

(11) Japanese Unexamined Utility Model Registration

Application Publication No. 5-69732

(43) Publication Date: September 21, 1993

(21) Application No. 4-7110

(22) Application Date: February 20, 1992

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(54) [Title of Device] BACKLIGHT STRUCTURE FOR LIQUID  
CRYSTAL DISPLAY

(57) [ABSTRACT]

[Object] To provide a backlight structure for a liquid crystal display which can illuminate the liquid crystal display from a back surface side thereof without increasing the size of a mounting space for the liquid crystal display.

[Construction] Light sources 13 are provided at both ends of a second glass substrate 11b of a liquid crystal display 11 having first and second glass substrates, and a light reflecting layer 18 is provided on a surface of the second glass substrate 11b opposite to the first glass substrate 11a by the intermediary of a light diffusing layer 17.

[CLAIM]

[Claim 1] A backlight structure for a liquid crystal display including a first glass substrate, a second glass

substrate and liquid crystal disposed therebetween, configured to irradiate light from the second glass substrate side toward the first glass substrate side, comprising: light sources provided at both ends of the second substrate and configured to irradiate light toward the second glass substrate; and a reflecting layer configured to reflect light and provided on a surface of the second glass substrate opposite to a surface on which the liquid crystal is arranged with a diffusing layer configured to diffuse light interposed therebetween.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is a cross-sectional view taken along the line A-A in Fig. 2 in a state in which a liquid crystal display is mounted.

[Fig. 2] Fig. 2 is an exploded perspective view for explaining a backlight structure for the liquid crystal display of the first example of the present invention.

[Fig. 3] Fig. 3 is an exploded perspective view illustrating a mounting structure for a liquid crystal display of the related art.

[Fig. 4] Fig. 4 is an exploded perspective view of a backlight unit of the related art.

[Fig. 5] Fig. 5 is a cross-sectional view taken along the line B-B in Fig. 3 in a state in which the liquid crystal display is mounted.

[Reference Numerals]

- 11 liquid crystal display
- 11a first glass substrate
- 11b second glass substrate
- 11c liquid crystal
- 13 light source
- 18 reflecting layer
- 17 diffusing layer

[Detailed Description of the Device]

[0001]

[Field of Industrial Application]

The present invention relates to a backlight structure configured to illuminate a liquid crystal display from a back surface side thereof.

[0002]

[Description of the Related Art]

A mounting structure for a liquid crystal display of the related art is illustrated in Fig. 3 to Fig. 5.

[0003]

Mounting of a liquid crystal display (LCD) 1 is performed as illustrated in Fig. 3 by fitting the LCD 1 in a holding frame 2, positioning a rubber connector 3 and a backlight unit 4 on a back surface side of the LCD 1, inserting mounting legs 2a of the holding frame 2 into

square holes 6a of a printed wiring board 6, and twisting distal ends of the mounting legs 2a on a back surface side of the printed wiring board 6. Accordingly, the LCD 1 is fixed to the printed wiring board 6, and is electrically connected to the printed wiring board 6 via the rubber connector 3.

[0004]

In contrast, the backlight unit 4 includes a light guide panel 8, LEDs 9, 9 to be positioned at both end surfaces of the light guide panel 8, and a reflecting case 10 to which the light guide panel 8 and the LEDs 9, 9 are fitted as illustrated in Fig. 4, is positioned on the back surface side of the LCD 1 when mounting the LCD 1 on the printed wiring board 6, and terminals 9a of the LEDs 9 are soldered to the printed wiring board 6. Therefore, as illustrated in Fig. 5, light irradiated from the LEDs 9 is guided to the light guide panel 8, and is reflected by the reflecting case 10, thereby irradiating the back surface side of the LCD 1. In this case, the reflecting case 10 is formed of a white material so as to reflect light efficiently, and a back surface 8a of the light guide panel 8 is formed to have uneven surface so as to diffuse light. Therefore, the back surface side of the LCD 1 is irradiated with light of the LEDs 9 uniformly.

[0005]

According to the structure of the related art, the light guide panel 8 configured to guide light of the LEDs 9 is required as a backlight structure that illuminates the LCD 1, and the light guide panel 8 needs to guide light irradiated from the LEDs 9 efficiently. Therefore, the thickness thereof cannot be reduced to a thickness smaller than that of the LEDs 9. Therefore, the height of the LED 1 from the printed wiring board 6 is increased, and hence a problem of an increase of a space required for mounting the LED 1 arises.

[0006]

[Problem to be Solved by the Device]

As described above, in the back light structure of the liquid crystal display of the related art, since there is a need to provide the light guide panel for guiding light from the light sources on a bottom surface side of the liquid crystal display, and hence a problem that the mounting space for the liquid crystal display is increased correspondingly arises.

[0007]

The present invention is intended to solve the problems of the related art, and intended to provide a backlight structure for a liquid crystal display in which the liquid crystal display can be illuminated without increasing a mounting space for the liquid crystal display.

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