American DJ®

EMERALD SCAN

User Instructions

American DJ®
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Introduction: Thank you for purchasing the American DJ® Emerald Scan.™ The Emerald Scan™ is a DMX intelligent, laser effect that creates 12 different patterns. This unit can be used as a stand alone, sound-active unit or in a Master/Slave configuration. The unit can also be controlled via DMX controller. For a dramatic laser show use several Emerald Scans™ together. This piece is best used with a fog or haze machine to enhance the beam output.

Unpacking: Every Emerald Scan™ has been thoroughly tested and has been shipped in perfect operating condition. Carefully check the shipping carton for damage that may have occurred during shipping. If the carton appears to be damaged, carefully inspect the unit for any damage and be sure all accessories necessary to operate the unit have arrived intact. In the event damage has been found or parts are missing, please contact our toll free customer support number for further instructions. Please do not return the unit to your dealer without first contacting customer support.

Customer Support: American DJ® provides a toll free customer support line, to provide set up help and to answer any question should you encounter problems during your set up or initial operation. You may also visit us on the web at www.americandj.com for any comments or suggestions. *For service related issue please contact American DJ®.* Service Hours are Monday through Friday 9:00 a.m. to 5:00 p.m. Pacific Standard Time.

      Voice: (800) 322-6337
      Fax: (323) 582-2610
      E-mail: support@americandj.com

To purchase parts online visit http://parts.americandj.com

Warning! To prevent or reduce the risk of electrical shock or fire, do not expose this unit to rain or moisture.

Caution! There are no user serviceable parts inside this unit. Do not attempt any repairs yourself, doing so will void your manufactures warranty. In the unlikely event your unit may require service please contact American DJ customer support.

PLEASE recycle the shipping carton whenever possible.

Please carefully read and understand the instructions in this manual thoroughly before attempting to operate this unit. These instructions contain important safety information regarding the use and maintenance of this unit. Please keep this manual with the unit, for future reference.

Emerald Scan™   **Features**

• 4.9mW Green Laser Diode
• X/Y Mirror Control
• 2 Selectable Built-In Light Shows
• 4 Channel DMX Control
• Built-In Hanging Yoke
• Sound Active with Internal Microphone
• Fan Cooled
• 12 Patterns
• Mini/C Compatible for Blackout Control (Not Included)

Emerald Scan™   **Warranty Registration**

The Emerald Scan™ carries a 90 day limited warranty. Please fill out the enclosed warranty card to validate your purchase. All returned service items whether under warranty or not, must be freight pre-paid and accompany a return authorization (R.A.) number. If the unit is under warranty you must provide a copy of your proof of purchase invoice. Please contact American DJ® customer support for a R.A. number.

DANGER

VISIBLE LASER RADIATION
-AVOID DIRECT EYE EXPOSURE
LASER DIODE
WAVELENGTH : 635~650 nm
Max Output : <4.9mW
Class IIIa Laser Product

Safety Issues: This unit may "pop" the breaker if the maximum allotted load of 2 amps is reached.

• To reduce the risk of electrical shock or fire, do not expose this unit rain or moisture.
• Do not spill water or other liquids into or on to your unit.
• Do not attempt to remove or break off the ground prong from the electrical cord. This prong is used to reduce the risk of electrical shock and fire in case of an internal short. Do not attempt to operate this unit if the power cord has been frayed or broken.
• Disconnect from main power before making any type of connection.
• Do not remove the cover under any conditions. There are no user serviceable parts inside.
• Always be sure to mount this unit in an area that will allow proper ventilation. Allow about 6" (15cm) between this device and a wall.
• Do not attempt to operate this unit, if it becomes damaged.
• This unit is intended for indoor use only, use of this product outdoors voids all warranties.
• During long periods of non-use, disconnect the unit's main power.
• Always mount this unit in safe and stable matter.
• Power cords should be routed so they are not likely to be walked on, pinched by items placed upon or against them.
• Cleaning -The fixture should be cleaned only as recommended by the manufacturer. See page 12 for cleaning details.
• Heat -The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
• The fixture should be serviced by qualified service personnel when:
  A.   The power-supply cord or the plug has been damaged.
  B.   Objects have fallen, or liquid has been spilled into the unit.
  C.   The unit has been exposed to rain or water.
  D.   The unit does not appear to operate normally or exhibits a marked change in performance.
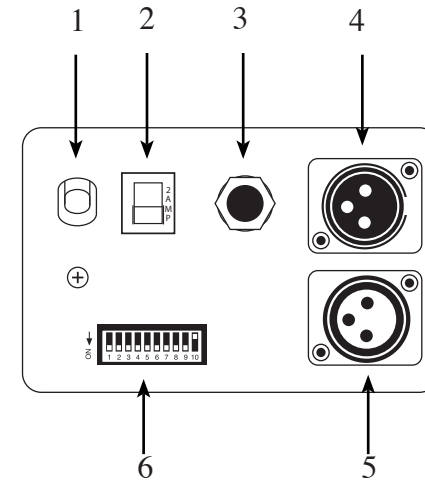
LASER APERTURE

CAUTION - CLASS 3R LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM

M anufactured:
M O O NLIG HT ILLUM INATIO N CO .,LTD
N um ber 10, alley 41, lane 116
Chun Y ing S t.,ShuLin C ity T aipei H sien.
Taiw an R.O .C

Com plies w ith perform ance standards
For laser products w ith the exception of
deviation pursuant to Laser N otice N um ber 50,
date Ju ly 26, 2001

LA SER RA D IA TIO N
A VO ID D IREC T EY E EX PO SU RE

CLA SS 3R LA SER PRO D U CT
5.0m W m ax CW D iode 532nm
IEC/EN 60825-1, ed 1.2

CA U TIO N
CLA SS 3R LA SER RA D IA TIO N W HEN
O PEN A VO ID D IRECT EY E EX PO SU RE

DANGER

LASER RADIATION AVOID DIRECT EYE EXPOSURE

WAVELENGTH:532nm
Max Output:<5mW
CLASS III a LASER PRODUCT
COMPLIES WITH CFR 1040.10
AND 1040.11

1. Power Cord - Connect only to a matching power outlet. Never use this fixture is the ground prong has been removed or broken off.

2. Breaker - A 2A built-in safety breaker to reduce the risk of electrical shock or fire and protect the circuitry. In the case of a internal short or power surge.

3. Mini/C Controller Jack - This jack is for use with the optional Mini/C controller only. Do not attempt to connect an audio signal to this jack, this will damage the PC board and void your manufactures warranty!

4. XLR Input Jack - This jack is used to accept an incoming DMX signal or Master/Slave signal.

5. XLR Output Jack - This jack is used to transmit the incoming DMX signal to another DMX fixture, or transmit a Master/Slave signal to the next Emerald Scan™ in the chain. For best results in DMX or Master/Slave mode terminate this jack if it is the last unit in the chain. See "Terminator" on page 10.

6. Dip Switches - These switches serve two functions. In DMX mode each switch corresponds to a specific value based on binary code. See page 8 for a detailed explanation of DMX binary code.

Power Supply: Before plugging your unit in, be sure the source voltage in your area matches the required voltage for your American DJ® Emerald Scan.™ The American DJ® Emerald Scan™ is 120v only. Because line voltage may vary from venue to venue, you should be sure your unit voltages matches the wall outlet voltage before attempting to operate you fixture.

DMX-512: *DMX is short for Digital Multiplex. This is a universal protocol used as a form of communication between intelligent fixtures and controllers.* A DMX controller sends DMX data instructions from the controller to the fixture. DMX data is sent as serial data that travels from fixture to fixture via the DATA "IN" and DATA "OUT" XLR terminals located on all DMX fixtures (most controllers only have a DATA "OUT" terminal).

DMX Linking: DMX is a language allowing all makes and models of different manufactures to be linked together and operate from a single controller, as long as all fixtures and the controller are DMX compliant. *To ensure proper DMX data transmission, when using several DMX fixtures try to use the shortest cable path possible. The order in which fixtures are connected in a DMX line does not influence the DMX addressing. For example; a fixture assigned a DMX address of 1 may be placed anywhere in a DMX line, at the beginning, at the end, or anywhere in the middle. When a fixture is assigned a DMX address of 1, the DMX controller knows to send DATA assigned to address 1 to that unit, no matter where it is located in the DMX chain.*

Dipswitches in DMX mode: This unit uses dipswitches to assign a DMX address. Each dipswitch represents a binary value.
Dipswitch 1 address equals 1
Dipswitch 2 address equals 2
Dipswitch 3 address equals 4
Dipswitch 4 address equals 8
Dipswitch 5 address equals 16
Dipswitch 6 address equals 32
Dipswitch 7 address equals 64
Dipswitch 8 address equals 128
Dipswitch 9 address equals 256
Dipswitch 10 - Some units omit dipswitch 10. When a unit does include dipswitch #10, it is usually used for special functions such as

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sound activation.

Assigning DMX Address: Each dipswitch has a preset value. A specific DMX address is set by combining the dipswitches that sum your desired value. For example: To achieve a DMX address of 7, combine dipswitches 1, 2, and 3. Since dipswitch 1 has a value of 1, dipswitch 2 has a value of 2, and dipswitch 3 has a value of 4, the combination of the three create a DMX value of 7. (See example below).

Set DMX address 1:   Set DMX address 7:
Dip-switches #   1 = 1   Dip-switches #   1 = 1
                                                          2 = 2
                                                          3 = 4
                                                            = 7

Data Cable (DMX Cable) Requirements (For DMX and Master/Slave Operation): The Emerald Scan™ can be controlled via DMX-512 protocol. The Emerald Scan™ is a four channel DMX unit. The DMX address is set on the side panel of the Emerald Scan.™ Your unit and your DMX controller require a standard 3-pin XLR connector for data input and data output (Figure 1). If you are making your own cables, be sure to use standard two conductor shielded cable (This cable may be purchased at almost all pro sound and lighting stores). Your cables should be made with a male and female XLR connector on either end of the cable. Also remember that DMX cable must be daisy chained and can not be split.

Notice: Be sure to follow figures two and three when making your own cables. Do not use the ground lug on the XLR connector. Do not connect the cable's shield conductor to the ground lug or allow the shield conductor to come in contact with the XLR's outer casing. Grounding the shield could cause a short circuit and erratic behavior.
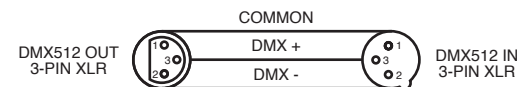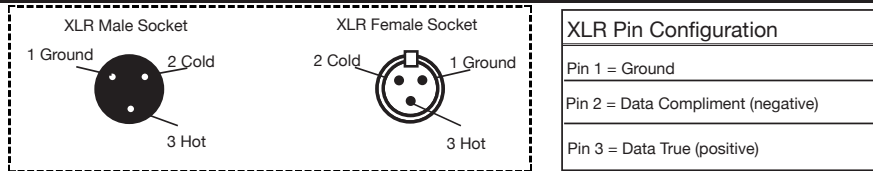

Figure 2

XLR Male Socket   XLR Female Socket

1 Ground   2 Cold   2 Cold   1 Ground

3 Hot   3 Hot

XLR Pin Configuration
Pin 1 = Ground
Pin 2 = Data Compliment (negative)
Pin 3 = Data True (positive)

Figure 3

Special Note: Line Termination. When longer runs of cable are used, you may need to use a terminator on the last unit to avoid erratic behavior. A terminator is a 90-120 ohm 1/4 watt resistor which is connected between pins 2 and 3 of a male XLR connector (DATA + and DATA -). This unit is inserted in the female XLR socket of the last unit in your daisy chain to terminate the line. Using a cable terminator (ADJ part number Z-DMX/T) will decrease the possibilities of erratic behavior.

Termination reduces signal errors and avoids signal transmission problems and interference. It is always advisable to connect a DMX terminal, (Resistance 120 Ohm 1/4 W) between PIN 2 (DMX-) and PIN 3 (DMX +) of the last fixture.   Figure 4

5-Pin XLR DMX Connectors. Some manufactures use 5-pin XLR connectors for DATA transmission in place of 3-pin. 5-pin XLR fixtures may be implemented in a 3-pin XLR DMX line. When inserting standard 5-pin XLR connectors in to a 3-pin line a cable adaptor must be used, these adaptors are readily available at most electric stores. The chart below details a proper cable conversion.

3-Pin XLR to 5-Pin XLR Conversion		
Conductor	3-Pin XLR Female (Out)	5-Pin XLR Male (In)
Ground/Shield	Pin 1	Pin 1
Data Compliment (- signal)	Pin 2	Pin 2
Data True (+ signal)	Pin 3	Pin 3
Not Used		Pin 4 - Do Not Use
Not Used		Pin 5 - Do Not Use

Power Supply: This unit is available only in 120v. Before plugging your unit in be sure the source voltage in your area matches the required voltage for your American DJ® Emerald Scan.™

General Operation: This fixture is designed to operate as a stand alone, sound-active unit, or in a Master/Slave configuration. It can also operate via DMX controller. The Emerald Scan™ is ready to be plugged in out of the box. After plugging the power cord into a power outlet, flip dipswitch #10 to the "ON" poition to activate sound-active mode.

Operating Modes:

Universal DMX Control: This mode allows you to use a universal DMX-512 controller such as the American DJ® DMX Operator™ or Show Designer.™
1. To control your fixture in DMX mode, follow the set-up procedures on pages 7-9 as well as the set-up procedures included with your DMX controller.
2. For longer cable runs (more than a 100 feet) use a terminator on the last fixture.
3. The Emerald Scan™ uses four DMX channels. See pages 12-13 for detailed description of the DMX traits. Use your DMX controller to activate the various built-in patterns.
4. For help operating in DMX mode consult the manual included with your DMX controller.

Stand-Alone Operation (Sound Active): This mode allows a single unit to run to the beat of the music. Only use this mode when running a single unit, or when running several units as individuals.
1. Set dipswitch #10 to the "ON" positon to activate Stand-Alone.
2. The unit will react to the low frequencies of music via the internal microphone.
3. The optional *MINI/C Controller* (not included) may be used with this mode to control a blackout function.

Master-Slave Operation (Sound Active): This mode will allow you to link up to 16 units together and operate without a controller. In Master-Slave mode, the units will react to sound. In Master-Slave operation one unit will act as the controlling unit and the others will

react to the controlling units programs. Any unit can act as a Master or as a Slave.

1. Using standard XLR microphone cables, daisy chain your units together via the XLR connector on the rear of the units. Remember the Male XLR connector is the input and the Female XLR connector is the output. For longer cable runs we suggest a terminator at the last fixture.
2. See page 14 for Master/Slave dipswitch positions. Choose a unit to function as the Master and set the dipswitch accordingly. This unit must be the first unit in line. Then simply daisy chain the units together using XLR cables.
3. Now set the Slave units dipswitches accordingly, and they will react the same as the MASTER.
4. The optional *MINI/C Controller* (not included) may be used to control a blackout function.

Built-In Program: This mode allows a single unit to run a built-in program. Use this mode when running a single unit, or when running a Master/Slave configuration.
1. Follow the dipswitch settings on page 14.
2. The unit will run the built-in internal program that you have chosen.
3. The optional *MINI/C Controller* (not included) may be used with this mode to control a blackout function.

Channel	Value	Function
1	0 - 255	PAN
2	0 - 255	TILT
3	0 - 255	PATTERNS FOLLOW CHART ON NEXT PAGE
4	0 - 255	LASER GLITTER (This increases and decreases the lazer line size and the gap size in the patterns)

Fixture Cleaning: Due to fog residue, smoke, and dust cleaning the internal and external lenses should be carried out periodically to optimize light output.
1. Use normal glass cleaner and a soft cloth to wipe down the outside casing.
2. Clean the external optics with glass cleaner and a soft cloth every 20 days.
3. Always be sure to dry all parts completely before plugging the unit back in.

Cleaning frequency depends on the environment in which the fixture operates (I.e. smoke, fog residue, dust, dew). In heavy use we recommend cleaning on a monthly basis. Periodic cleaning will ensure longevity, and crisp beam output.
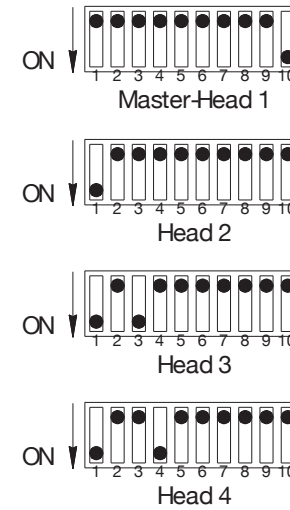
This unit is equipped with a built-in safety breaker. This breaker is designed to close the power circuit in the event of an internal short or power surge. This will reduce the risk of electrical shock or fire and protect the circuitry. To reset the breaker, push the breaker button in until you hear it "pop" back in to place. If the breaker continues to pop, stop using the unit and contact our customer support team, the unit may need to be returned for service.

CHANNEL 3

PICTURE

255

Value	Picture
255	
240-254	
225-239	Fast
210-224	Fast
195-209	
180-194	
165-179	
150-164	Slow
135-149	
120-134	
105-119	
90-104	
75-89	
60-74	
45-59	
30-44	
15-29	
00-14	

Master/Slave Chart
PROGRAM1

ON ▼

Master-Head 1

ON ▼

Head 2

ON ▼

Head 3

ON ▼

Head 4

Master/Slave Chart
PROGRAM2

ON ▼

Master-Head 1

ON ▼

Head 2

ON ▼

Head 3

ON ▼

Head 4
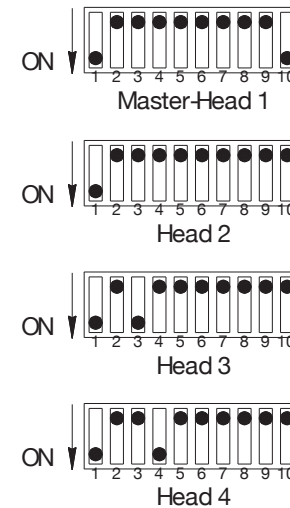
90 DAY LIMITED WARRANTY

A. American DJ® hereby warrants, to the original purchaser, American DJ® products to be free of manufacturing defects in material and workmanship for a period of 90 days from the date of purchase. This warranty shall be valid only if the product is purchased within the United States of America, including possessions and territories. It is the owner's responsibility to establish the date and place of purchase by acceptable evidence, at the time service is sought.

B. For warranty service, send the product only to the American DJ® factory. All shipping charges must be pre-paid. If the requested repairs or service (including parts replacement) are within the terms of this warranty, American DJ® will pay return shipping charges only to a designated point within the United States. If the entire instrument is sent, it must be shipped in its original package. No accessories should be shipped with the product. If any accessories are shipped with the product, American DJ® shall have no liability whatsoever for loss of or damage to any such accessories, nor for the safe return thereof.

C. This warranty is void if the serial number has been altered or removed; if the product is modified in any manner which American DJ® concludes, after inspection, affects the reliability of the product; if the product has been repaired or serviced by anyone other than the American DJ® factory unless prior written authorization was issued to purchaser by American DJ®; if the product is damaged because not properly maintained as set forth in the instruction manual.

D. This is not a service contract, and this warranty does not include maintenance, cleaning or periodic check-up. During the period specified above, American DJ® will replace defective parts at its expense, and will absorb all expenses for warranty service and repair labor by reason of defects in material or workmanship. The sole responsibility of American DJ® under this warranty shall be limited to the repair of the product, or replacement thereof, including parts, at the sole discretion of American DJ®. All products covered by this warranty were manufactured after January 1, 1990, and bear identifying marks to that effect.

E. American DJ® reserves the right to make changes in design and/or improvements upon its products without any obligation to include these changes in any products theretofore manufactured.

F. No warranty, whether expressed or implied, is given or made with respect to any accessory supplied with products described above. Except to the extent prohibited by applicable law, all implied warranties made by American DJ® in connection with this product, including warranties of merchantability or fitness, are limited in duration to the warranty period set forth above. And no warranties, whether expressed or implied, including warranties of merchantability or fitness, shall apply to this product after said period has expired. The consumer's and or Dealer's sole remedy shall be such repair or replacement as is expressly provided above; and under no circumstances shall American DJ® be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product.

G. This warranty is the only written warranty applicable to American DJ® Products and supersedes all prior warranties and written descriptions of warranty terms and conditions heretofore published.

H. All lamps and fuses are not covered under this warranty.

Model: Emerald Scan™

Voltage*:	120v~60Hz
Lasers:	4.9mW Green Diode
Breaker:	2A
Dimensions:	5.5" (L) x 8" (W) x 16" (H)
Weight:	7 Lbs. (3kg)
Duty Cycle:	None
Ventilation:	Fan Cooled
Warranty:	90 Days

*Voltage is preset at the factory and can not be changed by the user.

Please Note: Specifications and improvements in the design of this unit and this manual are subject to change without any prior written notice.