

the contacts are touched to the contact pads, it is possible to prevent erroneous inputting of characters. This is further effective in accelerating the character inputting. Alternatively, the potentials may be scanned and compared at three or more times should that be desirable.

[0077] When scanning intervals are shortened, the time for detecting the detection of key depression will be also shortened. However, if the key is depressed at a wrong position, the key depression may be detected before the key is re-depressed at a correct position. On the other hand, the longer the scanning intervals, the longer it takes to detect the key depression. In other words, it takes time to input characters. In such a case, even when a key is depressed at a wrong position, it can be depressed again at a desired position before the key depression is detected by the completion of the second scan during the defined time period.

[0078] The scanning intervals affect time periods to input characters. Experiments were performed using cellular phones having data inputting units of the present invention, with a scanning interval set to 0.1 second. The key depressions have been accurately detected during the experiments.

[0079] Each of the contact pads of the experimental cellular phones had a diameter of 2.0 mm which is smaller than a diameter (approximately 2.5 mm) of a contact pad of a cellular phone of the related art. Each key of the experimental cellular phones was as large as that of the cellular phone of the related art, and was provided with two contact pads. In other words, a contact pad of each experimental cellular phone was as large as that of the related art, and two contact pads were provided for each key.

[0080] According to the first preferred embodiment of the invention, each key has two contacts. Alternatively, each key may have three or more contacts on a rear face. FIG. 10(a) shows a key B30 provided with three contacts C31, C32 and C33 while FIG. 10(b) shows a key B40 having four contacts C41, C42, C43 and C44.

[0081] When the key B30 is used, the contacts C31, C32 and C33 are touched to contact pads in seven combinations depending upon what part or parts of the key B30 is or are depressed; only the contact C31; only the contact C32; only the contact C33; the contacts C31 and C32; the contacts C31 and C33; the contact C32 and C33; and the contacts C31, C32 and C33. In other words, one of seven pieces of data can be inputted by depressing the key B30 once. Further, one of nine different individual pieces of data can be inputted by depressing the key B40 only once.

[0082] As noted, the data inputting device and method herein is applicable to not only a cellular phone but also to other devices such as a keyboard of a personal computer or a remote controller of an electric appliance such as a television set or an air-conditioner which are used in order to input data assigned to each key. Such is anticipated.

[0083] Further, while all of the fundamental characteristics and features of this invention have been described herein, with reference to particular embodiments thereof, a latitude of modification, various changes and substitutions are intended in the foregoing disclosure and it will be apparent that in some instance, some features of the invention will be employed without a corresponding use of other features without departing from the scope of the invention as

set forth. It should be understood that such substitutions, modifications, and variations may be made by those skilled in the art without departing from the spirit or scope of the invention. Consequently, all such modifications and variations are included within the scope of the invention as defined herein.

What is claimed is:

1. A data inputting device for use in combination with a device requiring data input comprising:

a plurality of keys;

said keys having a static position and a depressed position;

a plurality of contacts attached to each of said keys;

a plurality of contact pads, each of said contact pads corresponding to one of said plurality of contacts on each of said keys and communicates therewith when said key is in said depressed position;

a key depression detector communicating with each of said plurality of contact pads and detecting a key depression when one of said keys is moved to said depressed position once and at least one contact of said key is touched to at least one contact pad; and

a logic value generator communicating with said key depression detector and producing a logic value on the basis of a specific contact from said plurality of contacts brought into communication with a corresponding contact pad, wherein data corresponding to the logic value is inputted to said device requiring data input.

2. The data inputting device of claim 1, wherein each key is provided with two contacts, and is depressed to input any one of three characters assigned thereto depending upon whether both or one of said contacts communicates with a corresponding contact pad.

3. The data inputting device of claim 1 or 2, wherein the key depression detector detects the key depression by comparing results obtained by repeatedly observing the contacting of the plurality of contacts with the plurality of contact pads.

4. A cellular phone provided with a data inputting device which comprises:

a plurality of keys;

said keys having a static position and a depressed position;

a plurality of contacts attached to each of said plurality of keys;

a plurality of contact pads each of which corresponds to one of said plurality of contacts attached to each key and communicates there with when said key is in said depressed position;

a key depression detector detecting a key depression when a key is depressed once and at least a contact thereof is touched to at least a contact pad; and

a logic value generator producing a logic value on the basis of the contact pad brought into contact with the contact, wherein data corresponding to the logic value is inputted.