

PRICE: \$15.00

# SetScroll

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## *OPERATIONS MANUAL*



Strand Lighting

Part #: 3-450056-010  
(WAS 8-700162-000)  
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An unbound version of this full manual is available as 2-450056-010 through Strand Lighting Engineering, but is not intended for general distribution.

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# TABLE OF CONTENTS

---

*SetScroll Operations Manual*

## INTRODUCTION

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This section provides information on manual organization, and definition of the terms and conventions used in this manual. It also details procedures for getting your suggestions to Strand Lighting, and receiving help if necessary.

<b>1. ABOUT THIS MANUAL .....</b>	<b>3</b>
1.1 Manual Organization .....	3
1.2 Definitions .....	3
1.3 Conventions .....	4
<b>2. TECHNICAL ASSISTANCE .....</b>	<b>5</b>
2.1 In Case Of Problems .....	5
2.2 Technical Questions .....	5
2.3 Parts Purchases .....	5
2.4 Comments and Suggestions .....	5

## SYSTEM INFORMATION

---

This section provides specifications and control layout information for SetScroll.

<b>3. SPECIFICATION .....</b>	<b>9</b>
<b>4. CONTROLS AND DISPLAYS .....</b>	<b>11</b>

## QUICK REFERENCE

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This section is a quick reference to command keystroke sequences used in SetScroll, and not a comprehensive tutorial for inexperienced users. A step by step tutorial on the operations of SetScroll starts with Chapter 6 of this manual.

<b>5. COMMAND FORMATS</b>	<b>31</b>
5.1 Select A Channel	17
5.2 Select A Color	17
5.3 Groups	17
5.4 Sequences	18
5.5 Speed Control	18
5.6 Action Control	18

## TUTORIAL

---

This section is a tutorial for SetScroll use. Use a controller with this manual to follow the steps outlined here and observe the results. Experienced users who do not wish to follow the tutorial should turn to Chapter 5 ("Command Formats") for a quick reference to available commands.

<b>6. LIVE MODE CONTROL</b>	<b>21</b>
<b>7. GO (PRESET) MODE CONTROL</b>	<b>23</b>
<b>8. CONTROL A GROUP OF CHANNELS</b>	<b>25</b>
8.1 Select A Group	25
8.2 Add A Channel To A Group	25
8.3 Delete A Channel From A Group	26
8.4 Exit From Group Mode	26
<b>9. SEQUENCES</b>	<b>27</b>
9.1 Program A Sequence	27
9.2 Add A Color To A Sequence	28
9.3 Delete A Color From A Sequence	28
9.4 Stop A Sequence	28
9.5 Restart A Sequence	28
9.6 Clear A Sequence	28

## **APPENDICES**

---

<b>A</b>	<b>INSTALLATION RULES .....</b>	<b>29</b>
<b>B</b>	<b>MOTION CONTROL DATA BUS .....</b>	<b>33</b>

## **REFERENCES**

---

### **LIST OF FIGURES**

1.	SetScroll Keyboard Layout .....	11
2.	Mode And Start Control .....	12
3.	Select Keypad .....	13
4.	Speed Control .....	14
5.	ShowChanger Cable .....	36

<b>INDEX .....</b>	<b>37</b>
--------------------	-----------



# **INTRODUCTION**

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*SetScroll Operations Manual*

This section provides information on manual organization, and definition of the terms and conventions used in this manual. It also details procedures for getting your suggestions to Strand Lighting, and receiving help if necessary.





# ***1. ABOUT THIS MANUAL***

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This manual provides information on the operating procedures for SetScroll.

## ***1.1 Manual Organization***

This manual contains 5 major sections as shown below.

### **INTRODUCTION**

Manual organization, and definitions and conventions (chapter 1)  
How to get help (chapter 2)

### **SYSTEM INFORMATION**

Specifications (chapter 3)  
Control Layout (Chapter 4)

### **QUICK REFERENCE**

Command summaries for quick reference by experienced operators  
(chapter 5)

### **TUTORIAL**

Step by step tutorial for detailed information and first time operators  
(chapters 6 through 9)

### **APPENDICES**

Appendices A and B

## ***1.2 Definitions***

This manual uses the following definitions to avoid confusion.

### **Fixture**

Any Strand Lighting color scroller or movable lighting fixture compatible with the Strand Lighting Motion Control Bus protocol.

### **Preset**

A pre-defined setup of fixture intensities, positions, colors, etc., 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," "Cue," and "Memory" are often used interchangeably. This manual uses "Memory" throughout for consistency with console labeling.

## Chase

A pre-defined series of memories called in sequence automatically, and continuously repeated.

## Channel

The basic control unit used in SetScroll. SetScroll can control channels 1 through 12 on the Motion Control Bus. Fixtures respond to the channel number matching their fixture number (thumbwheel switch setting). A channel controls all fixtures set to the same fixture number.

## Color

A single color frame in a Strand Lighting color scroller.

## 1.3 Conventions

The following conventions of capitalization apply in this manual:

[COPY] (All capital Helvetica type face, surrounded by [ ]) The push-button labeled "COPY." A sequence of button pushes is shown as [1][+][2][+][3] etc.

[Color#] - A number entered with Selection Buttons. Specific buttons are shown as [Color12], [Channel2], etc.

[SEQ]LED is the LED in [SEQ].

[SEQ-Color#] means "push [SEQ] and then push [Color#] while [SEQ] is pushed."

{SCROLL SPEED} (All capital Helvetica typeface, surrounded by { })  
A speed control (e.g., {SEQUENCE RATE}).

ON (All capital Helvetica typeface) Function or switch status, as in "Turn the switch ON."

## ***2. TECHNICAL ASSISTANCE***

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### ***2.1 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.

### ***2.2 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).

### ***2.3 Parts Purchases***

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

### ***2.4 Comments and Suggestions***

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

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



# SYSTEM INFORMATION

*SetScroll Operations Manual*

This section provides specifications and control layout information for SetScroll.

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### 3. *SPECIFICATION*

---

SetScroll is a microprocessor based color change controller intended for use with the Strand Lighting ShowChanger series of automated color scrollers. It is available as a stand-alone controller, or as a drop-in module for LightBoard M consoles.

SetScroll can control the color changing function on up to twelve channels of color scrollers and twelve color frames. A single 9-pin output connector provides for transmission of all power and control data.

SetScroll allows both Live and Preset (Go) Modes of operation. Normal operation is in Preset Mode.

Group Mode allows multiple channel grouping for color selection.

The Sequence Function allows setting a channel to a sequence of colors rather than an individual color.

{SCROLL SPEED} and {SEQUENCE RATE} allow color change speed and sequence rate speed control.





#### 4. CONTROLS AND DISPLAYS

The SetScroll keyboard layout is shown below. All operator feedback (display) is via LEDs in the push-buttons.

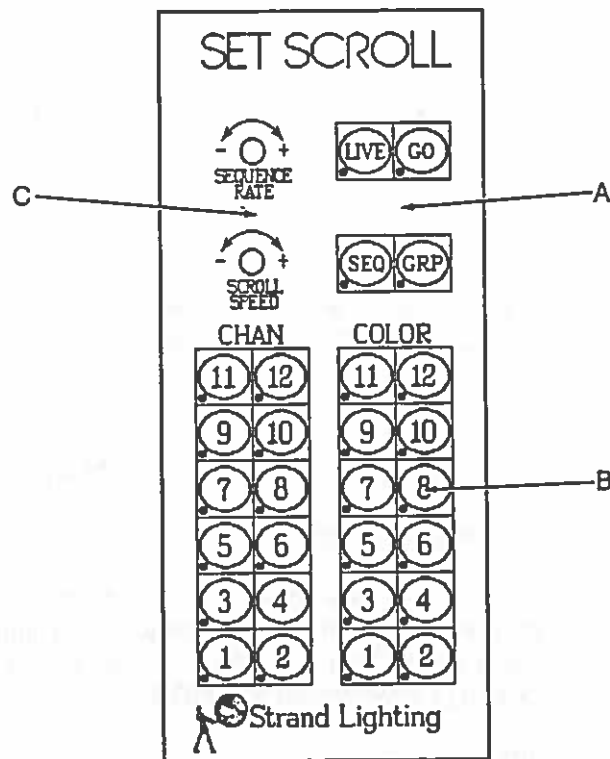


Figure 1. SetScroll Keyboard Layout

## A. Mode And Start Control

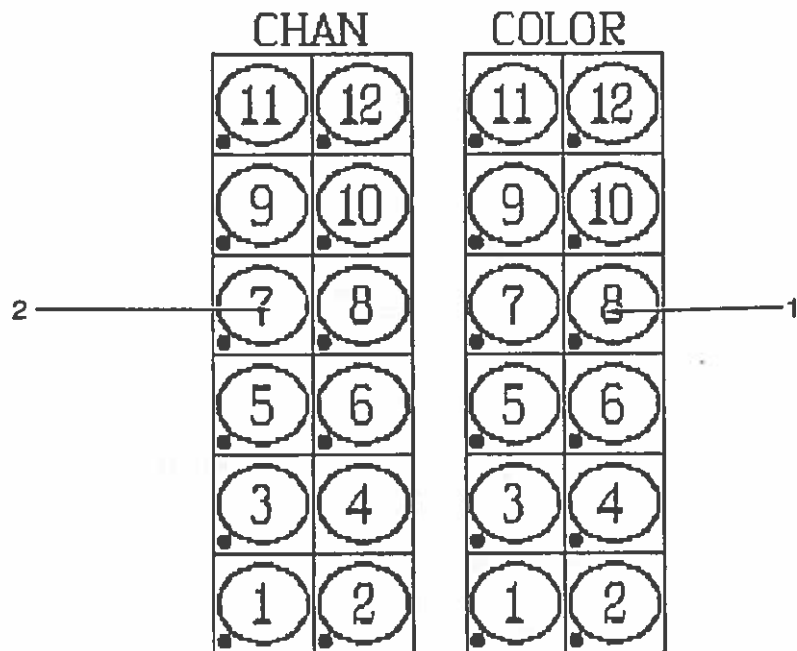


**Figure 2. Mode And Start Control**

- 1) [LIVE]  
Turns Live Mode ON or OFF (alternate action). When [LIVE]LED is ON, all operator actions start a color change. When [LIVE]LED is OFF, Push [GO] to start a color change.
- 2) [GO]  
Starts the selected control sequence when [LIVE]LED is OFF.
- 3) [SEQ] (Sequence Button)  
Allows selection of a color sequence ("chase"). Colors selected while [SEQ] is pushed begin sequencing immediately in Live Mode or when [GO] is pushed. To stop sequencing, select a color and (if in Go Mode) push [GO].
- 4) [GRP] (Group Button)  
Turns Group Function ON or OFF (alternate action). When [GRP]LED is ON, Channel Select Buttons are alternate action, allowing multiple channel selection. When the [GRP]LED is OFF, each push of a Channel Select Button cancels the previous selection. When this function is turned OFF, [GRP]LED goes OFF, but the group is active until a new channel is selected.

### C. Select Keypad

Allows channel and color selection.



**Figure 3. Select Keypad**

- 1) **Color Selection Buttons**  
Allows color selection (or colors when in Sequence Mode). Each color has a numbered push-button with LED.
- 2) **Channel Selection Buttons**  
Allows channel selection (or channels when in Group Mode). Each channel has a numbered push-button with LED.

E. Speed Control

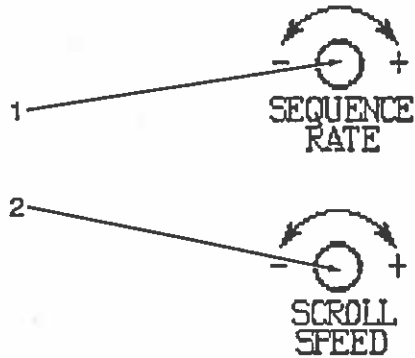


Figure 4. Speed Control

1) {SEQUENCE RATE}

Sets Sequence Rate (time between color changes) via rotary controller ({SEQUENCE RATE}). Clockwise controller motion increases the speed of the function.

2) {SCROLL SPEED}

Sets Scroll Speed (speed of color string movement) via rotary controller ({SCROLL SPEED}). Clockwise controller motion increases the speed of the function.

⋮

# QUICK REFERENCE

*SetScroll Operations Manual*

This section is a quick reference to command keystroke sequences used in SetScroll, and not a comprehensive tutorial for inexperienced users. A step by step tutorial on SetScroll operation's starts with Chapter 6 of this manual.



## 5. *COMMAND FORMATS*

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### 5.1 *Select A Channel*

[GRP]LED must be OFF to select individual channels. If [GRP]LED is ON, push [GRP] to turn it OFF.

Key Entry: [Channel#]

Example: [Channel10]

Selects the channel for color changing. [Channel#]LED lights, showing the channel under control. When [GRP]LED is ON, selection of a channel reverses its current state, allowing multiple channel selection. When [GRP]LED is OFF, selection of a new channel cancels the previous selection.

### 5.2 *Select A Color*

Key Entry: [Color#]

Example: [Color3]

Selects a color. [Color#]LED lights, showing the new color. Sequencing is always be in numerical color order for the selected colors. When [SEQ]LED is OFF, selection of a new color cancels the previous selection.

### 5.3 *Groups*

Key Entry: [GRP][Channel#][Channel#]...[Channel#]

Example: [GRP][Channel1][Channel3][Channel7]

Puts selected channels in a group for control. Selected [Channel#]LEDs go ON.

Key Entry: [Channel#]

Example: [Channel3][Channel9]

Adds or deletes channels from the group (alternate action). This example adds channel 9 (which was OFF), and deletes channel 3 (which was ON).

Key Entry: [GRP]

Turns Group Function ON or OFF (alternate action). [GRP]LED is ON when controller is in Group Mode.

## 5.4 Sequences

[SEQ] always remains pushed while selecting sequence colors. [SEQ-Color#] means "push [SEQ], then push [Color#] while holding [SEQ]."

Key Entry: [SEQ-Color#][SEQ-Color#]...[SEQ-Color#]

Example: [SEQ-Color3][SEQ-Color1][SEQ-Color6][SEQ-Color8]

Puts selected channels in a sequence. [Color#]LED goes ON for selected colors. Sequencing is always in numerical order.

Key Entry: [SEQ-Color#]

Example: [SEQ-Color6][SEQ-Color5]

Adds or deletes colors from the sequence (alternate action). Example adds color 5 (which was OFF), and deletes color 6 (which was ON).

Key Entry: [Color#]

Example: [Color3]

Selects a color in place of the sequence.

Key Entry: [SEQ]

Selects a previously programmed sequence.

## 5.5 Speed Control

Movement: {SEQUENCE RATE}

Selects the time between changes in a sequence. Clockwise controller motion increases sequencing speed (decreases sequencing intervals).

Movement: {SCROLL SPEED}

Selects the rate of color movement. Clockwise controller motion increases color change speed.

## 5.6 Action Control

Key Entry: [LIVE]

Turns Live Mode ON or OFF (alternate action). When [LIVE]LED is ON, all actions happen on stage immediately. When [LIVE]LED OFF, push [GO] to initiate a selected action.

Key Entry: [GO]

Starts the selected color change if Live Mode is OFF.



# TUTORIAL

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*SetScroll Operations Manual*

This section is a tutorial for SetScroll use. Use a controller with this manual to follow the steps outlined here and observe the results. Experienced users who do not wish to follow the tutorial should turn to Chapter 5 ("Command Formats") for a quick reference to available commands.



## 6. *LIVE MODE CONTROL*

---

In Live mode, commands are sent when selected. This demonstration requires at least one scroller set to channel 2 and one to channel 3. If not, Scrollers will not follow the actions as described.

A. Push [LIVE].

[LIVE]LED lights. SetScroll is in Live Mode.

B. Push [Channel3].

[Channel3]LED lights. Channel 3 is active.

C. Set scroll speed using {SCROLL SPEED}.

Clockwise controller motion increases scroll speed, and counterclockwise motion decreases scroll speed. Movement of the controller after a change starts does not influence the change in progress.

D. Push [Color6].

[Color6]LED lights. Channel 3 scrollers move to Color 6.

E. Move {SCROLL SPEED} while color string is moving.

There is no effect on changes in progress.

F. Push [Color3].

[Color3]LED lights. Channel 3 scrollers move to color 3.

⋮



## 7. GO (PRESET) MODE CONTROL

Push [GO] to start a control sequence if [LIVE]LED is OFF. This demonstration requires at least one scroller set to channel 2 and one to channel 3. If not, Scrollers will not follow the actions as described.

- A. Push [LIVE].

[LIVE]LED goes OFF. Live Mode is OFF (system is in Go Mode).

- B. Push [Channel2].

[Channel2]LED lights. Channel 2 is active.

- C. Set scroll speed using the {SCROLL SPEED}.

Clockwise controller motion increases scroll speed, and counterclockwise motion decreases scroll speed. Movement of the controller after a change starts does not influence the change in progress.

- D. Push [Color5].

[Color5]LED lights, showing the color for the next color change.

No fixtures have moved yet.

- E. Push [GO].

[GO]LED flashes as SetScroll sends data to scrollers.

Channel 2 scrollers move to color 5.

- F. Move {SCROLL SPEED} while color string is moving.

There is no effect on changes in progress.

- G. Push [Channel3][Color1][GO].

[Channel3]LED and [Color1]LED light. All other [Channel#]LEDs and [Color#]LEDs go OFF. Channel 3 scrollers move to color 1. channel 2 scrollers do not change.



## ***8. CONTROL A GROUP OF CHANNELS***

---

SetScroll controls up to 12 channels at once. All channels in a group receive the same command. This demonstration shows Live Mode control of Groups. In Go Mode, push [GO] after each command. This demonstration requires at least one scroller set to channels 1, 2, and 3. If not, Scrollers will not follow the actions as described.

### ***8.1 Select A Group***

- A. Push [LIVE].

[LIVE]LED lights. Live Mode is ON.

- B. Push [GRP] (Group).

[GRP]LED lights. SetScroll is in Group Mode.

- C. Push [Channel1][Channel2].

[Channel1]LED and [Channel2]LED lights. Channel 1 and channel 2 are active.

- D. Set scroll speed using the {SCROLL SPEED}.

Clockwise controller motion increases scroll speed, and counterclockwise motion decreases scroll speed. Movement of the controller after a change starts does not influence the change in progress.

- E. Push [Color 8].

[Color8]LED lights. Channel 1 and channel 2 scrollers move to color 8. Channel 3 scrollers do not change.

- F. Push [Color 6].

[Color6]LED lights. Channel 1 and channel 2 scrollers move to color 6. Channel 3 scrollers do not change.

### ***8.2 Add A Channel To A Group***

- A. Push [Channel3].

[Channel3]LED lights. SetScroll adds channel 3 to the group.

- B. Push [Color3].

[Color3]LED lights. Channel 1, 2, and 3 scrollers move to color 3.

### 8.3 *Delete A Channel From A Group*

- A. Push [Channel1].  
[Channel1]LED goes OFF. SetScroll removes channel 1 from the group.
- B. Push [Color 5].  
[Color5]LED lights. Channel 2 and channel 3 scrollers move to color 5.  
Channel 1 scrollers do not change.

### 8.4 *Exit From Group Mode*

- A. Push [GRP].  
[GRP]LED goes OFF. Group Mode is OFF.
- B. Push [Color4].  
[Color4]LED lights. Channel 2 and channel 3 scrollers move to color 4.  
Channel 1 scrollers do not change. Lights still react as though in Group Mode.
- C. Push [Channel3].  
[Channel3]LED remains ON and [Channel2]LED goes OFF.
- D. Push [Color10].  
Channel 3 scrollers move to color 10. Channel 1 and channel 2 scrollers do not change.



## 9. SEQUENCES

---

Sequences are multiple color changes used instead of a single color assignment in either Live or Go Modes. SetScroll supports a single color sequence. Color sequencing is in color number order, and not in channel selection order. This demonstration shows Live Mode operation. In Go Mode, push [GO] to start the sequence.

### 9.1 Program A Sequence

- B. Push [Channel2].

[Channel2]LED lights and [Channel3]LED goes OFF.

Group Mode allows control of multiple sequencing channels. The sequence for all channels is the same.

- C. Set scroll speed with {SCROLL SPEED}.

Clockwise controller motion increases scroll speed, and counterclockwise motion decreases scroll speed. Movement of the controller after a change starts does not influence the change in progress.

- D. Set sequence rate with {SEQUENCE RATE}.

Clockwise controller motion increases sequence rate (shorter sequencing intervals), and counterclockwise motion decreases sequence rate. Movement of the controller after a change starts will change the sequence rate.

- E. No color movement has taken place.

**Care must be taken in setting scroll speed and sequence rate. Each color change must have time to complete before the start of a new color change. Scrollers will miss color change commands received during a color change.**

- F. Push [SEQ-Color1][SEQ-Color4][SEQ-Color10][SEQ-Color7].

[Color1]LED, [Color4]LED, [Color10]LED, and [Color7]LED start flashing. Channel 2 scrollers begin sequencing in the order:

Color 1  
Color 4  
Color 7  
Color 10  
Color 1  
Color 4  
etc.

## 9.2 *Add A Color To A Sequence*

Push [SEQ-Color6].

[Color6]LED starts flashing. SetScroll adds color 6 to the sequence.

## 9.3 *Delete A Color From A Sequence*

Push [SEQ-Color4].

[Color4]LED goes OFF. SetScroll removes color 4 from the sequence.

## 9.4 *Stop A Sequence*

Push [Color2].

[SEQ]LED goes OFF. Sequence completes to the last programmed color number, then goes to color 2 and stops.

## 9.5 *Restart A Sequence*

Push [SEQ].

[SEQ]LED lights. Sequence starts.

## 9.6 *Clear A Sequence*

Clear the sequence from Live and Go Modes to clear it from the controller.

A. Push [SEQ-Color1][SEQ-Color6][SEQ-Color7][SEQ-Color10].

At each selection, SetScroll turns [Color#]LED OFF and removes selected color from sequence in Live Mode only.

B. Push [LIVE].

[LIVE]LED goes OFF. SetScroll is in Go Mode.

C. Push [SEQ-Color1][SEQ-Color6][SEQ-Color7][SEQ-Color10].

SetScroll deletes selected colors from Go Mode. Sequence is deleted from both Live and Go Modes, but is still running if started in Go Mode.

D. Push [GO]

Sequence stops.

*Appendix A*

# **INSTALLATION RULES**

*SetScroll Operations Manual*



## GENERAL

When installing automated fixtures, all normal precautions associated with lighting equipment installation must be observed. Remember that lamp dimming power and fixture control power are separate connections.

## FANOUT

Fanout is the number of devices which can be hooked into an output. For ShowChanger components, fanouts for 120VAC, +24VDC (ParScan only), and Control signal must all be considered.

### A. 120VAC Fanout To Scrollers and Motorized Yokes

120VAC fanout from any source device is 6 devices.

Sources are:

- 1) All controllers
- 2) Analog or Multiplexed Interface
- 3) Buffer box on 'LOCAL' power
- 4) LiteScan Distro Box

Devices are:

- 1) All Scrollers
- 2) Motorized Yokes
- 3) Buffer Box on 'REMOTE' power

### B. 120VAC And +24 VDC Fanout To ParScans

+24 VDC Fanout applies only to Power Supply Boxes as a source and only ParScans as a device. 6 ParScans are allowed per Power Supply Box. Power Supply Boxes must connect to a local power source.

### C. Control Signal Fanout

Control signal fanout is 6 devices per active source. Power Supply and Splitter Box outputs are not active sources, or devices.

Active sources are:

- 1) Buffer Output
- 2) Analog or Multiplexed Interface Output
- 3) Control Console Output

Devices are:

- 1) All fixtures
- 2) Buffer Boxes

## ALLOWED CABLE LENGTHS

Allowable distances between ShowChanger components are as follows:

Controller, Interface, or Buffer Box to next buffer point = 250 feet max.

Controller, Interface, or Buffer Box to Motirized Yoke = 250 feet max.

Controller, Interface, or Buffer Box to the last scroller when daisy chained = 100 feet max.

Splitter Box output to Scroller = 20 feet maximum for all but one output.  
One output may be 100 feet maximum to the last Scroller or 250 feet maximum to a Buffer Box.

Each ParScan must be connected to a Power Supply Box output.  
Power Supply Box to ParScan = 20 feet max.

Combined length of output cable per Power Supply Box = 100 feet max.

**ONCE FIXTURES ARE INSTALLED, SET THUMBWHEEL SWITCHES TO THE ASSIGNED FIXTURE NUMBERS. MAKE CERTAIN THAT FIXTURES ARE NOT CONNECTED WHILE SETTING THE THUMBWHEEL SWITCH, SINCE SUDDEN MOTION MAY RESULT.**

*Appendix B*

# **MOTION CONTROL DATA BUS**

*SetScroll Operations Manual*





## GENERAL

The Strand Lighting Motion Control Data Bus is an 8 wire bus used for transmitting commands and power to ShowChanger automated fixtures.

## TRANSMIT FORMAT

Rate = 62.5 Kbaud.

Format = 1 start bit, 8 data bits, 1 even parity bit, and 1.5 stop bits.

## DATA FORMAT

Data is transmitted with a three byte header, followed by 100 data frames of 8 bytes each. Channel 1 is transmitted first and channel 99 last, followed by one blank channel frame.

FF	sync byte 1	)
FF	sync byte 2	)transmission header
AD	data stream identifier	)
XX	pan data	)
XX	tilt data	)
XX	color data	)
XX	speed data	)data frame per fixture
XX	gobo data	)
XX	iris data	)
XX	douser data	)
XX	focus data	)

## CABLE

The control cable for Strand Lighting ShowChangers is a special prefabricated cable which carries signal, +24 VDC, and 120VAC. It does not carry AC power for fixture lamps. Fixture distribution must use this cable, which is available in several lengths, and can be connected end-to-end. Consult Strand Lighting Customer Service for available lengths and part numbers.

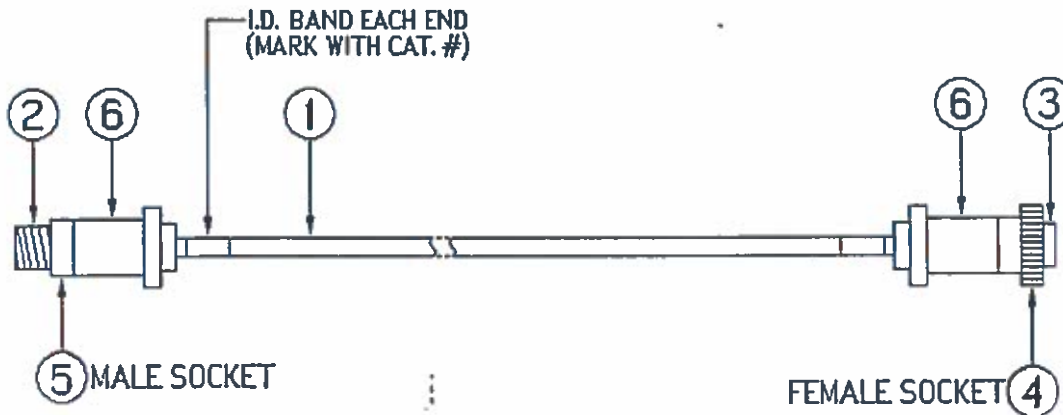
Transmit and Transmit provide a differential signal for transmitting commands to Showchanger fixtures. Levels on these lines switch between 0 and 5 volts, out of phase with each other. Line drivers can drive up to 6 receiving units (fixtures or buffer boxes).

Receivers are opto-isolated. Transmit lines drive the opto-isolator LED. Early equipment used 8820 line receivers, and requires the transmit 0 volts (Pin 2).

ShowChangers use two types of cable for basic distribution. The following pin number assignments are made in the wire and on the connectors.

Pin #	Custom Atlas Cable (Green Cable)		Belden 9157 (Grey Cable)		Function
	Wire Color	Pair #	Wire Color	Pair #	
1	Yellow	2	Blue	2	+24 VDC
2	Green		Black	3	Transmit 0 Volts*
3	White		Black	4	AC Power Neutral
4	Red	2	Black	2	24 VDC Return
5	Black		Red	4	AC Power
6					Not Used
7	Brown	1	White	1	Transmit (0 volts idle)
8	Orange	1	Black	1	Transmit (5 volts idle)
9	Shield Drains		Green	3	Protective Ground

\*Not used in later equipment, but useful for scope reference.



Item	Strand Part #	# Req.	Description
1	1-263157-000 or 6-263002-010		Belden #9157 Cable (Grey Cable)
			Atlas Custom Cable (Green Cable)
2	1-411314-000	8	Crimp Pin, AMP 66098-9
3	1-411315-000	8	Crimp Socket, AMP 66100-9
4	1-229323-000	1	Plug Holding, AMP 206708-1
5	1-229444-000	1	Receptacle Molding, AMP 206705-2
6	1-141026-000	2	Connector Housing, AMP206966-1

Figure 5. ShowChanger Cable

# INDEX

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## [ ] BUTTONS

- [Channel#], 17
- [Color#], 17
- [GO], 12, 18, 23
- [GRP], 12, 17, 25
- [LIVE], 12, 18, 21
- [SEQ-Color#], 18, 27
- [SEQ], 12, 18, 28

## { } CONTROLS

- {SCROLL SPEED}, 14, 18, 21, 23, 25, 27
- {SEQUENCE RATE}, 14, 18, 27

## A

- About This Manual, 3
- Action Control, 18

## C

- Cable, 32, 35
  - Lengths, 32
  - Pin Assignment, 36
- Channel, 4
  - Add To Group, 17, 25
  - Add To Sequence, 18, 28
  - Delete From Group, 17, 26
  - Delete From Sequence, 18, 28
  - Group Control, 25
  - Program Sequence, 27
  - Select, 17
  - Sequence, 27
- Channel Selection, 13
- Chase, 4
- Color, 4
  - Select, 17, 18
- Color Selection, 13
- Command Formats, 17
- Control, 11
  - Gel Movement, 18
  - Go Mode, 23
  - Live Mode, 21
  - Preset Mode, 23
- Cue, 4

## D

- Data Bus, 35
  - Data Format, 35
  - Transmit Format, 35
- Definitions, 3
- Display, 11

## F

- Fanout, 31
- Fixture, 3

## G

- Group, 25
  - Add Channel, 17, 25
  - Delete Channel, 17, 26
  - Exit Group Mode, 26
  - Select, 17, 25

## I

- Installation Rules, 31
- Interconnect
  - Cable, 35
  - Cable Lengths, 32

## L

- Live Mode, 21

## M

- Manual Organization, 3
- Memory, 4
- Mode Control, 12

## P

- Preset, 3

## S

- Select
  - Channel, 17
  - Color, 17, 18
  - Group, 17, 25
  - Sequence, 18
- Select Keypad, 13

Sequence, 27  
  Add A Color, 28  
  Add Channels, 18  
  Clear, 28  
  Delete A Channel, 28  
  Delete Channels, 18  
  Program, 27  
  Restart, 28  
  Select, 18  
  Start, 18  
  Stop, 18, 28  
Specification, 9  
Speed Control, 14, 18



