

## ATMs, Kiosks and Gaming

### Touch Panel Solutions for Durable Systems

Standalone touch-screen based products such as ATM, Kiosk, Factory Automation and Gaming / Casino units must perform unattended and often under extreme conditions. High tolerance for sunlight, dust, liquids, rough handling, and extreme temperatures requires characteristics traditionally not provided by today's touch-screen technologies. To address the robust needs of this market, F-Origin developed a touch technology based on force, called zTouch™.



*The benefits and characteristics of zTouch™ makes it ideal for high durability applications.*

Surface-based technologies fail due to wear and tear in environments where the touch-screen must be designed to withstand "touches" from fingers and gloves as well as keys, pens and other sharp objects. With zTouch™, the surface membrane is eliminated, allowing the designer flexibility to select from a variety of touch-screen materials (glass, plastic, etc.).

Common problems for outdoor units are the need for the user to remove gloves and only use fingers when capacitive-based technologies are used. Other technologies are sensitive to light, such as infrared, or perform poorly in sunlight due to the optical

characteristics, such as resistive-based technologies. zTouch™ does not suffer from these limitations as light does not interfere with the sensors, which are placed and protected behind the touch surface.

Because zTouch™ is a force-based touch-screen technology, the user can use a finger, an object or be wearing a glove. The force sensors in the zTouch™ system also enable use over a wide temperature range, allowing for outdoor use in direct sunlight as well as in winter climates.

Since the touch sensors are placed behind the touch surface, there is no performance degradation or occurrence of "dead zones" due to surface contamination, reducing the need and overhead for cleaning the touch-screen surface.



*zTouch™ is ideal for integration into ATM units.*

In addition to increased durability and material options, zTouch™ affords developers an added level of design flexibility. For example, 3-dimensional shapes or features can be incorporated in the touch-screen surface area for improved readability and presentation.

### 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.

### 3D Touch™

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.

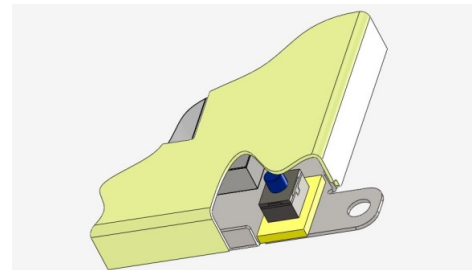
This three-dimensional touch input can be applied to fixed thresholds, where a soft touch represents mouse movement, and a force larger than the threshold represents a mouse click. The force input levels may also be used for smoothly variable input controls, such as the heat setting of a cook top or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