

which is largely swellable in good solvent. An operation voltage of each of them is around 1.5V.

[0352] On the bottom surface of the electrically conductive rubber 182, the electrodes 52 are arranged at the positions corresponding to the respective operation keys as shown in FIG. 39. The plurality of electrodes 52 are connected individually to the above-mentioned wiring pattern group 57. The intermediate layer film 183 is bonded on the upper portion of the electrically conductive rubber 182 by an adhesive agent or the like. As the intermediate layer film 183, an insulated and transparent polyimide based film member is used.

[0353] The display unit 29 which forms the organic EL device is bonded on the upper portion of the intermediate layer film 183 by an adhesive agent or the like. The display unit 29 includes a sealing layer 29a, a self-light-emitting organic material 29b, an intermediate layer film 29c, a base panel 29d and an electrode pattern 29e. The sealing layer 29a has a frame shape as shown in FIG. 38 and is provided on the intermediate layer film 183. The sealing layer 29a seals the self-light-emitting organic material 29b.

[0354] The intermediate layer film 29c is bonded on the upper portion of the sealing layer 29a and the self-light-emitting organic material 29b by an adhesive agent or the like. As the intermediate layer film 29c, the insulated and transparent polyimide based film member also is used. The base panel 29d is arranged on the upper portion of the intermediate layer film 29c. As the base panel 29d, a transparent film member or a glass member is used.

[0355] The electrode pattern 29e which is used concurrently by the touch-sensitive sheet member 180 and the display unit 29 is arranged on the bottom surface side of the base panel 29d. The electrode pattern 29e is composed of an ITO film, and a single pattern, a divided pattern in blocks or a divided pattern in a matrix shape is available therefor.

[0356] The above-mentioned wiring pattern group 57 is connected to the driving power supply 55A, which is not shown in FIGS. 38 and 39, together with the electrode pattern 29e of the display unit 29. The driving power supply 55A applies the DC driving voltage between the electrodes 52 and the electrode pattern 29e of the organic EL display device for every individual operation key. At that time, it is also allowed to apply the DC driving voltage by changing the voltage-level thereof variably. This enables the input device 800 to be configured.

[0357] FIGS. 40A to 40C show multiplex examples of display data and shape presentation signals in the input device 800.

[0358] A data format DF1 shown in FIG. 40A is used in a case in which the display of the icon image in the display unit 29 and the sense of touch representation by the electrically conductive rubber 182 in the touch-sensitive sheet member 180 are functioned simultaneously. The display data D1, D2, D3 . . . and the shape presentation signals S1a, S2a, S3 . . . are packetized and applied alternately between the electrode pattern 29e and the wiring pattern group 57. The minimum driving frequency f_m of one packet is around 100 Hz to 1 KHz (0.1 to 10 ms in the period). The display data D1, D2, D3 . . . are digital-analogue converted and made as an image signal Sv.

[0359] For example, between the electrode 52 which is arranged for every individual operation key image and the electrode pattern 29e, there is applied the shape presentation signal S1a subsequent to the display data D1; there is applied the shape presentation signal S2a subsequent to the display

data D2; there is applied the shape presentation signal S3 subsequent to the display data D3; there is applied the shape presentation signal S4 subsequent to the display data D4; there is applied the shape presentation signal S5 subsequent to the display data D5; and there is applied the shape presentation signal S6 subsequent to the display data D6, by time divisional multiplexing through the wiring pattern group 57.

[0360] A data format DF2 shown in FIG. 40B is used in a case in which only the sense of touch representation is functioned by the electrically conductive rubber 182 in the touch-sensitive sheet member 180. The shape presentation signals S1a, S2a, S3, S4, S5, S6 . . . and so on are packetized and applied between the electrode pattern 29e and the wiring pattern group 57. For example, there is employed an intermittent transmission system such that the shape presentation signal S1a and the next shape presentation signal S2a are transmitted with intermitting one vacant packet to the electrode 52 arranged for every individual operation key image and the electrode pattern 29e through the wiring pattern group 57. It is needless to say that a redundant transmission system may be employed in which the shape presentation signal S1a is inserted in two packets and transmitted.

[0361] A data format DF3 shown in FIG. 40C is used in a case in which only the display of the icon image in the display unit 29 is functioned. The items of the display data D1, D2, D3 . . . are packetized and applied between the electrode pattern 29e and the wiring pattern group 57. The items of the display data D1, D2, D3 . . . are digital-analogue converted and made as the image signal Sv. For example, in the intermittent transmit system, the display data D1 and the next display data D2 are sequentially transmitted with intermitting one vacant packet to the electrode 52 arranged corresponding to the individual operation key image and the electrode pattern 29e through the wiring pattern group 57. In the redundant transmission system, the display data D1 which is inserted in two packets and the next display data D2 which is inserted in the next two packets are transferred.

[0362] In the above-mentioned input device 800, the items of the display data D1, D2, D3 . . . are outputted to the display unit 29 instead of the image signal Sv from a signal processing unit, which is not shown, such as the image-and-audio-processing unit 44 shown in the FIG. 20. The shape presentation signals S1, S2, S3 . . . are outputted to the touch-sensitive sheet member 180 instead of the vibration control signal Sout2. It is needless to say that the display data D1, D2, D3 . . . may be supplied to the display unit 29 from the image-and-audio-processing unit 44 or the shape presentation signals S1', S2', S3 . . . may be outputted to the touch-sensitive sheet member 180.

[0363] The following will describe an operation example of the input device 800. A selection example of a sense of touch and/or a display function will be explained. FIG. 41 shows the selection example of the sense of touch and/or the display function in the input device 800.

[0364] In this example, there is cited a case in which, based on the selection of a display output application or a shape presentation application of the icon images, the input device 800 mounted with the touch-sensitive sheet member 180 displays the operation screen and, by linking with this display, the sense-of-touch-representing unit is built by applying the driving voltage to the electrically conductive rubber 182 in the touch-sensitive sheet member 180 through the electrode 52 and the electrode pattern 29e. In this example, when there is an application execution instruction, a case is illustrated in