POWER SUPPLY (PSU) — 24V* — CONTROL MODULE

AC

DMX INPUT

* For use with 24VDC power supplies ONLY.

⚠ Control Module is suitable for use in dry locations only (IP20).

⚠ CONTROL MODULE must be installed by a qualified electrician.

⚡ All devices should always be disconnected from mains power supply and verify its absence prior to installation/maintenance.

⚠ Damage to CONTROL MODULE and/or light sheets may occur if wired incorrectly.

FCC STATEMENT:
This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
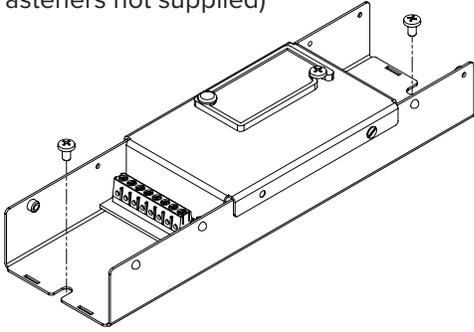(2) This device must accept any interference received, including interference that may cause undesired operation.

CE

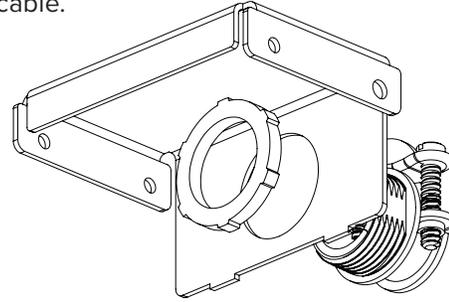c(UL)us LISTED

RoHS

⑤ **5 Year Limited Warranty:**
Parts and workmanship
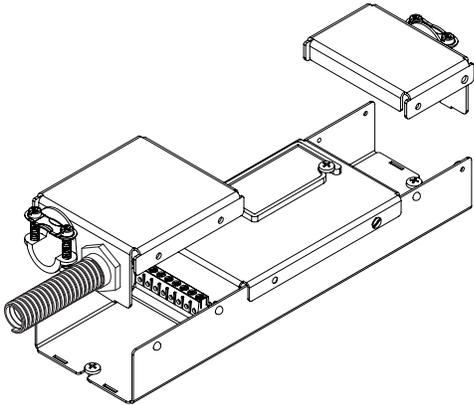
MOUNTING COOLEDGE CONTROL MODULE

1) Fasten module in position by using the two mounting slots. (Fasteners not supplied)
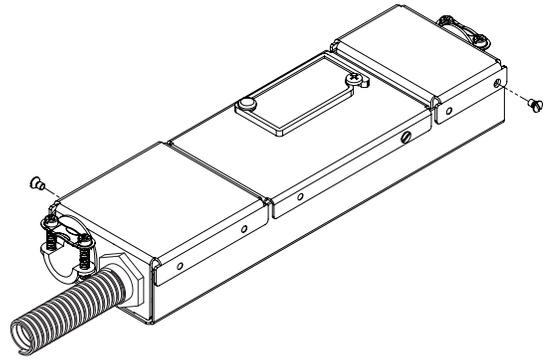

2) Terminal covers support 1/2" strain relief of conduit. Conduit or armoured cable must be used on power input cable.

3) Thread cables through conduit/strain reliefs and covers; then make connections as required.

4) Snap covers in position and secure with provided fasteners.

INPUT POWER - 24VDC: 400W - SELV

| Black+ |
| Red- |
| N/C |
| Green- |
| N/C |
| Blue- |
| N/C |
| White- |
| +VIN |
| GND |

| Status LED |
| (+) 24VDC |
| (-) GND |

PSU 24V 400W
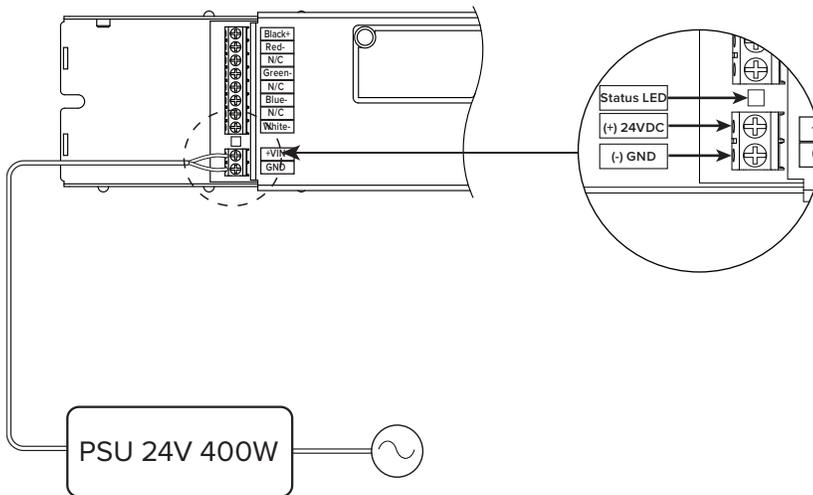
cUL Listed 24V	Control Module	400W PSU
Dimensions (in)	8.7 x 2.6 x 1.4	16.0 x 4.9 x 1.7
CE Compliant 24V	Control Module	400W PSU
Dimensions (mm)	220 x 66 x 36	262 x 125 x 44

INTRODUCTION TO COOLEDGE CONTROL MODULE

The Cooledge Control Module receives a single 24V DC power input from a constant voltage power supply and converts it into up to 4 controlled output channels of max. 90W each. Input signals from 3rd party controllers are used to control dimming and color tuning (if applicable). Each channel drives a separate color: white, red, green or blue.

DIP Switch Cover

Controls Input Cover

Output Channel and Power Input Cover

Mode and Addressing DIP Switch

Output Channels

	Black+
	Red-
	N/C
	Green-
	N/C
	Blue-
	N/C
	White-

Status LED

Power Input

+VIN
GND

DMX Inputs

Wireless Card Slot (Not Used)

ON

1 2 3 4 5 6 7 8 9 10 11 12

- Switches 1 - 3: Control Module MODE
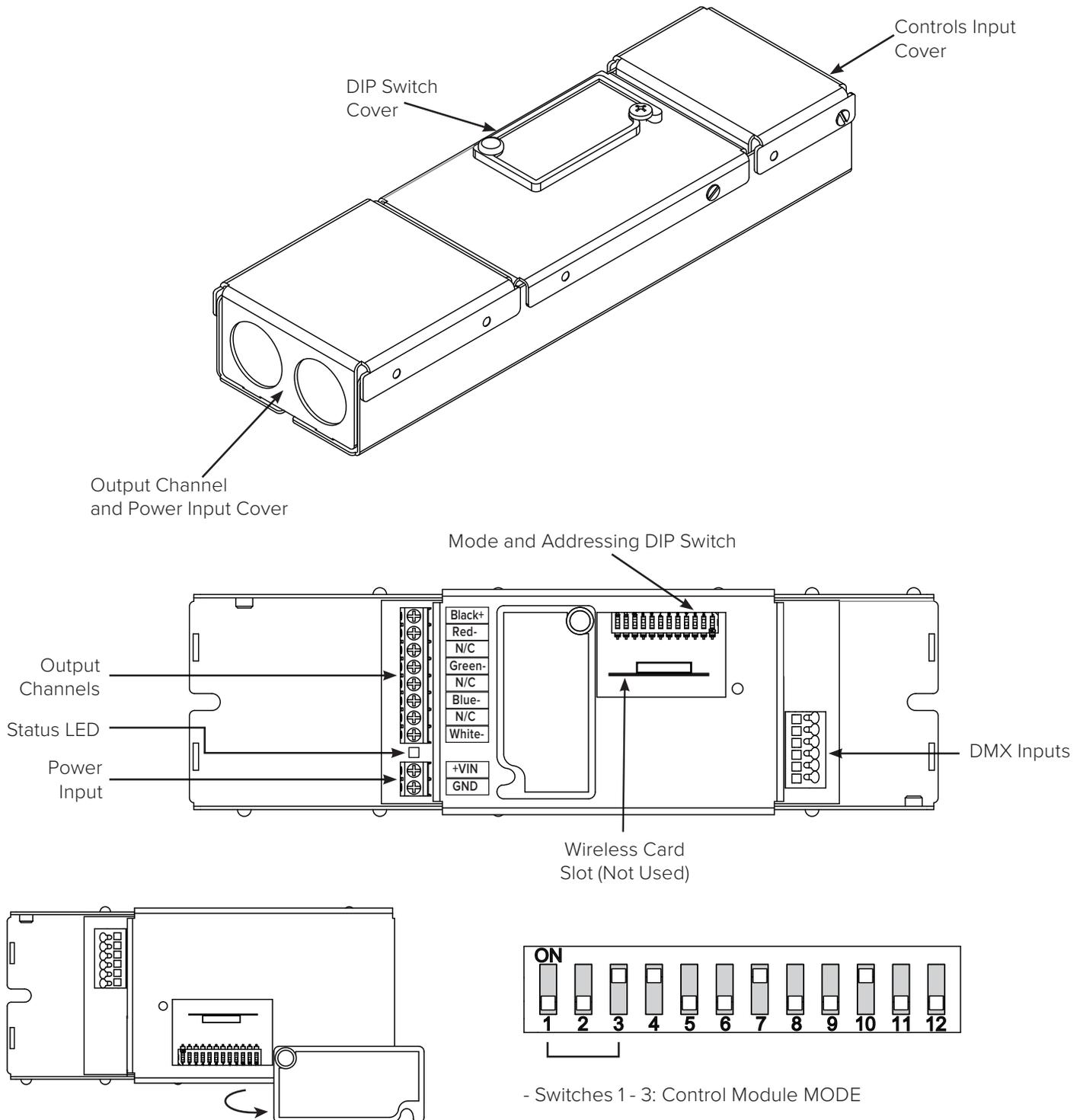
To access the DIP switches for selecting the operational mode, unfasten the cover screw and rotate cover out of the way. Positions 1-3 are used to identify the controller mode. Settings for each mode are explained in each section.

⚠ Note: The Control Module accepts wire gauges in the range of 14-16AWG **ONLY**. Remote electrical connection can still be achieved with 10-12AWG wire if it is spliced onto a section of 14AWG connected directly to the Control Module.
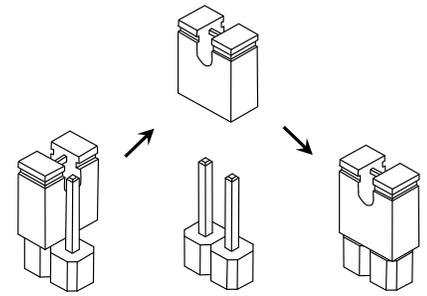
⚠ Note: When making electrical connections to the Control Module, **DO NOT** overtorque the set screws in the terminal blocks. Tighten the screws until they offer moderate resistance, using **ONLY** hand tools.

INPUT CONNECTIONS
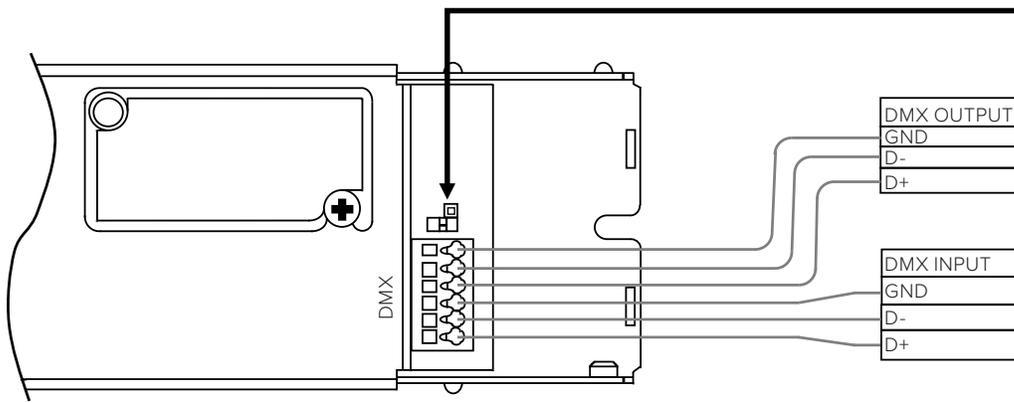
When installing the final controller (termination point) in a DMX network use the provided jumper on the indicated header.

DMX OUTPUT
GND
D-
D+

DMX INPUT
GND
D-
D+

DMX

OUTPUT CONNECTIONS (STANDARD MODE)

Relevant Part No's:

CTR-RGBW-DMX-24V

Max 6 sheets

CH1	+	Black+		Black+
	-	Red-		Red-
CH2	+	N/C		N/C
	-	Green-		Green-
CH3	+	N/C		N/C
	-	Blue-		Blue-
CH4	+	N/C		N/C
	-	White-		White-

+VIN
GND

Black+
Red-
N/C
Green-
N/C
Blue-
N/C
White-

+VIN
GND

PSU 24V

SELECTING DMX ADDRESSES
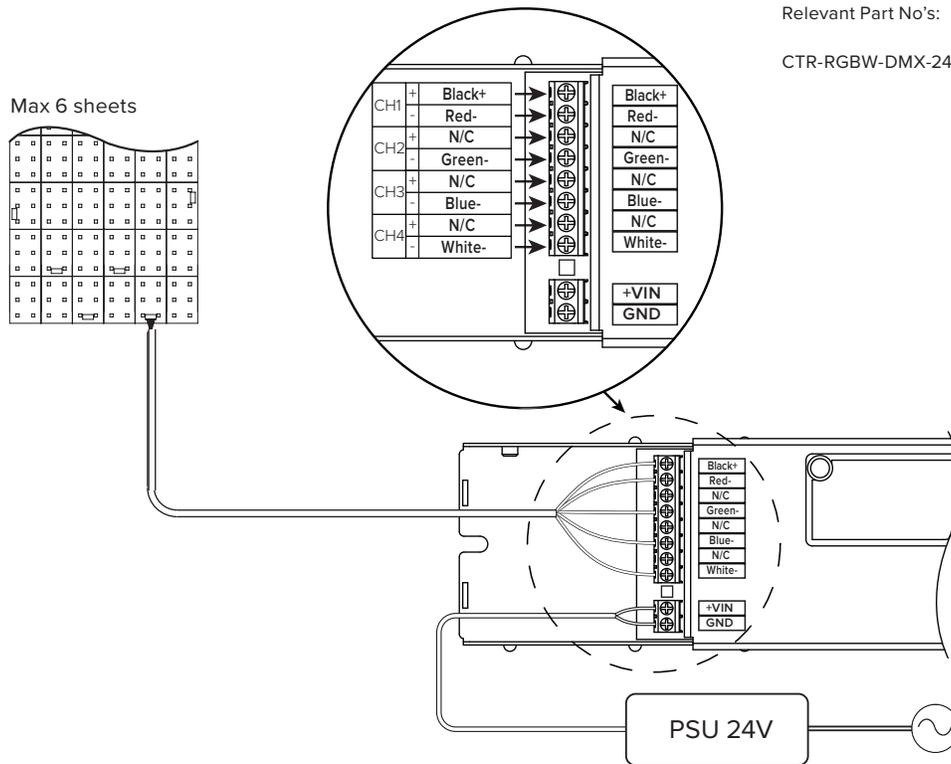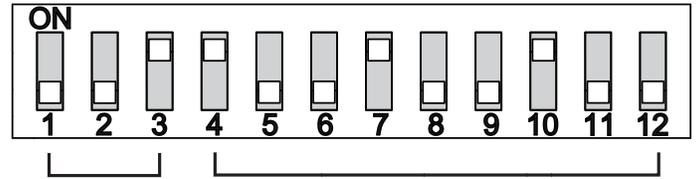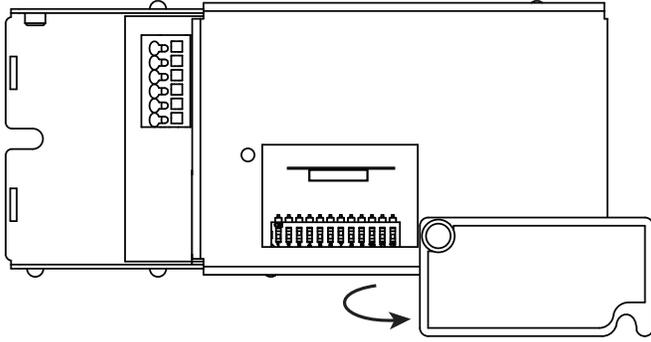
- Switches 1 - 3: Factory set, refer to modes below for details.

- Switches 4 - 12: Addressing switches.

- To access the dip switch for selecting addresses for DMX controls, unfasten the cover screw and rotate cover out of the way.
DMX Controllers are factory set to address 1

- Each of the 9 switches (4-12) represents a bit in binary representation for the address. For example, when switch 12 is 'ON' only address 1 is selected, if switch 12 & 11 are 'ON' then address 3 is selected. The address is selected by the sum of the values of each 'ON' switch. Addresses 1 through 511 are possible

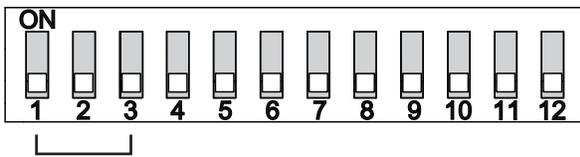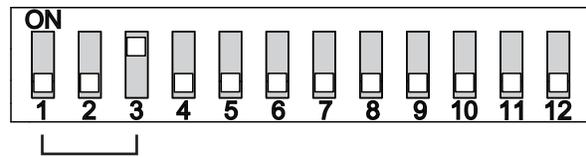| Switch:	4	5	6	7	8	9	10	11	12
Address:	256	128	64	32	16	8	4	2	1

STANDARD MODE

Standard Mode is a mode in the control module where colour and dimming are controlled via DMX input.
There are 4 output channels: RED, GREEN, BLUE, WHITE, each channel can handle up to a 90W load.

Choose the DIP Switch settings from the tables below to achieve the desired dimming level.

LOG MODE

LIN MODE

- Switches 1 - 3: Control Module MODE

STANDARD MODES 8bits/16bits	MODE (Pos 1-3)	Switches 4-12	DESCRIPTION
DMX Standard LOG 16 bits	0-0-0	Addressing	Standard LOG 16 bits
DMX Standard LIN 16 bits	0-0-1	Addressing	Standard LIN 16 bits
DMX Standard LOG 8 bits	0-1-0	Addressing	Standard LOG 8 bits
DMX Standard LIN 8 bits	0-1-1	Addressing	Standard LIN 8 bits

Dimming curves are shown in APPENDIX A.

Warning! Unit must be powered off when changing DIP switch settings

For STANDARD -16bit Modes- LOG or LIN- each Output Channel uses 2 x DMX Channels:
1 for DIM Coarse
1 for DIM Fine

In total, each controller occupies 8 x DMX channels, assigned as below:
DMX CH1 – DIM Coarse RED Channel
DMX CH2 – DIM Fine RED Channel
DMX CH3 – DIM Coarse GREEN Channel
DMX CH4 – DIM Fine GREEN Channel
DMX CH5 – DIM Coarse BLUE Channel
DMX CH6 – DIM Fine BLUE Channel
DMX CH7 – DIM Coarse WHITE Channel
DMX CH8 – DIM Fine WHITE Channel

Example of addressing units for 16-bit LIN/LOG Modes on DMX bus:
1. Unit 1 takes DMX Address = 1, and unit occupies DMX Channels # 1-8
2. Unit 2 takes DMX Address = 9, and unit occupies DMX Channels # 9-16
3. Unit 3 takes DMX Address = 17, and unit occupies DMX Channels # 17-24

For the above the DIP SETTINGS are:
1. 000 000000001 Controller set for 16-bit LIN/LOG Mode, unit occupies DMX Channels 1-8
2. 000 000001001 Controller set for 16-bit LIN/LOG Mode, unit occupies DMX Channels 9-16
3. 000 000010001 Controller set for 16-bit LIN/LOG Mode, unit occupies DMX Channels 17-24

For STANDARD -8bit LIN/LOG Modes - each Output Channel uses 1x DMX Channel:

In total, each controller occupies 4 x DMX channels, assigned as below:
DMX CH1 – DIM RED Channel
DMX CH2 – DIM GREEN Channel
DMX CH3 – DIM BLUE Channel
DMX CH4 – DIM WHITE Channel

Example of addressing units for 8-bit LIN/LOG Modes on DMX bus:
1. Unit 1 takes DMX Address = 1 and unit occupies DMX Channels # 1-4
2. Unit 2 takes DMX Address = 5 and unit occupies DMX Channels # 5-8
3. Unit 3 takes DMX Address = 9 and unit occupies DMX Channels # 9-12

For the above the DIP SETTINGS are:
1. 000 000000001 Controller set for 8-bit LIN/LOG Mode, unit occupies DMX Channels 1-4
2. 000 000000101 Controller set for 8-bit LIN/LOG Mode, unit occupies DMX Channels 5-8
3. 000 000001001 Controller set for 8-bit LIN/LOG Mode, unit occupies DMX Channels 9-12

STANDALONE MODES

Standalone mode gives a pre-defined user-selectable fixed color output. No external control input is required.
When one of the operational modes (Standalone Fixed or Standalone Dynamic) is selected through the DIP Switch setting, the module will ignore DMX commands and operate according to the settings, as per table below.
Standalone Fixed Modes selection include:
- 8 x Fixed R, G, B, W colors
- 26 predefined mixed colors
- 6 x CCT white combinations

STANDALONE FIXED MODES

STANDALONE FIXED RGBW	MODE(Pos 1-3)	Switches 4-12	
FIXED RED LOG	1-0-0	X-X-X-X-X-X-X-0-0	DMX RED channel fixed LOG
FIXED RED LIN	1-0-0	X-X-X-X-X-X-X-0-1	DMX RED channel fixed LIN
FIXED GREEN LOG	1-0-0	X-X-X-X-X-X-X-1-0	DMX GREEN channel fixed LOG
FIXED GREEN LIN	1-0-0	X-X-X-X-X-X-X-1-1	DMX GREEN channel fixed LIN
FIXED BLUE LOG	1-0-1	X-X-X-X-X-X-X-0-0	DMX BLUE channel fixed LOG
FIXED BLUE LIN	1-0-1	X-X-X-X-X-X-X-0-1	DMX BLUE channel fixed LIN
FIXED WHITE LOG	1-0-1	X-X-X-X-X-X-X-1-0	DMX WHITE channel fixed LOG
FIXED WHITE LIN	1-0-1	X-X-X-X-X-X-X-1-1	DMX WHITE channel fixed LIN
FIXED 32 Colors With 16 Intensities	1-1-0	X-X-X-X-X-X-X-X-X	32 Colors = X-X-X-X-X and 16 intensities = X-X-X-X; See charts for intensities and colors (see page 12)

*DIP switch positions 1-3 are used to select one of four colors (W, R, G, B)
*DIP switch positions 11-12 are used to select one of two dimming curves (LIN, LOG)
*DIP switch positions 4-10 are used to control LED intensity % according to the selected dimming curve, shown in the Table below.

LEVEL	DIP SETTING POS 4-10	LOG CURVE (%)	LIN CURVE (%)	LEVEL	DIP SETTING POS 4-10	LOG CURVE (%)	LIN CURVE (%)	LEVEL	DIP SETTING POS 4-10	LOG CURVE (%)	LIN CURVE (%)
1	0000000	0.05	0.05	44	0101011	1.4	34.22	87	1010110	11.36	68.08
2	0000001	0.21	1.15	45	0101100	1.45	35.01	88	1010111	12	68.88
3	0000010	0.24	1.95	46	0101101	1.51	35.81	89	1011000	12.65	69.67
4	0000011	0.24	2.73	47	0101110	1.59	36.6	90	1011001	13.35	70.45
5	0000100	0.27	3.51	48	0101111	1.66	37.37	91	1011010	14.07	71.24
6	0000101	0.27	4.31	49	0110000	1.74	38.17	92	1011011	14.85	72.02
7	0000110	0.29	5.1	50	0110001	1.8	38.95	93	1011100	15.65	72.82
8	0000111	0.32	5.87	51	0110010	1.89	39.75	94	1011101	16.52	73.6
9	0001000	0.32	6.67	52	0110011	1.98	40.53	95	1011110	17.43	74.4
10	0001001	0.35	7.46	53	0110100	2.07	41.32	96	1011111	18.4	75.18
11	0001010	0.37	8.24	54	0110101	2.17	42.1	97	1100000	19.4	75.98
12	0001011	0.4	9.03	55	0110110	2.25	42.9	98	1100001	20.46	76.75
13	0001100	0.4	9.82	56	0110111	2.37	43.68	99	1100010	21.6	77.54
14	0001101	0.43	10.6	57	0111000	2.47	44.47	100	1100011	22.8	78.33
15	0001110	0.46	11.4	58	0111001	2.61	45.25	101	1100100	24.06	79.12
16	0001111	0.49	12.18	59	0111010	2.73	46.05	102	1100101	25.38	79.9
17	0010000	0.51	12.98	60	0111011	2.87	46.83	103	1100110	26.8	80.7
18	0010001	0.54	13.75	61	0111100	3.01	47.63	104	1100111	28.3	81.48
19	0010010	0.57	14.55	62	0111101	3.16	48.4	105	1101000	29.85	82.28
20	0010011	0.58	15.33	63	0111110	3.32	49.19	106	1101001	31.51	83.04
21	0010100	0.59	16.12	64	0111111	3.48	49.97	107	1101010	33.25	83.84
22	0010101	0.62	16.91	65	1000000	3.67	50.77	108	1101011	35.11	84.64
23	0010110	0.64	17.7	66	1000001	3.85	51.55	109	1101100	37	85.42
24	0010111	0.67	18.48	67	1000010	4.04	52.34	110	1101101	39.13	86.21
25	0011000	0.69	19.28	68	1000011	4.24	53.12	111	1101110	41.3	86.98
26	0011001	0.72	20.05	69	1000100	4.47	53.92	112	1101111	43.6	87.77
27	0011010	0.73	20.85	70	1000101	4.71	54.7	113	1110000	46	88.56
28	0011011	0.76	21.64	71	1000110	4.95	55.49	114	1110001	48.6	89.34
29	0011100	0.78	22.42	72	1000111	5.2	56.27	115	1110010	51.3	90.14
30	0011101	0.81	23.2	73	1001000	5.47	57.07	116	1110011	54.18	90.92
31	0011110	0.84	24	74	1001001	5.76	57.85	117	1110100	57.2	91.71
32	0011111	0.87	24.78	75	1001010	6.07	58.65	118	1110101	60.4	92.49
33	0100000	0.92	25.58	76	1001011	6.39	59.42	119	1110110	63.8	93.28
34	0100001	0.94	26.35	77	1001100	6.73	60.21	120	1110111	67.35	94.08
35	0100010	0.98	27.15	78	1001101	7.1	61	121	1111000	71.1	94.88
36	0100011	1.02	27.92	79	1001110	7.47	61.8	122	1111001	75.1	95.64
37	0100100	1.06	28.72	80	1001111	7.87	62.58	123	1111010	79.28	96.44
38	0100101	1.1	29.51	81	1010000	8.3	63.38	124	1111011	83.71	97.2
39	0100110	1.15	30.3	82	1010001	8.75	64.15	125	1111100	88.4	97.97
40	0100111	1.2	31.08	83	1010010	9.21	64.95	126	1111101	93.35	98.76
41	0101000	1.23	31.88	84	1010011	9.71	65.73	127	1111110	98.58	99.53
42	0101001	1.3	32.65	85	1010100	10.24	66.51	128	1111111	100.0	100.0
43	0101010	1.34	33.45	86	1010101	10.8	67.3				

*DIP switch positions 4-7 are used to select 16 intensities for each of 32 fixed colors as shown in the Table below:

INTENSITY LEVEL	DIP SETTING POS 4-7	OUTPUT %
1	0-0-0-0	1
2	0-0-0-1	5
3	0-0-1-0	10
4	0-0-1-1	15
5	0-1-0-0	20
6	0-1-0-1	25
7	0-1-1-0	30
8	0-1-1-1	35
9	1-0-0-0	40
10	1-0-0-1	45
11	1-0-1-0	50
12	1-0-1-1	60
13	1-1-0-0	70
14	1-1-0-1	80
15	1-1-1-0	90
16	1-1-1-1	100

*See next page for color settings.

*DIP switch positions 8-12 are used to select 32 colors as shown in the Table below:

| COLOR NUMBER	COLOR	DIP SETTING POS 8-12	RED DMX VALUE	GREEN DMX VALUE	BLUE DMX VALUE	WHITE DMX VALUE
1	PINK	0-0-0-0-0	255	5	24	0
2	LIGHT PINK	0-0-0-0-1	255	22	30	0
3	VIOLET	0-0-0-1-0	129	0	104	0
4	FUCSHIA (MAGENTA)	0-0-0-1-1	162	0	41	0
5	PLUM	0-0-1-0-0	39	0	92	0
6	ORCHID	0-0-1-0-1	179	0	98	0
7	ORANGE	0-0-1-1-0	255	15	0	0
8	SALMON	0-0-1-1-1	255	19	6	0
9	CORAL	0-1-0-0-0	255	9	6	0
10	LIGHT CORAL	0-1-0-0-1	255	9	6	25
11	YELLOW	0-1-0-1-0	255	63	0	0
12	LIGHT VIOLET	0-1-0-1-1	199	0	199	79
13	OLIVE	0-1-1-0-0	0	45	8	94
14	AQUAMARINE	0-1-1-0-1	0	255	157	0
15	SPRING GREEN	0-1-1-1-0	0	245	6	24
16	LIGHT SEA GREEN	0-1-1-1-1	0	255	64	0
17	LIME GREEN	1-0-0-0-0	30	200	0	0
18	PALE GREEN	1-0-0-0-1	45	255	6	18
19	TURQUOISE	1-0-0-1-0	0	146	58	0
20	ROYAL BLUE	1-0-0-1-1	24	5	176	0
21	SKY BLUE	1-0-1-0-0	0	93	255	0
22	CYAN	1-0-1-0-1	0	255	255	0
23	POWDER BLUE	1-0-1-1-0	75	224	230	0
24	SLATE BLUE	1-0-1-1-1	106	90	205	0
25	LAVENDER	1-1-0-0-0	221	13	228	0
26	AZURE	1-1-0-0-1	0	128	255	0
27	2700K	1-1-0-1-0	161	38	0	255
28	3000K	1-1-0-1-1	79	22	0	255
29	3500K	1-1-1-0-0	39	21	4	255
30	4000K	1-1-1-0-1	16	25	16	255
31	5000K	1-1-1-1-0	0	38	42	255
32	5700K	1-1-1-1-1	0	49	58	255

STANDALONE DYNAMIC MODES

Dynamic test mode is used to check the system functionality. This mode will ignore control inputs and cycle through the output range.

STANDALONE DYNAMIC RGBW	MODE(Pos 1-3)	Switches 4-12
DYNAMIC Single color RGBW	1-1-1	X-X-X-X-X-X-X-X-0
DYNAMIC Mixed color RGBW	1-1-1	X-X-X-X-X-X-X-X-1

DYNAMIC SINGLE COLOR

Each color output duty cycle starts from 0% and ramps linearly up to 100% output for 1s, then ramps back down to 0% for 1s, starting with RED, GREEN, BLUE, WHITE and then repeats indefinitely with a period of 8 seconds.
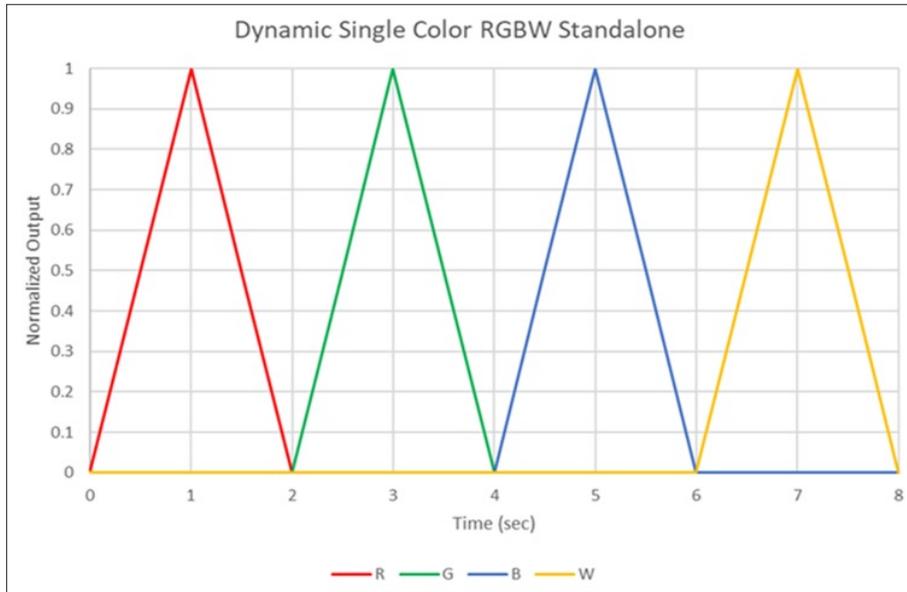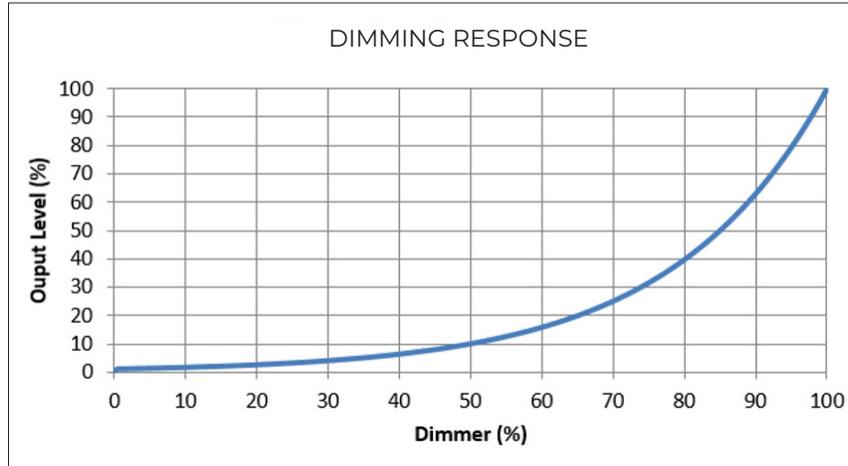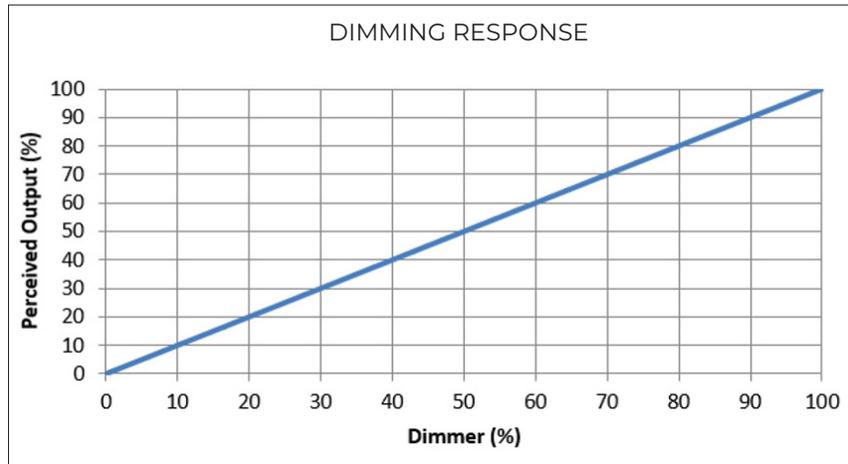

DYNAMIC MIXED COLOR

Each color output duty cycle starts from 0% and ramps linearly up to 100% output for 2s, then ramps back down to 0% for 2s. Channels start ramping with 1s delay starting with RED color and repeats indefinitely.
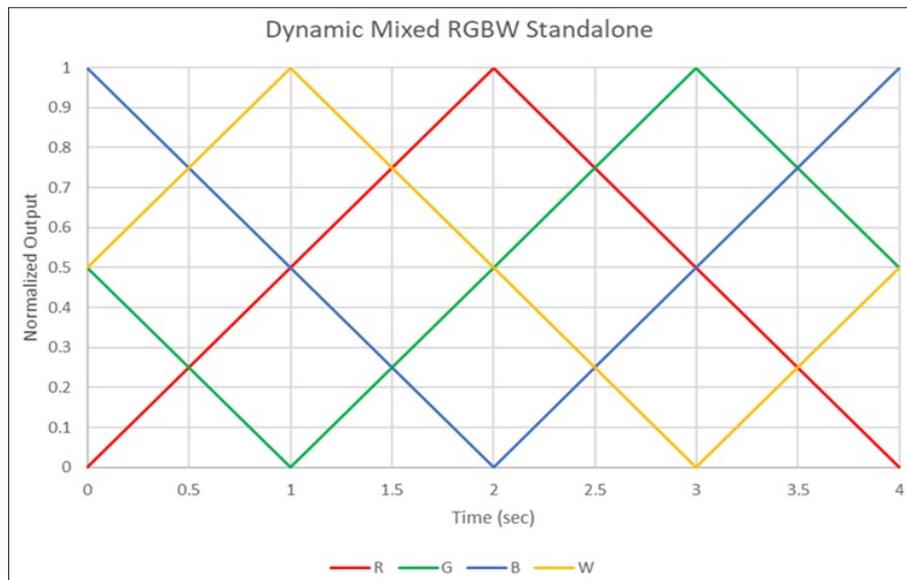
DIMMING CURVE FOR LOG MODE

DIMMING CURVE FOR LIN MODE

*For a 8-bit curve, the control values fall between 0-127 (Standalone Fixed RGBW, Standard).
*For a 16-bit curve, the control values fall between 0-255 (Standard).
*These curves do NOT apply to Standalone Fixed 32 Color (preset curve), or Standalone Dynamic (time-varying intensity)

*In Standalone Fixed modes, DIP switches 4-12 (or a subset thereof) determine intensity based on one of these curves. In Standard Mode, these switches are used for addressing, and the DIP switches on the DMX host itself are used to set intensity.

CONTROLLER STATUS	MODE	LED STATUS	LOAD BEHAVIOR
OFF (No input power)	All	OFF	OFF
DMX Control Input Recognized	Standard	Green ON Steady	Responsive to DMX Commands
Standalone Recognized	Standalone	Alternate Amber/Green Slow (1 Hz)	Responsive only to DIP Switch Settings
DMX Control Input missing	All	Amber On Steady State	ALL colors at full ON, white color
DMX Shorted	Standard	Amber On Steady State	ALL colors at full ON, white color
Input Over Voltage	All	Amber Flashing Slow (1 Hz)	OFF
Input Under Voltage	All	Amber Flashing Fast (8 Hz)	OFF
Output Short Circuit Common + to any R,G,B,W color	All	Red LED flashes at 1s rate	Load is OFF on shorted Channel All loads of the unit, except the shorted one, are flashing The rest of units in the installation remain responsive to DMX commands
Output short circuit between any two R,G,B,W	All	Red LED flashes at 1s rate	Color shorted is brighter, still DMX control
Output Overload		Red LED flashes at 1s rate	Loads Flash at 1s rate
DMX Disconnected during normal operation (D- or D+) from unit "n"	Standard	Amber LED on units with addresses > "n"	Units with addresses <n have loads flickering and units with addresses >n are at full ON and display Amber LED

WARNING:

Each module treats the input controls available with the following priority:
1. Standalone (Fixed or Dynamic): If DIP Switch setting for one of these modes is selected, the module will ignore any other control input (Casambi, DMX) and operate according to the settings of the operational mode selected
2. Wireless (Casambi): When the wireless chip is installed in the Control Module all other inputs (DMX) are ignored even they are wired

PRODUCT SUPPORT
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