

2518 DMX Controller

user manual



© 1997 - 2000 Martin Professional A/S, Denmark.

All rights reserved. No part of this manual may be reproduced, in any form or by any means, without permission in writing from Martin Professional A/S, Denmark.

Printed in Denmark.

P/N 35000001, rev. D

section 1	
INTRODUCTION	
SAFETY PRECAUTIONS	4
FEATURES	4
ACCESSORIES	4
section 2	
INSTALLATION	
CONNECTING THE SERIAL LINK	5
CONNECTING THE POWER SUPPLY	7
section 3	
ADDRESS AND MODE SETTING	
ADDRESS SETTING	8
section 4	
PROGRAMMING	
BASIC CONTROL	10
PROGRAMMING SCENES	11
section 5	
PLAYBACK	
CONTROL PRECEDENCE	14
MANUAL EXECUTION	15
AUTO TRIGGER EXECUTION	15
MUSIC TRIGGER EXECUTION	15
SHOW MODE	16
AUTO-START CONFIGURATION	16
BLACKOUT / STANDBY	17
section 6	
USING MIDI	
MIDI SCENES AND TRIGGERS	18
section 7	
TANDEM MODE	
.....	20
section 8	
PROGRAM MANAGEMENT	
PLAYBACK MODE	22
CONTROLLER INITIALIZATION	22
appendix a	
TROUBLESHOOTING	
.....	23
appendix b	
SERVICE	
CALIBRATING FADERS	24
appendix c	
COMMAND TABLE	
.....	25
appendix d	
SPECIFICATIONS	
.....	26

section 1

INTRODUCTION

Thank you for selecting the Martin 2518 DMX Controller. This ruggedly built, easy to use controller offers 72-channel DMX control and multiple triggering options. Two 2518 DMX Controllers may be connected using the Tandem Connection Kit, P/N 91616005, to double the number of control channels and programmable scenes.

This manual describes the features programmed in CPU firmware version 2.2.

SAFETY PRECAUTIONS

- The 2518 DMX Controller is not for domestic use.
- Use the device only as described.
- Do not expose the device to rain or moisture.
- Make sure the device is properly grounded.
- Do not operate the device with the cover removed.
- Immediately repair or replace damaged power cords.
- There are no user-serviceable parts inside; refer all service to a qualified technician.

FEATURES

- 72 DMX channels
- 30 banks of 6 programmable scenes
- Tandem operation of 2 controllers
- Built-in microphone for music triggering
- Built-in timer for automatic triggering
- MIDI control interface
- 2-digit LED display
- Blackout master
- Flash scene
- Auto-start configuration
- Locked-memory “playback” mode
- Solid steel construction
- Table or 19” rack mount
- Low current standby mode

ACCESSORIES

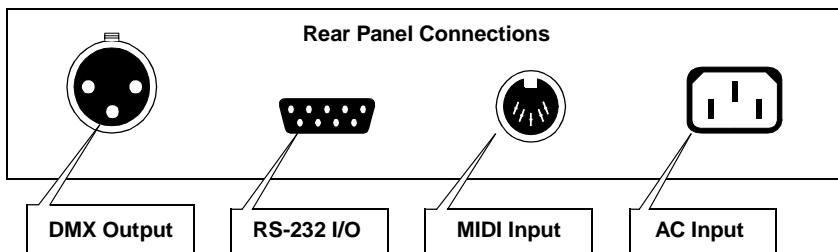
- Tandem Connection Kit..... P/N 91616005
- Martin 4-Channel Opto-Isolated RS-485 Splitter..... P/N 90758060
- Martin 6 Channel DMX Switch Pack, 210 - 245 P/N 90758200
- Martin 6 Channel DMX Switch Pack, 100 - 130 V..... P/N 90758300

section 2

INSTALLATION

The 2518 DMX Controller comes with the following:

- IEC power cable
- 5 meter 3-pin XLR-XLR cable
- Termination plug
- User manual



CONNECTING THE SERIAL LINK

ABOUT SERIALS LINKS

The 2518 DMX Controller sends instructions through a serial data link. The link goes from the controller's output to the input of the first lighting fixture and then from the fixture's output to the input of the next fixture. It continues output-to-input in a daisy-chain to all fixtures.

Adaptor cables may be required when building the data link. There are two differences to be aware of. First, both 3-pin and 5-pin XLR sockets are common. (Martin fixtures have 3-pin XLR sockets. On fixtures that have 5-pin XLR sockets, pins 4 and 5 are not used.) Second, the XLR sockets on some mostly older Martin fixtures such as the RoboScan 812 are wired with the hot and cold data pins reversed in relation to later Martin fixtures and DMX-compatible devices. See Table 1. The XLR pin-out for Martin products is always shown next to the socket.

The 2518 XLR pin-out is DMX compatible!

No adaptors are required to connect the 2518 DMX Controller to Martin fixture introduced since 1997 or any DMX-compatible fixture with 3-pin XLR connectors. The adaptors required to connect other fixtures are shown in Table 2.

Standard	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
DMX	shield	cold (-)	hot (+)	-	-
Martin	shield	hot (+)	cold (-)	-	-

Table 1: Martin and DMX Pin-Outs

		Output			
		Martin pin 2 (+) pin 3 (-)	DMX pin 2 (-) pin 3 (+)		
		XLR	3-pin	3-pin	5-pin
Input	Martin pin 2 (+) pin 3 (-)	3-pin	Male Female 1 — 1 2 — 2 3 — 3	Male Female 1 — 1 2 — 2 3 — 3	Male Female 1 — 1 2 — 2 3 — 3 4 5
			————— P/N 11820008	————— P/N 11820006	————— P/N 11820003
	DMX pin 2 (-) pin 3 (+)	3-pin	Male Female 1 — 1 2 — 2 3 — 3	Male Female 1 — 1 2 — 2 3 — 3	Male Female 1 — 1 2 — 2 3 — 3 4 5
			————— P/N 11820006	————— P/N 11820008	————— P/N 11820005
		5-pin	Male Female 1 — 1 2 — 2 3 — 3 4 5	Male Female 1 — 1 2 — 2 3 — 3 4 5	Male Female 1 — 1 2 — 2 3 — 3 4 — 4 5 — 5
			————— P/N 11820002	————— P/N 11820004	————— -

Table 2: XLR Cable Requirements

TO BUILD THE SERIAL LINK

1. **Use shielded twisted-pair cable.** A reliable data connection begins with the right cable. Microphone cable cannot transmit DMX data reliably over long runs. For best results, use only cable designed for RS-485 applications. Your Martin dealer has a range of cables, connectors, and adaptors designed for lighting control.
2. **Starting from the controller, connect output to input.** Check the pin-out on Martin fixtures and be sure to connect hot to hot and cold to cold.
3. **Never use a “Y” connector to split the link.** If you need to split the serial link into branches use a dedicated splitter/amplifier such as the Martin 4-Channel Opto-Isolated RS-485 Splitter.
4. **Don’t overload the link.** Placing more than 32 devices on a link can cause unpredictable performance. The control units for the RoboColor IIx and RoboColor III systems, the Martin DMX Switch Pack, and the Martin DMX Interface each count as 1 device.
5. **Always terminate the link** by installing the provided termination plug in the output socket of the last fixture on the link. The termination plug, which is a male XLR connector with a 120 ohm resistor soldered between pins 2 and 3, “soaks up” the control signal so it cannot reflect back down the link. If a splitter is used, terminate each branch of the link.

CONNECTING THE POWER SUPPLY

For safe operation, the controller must be grounded (earthed).

TO INSTALL A PLUG

The 2518 DMX Controller is delivered without a plug on the power cord. Following the manufacturer’s instructions, install an approved 3-prong grounding-type plug that fits your supply. Connect the wires to the pins as listed below. *If the pins are not clearly identified, or if you have any doubts about proper installation, consult a qualified electrician.*


Wire	Pin	Marking	Screw color
brown	live	“L”	yellow or brass
blue	neutral	“N”	silver
yellow/green	ground		green

Table 3: Plug Wiring

section 3

ADDRESS AND MODE SETTING

Each fixture connected to the serial link must have a unique address, also known as a start channel, which is the first channel the controller uses to send instructions to the fixture. If independent control is not required, two or more identical fixtures may use the same address. They will receive the same instructions and behave identically.

You must know how many control channels each fixture requires before setting addresses. This can be found in the fixture’s user manual or DMX protocol.

Some Martin fixtures offer the option of “tracking” or “vector” control. The 2518 DMX Controller does not have cross-faders, which are required for programming fades in tracking mode. Select vector mode when applicable: this allows you to program effect speeds on separate channels.

ADDRESS SETTING

As you will see when you start programming, it is best if all of a fixture’s channels are assigned to one channel button. The buttons are divided into 12 groups of 6 channels as shown below. With two controllers connected in tandem mode, however, each button controls 12 channels.

		Button 1		Button 2		Button 3		Button 4		Button 5		Button 6	
		Ch	Setting	Ch	Setting	Ch	Setting	Ch	Setting	Ch	Setting	Ch	Setting
Low channels	1	1		7	1, 2, 3	13	1, 3, 4	19	1, 2, 5	25	1, 4, 5	31	1, 2, 3, 4, 5
	2	2		8	4	14	2, 3, 4	20	3, 5	26	2, 4, 5	32	6
	3	1, 2		9	1, 4	15	1, 2, 3, 4	21	1, 3, 5	27	1, 2, 4, 5	33	1, 6
	4	3		10	2, 4	16	5	22	2, 3, 5	28	3, 4, 5	34	2, 6
	5	1, 3		11	1, 2, 4	17	1, 5	23	1, 2, 3, 5	29	1, 3, 4, 5	35	1, 2, 6
	6	2, 3		12	3, 4	18	2, 5	24	4, 5	30	2, 3, 4, 5	36	3, 6
High channels	37	1, 3, 6		43	1, 2, 4, 6	49	1, 5, 6	55	1, 2, 3, 5, 6	61	1, 3, 4, 5, 6	67	1, 2, 7
	38	2, 3, 6		44	3, 4, 6	50	2, 5, 6	56	4, 5, 6	62	2, 3, 4, 5, 6	68	3, 7
	39	1, 2, 3, 6		45	1, 3, 4, 6	51	1, 2, 5, 6	57	1, 4, 5, 6	63	1, 2, 3, 4, 5, 6	69	1, 3, 7
	40	4, 6		46	2, 3, 4, 6	52	3, 5, 6	58	2, 4, 5, 6	64	7	70	2, 3, 7
	41	1, 4, 6		47	1, 2, 3, 4, 6	53	1, 3, 5, 6	59	1, 2, 4, 5, 6	65	1, 7	71	1, 2, 3, 7
	42	2, 4, 6		48	5, 6	54	2, 3, 5, 6	60	3, 4, 5, 6	66	2, 7	72	4, 7

Table 4: Channel Groups and Settings (DIP-Switch Pins ON)

The address is often set on the fixture using a DIP-switch. Table 4 shows the DIP-switch pins that must be ON to set an address from 1 to 72.

Note that the DIP-switch may also be used to enable special options. The Martin Punisher X250 and Destroyer X250, for example, must be set with DIP-switch 10 on

when operated by a controller. Please refer to the user manuals for specific details on address and mode setting.

ADDRESSING EXAMPLE

Table 5 shows how you could assign addresses for the following Martin equipment.

- 4 MX-1s
- 2 Punisher X250s
- 2 RoboScan 812s
- 4 CX-2s
- 1 SynchroZap QX250
- 1 6-Channel DMX Switch Pack

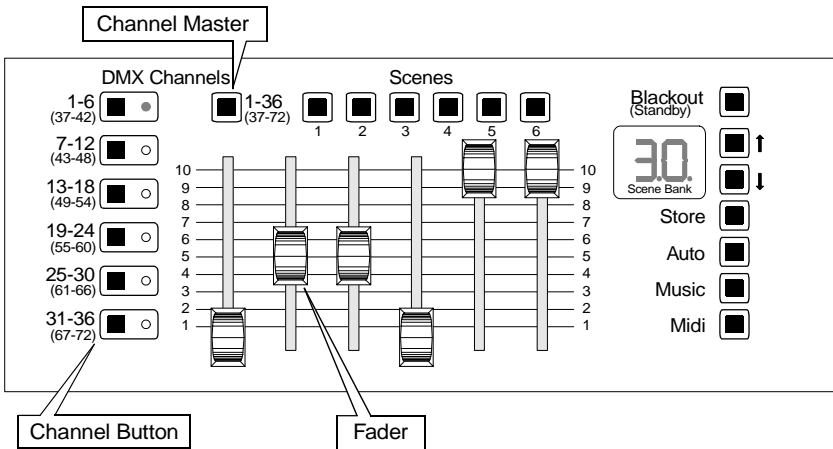
Note that the four CX-2s share two sets of control channels and that all fixtures except the RoboScan 812s have their control channels on a single button.

	Button 1	Button 2	Button 3	Button 4	Button 5	Button 6
Low channels	1	7	13	19	25	31
	2	8	14	20	26	32
	3	9	15	21	27	33
	4	10	16	22	28	34
	5	11	17	23	29	35
	6	12	18	24	30	36
High channels	37	43	49	55	61	67
	38	44 not used	50	56 not used	62	68
	39	45	51	57	63	69
	40	46	52	58	64	70
	41	47	53	59	65	71
	42	48	54	60	66	72

Table 5: Example (Addresses shaded)

section 4

PROGRAMMING



Lighting fixtures are controlled with the faders in groups of six channels. The DMX value is 0 when a fader is at the bottom and 255 when it is at the top. The faders map to the channels from left to right and can be calibrated using the procedure on page 24.

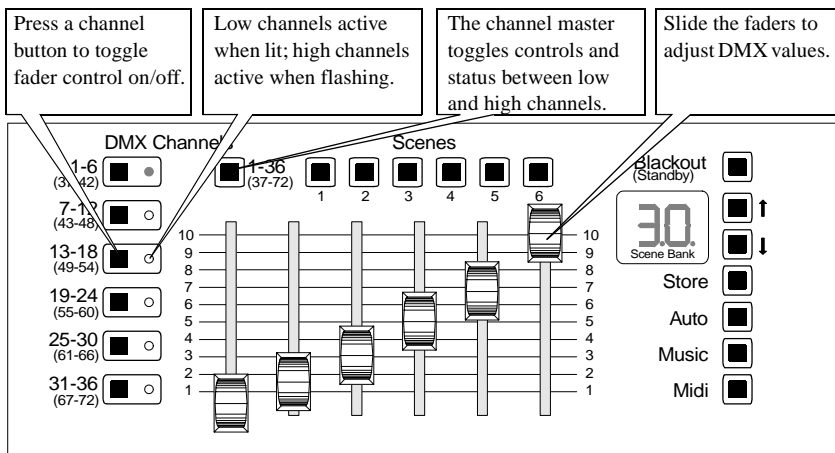
Fader control of each group of channels is activated and deactivated with the *channel buttons*. Each channel button toggles the channels listed next to it. The *channel master* toggles the channel buttons between the *low channels* (1-36) and the *high channels* (37-72).

The *channel status LEDs* show which channels are under fader control. If pressing a channel button causes the LED to light, then the low channels are activated. If the LED flashes, then the high channels are activated. High and low channels can be activated at the same time but the LED displays the status of only one set at a time: press the channel master to view the status of the other set.

BASIC CONTROL

1. Apply power to the lights. After a short reset procedure, the lights will be ready to respond to the controller.
2. Apply power to the 2518 DMX Controller.
3. Press a channel button to activate fader control of a fixture's effects. You can activate additional channels to control several fixtures at once. This works best with identical fixtures.

4. Set effects with the faders. If there is no light, you may need to send a lamp-on command - see the fixture's DMX protocol.
5. Press the channel button again to turn fader control off.
6. Repeat for other fixtures. To activate fader control of high channels, press the channel master to toggle to the high channels before pressing the channel button.



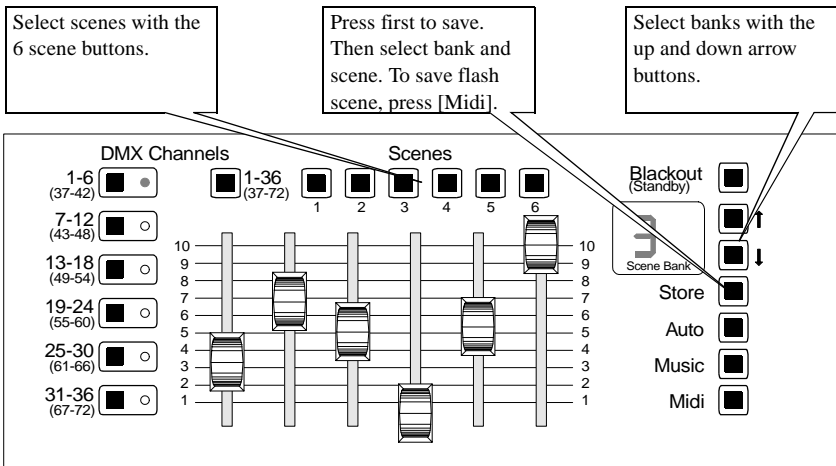
PROGRAMMING SCENES

Scenes contain one DMX value for every channel and determine how each light looks at a particular moment. They are stored in 30 groups called *banks*. There are 6 scenes per bank in single-controller mode and 12 scenes per bank in tandem mode. There is also a *flash scene* that is not stored in a bank and thus can be executed at any time.

Scenes are programmed and executed one at a time. In single-controller mode, the active scene is displayed as a 1-digit number and the active bank is displayed as a 2-digit number.

TO CREATE AND SAVE A SCENE

1. Set your lights using the basic control procedure described above.
2. Press [Store]. The display flashes.
3. Press the up and down arrow buttons to select a bank.
4. Press a scene button from 1 to 6. The display stops flashing.



TO CREATE AND SAVE A FLASH SCENE

The flash scene can be executed at any time by pressing [Midi].

1. Program or select a scene to use as the flash scene.
2. Press [Store]. The display flashes.
3. Press [Midi] to save as the flash scene.

TO EDIT A SCENE

1. Select a scene to edit.
2. Make the desired changes.
3. Press [Store]. Select scene to save.

TO INITIALIZE A SCENE

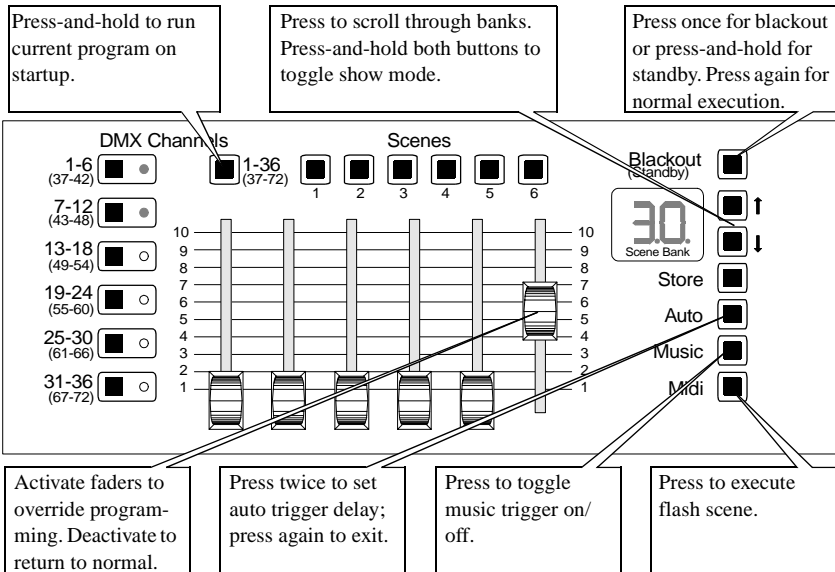
Setting all DMX values to 0 provides a fresh start.

1. Deactivate all channels. Slide all faders to 10.
2. Activate all channels. Slide all faders to 0.
3. Press [Store]. Select the scene to initialize.

section 5

PLAYBACK

This section describes the built-in options for executing scenes: additional MIDI and tandem control options are covered in following sections.



CONTROL PRECEDENCE

Fader control overrides programmed control!

Programmed commands can be overridden by the faders. For example, to change the programmed mirror movement speed of one or more scanners during a show, you would activate fader control of the fixture(s) and set the pan/tilt speed channel to the desired value. (The DMX value does not change until the fader is moved.) Normal program execution resumes when fader control is deactivated or when executing a scene manually or via MIDI.

Manual and MIDI scene execution (see next section) take precedence over automatic scene execution. If the controller is executing scene 3 in music trigger mode and you press the scene 1 button, scene 1 will be executed. The next music trigger pulse will execute scene 2.

MANUAL EXECUTION

To execute scenes manually, simply select a bank with the arrow buttons and select a scene with the scene buttons. The new bank does not begin to execute until a scene button has been pressed.

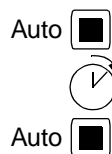
To execute the flash scene, press [Midi].

AUTO TRIGGER EXECUTION

The *auto trigger* executes scenes at the rate that you set with the built-in timer. Unless you are using Show Mode, described below, the current bank runs in a continuous forward loop and may be switched manually or via MIDI at any time.

TO SET AUTO TRIGGER

1. Press [Auto]. Wait for the desired trigger interval.
2. Press [Auto]. Execution starts.
3. To exit, press [Auto] again.



MUSIC TRIGGER EXECUTION

The *music trigger* executes scenes to the beat of music using the built-in microphone. As with auto trigger, the current bank runs in a continuous forward loop and may be switched at any time.

TO SET MUSIC TRIGGER

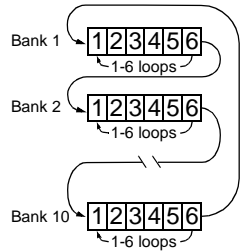
1. Press [Music]. Execution starts.
2. To exit, press [Music] again.

SHOW MODE

In *show mode*, banks execute serially, allowing you to run some or all banks without additional input. There are 4 sets to choose from: banks 1-10, 11-20, 21-30, and 1-30.

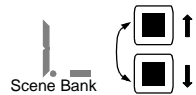
Banks execute 1-6 times before proceeding to the next bank. After the last bank, the program loops back to the first bank. The auto, music, and MIDI triggers can be used to trigger show mode execution.

When the controller is running in show mode, the programming and manual execution functions are disabled.



TO SET SHOW MODE

1. Press and hold both arrow buttons until the bank display shows one or more horizontal bars. Use the top controller in tandem mode.
2. Press the up or down arrow button to select the set of banks to execute. Sets are indicated by bars as shown to right and can be changed during execution.
3. Press a scene button to select 1-6 loops. The number is displayed by the scene digit and can also be changed during execution.
4. Select a trigger to start program execution.
5. To exit show mode, press and hold both arrow buttons.



Banks	Bar(s)
1-10	—
11-20	—
21-30	—
1-30	— — —

AUTO-START CONFIGURATION

The auto-start feature allows you to select a program to execute on startup.

TO SAVE AN AUTO-START CONFIGURATION

1. Select and execute the startup scene, bank, or show with the desired trigger options.
2. Press and hold the channel master for several seconds until the controller resets. When powered up or taken out of standby, execution resumes at the scene that was executing at this point.

TO CLEAR AUTO-START

This procedure clears the memory lock and auto-start functions: to reset the memory lock see page 22.

1. Turn off the controller. In tandem mode, turn off the top controller.
2. Turn on the controller and immediately press and hold the top 3 channel buttons until “ON” or “OF” is displayed.
3. Repeat.

BLACKOUT / STANDBY

In *blackout* mode, the controller blacks out lights by sending DMX value 0 on all channels.

In *standby* mode, there is no DMX output from the controller. Fixtures will behave differently when the DMX signal stops: some will blackout, some will keep their last look, and some will run in stand-alone mode. Standby mode uses very little current and is recommended whenever the controller is not being used for extended periods.

TO BLACKOUT ALL FIXTURES

1. Press [Blackout]. The display flashes.
2. Press [Blackout] again to resume operation.

TO TOGGLE STANDBY MODE

1. Press and hold [Blackout] until the display clears.
2. To return to normal execution, press [Blackout] again. *Power-on commands may be executed immediately after pressing the button.*

section 6

USING MIDI

The 2518 DMX Controller provides additional playback options when connected to a MIDI device such as a keyboard, drum machine, or computer sound card. MIDI notes and program changes can be used to call specific scenes, change banks, and to trigger the next scene in the current bank. A particular MIDI code may be used either as a trigger or to call a specific scene, but not both.

If you have several MIDI devices, response can be limited to a specific MIDI channel. If no channel is selected, the controller responds to MIDI channels 1-16.

TO CONNECT A MIDI DEVICE

Connect the device's MIDI output to the controller's MIDI input using a standard MIDI cable. A standard MIDI cable consists of a shielded twisted-pair cable and 5-pin DIN connectors wired pin 2 to pin 2, pin 4 to pin 4, and pin 5 to pin 5. The cable shield is connected to pin 2. Pins 1 and 3 are not used. The cable may be up to 15 meters (50 feet) long.

MIDI SCENES AND TRIGGERS

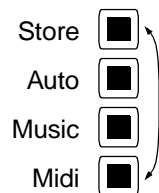
A *MIDI scene* is a scene that is tied to a MIDI code so that it executes when the code is generated. Any number of scenes may be MIDI scenes. The MIDI code must be different for each scene.

When a MIDI scene is executed, the active bank changes to the bank containing the scene. This provides a convenient way to switch banks remotely. For example, you can use auto or music trigger to execute scenes and use MIDI scenes to change banks.

A *MIDI trigger* is a MIDI code that sends a trigger pulse each time it is executed. It is not associated with any specific scene, but executes the next scene in the active bank. Up to 2048 MIDI triggers can be created.

TO CREATE A MIDI SCENE

1. Select a scene.
2. Press and hold [Midi], then press [Store].
The display rolls.
3. (Optional) Select a MIDI channel: Press the up and down arrow buttons to select a channel between 1 and 16.



4. Generate the MIDI code: On you keyboard or other MIDI device, play the note or execute the function to save with the scene.



TO CREATE A MIDI TRIGGER

1. Press and hold [Midi], then press [Auto]. The display rolls.
2. (Optional) Select a MIDI channel: Press the up and down arrow buttons to select a channel between 1 and 16.
3. Generate the MIDI code: On you keyboard or other MIDI device, play the note or execute the function to use as a trigger.



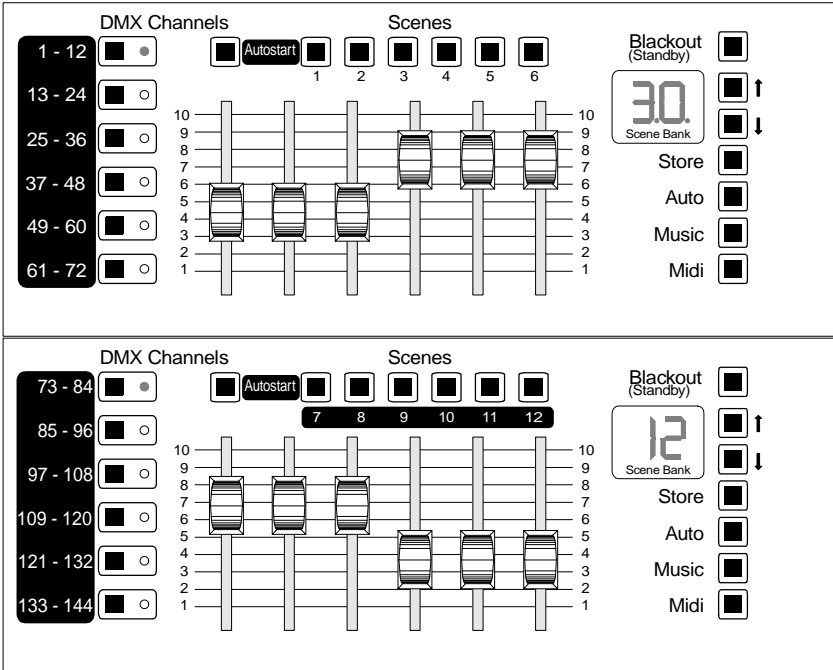
TO DELETE A MIDI SCENE OR TRIGGER

1. Press and hold [Midi], then press [Music]. The display rolls.
2. Generate the MIDI code to delete.



section 7

TANDEM MODE



Two 2518 DMX Controllers with v. 2.1 or higher firmware and connected using the Tandem Connection Kit, P/N 91616005, can be operated in a 2-controller tandem mode in which DMX channels, faders, and scenes per bank are doubled.

The top controller provides access to channels 1 - 72 and scenes 1 - 6; the bottom controller provides access to channels 73 - 144 and scenes 7 - 12.

The functions of the controls in tandem mode differ slightly from that described for a single controller. The most important difference is that in tandem mode, each channel button controls 12 channels, instead of 6, so there is no need to switch between high and low channels. In addition, MIDI execution is not supported in tandem mode.

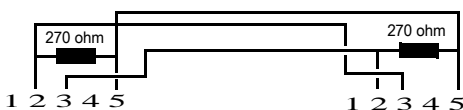
Otherwise, tandem mode programming and playback are very similar to single-controller mode. Table 6 summarizes the differences.

Feature	Single mode	Tandem mode
DMX output	72 channels	144 channels
Channel buttons	Control 6 low + 6 high channels.	Control 12 channels.
Channel master	Toggles between low and high channels, saves auto-start sequence.	Saves auto-start sequence.
Scenes	6 per bank, 181 total.	12 per bank, 361 total.
Display	Shows bank with 2 digits, scene with 1 digit.	Top shows bank, bottom shows scene.
Arrow buttons	Select bank 1-30. Toggle show mode on/off.	Same on top controller only.
MIDI execution	Supported	Not supported

Table 6: Single versus tandem mode

TO CONNECT CONTROLLERS

Use only the cable included with the Tandem Connection Kit to connect the controllers: standard serial cables will not work. Cable wiring is shown below: pins 6 - 9 are not used or shown.



1. Connect the cable to the RS-232 I/O port on each controller.
2. Connect the XLR cable to the DMX output of the *bottom* controller.

TO SET TANDEM MODE

1. Turn off both controllers and connect them as described above.
2. Turn on the *bottom* controller first.
3. Turn on the top controller and immediately press and hold the top 3 DMX channel buttons (1-12, 13-24, 25-36) until "ON" is displayed. The controllers are now ready for tandem operation.
4. Repeat to return to single mode operation. "OF" is displayed.

section 8

PROGRAM MANAGEMENT

This section describes the features for saving and deleting the contents of the controller's memory. There is also an Upload/Download Utility available from the Martin web site. This is a free Windows utility for managing lighting programs created with the 2518 DMX Controller.

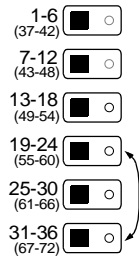
To use the Upload/Download Utility, a straight-through RS-232 cable must be connected between the computer's serial port and the controller's RS-232 I/O port. Disconnect both devices from AC power before connecting the RS-232 cable. Please refer to the online documentation for additional details.

PLAYBACK MODE

Locking a program in memory turns the 2518 DMX Controller into an easy-to-use playback controller with manual override. Note, however, that setting tandem mode unlocks the memory and allows the editing and/or deletion of the programming.

TO LOCK OR UNLOCK THE MEMORY

1. Turn off the controller. In tandem mode, turn off the top controller.
2. Press and hold the fourth and sixth channel buttons while turning on the controller. Hold until "LO" is displayed.
3. Repeat steps 1 and 2 to unlock the memory. "OF" is displayed when the memory is unlocked.



CONTROLLER INITIALIZATION

These procedures allow you to erase all programming.

TO CLEAR ALL SCENES

1. Disconnect the controller from AC power.
2. Press and hold [Store] and the up arrow button. Apply power.

TO CLEAR ALL MIDI FUNCTIONS

1. Disconnect the controller from AC power.
2. Press and hold [Midi] and the down arrow button. Apply power.

appendix a

TROUBLESHOOTING

problem	probable cause(s)	suggested remedy
None of the fixtures respond to the controller.	The controller is disconnected from the data link.	Connect controller.
	Blackout or standby mode selected.	Press blackout button.
Some fixtures do not respond, respond erratically, or continuously reset.	Bad data link connection.	Check data link connections/cables and correct accordingly.*
	DMX signal polarity reversed.	Swap pins 2 and 3. See section 2.
	DMX signal reflection.	Insert termination plug in the last light on the link.
	Incorrect addressing of fixtures.	Check addresses.
	Fixtures not on.	Turn on fixtures.
	Protocol auto-detection failure.	Switch the fixtures off and then back on. In general, power on the controller before the fixtures.
Save commands do not work.	Memory locked.	Unlock memory.
Fixtures do not execute programming on one or more channels.	Fader control is overriding programming.	Turn off fader control.
No light from some or all fixtures.	The scenes do not contain 'Lamp On' instructions for fixtures with remote lamp on/off.	Make sure the "Lamp On" command is saved in at least one scene.
Uneven or incomplete fader control.	Faders not calibrated.	Calibrate faders as described in "Service".

* To test the data link with an ohm meter, disconnect the link from the controller and measure the resistance across pins 2 and 3 of the XLR male plug. The reading should be around 120 ohms. Readings from 400 - 20,000 ohms indicate the data link is not terminated. Infinite resistance indicates a bad connection, broken wire, or a defective fixture. Very low readings indicate a short circuit in the link or a defective fixture.

appendix b

SERVICE

CALIBRATING FADERS

If the controller does not output the full range of DMX values, or outputs different values from the same fader position, the faders can be recalibrated as follows.

1. Press and hold [Blackout] to put the controller in standby mode.
2. Slide all six faders to the top.
3. Press [Blackout] to bring the controller out of standby mode. Quickly press scene buttons 4 and 6 at the same time and hold for 1 second. Release the scene buttons.
4. The channel LEDs chase upwards. Repeat steps 1-3 if the LED chase does not occur.
5. In controllers with CPU firmware version 2.1 and above, the faders are now calibrated and the controller is ready for use.
6. If your controller has firmware version 1.5 or below, press a DMX Channel button. (Optional) Slide each fader, one at a time, between 0 and 100%. When a fader is at 0, the display reads 0 (DMX 0). When a fader is at 10, the display reads FF (DMX 255). Do not leave a fader on 0 - you will not be able to read the other fader values. Press a DMX Channel button to complete the process and return to normal operation.

appendix c

COMMAND TABLE

Function	To execute:
Save scene	Press [Store]. Press scene no.
Save flash scene	Press [Store]. Press [Midi].
Execute flash scene	Press [Midi].
Set auto-trigger	Press [Auto]. Wait. Press [Auto].
Toggle music trigger	Press [Music].
Toggle show mode	Press-and-hold [Up] + [Down].
Set show mode banks	Press [Up] or [Down].
Set show mode loops	Press a scene button from 1 to 6.
Blackout	Press [Blackout].
Standby	Press-and-hold [Blackout].
Clear blackout or standby	Press [Blackout].
Save auto-start configuration	Press-and-hold channel master.
Clear auto-start configuration	Toggle tandem mode on/off.
Toggle tandem mode	Put both controllers on standby. Press [Blackout] on bottom controller. Press [Blackout] on top controller. Quickly press-and-hold top 3 channel buttons.
Create MIDI-callable scene	Select scene. Press-and-hold [Midi]. Press [Store]. Generate MIDI code.
Create MIDI trigger	Press-and-hold [Midi]. Press [Auto]. Generate MIDI code.
Delete MIDI function	Press-and-hold [Midi]. Press [Music]. Generate MIDI code.
Lock/unlock memory	Put (top) controller in standby. Press [Blackout]. Quickly press-and-hold fourth + sixth channel buttons until "LO" (lock) or "OF" (off) is displayed.
Delete all scenes	Put controller in standby. Press [Blackout]. Quickly press-and-hold [Store] + [Up]
Delete all MIDI functions	Put controller in standby. Press [Blackout]. Quickly press-and-hold [Store] + [Down]

Table 7: Command summary

appendix d

SPECIFICATIONS

DIMENSIONS

- Height..... 95 mm (3.7")
- Length 483 mm (19.0")
- Width 130 mm (5.1")
- Weight 2.8 kg (6.1 lb)
- Rack size 19" x 3U

POWER CONSUMPTION

- 2.2 W

AC VOLTAGE AND FREQUENCY

- EU model..... 210-240 V, 50-60 Hz
- US model..... 100-130 V, 50-60 Hz

PROGRAMMING CAPACITY

- Scenes 180
- MIDI triggers 2048

DMX CAPACITY

- 72 channels

TRIGGER SOURCES

- adjustable timer, MIDI, internal microphone

REAR PANEL CONNECTIONS

- Power input..... grounding 3-prong IEC male
- DMX output..... 3-pin XLR female
- MIDI input 5-pin DIN female
- RS-232 9-pin D-SUB female

MATERIALS

- Cover, case..... steel with electrostatic powder coating
- Buttons, knobs plastic
- Feet rubber

