COMPUTER DISPLAYS

This invention relates to computer displays, and in particular to foldable displays such as are used, for example, in laptop PCS.

A laptop PC is intended to be used by a single person operating a keyboard or other input device which is integral within the laptop and using a hinged display. The display is located on the inside of the display and is usually an LCD type display. As laptops are intended to be carried around, the location of the display protects it from accidental damage.

The display arrangement is less convenient when the display is to be viewed by a number of people or the laptop is intended for uses other than by a particular user, for example, it would be very difficult to wall mount a laptop, say in an information centre as the display would be hard to see. Even if the display hinge could be rotated through 180°, the footprint of the laptop would be twice the footprint when it is closed.

The invention aims to overcome the disadvantages of laptop displays and to provide displays which are more suitable for retail and hospitality environments as well as a variety of other environments in which the computer is intended to be used by a variety of different people.

The invention in its broadest form resides in a display which is mounted to a main body in which the display screen is on the outer face of the display such that when the display is folded to a flat position the display is still visible.

In accordance with a first aspect of the invention, there is provided a PC computer comprising a PC housing having mounted therein, a processor, and associated peripherals; and a first display housing having a display immovable with respect thereto, the first display housing being pivotally mounted substantially at its lower edge at a fixed position on the PC housing for movement relative to the PC housing about pivot points disposed on the housing, the fixed position being

substantially along an edge of the PC housing, and first display housing being movable between a first position generally parallel to the PC housing and a second position angled with respect to the PC housing, the display housing having an inner face opposite the PC housing in the first position and an outer face, the display being mounted on the outer face and a second display housing having a second display therein, the second display housing being at an opposite end of the PC housing to the first display housing.

The invention has the advantage that the computer may be used in environments where it is desirable for a number of people to see a display. For example, in a flat configuration, the PC may be wall mounted. It is preferred that the display is a TFT touch screen display which is particularly advantageous in a wall mounted environment.

Preferably, the main body PC housing has an angled rear face with a second display housing mounted thereon. The display is also mounted on the outer face of the second display housing and is preferably a TFT touch screen display.

In accordance with a second aspect of the invention, there is provided a PC computer comprising a PC housing having a base and having mounted therein, a processor, and associated peripherals; a first display housing having a display immovable with respect thereto, the display housing being pivotally mounted substantially at its lower edge at a fixed position on the PC housing for movement about pivot points on the housing, the first display housing being movable between a first position generally parallel to the base of the PC housing and a second position angled with respect to the PC housing, the display housing having an inner face opposite the PC housing in the first position and an outer face, the display being mounted on the outer face; and a second display housing having a second display therein, the second display housing being at an opposite end of the PC housing to the first display housing.

Embodiments of the invention will now be described, by way of example only, and with reference to the accompanying drawings in which:

Figure 1 is a front perspective view of a computer embodying the invention;

Figure 2 is a rear perspective view of the computer of Figure 1;

Figure 3 is a perspective view of a second embodiment of the invention showing the screen in a raised position.

Figure 4 is a further perspective view of the embodiment of figure 3.

The computer illustrated in the figures is a PC computer 10 comprising a display assembly 12 and a base unit 14. The base unit or PC housing 14, houses all the standard PC architecture such as the motherboard containing the processor, chipsets, ROM and RAM memory and device controllers; a hard drive and, as can be seen from Figure 1, a floppy disc drive 16 and a CD-ROM or DVD drive

18 are mounted on the front face 20 of the housing. One of the side walls 22 includes three arcuate series of apertures 24 which provide an outlet for sound from a speaker mounted behind the apertures in the housing. A similar set of apertures is provided on the other side wall 26 (Figure 2).

The display assembly is hinged to the main housing and comprises a flat screen display 12, which is arranged on the outside such that when the display is moved to a "closed" position as shown in Figures 1 and 2, the display is visible. Thus, rather than having open and closed positions as in a conventional laptop, the display is visible at all times and can be moved from a flat position in which it is generally parallel to the housing to a number of positions in which it is angled to the housing. The display 12 is mounted in a display housing and is fixed with respect to the display housing. Thus, the display cannot move except with the display housing. The display assembly is pivoted using a pair of torque hinges as is well known from laptops and does not require further description. The torque hinges are mounted on the display housing substantially at its lower edge to enable pivotal movement of the display housing 13 with respect to the PC housing 14. The torque hinges are fixed to the PC housing 14 such that the display housing pivots about a fixed axis on the PC housing. That axis is substantially along one edge of the PC housing. In the example shown it is the rear edge. The torque hinge allows maximum friction. In addition, as can be seen for figures 3 and 4 which illustrate a second embodiment of the invention and show the screen in a raised position, the display assembly 12, 13 is held in place with a prop and rack mechanism 28, 30. The prop 28 comprises a generally T-shaped arm which is hinged at the rear of the display and tapers towards its free end. At the free end is an elongate aperture 32 which receives a portion of the rack. The rack 30 comprises a series, of five in Figure 2, of retaining

elements which each comprises a generally upright elongate portion and a generally flat elongate portion parallel to and spaced from the housing and which together form a catch. The flat elongate portion is received in the aperture at the free end of the prop to hold the prop in place. The rack is moulded integral with the upper surface of the housing.

The display may be any conventional flat screen display, although it is preferred to use a SVGA TFT, XGA TFT, UXGA TFT or Super TFT™ (thin film transistor) each of which can provide touch screen capabilities. In many anticipated applications this eliminates the need for input devices such as a keyboard or mouse. However, it will be appreciated that a keyboard or mouse could be used, either as a separate plug in component or as an integral component, for example built in to the upper surface of the housing. As can be seen from figure 4, a card reader is formed on the side of the display.

As can be seen from Figures 1 and 2, the display assembly latches into the flat position such that it is fixed in position. To move the display assembly, pressure is applied to the latch 42 to release the latch. The assembly can then be pivoted.

In the flat position shown in Figures 1 and 2, the single display unit may be wall mounted or mounted flush with a counter. In the tilted orientation the computer may be mounted on a flat or sloped surface and the angle of tilt adjusted as required.

In the embodiment of Figures 1 and 2 the computer is shown as having a single hinged display assembly. The embodiment of Figures 3 and 4 shows an alternative embodiment in which a second display assembly is provided which is fixed at an angle to the housing. The second display assembly is mounted on a sloped rear wall 40 of the housing and may be detached.

The embodiments described have a number of advantages. First, the viewer may select the angle at

which the display is viewed. By mounting the screen on the outside surface, the display is easily viewed by third parties. The PC may be mounted on a counter top, in which case the embodiment of Figures 3 & 4 is especially useful for touchscreen EPOS (electronic point of sale). In either configuration the display may be used as an interactive customer display system. Embodiments of the invention may be used in environments such as hotel rooms in which case terminals may be pole or wall mounted to give combined TV/PC/Internet touchscreen facilities. Alternatively, the display may be used as a customer service screen.

CLAIMS

1. A PC computer comprising

a PC housing having mounted therein, a processor, and associated peripherals; a first display housing have a display immovable with respect thereto, the first display housing being pivotally mounted substantially at its lower edge at a fixed position on the PC housing for movement relative to the PC housing about pivot points disposed on the housing, the fixed position being substantially along an edge of the PC housing, the first display housing being movable for viewing between a first position generally parallel to the PC housing and a second position angled with respect to the PC housing, the display housing having an inner face opposite the PC housing in the first position and an outer face, the display being mounted on the outer face; and a second display housing having a second display therein, the second display housing being at an opposite end of the PC housing to the first display housing.

2. A PC computer comprising

a PC housing having a base and having mounted therein, a processor, and associated peripherals; a first display housing have a display immovable with respect thereto, the display housing being pivotally mounted substantially at its lower edge at a fixed position on the PC housing for movement about pivot points on the housing, the first display housing being movable between a first position generally parallel to the base of the PC housing and a second position angled with respect to the PC housing, the display housing having an inner face opposite the PC housing in the first position and an outer face, the display being mounted on the outer face; and a second display housing having a second housing display therein, the second display housing being at an opposite end of the PC housing to the first display housing.

3. A PC computer according to claim 1 or 2, wherein the PC housing has an upper surface having a rack thereon and the inner face of the first display housing has a prop, the prop being received in the rack in one of a plurality of positions to maintain the display housing at one of a plurality of attitudes to the PC housing.

4. A PC computer according to claim 1, 2 or 3, wherein the first display housing is connected to the PC housing by a torque hinge.

5. A PC computer according to claim 4, wherein the first display housing is connected to the PC housing by a pair of torque hinges.

6. A PC computer according to any preceding claim, wherein the end of the PC housing to which the second display housing is mounted comprises a sloped wall, whereby the second display housing is mounted at an acute angle to the PC housing.

7. A PC computer according to claim 6, wherein the second display housing is mounted on the angled rear wall of the PC housing, the second display housing having an inner face and an outer face.

8. A PC computer according to claim 7, wherein the second display housing has a second display mounted on its outer face.

9. A PC computer according to any preceding claim, wherein the first display and/or the second displays are TFT displays.

10. A PC computer according to any preceding claim, wherein the first display and/or the second displays are touch screen displays.

11. A PC computer according to any preceding claim, comprising a card reader mounted on the first display housing.

12. A PC computer, substantially as herein described with reference to figures 3 and 4 of the accompanying drawings.