mand. This actuator identity signal **32** is indicative of a location of the actuator **12** in said plane and optionally indicative of a force imposed by said actuator **12** on the input board **10**, thus providing a multi-functional touch actuation. The actuator identity signal **32** is provided to a board driver and controller **24** (which provides the input board **10** with a drive signal **23**). The board driver and controller **24** generates a function signal **30** providing it as the predetermined command to a corresponding block of the electronic device **22**.

[**0060**] **FIG. 2** is an example among others of a perspective view of a general purpose input board **10** demonstrating a principle of operation of the input board **10**, according to an embodiment of the present invention. The surface of the input board contains a grating of conductors running in the y-direction forming y-lines **34**. For example, y-lines **34** can contain N (N is an integer of at least a value of two) conducting lines on the surface of the input board **10**, wherein said N conducting lines are parallel to each other and electrically isolated (using an insulating material **38**) from each other. There are contacts connected to x-lines **36** running in the insulated layer below between the y-lines **34**. For example, x-lines **36** can contain K (K is an integer of at least a value of two) further conducting lines beneath the surface of the input board **10**, wherein said K further conducting lines are parallel to each other and electrically isolated (using the insulating material **38**) from each other and from said N conducting lines **34**. Also, said K further conducting lines **36** are perpendicular to said N conducting lines **34**, and each of said K further conducting lines has N-1 contacts **36***a* extending to the surface of the input board **10** having one such contact of said N-1 contacts **36***a* between any two of said N parallel conducting lines.

[**0061**] In one possible implementation of the present invention, said N conducting lines **34** are equally spaced, said K conducting lines **36** are equally spaced and said N-1 contacts **36***a* are also equally spaced and wherein each of said N-1 contacts **36***a* has an equal distance to said any two adjacent parallel conducting lines out of said N conducting lines **34**.

[**0062**] According to a further embodiment of the present invention, when the actuator **12** is made of a conductive material and, if in the physical contact (with an area of a contact **40**) with the input board **10**, said actuator **12** provides an electrical short between one or more conductive lines out of said N conductive lines **34** to one or more further conductive lines out of said K further conductive lines **36**. Furthermore, according to an embodiment the present invention, when the actuator **12** is made of a conductive material and an electrically insulating membrane is laid over a surface of the input board **10**, and, if in the physical contact with said general purpose input board, the actuator **12** provides a capacitive connection between one or more conductive lines out of said N conductive lines **34** to one or more further conductive lines out of said K further conductive lines **36**.

[**0063**] The basic idea of the present invention is to detect the x-position and the y-position of the actuator **12** touching the input board **10**. The actuator may be an undersurface of an input device on a keymat. Examples of such input devices among many possible alternatives are depicted in **FIG. 3***a* and **3***b*.

[**0064**] **FIG. 3***a* shows one example among others of a cross-sectional view of the general purpose input board **10** with an actuator utilizing a key **50***a* (generally indicated on the left) or joystick **50***b* (generally indicated on the right) as an input device, according to an embodiment of the present invention. **FIG. 3***b* is a cross-sectional view of the general purpose input board taken along **3***b* line in **FIG. 3***a*.

[**0065**] The actuator is implemented as a conductive rubber **42** and **42***b* (for the key **50***a* and the joystick **50***b* implementations, respectively). The actuator is undersurface of an input device on a keymat **44** followed by key-caps **48***a* and **48***b*, again, for the key **50***a* and the joystick **50***b* implementations, respectively (the manipulation signal **18** is applied by the user **26** to the key-caps **48***a* and/or **48***b*). Cover **46** is for protecting the keymat **44**.

[**0066**] A touchpad can be implemented simply by topping the input board **10** with a membrane having a conductive undersurface (e.g., using a membrane-like actuator). The membrane then would be separated from the input board **10** with an air-gap. The benefit of using the input board **10** to implement a touchpad is that the undersurface of the top membrane can be fully conductive. In fact, the resistance value of the top membrane is rather immaterial, as the current's path is very short (e.g., about 0.2 mm). Consequently, the touch-device using the general purpose input board **10** described by the present invention is insensitive to non-linearities of the top membrane resistance. In addition, stretching of the membrane does not affect pointing accuracy.

[**0067**] **FIG. 4** shows one example among others of a schematic representation of the general purpose input board **10** implemented as a printed input board, according to an embodiment of the present invention, using a conductive print (for implementing the y- and x-lines **34** and **36**, respectively), an insulating print (for providing the insulating material **38**) and a resistive print (see elements **52***a* and **52***b*). Distributed resistors **52***a* and **52***b* are used for applying different voltages to the y- and x- lines **34** and **36**, respectively, by voltage division.

[**0068**] The location on the surface of the general purpose input board **10** in a direction **20***b* parallel to said N conducting lines is determined by applying a different bias voltage (e.g., using a battery **54**, a resistor **56** and a distributed resistor **52***a*) to each of said K further conducting lines and by monitoring a voltage (e.g., using a voltmeter **58**) generated in any of the N conducting lines **34** as a result of making said physical contact.

[**0069**] Similarly, the location on the surface of the general purpose input board **10** in a further direction **20***a* perpendicular to said N conducting lines is determined by applying a different bias voltage (e.g., using the battery **54**, the resistor **56** and the distributed resistor **52***b*) to each of said N further conducting lines and monitoring a voltage (e.g., using the voltmeter **58**) generated in any of the K further conducting lines **36** as a result of making said physical contact.

[**0070**] The contact the actuator makes with the x- and y-lines can be conductive or capacitive.

[**0071**] As can be seen in **FIG. 3**, depressing an actuator would short-circuit one or several x-lines **36** conductively to one or several y-lines **34**. The position of the contact can be detected, e.g., by a simple resistive circuit, as described