2 Next Set-UP F3 Pause F4 Mutli-View

Display Control

DISPLAY NEXT displays the next page of 125 dimmers.

DISPLAY LAST displays the previous page of 125 dimmers.

F4 turns the Multi-View function ON or OFF (alternate action).

Channel Control

All standard channel control commands are available while you are in this display. See *Channel Control* in this chapter for more details.

While you are in the *Stage* display, if you select a channel and then change its level it will be made independent. This will happen even if you return the level to its starting level. Independent channels will remain independent until specifically cleared by the operator. If you select a channel but then deselect it without changing its level it will not be made independent.

To make a channel independent without changing its level, use **[SELECTION LIST] AT [ORIGINAL LEVEL]**. Although nothing changes on stage, the console thinks you have changed channel levels and will make the channels independent. If you wish to capture multiple channels which do not have the same level, select the channels and change their levels one point and then back with the wheel.

CLEAR

If there any channels selected, this command releases (deselects) those channels. If there are no channels selected, this command releases all channels from independent. Press this button twice if there are channels selected and you want to release all channels from independent.

ALT + NEXT

Brings the next channel to FULL, releasing the current channel from independent. If there is no channel selection the first channel to be brought to FULL is channel 1.

Record Cues

Cues can be recorded from levels on stage whenever the *Stage* display is active.

RECORD [m#] *

Records current stage levels to the specified cue. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

RECORD PLUS *

Records current stage levels to the next number cue after the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.2), this advances the cue number one decimal place (i.e., to 1.3). If the cue in preview is a whole number (i.e., 1), this advances the cue number to the next whole number (i.e., 2).

RECORD MINUS *

Records current stage levels to the last number cue before the cue currently in the *In Preview* window. If the cue in preview has a decimal point (i.e., 1.3), this decrements the cue number one decimal place (i.e., to 1.2). If the cue in preview is a whole number (i.e., 2), this decrements the cue number by one whole number (i.e., to 1).

TRACK [m#] *

Records current stage levels to the specified cue and insures that the new levels track through subsequent cues until a change in levels is present. System default times are used if this is a new cue. The cue is loaded into the *Preview* buffer and pertinent data appears in the *In Preview* window. If this cue is playing on stage (completed, and not in progress), new levels are also re-loaded to the appropriate Fader(s).

TRACK PLUS *

Records current stage levels to the next whole number cue after the cue currently in the *In Preview* window, and insures that the new levels track through subsequent cues until a change in levels is present.

[TIME]

Accesses the fade time, delay time, and next execution information for modification. On the first press the system highlights the up-fade time in the *In Preview* window, which can then be modified using the Level or Memory keys. Subsequent presses of **TIME** move the highlighting to the next time function and record the one just entered. The last press of **TIME** completes the entry and closes the *Execute* window.

When you record a delay time the system assumes a down-fade delay. To cause an up-fade delay press **PLUS** while you are in the delay field. A + appears after the delay time. To change back to a down-fade delay, press **MINUS** while you are in the delay time field.

Re-Record Cues

Re-recording cues is the same as initial recording except that the time information is taken from the old cue, and not from the system defaults.

Modify Cue Parameters

You can modify cue parameters (fade time, delay, next execute) in the same manner as they were initially recorded.

Copy/Delete Cues

[DELETE] **[m#]** [*]

Deletes the specified cue.

Press [CANCEL] instead of [*] to quit without deleting.

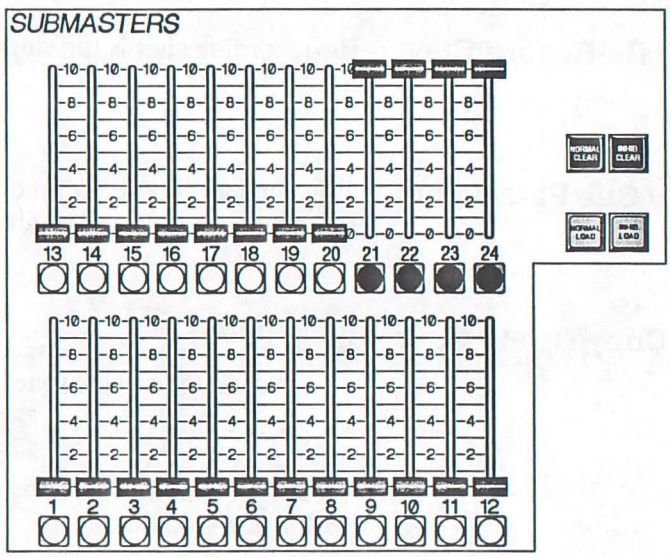
To copy a cue live to a new number, put the cue on stage and record it with a new number.

Set-ups

All Set-up functions are active in this display.

Submaster Controls

24 Submasters let you submaster groups of channels, and "bump" the channel levels associated with a submaster. There are 20 scene masters (submasters 1-20) and 4 inhibitive submasters (submasters 21-24) in this module. Scene masters can be *Normal* (levels add, or pile-on to stage levels), eXclude from Record (a *Normal* submaster which is ignored by all recording functions), or *Solo* (a *Normal* Submaster in which pressing the Bump Button causes all other submaster potentiometer levels to be momentarily forced to ZERO). Inhibitive submasters subtract from stage levels for assigned channels.



[m#] NORMAL LOAD

Opens a *Load Scene Master* window so you can assign a cue to a scene master. **[M#]** is optional.

≫ selects the next field for modification.

Enter new value(s) while the appropriate field is highlighted.

✳ closes the window and records your changes.

CANCEL closes the window without recording changes.

Note

If you do not specify a cue number in this command, the cue number field will be blank when the window opens. The *Scene Master* field always shows scene master 1 when the window opens.

NORMAL CLEAR

Opens a *Clear Scene Master* window to let you specify the range of Scene masters to be cleared.

≫ selects the next field for modification.

Enter new value(s) while the appropriate field is highlighted.

* closes the window and records your changes.

CANCEL closes the window without recording changes.

[m#] INHIB. LOAD

Loads the cue specified by the Memory keypad into the Inhibitive *Submaster* buffer. If no cue is specified, the cue already in the Preview is used. This cue acts as an assignment list to specify the channels which are controlled by the Inhibitive Submaster.

INHIB. CLEAR

Clears the cue from the *Inhibitive* buffer.

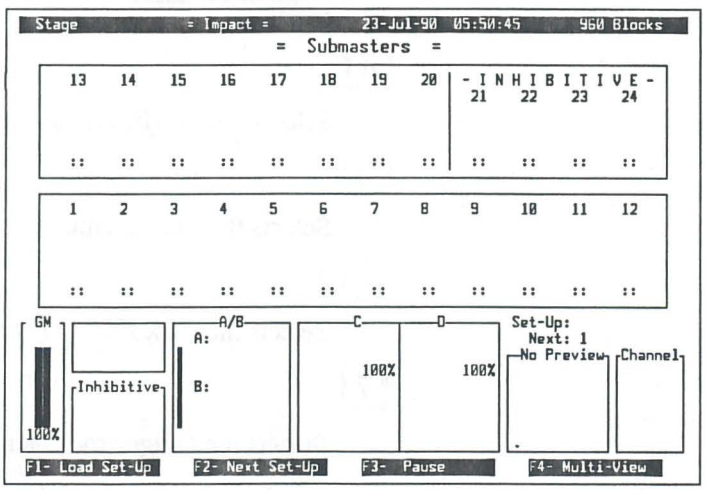
Submaster Display

The *Submaster* display shows a bar-graph representation of the current submaster levels. Inhibitive submasters are shown in their own box. *Solo* scene masters are shown with an "s" in front of their number. *eXclude from Record* scene masters are shown with an "x" in front of their number. This is a display only. All submaster configuration functions are done in other menus or displays. The system is still in Stage mode while in this display.

Press

SUBS

to see the Submaster display.



Function Keys

F1 Load Set-UP F2 Next Set-UP F3 Pause F4 Mutli-View

Set-ups All Set-up functions are active in this display.

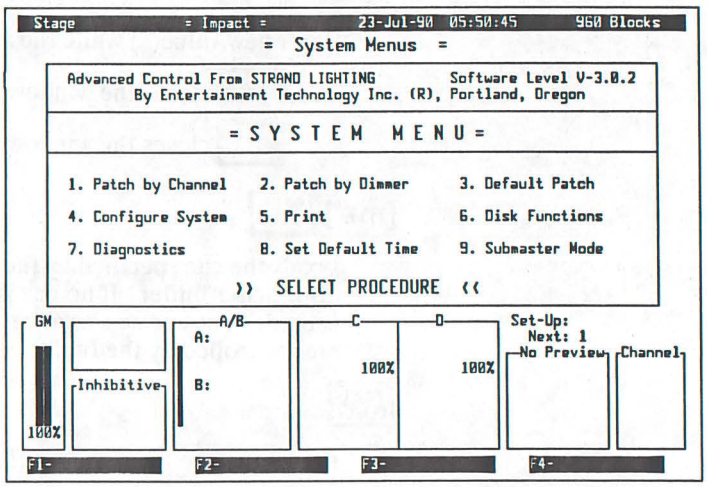
System Menu

The *System* menu is the main menu from which all other system related menus are called.

Press

MENU

to see the System menu.



Menu Selections

1

Selects the *Patch by Channel* display.

2

Selects the *Patch by Dimmer* display.

3))'*' to Confirm((*

Sets the patch table to a one-to-one dimmer-to-channel correspondence.

))'*' to Confirm((warns that pressing **EXECUTE** will change the system patching.

4

Selects the *Config* menu.

5

Selects the *Print* menu.

6

Selects the *Disk Functions* menu.

7

Selects the *Diagnostics* menu.

8

Records all of the time values currently in the *In Preview* window as default times. These values are automatically assigned to a new cue when it is recorded.

Warning 

There is no warning for this function. When you press 8 the system immediately records the Preview times as the new default.

9

Opens the *Scene-Master Mode* window.

Keycap Reference

Control Keys

Display Keys

Level Keys

Memory Keys

Playback Keys

Submaster Keys

Index

K

L

M

O

P

R

S

T

U

V

W