

# TOUCH-CONTROL INTERFACES

*Circuit-less Switches on Virtually ANY Surface*

## BENEFITS

**Versatility — Imagination is the only limit.** Replace all kinds of traditional controls, such as buttons, switches, knobs, keypads.

**Durability — Can virtually last forever.** No moving part to stick or break; maintenance-free. System can even be hermetically sealed. Controls often outlast lifespan of equipment using them.

**Reliability — Right every time.** Unique auto-calibration ensures consistent & accurate operation; no need to recalibrate or adjust; virtually no chance of false touches from clothing, liquids or falling objects.

**Attractiveness — Elegant, convenient, pleasant to use.** Can fully blend function into form, wherever desired; any panel area can be turned into sleek controls.

**Through-Glass Operation — THE solution for demanding environments.** Can accommodate up to 18mm thick IR transparent barriers, ideal for flame-proof, vandal-proof, frequently-cleaned, or public-access applications.

## WHY IS IT UNIQUE?

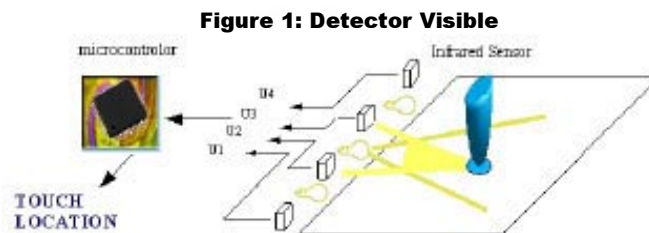
No physical link is required (no wiring) between the sensing device and the touch surface. Thus, ANY surface made of ANY solid material can become a touch-sensitive area, so long as it's within 70mm of the sensing device.

This completely novel device-control solution separates the circuitry from the control surface, providing cosmetic and functional advantages over current switch technology — all with a significant WOW!-factor.

## TECHNOLOGY DESCRIPTION

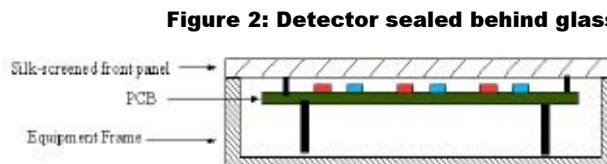
The heart of this technology is optical recognition. Any object illuminated by a light source reflects a part of that light; both the quantity of reflected light and the contour of the reflected-light envelope can determine the shape and position of the reflected object (such as a finger). Infrared diodes and detectors are used to generate a unique “light signature,” and the exact touch location is pinpointed through multivariate analysis of the shape and quantity of the reflected IR. Proprietary, built-in Auto-calibration automatically accommodates changes in surrounding conditions and can detect/distinguish false touches from clothing, spills or falling objects. The basic technology can be implemented in two ways — with the detection device *VISIBLE* near the touch surface, or with the detection device *HIDDEN* behind the touch surface.

**Detector *VISIBLE* near the touch-surface:** In the visible configuration, the array of IR diodes & detectors is placed parallel to the touch surface. (Figure 1)



**Exact location determined by multivariate analysis of receiver set output signals**

**Detector *HIDDEN* behind/below the touch-surface:** In the hidden configuration, the array of infrared diodes & detectors is installed underneath or behind a silk-screened panel comprised of IR-transparent material; one pair of IR emitter/detectors is used per touch button, plus one backlighting diode to indicate touch registration. These elements are integrated into a ruggedized Printed Circuit Board. (Figure 2)



**Diode/Detector PCB attached to IR-transparent, silk-screened front panel**

# TECHNOLOGY LICENSE OPPORTUNITY

## TOUCH-CONTROL INTERFACES

### ADDITIONAL NON-CONFIDENTIAL INFORMATION

- Numerous White Papers and Application notes on various solutions already implemented
- Copies of issued patents and published patent applications
- Demonstration Model [under cover of an Evaluation Agreement]

### ADDITIONAL CONFIDENTIAL INFORMATION [AVAILABLE UNDER SECRECY AGREEMENT]

- Copies of unpublished patent applications
- Detailed technical information
- Proprietary third-party econometric model

### FOR MORE INFORMATION & TO DISCUSS COMMERCIAL TERMS, CONTACT:

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AG Case Number 0212

### TECHNOLOGY APPLICATIONS

This technology can be applied anywhere switches, push-buttons or other electronic controls are needed. Specific examples include:

Keyboards — Touch-typing without the effort of depressing keys; less repetitive stress  
Security Access — Put access keypads ANYwhere  
Waterflow — Turn water on & off / control volume with no faucets  
Explosive or caustic environments — Switch is separated ; cannot harm or be harmed  
Medical Environments — Electronics can be hermetically sealed  
Domestic appliances — Unparalleled design flexibility and WOW! -appeal to consumers  
Ruggedized Equipment — Wherever harsh or hostile conditions prevail  
Public-access displays & terminals — No moving parts; maintenance free and intuitive  
*Actual examples of implemented applications can be provided*

### INTELLECTUAL PROPERTY

This technology is fully protected by US and foreign patent rights and by copyrighted neural net software. Patents include *Method and device for optical detection of the position of an object*, published in Europe DEC 27, 2002; and *Method and device for optically detecting the position of an object ny measuring the light reflected bythis object*, published in Europe MAR 4, 2005. The US counterpart of the first patent has been published as S/N 20040246105; the US counterpart of the second patent has been filed, but not yet published. Full PCT rights are available on the second patent, and key European, North American and Asian countries are protected on the first patent.

### STAGE OF DEVELOPMENT

This technology is NOT experimental and has been implemented in numerous applications in Europe. The originating company (in France) is available for consultation and technical consulting in adapting the technology to the specific needs of licensees.

### COMMERCIAL RIGHTS AVAILABLE

Full commercial rights to this technology are available outside of Europe , with the exception of application to stoves and cooktops, which rights have already been exclusively licensed. Additional rights can be granted to any serious player in any other applicable market segment. Licensing preference will be given to Field-of-Use Exclusive licensees willing to commit to strong growth objectives. The originating company intends to pursue the European market on its own, though interested European companies are invited to inquire about available European Fields of Use. Apropos Group is the exclusive licensing agent for the originating company outside of Europe.

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