the lamps. The wires shown in **FIG. 1***b* have been removed and instead, contact means such as, for example short mechanical connection means such as standard PCB board-to-board connectors **12**, each having a plurality of relatively short and substantially inflexible protruding links or conductive pins **13** are provided on PCB **14** which directly contact lamp end circuit board **10**. The board-to-board connectors **12** are provided along a substantially straight edge of the PCB **14** and each receives the output from a respective ballast capacitor **4** mounted on POB **14**. The proximal lamp-end circuit board **10** has been altered to receive the conductive pins which are connected thereto and conductive tracks are provided on PCB **10** between the respective conductive pins **13** and the respective ends of a group of, for example four, lamps.

[**0061**] The length of links **13** between PCB **14** and the lamps is minimised to reduce parasitic power losses due to capacitive coupling. Using board-to-board connectors keeps the length of all the tracks between the inverters **2,3** and lamps **5** approximately the same so that the intensity of visible light produced by each of the lamps will be substantially the same. As a result of the construction shown in **FIG. 1***a,* the backlighting system according to the present invention is less bulky. The reduction in the number of wires which would otherwise be necessary also improves safety as the internal temperature in an MLD or SLD unit is elevated due to the number of light sources required. Furthermore, the serviceability of MLD or SLD units incorporating the present invention is improved as it is possible to replace the lamps all at once by virtue of the inclusion of board-to-board connectors. The PCB **14** is also of an improved mechanical shape (that is, wide and flat) in comparison to the board **9** of **FIG. 1***b* so heat conduction is improved as a result of a larger surface area. There is also no need for a person to manually solder components in the backlighting system of the present invention as a machine can surface mount all of the components. It should be noted that the present invention is applicable to both single- and multi-layer displays.

[**0062**] Alternatively in certain configurations the inverters **2,3** and lamps **5** could be attached board to board without the need for connectors **12** with the same advantages. That is, the PCB **14** and lamp-end board **10** could be integrally provided, for example by forming PCB **14** in a substantially "L" shape to incorporate the function of circuit boards **10** and **14** or substantially "U" shape to incorporate the functionality of circuit boards **10**, **11** and **14**.

[**0063**] **FIG. 2***a* demonstrates the layout of electronic components within the backlighting system's power supply for only one of the inverters **2,3** according to a preferred embodiment of the present invention. It can be seen that the control means or microcontroller **7** now also incorporates the function of regulator **1**. Preferably, controller **7** executes predetermined conditional steps or software (to be described below) stored in an associated storage device either within or associated with controller **7** and, in response to certain inputs, provides a modulated or pulsed or PWM output signal to a switch **15** which, in response, provides a modulated or pulsed or PWM input DC voltage signal (for example 12 volts DC maximum) to royer **2** which effectively controls the brightness of the lamp(s).

[**0064**] It can clearly be seen that a single inverter **2,3** in the layout according to the present invention may provide power to more than one lamp **5** and that the voltage across the current sense resistor **6** provides an indication of the total current through all of the lamps in the group connected to that particular inverter **2,3**. The position of the current sense resistor could be moved from the distal ends of the lamps to, for example, adjacent the secondary side of the transformer **3**, in which case, it would be possible to reduce the length of the wires connecting the controller **7** and the current sense resistor **6**.

[**0065**] It can also be seen in **FIG. 2***a* that a cooling means such as a variable speed fan **16** is also receives input from controller **7**. The fan **16** is adapted to provide variable cooling to the lamps **5** which produce a large amount of heat in use and th fan speed may be controlled, for example, by a PWM signal provided by the controller **7**. A temperature sensor **17** is provided in the vicinity of the lamps or a number of temperature sensors are provided, one for each group of lamps, which provides a temperature signal indicative of a temperature within the display apparatus to the controllers or the controller associated with the particular group of lamps for which it is detecting the temperature. Other ambient sensors such as brightness may also be incorporated and provide feedback to the controller **7** which will adjust the power supplied to (and thereby the brightness of) the lamp(s) accordingly.

[**0066**] With reference now to **FIG. 3**, it can be seen that in one embodiment of the present invention, three separate controllers **7** are provided, each of which provides output control signals to two separate inverters **2,3** and each inverter **2,3** provides a regulated voltage to four separate lamps. Input signals from a user (such as on/off and brightness and contrast change requirements) are received via the user controls **8** and ambient parameters such as temperature are provided to the controllers **7** via sensors such as temperature sensor **17** while output control signals are issued to external devices such as fan **16**. Although switch **15** is not illustrated in **FIG. 3**, its function may still be incorporated.

[**0067**] The input signals may be communicated to each of the controllers via a communication bus interconnecting all controllers and output signals to external devices (such as the fan **16**) may be communicated directly via a particular controller connected to that external device, or, one of the controllers (a "master" controller) may generate the output signal and this may be transmitted via the communications bus **18** to a particular ("slave") controller to which the external device is connected and the control signal then passed to the external device from that slave controller. The communications bus **18** may be a single wire,

[**0068**] With reference to the flow diagrams of **FIGS. 4***a,* **4***b* and **4***c,* the control algorithm or software executed by the or each controller in accordance with a further aspect of the present invention will now be described.

[**0069**] In **FIG. 4***a,* execution starts at block **20** and proceeds to the step of initialising the controller(s) or CPU(S) and then waits for an interrupt to occur at block **28**. The interrupt may be a user interrupt such as the user providing input via an on/off switch or brightness or contrast adjustment input device in which case control passes to a series of steps starting with block **21** and the MLD unit is, for example turned off or on in blocks **22** and **23** respectively.

[**0070**] Alternatively, the interrupt may be timed or automatic and results in the controller reading the temperature