Anytronics Colour Desk CD02 user guide

Anytronics CD01 and CD02 ColourDesks are controllers for integrated colour control systems which will allow synchronised colour changing of fluorescent, cold cathode neon, LED and any other dimmable light sources. They are particularly recommended for use in controlling systems using Anycolour digital fluorescent ballast fittings (DFBs). Whilst the CD01 has only one set of RGBY outputs, the CD02 will provide data for driving 16 such RGBY separate colour outputs. The CD02 is available in a mains powered version (AC004) or in a low voltage version (AC003) which can be powered from an Anycolour DMX to DFB Interface.

NOTE : Information for installers, including full DMX addressing information, is given in section 3 at the end of this user guide.

Installation procedure overview

AC003

1. Connect to a correctly installed DMX to DFB interface by connecting from RJ45 socket on the CD02 to the ColourDesk RJ45 input on the Interface Unit using the 5m Category 5 cable supplied.
2. Set Interface unit DIL switches 1, 2, 3 to ON, and set appropriate DMX address

AC004

1. Check unit is for correct supply voltage and connect to supply.
2. Connect DMX output data to light fittings and set DMX addressing.
3. If using DMX to DFB Interface unit set DIL switches 1, 2, 3 to ON, and set appropriate DMX address

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1.0 Front Panel Control Overview

Slider controls :-

Red, Green, Blue, Neutral colour level settings and Master level control (all 0-100%)
Colour cycle Depth (0-100%) and Period (10 seconds - 45 minutes) control
[or select slow period range (5 minutes - 24 hours) using internal jumper J1]
Phase separation between RGBY outputs (0-25% of colour cycle period)

Push button controls :-

Sequence select	:	one 3-way (RGB) and three 4-way (RGBY) colour cycles
Waveform select	:	Ramp, Sine and Peak modulation waveforms
Direction select	:	Forward, Reverse and Freeze control of colour cycle
Phase split	:	Linear or centre split phase change
Phase sign	:	Positive or negative phase change direction
Blackout	:	Blackout all outputs

Internal settings :-

J1 fast /slow speed range, J2 odd/even number of fittings

2.0 Getting Started

2.1 Static Colour Control

Set RGBY sliders to 20%, Depth, Speed and Phase to 0% and Master to 100%, then power up equipment. The levels of the Red , Green, Blue and Yellow illumination should be individually controllable from the relevant slider. If the controls appear to be mixed up, remove power from the system and recheck the DMX addressing in your system. Keeping the level of the Yellow slider low, you should be able to produce most imaginable colours by adjusting the relative levels of Red, Green and Blue.

Less saturated colours (ie more subtle pastel shades of lighting) can also be created by now raising the level of the fourth 'neutral' colour (Yellow). Precise control of saturation and hue can be achieved using these four controls to create a wide range of static coloured lighting.

The Master level control will allow you to raise and lower the level of illumination from the light source, whilst keeping the same colour effect. If the colour tends to vary as you adjust this Master level you will probably find that you are using the inappropriate DMX output data for the light source concerned (ie wrong dimming curve), or that the RGB colour sources have not been correctly balanced and matched as they have been in Anycolour DFB fluorescent fittings.

Pressing the right hand 'blackout' button should shut off the lights, and this 'shut down' mode is indicated by the flashing LED above the control. Pressing the button again will extinguish the LED but re-enable the lights. (Note that if driving fluorescent lighting through an Anytronics DMX to DFB Interface unit this feature must be specifically enabled by switching the Interface unit DIL switch 3 to ON.)

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2.2 Dynamic Colour Effects

Once you have experimented with the variety of static colours available from these controls, you are ready to try out more dynamic lighting effects, but keep the Phase control set to zero for the time being. Set up your favourite colour using the controls previously described, and push the colour cycle 'Period' slider to the 100% or 10 second setting. If you now slowly raise the level on the cycle 'Depth' to 10 or 20%, you should see cycles of colour change repeating every 10 seconds. If this is a little fast, reduce the level on the 'Period' slider to slow it down. Increasing the level of the 'Depth' control will produce larger and larger changes in hue until sweeping and dramatic changes in colour are produced. It is probably now a good idea to increase the period to enjoy the full range of colours produced. The calibrated Depth and Period controls allow precise control of the rate of change of hue and of the overall subtlety of the effect, whilst the four colour controls allow the colour cycling to be moved from one part of the colour spectrum to another to achieve an overall required effect. Colour cycling can be removed at any time by reducing the Depth to 0%.

The cycle can instead be frozen or reversed by repeated pressing of the direction button. If both LEDs are lit, then the cycle is frozen at the current colour. Another press will restart the colour cycling, the direction of the cycle being indicated by the upper or lower LED.

Colour Desks can produce three different shapes of colour cycle modulation, creating precisely controlled trajectories through colour space. For colour cycles which linger at the extremes of hue, press the wave form button once to light both LEDs and select a sine modulation. For colour cycles which spend more time meandering through subtle shades with an occasional dramatic colour peak, press the waveform button twice to illuminate the lower LED and select the peak modulation waveform. Each push of this button steps through to the next of the three available waveforms.

2.3 Sequence Effects

The default RGB(Y) setting of the left hand push button provides the best control of hue and colour saturation levels during cycling. In this setting the hue is cycled using the modulation of the RGB levels, whilst the saturation depth of the colour is controlled automatically using the fourth neutral colour. This setting is the best setting to use with RGB colour units such as commercial LED lighting.

By pressing the left button, four colour sequences (or chases) which provide dramatic and interesting colour effects can be selected instead. The central colour about which the colour will cycle is controlled by the settings of the four colour level controls as before, with the depth and period of the colour cycles set by the corresponding controls. Different intermediate colours are produced by the three different cycle patterns available, and the direction of the cycle and choice of modulation waveform are selectable as before by using the push button controls.

2.4 Spatial colour change effects

So far the sixteen RGBY outputs of the ColourDesk 2 have all been driven with the same colour information. If you have several RGB or RGBY light fittings controlled at separate sets of DMX channels, then you can now send different colour information to each fitting by using the Phase control. This control adjusts the separation between colour information sent to the successive RGBY address sets as a percentage of the total colour cycle (between 0 and 25%). The colour information

sent to an RGBY fitting at DMX address 5 will lead or lag the information sent to one at address 1 depending on whether the phase 'sign' toggle switch is set to '+' or '-' (as indicated by the panel LEDs).

Set the Depth and Phase slider controls to zero. As before, all the fittings should produce the same static colour set by the RGBY sliders. With the Period slider towards the top of its travel, move the Depth slider up towards 100% to produce a noticeable colour cycle with all fittings producing the same colours. By now moving the Phase slider up, the colour separation between the differently addressed fittings will slowly increase. If these fittings are arranged in a linear colour wash array across a wall or ceiling, the rate of change of colour across the wall from fitting to fitting is set by this Phase control. At low settings a subtle change in hue is visible, at higher settings a whole or even several complete spectra will be seen. The more fittings that are involved, the better the effect and the greater the precision in colour control.

The colours will move along the wall at a rate controlled by the period control, and can be stopped by putting the unit in 'Freeze'. The depth of colour change is set by the Depth slider control and type of change by the Waveform switch. If four colour fittings are in use (such as most Anycolour DFB fittings), more varied four colour sequences can be introduced by using the Sequence switch. These work less well with three colour RGB fittings.

This effect can produce stunning colour washes with subtle changes in hue moving slowly across a wall or back lit screen, or with faster more dramatic colour changes moving whole spectra across the illuminated surface. With light fittings arranged in circular or similar arrays, a complete spectrum of colour can be made to move continuously round the array with the depth of colour change and rate of movement being set by the Depth and Period controls respectively.

2.5 Phase Split Effect

With a number of fittings arranged in a linear array as described above, the colours can be made to enter at one end of the array and move through to the other in a direction set by the Direction control. If the fittings are appropriately addressed, one further effect is possible, in that the colours can instead be made to either start at the centre of the array and move outwards, or start at the edges and merge in the centre. This effect is controlled by the switch near the Phase slider which has diagrammatic arrows showing the two options of the array as a continuous or as a split effect.

2.6 Phase Split DMX Addressing

To get the best out of this effect requires careful installation and setting of the DMX addresses of the light fittings. An internal jumper J2 inside the CD02 must also be set to select the output data suitable for an odd or even number of light fittings. If the number of light fittings is an even number, the jumper should be in the position closer to J1. If the number of light fittings in use is an odd number, the jumper should be in the position closer to J3.

If you are using an **even** number of light fittings in this effect, then they should be arranged symmetrically around the fittings corresponding to addresses H and I in section 3, eg for LED fittings, equal numbers of fittings should be set to be addressed above and below the centre split point between address 32 and 33. If using 10 such RGB fittings, they should be given addresses 13, 17, 21, 25, 29, 33, 37, 41, 45, 49 and the central two fittings (H and I) will receive the same information in 'split' mode.

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If you are using an **odd** number of light fittings for this effect, then they should be arranged symmetrically around the fitting corresponding to RGBY output I in section 3 (DMX addresses 33-36, 97-100, 161-164 or 225-228) which is at the centre of the split effect. Eg for eleven LED fittings, their correct addresses would be

13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53.

To translate these examples for use with other types of light fitting, (see section 3.0)

add 192 to these addresses for Anycolour fluorescent DFBs addresses.
add 64 to these addresses for incandescent light fittings addresses.
add 128 to these addresses for cold cathode /neon / argon lighting addresses

3.0 Output Data Format and DMX addressing

The data output is in a DMX format via standard 5 pin XLR (AC004) or via RJ45 and Cat 5 cable (AC003). The DMX frame consists of four sub-frames each containing 64 data channels made up of 16 sets of RGBY data, so that the total data frame is 256 channels long and consists of data suitable for use with all different dimmable light sources. This DMX data frame is organised thus :-

channels 1 - 64 : linear output data (for LEDs etc)
channels 65 -128 : linear power data (for incandescents)
channels 129 -192 : cold cathode data (for neon / argon etc)
channels 193 -256 : fluorescent data

with the channel addressing organised for the 16 sets of RGBY data (A to P) thus :-

	A	B	C	D	E	F	G	H
Linear data	1 - 4	5 - 8	9 -12	13 - 16	17 - 20	21 - 24	25 - 28	29 - 32
Linear Power	65 - 68	69 -72	73 -76	77 - 80	81 - 84	85 - 88	89 - 92	93 - 96
Cold Cathode	129 -132	133 -136	137 -140	141 -144	145 -148	149 -152	153 -156	157 -160
Fluorescent	193 -196	197 -200	201 -204	205 -208	209 -212	213 -216	217 -220	221 -224

	I	J	K	L	M	N	O	P
Linear data	33 - 36	37 - 40	41 - 44	45 - 48	49 - 52	53 - 56	57 - 60	61 - 64
Linear Power	97 -100	101 -104	105 -108	109 -112	113 -116	117 -120	121 -124	125-128
Cold Cathode	161 -164	165 -168	169 -172	173 -176	177 -180	181 -184	185 -188	189 -192
Fluorescent	225 -228	229 -232	233 -236	237 -240	241 -244	245 -248	249 -252	253 -256

Four colour fluorescent light fittings (such as Anycolour DFBs) should be set with addresses at 193, 197, 201 etc through to 253, in order to use the RGBY fluorescent compatible information for each fitting.

Three colour light fittings such as RGB LED fittings should be set with addresses 1, 5, 9, 13 etc to 61 to use only the first three channels of data (RGB) from each set of four channel (RGBY) data.

To use the split phase lighting feature, fittings should be addressed symmetrically around fitting H and I for an even number of fittings, or symmetrically around fitting I for an odd number of fittings. (See section 2.6)

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