

disposed adjacent to the horizontal wires so that either, each of the vertical wires crosses over the horizontal wires or each of the horizontal wires crosses over the vertical wires. The cross over between each of the horizontal and vertical wires define a wire grid 22. Each of the horizontal and vertical wires is electrically coupled to a signal output from the driver device 12. Electrical charges received from the driver device 12, via the signal outputs, travel through the wire grid 22. The wire grid 22 in conjunction with the electrical charges defines a coordinate plane. As will be more fully discussed below, the touchpad 10 outputs a resultant signal (shown as SNSP1 in FIG. 2) to the driver device 12. This resultant signal is induced by interaction between movement of a user finger on the wire grid 22 and one or more of the electrical charges in the wire grid 22. The capacitive touchpad 10 may be a touchpad made by Cirque such as, for example, the Single-Chip Touchpad.

[0017] The driver device 12 is an integrated circuit electrically coupled to the touchpad 10 and the controller 14. More specifically, the driver device 12 includes a plurality of signal outputs (GND, Y0 . . . Y5, X0 . . . X7 depicted generally by 20) for driving a plurality of electrical charges and sending these electrical charges to the capacitive touchpad 10 for mapping the capacitive touchpad 10 into a coordinate plane. This may be done by, for example, directing electrical charges Y0-Y5 onto vertical wires of the wire grid 22 and electrical charges X0-X7 onto horizontal wires of the wire grid 22. The electrical charges are preferably sent sequentially so that they may be distinguished from each other. However, the electrical charges may also be sent at the same time but with different potential levels so that they may be distinguished from each other. The driver device 20 receives the resultant signal SNSP1 from the touchpad 10 and is able to match the resultant signal to a coordinate on the capacitive touchpad due to the sequential nature in which the pulse signals are sent. The driver device 12 subsequently generates a touchpad data signal corresponding to this resultant signal and sends it to the controller 14. The driver device 12 may be, for example, a known integrated circuit made by Cirque.

[0018] The controller 14 is preferably a baseband processor. The controller 14 includes a memory 24, a keyboard port 28 and a processor 30. As those skilled in the art should appreciate, the processor 30 operates in a known manner to control operation of the controller 14 and thus the driver device 12 based upon software instructions (not shown) stored in the memory 24. The keyboard port 28 is for providing electrical coupling between the key switches of the mechanical keypad 16 and the controller 14. The memory 24 may be a combination of known RAM, ROM, EEPROM or magnetic memory. The memory 24 includes a plurality of lookup tables (not shown) stored therein. However, the lookup tables may alternatively be stored in an external memory. Each of the plurality of lookup tables, preferably corresponds to a specific key of the mechanical keypad 16 and is comprised of a table of touchpad data signal values and corresponding character values. The controller 14 is also electrically coupled to the driver 12 via, for example, a wired connection for receiving the touchpad data signal(s) generated by the driver device 12. The controller 14 resolves the touchpad data signal(s) as one of a plurality of character values by, preferably, matching this touchpad data signal(s) to a touchpad data signal in one of the lookup tables and finding its corresponding character value.

[0019] The mechanical keypad 16 may be a known physical keypad or virtual keypad. The mechanical keypad 16 includes a plurality of keys (see FIG. 1) and respective key switches (not shown). The key switches are for detecting pressing of or pressure on (selection of) one of the plurality of keys, respectively and for outputting a selection indication signal corresponding to one of the plurality of keys to the controller 14. The keys switches may also output the selection indication signal having or demonstrating a corresponding time duration of the pressing. As mentioned above, the mechanical keypad 16 may be electrically coupled to the controller 14 via the keyboard port 28. The mechanical keypad 16 is preferably disposed above the capacitive touchpad 10 so that a user can easily make directional movements subsequent to pressing one of the plurality of keys.

[0020] Referring to FIGS. 3-4, a method of operation of the disambiguated keypad of the subscriber device 1 will now be discussed in view of the elements illustrated in FIGS. 1-2. At 310, a user presses one of the keys of the mechanical keypad 16. The pressed key represents a plurality of characters, for example, text symbols and a number. The key switches of the mechanical keypad 16 detect the actuation or the pressing of (or pressure on) a key and generate a key selection signal indicative of the pressed key. At 312, the mechanical keypad 16 communicates this key selection signal to the processor 30 via the keyboard port 28.

[0021] At 314, the processor 30, preferably, selects one of a plurality of lookup tables stored in the memory 24. Each of the plurality of lookup tables corresponds to one of the keys and represent or corresponds to touch pad data. Accordingly, the processor 30 selects one of the plurality of lookup tables based upon the key selection signal.

[0022] At 316, the processor 30, based on software instructions stored in the memory 24, commands the driver 12 to begin recording finger location data of the user and to send a data stream to the processor 30. The driver 12 then sequentially sends the electrical charges to the wire grid 22 of the capacitive touchpad 10 for defining the coordinate plane. As those skilled in the art should appreciate, when a user touches the capacitive touchpad 10 and thus a particular wire intersection (between a horizontal and vertical wire) or vicinity thereof of the wire grid 22, the potential of the pulse signal in that particular wire intersection or vicinity will be changed or distorted. This changed or distorted potential signal, received by the driver device 12, will be referred to as a resultant signal. The driver device 12 converts the resultant signal to a touchpad data signal and sends it to the processor 30. The driver device 12 is able to also record direction of the pressing by recording the change in the different pulse signals for each wire and continuing to send touchpad data signals to the processor 30 as part of the data stream.

[0023] At 318, the processor 30 determines if the key was released. This determination can be done via the electrical coupling between the processor 30 and the mechanical keypad 16 at the keyboard port 28. If the processor 30 determines that the key was not released, then at 321 the processor 30 measures the time duration of the pressing or time lapsed while the key is pressed. This is done, preferably, by utilizing an internal clock (not shown) in the controller 14. Alternatively, the key switches of the