

Appliances & Controls

Touch Panel Solutions for Every Day Use

Commercial and residential white goods and control systems are taking advantage of touch technologies in order to remove key panels and dials, thereby reducing cost and improving design esthetics. New products are providing consumers with simple, adaptive and multi-language user interfaces.



The benefits of zTouch™ makes it ideal for touch control of appliances and control panels.

Existing solutions, however, are not always living up to expectations. Surface-based technologies, such as resistive and capacitive technologies that utilize membranes applied directly onto the panel surface, are failing due to wear and tear.

With F-Origin's patented zTouch™ technology, new design opportunities are available. Because zTouch™ is a force-based touch-screen/touch-panel technology, the surface membrane is eliminated. The user can use a finger, gloved finger, utensil, plastic stylus or metal key. Input by any device is

allowed. This also eliminates the issue of "false touches" that often plague capacitive solutions in a humid environment.

Since the miniature F-Origin touch sensors are placed behind the panel, there is no performance degradation issue due to wear and tear of the surface.

The force sensors in the zTouch™ system also enable use over a very wide temperature range. The touch surface can be placed inside a freezer as well as near heat elements.



Touch panels made of glass, metal, plastic or any other rigid material is possible by using zTouch™.

zTouch™ also allows for use of a wide variation of materials for the touch surface, such as glass, plastic, or metal. Even direct touches on the display module itself are allowed. The touch surface can also be shaped - the touch-screen / panel can be oval or it can have raised or lowered surface features. This provides the product designer with new possibilities in terms of design language and user interface capabilities.

About F-Origin

F-Origin is the developer of zTouch™, an innovative force-based touch technology. zTouch™ delivers robust design advantages to OEMs and ODMs implementing touch screen, touch panel, and high durability touch user interface solutions. Founded in 2005, F-Origin is a privately held US company with headquarters in Research Triangle Park, North Carolina.

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zTouch™ Benefits

Because panel surface membranes / films are eliminated from the design, there are a number of user benefits available to zTouch™ product developers and end users.

Optical Performance and Durability

A touch-screen utilizing zTouch™ technology has an improved durability relative to resistive and capacitive systems because there is no surface-mounted film or membrane to wear out. The absence of a film also means no optical degradation of the display, so the screen is naturally brighter and clearer, enabling use in a broad range of indoor and outdoor environments. Additionally, the display is also more energy efficient, as less backlighting is required.

Any Object Touch

zTouch™ works with a finger, gloved finger, stylus or any other object. In contrast, capacitive touch-screens require the touch to be from a finger or special stylus. Other technologies, such as optical-based systems, are also limited by the touch surface area.

Design Flexibility

Since zTouch™ only requires that the touch surface be rigid, any surface material may be used (glass, plastic, metal, ceramic, etc). This provides a high level of design flexibility for touch-screen or panel-based products. The product designer can also select appropriate materials to meet enhanced durability requirements for their end product. zTouch™ is also well suited for applications that require dust and water seals.

Handwriting and Gestures

zTouch™ supports both finger and stylus touch. Along with a high touch resolution, frequency coordinate reporting and software-defined touch and click force levels, zTouch™ is an excellent technology for handwriting and gestures.

3DTouch™

The zTouch™ touch-screen system supports an alternative form of multi-touch. In addition to detecting the touch coordinates, the system also determines the force level of that touch. In other words, the force of the user's touch is measured and can be used as another application input.

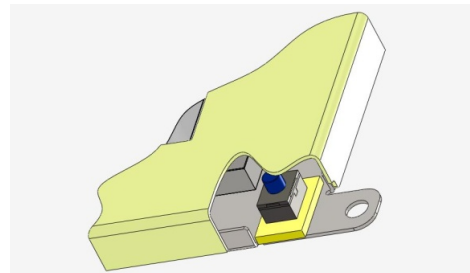
This three-dimensional touch input can be applied to fixed thresholds, where a soft touch represents mouse movement, and a force larger than the threshold represents a mouse click. The force input levels may also be used for smoothly variable input controls, such as the heat setting of a cook top or the volume setting of an audio control.

Cost

Since the sensors in a zTouch™ system do not cover the touch screen area, the product cost is not a function of surface area, resulting in a highly cost effective solution as the touch screens/panels grow in size.

zTouch™ Description

The core system components are; force sensors, signal amplification, and a micro controller unit. Not only can the overall system cost be kept very low, the manufacturing and assembly process is straightforward and scalable.



Close up illustration shows the placement of a force sensor in a corner behind the LCD front bezel.

The sensors are normally placed under each corner of the touch surface, where they record force changes lower than 1 mN. The zTouch™ software continuously records the sensor data and “quadrangulates” the touch coordinates. In order to ensure accuracy, a number of filtering, compensation and calibration functions are included in the coordinate calculation. The touch coordinates and touch forces are communicated at 200 points per second over USB or any other appropriate interface.