

# CITY THEATRICAL

NEW YORK • LONDON

## D1 Dimmer Users Manual

Rev 3



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## COMPLIANCE INFORMATION



The D1 Dimmer is ETL Listed and conforms to UL 508A

**Intertek**



The D1 Dimmer is CE Certified  
Standards Applied:

BS EN 60950-1:2002 incorporating Corrigendum No. 1 and Amendment No. 1  
EN 55203-1: 1996  
EN 55203-2: 1996  
EN 301 489-1 V1.4.1  
EN 301 489-3 V1.4.1

Products Conform to CE Marking Directive 93/68/EEC  
RoHS compliant

### **Safety Notices**

Please read this entire manual before using your new equipment. Please keep the manual in a safe place so you can refer to it in the future as required.

The D1 Dimmer is intended for use only by qualified professionals. Connection, installation and hanging of this equipment must be performed in accordance with all pertinent local, regional and national safety codes and regulations.

The D1 Dimmer intended for indoor use only unless specified for outdoor use.

Keep the equipment dry! Do not operate the equipment if it gets wet!

Do not operate in excessive heat/direct sunlight. Maximum operating temperature 40° C

Be sure installation provides adequate ventilation. Some system components can produce significant heat and must be properly installed to allow proper cooling and assure user safety (please see specific notes about D1 Dimmer installation and heat in this manual). All sides of the equipment must be clear of obstruction and allow free airflow.

## The D1 Dimmer

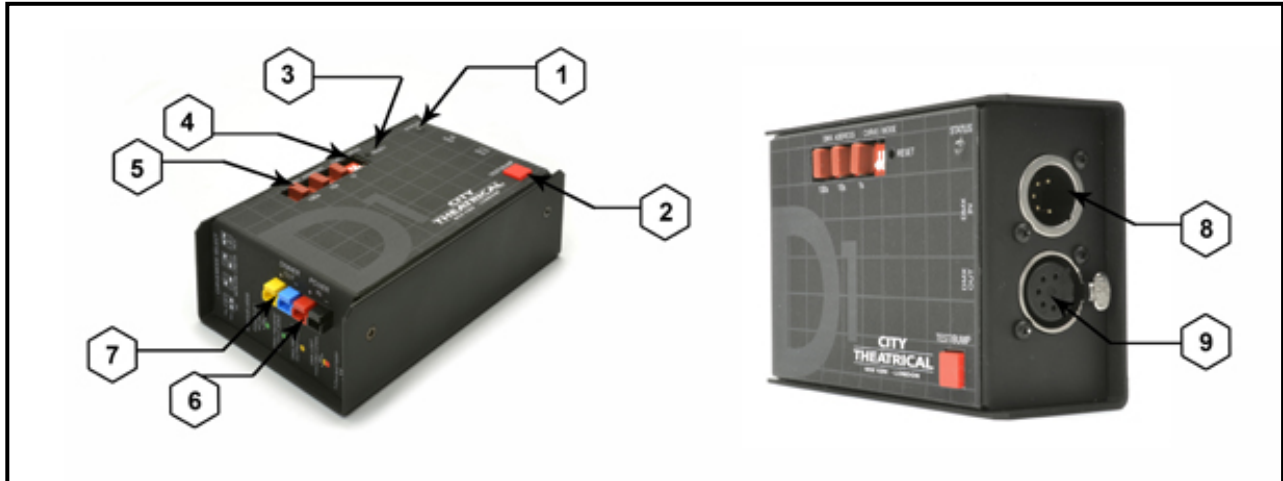


Figure 1, D1 Dimmer Top and Front Panel

### Setup and Controls

1. STATUS/POWER LED: This single Bi-Color LED indicates the status of a number of things including power, DMX, and output.

The LED conditions are as follows:

LED State/Color	Condition
Blinking Green	Dimmer has power, CPU is running
Solid Green	DMX Present, Output OFF
Solid Amber	DMX Present, Output FULL
Flashing between Red and Green/Amber	DMX Lost, Dimmer holding Last Level
Flashing Red	Low Battery

Figure 2, D1 Dimmer LED Key

2. TEST/BUMP Button: Press to test fire load (the LED will turn amber when the button is pressed.)
3. RESET switch: This switch is recessed to prevent unintentional operation. Press with a pen or other similar device to reset the Dimmer's internal processors.
4. MODE DIP switch: This 2 position DIP switch selects the operation mode as follows

Switch Setting	Function
OFF OFF	Normal Dimming, ISL Curve
ON OFF	NON - DIM
OFF ON	Linear Dimming Curve
ON ON	LED Curve

Figure 3, Mode Switch Selection Chart

5. DMX ADDRESS BCD Rotary Switches: These BCD rotary switches are used to set the unit's specific DMX address to any value from 1 to 512.

## Connections

6. POWER IN Anderson Power Pole Connector Set: Connect to Battery Power. Red = +12-24VDC, Black = DC Common.
7. DIMMER OUT Anderson Power Pole Connector Set: Connect to the load to be dimmed. Yellow = + VDC, Blue (0-Full) = DC Common .
8. DMX INPUT, 5P XLR Male: This is a standard DMX 512 input. Connect to the DMX output port of the Receiver, or any standard DMX output device.
9. DMX PASS-THRU, 5P XLR Female: This pass-thru is provided to allow connection of downstream DMX devices.

DMX INPUT/PASS-THRU special features:

- The DMX INPUT is provided with auto-termination, so no other end-of-line termination setting is required.
- During normal operation, the D1 Dimmer re-generates the DMX 512 data presented at the Pass-Thru output, so the output may supply a full complement of DMX load.
- If the power supply is removed or other system failure occurs, the DMX input will automatically be switched over to a hardwired connection to the pass-thru, assuring continued delivery of the DMX data to downstream devices.

## Protective Features

- Low Battery Power: If the connected Battery drops below a preset voltage, the D1 Dimmer will shut down, and will not restart until reset (the Low Battery indication will light). This feature protects rechargeable batteries from discharging to the point where they cannot be recharged with a standard charger. The standard factory set cut-off point is 9VDC. Other settings are available on a custom basis; please consult City Theatrical.
- Internal Watchdog for DMX processor and Dimmer Processor: If the DMX processor fails, the LED will flash at 1 sec interval (red or amber depending on DMX failure mode) and the load output will be turned off, protecting the battery and load. If the Dimmer processor fails, the load output will be turned off, protecting the battery and load.
- Internal reverse power polarity protection: The internal power supply circuitry is designed to protect the control electronics from damage if the battery leads are accidentally reversed or plugged into the DIMMER OUTPUT connection.
- Hold Last valid DMX Level: If DMX is lost; the D1 Dimmer will hold the last valid level for about 5 minutes, and then fade to black.

## Switch Diagnostics

Setting the BCDs to the settings shown below and resetting the unit will start the following diagnostic self tests:

BCD Settings	MODE DIP Settings	Function Tested	Indication
601		Ones (1s) BCD	LED Will flash = to the number the "1s" BCD is set to
602		Tens (10s) BCD	LED Will flash = to the number the "10s" BCD is set to
603		Hundreds (100s) BCD	LED Will flash = to the number the "100s" BCD is set to
604	0 0	DIP Switch	No LED Flashes
	0 1	DIP Switch	1 LED Flash
	1 0	DIP Switch	2 LED Flashes
	1 1	DIP Switch	Fast Red/Green/Amber Flashes
605		Manually Set Output Level	After reset move the tens and ones BCD switches to manually set the lamp to a % level

**Figure 4, Switch Diagnostics**

The BCD test setting must be set (as above) either before power is applied or reset is pressed.

### **Fuse Replacement**

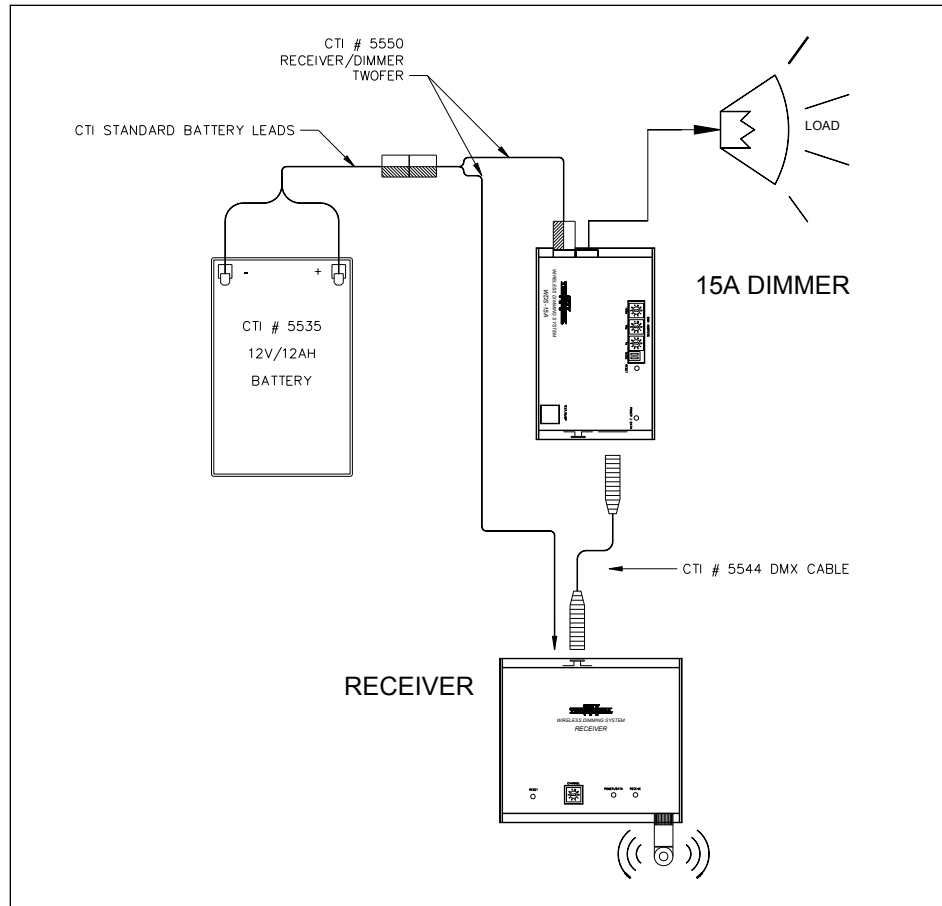
The D1 Dimmer contains a replaceable ATO 15A Fuse. Refer to qualified service personnel if your unit needs a fuse replacement.

### **Wire Gauge**

When installing this unit in a system, City Theatrical recommends 12 gauge wiring between all line and load devices to minimize voltage drop, otherwise significant damage could result to the equipment.

### **Operating Temperature**

Maximum ambient operating temperature is 40°C.



**Figure 5, Typical Single 12V Battery System**

### ***Batteries and Power Considerations***

Rechargeable 12V batteries used with this system may not charge readily with modern chargers if they are allowed to discharge past ~ 10.5VDC. When allowed to discharge more, the battery may load the charger too much, causing the charger to shut down<sup>1</sup> to prevent serious damage. Furthermore, with some loads the current draw will tend to rise as the available voltage drops. If the battery is allowed to discharge too far under these conditions, the current may exceed the limits of the system and cause overheating and/or blow the fuse.

For all these reasons, the D1 Dimmer is designed with a low power sensing system that shuts down the dimmer if the battery gets below a safe voltage limit (the standard factory setting is ~9VDC; custom units may be configured with a different limit voltage if needed, consult CTI for details).

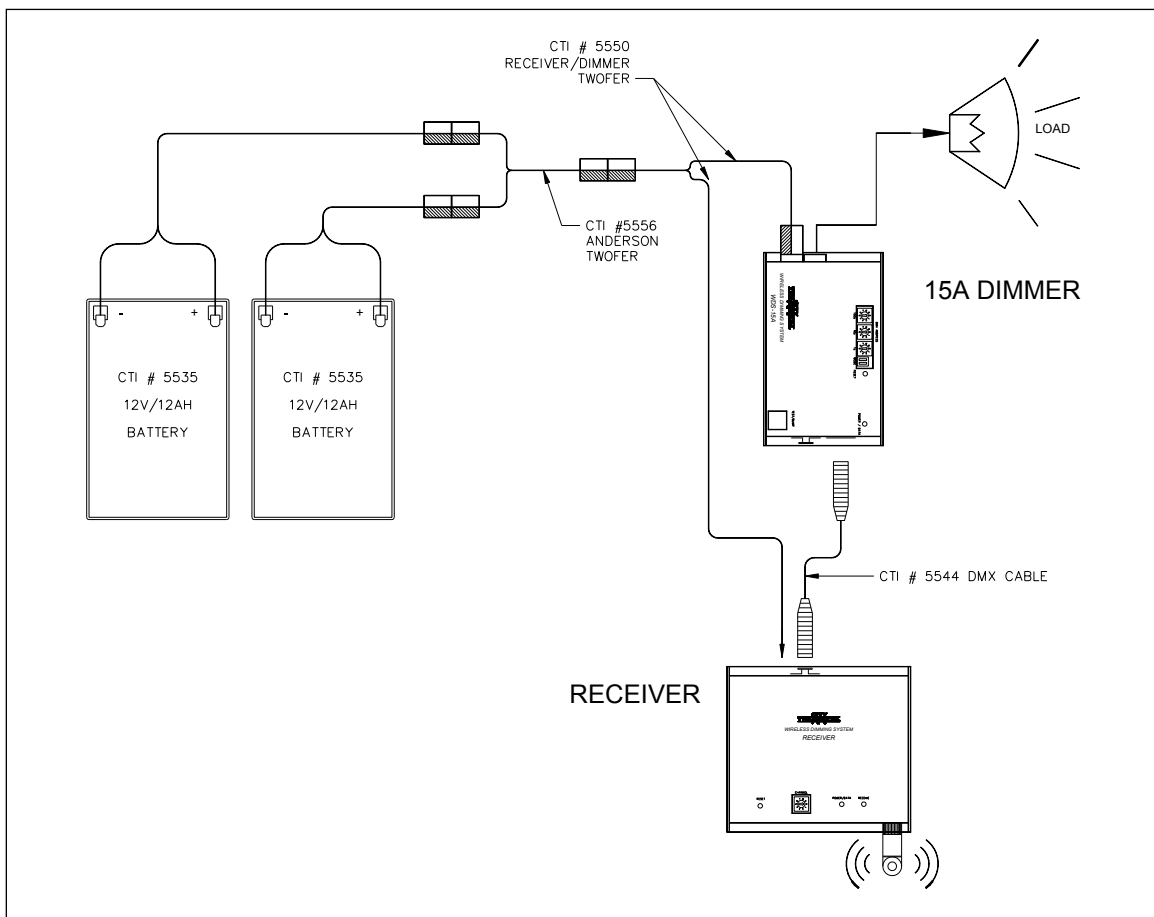
The D1 Dimmer will control a load of up to 15 amps at *any* voltage within its rated operating range of 12-24VDC. At 24V the maximum load is 360 watts, while at 12V the maximum load is 180 watts. Typical, continuous use battery life for the standard 12 Amp/Hour CTI 12V rechargeable battery (CTI # 5535) is shown on the next tabl

<sup>1</sup> If this should happen, the charger may be jump-started by connecting the too-low battery in parallel with a charged battery, starting the charger, and then removing the full battery once the charging has reached a stable point.

Number of Batteries	Load Voltage	Battery Wiring	Total watts Load	Typical Battery Life per charge	Example of typical load types
1	12	n/a	150	20~25 minutes	2 x 75W MR 16 lamps
2	24	Series	300	20~25 minutes	24V Lamps
2	12	Parallel	150	40~50 minutes	2 x 75 W MR 16 lamps

**Figure 6, Typical Continuous Battery Life for 12AH Battery**

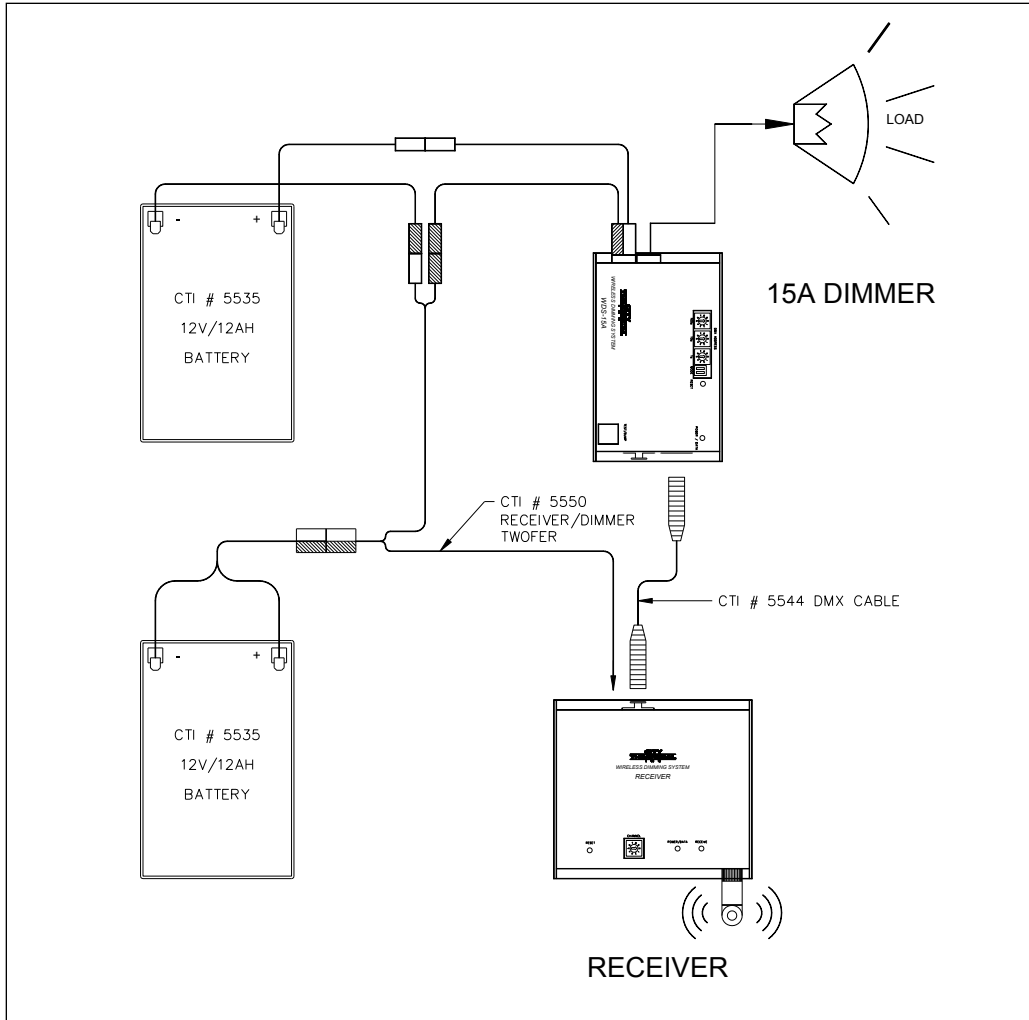
For extended 12V operation, 2 (or more) batteries may be connected together in parallel as suggested in the table above (see Figure 7). For 24V operation, 2 batteries may be connected in series so that the battery voltages add together (see Figure 8).



**Figure 7, Two Battery 12V (parallel) System**

For 24V Dimmer operation, it is recommended that the associated SHoW DMX Receiver be powered with 12V from only one of the batteries in the series array (see Figure 8).





**Figure 8, Two Battery 24V (series) System**

## Unit Specifications

### D1 Dimmer:

- DMX 512 Input: Neutrik NC5MBH 5 pin XLR male connector
- DMX 512 Repeated Pass-Through: Neutrik NC5FBH 5 pin XLR female connector
- DMX Termination: Automatic
- DMX Addressing: any DMX address 1 – 512, configured with (3) standard BCD switches
- Output modes: two incandescent dimmer curves (ISL and Linear), LED and non-dim
- Bump button for load test
- Status LED for Power, DMX and output functions
- Power and Load Connectors: 30A Anderson Powerpole 1327 series
- Max output: 24VDC 15A
- Output Signal: PWM Dimming from 00 (Off) to FF (Full)
- Dimensions: 3.25" x 5.25" x 1.687"
- Input Power: 12-24V DC, 200mA, From Load Battery Power

- Compliance: ETL Listed, CE Certified, RoHS Compliant
- Weight: 1.5 lbs
- Dimensions: 3.25" x 5.25" x 1.687"