

ColourTheme 4 RGBW DMX Controller User Manual



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Notes

- Install in a dry sheltered position
- Interior use only

- Ensure adequate ventilation
- Installation should only be performed by a qualified professional
- Install in accordance with all appropriate wiring standards
- Never connect a LED fitting to a driver that is powered. Doing so may result in damage to the LED.
- Always make sure the output voltage range and output current of the LED driver match the requirements of the LED fitting. Failure to do so may result in damage both the driver and fitting.

Introduction

The Colour Theme Controller is a DMX show generator with a simple and intuitive user interface, designed for use with Digilin's range of LED power controllers. It can have up to 400 pre-programmed shows¹ stored in its memory, each dimmable down to 10%, ranging from static colours, to smooth flowing colour changes through to dynamic bold shows, all of which make full use of the intense, vibrant lighting effects achievable with LED lighting.

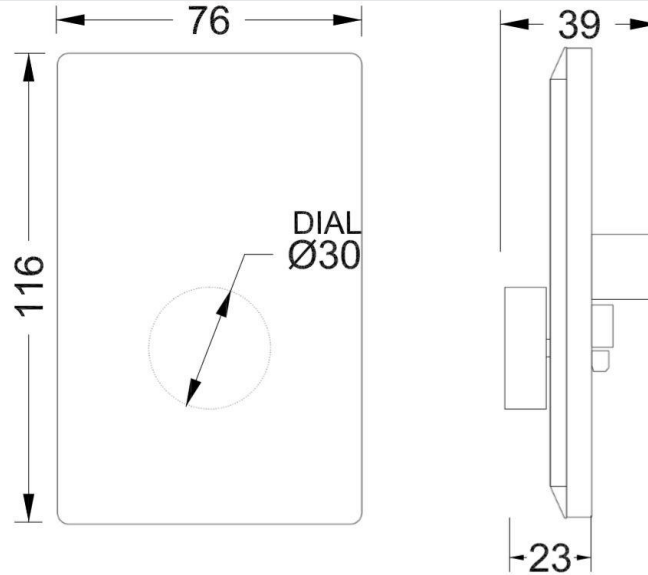
Additionally, the Colour Theme Controller has a serial interface which provides an interface to PC or any number of lighting control networks.

¹ Shows are hard coded into the device and not user configurable. Should you have specific requirements that are not met by the default shows, please contact Digilin.

Specifications

Physical

		Units
Plate Dimensions	76 x 116 x 11	mm
Dimensions Including Knob	76 x 116 x 23	mm
Weight	100	g



Inputs

		Units
Voltage	12 -24	VDC
Current		mA
Fuse	100	mA

Communications

		Units
DMX Channels	4	
DMX Start Address	Adjustable – Default 1	
DMX Load	0.25	Standard Devices
Serial Baud Rate	9600	bps

Installation

Wiring

The Colour Theme has a single 4-way screw terminal block, as shown in Figure 1. This provides connections for the power and data. The positive voltage input should be between +12V and +24V. This cable can be secured to the cable mount point using a cable tie.

If using the serial interface, connect the unit using a null modem cable (refer to Appendix A. RS232 Null Modem Cables Using RJ45 Connectors to see how these cables are constructed) to the chosen host.

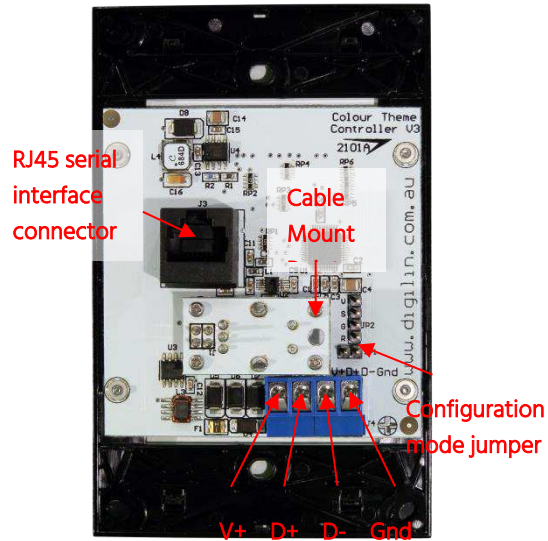


Figure 1 Connections on the Colour Theme Controller

Wiring to LDD Controllers

Digilin’s newest range of LDD controllers use RJ45 and cat5 cables for DMX. To connect the colour theme to these drivers, follow the instructions in Table 1

	T568A	T568B
V+	Blue	Blue
D+	Green/White	Orange/White
D-	Green	Orange
Gnd	Blue/White, Brown, Brown/White	Blue/White, Brown, Brown/White

Table 1 Wiring to Cat5 cables

Mounting

The Colour Theme Controller is housed in a standard Clipsal plate, and as such is compatible with any standard mounting boxes or clips. There is also a mounting frame (Clipsal Part number 4000VH1) available in 5 colours that can be used to cover the black base and compliment wall colour.

To install the Colour Theme Controller

1. Remove the knob by gently pulling it straight back
2. Remove the fascia by inserting a small flat blade screwdriver into the slots on the top and bottom of the plate and lever it off.
3. Mount to wall using appropriate hardware.
4. Re-attach fascia by pushing it into place at the top then at the bottom.
5. Re-install the knob by gently sliding it onto the shaft.

Operation

Software Version

On power up, the Colour Theme Controller will briefly display 2 codes. First it will briefly display -4-, indicating that this is a 4 channel Colour Theme. Next it will display the firmware version.

Selecting Shows

The identifier of the currently running show is displayed on the 3-digit display of the Colour Theme Controller Panel. To change the show simply turn the knob, clockwise to increase the show and anti-clockwise to decrease it. The Colour Theme Controller will skip over un-programmed show identifiers and will loop between the highest and lowest programmed shows.

Dimming

Each show on the Colour Theme Controller can be dimmed in 10% steps down to 10%. To alter the dimming level, press the knob for 0.5 seconds. The display will then show a 'd' followed by a 2-digit number representing the 10 dim levels (1 = 10%, 10 = 100%). This can now be altered by turning the knob (clockwise to increase dim level, anti-clockwise to decrease it). The Colour Theme Controller will exit dimming control if nothing is changed for a period of 2 seconds.

Note that, depending on the LED driver, dimming may alter the dynamics of Colour Theme Controller shows.

Switching Drivers Off

To turn off the LED light fittings, simply give a short press to the knob (less than 0.5 seconds). The unit will then display OFF for a period of 10 seconds before the display goes blank.

While the Colour Theme Controller is off, any show running is paused. To turn the light fittings back on, simply press the knob again.

Storing Default Setting

Storing a default setting will set which show and dim level the Colour Theme Controller will load when first power on (the factory default is show 001). To change this, with the unit turned on, select the desired show and dim level. Next press and hold the knob for a period of 2.5 seconds. The display will cycle to the dim setting, and then the unit will briefly flash to off. Once the unit is back on, the setting is saved.

Serial Interface

The Colour Theme Controller features an RS232 serial interface with the following data format:

- 9600 baud
- 8-bit data
- 1 stop bit
- No parity
- No flow control

The pin-out for the RJ45 connector is covered in Appendix A RS232 Null Modem Cables using RJ45 Connectors.

User Configuration

Configuration mode allows the user to change various settings (as listed in Table 2). To use this mode, the Colour Theme Controller will need to be connected to a computer running a terminal program² (configured with the settings from above), via the RJ45 serial connection. Before powering up, place a jumper on the pins of JP1 (refer to Figure 1).

Once the Colour Theme Controller is power up, it should print a menu similar to that shown in Figure 2 in the terminal program window. To alter settings, simply follow the instructions in the menu (settings are saved automatically as they are altered). To exit configuration mode, power off the Colour Theme Controller and remove the jumper on JP1.

² Up until Windows Vista, the terminal program HyperTerminal was installed as part of a windows installation. A simple web search will turn up several free alternatives for use with newer operating systems.

Setting	Description	Valid Range	Default Value
DMX Start Address	Channel to start the RGB triplet (all address before this will transmit as 0)	1 – 510	1
Channel Repeat	Number of times to repeat the RGB triplet	1 - 170	1
Echo enabled	Controls if commands are sent back (echoed) to the user when sending serial commands	On/Off	Yes

Table 2 Settings in User Configuration.

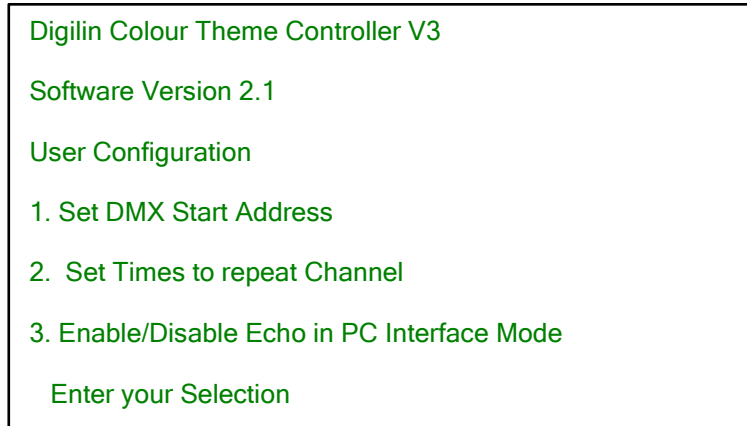


Figure 2 Starting menu in configuration mode.

Serial Commands

This mode provides a simple method to control the Colour Theme Controller via a PC (or any device in which the serial data output can be formatted correctly, which includes several home automation/lighting control systems.). If echo is enabled, characters sent will be echoed back, unless an incorrect character is detected (i.e. not a number), in which case all characters will be ignored until the carriage return character is detected.

The command to set the currently running show is simply a 1 to 3-digit number (transmitted in ASCII) representing the desired show followed by the carriage return character. If a value of 0 is entered, the unit will turn off. It can be turned on again by entering any number, if the number is an unimplemented show, the Colour Theme Controller will resume the previous show. Entering an unimplemented show when already on will have no effect.

The command to dim the fourth channel is the '-' character followed by a single ASCII digit, with 0 represent dim level 10 (i.e. 100%). A dim command can directly follow a show command. Refer to Appendix B. Serial Command Examples for further explanation.

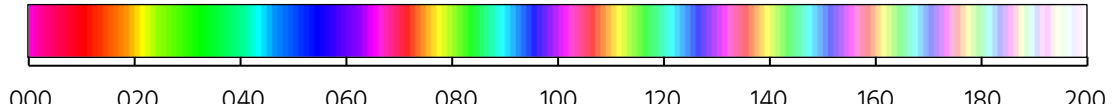
Shows

The show space is broken into 3 groups

1. 001 – 200 are static colours
2. 201 – 300 are static colour temperatures
3. 301 – 400 are subtle shows
4. 401 – 500 are dynamic shows

Static Colours

There are 200 unique saturated colours (colours made from at least 1 channel being at 100%) in the static colour range. The range is broken up as shown in the image below.



Essentially the sequence of colours from 0 to 66 are repeated, slowly increasing the levels of the non-saturated channels until it reaches white at 200. Colours that may be of particular interest are given in Table 3, and there is a complete listing of the static colours (along with their RGB values) in Appendix D. Full Static Colour Listing.

Show	Colour	Show	Colour
011	Red	033	Green
055	Blue	200	Full On
022	Yellow	044	Cyan
066	Magenta	019	Orange
175	Pink	024	Lime

Table 3 Important colours in the static colour range.

Setting Colour Temperature

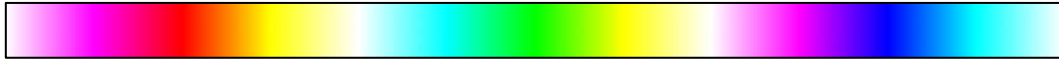
The Colour Theme Controller uses shows 201 through 243 to approximate a white light with a colour temperature between 1800K and 6000K. While in this range, the display on the Colour Theme Controller will display the colour temperature in kilokelvin (e.g. t1.8 = 1800K)

This is based on the LED colours and levels of our PaletteFlex RGBW strip. However, note that due to LED binning and colour variances created by optical components, the resultant colour temperature may vary slightly from the figure displayed on the screen.

Subtle Shows

Subtle Shows feature colour transitions that may not necessarily be noticeable, allowing the colours to shift and dance in the background.

Show 301



RGB colour cycle 1 with fade
Total Show Length: 12 minutes

Show 302



RGB colour cycle 1 with fade
Total Show Length: 6 minutes

Show 303



RGB colour cycle 1 with fade and 30 second hold on each colour
Total Show Length: 12 minutes

Show 304



RGB colour cycle 1 with fade
Total Show Length: 24 minutes

Show 305



RGB colour cycle 1 with fade
Total Show Length: 1 hour

Show 306



RGB colour cycle 1 with fade
Total Show Length: 2 hours

Show 307



RGB colour cycle 1 with fade
Total Show Length: 4 hours

Show 308



RGB colour cycle 2 with fade
Total Show Length: 50 seconds

Show 309



RGB colour cycle 2 with fade
Total Show Length: 100 seconds

Show 310



RGB colour cycle 2 with fade

Total Show Length: 2 minutes, 24 seconds

Show 311



RGB colour cycle 2 with fade

Total Show Length: 16 minutes

Show 312



RGB colour cycle 2 with fade and 5 second hold on each colour

Total Show Length: 16 minutes, 40 seconds

Show 313



RGB colour cycle 2 with fade and 30 second hold on each colour

Total Show Length: 20 minutes

Show 314



Aqua Colour Cycle

Total Show Length: 7 minutes, 45 seconds

Show 315



Aqua Colour Cycle

Total Show Length: 1 minute

Show 316



Red and Pink mix

Total Show Length: 18 seconds

Show 317



Warm Colour mix

Total Show Length: 30 seconds

Show 318



Cool Colour Mix

Total Show Length: 30 seconds

Show 319



Sunset sequence, 1 minute hold on blue (night)

Total Show Length: 2 minutes

Show 320



Slow Sunset sequence, with 10 minute hold on blue (night)

Total Show Length: 2 hours

Show 321



Green and Red flash with fade

Total Show Length: 50 seconds

Show 322



Green and Red flash with fade

Total Show Length: 1 minute, 30 seconds

Show 323



Bright RGB Colour Mix

Total Show Length: 1 minute, 30 seconds

Show 324



Bright RGB Colour Mix

Total Show Length: 7 minutes

Show 325



Smooth Colour Mix with no dominant green or red

Total Show Length: 30 minutes

Show 326



Smooth colour mix with no dominant red or green, with 1 minute hold on each colour

Total Show Length: 26 minutes, 24 seconds

Show 327



Blue, green, orange, cool white with 5 second fade and 90 second hold

Total Show Length: 6 minutes, 20 seconds

Show 328



Blue, green, orange with 5 second fade and 90 second hold

Total Show Length: 4 minutes, 45 seconds

Show 329



Blue & Orange with 5 second fade and 5 second hold

Total Show Length: 20 seconds

Show 330



Blue twinkling/sparkling effect

Total Show Length: 8.65 seconds

Show 331



Red twinkling/sparkling effect

Total Show Length: 8.65 seconds

Show 332



Orange twinkling/sparkling effect

Total Show Length: 8.65 seconds

Show 333



Warm Colours twinkling/sparkling effect

Total Show Length: 8.65 seconds

Show 334



White twinkling/sparkling effect

Total Show Length: 8.65 seconds

Show 335



RGB twinkling/sparkling effect

Total Show Length: 39.25 seconds

Dynamic Shows

Dynamic shows feature rapid colour transitions, designed to draw attention to an area, a display, or an event.

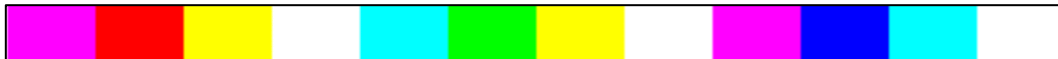
Show 401



RGB Colour cycle 1, with 1 second fade and 10 second hold

Total Show Length: 2 minutes, 12 seconds

Show 402



RGB Colour cycle 1, with 1 second fade and 30 second hold

Total Show Length: 6 minutes, 12 seconds

Show 403



RGB Colour cycle 1, with 1 second fade and 1 minute hold

Total Show Length: 12 minutes, 12 seconds

Show 404



RGB Colour cycle 2, with 0.75 second fade and 5 second hold

Total Show Length: 46 seconds

Show 405



RGB Colour cycle 2, with 0.75 second fade and 30 second hold

Total Show Length: 4 minutes, 6 seconds

Show 406



RGB Colour cycle 2, with 3 second fade and 5 second hold

Total Show Length: 1 minute, 4 seconds

Show 407



RGB Colour cycle 2, with 3 second fade and 30 second hold

Total Show Length: 4 minutes, 24 seconds

Show 408



1 Second per colour, no fade

Total Show Length: 11 seconds

Show 409



Randomly jumping colours to simulate fireworks

Total Show Length: 14.1

Show 410



Green and gold alternating at increasing speeds

Total Show Length: 10 seconds

Show 411



Alternating green and gold, with hold for 30 seconds

Total Show Length: 61 seconds

Show 412



A quick 3 count, followed by 2 minutes of steady green

Total Show Length: 2 minutes, 4 seconds

Show 413



Double beat with trailing fade in red

Total Show Length: 2 seconds

Show 414



Maroon & Blue, with 2 second hold & 1 second fade

Total Show Length: 10 seconds

Show 415



Traffic Light Sequence

Total Show Length: 15 seconds

Show 416



Red and Green flash with quick fade

Total Show Length: 1 second

Show 417



A 5 beat read and green flashing sequence

Total Show Length: 4 seconds

Show 418



Pulsing red

Total Show Length: 3 seconds

Show 419



Pulsing yellow

Total Show Length: 3 seconds

Show 420



Pulsing green

Total Show Length: 3 seconds

Show 421



Pulsing cyan

Total Show Length: 3 seconds

Show 422



Pulsing blue

Total Show Length: 3 seconds

Show 423



Pulsing magenta

Total Show Length: 3 seconds

Show 424



Pulsing white

Total Show Length: 3 seconds

Show 425

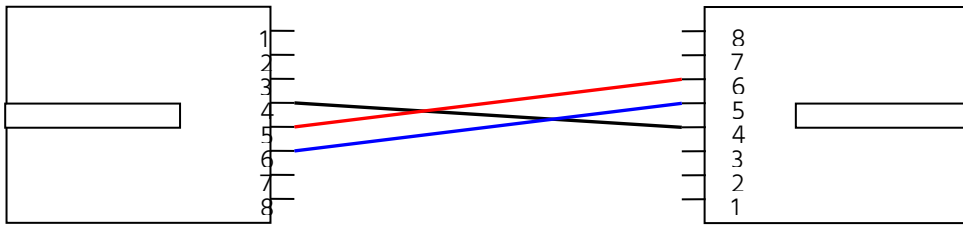


Pulsing RGB colour cycle

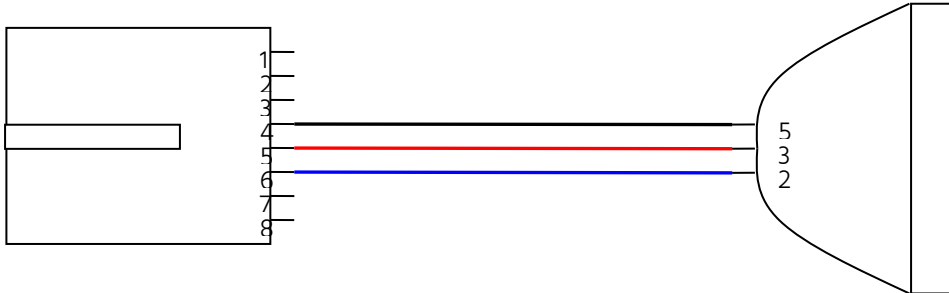
Total Show Length: 21 seconds

Appendix A RS232 Null Modem Cables using RJ45 Connectors

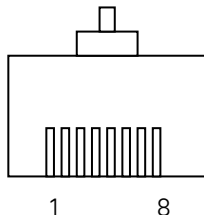
RJ45 to RJ45



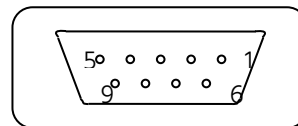
RJ45 to DB9 Female



RJ45 Front View



DB9 Female Front View



Appendix B. Serial Command Examples

Example 1

```
36↵
```

This example will set the Colour Theme Controller to show 36. The command consists of the desired show number in ASCII (36) followed by the carriage return character (shown here as ↵). If the Colour Theme Controller is off, this command will turn it on as well as setting it to show 36. Note that there are no spaces in the command.

Example 2

```
036↵
```

This command is equivalent to Example 1. Any show number can be padded out to 3 digits with leading 0's.

Example 3

```
0↵
```

This command will turn the RGB channels of the Colour Theme Controller off.

Example 4

```
500↵
```

As 500 is an unimplemented show, this command will turn the Colour Theme Controller on. If the unit is already on, this command will have no effect.

Example 5

```
-0↵
```

This command will set the dim level to 50%.

Example 6

```
-1↵
```

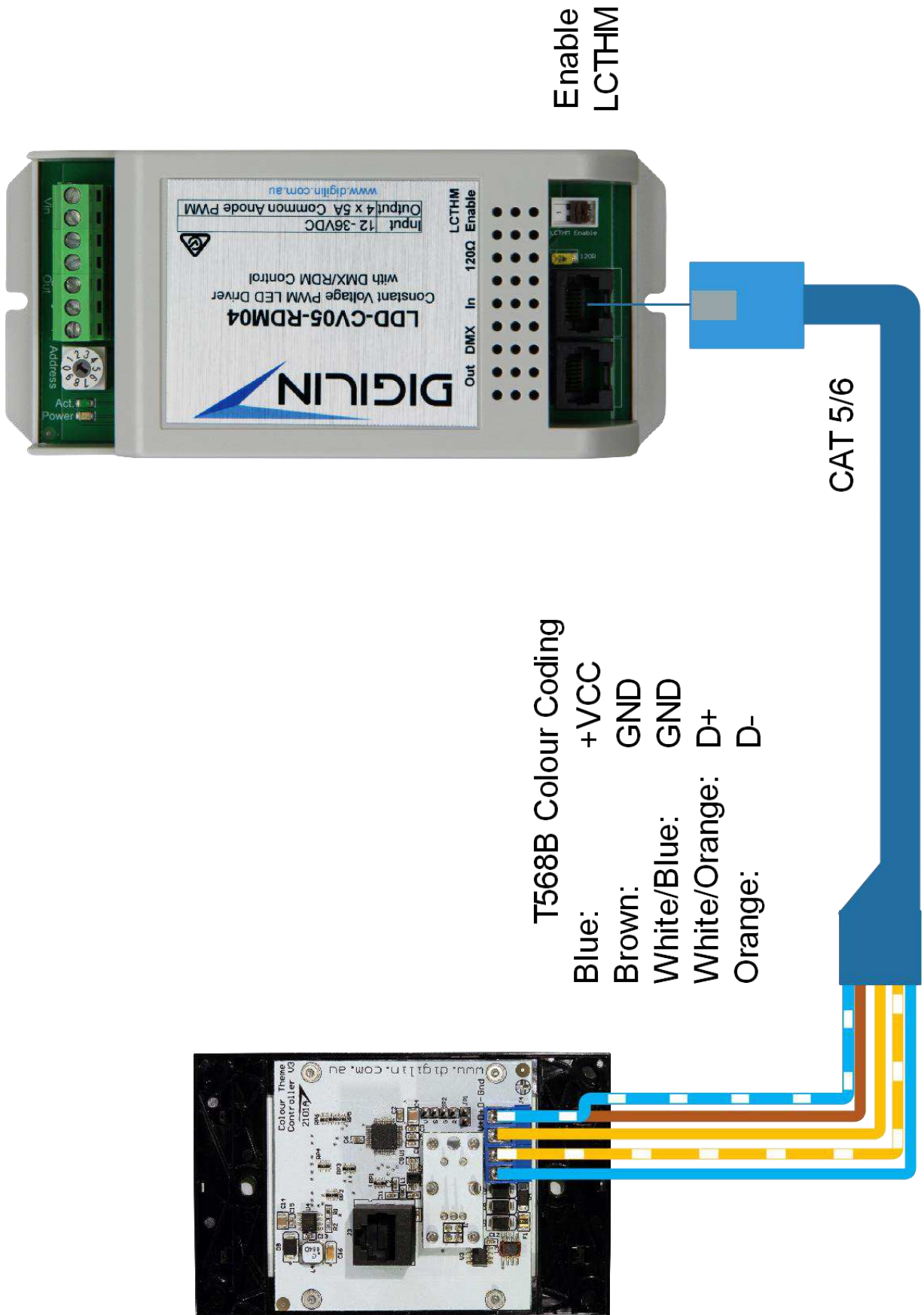
This command will set the dim level to 10%

Example 7

```
036-5↵
```

This command demonstrates how a show and dim level can be sent in a single command. The command will set the Colour Theme Controller to show 36 with dim level set to 25%. Note there are no spaces in this command.

Appendix C. Wiring Diagram



Appendix D. Full Static Colour Listing

#	Levels				#	Levels				#	Levels				#	Levels			
	Red	Green	Blue	White		Red	Green	Blue	White		Red	Green	Blue	White		Red	Green	Blue	White
1	255	0	219	0	51	0	73	255	0	101	219	36	255	0	151	109	146	255	0
2	255	0	182	0	52	0	51	255	0	102	255	36	255	0	152	109	109	255	0
3	255	0	146	0	53	0	36	255	0	103	255	73	219	0	153	146	109	255	0
4	255	0	128	0	54	0	18	255	0	104	255	73	182	0	154	182	109	255	0
5	255	0	109	0	55	0	0	255	0	105	255	73	146	0	155	219	109	255	0
6	255	0	91	0	56	18	0	255	0	106	255	73	109	0	156	255	109	255	0
7	255	0	73	0	57	36	0	255	0	107	255	73	73	0	157	255	146	219	0
8	255	0	51	0	58	51	0	255	0	108	255	109	73	0	158	255	146	182	0
9	255	0	36	0	59	73	0	255	0	109	255	146	73	0	159	255	146	146	0
10	255	0	18	0	60	91	0	255	0	110	255	182	73	0	160	255	182	146	0
11	255	0	0	0	61	109	0	255	0	111	255	219	73	0	161	255	219	146	0
12	255	18	0	0	62	128	0	255	0	112	255	255	73	0	162	255	255	146	0
13	255	36	0	0	63	146	0	255	0	113	219	255	73	0	163	219	255	146	0
14	255	51	0	0	64	182	0	255	0	114	182	255	73	0	164	182	255	146	0
15	255	73	0	0	65	219	0	255	0	115	146	255	73	0	165	146	255	146	0
16	255	91	0	0	66	255	0	255	0	116	109	255	73	0	166	146	255	182	0
17	255	109	0	0	67	255	36	219	0	117	73	255	73	0	167	146	255	219	0
18	255	128	0	0	68	255	36	182	0	118	73	255	109	0	168	146	255	255	0
19	255	146	0	0	69	255	36	146	0	119	73	255	146	0	169	146	219	255	0
20	255	182	0	0	70	255	36	109	0	120	73	255	182	0	170	146	182	255	0
21	255	219	0	0	71	255	36	73	0	121	73	255	219	0	171	146	146	255	0
22	255	255	0	0	72	255	36	36	0	122	73	255	255	0	172	182	146	255	0
23	219	255	0	0	73	255	73	36	0	123	73	219	255	0	173	219	146	255	0
24	182	255	0	0	74	255	109	36	0	124	73	182	255	0	174	255	146	255	0
25	146	255	0	0	75	255	146	36	0	125	73	146	255	0	175	255	182	219	0
26	128	255	0	0	76	255	182	36	0	126	73	109	255	0	176	255	182	182	0
27	109	255	0	0	77	255	219	36	0	127	73	73	255	0	177	255	219	182	0
28	91	255	0	0	78	255	255	36	0	128	109	73	255	0	178	255	255	182	0
29	73	255	0	0	79	219	255	36	0	129	146	73	255	0	179	219	255	182	0
30	51	255	0	0	80	182	255	36	0	130	182	73	255	0	180	182	255	182	0
31	36	255	0	0	81	146	255	36	0	131	219	73	255	0	181	182	255	219	0
32	18	255	0	0	82	109	255	36	0	132	255	73	255	0	182	182	255	255	0
33	0	255	0	0	83	73	255	36	0	133	255	109	219	0	183	182	219	255	0
34	0	255	18	0	84	36	255	36	0	134	255	109	182	0	184	182	182	255	0
35	0	255	36	0	85	36	255	73	0	135	255	109	146	0	185	219	182	255	0
36	0	255	51	0	86	36	255	109	0	136	255	109	109	0	186	255	182	255	0
37	0	255	73	0	87	36	255	146	0	137	255	146	109	0	187	255	219	219	0
38	0	255	91	0	88	36	255	182	0	138	255	182	109	0	188	255	255	219	0
39	0	255	109	0	89	36	255	219	0	139	255	219	109	0	189	219	255	219	0
40	0	255	128	0	90	36	255	255	0	140	255	255	109	0	190	219	255	255	0
41	0	255	146	0	91	36	219	255	0	141	219	255	109	0	191	219	219	255	0
42	0	255	182	0	92	36	182	255	0	142	182	255	109	0	192	255	219	255	0
43	0	255	219	0	93	36	146	255	0	143	146	255	109	0	193	255	0	0	255
44	0	255	255	0	94	36	109	255	0	144	109	255	109	0	194	255	255	0	255
45	0	219	255	0	95	36	73	255	0	145	109	255	146	0	195	0	255	0	255
46	0	182	255	0	96	36	36	255	0	146	109	255	182	0	196	0	255	255	255
47	0	146	255	0	97	73	36	255	0	147	109	255	219	0	197	0	0	255	255
48	0	128	255	0	98	109	36	255	0	148	109	255	255	0	198	255	0	255	255
49	0	109	255	0	99	146	36	255	0	149	109	219	255	0	199	0	0	0	255
50	0	91	255	0	100	182	36	255	0	150	109	182	255	0	200	255	255	255	255