



# C-200 WATERCOLOR-U USER GUIDE

MODEL # C-200W-U  
U.S. PATENT # 6,016,038  
OTHER PATENTS PENDING

©2000 Color Kinetics Incorporated  
Color Kinetics is a registered trademark and Chromacore, ColorBlast, ColorPlay, Coup de Color, iColor, iPlayer and SmartJuice are trademarks of Color Kinetics Incorporated.

MAN-0019 Rev 00

Specifications subject to change without notice.

## GETTING STARTED

Congratulations on your purchase, not to mention your good taste. Welcome to a more colorful world brought to you by Color Kinetics and Chromacore™, our patented technology that generates colored light and effects using a microprocessor to control Red, Green and Blue LEDs. This guide contains important information not only on operating your new C-200 WaterColor-U, but also on using it safely. For your protection, please read it carefully before you embark on your colorful adventure. There are very few rules, but those that exist are there for your safety.

### Included in this box:

- (1) C-200 WaterColor-U (Model# C-200W-U)
- (1) Warranty Card
- (1) Registration Card
- (1) User Guide
- (1) Silicone O-ring lubricant

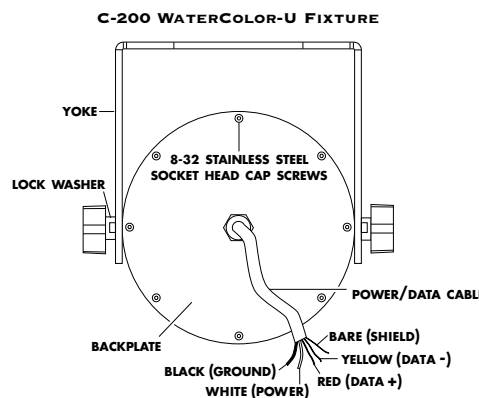
## IN THE BEGINNING

### Setting Up Your New System

This section examines how to find your way around the C-200 WaterColor-U and how Chromacore tells it to “think.”

### Lay of the Land

The following illustration indicates the components of the C-200 WaterColor-U fixture.



### Power Me Up

Before connecting your C-200 WaterColor-U unit to power, carefully read the product configuration requirements and safety information on the other side of this sheet.

Note: The following instructions are for power connections only. For information on wiring the product to receive data, see the section titled “Wired.”

To power the C-200 WaterColor-U using the cMOPS-150 Power Supply, connect the five color-coded wires at the end of the power/data cable to the screw terminals on the power supply (see Fig. 1), in the order shown in Fig. 2.

Fig. 1

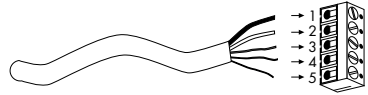


Fig. 2

Terminal	Wire Color
1	Black (Ground)
2	White (+24VDC)
3	Red (Data +)
4	Yellow (Data -)
5	Bare (Shield)

COLOR KINETICS INCORPORATED  
10 MILK STREET, SUITE 1100  
BOSTON, MA 02108 USA  
TEL 888 FULL RGB  
TEL 617 423 9999  
FAX 617 423 9998  
INFO@COLORKINETICS.COM  
WWW.COLORKINETICS.COM

Each cMOPS 150 Power Supply has the ability to run six (6) C-200 WaterColor-U units.

To power the C-200 WaterColor-U using the C-Series Power Supply, you will need a Power/Data Adapter, available from Color Kinetics. Connect the five color-coded wires at the end of the power/data cable to the Power/Data Adapter screw terminals in the order shown in Fig. 2. To connect the Power/Data Adapter to the power supply, insert the BNC connector into its mate and twist to lock it. The C-Series Power Supply can power one (1) C-200 WaterColor-U unit.

C-Series Power Supplies can accommodate 100–240VAC. The C-Series Power Supply adjusts automatically if the voltage is within this range. Users outside the United States may need to provide the appropriate adapters and/or power cords.

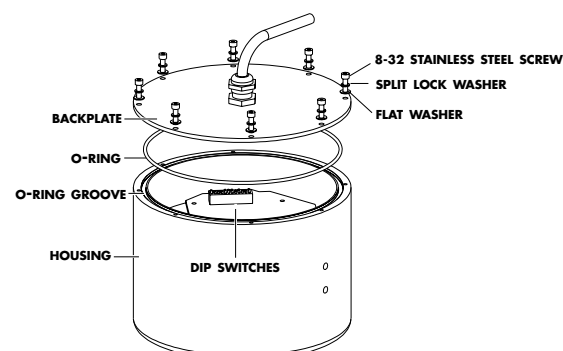
C-Series Power Supplies also require a three-wire grounding plug for safety. DO NOT defeat the purpose of this safety precaution by cutting the grounding pin off the plug. If your outlet does not conform to the pin configuration, contact a licensed electrician to replace it with a properly grounded one.

### Do the Dip

Your C-200 WaterColor-U has been pre-programmed with an assortment of Shows. The back of each C-200 WaterColor-U light holds the key to setting your colorful world. Control, Effects and Variations are all determined by setting the dip switches. We suggest you reposition dip switches with a blunt object such as a stylus or pen cap, not with a sharp object which may damage the units.

In order to select or change the Control, Effects or Variations, you will need to remove the backplate (see Fig. 3).

Fig. 3



To insure that your C-200 WaterColor-U remains water-resistant, please follow these directions carefully for removing and replacing the backplate:

- Disconnect the fixture from the power supply.
- In a dry area, remove the back cover of the unit by removing the eight screws and washers.
- The location of the dip switches is shown in Fig. 3. Configure the switches for the desired show. There are a total of 12 dip switches on the unit. Fig. 4a shows the dip switch location in the housing of the WaterColor-U. Note that in this orientation, switches 1 through 12 read from right to left. (Detailed instructions for show settings begin in the section: “Talk the Talk.”)

Fig. 4a

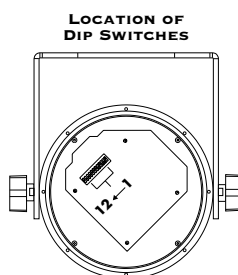
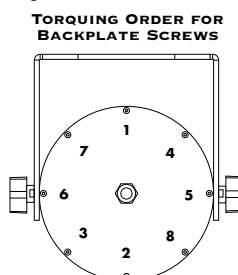


Fig. 4b



When you have completed setting the switches, replace the backplate and gasket as follows:

- Wipe the o-ring groove in the housing with a soft cloth to remove any moisture or debris.
- Gently clean the entire o-ring with a soft cloth to remove any debris.
- Apply a thin layer of lubricant (included with the C-200 WaterColor-U) to the entire o-ring.
- Carefully fit the lubricated o-ring into the groove, making sure that there are no twists in the o-ring as you install it.
- Center the backplate on the housing. Check the entire circumference to be sure that the o-ring is not pinched outside the groove between the backplate and the housing.
- Replace the eight screws and washers. Tighten them to 15–20 in-lbs in the order as shown in Fig. 4b.
- Connect power to the unit.

Note: In order to select or change the Control, Effects or Variations, you must disconnect the power to the C-200 WaterColor-U unit, configure the dip switches according to the desired Show, and then repower the unit. New Shows will not be displayed until the unit is repowered.

## TALK THE TALK

For the most part, the language of Color Kinetics and Chromacore is oriented around three categories: Control, Effects, and Variations.

Take a look at Table 1: Dip Switch Settings, below. This table is the key to what each dip switch setting governs. You’ll see from this table that dip switches #10-12 determine the method of Control and the Effect. Dip switches #1-9 govern the Variations.

### Control

“Control” refers to input—how the user chooses to control the C-200 WaterColor-U in order to produce the desired Shows. The C-200 WaterColor-U can operate via either Networked control or Stand Alone control.

#### • Networked Control

If you are using a DMX512 controller or a PC to control the C-200 WaterColor-U, you need to set each unit to Networked mode. If this is your method of Control, you can skip directly to the “Wired” section on the other side of this sheet.

#### • Stand Alone Control

During Stand Alone operation, the C-200 WaterColor-U will repeat the same Show for as long as it is powered on. If you’re using Stand Alone control, proceed directly to the next section to choose the desired Effect.

### Effects (For Stand Alone operation only)

“Effects” refer to what type of output, or displays, are produced. With the C-200 WaterColor-U you can select any of the following Effects in Stand Alone operation:

- Fixed Color
- Cross Fade
- Fixed Color Strobe
- Color Wash
- Random Color
- Variable Color Strobe

### Variations (For Stand Alone operation only)

Once you have chosen the desired Effect, you can then choose different Variations which will further modify the Effect by adjusting factors such as:

- Color
- Speed
- Brightness
- Saturation
- Strobe Rate
- Cycle Direction

Not every Variation is available with every Effect. Each Effect has a unique combination of variables. But if you follow the Color Kinetics Easy Step Program you can start experimenting to your heart’s content:

- Pick a desired Effect.
- Customize the Effect within the existing range of Variations.
- Sit back and enjoy the compliments—the C-200 WaterColor-U isn’t the only thing with a brain!

## FIXED COLOR

Fixed Color allows the static display of any one of 512 possible colors. A Fixed Color Effect is generated by blending the primary colors of Red, Green and Blue (remember additive color mixing and that smart microprocessor).

To select Fixed Color, first set the switches for the Fixed Color Effect (remember that ON is the UP position).

### CHOOSE THE EFFECT: FIXED COLOR

Switches #10, 11 and 12: ON



### CHOOSE THE VARIATION: FIXED COLOR

The Variation on Fixed Color is choosing one of 512 discrete colors.

#### ◆ Discrete Color

Switches #1-3 control hues of Red. Switches #4-6 control hues of Green. Switches #7-9 control hues of Blue. To illustrate the principles behind the dip switch configurations let’s look at Blue (display of Reds and Greens follow similar principles). In general, the fewer switches in the ON position, the lighter the shade of color which is displayed. So, to get a very light “sky blue,” turn ON only Switch #7. The next hue would be Switch #8 only and so on. Remember, throughout this guide, this symbol ■ indicates the switch should be ON. (See Example 1)

EXAMPLE 1

SWITCH #	7	8	9
0	No blue		
1	Lightest blue	■	
2	A little more	■	■
3	A bit more	■	■
4	Still more	■	■
5	Even more	■	■
6	More intense	■	■
7	Most intense	■	■

TABLE 1: DIP SWITCH SETTINGS

SWITCH #	1	2	3	4	5	6	7	8	9	10	11	12			
<b>FIXED COLOR</b>	Add levels of Red		Add levels of Green			Add levels of Blue			On	On	On				
<b>COLOR WASH</b>	Speed .5 sec - 2 hrs						Satura- tion	Bright- ness	Cycle Direc- tion	On	On				
<b>CROSS FADE</b>	Ending Color red, green, blue, cyan, magenta, yellow, white, black			Starting Color red, green, blue, cyan, magenta, yellow, white, black			Speed from starting color to ending color and back again				On				
<b>RANDOM COLOR</b>	Speed .05 sec - 3 min			Satura- tion			Starting Color red, green, blue, cyan, magenta, yellow, white, black					On			
<b>FIXED COLOR STROBE</b>	Color red, green, blue, cyan, magenta, yellow, white, black						Strobe Rate 20/sec - 2/sec				On				
<b>VARIABLE COLOR STROBE</b>	Speed (color advance)			Cycle Direc- tion			Strobe Rate 20/sec - 2/sec			On		On			
<b>PC-DMX</b>										PC Address			On		
<b>DMX512</b>										DMX512 Address					

## A GLOSSARY OF TERMS

**BRIGHTNESS:** aka (that’s detective talk for also known as) “intensity” or “luminance” of light. A measure of the rate of flow of light energy (luminous flux) per unit area leaving a surface in a particular direction. (For the purpose of this guide, a lower level of Brightness has nothing to do with being intellectually challenged.)

**COLOR:** Color specification can be described in many ways, but in general three qualities describe “color:” brightness (the intensity of the color), hue (the wavelength which determines how similar it is to one or a combination of the perceived colors red, yellow, green or blue), and saturation (the amount of white light mixed in). We can see approximately 200 hues with the naked eye. The other colors we can identify are due to variations in brightness and saturation.

**COLOR WASH:** A Color Wash Effect moves sequentially around the spectrum of colors in either clockwise (ROYGBIV) or counterclockwise (VIBGYOR) Cycle Direction at user definable speeds. Color Wash differs from the Random Color Effect which has no distinct or sequential pattern of color generation.

**CROSS FADE:** Cross Fade Effects slowly increase the intensity of one color of light while simultaneously reducing the intensity of another color. A Cross

Fade Effect differs from a Color Wash Effect in that a Cross Fade alternates between only two colors while the Wash cycles through the color spectrum. In Cross Fades, users will select a Starting Color and an Ending Color (don’t choose the same color!) and then select the desired Speed to go from the first to the second and back again.

**CYCLE DIRECTION:** The sequence in which colors move through the spectrum. The sequence can be in either clockwise (ROYGBIV) or counterclockwise (VIBGYOR) direction.

**DMX AND DMX512:** DMX is a shortened form of “digital multiplex.” It describes a standard method of data transmission that makes possible the interconnection of lighting control equipment by different manufacturers. The DMX512 protocol was developed in 1986 by a committee of the USITT (United States Institute for Theater Technology) to provide a standard interface with which to control dimmers from lighting consoles. In DMX512, each data link supports up to 512 dimmers (hence the name and number – clever, no?).

**DIP SWITCH:** Dip switches are tiny binary devices located on the back of each C-Series lighting fixture in banks of 12, signaling either ON or OFF. With a single dip switch there are two possible combinations or settings, with two dip switches there are 2<sup>2</sup> or 4 possible settings, and so on. With

nine switches, a total of 512 (remember DMX512), or 2<sup>9</sup>, combinations are possible. Color Kinetics products use a “base zero” address where a given setting is determined by the sum of the value of the switches in the ON (or “up”) position, plus one.

**ENDING COLOR:** This Variation allows the user to define the Ending Color of the Cross Fade Effect. For instance, if a Cross Fade goes from red to blue, the Starting Color Variation would be set to red and the Ending Color would be set to blue.

**FIXED COLOR:** (aka, Constant Color) The Fixed Color Effect allows the static display of any ONE of 512 possible colors. Fixed Color is generated by blending (or independently displaying) any of the primary colors (Red–8 shades of red, Green–8 shades of green, and Blue–8 shades of blue). White light will be produced when all colors (Red, Green and Blue) are added together (remember additive color mixing, where all colors combine to white?).

**LED:** (Light Emitting Diode) The source of light used by the Color Kinetics™ C-Series and the secret to its ultra-long source life, LEDs have a predicted source life rated at 100,000 hours under normal operating conditions – that’s 11.4 years of continuous use! An LED is a p-n junction, solid-state diode that emits light through the combination of specially prepared high

purity semiconductor material and two additives. One additive produces negatively charged output (excess electrons) and the other produces positively charged material (a shortage of electrons, or holes, which act as positive charges). Please forgive this foray into techno-speak, we had to use it somewhere in the manual.

**NETWORKED:** Refers to a method of control. Networked control utilizes the C-Series’ data interface ports for external direction of the units. Information is perceived from an external source such as a DMX512 controller or PC instead of from the on-board microprocessor.

**ON:** (Dip Switch Position) A switch is considered to be ON if it is in the UP position. Throughout the guide, we will use the sym- to indicate a switch is ON.

**RANDOM COLOR:** aka “step” or “jump.” Each Random Color Effect produces a randomly generated set of 128 colors at user definable speeds. Colors step (in discrete increments) from one hue to the next in increments of at least 25% of the color spectrum so no two colors in a row will have similar values. Random Color differs from a Color Wash which sequentially and smoothly moves through the color spectrum.

**ROY G. BIV:** An acronym used by many to remember the order of the longest to the shortest wavelengths of the visible spectrum (R=red,

With additive color mixing (thanks to Chromacore technology’s ability to think), you can mix Reds, Greens and Blues to produce secondary colors. The illustration at right shows how secondary colors are produced:

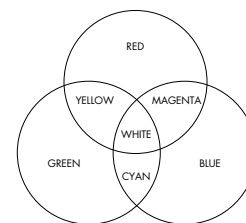
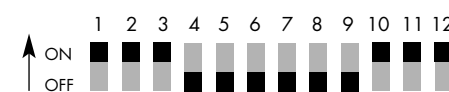


TABLE 2: COLOR WASH SPEED

SWITCH #	1	2	3	4	5	6
0	0.5 sec					
1	0.6 sec	■				
2	0.7 sec	■	■			
3	0.8 sec	■	■	■		
4	0.9 sec	■	■	■	■	
5	1.1 sec	■	■	■	■	■
6	1.2 sec	■	■	■	■	■
7	1.4 sec	■	■	■	■	■
8	1.6 sec	■	■	■	■	■
9	1.9 sec	■	■	■	■	■
10	2.2 sec	■	■	■	■	■
11	2.5 sec	■	■	■	■	■
12	2.9 sec	■	■	■	■	■
13	3.3 sec	■	■	■	■	■
14	3.8 sec	■	■	■	■	■
15	4.4 sec	■	■	■	■	■
16	5 sec	■	■	■	■	■
17	5.8 sec	■	■	■	■	■
18	6.7 sec	■	■	■	■	■
19	7.7 sec	■	■	■	■	■
20	8.8 sec	■	■	■	■	■
21	10.2 sec	■	■	■	■	■
22	11.7 sec	■	■	■	■	■
23	13.4 sec	■	■	■	■	■
24	15.4 sec	■	■	■	■	■
25	18 sec	■	■	■	■	■
26	20 sec	■	■	■	■	■
27	24 sec	■	■	■	■	■
28	27 sec	■	■	■	■	■
29	30 sec	■	■	■	■	■
30	35 sec	■	■	■	■	■
31	40 sec	■	■	■	■	■
32	45 sec	■	■	■	■	■
33	50 sec	■	■	■	■	■
34	1 min	■	■	■	■	■
35	1.1 min	■	■	■	■	■
36	1.3 min	■	■	■	■	■
37	1.5 min	■	■	■	■	■
38	1.8 min	■	■	■	■	■
39	2 min	■	■	■	■	■
40	2.3 min	■	■	■	■	■
41	2.7 min	■	■	■	■	■
42	3 min	■	■	■	■	■
43	3.5 min	■	■	■	■	■
44	4 min	■	■	■	■	■
45	4.5 min	■	■	■	■	■
46	5 min	■	■	■	■	■
47	5.5 min	■	■	■	■	■
48	6 min	■	■	■	■	■
49	6.5 min	■	■	■	■	■
50	7 min	■	■	■	■	■
51	8 min	■	■	■	■	■
52	9 min	■	■	■	■	■
53	10 min	■	■	■	■	■
54	12 min	■	■	■	■	■
55	15 min	■	■	■	■	■
56	20 min	■	■	■	■	■
57	25 min	■	■	■	■	■
58	30 min	■	■	■	■	■
59	40 min	■	■	■	■	■
60	50 min	■	■	■	■	■
61	1 hr	■	■	■	■	■
62	1.5 hrs	■	■	■	■	■
63	2 hrs	■	■	■	■	■

### EXAMPLE OF FIXED COLOR EFFECT

Full Intensity Red



## COLOR WASH

The Color Wash Effect moves sequentially around the spectrum of colors in either clockwise (ROYGBIV) or counterclockwise (VIBGYOR) direction, repeating the same cycle over and over, at user-definable speeds. The Color Wash differs from Random Color which has no distinct or sequential pattern of color generation.

To select Color Wash, first set the switches for the Color Wash Effect (remember that ON is the UP position).

### CHOOSE THE EFFECT: COLOR WASH

Switches #10 and 11: ON



Switch #12: OFF

### CHOOSE THE VARIATION: COLOR WASH

The Color Wash can be varied by Speed, Saturation, Brightness and Cycle Direction.

#### ◆ Speed

In the Color Wash, Speed is defined as the amount of time which elapses between the initial display of the Starting Color in Cycle One (Red in ROYGBIV, or Violet in VIBGYOR), and its next display which begins Cycle Two. There are 64 different speeds which can be set in the Color Wash Effect, ranging from as fast as .5 seconds to as long as 2 hours to complete a single cycle. Switches #1-6 control the speed options. For the fastest speed (.5 sec.), all switches between #1-6 are OFF. For the slowest speed (2 hrs.), all switches between #1-6 are ON. Table 2: Color Wash Speed illustrates the available options, and their switch settings.

#### ◆ Saturation

In the Color Wash Effect, you can vary the Saturation by choosing light Saturation (pastels) or full Saturation. Switch #7 controls Saturation. For light Saturation, set Switch #7 OFF. Full Saturation is achieved by setting Switch #7 ON.

#### ◆ Brightness

In the Color Wash Effect, Switch #8 controls the level of Brightness. The Brightness, or intensity, of the light can be set to either half intensity or full intensity. For half intensity, set Switch #8 OFF. For full intensity, set Switch #8 ON.

TABLE 3: CROSS FADE STARTING COLOR

		SWITCH #	4	5	6
COLOR	0	Black			
	1	Red	■		
	2	Green		■	
	3	Yellow	■	■	
	4	Blue			■
	5	Magenta	■		■
	6	Cyan		■	■
	7	White	■	■	■

◆ Ending Color

In the Cross Fade Effect, Switches #1-3 govern which color to fade to before it reverses back to the Starting Color. Choose one of the following eight colors: black, red, green, magenta, blue, yellow, cyan or white. *Table 4* below illustrates all available options and their switch settings.

TABLE 4: CROSS FADE ENDING COLOR

		SWITCH #	1	2	3
COLOR	0	Black			
	1	Red	■		
	2	Green		■	
	3	Yellow	■	■	
	4	Blue			■
	5	Magenta	■		■
	6	Cyan		■	■
	7	White	■	■	■

Do not set your Starting Color and Ending Color to the same color. If you want a static color display, choose the Fixed Color Effect.

◆ Speed

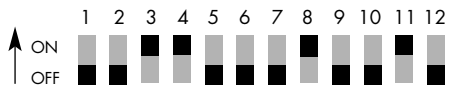
In Cross Fade, Speed is defined as the amount of time which elapses between the initial display of the Starting Color to the Ending Color and back again. There are eight different speeds which can be set for the Cross Fade Effect, ranging from as fast as 5 seconds for the round trip to as long as 1 hour to complete the round trip. Switches #7-9 control the speed options. For the fastest speed (5 sec.), all switches between #7-9 are OFF. For the slowest speed (1 hr.), all switches between #7-9 are ON. *Table 5* below illustrates all available speed options and their switch settings.

TABLE 5: CROSS FADE SPEED

		SWITCH #	7	8	9
SPEED	0	5 sec.			
	1	10 sec.	■		
	2	30 sec.		■	
	3	1 min.	■	■	
	4	2 min.			■
	5	15 min.	■		■
	6	30 min.		■	■
	7	1 hr.	■	■	■

EXAMPLE OF CROSS FADE EFFECT

Starting from red, fading to blue at a speed of 30 seconds round trip

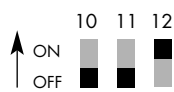


RANDOM COLOR

Random Color or “step” produces a randomly generated set of colors at user definable speeds. Colors step in discrete increments from one hue to the next. This differs from a Color Wash which sequentially and more gradually moves through the color spectrum.

CHOOSE THE EFFECT: RANDOM COLOR

Switches #10 and #11: OFF  
Switch #12: ON



CHOOSE THE VARIATION: RANDOM COLOR

The Random Color Effect can be varied by Speed, Saturation and Starting Color.

◆ Speed

In Random Color, Speed is defined as the amount of time a single color is displayed before it “jumps” to the next color. There are 32 different speeds which can be set for the Random Color Effect, ranging from as fast as .05 seconds to as long as 3 minutes before jumping to the next color. Switches #1-5 control speed. For the fastest speed

TABLE 6: RANDOM COLOR SPEED

		SWITCH #	1	2	3	4	5
0	0.05 sec						
1	0.06 sec	■					
2	0.08 sec		■				
3	0.12 sec			■			
4	0.15 sec	■	■	■			
5	0.21 sec				■		
6	0.25 sec	■	■	■	■		
7	0.3 sec		■	■	■	■	
8	0.4 sec					■	
9	0.5 sec	■	■	■	■	■	
10	0.75 sec		■	■	■	■	
11	1 sec	■	■	■	■	■	
12	1.2 sec					■	
13	1.5 sec	■	■	■	■	■	
14	2 sec					■	
15	2.5 sec	■	■	■	■	■	
16	3.5 sec						■
17	4.5 sec	■	■	■	■	■	
18	5 sec		■	■	■	■	
19	7.5 sec	■	■	■	■	■	
20	10 sec					■	
21	12 sec	■	■	■	■	■	
22	15 sec					■	
23	20 sec	■	■	■	■	■	
24	25 sec					■	
25	30 sec	■	■	■	■	■	
26	45 sec					■	
27	1 min	■	■	■	■	■	
28	1.5 min					■	
29	2 min	■	■	■	■	■	
30	2.5 min					■	
31	3 min	■	■	■	■	■	

(.05 sec.), all switches between #1-5 are OFF. For the slowest speed (3 min.), all switches between #1-5 are ON. The previous table (*Table 6: Random Color Speed*) illustrates the available options, and their switch settings.

◆ Saturation

In the Random Color Effect, you can vary the Saturation by choosing light Saturation (pastels) or full Saturation. Switch #6 controls the amount of Saturation. For light Saturation, set Switch #6 OFF. Full Saturation is achieved by setting Switch #6 ON.

◆ Starting Color

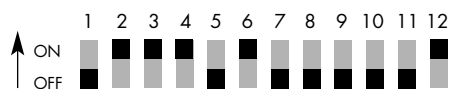
You can choose from one of eight different starting colors in the Random Color Effect. From these eight different starting points it will cycle through a set of 128 colors which step in discrete increments of at least 25% of the color spectrum so no two colors in a row will have similar values. Switches #7-9 govern the Starting Color. *Table 7* below illustrates all available options and their switch settings.

TABLE 7: RANDOM COLOR STARTING COLOR

		SWITCH #	7	8	9
COLOR	0	starting color 1			
	1	starting color 2	■		
	2	starting color 3		■	
	3	starting color 4	■	■	
	4	starting color 5			■
	5	starting color 6	■		■
	6	starting color 7		■	■
	7	starting color 8	■	■	■

EXAMPLE OF RANDOM COLOR EFFECT

At a speed of every 2 seconds, Fully Saturated, Starting with Color 1



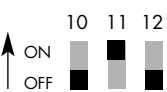
In this example, if a second C-200 WaterColor-U is set to the same settings as the example above except for Starting Color, each would change colors at the same rate but not follow the same color display.

FIXED COLOR STROBE

Strobes are a “stop action,” or rapid series of very short intense light flashes which can make actions seem intermittent. In the Fixed Color Strobe Effect, the same color is strobed at each flash.

CHOOSE THE EFFECT: FIXED COLOR STROBE

Switch #11: ON  
Switches #10 and 12: OFF



CHOOSE THE VARIATION: FIXED COLOR STROBE

The Fixed Strobe Effect can be varied by Color and Strobe Rate.

◆ Color

In the Fixed Color Strobe Effect, switches #1-3 AND #4-6 govern which single color will be displayed during the flash. Choose one of the following eight colors: black, red, green, yellow, blue, magenta, cyan, or white. Both Switches #1-3 AND #4-6 must be configured in exactly the same way. *Table 8* below illustrates the available colors and their switch settings.

TABLE 8: FIXED COLOR STROBE

		SWITCH #	1	2	3	4	5	6
COLOR	0	Black						
	1	Red	■			■		
	2	Green		■			■	
	3	Yellow	■	■		■	■	
	4	Blue			■		■	
	5	Magenta	■		■		■	
	6	Cyan		■	■		■	
	7	White	■	■	■	■	■	■

◆ Strobe Rate

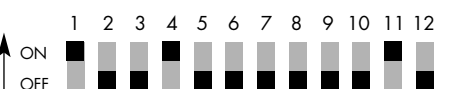
In the Fixed Color Strobe Effect, Switches #7-9 govern the strobe rate which can be set from as fast as 20 flashes per second to as slow as 2 flashes per second. For the fastest speed (20/sec.), all switches between #7-9 are OFF. For the slowest speed (2/sec), all switches between #7-9 are ON. *Table 9* below illustrates all available options and their switch settings.

TABLE 9: FIXED COLOR STROBE RATE

		SWITCH #	7	8	9
STROBE RATE	0	20/sec			
	1	13/sec	■		
	2	10/sec		■	
	3	7.5/sec	■	■	
	4	5/sec			■
	5	4/sec	■	■	■
	6	3/sec		■	■
	7	2/sec	■	■	■

EXAMPLE OF FIXED COLOR STROBE EFFECT

Strobing Red at a rate of 20 flashes/second

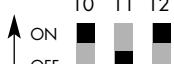


VARIABLE COLOR STROBE

Strobes are a “stop motion,” or rapid series of very short intense light flashes which can make actions seem intermittent. The Variable Color Strobe Effect cycles through a sequence of colors, generating strobes of different colors.

CHOOSE THE EFFECT: VARIABLE COLOR STROBE

Switches #10 and 12: ON  
Switch #11: OFF



CHOOSE THE VARIATION: VARIABLE COLOR STROBE

The Variable Color Strobe Effect can be varied by Speed, Cycle Direction and Strobe Rate.

◆ Speed

In the Variable Color Strobe Effect, Switches #1-5 govern the pattern of colors displayed during the flash of the strobe. The pattern of colors displayed depends on how fast the colors are advancing through the spectrum. This advance is measured as a percentage around the spectrum. At the lower Speeds, each strobe will flash sequential colors since it is slowly advancing through the spectrum. Faster Speeds will flash colors further apart in the spectrum, with the fastest Speed flashing complementary colors. *Table 10* below illustrates all available options and their switch settings.

TABLE 10: VARIABLE COLOR STROBE SPEED

		SWITCH #	1	2	3	4	5
0	0.07%						
1	0.13%	■					
2	0.20%		■				
3	0.26%			■			
4	0.33%	■	■				
5	0.39%			■			
6	0.46%	■	■	■			
7	0.52%		■	■	■		
8	0.65%				■		
9	0.78%	■	■	■	■		
10	1.00%				■		
11	1.20%	■	■	■	■		
12	1.40%				■		
13	1.60%	■	■	■	■		
14	2.00%				■		
15	2.30%	■	■	■	■		
16	2.90%				■		
17	3.60%	■	■	■	■		
18	4.20%		■	■	■	■	
19	4.90%	■	■	■	■	■	
20	5.90%				■	■	
21	7.20%	■	■	■	■	■	
22	8.50%				■	■	
23	10%	■	■	■	■	■	
24	12%				■	■	
25	15%	■	■	■	■	■	
26	18%		■	■	■	■	
27	22%	■	■	■	■	■	
28	26%				■	■	
29	33%	■	■	■	■	■	
30	38%		■	■	■	■	
31	49.9%	■	■	■	■	■	

◆ Cycle Direction

The direction of the flow of colors can be controlled in the Variable Color Strobe through Switch #6. When Switch #6 is OFF, the direction of the flow of colors is clockwise from Red to Violet (ROYGBIV). When Switch #6 is ON, the direction the flow of colors is counter-clockwise from Violet to Red (VIBGYOR).

◆ Strobe Rate

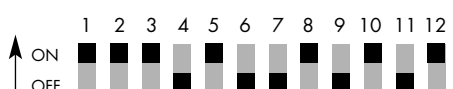
In the Variable Color Strobe Effect, Switches #7-9 govern the strobe rate which can be set from as fast as 20 flashes per second to as slow as 2 flashes per second. For the fastest speed (20/sec.), Switches #7-9 are OFF. For the slowest speed (2/sec), Switches #7-9 are ON. *Table 11* below illustrates all available options and their switch settings.

TABLE 11: VARIABLE COLOR STROBE RATE

		SWITCH #	7	8	9
STROBE RATE	0	20/sec			
	1	13/sec	■		
	2	10/sec		■	
	3	7.5/sec	■	■	
	4	5/sec			■
	5	4/sec	■	■	■
	6	3/sec		■	■
	7	2/sec	■	■	■

EXAMPLE OF VARIABLE COLOR STROBE EFFECT

Speed of 10% advance\*, Clockwise Direction, Strobe Rate of 10/sec



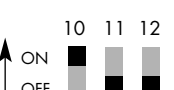
\* This Speed will display advancing complementary colors.

WIRED

The C-200 WaterColor-U can be operated via either Stand Alone or Networked control. Networked control will allow you to utilize either a DMX512 controller or a PC to operate any connected units. If you are using an external control source, you must connect the unit and set the dip switches to receive external data.

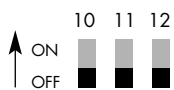
PC

To make the C-200 WaterColor-U take external direction from a PC, set Switch #10 to ON and Switches #11 and 12 to OFF.



DMX512

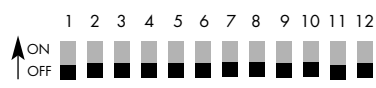
To make the C-200 WaterColor-U take external direction from a DMX512 controller, Switches #10, 11 and 12 should be in the OFF position.



PC control operates at 115,200 baud while DMX512 operates at 250,000 baud. C-200 WaterColor-U fixtures use a base zero system to set the channel address. Switches #1-9 set the starting channel address. Switch #9 is the most significant bit and controls the highest binary digit (256). Each light requires three channels corresponding to Red, Green

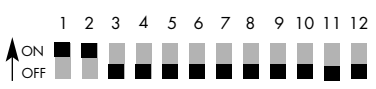
and Blue channels. For example, DMX address #1 corresponds to all switches off.

DMX Address #1 (binary #0)



When set to DMX address #1, the unit’s Red channel corresponds to DMX address #1 while the Green and Blue channels correspond to DMX address #2 and DMX address #3 respectively. The next unit would have a DMX address of #4 and would respond to channels #4, #5 and #6. Subsequent units would be addressed at #7, #11, #14 and further units of three.

DMX Address #4 (binary #3)



Connections

If you are using an external controller such as a PC or a DMX512 board, the power setup remains the same. The data connection is made by using an RJ-45 data cable to connect the Power/Data Adapter or cMOPS-150 Power Supply to your PC or other external controller. Refer to the Recommended Practice for DMX512 guide for additional wiring configuration guidelines. This guide is available from PLASA and USITT.

PLASA Ltd.

</