Making the most of colourwave effects on the Anycolour CD02 ColourDesk

CD01 ColourDesks produce a single channel of colour information suitable for use in controlling RGB or RGBY light fittings. The ColourDesk controls allow a precise colour cycle to be produced from such fittings, and the front panel settings can be memorised in one of the presets of the simple to use Anycolour memory.

CD02 ColourDesks produce sixteen channels of such colour information which are spaced apart round the selected colour cycle by an amount set on the 'Phase' control. This channel separation is variable from 0-25% of the total colour cycle.

These 16 channels of RGBY colour information are output four times in each DMX frame in formats suitable for use with a variety of dimmable illumination sources. The resultant DMX frame is 256 channels long and consists of four sub-frames each containing 64 data channels made up of 16 sets of RGBY data, thus :-

channels 1 - 64 : 16 channels of RGBY linear output data (for LEDs etc)
channels 65 -128 : 16 channels of RGBY linear power data (for incandescents)
channels 129 -192 : 16 channels of RGBY cold cathode data (for neon / argon etc)
channels 193 -256 : 16 channels of RGBY 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

To output the 16 channels of colour information to Anycolour lightboxes or DFBs requires the use of two DMX to DFB interfaces, each producing 8 output channels. The interfaces should be set with start addresses 193 and 225 respectively, each decoding one block of information as shown in the table above.

Normally each RGBY colour channel (A-P) outputs information spaced from its neighbour by the amount set on the 'Phase' control. If this control is set to zero, all colour outputs will be the same (following the same point in the set colour cycle) and the output will be equivalent to the single colour output from a CD01.

If the ‘Phase’ setting is moved up to 2.5, the colour separation between channels will in fact be 25% of a quarter of the full colour cycle, or about 6% of the full colour cycle, so that a linear array of Anycolour lightboxes or DFBs or any other RGB or RGBY fitting will produce one colour cycle as a full spectrum along the line of the fittings. If the fittings are arranged in a circle, the complete spectrum will occupy the circumference of the circle.

This spectrum can be made to move forwards, backwards or to freeze by using the ColourDesk ‘Direction’ control button found under the ‘Depth’ control on the CD02. The speed of movement can be adjusted by using the ‘Period’ control and the depth of colour change by using the ‘Depth’ control. The direction of phase shift through the colour cycle can be selected using the Phase +/- button under the ‘Phase’ control. This reverses the order of the colour spectrum, whilst retaining the direction of colour movement selected with the ‘Direction’ button.

Channel output structure

If the sixteen output channels from the DMX to DFB interface units drive sixteen lightboxes or DFBs in a sequential linear array, they can be represented thus :-

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

by pressing the ‘Split’ button under the period control, the split output option can be selected. This duplicates the information from the first eight colour outputs into the second eight colour outputs in reverse order, so that the colour wave now moves from the edges of the array into the centre, or from the centre to the edges. Although the ColourDesk outputs are still 16 separate channels A-P, the colour information is duplicated around the centre thus, giving a colour spectrum which appears reflected about its centre thus :-

A	B	C	D	E	F	G	H	H	G	F	E	D	C	B	A

and this can be switched back to the previous linear output arrangement by pressing the ‘Split’ button again.

An array of sixteen fittings arranged in a circle will produce a continually circling spectrum in the first setting, or else with the ‘Split’ function selected, a spectrum which originates at one point and moves round both sides of the circle to rejoin on the opposite side. The phase control can be adjusted for the desired effect, but for the complete circle without the ‘Split’ function a complete rotating spectrum will be produced with a setting of about 2.5 or 25%.

To drive smaller numbers of lightboxes or DFBs correctly, set the same DMX addressing on the two DMX to DFB interfaces, but just use the innermost colour outputs, leaving outputs from 1 up on the first interface, and 8 down on the second unused. For twelve lightboxes you should aim to use outputs thus :-

		C	D	E	F	G	H	I	J	K	L	M	N		

so that the spectrum is continuous through the centre and can be switched to an effective output of

		C	D	E	F	G	H	H	G	F	E	D	C		

by engaging the'Split' function.

For eight or fewer colour channel outputs, a single DMX to DFB interface can be used for this, and would be best addressed at DMX address 209 to decode just the central outputs from the CD02 thus :-

				E	F	G	H	I	J	K	L				

leaving off the DFB's from outputs 1 and 8 for six outputs :-

					F	G	H	I	J	K					

1,2,7 and 8 for only four outputs :-

						G	H	I	J						

Note : if only four outputs are being used in this way, the DIL switch settings on the interface unit can be changed to output the data from successive pairs of interface outputs, doubling the effective drive capability. The DMX address should be set to 217 (corresponding to the G output) and outputs 1 and 2 will output 'G' information, 3 and 4 'H' information, 5 and 6 'I' information and 7 and 8 'J' information.

Odd Numbers of fittings

In all the examples given above, there are assumed to be an even number of fittings so that in 'Split' mode the colourwave emerges from outputs A and P simultaneously and disappears into outputs H and I simultaneously.

A jumper setting inside the ColourDesk can be used to change the output arrangement in 'Split' mode to be symmetric for odd numbers of colour fittings. This jumper does not change the colour outputs when out of 'Split' mode :-

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

but reflects the data around a different DMX address in 'Split' mode :-

A	B	C	D	E	F	G	H	I	H	G	F	E	D	C	B

This is useful for odd numbers of fittings in a linear array. The maximum of 15 would be connected to the last 15 outputs from the interfaces, normally giving

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

or in ‘Split’ mode giving :-

	B	C	D	E	F	G	H	I	H	G	F	E	D	C	B

Again for smaller numbers of fittings, the outer outputs should be unused, eg for eleven fittings :-

			D	E	F	G	H	I	J	K	L	M	N		

giving :-

			D	E	F	G	H	I	H	G	F	E	D		

in ‘Split’ mode.

For fewer than 8 fittings, only one DMX to DFB interface need be used, and this should be addressed at DMX address 209, seven outputs being connected thus with the first interface output unused:-

					F	G	H	I	J	K	L				

or for the extreme example of three fittings, outputs 1,2,3,7,and 8 of the interface are unused :-

							H	I	J						

For this last case it is possible to output the information to pairs of interface outputs and set the DMX address to 217 as explained at the end of the previous section, but in this case the ‘G’ information is unwanted, so outputs 1 and 2 of the interface are unused. ‘H’ information would be available on outputs 3 and 4, ‘I’ on 5 and 6 and ‘J’ on outputs 7 and 8 of the interface.

More complex arrays

Once the above principles of operation have been understood, they can be applied to more complex shapes to produce a variety of lighting effects whether created using DFBs behind translucent screens or directly with stacked lightboxes.

Some examples are shown below :-

a double course of 14 lightboxes, and seen in split mode :-

B	C	D	E	F	G	H			B	C	D	E	F	G	H
O	N	M	L	K	J	I			B	C	D	E	F	G	H

either the colour wave rotates round the boxes or moves along the wall.

Alternatively they could be connected as for the single course array before (with odd number selected on the CD02 jumper) :- for split effect from the centre :-

F	G	H	I	J	K	L			F	G	H	I	H	G	F
F	G	H	I	J	K	L			F	G	H	I	H	G	F

Triple and quadruple courses can have colours moving one way along the outside and back along the middle, turning into a moving wave in 'Split' mode :-

B	C	D	E	F	G	H			B	C	D	E	F	G	H
O	N	M	L	K	J	I			B	C	D	E	F	G	H
B	C	D	E	F	G	H			B	C	D	E	F	G	H

B	C	D	E	F	G	H			B	C	D	E	F	G	H
O	N	M	L	K	J	I			B	C	D	E	F	G	H
O	N	M	L	K	J	I			B	C	D	E	F	G	H
B	C	D	E	F	G	H			B	C	D	E	F	G	H

or as before split in the centre of the wall instead.

Complex shapes

Closed shapes such as those surrounding a screen or window require more care, as even though there may be an even number of fittings, the 'Split' mode may only work properly with the CD02 jumper in the 'odd number' position. This is when the colour wave is expected to start and finish in single fittings as in these cases :-

normally :- in 'Split' mode :-

O	N	M	L	K				C	D	E	F	G
P				J				B				H
A				I				A				I
B				H				B				H
C	D	E	F	G				C	D	E	F	G

A	P	O	N	M	L			A	B	C	D	E	F
B					K			B					G
C					J			C					H
D	E	F	G	H	I			D	E	F	G	H	I

B	O	N	M	L				B	C	D	E	F
C				K				C				G
D				J				D				H
E	F	G	H	I				E	F	G	H	I

A	P	O	N	M	L	K		A	B	C	D	E	F	G
B						J		B						H
C	D	E	F	G	H	I		C	D	E	F	G	H	I

or require the use of the ‘even’ jumper position when the colour wave is required to start and finish in pairs of fittings as here :-

normally :- and in ‘Split’ mode :-

O	N	M	L	K	J			B	C	D	E	F	G
P					I			A					H
A					H			A					H
B	C	D	E	F	G			B	C	D	E	F	G

N	M	L	K	J				C	D	E	F	G
O				I				B				H
B				H				B				H
C	D	E	F	G				C	D	E	F	G

D	C	B	O	N	M			D	C	B	B	C	D
E					L			E					E
F	G	H	I	J	K			F	G	H	H	G	F

and again use the ‘odd’ jumper position when the colour wave is required to start at one lightbox as with these interesting triangular configurations :-

normally :- and in ‘Split’ mode

I									I								
H	I								H	I							
K	H	I							G	H	I						
F	K	H	I						F	G	H	I					
M	F	K	H	I					E	F	G	H	I				
D	M	F	K	H	I				D	E	F	G	H	I			
O	D	M	F	K	H	I			C	D	E	F	G	H	I		
B	O	D	M	F	K	H	I		B	C	D	E	F	G	H	I	

I									I								
H	I								H	I							
K	H	I							G	H	I						
F	K	H	I						F	G	H	I					
M	F	K	H	I					E	F	G	H	I				
D	M	F	K	H	I				D	E	F	G	H	I			
O	D	M	F	K	H	I			C	D	E	F	G	H	I		

More complex shapes require more thought, but the examples above should provide some help. Map your intended installation out on paper as above, label the boxes according to the colour wave effect that you want to create, and work out the DMX addressing and connections from there using the lookup table on page 1.

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