

Programming Instructions

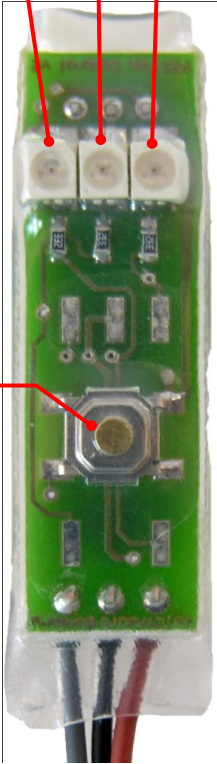
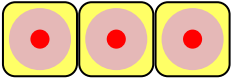
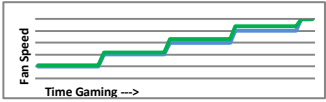
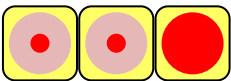
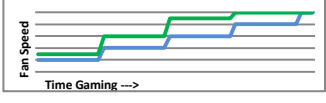
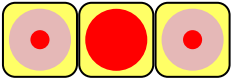
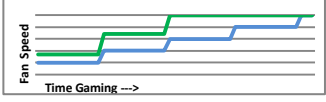
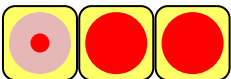
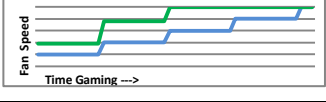
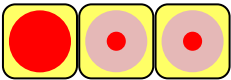
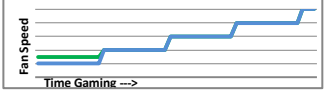
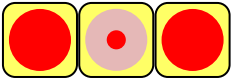
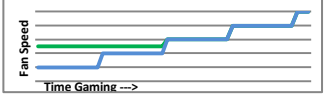
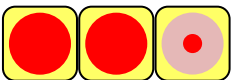
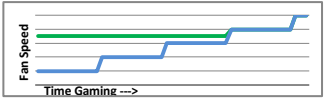
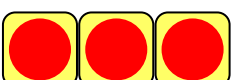
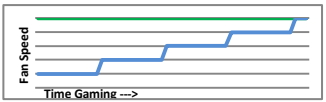
It will be necessary to switch the console on whilst the cover is removed in order to program this module, so take great care not to touch any bare live wires. All work is undertaken at your own risk. If you are not comfortable with this, then contact me and arrange for the return of the module.

When the module is fitted and the console switched on, the LED's will show the currently selected mode of operation (see table below). To change the mode, press and hold the button for at least 3 seconds until the LED's start flashing to indicate the module is now in programming mode.

Now, on each press of the button the module will step through each mode in turn, indicated by the LED's.

You will notice that the LED's are never off – they are either bright or dim. This is to allow the distinction to be made between Mode 1 (all LED's dim) and a module with no power. It also allows the possibility of additional modes of operation to be added later.

Once the desired mode is selected wait for about 10 seconds, after which time the LED's will revert to a steady state, indicating that the unit is now set and operating at that mode.

LED1 LED2 LED3 Mode Button 		Accelerate system-set speed by 25%	
		Accelerate system-set speed by 50%	
		Accelerate system-set speed by 75%	
		Accelerate system-set speed by 100%	
		Fan will spin at no less than 25% of full speed	
		Fan will spin at no less than 50% of full speed	
		Fan will spin at no less than 75% of full speed	
		Fan will always spin at full speed	

Self Test

The unit's self-test feature was initially designed for post construction test purposes, however I thought it might be an idea to make the facility available to users.

To initiate self-test, simply press and hold the mode select switch of the module whilst switching on the console.

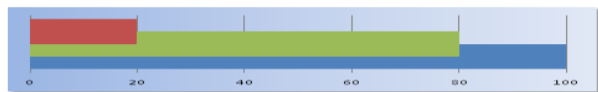
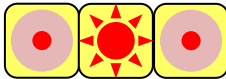
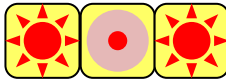
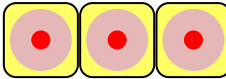
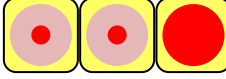
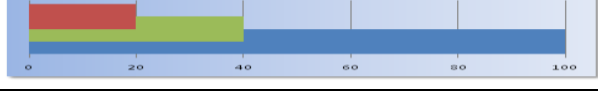
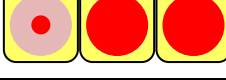
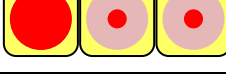
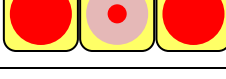
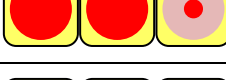
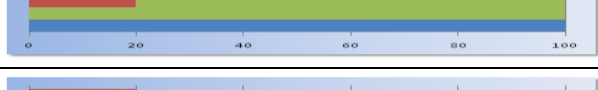
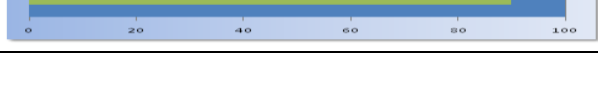
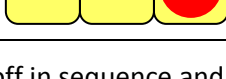
The sequence starts with the LED's illuminating in turn, followed by a check for the presence of the fan speed signal from the console. If present, the centre LED will pulse and the outer LED's will glow dimly.

1. LED's will illuminate in turn
2. Check performed for the presence of the fan speed signal from the console.
 - 2.1. If the signal is present, LED2 will pulse and the outer LED's will glow dimly
 - 2.2. If the signal is not present, LED's 1 & 3 will flash alternately and the self-test will terminate. The system will need to be switched off to re-set.
3. If LED2 is pulsing, PRESS THE BUTTON to continue the test which steps through each mode, for approximately 5 seconds, in turn
 - 3.1. Modes 1-4 assume the console is cold, i.e. the fan would run at about 20% of full speed and increases that by 25%, 50%, 75% and 100% in turn.
 - 3.2. Modes 5-8 set the fan speed to 25%, 50%, 75% and 100% in turn.
 - 3.3. This test also checks the EEPROM of the microcontroller. If a failure occurs the LEDs will flash continuously and the test will terminate
4. The module then simulates the failure of the microcontroller by fixing its output at three states. The fan should continue running at high speed for the duration of the tests:
 - 4.1. High logic level – LED1 on (approx 5secs).
 - 4.2. Low logic level –LED2 on (approx 5secs).
 - 4.3. High impedance –LED3 on (approx 5secs).
5. Finally, the LED's will all glow brightly and turn off one-by-one, followed by resetting to normal operation in the previously selected mode.

If at step 2 the module indicates a failure of the signal from the console, remove the module and power up the console, listening to the fan. If the fan either fails to spin or spins at full speed when the console is cold this would confirm a problem with the console itself.

Should the fan spin normally with the module removed, but an error is still indicated with the module in place then please contact me at circuitsurgery@btinternet.com for return/replacement of the module.

SELF-TEST – To begin, hold the mode button whilst powering the console on

<u>TEST</u>	<u>FAN SPEED</u> SYSTEM SPEED ACTUAL FAN SPEED FULL SPEED	<u>LEDs</u>
Sequence Starts		Turn on in sequence
Check Signal from Console		OK 
		Fail 
<u>Press button to continue...</u>		
Check Mode 1		
Check Mode 2		
Check Mode 3		
Check Mode 4		
Check Mode 5		
Check Mode 6		
Check Mode 7		
Check Mode 8		
MCU fail condition 1		
MCU fail condition 2		
MCU fail condition 3		
End Self-Test		Turn off in sequence and return to normal operation