Z1
DMX-512 LED CONTROLLER

User's manual

V.1.1

ENG

DTS

The Lighting Company

Code 03.LA.009

IMPORTANT SAFETY INFORMATION

Fire prevention:

Never locate the fixture on any flammable surface.
Minimum distance from flammable materials: 10 cm
Replace any blown or damaged fuses only with those of identical value

Prevention from electric shock:

High voltage is present inside the unit.
Unplug the unit prior to performing any operation which involves touching the inside of the unit.
This equipment must be grounded, do not connect to non-grounded supplies.
The use of a thermal magnetic circuit breaker is recommended for each Z1.
Use only AC supplies 90-260V, 50-60Hz
The unit should never be located in position exposed to rain or in areas of extreme humidity.
A good air ventilation is essential for proper equipment work.

Safety:

The external surface of the unit may exeed 50°C; never handle the unit until at least 5 minutes have elapsed since the unit was turned off.
Never install the unit in an enclosed area lacking sufficient air flow.
The ambient temperature should not exeed 40°C and should not be lower than -10°C

DESCRIPTION:

Z1 / DMX-512 LED controller is a unit dedicated to the following LED products by D.T.S.:
MR16 RGB LED lamp; MR16 full color LED lamp; D30 RGB LED projector;D30 full color LED projector;D150 full color LED projector
3 channels output DMX-512 Power interface, able to drive RGB LED units (Max 25W x channel).
3 x 350mA electronically dimmable led control outputs.
Main Input voltage range is 90V - 260V, 50 - 60 HZ
It is possible to use this item through every DMX-512 mixer or by using the DTS InfraRed control

MAIN ELECTRICAL CHARACTERISTICS:

Input Voltage Range : Vin **90** - 26**0** Vac
Frequency : 50 - 60 HZ
Power Consumption Range : 6 - 60 W
Power Factor (Pf) : 0.95 electronic PFC controller
Efficiency : 90% typical

IP protection grade: IP 20

Output:
Power Output Range : 1,5 - 25W per channel
Output Current : 350 mA @ 100% per channel (500mA @ 100% per channel in BOOST Mode)
Output Voltage : Vout 48V
Max Load (output) : 15 x MR16 RGB LED lamp or 15 x D30 RGB LED projector or 5 x MR16 full color LED lamp or 5 x D30 full color LED projector or 1 x D150 full color LED projector
Min Load (output) : 1 x MR16 RGB LED lamp

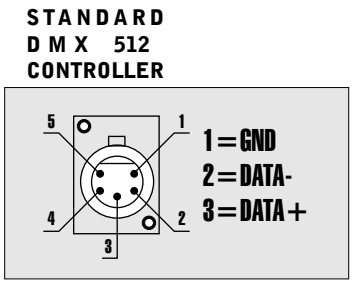
Control Input:
Control Signal : DMX 512
Dimming System :Constant Current PWM
Address Range : DMX 512 channels addressable by display

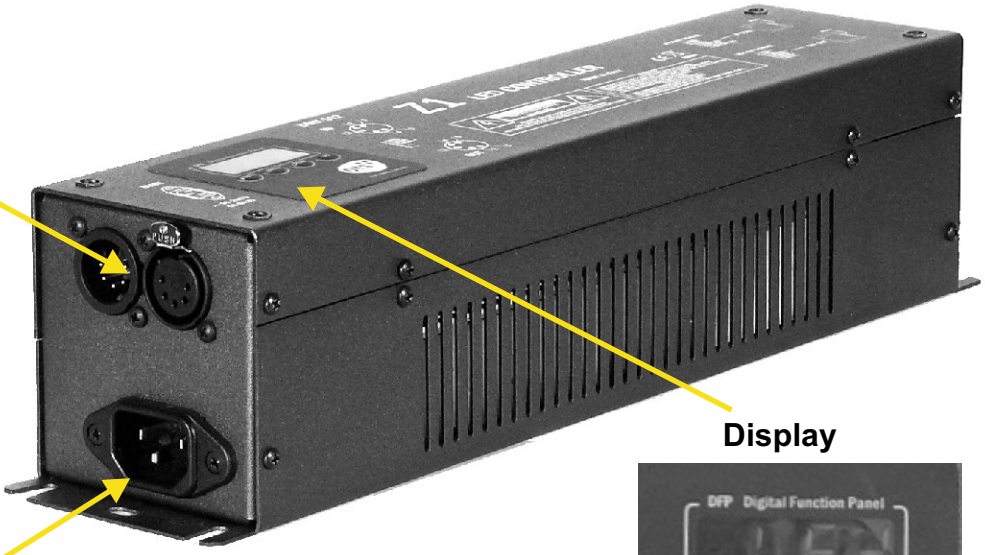
APPLICATIONS:

Cinemas - Restaurants and pubs - Discoteques - Architectural - Interior and Exterior.

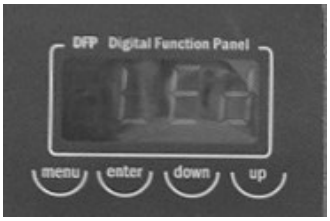
INPUT/OUTPUT CONNECTIONS

DMX IN-OUT connectors

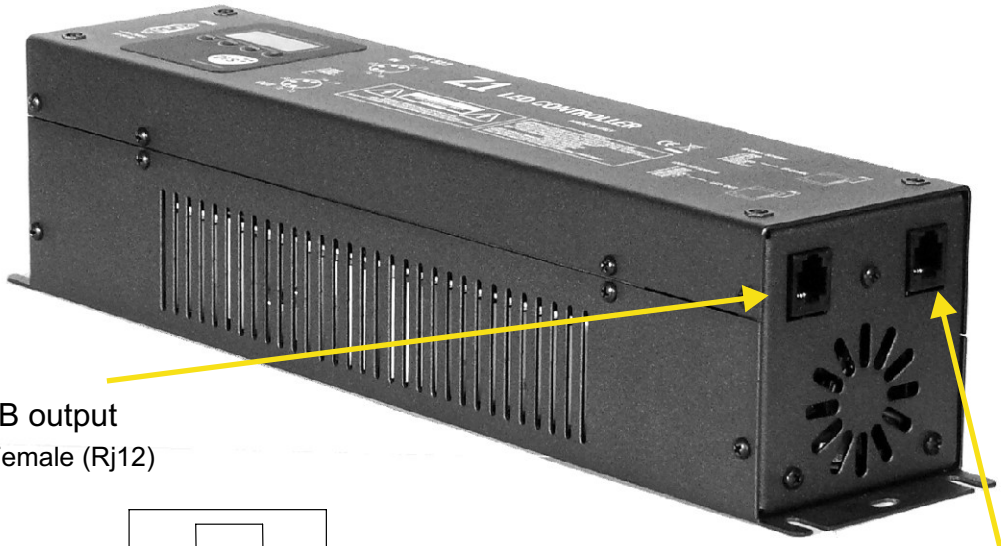




Display



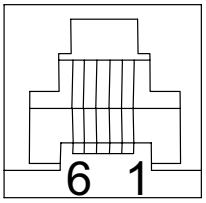
Mains 90-260 Vac
50-60 Hz



RGB output
6-pin Female (Rj12)

Infrared sensor input connector

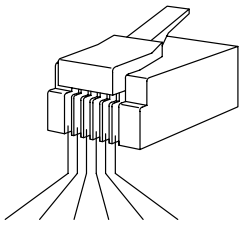
Pin 1 = RED +
Pin 2 = RED -
Pin 3 = GREEN +
Pin 4 = GREEN -
Pin 5 = BLUE +
Pin 6 = BLUE -



6-pin Female (RJ12)

RJ12 : 6P6C

6P6C indicates 6 positions 6 cables

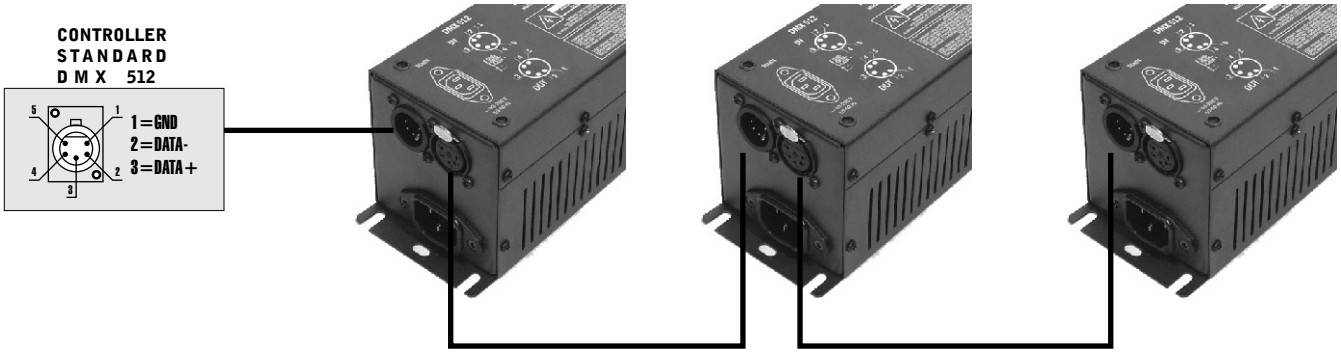


6-pin Male (RJ12)
Modular Plug

LEDs cabling connection can be done with a standard UTP TIA/EIA 568-A category 3 cable.
The maximum distance between power supply and the last LED lamp in the line should not exceed 100 meters.
For short distance connections (less than 20 meters), you can also use a standard 6 conductors telephone flat cable

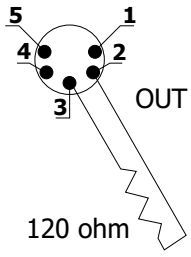
DMX SIGNAL CONNECTION:

The unit operates using a digital DMX 512 signal. Connection between the controller and the unit or between units must be carried out using a two pair screened ø0.5 mm cable and a CANNON XLR 5 or 3 pole connector.
Ensure that the conductors do not touch each other. Do not connect the cable ground to the XLR chassis. The plug housing must be isolated. Connect the mixer signal to the DMX IN projector plug and connect it to the next projector by connecting the DMX OUT plug on the first unit to the DMX IN plug of the second one.
In this way, all the projectors are cascade connected.

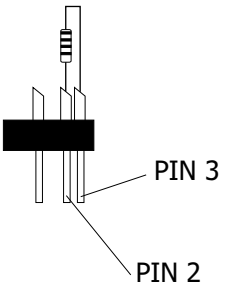


P.S:
If the display showing the DMX address flashes, then one of the following errors has occurred:
- DMX signal not present
- DMX reception problem

For Installations where long distance DMX cable connections are needed,we suggest to use a DMX terminator.
The DMX terminator is a male XLR 3-5 pins connector with a 120 ohm resistor Between pin 2 and 3.
The DMX terminator must be plugged into the last unit (DMX out panel connector) of the DMX line.



PLACE A 120 OHM RESISTOR BETWEEN PIN 2 AND 3 OF A MALE XRL CONNECTOR AND PLUG IT INTO THE DMX OUT PANEL CONNECTOR OF THE LAST UNIT CONNECTED TO THE DMX LINE



The standard configuration of the Z1 is with XLR 5 pins connectors.

DMX ADDRESS

Z1 can be used in two different modes: 5 or 9 DMX (default) channels.

If you want to use the Z1 in 5 channels mode, select the 5 CH mode from the MODE menu and set the following addresses on the mixer:

Projector 1 A001

Projector 2 A006 If you want to select the next projector, just add "5"

Projector 3 A011

….. A….

projector 6 A026

If you want to use the Z1 in 9 channels mode, select the 9 CH mode from the MODE menu and set the following addresses on the mixer:

Projector 1 A001

Projector 2 A010 If you want to select the next projector, just add "9"

Projector 3 A019

….. A….

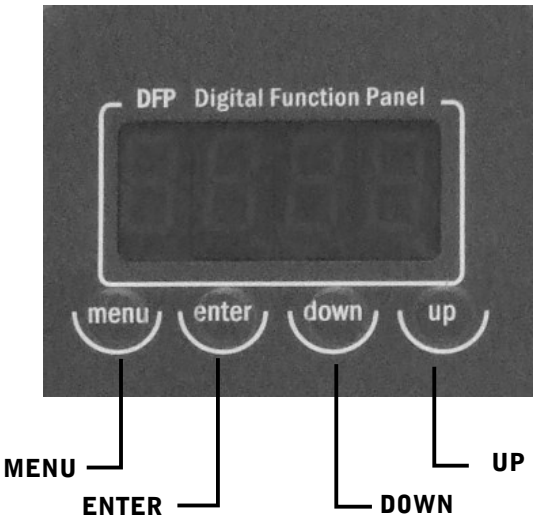
projector 6 A046

Selelcting the DMX address

1) Press the UP-DOWN key until you reach the required DMX address. The numbers on the display will start to flash (but the new DMX address hasn't yet been set).
2) Press ENTER to confirm your selection. The numbers on the display will stop flashing and the projector is now controlled by the new DMX address.

TIPS: if you keep pushed the UP or DOWN keys, the channels are calculated more quickly and you get a faster selection.

DISPLAY FUNCTIONS



DISPLAY FUNCTIONS

The Z1 display panel shows all the available functions . Using these functions, it is possible to change some of the parameters and add some functions. Changing the D.T.S. setting can vary the functions of the unit so that it does not respond to the DMX 512 signal used to control it. Carefully follow the instructions below before carrying out any variations or selections.
NOTE: the symbol ☞ shows which key has to be pushed to obtain the desired function.

Software version 1.04

A001 — MENU / UP-DOWN → **dISP**

REVERSE DISPLAY
Reverses display's reading depending on the mounting position (On the ground or suspended).

ENTER / UP-DOWN → **POS1**

- **AA** — **Floor position** — ENTER
- **bb** — **Suspension position** — ENTER

UP-DOWN → **StbY**

DISPLAY STAND BY
To turn off the display (after 5 seconds) Or leave it always on.

- **oFF** — **Display OFF** — ENTER
- **on** — **Display always ON** — ENTER

MENU / UP-DOWN → **nOdE**

DMX MODE
To select DMX mode : 5 - 9 (default) channels

ENTER / UP-DOWN

- **5CH** — **5 CHANNELS** — ENTER
- UP-DOWN → **9CH** — **9 CHANNELS** — ENTER

DMX Mode default = 9 CH

MENU / UP-DOWN → **bSt**

BOOST DRIVING
This menu allow to increase the LED's current from 350mA to 500 mA

ENTER / UP-DOWN

- **On** — **Boost mode activated** — ENTER
- UP-DOWN → **OFF** — **Boost mode deactivated** — ENTER

Whit BOOST active,the LED's current is setted to 500mA (30%more gain).
Default = Disable

MENU Up-Down LEd ENTER Up-Down rEd ENTER Up-Down MIn Default = 0 ENTER

MAH Default = 255 ENTER

LED
RGB Min/Max, Smooth and Compression level values settings

Up-Down GrEE ENTER Up-Down MIn Default = 0 ENTER

MAH Default = 255 ENTER

RGB MINIMUM VALUES
This menu allow to select the minimum levels for Red,Green and blue

Up-Down bLUE ENTER Up-Down MIn Default = 0 ENTER

MAH Default = 255 ENTER

RGB MAXIMUM VALUES
This menu allow to select the maximum levels for Red,Green and blue

These settings have priority on Master Dimmer (DMX channel 2)

Up-Down SMtH ENTER Up-Down 2 Range = Off-20 Default = 2 ENTER

SMOOTH VALUE
This menu allow to select the value of the delay(in millisecons) for RGB and Dimmer channels reaction to DMX or Program variation.
Off=25 ms delay (Fast response)
20=250 ms delay (Slow response)

Off = 25 ms
Istant responce to DMX variation

20 = 250 ms
Smooth response to DMX variation

Up-Down COMP ENTER Up-Down LInE Linear = Linear courrent output ENTER

9UAd Quadratic = Linear light output ENTER

COMPRESSION
This menu allow to select between Linear courrent output or Quadratic courrent output for LEDs
Default = Linear

MENU Up-Down AUtO ENTER SUrE ENTER Up-Down ChPr ENTER SPEE Up-Down 0010 ENTER

UAIt 0010

AUTOMATIC MODE
Automatic demo game without DMX controller

CUPr ENTER rEd Up-Down 120 ENTER

GrEE 255

bLUE 104

ChPr
Chase with 16 steps previously created in REC MODE
Speed and Wait time selectable by user

CUPr
RGB values selectable by user

rAIn ENTER SPEE Up-Down 0010 ENTER

Rainbow (rAIn)
Rainbow colours effect.
Speed time selectable by user

CU01 ENTER Up-Down ENTER

CU02

CU03

CU.....

CU16

CU01-CU16
Color Macros as on DMX channel 8 (Macro)

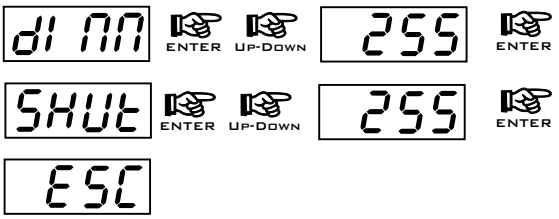
AUTOMATIC MODE
Automatic demo game without DMX controller

WHITE MACROS
16 macros for White color from 2000 to 7200 ° K

DIMMER
Dimmer level selectable by user as on DMX channel 2 (Dimmer)
Dimmer level is active for all the programs and macros

SHUTTER
Shutter level selectable by user as on DMX channel 1 (Shutter)
Shutter level is active only for CU01/CU16 and Wh01/Wh16 macros

ESC
Esc from Automatic Mode Menu



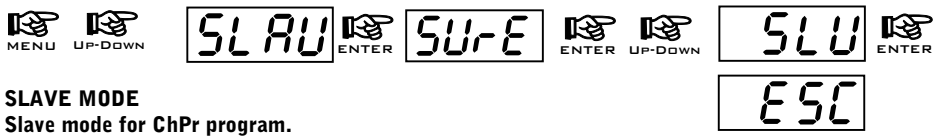
REC MODE
In DMX Recorder Mode,it is possible to create and store the scenes of the ChPr by using an external DMX controller.
The unit must be setted to 9 channels MODE

DMX Recorder Mode
For the programming of ChPr by using a DMX controller, besides the 9 channels necessary to control the unit a further 3 DMX channels are needed.
So that in RECORDER mode (via DMX) the unit will need 12 channels to be correctly programmed.
The three new DMX channels are:

DMX channel 10 = SCENES channel
From 0-10 = no function (r001)
From 11-255 are displayed the programmable scenes (max 16 scenes from M001 to M0016)

DMX channel 11 = EDIT channel:
-From 0-19 = no function
-From 20-234 the unit runs the configuration given by the received input DMX values.
With the channel SCENES it is possible to pass from one step to the next while with REC it is possible to record the selected scene.
-From 235-255 the unit runs the configuration given by the received input DMX values closing the sequence as last scene.
With the channel REC it is possible to record the selected scene as last scene.

DMX channel 12 = RECORDING channel
Records the set scene with a variation between 0 to 255 (the display flashes indicating that the scene has been recorded).It is advised that you keep the REC channel set to 0 and to run through the 255 only once you have decided to save the scene. If ChPr is not closed, by indicating the last scene (Edit channel between 235-255), in playback mode all 16 scenes will be played through even if not programmed

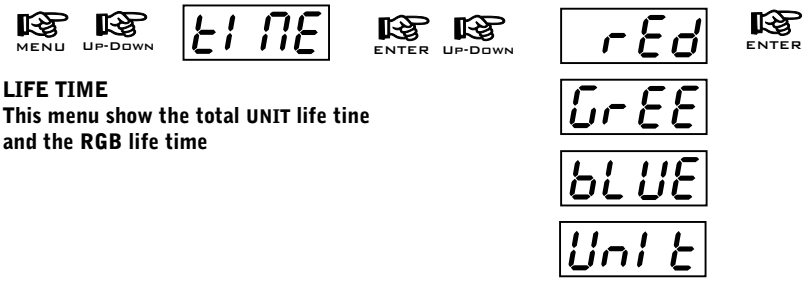


SLAVE MODE
Slave mode for ChPr program.
All slave units will be synchronised with master unit, running their own Chpr program.

INFRARED MODE
Infrared remote control.
By activating Ir MODE,it will be possible to navigate trought the unit functions by using the D.T.S. infrared remote control.
D.T.S. Code :0514L008

NOTE:
External infrared remote sensor needed.
D.T.S. Code :03.LA.016

DEFAULT
To restore default settings



LIFE TIME
This menu show the total UNIT life tine and the RGB life time

TEST MODE
RGB colours test with rainbow

SOFTWARE
Software version

HIDDEN MENU

For technical personnel only

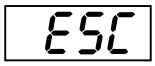
To operate this menu:
-Connect the unit to the main

- **While reset is running, press the MENU and ENTER keys at the same time.**

Reset EEPROM (Reset all settings)
ATTENTION: by pressing this key you must repeat all previous calibrations

UPLOAD
This menu allow to upgrade the unit's software by computer

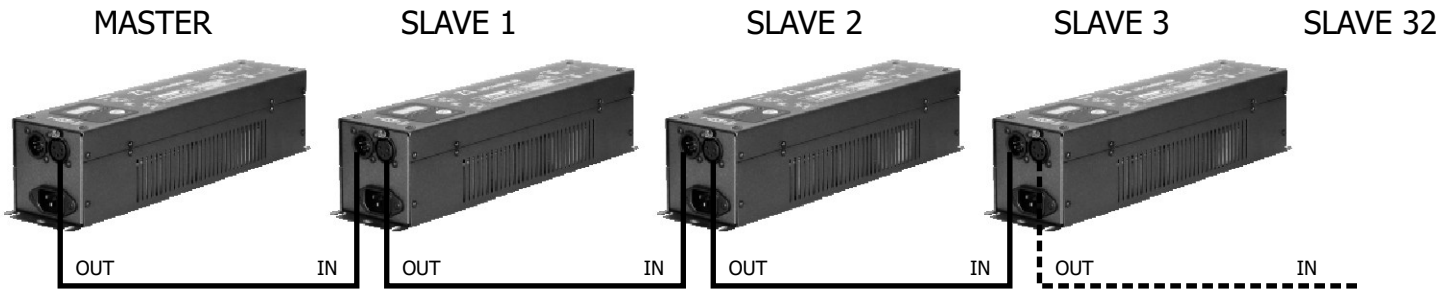
DOWNLOAD
This menu allow to save unit's programs into computer



EXIT
Exit from hidden menu.

AUTOMATIC OPERATION (AUTO):

Z1 can work in automatic mode without a DMX controller. First of all connect the projectors with a DMX cable (picture below). A maximum quantity of 32 slave units can be connected to the same Master unit.



To activate Auto mode on the first unit, use the menu to run through the different modes until AUTO appears on the display, at this point press enter.
Now it is possible to choose between the different pre-programmed games (CUPr-RAIn-CU01/CU16-Wh01/Wh16) or ChPr which is user programmable through REC mode. To confirm game activation press ENTER on the selected GAME.

CUPr-RAIn-CU01/CU16-Wh01/Wh16

The first unit that will work as a Master should be placed in Automatic mode (AUTO), the other units have to be placed in 9 channels DMX mode (MODE 9CH) and the DMX address should be set at A001.
For RaIn (rainbow) game it is possible to select the speed for the colour changhing (SPEE).
DIMMER function (in AUTOMATIC MODE) is active for all the programs.
SHUTTER function (in AUTOMATIC MODE) is active only for CU01/CU16 and Wh01/Wh16 macros.

ChPr MASTER/SLAVE

The first unit that will function as a Master must be set to Automatic mode (AUTO), the other units must be set to Slave mode (SLAV), selectable through the menu. In this way all the Slave units will be synchronised with the master and running their own ChPr game.
On the master unit it is possible to vary the Speed time (SPEE) for the colour changhing and the Wait time (UAIt) between the steps.
Speed time and Wait time on the Master, have priority on the slave units.
NB: It is possible to run GA.Pr on the other units even though these do not have GA.Pr programmed. You can do this by setting the units to 9 ch DMX MODE and selecting DMX address A001.

Rec mode

It is possible to program your own game on the Z1 that will then run it in AUTO mode (ChPr).
Each unit can have its own programmed game.
In REC mode Z1 unit must be set to 9 channels mode.
To program the ChPr by using a DMX controller, you need 3 more channels in addition to the 9 channels necessary to control the unit.
So that in RECORDER mode (via DMX) the unit will need 12 DMX channels to be correctly programmed.

The three new DMX channels are:

DMX channel 10 = SCENES channel
From 0-10 = no function (r001)
From 11-255 are displayed the programmable scenes (max 16 scenes from M001 to M0016)

DMX channel 11 = EDIT channel:
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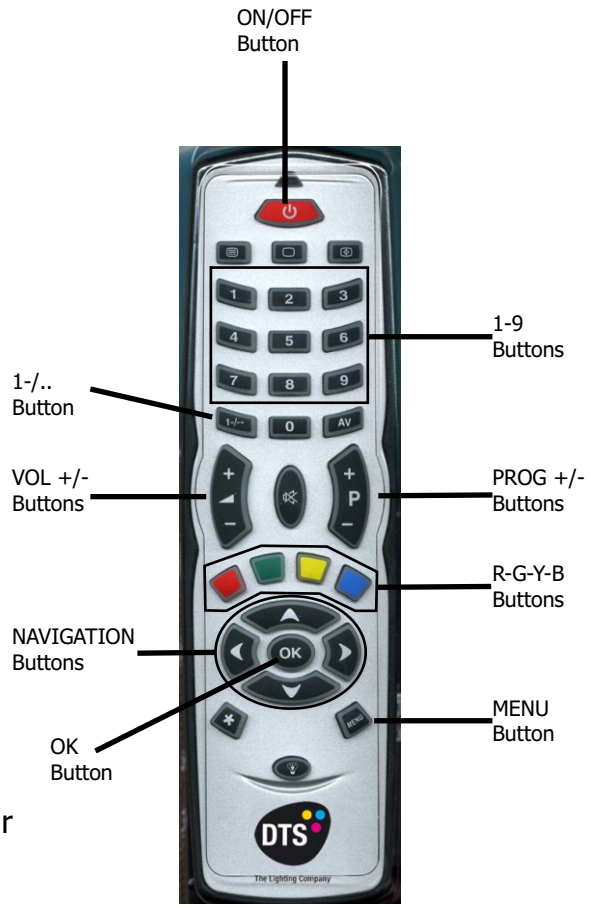
Records the set scene with a variation between 0 to 255 (the display flashes indicating that the scene has been recorded).It is advised that you keep the REC channel set to 0 and to run through the 255 only once you have decided to save the scene. If ChPr is not closed, by indicating the last scene (Edit channel between 235-255), in playback mode all 16 scenes will be played through even if not programmed

INFRARED REMOTE CONTROL

By activating Ir MODE on Z1 Menu it will be possible to navigate trought the unit functions by using the D.T.S. infrared remote control (D.T.S. Code :0514L008).
Please note that external infrared remote sensor is also needed. (D.T.S. Code :03.LA.016)



Infrared remote control functions:
ON/OFF and MUTE buttons
In Automatic mode let you stop the games running.
Master and slaves will go in Stand-by mode
1-9 buttons
In Automatic mode let you select the colour macros 1/9
1-/.. Button
In Automatic mode let you select the colour macros 10-16
VOL +/-
In Automatic mode let you select the desired value for DIMMER
PROG +/-
In Automatic mode let you scroll between the selectable games
RED/GREEN/YELLOW/BLUE buttons
Direct acces to Automatic mode for Red/Green/Blue/Yellow colour macros.
Red=CU01 / Green=CU07 / Yellow=CU04 / Blue=CU13
Navigation buttons
Same as UP/DOWN on unit display
OK button
Same as ENTER on unit display
MENU button

DMX PROTOCOL

9 CHANNELS MODE (Default)

1 SHUTTER
2 DIMMER
3 RED
4 GREEN
5 BLUE
6 WHITE (Pre-programmed whites at different color temperatures)
7 CTC
8 COLOURS MACRO
9 FUNCTIONS

DMX CHANNEL	1	Parameter: **SHUTTER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9	**5**				**Black-out**
10-19	**14**				**Open**
20-29	**24**				**Black-out**
30-119					**Strobe at variable speed from slow to fast (3400ms-20ms)**
120-149					**Pulse open at variable speed from slow to fast (43s-100ms)**
150-179					**Pulse close at variable speed from slow to fast (43s-100ms)**
180-204	**192**				**Random Strobe (Master and RGB active)**
205-229	**218**				**Random Strobe (Full)**
230-255	**240**				**Open**

DMX CHANNEL	2	Parameter: **DIMMER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional dimmer**

DMX CHANNEL	3	Parameter: **RED**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

DMX CHANNEL	4	Parameter: **GREEN**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

DMX CHANNEL	5	Parameter: **BLUE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

DMX CHANNEL	6	Parameter: **WHITE (Pre-programmed White at diff. color temperature)**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-55	**23**				**No Function**
56-105	**80**				**Full (Red-Green-Blue at Full)**
106-155	**130**				**White DTS**

IF CHANNEL 9 (FUNCTIONS) = CUSTOM WHITE RECALL (Dmx range value 0 - 79)

156-205	**180**	**Custom White Recall**
206-255	**225**	**White CTC (Channel 7 CTC enabled 43 color temp. Correction Macros: 2000°K-7200°K)**

IF CHANNEL 9 (FUNCTIONS) = CUSTOM WHITE CREATE (Dmx range value 80 - 160)

156-205	**180**	**Custom White Create (RGB levels selectable by DMX)**
206-255	**225**	**White CTC (Channel 7 CTC enabled 43 color temp. Correction Macros: 2000°K-7200°K)**

DMX CHANNEL	7	Parameter: **CTC (Color temperature correction)**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function

IF CHANNEL 6 (White) = WHITE CTC (Dmx range value 206 - 255)

0-255	**43 color temp. Correction Macros: 0 = 2000°K / 128 = 5500°K / 255 = 7200°K**

IF CHANNEL 6 (White) = NO FUNCTION (Dmx range value 0 - 43)

0-255	**Smooth RGB linear Hue correction**

DMX CHANNEL	8	Parameter: **COLOUR MACROS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-14					**No Function**
15-29					**Macro 1**
30-44					**Macro 2**
45-59					**Macro 3**
60-74					**Macro 4**
75-89					**Macro 5**
90-104					**Macro 6**
105-119					**Macro 7**
120-134					**Macro 8**
135-149					**Macro 9**
150-164					**Macro 10**
165-179					**Macro 11**
180-194					**Macro 12**
195-209					**Macro 13**
210-225					**Macro 14**
226-239					**Macro 15**
240-255					**Macro 16**

DMX CHANNEL	9	Parameter: **FUNCTIONS (Recall,Create and Store the Custom white)**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-79		**Custom White Recall (Enable CH 6 for Custom white Recall)**			
80-160		**Custom White Create (Enable CH 6 for Custom white Creation)**			
161-255		**Custom White Store (Store the Custom White created)**			

5 CHANNELS MODE

1 SHUTTER
2 DIMMER
3 RED
4 GREEN
5 BLUE

DMX CHANNEL	1	Parameter: **SHUTTER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9	**5**				**Black-out**
10-19	**14**				**Open**
20-29	**24**				**Black-out**
30-119					**Strobe at variable speed from slow to fast (3400ms-20ms)**
120-149					**Pulse open at variable speed from slow to fast (43s-100ms)**
150-179					**Pulse close at variable speed from slow to fast (43s-100ms)**
180-204	**192**				**Random Strobe (Master and RGB active)**
205-229	**218**				**Random Strobe (Full)**
230-255	**240**				**Open**

DMX CHANNEL	2	Parameter: **DIMMER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional dimmer**

DMX CHANNEL	3	Parameter: **RED**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

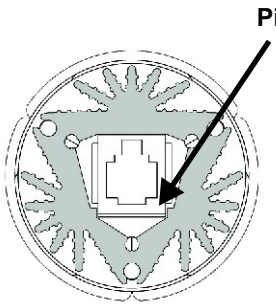
DMX CHANNEL	4	Parameter: **GREEN**

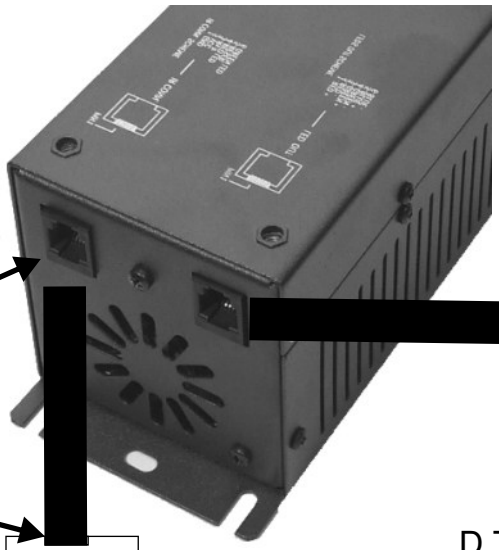
DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

DMX CHANNEL	5	Parameter: **BLUE**

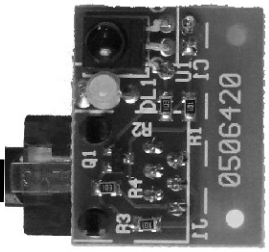
DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional colour**

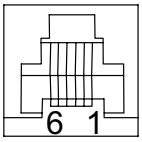
Z1 - LED UNITS WIRING CONNECTIONS





D.T.S. INFRARED
REMOTE SENSOR
CODE 03.LA.016





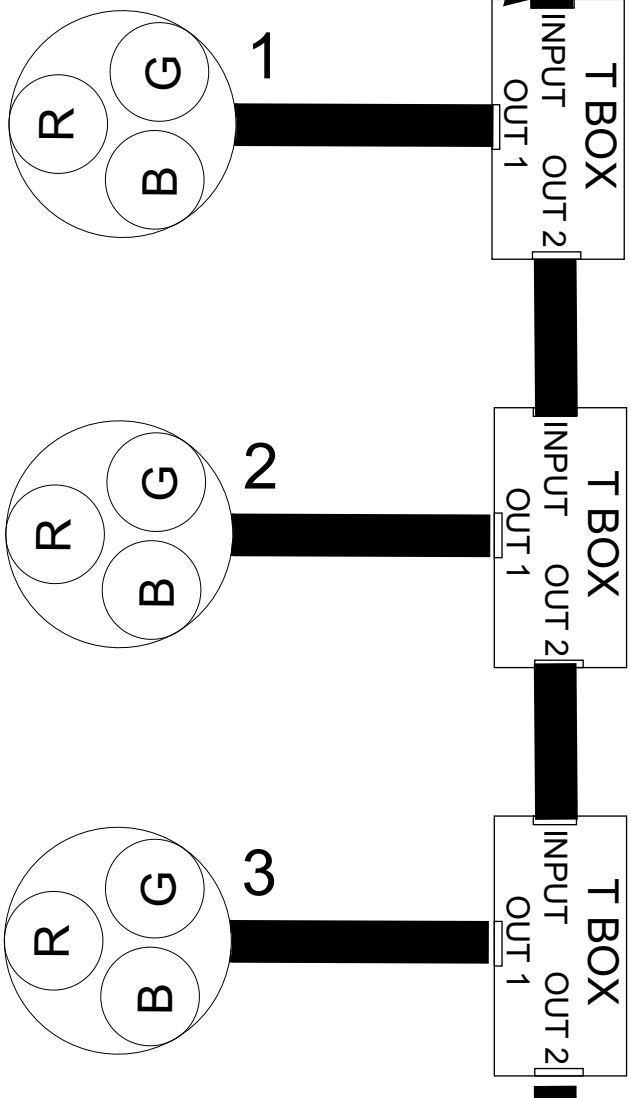
6-pin Female (RJ12)

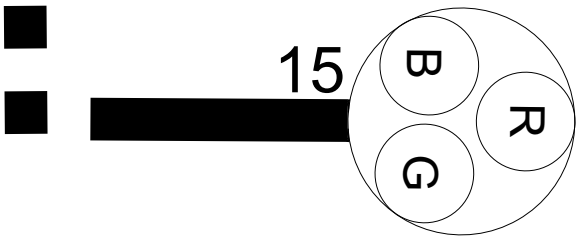
D.T.S. T-BOX
CODE 03.LA.001

INPUT

OUT 2

OUT 1





IMPORTANT:

The maximum number of MR16 RGB 3W LED lamps connectable to the Z1 Power supply is 15 pcs.

The maximum number of D150 full colour Led projector connectable to the Z1 Power supply is 1 pcs.

Never plug the cable coming from the Power supply into OUT 1 or OUT 2 of the T-BOX when other MR16 lamps are connected, because a wrong connection can seriously damage the lamps.

Never plug in a new MR16 lamp when the power supply is turned on.

Note

Note

MADE IN ITALY CE

The Lighting Company

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