ETA SYSTEMS

IMAGENATION SERIES
MODEL MC1224CM
MICROPROCESSOR LIGHTING CONTROLLER

OWNERS MANUAL

ETA SYSTEMS
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ETA LIGHTING SYSTEMS

MICROPROCESSOR LIGHTING CONTROLLER
MODEL MC1224CM

Welcome to the ever growing family of professionals who have discovered that ETA Professional Lighting Products are engineered specifically to meet the high standards expected of quality equipment.

We care about your performance; and when you look your best, so do we. With proper care and operation of your system, you and your audiences will enjoy years of spectacular, professional lighting effects.

CAUTION

Please read and follow these instructions carefully to assure the safe use of your new ETA MC Series Lighting Controller. Our engineers have created a durable and safe system. However, as with all sophisticated electronic systems, this equipment is also powerful and, when misused, potentially very dangerous.

Around electricity, a little knowledge is a very dangerous thing. The more electrical experts know about electrical power, the more they respect it. Therefore, if you install or use this ETA system, you must bear the responsibility of taking proper safety precautions. We have made every effort to provide you with complete and accurate instructions for the safe operation of your ETA system, but we cannot accept any responsibility for injury due to negligence or faulty interpretation of our instructions.

If you are uncertain about any electrical connections or usage, please seek qualified technical assistance from a local licensed electrician who is familiar with local codes, or contact your ETA Dealer.

ONE YEAR LIMITED WARRANTY

ETA warrants each new product to be free from defects in material or workmanship for a period of one year from the date of purchase, except triacs, which shall be warranted for the first sixty days after purchase. ETA will, within the warranty period, repair or replace, at its discretion, any ETA product, which in the judgement of ETA has proven to be defective.

This warranty is voided if any portion of an ETA system or product has been altered, tampered with, or has been repaired by anyone other than ETA or one of its authorized service representatives. This warranty does not cover any incidental or accessory items used in conjunction with any ETA products.

This warranty does not apply to any ETA product or system damaged by improper installation, improper operating practices, improper line voltage, misuse, abuse, accident, fire, lightning, flood or acts of God.

ETA shall not be liable for any damage or loss of equipment due to shipping.

It is the responsibility of the owner to retain the original sales receipt or sales invoice showing the date of purchase, dealer's name, purchaser's name, serial number, and model number in order to verify warranty status.

All transportation is the responsibility of the owner.

This warranty is non-transferable and applies to the original purchaser only.

This warranty is in lieu of any and all other warranties expressed or implied, including any implied warranty of merchantability. No person is authorized to assume for ETA any other liability in connection with the sale of the product.

CAUTION

RISK OF ELECTRIC SHOCK

DO NOT OPEN UNIT

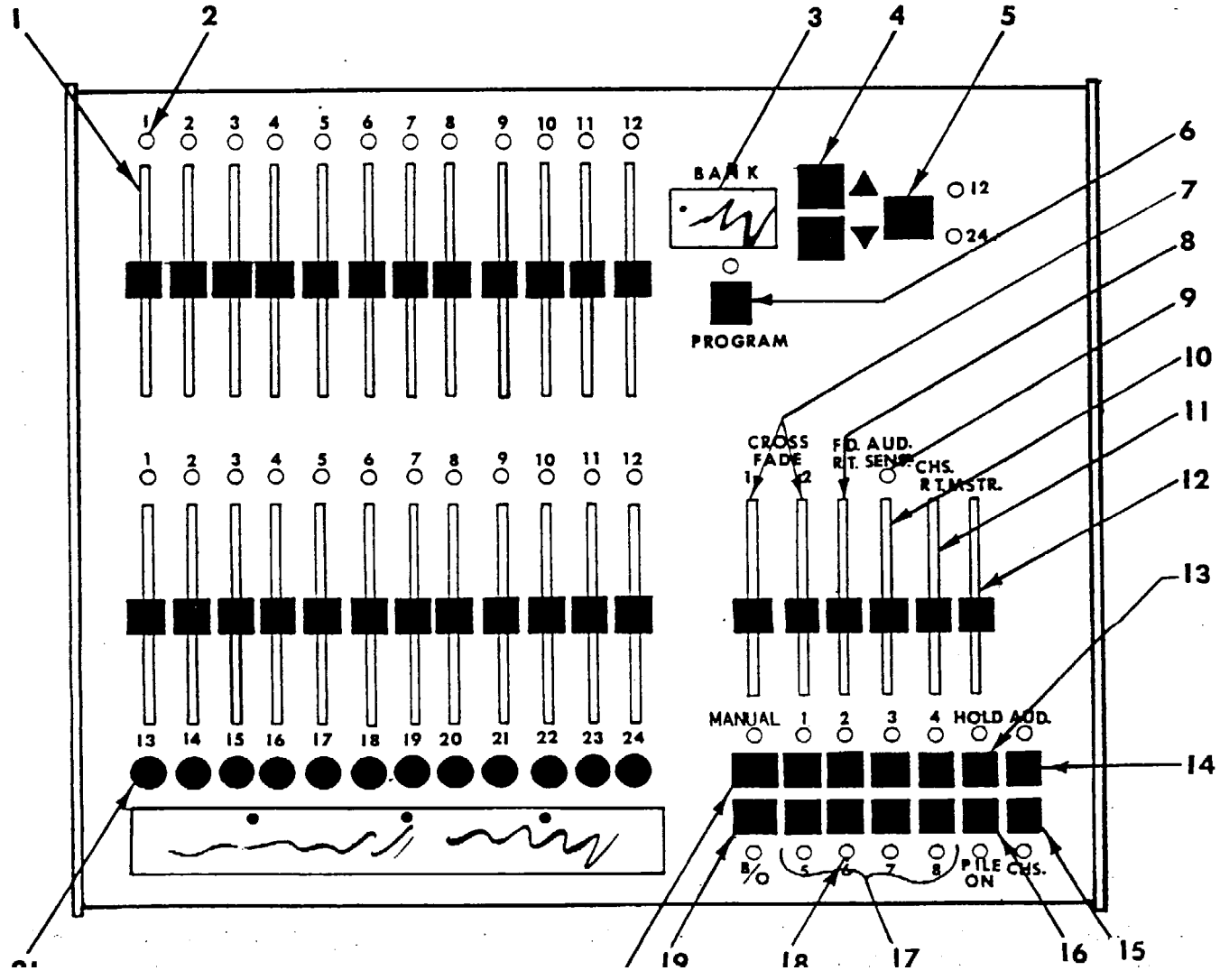
Never Attempt To Disassemble the Controller.

Disassembly of the chassis and/or tampering with the inside of the Controller can be dangerous to you and may cause serious damage to the unit. There are NO USER SERVICEABLE PARTS INSIDE.

Protect the Controller. Do not set drinks, ashtrays or any spillable items on the console. Keeping the Controller clean and free from debris will assure trouble free operation. Protect the controller from violent shocks or sudden impacts. Use of a protective road case is recommended when the unit is not in use.

KEY TO ILLUSTRATION 1

1. Channel Control Slider
2. Channel L.E.D. Output Monitor
3. L.E.D. Display Indicating Bank Number
4. Up/Down Switches for Bank Numbers
5. Channel Selector Switch for Flash Buttons
6. Program Switch
7. Split, Dipless
8. Fade Rate Slider
9. L.E.D. Indicator for Audio Trigger
10. Audio Sensitivity Slider
11. Chase Rate Slider
12. Master Control Slider
13. Output Hold Switch
14. Audio Chase Trigger Switch
15. Chase Switch
16. Pile On Switch
17. Programmed Scene or Chase Sequence Switch (8 total)
18. Status L.E.D. on all Switches
19. Blackout Switch
20. Manual Mode Switch
21. Channel Flash/Bump Switch



INTRODUCTION

The IMAGENATION MC1224CM is a 24 Channel Microprocessor Lighting Controller with a computerized memory that assures easy programming and use. The MC1224CM features 152 programmable scenes or eight 37-step chase sequences which can be triggered by a speed adjustable internal timer, or external audio source. The MC1224CM also has ports for interfacing with a MIDI sequencer or DMX512 system. The MC1224CM, when manual operation is required, functions as a 12 Channel, 2 Scene Lighting Controller.

MC1224CM POWER OPTIONS

The MC1224CM Microprocessor Controller is usually powered by 12VDC which it receives from the dimmer pack power source; or an optional 12VDC wallmount power supply, if the controller is required to be self-powered. ETA's Ultraplex series (MD410 or MD824U) are the compatible dimmers which feature a digitally encoded control signal that will address the 24 channels of control through an industry-standard 3 pin microphone cable. Additional dimmers can be added to the system to increase power or total wattage capacity; but the controller remains limited to the 24 channels of control.

An audio input jack ($\frac{1}{4}$" mono) is provided as a means of syncing your programmed chase sequences to the beat of the music. The audio signal is a direct line feed from the amplifier.

MIDI in/out/through connectors are provided for MIDI operation and interfacing. NOTE! The Channel Select Switch for Bump Buttons (5) must be in 24 mode to properly start the MIDI functions. After programming has begun, it can be switched as desired

A USITT standard 5 pin XLR connector is provided for dimmers using DMX512 digital control signal. The hook up is the same as the hook up for the Ultraplex digital signal, except that a 5 conductor cable is used in place of a 3 conductor microphone cable.

PROGRAMMING INSTRUCTIONS FOR MC1224CM

When you have completed your lighting designs, which by definition, are beyond the scope of this manual, you are ready to program the controller. Programming is easy. A chart is provided at the back of this manual which can be duplicated to record your scenes and chase sequences.

SCENE PROGRAMMING

To program the 24 channels of dimming control, make sure the "Channel Select Switch" (5) L.E.D. is lit for 24. The "Master Control Slider" (12) is not recorded in the program, but must be raised above zero output if you want to view what you are programming. To start with Scene One, Bank One, make sure the L.E.D. display (3) indicates "1" for Bank One. (You can change the bank by pressing Up or Down Switches [4].) Set all 24 Channel Sliders (1) as desired for Scene One, Bank One. Press Program Button (6) and the Program L.E.D. will flash indicating that

the controller is ready to record. Press Scene One Switch (17). Scene One L.E.D. (18) will light indicating that Scene One is recorded, and the Program L.E.D. will go out.

To continue programming, move Channel Sliders as desired for Scene Two, Bank One. Press Program Button (6), L.E.D. will flash. Press Scene Two Switch (17). Scene Two L.E.D (18) will light indicating that Scene Two is recorded, and the Program L.E.D. will go out.

Continue the above steps until you have recorded all eight scenes in Bank One. Then move Up Switch (4) to indicate (2) on Bank L.E.D display (3) which accesses Bank Two for programming eight more scenes.

You may continue the above process, recording all scenes in each bank up to Bank 19, which will give you 152 programmed scenes.

NOTE! The position of the Channel and Master Control Sliders (1 & 12) are relative to the output of the dimmer. This may vary with the dimmer used, and the type of fixture used. However in most cases, the light output (not voltage) will be linear. At the slider's bottom position, there is a zero light output; at the top position, light output is 100%; and at the center position, light output will approvimate 50%. Use these percentage settings when designing your programs on your chart.

Scenes may be modified by pushing Program Button (6) and repeating the recording sequence noted above.

PROGRAM LOCK

A program lock can be engaged to protect scenes and chases you have programmed. To access this feature, Push Program Button (6), then the Blackout Button (19) within seconds of each other. To remove controller from program lock use the same sequence (Program Button, then Blackout Button), then finally push Program Button again. The program L.E.D. should now flash, ready for programming.

CHASE PROGRAMMING

Chase programming is similar to scene programming. Each of the eight chase sequences will accept up to 37 steps. Each step in the chase is recorded the same way a scene is recorded. In other words, each sequence is a "scene" chase with a maximum of 37 scenes. To avoid confusion and mistakes, use the chase/scene program chart provided at the back of this manual to design and record your chases. Record each channel as a percentage (i.e. 100%, 50%, 0%).

When your charts are complete, you are ready to program each chase sequence. Set the controller in Manual Mode (press Manual Mode Switch [20] and Manual Mode L.E.D. will light) and make sure the Master Control Slider is above zero output. Press Program Button (6) and the L.E.D. will flash. Next, press the Chase Button (15) and the chase L.E.D. will flash together with the Program L.E.D. Now it is ready to program each step in your chase sequence as follows:

One, set Channel Sliders (1) as desired for the first step in Chase #1 according to your chart.

Two, Press Scene One Switch (17) and the corresponding L.E.D. will stay on momemtarily indicating that the step is recorded in memory. Then it will flash indicating that it is ready for the next step in the chase sequence.

Third, repeat the above procedure (steps one and two) for each step in the chase sequence until all steps in that particular chase is completed.

Four, move on to the next chase sequence by pressing Scene Two Switch (17) and repeat the above steps until you have recorded all the steps desired in Chase #2.

You may repeat steps one through four until all eight chases are recorded.

IMPORTANT NOTE: When you use all 37 steps in each chase sequence, the controller will not accept any more commands in that particular chase sequence. Simply, when you are finished with any given chase sequence, move on to the next procedure (step 4) as noted above.

When you have completed chase programming, press Program Button (6) and the L.E.D.'s will go off.

NOTE! Exercise care in programming chase sequence because it is not possible to edit the chase sequence. If a mistake is made, the entire sequence must be re-programmed from the beginning.

OPERATING INSTRUCTIONS FOR ETA MODEL MC1224CM

SCENE OPERATION

To activate a programmed scene, slide Master Control (12) to up position. Set Fade Rate Slider (8) to desired position. Select desired Bank (3) with Up-Down Switches (4). Simply tap the desired scene switch (17), and the scene will fade on at the fade rate determined by Slider (8). Select another bank (3) with Switch (4), then another scene (17), and the controller will cross-fade to the new scene. To cross-fade to a manual scene, set Channel Sliders (1) to the desired settings; then push Manual Switch (20) and the controller will cross-fade to the manual scene at the fade rate determined by Slider (8).

SCENE PILE ON OPERATION

The Pile On Switch (16) allows you to create additional scenes by combining one scene with another. To pile on two programmed scenes, move Master Control Slider (12) to up position. Set desired bank (3), (4), and push desired programmed scene Switch (17). It will automatically fade to on. Push Pile On Switch (16) (L.E.D. on); and push desired scene switch (17). This newly selected scene will fade on in addition to the scene already active. Any combination of scenes can be added together this way. To return to single scene operation, push Pile On Switch (16) to off, and the controller will automatically fade to the last scene added.

CHASE OPERATION

To select a programmed chase sequence, push Chase Button (15); then push desired chase sequence (1-8), (17). The controller will fade to the chase sequence selected at a fade rate determined by the Fade Rate Slider (8). Be sure that the Master Control Slider (12) is in up position. The Chase Rate Slider (11) controls the chase speed.

The chase will also trigger to the beat of the music. To do this, connect the audio input jack, then push Audio Button (14) and the desired Chase sequence (17). Adjust the Audio Sensitivity slider (10) until the Sensitivity L.E.D. (9) triggers to the beat of the music. To select another chase sequence, push the desired Sequence Button (17), and the controller will fade to the selected chase sequence. To stop chase, push Chase Button (15) (L.E.D. off).

NOTE: Chase will continue to run until another function button is pushed. For example, the controller is still in memory mode, so when you push the button for programmed scene three, the controller will then cross-fade to scene three from the chase at a rate determined by the Fade Rate Slider (8).

MASTER LEVEL CONTROL SLIDER (12)

This slider overrides all other level controls on the controller. It is a common mistake to have this control at zero (bottom position) and try to run the controller. There are no outputs with the Master Slider set at zero.

BLACKOUT SWITCH (19)

This switch, when pushed, will take any function (chase, scene, or manual mode) to blackout instantaneously. Push the Blackout Switch again, and the board will return to the original function which was in progress before the blackout.

When in blackout, the pushing of any other function switch will cause the controller to fade to that function at a rate determined by the Fade Rate Slider (8).

NOTE: The controller will always go to "blackout" when powered up.

MANUAL MODE OPERATION

To operate the MC1224CM as a manual controller, push Manual Mode Switch (20) to on. Push Master Control Slider (12) to up position. Check to be sure all other functions are off. The controller is now live. Set both cross-faders (7) in full up position. Moving any channel slider in Scene One (top row of sliders) will cause a light to respond on stage. Set desired channels in scene one; then set scene two with the next desired scene. To cross-fade, simply move Cross-faders (7) together to down position. Scene one will fade out and scene two will fade on. Reset scene one and repeat cross-fade as desired. To operate the Channel Flash Buttons (21), simply push in the order and speed you desire. This will cause each channel to momentarily flash up to the level of the Master Control Slider (12).

MC1224CM

TROUBLE SHOOTING

If your ETA Lighting Systems Controller will not operate, check the following:

1. Is the Controller receiving power from the dimmer or wallmount power supply? Do the L.E.D.s light?
2. Are you dimmers "live?" (see Dimmer Operators Manual)
3. Is the Blackout Switch in the operational position?
4. Is the Master Control Slider raised above zero?
5. Is the scene or chase sequence programmed?
6. Is the Fade Rate Slider set properly?
7. Are the remote control microphone cables in good condition and connected properly?
8. Check for Program Lock ("Program" button will not flash)
   To remove controller from program lock, push Program Button, then Blackout Button within seconds of each other and finally push Program Button again. The Program L.E.D. should now flash ready for programming. The same sequence can be repeated to put the unit back into program lock to protect your programs.
9. TO CLEAR ALL PROGRAMMED INFORMATION FROM MEMORY, power up unit while Program Button is depressed. The L.E.D.s should all light up, then fade out. Un-power the unit, then re-power and the microprocessor should be cleared of all memory.

MIDI UPDATE 9/6/90

MIDI ACCESS INSTRUCTIONS

THE FOLLOWING SECTION EXPLAINS HOW TO ACCESS THE MIDI FUNCTIONS OF ETA'S IMAGENATION SERIES CONTROLLERS:

A. MIDI IS SET ON CHANNEL "1" AT THE FACTORY.
TO CHANGE MIDI CHANNEL:

1. Press Program Button (L.E.D. will flash);
2. Press Audio Button (L.E.D. will flash); and then
3. Press appropriate Channel Flash Button (1-12).

B. THE MIDI RESPONSE IS SET "ON" AT THE FACTORY.
TO TURN OFF ALL MIDI RESPONSE:

1. Press Program Button (L.E.D. will flash);
2. Press Audio Button (L.E.D. will flash); and then
3. Press Blackout Button

TO TURN MIDI RESPONSE BACK ON:

1. Press Program Button (L.E.D. will flash);
2. Press Audio Button (L.E.D. will flash); and then
3. Press Manual Button

C. TO SET "OMNI LISTEN:"

1. Press Program Button (L.E.D. will flash);
2. Press Audio Button (L.E.D. will flash); and then
3. Press Scene "8."

The signal will still transmit on current address

D. TO COMPLETE A MIDI EXCLUSIVE DUMP TO A COMPUTER, SEQUENCER OR KEYBOARD:

1. Press Program Button (L.E.D. will flash);
2. Press Audio Button (L.E.D. will flash); and then
3. Press Pile-On Button.

Refer to computer software to send and receive dump.

NOTE! PROGRAM LOCK CANNOT BE EXECUTED WHEN IN MIDI MODE.

MIDI CONTROLLER INFORMATION

FLASH BUTTON 1	CONTROL 32	CHANNEL FADER 1	CONTROL 0
2	33	2	1
3	34	3	2
4	35	4	3
5	36	5	4
6	37	6	5
7	38	7	6
8	39	8	7
9	40	9	8
10	41	10	9
11	42	11	10
12	43	12	11

MANUAL BUTTON	PATCH 0	FADE RATE	CONTROL 64
SCENE 1 BUTTON	PATCH 1	AUDIO SENSITIVITY	65
SCENE 2 BUTTON	PATCH 2	CHASE RATE	66
SCENE 3 BUTTON	PATCH 3	MASTER FADER	67
SCENE 4 BUTTON	PATCH 4	BLACK OUT	70
SCENE 5 BUTTON	PATCH 5	AUDIO	69
SCENE 6 BUTTON	PATCH 6	PILE ON	71
SCENE 7 BUTTON	PATCH 7	CHASE	72
SCENE 8 BUTTON	PATCH 8		

MIDI DATA FORMAT

CONTINUOUS CONTROL:

Channel Fader	1011nnnn	where nnnn is the channel number
	0ccccccc	where ccccccc equals the channel number 0 thru 11
	0vvvvvvv	where vvvvvvv equals the channel intensity, 0 thru 127
Bump Button	1011nnnn	where nnnn is the channel number
	0ccccccc	where ccccccc equals the Bump Button 32 thru 43
	0vvvvvvv	where vvvvvvv is ignored
Fade Rate Fader	1011nnnn	where nnnn is the channel number
	01000000	(64)
	0vvvvvvv	where vvvvvvv equals the Fade Time Fader position, 0 thru 127
Audio Sens. Fader	1011nnnn	where nnnn is the channel number
	01000001	(65)
	0vvvvvvv	where vvvvvvv equals the Fade Time Fader position, 0 thru 127
Chase Rate Fader	1011nnn	where nnnn is the channel number
	0100010	(66)
	0vvvvvvv	where vvvvvvv equals the Fade Time Fader position, 0 thru 127
Master Fader	1011nnnn	where nnnnis the channel number
	01000011	(67)
	0vvvvvvv	where vvvvvvv equals the Master Fader position, 0 thru 127
Hold	1011nnnn	where nnnn is the channel number (68) where vvvvvvv equals 0 is off and 127 is on
Audio	1011nnnn	where nnnn is the channel number
	01000101	(69)
	0vvvvvvv	where vvvvvvv equals 0 is off and 127 is on
Blackout	1011nnnn	where nnnn is the channel number
	01000110	(70)
	0vvvvvvv	where vvvvvvv equals 0 is off and 127 is on
Pile On	1011nnnn	where nnnn is the channel number
	01000111	(71)
	0vvvvvvv	where vvvvvvv equals 0 is off and 127 is on
Chase	1011nnnn	where nnnn is the channel number
	01001000	(72)
	0vvvvvvv	where vvvvvvv equals 0 is off and 127 is on
Manual	1100nnnn	where nnnn is the channel number
	0ppppppp	where ppppppp equals o is off and 127 is on
Scene Change	1100nnnn	where nnnn is the channel number
	0ppppppp	where ppppppp equals the Scene Change 1 thru 8

MIDI DATA FORMAT CONT'D.

Memory Dump	F0 00 00 3D 01 dd dd	where the first 5 bytes are the dump header and the dd is 7 bit data
Channel Mode Messages	1011nnnn	where nnnn is the channel number
	0ccccccc	ccccccc equals 124: Omni Mode off
	0vvvvvvv	vvvvvvv equals 0

Receive Only:

Channel Fader	1001nnnn	where nnnn is the channel number
	0ccccccc	where ccccccc equals the channel number 0 thru 11
	0vvvvvvv	where vvvvvvv equals the channel intensity

MIDI DUMP - PRESS
PROGRAM
AUDIO
PILE ON

ETA Lighting Systems
A Creative Light And Sound Company

SCENE OR CHASE PROGRAMMING CHART

SCENE or STEP No.	CHANNEL 1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
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10												
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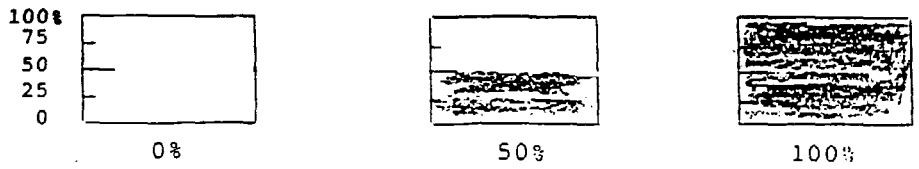
EXAMPLE: Shade the above Scene or Step blocks for each channel according to the percentage of light intensity desired from 0% to 100%