

Theatrelight LED Luminaires PWM rate

This note applies to the following Theatrelight luminaires purchased after July 2020

Thumbwheel Models: F500, F/Z1000, F/Z1000-2C, F/Z1000-4C

Joystick Models F/Z/P300, F/Z/P300-2C, F/Z/P300-4C

These luminaires have built-in firmware which offers a choice of PWM frequencies to suit use in Theatres, or Television and Film Studios.

The standard ex-factory setting is 16 bit resolution (65,536 steps when fading from Off to Full), at the slowest PWM frequency. This setting gives the highest resolution fade for Theatre use. Where this setting shows banding on video camera output, the firmware allows the PWM frequency to be set higher as follows:

Thumbwheel models:

1/ With the fitting off, set the Mode and DMX address to one of the following codes:

Mode/DMX	Resolution/PWM Frequency for 1 colour models	Resolution/PWM Frequency for 2/4 colour (RGBW) models
0912	12 bit, 3,840 Hz	11 bit, 4,394 Hz
0913	13 bit, 1,920 Hz	11 bit, 2,197 Hz
0914	14 bit, 960 Hz	16 bit, 1,098 Hz
0915	15 bit, 480 Hz	16 bit, 549 Hz
0916	16 bit, 240 Hz	16 bit, 274 Hz

2/ Hold down the Test key, then power on the light. After 3 seconds release the key, then power off the fitting.

3/ Restore the Mode and DMX address back to your normal settings, then power the fitting on - it will now operate at the new PWM frequency. The new PWM setting is saved to flash memory after 5 minutes, and restored every subsequent switch-on.

Joystick/LED display models:

1/ With the fitting on, push the joystick right until the LED display reads PF=N where N is from 2 to 6. Then press Up or Down on the joystick to set N anywhere from 2 to 6 as follows:

PF=N	Resolution/PWM Frequency for 1 colour models	Resolution/PWM Frequency for 2/4 colour (RGBW) models
N=2	12 bit, 3,840 Hz	11 bit, 4,394 Hz
N=3	13 bit, 1,920 Hz	11 bit, 2,197 Hz
N=4	14 bit, 960 Hz	16 bit, 1,098 Hz
N=5	15 bit, 480 Hz	16 bit, 549 Hz
N=6	16 bit, 240 Hz	16 bit, 274 Hz

2/ Once set, the luminaire will immediately operate at the new PWM frequency. The new PWM setting is saved to flash memory after 5 minutes, and restored every subsequent switch-on..

Note: Using higher PWM frequencies as required for studio cameras will reduce the fade resolution, and may introduce a slight non-linearity in the fade. However as lighting levels are usually left fixed in Television and Film production, any decreased fade resolution should not be apparent. In all cases, setting the level to full may eliminate banding.