A DISPLAY UNIT

FIELD OF INVENTION

This invention relates to a display unit for displaying data from a computer or laptop, or any other apparatus which can transmits the data to the display unit.

BACKGROUND OF THE INVENTION

Display screens used for computers and laptops in the prior art are powered by an external power source. In the case of laptops or any other mobile apparatuses, the display screens are powered by the battery in the laptops or the mobile apparatuses.

There are users who need to view more than one display screen, whereby all the screens are displaying data from the same source, a computer or a laptop. For such users, there is a need to provide for multiple connections, each display screen to each external power source. For a laptop, if multiple display screens are being powered by the laptop battery, the battery will be depleted within a much shorter time since the battery is only designed to provide power for supporting one display screen and the Central Processing Unit.

In prior art, US patent number 6,859,365, discloses a display unit for mobile apparatuses such as notebook-type personal computer, portable telephone, portable television image receiver, portable navigation device, mobile information terminal device, electronic pocket book and electronic dictionary. The display unit comprises a display device having a display screen, a battery at a rear side of the display device, a heat shielding layer interposed between the display device and the battery, the heat shielding layer having a thermal conductivity of at most 5 W/mK, and a heat radiating layer or a cooling layer disposed to the battery at a side opposing to the side of the display device. The display device and the secondary battery are integrally assembled to form a module structure.

For this display unit, the screen has to be specially manufactured to include a heat shielding layer and a heat radiating layer. There is a need to provide for a display unit which does not require a customised display screen.

Further, if the display screen is faulty, the entire display unit will have to be replaced. There is a need to reduce the replacement costs.

SUMMARY OF THE INVENTION

The invention is a display unit for displaying data comprising a display screen, and a power storage means detachably directly connected to the display screen.

BRIEF DESCRIPTION OF THE DRAWING

Figures 1A, 1B and 1C illustrate the various embodiments of the display unit.

Figure 2 illustrates a block diagram of the preferred embodiment of the display unit.

Figure 3 illustrates an application of the preferred embodiment of the display unit.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to the preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. While the invention will be described in conjunction with the preferred embodiment, it will be understood that they are not intended to limit the invention to this embodiment. On the contrary, the invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following detailed description of the present invention, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be obvious to one of ordinary skill in the art that the present

invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and features have not been described in detail as not to unnecessarily obscure aspects of the present invention.

Figure 1A illustrates a display unit 10 for displaying data comprising of a display screen 12 for displaying data from a laptop, computer or any other sources. The display screen is detachably directly connected to a power storage means 14 for supplying power to the display screen. This increases the mobility of the display screen since it does not have to be connected to an external power supply nor has to tap the power supply from the laptop, computer or any other data sources.

Preferably, a controlling means 16 is connected to both the display screen and the power storage means. The controlling means controls the power intake of the display screen, the charging and discharging of the battery and the heat dissipated from the battery. This eliminates the need for any heat insulating or heat shielding layer, thus reducing the materials required and minimizing the weight of the display unit. Further, the controlling means ensures that the power supply to the display screen is not overloaded, otherwise, the useful life of the display screen and the power storage means are likely to be reduced with constant overload. Not all rechargeable batteries will stop the charging process when they are fully charged. There is a need to ensure that the batteries are not overcharged to maintain the quality and lifetime of the battery.

Still preferably, as shown in Figure 1B, the display unit further comprises a housing 18 for the display screen, the power storage means and the controlling means. With this housing, the display screen, the power storage means and the controlling means are housed neatly, and the entire display unit is portable for increased mobility.

In the preferred embodiment as shown in Figure 1C, the display unit further comprises a supporting means 20. This supporting means is detachably connected to the display screen for supporting the display screen in a desired position independently. Further, the supporting means provides a housing for the power storage means and/or the controlling means. With this configuration, the screen size can be maximized without increasing the size of the display unit.

Preferably, the power storage means is a battery. The battery can be any disposable alkaline batteries or rechargeable batteries such as Nickel Metal Hydride, Lithium ion or Lithium Polymer. Providing the battery in the support means is advantageous, as any heat generated by the battery will not affect the display screen. Further, the support means has a surface area which is sufficiently large for dissipating the heat from the battery effectively without affecting the display screen. This further eliminates the need for having a heat-shielding layer and a heat radiating layer as provided in the prior art. Without these layers, the weight of the display unit is reduced.

Another advantage of a rechargeable battery is that it will help to reduce the operating costs of the display unit. Preferably, the rechargeable battery can be recharged by connecting to an external power source. This will avoid the hassle of having to remove and replace the battery from the display unit for charging each time, and there is no need to provide an accessory charger for recharging the battery.

In the preferred embodiment, the rechargeable battery is detachably connected to an external power source, such that the battery is only recharged upon demand. Preferably, the external power source can supply power directly to the display screen. This is advantageous when the battery is completely depleted, the display screen is still functional by the power supply from the external power source while the battery is being recharged.

In the preferred embodiment, the display screen is detachably connected to the supporting means. In the event that any of the parts, the display screen, the battery, the supporting means or the controlling means is faulty, only faulty part need to be replaced without replacing the entire display unit. This reduces the maintenance cost of the display unit.

Preferably, the display unit further comprises an indicating means 22 to show the voltage in the battery. This allows the user to view the charging and discharging of the battery and allows the user to gauge how long the display unit can operate in the absence of a live electrical socket.

Figure 3 shows an application of the preferred embodiment of the display unit. The display unit further comprises a receiving means 24 for receiving an input signal or data for displaying on the display screen. If the display unit is used for displaying data from a computer, the receiving means can be an interface for data cables such as a VGA or DVI, a USB interface, or any interface for receiving the data from the computer. The display unit can be a display which duplicates the display on the computer screen. Alternatively, it can be different form the display on the computer screen. Otherwise, it can be mosaicked with multiple display units for an enlarged display.

Alternatively, the receiving means is capable of receiving signals or data by wireless means such as an infrared detector for receiving signals or data sent by an infrared device, a Bluetooth™ detector for receiving signals or data sent by a Bluetooth device or a radio frequency detector for receiving signals sent by radio frequency. Such a capability is useful for displaying data from a laptop which can transmits data wirelessly.

We claim:

1. A display unit for displaying data comprising:
    (a) a display screen; and
    (b) a power storage means detachably directly connected to the display screen.

2. A display unit as claimed in claim 1 further comprising:
    a controlling means in connection with the display screen and the power storage means for controlling
        i. the power intake of the display screen; and
        ii. the charging and discharging of the power storage means.

3. A display unit as claimed in claim 2 further comprising:
    a housing for the display screen, the power storage means and the controlling means.

4. A display unit as claimed in claim 1 further comprising:
    a supporting means which is detachably connected to the display screen for supporting the display screen in a desired position.

5. A display unit as claimed in claim 4 wherein the supporting means provides a housing for the power storage means.

6. A display unit as claimed in claim 2 further comprising:
    a supporting means which is detachably connected to the display screen for supporting the display screen in a desired position wherein the supporting means provides a housing for the power storage means and the controlling means.

7. A display unit as claimed in claim 1 wherein said the power storage means is a battery.

8. A display unit as claimed in claim 1 wherein said the power storage means is a rechargeable battery.

9. A display unit as claimed in claim 1 wherein said the power storage means is detachably connected to an external power source for charging the power storage means or for supplying power directly to the display screen.

10. A display unit as claimed in claim 1 further comprising:

an indicating means for indicating the voltage of the battery of the display screen.

11. A display unit as claimed in claim 1 further comprising:

a receiving means for receiving an input signal or data for displaying on the display screen.

12. A display unit as claimed in claim 11 wherein the receiving means is a USB interface for receiving signal or data sent through a USB cable.

13. A display unit as claimed in claim 11 wherein the receiving means is a VGA cable interface for receiving signal or data sent through a VGA cable.

14. A display unit as claimed in claim 11 wherein the receiving means is a DVI interface for receiving signal or data sent through a DVI cable.

15. A display unit as claimed in claim 11 wherein the receiving means is an infrared detector for receiving signal or data sent by an infrared device.

16. A display unit as claimed in claim 11 wherein the receiving means is a Bluetooth detector for receiving signal or data sent by a Bluetooth device.

17. A display unit as claimed in claim 11 wherein the receiving means is a radio frequency detector for receiving signal or data sent by radio frequency.