2510 Controller

user manual

INTRODUCTION

Congratulations on your choice of the Martin 2510 controller, an easy-to-use playback controller for up to 31 Martin lights or 512 DMX channels. Sequences and shows are programmed using the Martin LightJockey or 3032 controller and downloaded for playback with the 2510 via a standard serial port connection.

The 2510 can also convert an RS-232 input signal to a Martin RS-485 output signal. This can be used to control Martin protocol lights with your own controller system.

SAFETY PRECAUTIONS

The 2510 Controller is not for household use. For safe operation, read this manual before use and follow the safety precautions listed below. If you have questions about how to operate the controller safely, please contact your Martin distributor or dealer.

- Use only a source of AC power that complies with local building and electrical codes.

- Disconnect the device from AC power when not in use.

- For protection against dangerous electric shock, ground (earth) the device electrically. Do not expose the device to rain or moisture.

- Do not open the device or remove any part; there are no user-serviceable parts inside. Refer all service to a qualified technician.

CONNECTIONS

AC POWER CONNECTION

Warning! ***For protection from electric shock, the fixture must be grounded (earthed). The AC mains supply shall have overload and ground-fault protection.***

The fixture's mains lead must be fitted with a grounding-type cord cap that fits your power distribution cable or outlet. Consult a qualified electrician if you have any doubts about proper installation.

• **Following the cord cap manufacturer's instructions, connect the yellow and green wire to ground (earth), the brown wire to live, and the blue wire to neutral.**

COMPUTER CONNECTION

Use the supplied serial cable to connect the 2510's RS-232 input to a serial port on the LightJockey or 3032 PC. If the computer is equipped with a 25-pin serial output, you will need a 25-to-9-pin converter, available from any computer store. The connections are shown below.

The 2510 may be disconnected from the computer after the show data has been loaded.

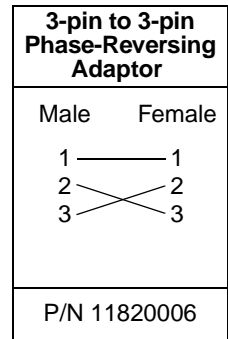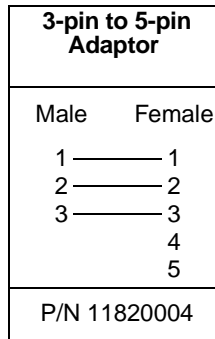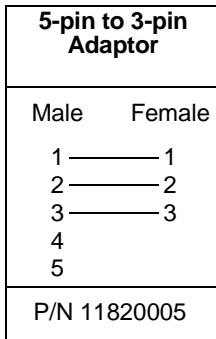| Signal	25 pin PC output	9 pin PC output	2510 RS-232 input
RXD	pin 2	pin 3	pin 3
GND	pin 7	pin 5	pin 5

FIXTURE CONNECTION

Important! ***The 3-pin XLR socket on the back of the 2510 is wired for Martin-protocol devices: an adaptor is required for connection to a DMX data link.***

To connect a DMX data link

1 Connect a phase-reversing adaptor cable (P/N 11820006) to the 2510's serial data link output.

2 If you already have a data link connected to the LightJockey controller, disconnect the XLR cable from the LightJockey and connect it to the female end of the phase-reversing cable.

3 If you are building a new link, connect a regular data link cable to the female end of the phase-reversing adaptor. Lead the cable to the first fixture and plug it into the data input. Connect the data output of the first fixture to the data input of the next fixture. Continue connecting fixtures output to input; up to 32 fixtures may be connected. Terminate the link by inserting the male termination plug, included, into the data output of the last fixture. A termination plug is an XLR connector with a 120 ohm resistor soldered across pins 2 and 3.

If you have DMX fixtures with 5-pin XLR sockets, you will also need 3-pin to 5-pin adaptors as shown below.

5-pin to 3-pin Adaptor	3-pin to 5-pin Adaptor	3-pin to 3-pin Phase-Reversing Adaptor
Male Female	Male Female	Male Female

1 ——— 1
2 ——— 2
3 ——— 3
4
5
	1 ——— 1
	2 ——— 2
	3 ——— 3
	  4
	  5
		1 ——— 1
		2 ⤬ 2
		3 ⤬ 3

P/N 11820005	P/N 11820004	P/N 11820006

To connect a Martin data link

1 If you already have a data link connected to the 3032 controller, disconnect the XLR cable from the 3032 and connect it to the 3-pin serial data output on the back of the 2510.

2 If you are building a new link, connect a data link cable to the 3-pin XLR socket on the back of the 2510. Lead the cable to the first fixture and plug it into the data input. Connect the data output of the first fixture to the data input of the next fixture. Continue connecting fixtures output to input; up to 31 fixtures may be connected. Terminate the link by inserting the male termination plug, included, into the data output of the last fixture. A termination plug is an XLR connector with a 120 ohm resistor soldered across pins 2 and 3.

MARTIN MODE OPERATION

This section describes how to use the 2510 to play back sequences programmed on the Martin 3032 controller.

SWITCHING ON THE CONTROLLER

Switch on the 2510 controller by pressing the power switch to the upper-left on the front panel. The controller will display the following:

{25} {10} {X. X} {##},

where {X.X} indicates the software version and {##} the number of sequences (flashes 3 times).

N O T E : If the 2510 is set up as a protocol converter it will show {PC} in the display. To enable playback mode, press and hold the [↑] key while powering up.

LOADING 3032 SEQUENCES

The controller does not contain any programs when supplied, so before playback mode is usable, a lighting program created with the 3032 controller must be downloaded into the 2510's memory. Please refer to the 3032 documentation on how to create and download programs.

N O T E : It is advisable to program 'Lamp On' instructions in all sequences to ensure that the lamps are powered on no matter which sequence you start running.

To download 3032 sequences

1   Turn off the 2510 and connect it to the 3032 PC as described on page 4.

1   Press and hold the [↓] key and turn on the 2510. The display will show {do} to indicate that download mode is enabled.

2   Using the "2510DNLD.EXE" utility or by selecting "2510 Controller" from the 3032's utility menu, start the download transmission from the 3032 or PC. While the download takes place the display will flicker - this is quite normal.

3   As soon as the display shows {rd} the download has finished. You may now switch the 2510 off and disconnect it from the PC. If the display shows {er}, an error occurred during the download. Check all connections and try again.

PLAYBACK

Playback mode is the default mode after switching on the 2510. After the starting message ({25}{10}{X.X}), the 2510 will immediately start executing the first sequence in memory. To transmit a reset to the lights, press and hold the [ENTER] key while switching on. Depending on the options selected when the original list of sequences was created, the 2510 will either execute the sequences one after the other (show mode), or loop the first sequence over and over. While running in show mode the 2510 will use the preprogrammed trig modes and trig rates originally selected.

Show mode may be disabled by pressing any of the four bottom keys. To restart show mode, switch the 2510 off and then back on again.

SELECTING SEQUENCES

When the 2510 is not in show mode you may choose between any of the programmed sequences, and any of the three trig types.

To preset a sequence or a show to run, simply use the [↑] and [↓] buttons until the desired sequence number appears in the display. The sequence number flashes to indicate that it is only preset - not yet being executed. To start executing the flashing sequence or show simply press [ENTER].

The first program selected after power up starts with the preprogrammed default trig rate. Changing from one trig mode to another is done by pushing the desired trig mode button (Manual, Auto or Music).

The current trig mode is indicated by the dots in the display. If the trig mode is Manual, the left dot will flash every time the [MANUAL] button is pushed. If Auto Trig mode is selected the right dot flashes with the beat of the trig rate. In Music Trig mode, both dots flash every time the built-in microphone triggers the 2510 controller.

AUTO TRIG RATE

To change the Auto Trig rate push [AUTO] two or more times in the rhythm you wish the sequence to trigger.

By keeping [AUTO] pressed two or more seconds the controller returns to default trig rate.

Please note that the controller does not change the trig mode or trig rate when a new sequence is selected.

MANUAL TRIG

Pushing [MANUAL] switches to Manual Trig mode. The sequence is triggered each time you push the [MANUAL] button.

MUSIC TRIG

Pushing [MUSIC] switches to Music Trig mode. A built-in microphone will pick up the beat of the music and trigger the sequence accordingly.

BLACKOUT

When [BLACKOUT] is pushed all lights blackout and execution of the program stops. To reactivate execution push [BLACKOUT] again.

DEFAULT START-UP SEQUENCE

It is possible to select the current sequence as default start-up sequence. This means that the 2510 Controller automatically starts up in this sequence every time you switch it on. Press [MANUAL] + [ENTER] to select the current sequence. To clear the default start sequence press [AUTO] + [ENTER]. In both cases the 2150 Controller will respond by displaying [..] briefly in the display.

NOTE: To enable the 2510 Controller running with a default start-up sequence, the 2510 sequence mode MUST be downloaded as MANUAL from the 3032 Controller - not LINKED. Otherwise, the 2510 will link the sequences as normal. The default start-up feature also requires software version 1.4+ installed in the controller.

MEMORY TEST

It is possible to test the internal memory of the 2510 controller. Do this if the lights connected to the controller start responding erratically. Please refer to the 3032 controller's documentation on how to make a memory test.

DMX MODE OPERATION

This section describes how to use the 2510 to play back sequences programmed on the Martin LightJockey controller. Version 2.0 of the 2510 Controller firmware and version 1.06, build 30 (or later) of the LightJockey software are required. LightJockey updates are available for download from the Martin web site at http://www.martin.dk.

SWITCHING ON THE CONTROLLER

Switch on the 2510 by flipping the power switch on the front panel to the "|" position. If the 2510 is in protocol converter mode, it will show {PC} in the display. Reset the controller by pressing and holding the [↑] key while powering up.

LOADING LIGHTJOCKEY SEQUENCES

A lighting program created with the LightJockey controller must be loaded into the 2510's memory before use. Please refer to "Using the 2510 Playback Controller" in the LightJockey's online help system for information on creating playback programs.

To download LightJockey sequences

1   Turn off the 2510 and connect it to the LightJockey PC as described on page 4.

1   Press and hold the [Auto] key and turn on the 2510. The display will show {dd} to indicate that LightJockey download mode is enabled.

2   From the LightJockey main menu, select Download > 2510 Controller. Create or load a download list and then click Create Download File. When the file compiles without errors, click Download to 2510.

3   Select the serial (COM) port to use and then click Start Download. While the download takes place the display will flicker.

4   When the display shows {rd} the download has completed successfully: switch the 2510 off and disconnect it from the PC. If the display shows {er} an error has occurred during the download. Check all connections and try again.

PLAYBACK MODES

Once the sequence list has been downloaded, the 2510 must be switched off and on to reset the controller in playback mode. During startup the 2510 flashes [25][10], the firmware revision [X.X], [LJ] (for LightJockey), and finally the number of available sequences.

If a dedicated startup sequence has been setup, it starts running and [SU] is displayed. The startup sequence may be aborted by pressing any key.

If no startup sequence has been assigned, or after the startup sequence has finished, the 2510 will playback sequences in the default 2510 Startup Mode set by the 2510 list.

MANUAL MODE

In manual mode, the controller continuously executes the selected sequence. To select sequences, scroll using the [up] and [down] buttons and then press [Enter] to execute.

SUB-LIST MODE

In sub-list mode, the controller executes the sequences in the selected sub-list. The current sub-list is displayed by [-X], where X is the sub-list number. To select a sub-list, scroll using the [up] and [down] buttons and press [Enter] to execute.

LIST MODE

In list mode, the controller executes all sequences in sequential order. When all sequences have been executed the list starts again from the top.

To change playback mode

The playback mode may be changed at any point in the following cycle:
Manual -> Sub-list -> List -> Manual.

Note that when entering sub-list or list mode, the trig modes and scene times are reset to the programmed defaults.

1 **From manual mode to sub-list mode: press and hold [Enter] until [-X] is displayed, where X is the sub-list number.**

2 **From sub-list mode to list mode: press and hold [Enter] until [--] is displayed.**

3 **From list mode to manual mode: press [Enter].**

TRIG MODES

The 2510 has 4 trig modes: manual, auto, music, and music-random. sequences are assigned a default trig mode in the LightJockey's 2510 download list. This

may be changed during playback using the [Manual], [Auto] and [Music] buttons. The selected trig mode remains active and overrides the default trig mode until the playback mode is changed to sub-list or list mode.

MANUAL

Sequences are triggered by pressing the [Manual] button.

AUTO

Sequences are triggered by the internal clock, either using the programmed scene time, or using an auto-trig time set during playback. To set an auto-trig time during playback, press [Auto], wait for the desired trigger time, and then press [Auto] again. To restore to the pre-programmed scene time, press and hold the [Auto] button for more than 0.5 seconds.

MUSIC

Press [Music] to switch to music trig mode. The 2510 triggers sequences to the beat of the music using the built-in microphone.

MUSIC RANDOM

In music-random mode, scenes are sound-triggered in random order rather than sequentially. This applies to all sequences with more than 2 scenes.

To enter the music-random mode, press and hold [Music] for more than 0.5 seconds.

BLACKOUT

Press [Blackout] to black out the fixtures. Press [Blackout] again to restore the light output.

Unless the Force DBO switch has been set for the 2510 list, the [Blackout] button blacks out fixtures according to the fixture personalities in LightJockey. All effects not related to fixture intensity are not affected, allowing a more graceful restore from blackout.

TROUBLESHOOTING

problem	probable cause(s)	suggested remedy
None of the lights respond to the controller.	The controller is disconnected from the data link.	Connect controller.
	The controller is in protocol-converter mode (displays {PC}).	Switch off the controller. Press and hold [↑] while switching on the controller.
Some lights do not respond or respond erratically.	Bad data link connection or reversed signal polarity.	Check connections/cables in the daisy-chain. Insert a phase reversing cable before fixture.
	Data link not terminated with 120 Ω termination plug.	Insert termination plug in the last light on the data link.
	Incorrectly addressing (DIP-switch setting) of lights.	Ensure that all lights are addressed as they were when the sequences were programmed.
	Lights not powered on.	Power on lights.
	Lights have failed in the protocol auto-detection.	Switch off the lights and then back on again. In general, switch on the 2510 controller before the lights.
No light emission from some or all lights.	The sequences do not contain 'Lamp On' instructions.	Edit sequences so that they all contain 'Lamp On' instructions.
{er} appears on the display when attempting to download.	An error has occurred during the download process due to a bad RS-232 connection between the 2510 and the PC.	Check the RS-232 connection and then try to download the sequences again.

RS-232 TO RS-485 PROTOCOL CONVERSION

Both the 2504 and 2510 playback controllers may be used as protocol converters, converting standard RS-232 into the RS-485 protocol that Martin uses to control lighting fixtures. The RS-485 has several advantages over the RS-232 protocol: not only does it work at higher transmission rates (187.5 Kbaud), it also specifies a balanced link, which means that several units may be connected in a daisy chain.

ENABLING PROTOCOL CONVERSION MODE

Playback mode is the default. Since the 2510 has programmable memory, it is possible to set PC mode as the default start-up mode. To do this:

1   Press the [↑] key while switching on the 2510. The display will show PC **to indicate that protocol conversion mode is active. This will be the default mode every time the 2510 is switched on.**

2   To disable protocol conversion mode, just press the [↑] when switching on, and the 2510 returns to playback mode.

USING PROTOCOL CONVERSION

The conversion translates RS-232 signals into the RS-485 protocol that Martin uses. RS-232 communication is strictly one-way and there is no handshake from the 2504/2510 controller back to the source.

The RS-232 protocol used is 8 data bits, 1 stop bit, no parity. The controller is initiated to a baud rate of 9600. Once in conversion mode it is possible to switch the baud rate up to a maximum of 57600 baud.

The RS-232 data send to the controller must **ALWAYS** be in the following 3 byte format: ADDRESS, MSB, LSB.

As there is no feedback, it is up to the RS-232 source to maintain the 3 byte synchronization. To ensure this, there must be a period of at least 250 microseconds from the end of one 3-byte packet to the start of the next 3-byte packet. This period must be from the **stop bit** of the last byte in a packet to the **start bit** of the first byte in the next packet. Most constructions including the PC have a UART to clock out the individual bits of a byte, leaving the CPU to

perform other operations, so remember to take the time used to clock out the byte into account (10 bit at the relevant baud rate).

The Address, MSB, LSB format primarily refers to the protocol used to control the fixtures, but the addresses 248-255 are set aside for communicating with the controller:

Address	MSB	LSB	Description
255	255	001	Enable protocol conversion
255	255	002	Disable protocol conversion
255	255	003	Set receive baud rate to 9600 baud
255	255	004	Set receive baud rate to 19200 baud
255	255	005	Set receive baud rate to 38400 baud
255	255	006	Set receive baud rate to 57600 baud

When the receive rate is changed, **all** subsequent data must be sent at the new baud rate.

CONTROLLING FIXTURES

Controlling fixtures is done by transmitting a 2 byte data value to a certain address. The base address for each fixture is calculated as Address = 8 * (dipswitch value-1). A fixture at dipswitch address 11 has a base address of 8 * (11-1) = 80.

Each fixture is then subdivided in to 8 addresses if it uses 1 Martin channel, or 16 addresses if it uses 2. A RoboScan 812 (1 Martin channel) at dipswitch address 1 has base address 0 and covers addresses 0 to 7. Note that dipswitch address 32 is not usable as addresses 248-255 are used to send instructions to the controller.

Effects are controlled by sending a MSB, LSB data value to each of these addresses. For example, to set the gobo wheel of a RoboScan 812 to the third gobo, the command is "ADR,30,0" where ADR is equal to the base address + the offset for the gobo wheel (refer to the RS-485 protocol for the fixture).

The MSB, LSB data bytes usually control different effects or speeds, so both the MSB and LSB values must be set to the desired values.

The order in which you update fixtures or effects within the fixture is not important. In addition, the fixtures do not require data refresh, so you only need to transmit new data values.

Some fixtures may have unassigned offsets, in which case you do not need to send to these addresses. Some older fixtures may not need LSB data, but due to the 3

byte format of the conversion, you must send both MSB and LSB to the 2504/2510. Just send a 0 as LSB.

Note that when most fixtures are resetting, either after power up or after a reset command, they will not listen to serial transmissions. With most fixtures you may need to re-establish the effect values after the reset.

Martin fixtures that are capable of running directly off a DMX controller have a built in auto-detection routine to determine the transmission protocol used. They need to sample the transmission for about 1.5 seconds before they respond to the Martin protocol. To make sure that the fixture has detected the Martin protocol, send at least one transmission and then wait 1.5 seconds before transmitting to the fixture.

SPECIFICATIONS

- 3032 scenes: 8024
- LightJockey scenes: ....from 247 @ 512 ch. to 42,325 @ 1 ch.
- Triggers: .... Auto, Manual and Music (built-in microphone)
- Data input: .... RS-232 (may be used as RS-232 to Martin RS-485 converter)
- Display: .... Two digit 20 x 25 mm LED
- Rack mounting dimensions: ....19"/2U
- Dimensions (LxWxH): .... 483 x 65 x 89 mm (19 x 2.6 x 3.5")
- Weight: ....1.0 kg (2.2 lb)
- Shipping weight: ....2.0 kg (4.4 lb)
- Shipping dimensions (LxWxH): .... 580 x 260 x 150 mm (22.9 x 10.2 x 5.9")
- AC Voltage (EU model): .... 210-250 V / 50-60 Hz
- AC Voltage (US model): .... 100-130 V / 50-60 Hz
- Power consumption: .... 2.5 W
- Link cable (standard): .... 5 meters (21'10")
- Link termination: .... 120 Ω