from sensor **17** at block **24**. If the temperature is greater than a predetermined maximum temperature then the MLD unit is turned off at block **25** to avoid damage to the unit.

[**0071**] In block **26** a decision is made as to whether the temperature is within a predetermined allowable or desirable temperature range. If the temperature is not within that predetermined range then control passes to the flow chart of **FIG. 4***b* which will be described below in which the cooling provided by the fan and/or the brightness of the lamps are adjusted in order to bring the temperature back to within the allowable range. If the temperature is found to be within the allowable range, then the lamp current is sensed via current sense resistor **6** at block **27**. Again, if the current is found to be above an absolute predetermined maximum current then the MLD unit is turned off at block **25** in order to minimise damage to the unit.

[**0072**] If the lamp current determined at block **27** is determined to be within a desired or allowable range (such as between 5 and 7 mA) then control returns to block **28** to wait for a further interrupt to occur. If however the current is found to be outside the predetermined range then control passes to the flow diagram of **FIG. 4***c* in which lamp current is regulated as will be described further below.

[**0073**] As mentioned above, in order to commence the flow diagram of **FIG. 4***b*, the temperature sensor must have sensed a temperature outside the preset range but less than the absolute maximum temperature. A decision is then made in block **30** as to whether the temperature is above the upper limit of the predetermined allowable range. If the temperature is above the upper limit, and the fan is currently turned off, then the fan is turned on at a minimum PWM duty cycle in block **31** (the duty cycle may be defined as the ON time divided by the sum of the ON time and OFF time in one cycle of the PWM waveform—100% duty cycle Is fully on and 0% duty cycle is fully off). Control then returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0074**] If the temperature is above the upper limit and the fan is currently on and the current duty cycle of the PWM control signal to the fan is below a predetermined maximum, then the duty cycle is increased by a predetermined amount in block **32** to slightly increase the fan speed and its cooling effect and control returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0075**] If the temperature is above the upper limit and the fan is currently on and the current duty cycle of the PWM control signal to the fan is at its predetermined maximum, then a decision is made in block **33** as to whether the lamp brightness is at a minimum. If the lamp brightness is not at its minimum then the lamp brightness is incrementally reduced at block **33** by reducing the duty cycle of a first PWM power signal output by the controller(s). This first power signal is at a comparatively low frequency, for example 200 Hz. Given a constant lamp current, adjustment of the duty cycle of this low frequency PWM signal regulates the brightness of the lamp(s). Effectively, the low frequency PWM signal turns the lamp(s) on and off at a rate which the human visual system can not detect and at a rate at which the electronic components can not smooth or filter down to a constant analogue or DC level. Control then returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0076**] If the fan is on, the duty cycle of the fan's PWM signal is at its maximum and the backlight brightness is at its minimum (that is, the duty cycle of the first PWM signal is at its minimum preset value), then control returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0077**] If at block **30** it is found that the temperature is less than or equal to the upper temperature limit and the fan is turned off then control returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0078**] If at block **30** it is found that the temperature is less than or equal to the upper temperature limit and the fan is on and operating above its minimum PWM duty cycle then the duty cycle of the fan's PWM signal is incrementally decreased at block **36** to reduce its speed and cooling effect and control returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0079**] If at block **30** it is found that the temperature is less than or equal to the upper temperature limit and the fan is on and operating at its minimum PWM duty cycle and the backlight brightness is below its maximum (that is, the duty cycle of the first PWM signal is at below its maximum preset value) then the duty cycle of the low frequency PWM power signal is incrementally increased at block **34** to slightly increase the brightness of the lamp and control then returns to block **27** in the flow diagram of **FIG. 4***a*.

[**0080**] If at block **30** it Is found that the temperature is less than or equal to the upper temperature limit and the fan is on and operating above its minimum PWM duty cycle and the backlight brightness is at its maximum then the fan is turned off at block **35** and control returns to block **27** in the flow diagram of **FIG. 4***a*. This is the ideal operating situation in which the temperature of the lamp is within its range, the fan is off and the lamp is at its brightest.

[**0081**] As mentioned above, in order to commence the flow diagram of **FIG. 4***c*, the current sense resistor **6** must have sensed a lamp current outside the preset range but less than the absolute maximum allowable current. A decision is then made in block **40** as to whether the current is above the upper limit of the predetermined allowable range.

[**0082**] If the current is above the upper limit of the allowable range and the duty cycle of a second PWM power signal output by the controller(s) is above a preset minimum duty cycle, then the duty cycle of this second PWM power signal is incrementally decreased at block **41**. This second PWM power signal is at a comparatively high frequency, for example 50 kHz and directly regulates or determines the size of the lamp current. Because the frequency of this second PWM signal is relatively high, the electronic components (such as capacitors and inductors) within the power supply circuitry smooth or filter this signal to a constant analogue or DC signal level. Accordingly, if the duty cycle of this second PWM power signal remains constant then a constant lamp current will flow and a constant lamp brightness will result which will in turn increase the life of the lamp.

[**0083**] It will be noted at this point that the first and second PWM power signals are separately generated but are applied to the inverter(s) **2**,**3** in superposition.

[**0084**] If the lamp current is above the upper limit of the allowable range and the second, high frequency PWM power signal is at its minimum duty cycle, then control returns to block **28** of **FIG. 4***a* to wait for a further interrupt.