SHOW★PRO

SM - 240

DMX LIGHTING CONTROLLER

OWNERS MANUAL

March 2, 2008

MAIN FEATURES

240 channels as 12 fixtures. 20 channels/fixture
Pan / Tilt Wheels
Fine Pan/Tilt movements via Fine-button
6 Programmable chases with up to 240 steps each
30 Scene banks. 8 scenes per bank (240 total scenes)
Copy function for scenes, programs and chasers
Sound control via built-in microphone or audio input
19 Inch mounting dimension (3 rack units)
Power Input Required: 9-12 VDC, 300mA minimum.
Power consumption: 4 Watts
Power Connector: 2.1mm, Center Pin Positive
Dimensions: 82 x 132 x 80 mm (19 in. x 3U)
Minimum mounting depth: 170mm
Weight: 2.5kgs

DESCRIPTION

The SM-240 is a fixture (or scanner) oriented DMX controller. It can control up to 12 fixtures of 20 DMX channels each. The unit can also be used to control conventional dimmer packs. The SM-240 includes 30 banks of user programmable scenes. Each bank can contain up to 8 scenes. There are also 6 programmable chases. Each chase may contain up to 240 steps. Scene banks can be automatically run like chases.

SOUND-CONTROL Sound control works using the built-in microphone or the AUDIO connector. Connect a line level sound signal (input sensitivity: 0.1 V – 1 V) from a mixer to the AUDIO connector on the rear panel..

INSTALLATION

The SM-240 may be operated on a horizontal surface or it can be installed in 19" equipment rack using the holes provided in the faceplate.

POWER CONNECTIONS

The SM-240 is provided with an external power supply which supplies 9VDC to the unit,

Connect the cable of the external power-unit to the DC INPUT socket. Plug the power unit itself into a 120VAC wall outlet.

FIXTURE CHANNEL ASSIGNMENTS

Each fixture is permanently assigned a 20 channel block of DMX addresses. The following table shows the assignments.

FIXTURE (SCANNER)	STARTING ADDRESS
1	1
2	21
3	41
4	61
5	81
6	101
7	121
8	141
9	161
10	181
11	201
12	221

The fixtures must be set to accommodate these DMX assignments. This is usually done using DIP switches on the fixture. Refer to the fixture manual for exact instructions for this procedure. This information is sometimes shown on a tag or chart on the fixture.

If you set multiple fixtures to the same addresses then they will respond to the SM-192 as one fixture.

You will also need to know which channel within the fixture is assigned to each fixture function (Pan, Tilt, Color, Dimming, etc.). This information is normally contained in the fixture manual.

CONTROL SIGNAL (DMX) CONNECTIONS

Any system using DMX control should be connected together as a chain of devices. In other words the control cable should proceed from the controller to the first fixture and then to other fixtures in a continuous "daisy chain" fashion. Most fixtures have a DMX IN and a DMX OUT connector to be used to connect the chain. The control cable should NOT be split into a multiple run star arrangement with a cable running from the controller directly to each fixture.

DMX CONNECTOR PIN ASSIGNMENTS

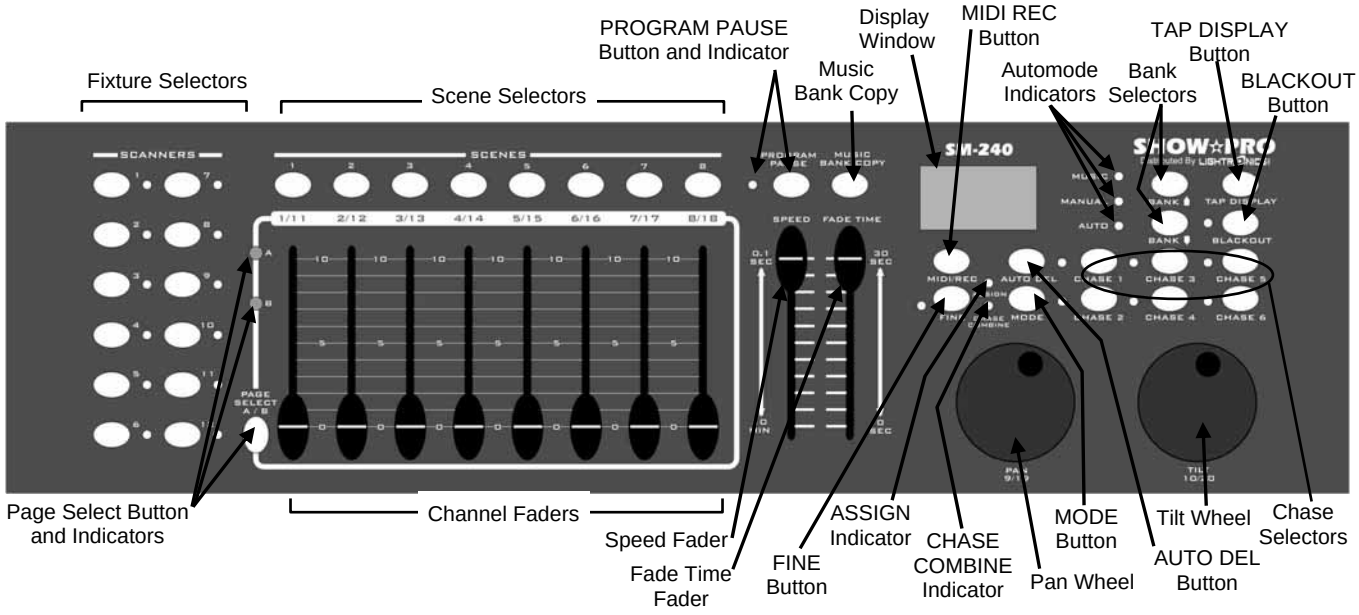
There are two different connectors which can be used for DMX control. They are both XLR type connectors. Some units use 3 pin connectors. Others use 5 pin connectors. The SM-240 transmits from a 3 pin female connector on the back edge of the unit. If your fixtures use 5 pin connectors then you can make up an adapter cable to accommodate this. The following table shows the pin assignments.

PIN #	SIGNAL NAME
1	DMX COMMON
2	DMX DATA -
3	DMX DATA +
4	NOT USED
5	NOT USED

Some fixtures use a reversed signal assignment. In this case the DATA - and DATA + pins are reversed. The SM-240 has a reversing switch on the back edge to accommodate this situation.

DMX TERMINATION

A DMX chain should be terminated at the last fixture (and ONLY the last fixture) on the chain. This is done by installing a commonly available 1/4 Watt, 120 Ohm resistor across the DATA - and DATA + wires at the last fixture. If you have only a few fixtures very close together and a very short cable run to the controller then you may be able to operate without the terminator.



TOP PANEL CONTROLS AND INDICATORS

SCANNERS Buttons and Indicators (12): Selects and deselects a fixture (Scanner) to control. Associated Indicator is ON when selected.

SCENES select buttons (8): Activates scenes in the currently selected scene bank.

CHANNEL FADERS (8): Sets DMX channel values. Ch 1-8 can be adjusted when Page A is selected. Channels 9 - 16 are adjusted using Page B.

PAGE A and B LED Indicators: Show which Page(s) are selected for fader channel control.

PAGE SELECT Button: Controls which DMX channels are active for the channel faders. Channels 1-8 are Page A. Channels 9-16 are page B. Both A and B can be active at the same time.

PROGRAM PAUSE Button:

PROGRAM Switches the SM-240 into program mode. it down for about 3 sec. to toggle program mode ON or OFF. The program mode indicator flashes continuously when the unit is in program mode.

PAUSE Temporarily stops Auto-Run scenes and chases. Push briefly to turn PAUSE ON/OFF. The indicator is ON when PAUSE is active.

MUSIC/BANK COPY Button:

MUSIC Switches audio mode (operated with sound control) ON/OFF

BANK COPY Used in programming mode to copy scene banks.

DISPLAY WINDOW: Shows various information depending on operation being performed.

AUTOMODE Indicators (MUSIC/MANUAL/AUTO): Shows the status of Auto-Run.

BANK UP and BANK DOWN Buttons: Selects 1 of 30 scene banks. Each bank contains 8 scenes.

TAP DISPLAY Button:

TAP Controls the speed of Auto-Run Scenes and chases. Push TAP several times at the rate you want the scenes or chases to run. This is an alternative to using the SPEED fader.
DISPLAY Switched display to show DMX level as 0-255 or 0% - 100%. It can also alter other display formats.

BLACKOUT Button: Sets all DMX channels to zero level output.

MIDI REC Button:

MIDI Toggles MIDI operation ON and OFF if held down for about 3 seconds.
REC Used in program mode during recording of scenes and chases.

ASSIGN Indicator: ON when assigning channels.

AUTO DEL Button:

AUTO Toggles Auto-Run scenes and chases On and Off. The AUTO indicator will be ON when Auto-Run is active.
DEL Used in program mode to delete scenes, chases, and chase steps.

CHASE BUTTONS (1 – 6): Selects one or more chases for activation or programming. The associated chase indicator is ON when a chase is selected.

SPEED Fader: Controls the speed of Auto-Run scenes and chases. Also used when assigning channel functions.

FADE TIME Fader: Controls the fade time of Auto-Run scenes and chases. Also used when assigning channel functions.

FINE Button: Enables PAN/TILT operation in small increments for finer control.

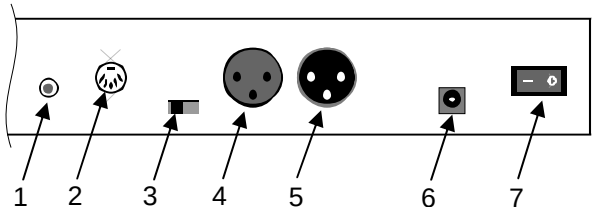
CHASE COMBINE Indicator: On when chases are running in combine mode.

PAN Wheel: Controls left/right operation of fixtures when assigned.

TILT Wheel: Controls up/down operation of fixtures when assigned.

MODE Button: Used with FINE button to set Channel Reverse and Channel Assign functions. Also activates COMBINE mode when running multiple chases.

REAR PANEL CONTROLS AND INDICATORS



1 AUDIO INPUT Connector
2 MIDI INPUT Connector
3 DMX POLARITY Switch
4 DMX OUTPUT Connector (Male XLR)
5 DMX INPUT Connector (Female XLR)
6 DC INPUT Connector
7 POWER ON/OFF Switch

ASSIGNING CHANNEL FUNCTIONS

The channel assignments within a fixture can be re-assigned to other faders or the PAN and TILT wheels.

1. Push FINE and MODE at the same time TWICE. The ASSIGN indicator will come ON.

2. Select a fixture by pushing its SCANNER button.

3. The display shows the fixture channel and its controller fader assignments. Use the FADE TIME fader to scroll through the controller fader (and wheel) numbers. The corresponding fixture channel for that fader will be also be shown.

4. Use the SPEED fader to reassign the fixture channel to a different fader or wheel.

Note: The PAN and TILT wheels are shown on the display as X and Y respectively. The default wheel assignments are CH9:PAN, CH10:TILT. They are also assigned to CH19:PAN, CH20:TILT for Page B.

5. Push MIDI REC to record your assignment change. The controller LEDs will flash briefly.

6. Repeat steps 4. and 5. for additional re-assignments.

7. Push FINE and MODE at the same time to exit from the assignment menu. The controller indicators will flash briefly.

REVERSING CHANNEL OPERATION

The action of the faders and PAN/TILT wheels can be reversed. This normally used with PAN/TILT controls but can be applied to other functions.

1. Push FINE and MODE at the same time. The display bottom row will show REVERSE.
2. Select a fixture by pushing its SCANNERS button.
3. Use the FADE TIME fader to scroll through the channels (1 - 8 and X and Y). Use the SPEED fader to select Y or N (reverse ON or OFF).
4. Push MIDI REC to record your assignment change. The controller LEDs will flash briefly.
5. Repeat steps 4. and 5. for additional re-assignments.
6. Push FINE and MODE at the same time TWICE to exit from the assignment menu. The controller indicators will flash briefly.

FADE TIME APPLICATION

You can control whether or not fade times will be applied to only the PAN and TILT wheels or to all fixture channels.

1. Turn OFF the controller.
2. Hold down MODE and TAP DISPLAY at the same time and turn the controller back on.
3. The display shows the current fade choice.
4. Use TAP DISPLAY to change it.
5. Push MODE and TAP DISPLAY at the same time to record the change. The controller indicators will flash briefly.

MANUAL FIXTURE OPERATION

When the SM-240 is turned on it is in the manual mode with the blackout function active. Push BLACKOUT to turn it OFF. The MANUAL indicator is ON when the unit is in manual mode.

1. Select a fixture (1-12) by pushing its SCANNERS button. The associated indicator will flash.
2. Use the channel faders and /or PAN and TILT wheels, if assigned, to control the fixture functions. If the fixture has more than 8 channels then you will need to use Page B to access those channels.

You may need to run a fader to its limits briefly to activate control of the channel. You can select more than one fixture at a time and run them together.

The display shows the level of the most recent fader setting and can be switched to show it as a DMX count (0-255) or as 0% -100%. Push TAP DISPLAY to switch the display mode.

There is no provision to record the settings of a fixture other than using them in a scene.

PROGRAMMING SCENES

A scene is a recorded snapshot of all channel settings of one or more fixtures. The SM-240 can record 240 scenes. The scenes are arranged in 30 banks of 8 scenes each.

ALL SCENE RECORD, EDIT, COPY, AND DELETE FUNCTIONS ARE DONE IN THE PROGRAM MODE.

Hold down PROGRAM for about 3 second to activate program mode. The PROGRAM indicator flashes continuously when program mode is active. This button also turns program mode OFF.

RECORD A SCENE

1. Select a scene bank for the scene using BANK UP or BANK DOWN.
2. Select a fixture by pushing its SCANNERS button. Its indicator will flash when selected.
3. Move the faders to the desired settings as in manual fixture operation.
4. Push MIDI REC.
5. Push a SCENES button (1 - 8) to save the fixture settings in the scene. The controller indicators will flash briefly.
6. Select another fixture for the scene. The settings for the first fixture will be retained.
7. Repeat steps 3. through 5. using the same scenes button used for step 6.. You can include as many fixture settings as needed in the scene.

EDIT A SCENE

You can edit the settings of one of the fixtures in a scene without re-creating all the settings for other fixtures.

1. Select the scene bank which contains the scene to be edited using BANK UP or BANK DOWN.
2. Select the scene (1 - 8) to be edited by pushing its SCENES button. The scene will activate.
3. Select a fixture by pushing its SCANNERS button. Its indicator will flash when selected.
4. Adjust the faders to the desired settings as in manual fixture operation.
5. Push MIDI REC.
6. Push the SCENES button you used in step 2. to save the fixture settings to the scene. Other fixtures will keep their original settings.

COPY A SCENE

You can copy the contents of a scene to another scene in the same or a different bank.

1. Select the scene bank which contains the scene to be copied using BANK UP or BANK DOWN.
2. Select a scene to be copied by pushing its SCENES button.
3. Push MIDI REC.
4. Select the scene bank which will receive the scene be copied by using BANK UP and BANK DOWN.
5. Push the SCENES button for the scene which will receive the copy. The copy will be made and the controller indicators will flash briefly.

COPY A BANK OF SCENES

You can copy a complete bank of scenes to another bank.

1. Select the scene bank which will be copied using BANK UP or BANK DOWN.
2. Push MIDI REC.
3. Select the scene bank to receive the copy using BANK UP or BANK DOWN.
4. Push MUSIC BANK COPY. The copy will be made and the controller indicators will flash briefly.

DELETE A SCENE

1. Select the scene bank which contains the scene to be deleted using BANK UP or BANK DOWN.
2. Hold Down AUTO DEL and push the SCENES button for the scene to be deleted. The controller indicators will flash briefly.

DELETE ALL SCENES

THIS CLEARS ALL SCENES IN ALL BANKS.

1. Turn off the SM-240 using the ON/OFF switch.
2. Hold down PROGRAM and BANK DOWN while you turn the power back on. Keep the buttons down for a few seconds until the indicators flash.

PROGRAMMING CHASES

The SM-240 contains 6 user programmable chases. Each chase may include up to 240 steps.

EACH CHASE STEP CONSISTS OF A SCENE WHICH HAS ALREADY BEEN RECORDED.

A chase step can use any scene in any bank. Any scene can be used in multiple chase steps and in multiple chases.

ALL CHASE RECORD, EDIT, COPY, AND DELETE FUNCTIONS ARE DONE IN THE PROGRAM MODE.

Hold down PROGRAM for about 3 second to activate program mode. The PROGRAM indicator flashes continuously when program mode is active. This button also turns program mode OFF.

CREATE A CHASE

1. Select the chase (1 - 6) to be created by pushing its CHASE button.
2. Select the scene bank (1 - 30) which contains the scene to be used for the chase step by using BANK UP or BANK DOWN.
3. Select the scene (1 - 8) to be used for the chase step by pushing its SCENE button.
4. Push MIDI REC. The controller indicators will flash briefly and the step will be recorded.
5. Repeat instruction steps 2, 3, and 4 above as many times as needed to record additional steps in the selected chase. You can record up to 240 steps.

COPY A SCENE BANK TO A CHASE

This will copy the contents of a scene bank to a chase. If the chase already has steps programmed then the scene bank contents will be added to the existing steps.

1. Select the scene bank you want to copy FROM using BANK UP or BANK DOWN.
2. Select the chase you want to copy it TO by pushing its selector button.
3. Push MUSIC BANK COPY.
4. MIDI REC. The controller indicators will flash briefly and the copy will be made.

INSERT A STEP IN A CHASE

1. Select any chase (1 - 6) by pushing the applicable CHASE button.
2. Push TAP DISPLAY. The display will show the current chase step and its assigned bank and scene.
3. Use BANK UP or BANK DOWN to advance to the step BEFORE the step you want to insert.
4. Push MIDI REC. The display will show the NEXT step.
5. Push the SCENES Button for the scene you want to insert. You can use BANK UP or BANK DOWN if the scene to be inserted is in a different bank.
6. Push MIDI REC. The controller indicators will flash briefly and the step will be inserted.

DELETE A STEP IN A CHASE

1. Select any chase (1 - 6) by pushing the applicable CHASE button.
2. Push TAP DISPLAY. The display will show the current chase step and its assigned bank and scene.
3. Use BANK UP or BANK DOWN to advance to the step you want to delete.
4. Push AUTO DEL. The controller indicators will flash briefly and the step will be deleted.

DELETE A COMPLETE CHASE

1. Select any chase (1 - 6) to delete by pushing the applicable CHASE button.
2. Hold down AUTO DEL and push the same CHASE button again. The controller indicators will flash briefly and the chase will be deleted.

CLEAR ALL CHASES

This will delete ALL steps of ALL chases. It does not clear scenes.

1. Turn OFF the SM-240 using the ON/OFF switch.
2. Hold down the BANK DOWN button AND the AUTO DEL button while turning the power back ON. Keep the buttons held down for a few seconds until the controller indicators flash.

RUNNING SCENES AND CHASES

When the SM-240 is turned on it is in manual mode with bank 1, scene 1, and BLACKOUT active.

MANUAL SCENE ACTIVATION

1. Turn off PROGRAM mode, AUTO, MUSIC, all chases, and BLACKOUT.
2. Select the desired scene bank using BANK UP or BANK DOWN.
3. Push the Scene button for the scene you want to activate.

AUTOMATICALLY RUN A BANK OF SCENES

The scene Auto-Run function will cycle through a bank of scenes continuously. The speed and scene fade time can be controlled by operator. The speed is controlled by the TAP DISPLAY button or the SPEED fader. The fade time is controlled by the FADE TIME fader. Scenes can also be synchronized to music or MIDI note triggering.

1. Select the desired scene bank by using BANK UP or BANK DOWN.
2. Push AUTO DEL. The AUTO indicator will light and scene Auto-Run will begin cycling.

You can adjust the speed and fade time as needed. If you set a speed faster than the fade time then the scenes will advance before the fade is complete.

You can switch to another bank at any time by using BANK UP or BANK DOWN.

Push AUTO DEL to stop Auto-Run. The AUTO indicator will go OFF.

The PROGRAM PAUSE button can be used to stop Auto-Run temporarily. It toggles ON/OFF. To use this feature push the button briefly. If you hold it down too long the unit will switch into PROGRAM mode.

AUTO-RUN SCENES WITH MUSIC SYNC

The SM-240 has an internal microphone which can be used to Auto-Run scenes with music synchronization.

SCENE MUSIC AUTO-RUN

1. Push MUSIC BANK COPY. The MUSIC indicator will light and Music Auto-Run will begin in the currently selected scene bank.

2. You can switch to a different scene bank using BANK UP or BANK DOWN.

Push MUSIC BANK COPY to stop Music Auto-Run.

If you connect a line level audio signal (0.1 - 1.0 VPP) to the AUDIO connector on the back edge of the unit then that signal will be used for music sync.

MANUAL CHASE OPERATION

This is used to manually step through a chase. It enables you to see the bank and scene numbers for each chase step.

1. Select a chase (1 - 6) by pushing the applicable CHASE button.

2. Push TAP DISPLAY. The display will show the chase step number and its assigned bank and scene.

3. Use BANK UP and BANK DOWN to cycle through the chase steps.

AUTOMATICALLY RUN A CHASE

The chase Auto-Run function will cycle through a chase continuously. Multiple chases can be run together. Multiple chases will run in the order they were selected. The speed and fade time can be controlled by operator. The speed is controlled by the TAP DISPLAY button or the SPEED fader. The fade time is controlled by the FADE TIME fader.

1. Select a chase (1 - 6) by pushing the applicable CHASE button.

2. Push AUTO DEL. The AUTO indicator will light and the chase will run. You can select an additional chase to activate once Auto-Run is on.

You can adjust the speed and fade time as needed. If you set a speed faster than the fade time then the chase will advance before the fade is complete.

Push AUTO DEL to stop chase Auto-Run. The AUTO indicator will go OFF.

Note: If you turn off all chases before you turn off Auto-Run then the SM-240 will revert to scene Auto-Run in the last accessed scene bank.

You can combine the operation of multiple chases so that they will run at the same time by pushing MODE when multiple chases are operating in Auto-Run. This is useful when one chase uses only some of the fixtures and another chase uses different ones.

The PROGRAM PAUSE button can be used to stop a chase temporarily. It toggles ON/OFF. To use this feature push the button briefly. If you hold it down too long the unit will switch into PROGRAM mode.

AUTO-RUN CHASES WITH MUSIC SYNC

The SM-240 has an internal microphone which can be used to Auto-Run chases with music synchronization.

1. Select a chase (1 - 6) by pushing the applicable CHASE button.

2. Push MUSIC BANK COPY. The MUSIC indicator will light and Music Auto-Run will begin.

Push MUSIC BANK COPY to stop music Auto-Run. The MUSIC indicator will go OFF.

If you connect a line level audio signal (0.1 - 1.0 VPP) to the AUDIO connector on the back edge of the unit then that signal will be used for music sync.

MIDI OPERATION

Hold down MIDI REC for about 3 seconds to activate MIDI operation. The display will show the current MIDI channel (1 - 16) on the top row. Use BANK UP or BANK down to change the MIDI channel.

Hold down MIDI REC for about 3 seconds to end MIDI operation.

COPY A SM-240 CONFIGURATION TO ANOTHER SM-240 CONTROLLER

You can replicate the setup and programmed contents of a SM-240 to another one using the DMX IN and DMX OUT connectors on the back edge of the unit..

1. Connect the DMX OUT of a programmed SM-240 to the DMX IN of another one which you want to receive the copy.
2. Turn the programmed unit OFF.
3. Hold down SCANNERS buttons 2 and 3 along with SCENES button 1 while you turn the power back ON. The display will show TRANSMIT.
4. Release all the buttons.
5. Turn the second SM-240 (the one which will receive the copied data) OFF.
6. Hold down SCANNERS buttons 8 and 9 along with SCENES button 2 while you turn the power back ON. The display will show RECEIVE.
7. Release all the buttons.
8. Hold down SCENES buttons 7 and 8 of the programmed SM-240 (the one that will transmit) to start the transfer. Release the buttons when the display bottom row shows a progress bargraph. Both units will return to MANUAL mode when the copy is complete.

SHOW☆PRO WARRANTY SHOW☆PRO

All **SHOW☆PRO** products are warranted for a period of TWO YEARS from the date of purchase against defects in materials and workmanship.

This warranty is subject to the following restrictions and conditions:

A) If service is required, you may be asked to provide proof of purchase from an authorized Lightronics dealer.

B) This warranty is valid only for the original purchaser of the unit.

C) This warranty does not apply to damage resulting from abuse, misuse, accidents, shipping, and repairs or modifications by anyone other than an authorized Lightronics service representative.

D) This warranty is void if the serial number is removed, altered or defaced.

E) This warranty does not cover loss or damage, direct or indirect arising from the use or inability to use this product.

F) Lightronics reserves the right to make any changes, modifications, or updates as deemed appropriate by Lightronics to products returned for service. Such changes may be made without prior notification to the user and without incurring any responsibility or liability for modifications or changes to equipment previously supplied. Lightronics is not responsible for supplying new equipment in accordance with any earlier specifications.

G) This warranty is the only warranty either expressed, implied, or statutory, upon which the equipment is purchased. No representatives, dealers or any of their agents are authorized to make any warranties, guarantees, or representations other than expressly stated herein.

H) This warranty does not cover the cost of shipping products to or from Lightronics for service.

I) Lightronics Inc. reserves the right to make changes as deemed necessary to this warranty without prior notification.