CLEVERTOUCH

Why Capacitive Touch

Which buyers benefit and how

#clevertouch

Technology for sharing

True-bonded capacitive touch is the most advanced of the touch technologies available for flat-panel displays, giving the most natural, responsive and accurate touch experience – just like your smartphone or tablet.

Superior user experience

Until now, capacitive has been restricted to smaller screens of 22-inch and smaller so large-format interactive displays have relied on alternative technologies that couldn't match true-bonded's capabilities.

Now true-bonded capacitive is a reality for large and ultralarge formats, whether you want a walk-up-and-use touch screen for collaboration in a corporate huddle space or meeting room, or the best available responsiveness for creative work, or accuracy for detailed plans and drawings.

Defining characteristics

In this whitepaper we explain how true-bonded capacitive touch works, its defining characteristics, and which buyers will benefit most from them and how.

We compare true-bonded to other forms of capacitive and the commonly found alternatives.

We highlight its advantages – giving you, the buyer, the science you need to make informed buying decisions, selecting the touch technology best suited to your needs.

All touch technologies use a form of disruption to create a change of state when touched. The controller recognises the touch, identifies its exact location, and translates it into an instruction to the computer.

Projected capacitive (PCap), harnesses the natural electrical charge of the human body to create a touch event.

The touch layer within reacts to the electrical impulse of a light finger touch through the protective glass layer, which acts as a lens.

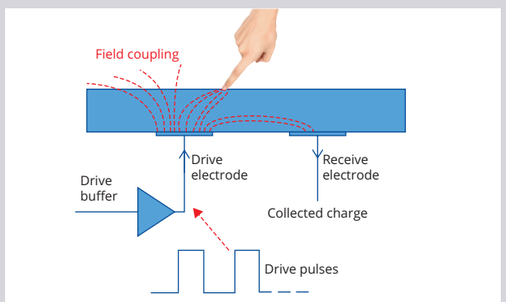
The most advanced touch technology is true-bonded capacitive. While most large-format PCap displays have air gaps between the layers, these have been virtually eliminated in true-bonded, giving them a faster response time and greater accuracy – but it also makes them the most difficult to manufacture.

Multi-layered

The air gap between the layers is virtually eliminated, delivering the exceptional responsiveness to which we are accustomed from our smartphones.

A minimal air gap is maintained which is necessary to prevent the Newton Rings effect (the moiré effect seen when you press a laptop monitor or LCD TV). The minimised air gap also means there's nowhere for dust or condensation to accumulate.

Adding the membrane without any air bubbles or dust ingress is highly challenging as anyone who has put a protective cover over their smartphone will know. And, the larger the surface, the harder it gets. It demands clean-room manufacturing and immense precision only available from a handful of factories.

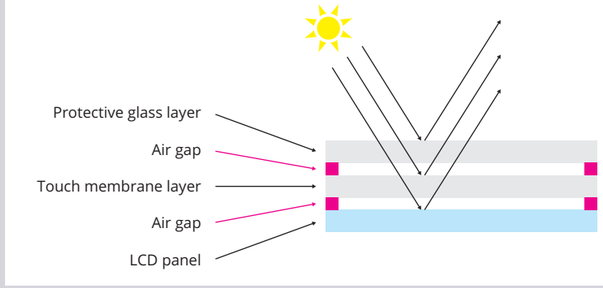


Projected Capacitive

Capacitive touch uses the natural electrical charge in the human body to create a disruption. The touch screen reacts to the electrical impulse from a light finger touch through the top, protective layer of glass, which acts as a lens. The second layer is printed with a minute grid of conductive material, typically Indium Tin Oxide (ITO) for smaller screens and a fine wire mesh for larger displays. The wires are very thin – around 10 microns, a fraction of the thickness of a human hair, and undetectable to the human eye.

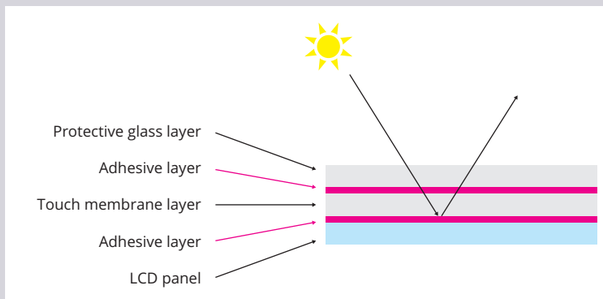
Eliminating of the air gap by using an optical adhesive bond gives touch displays with true-bonded capacitive a number of distinguishing qualities:

- Highly responsive: <15 milliseconds
- Highly accurate: just 1mm tolerance
- No time lag
- Low reflective quality
- Thinner and lighter
- No bezel
- Pressure sensitive
- High level of clarity
- Doesn't recognise non-capacitive objects e.g. cup, pen or notebook



Air-gap capacitive

Light reflects off each of the surfaces in an air-gap screen (shown above) causing increased reflection. Sealing all three layers with optical adhesive eradicates the problem in true-bonded (shown below).



True-bonded capacitive

How is it different?

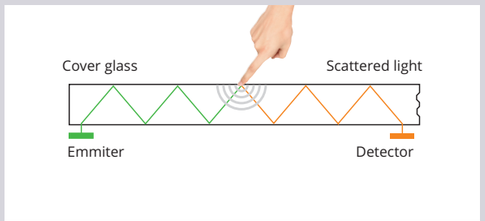
Touch technology has come a long way since its early days in the 1970s. Each generation has its distinguishing characteristics that suit different applications. All have pros and cons.

Resistive, for instance, an early version of touch, was only single touch but relatively low-cost so widely used in interactive whiteboards and flat-screen overlays.

Surface Wave, on the other hand, is highly durable because its an all-glass technology. This means it is suited to high-traffic applications, like bank ATMs, with structured user interfaces where being single touch is not a disadvantage. It is also suitable for medical uses because it is resistant to harsh cleaning agents.

Armed with an understanding of how the main touch technologies work and their inherent characteristics, buyers are able to match the technology to their specific requirements – responsiveness, clarity, ambient/direct light levels, durability, number of simultaneous touches and/or users and budget.

Infra-red (IR) on glass



Distribution by light

The touch of any object breaks the light waves injected into the glass to register the touch point.

Pros:

- Multi-touch
- No bezel required
- Optically clear

Cons:

- Does not operate well in high light levels or in direct sunlight
- Cannot be operated if damaged in any way
- Can't be used with anti-glare
- Minimal touch points

Disruption of light

The touch of any object breaks the infra-red light waves beamed over the surface of the glass to register the touch point.

Pros:

- 25 touch points
- Multi-touch
- Optically clear
- Can be used with anti-glare
- Works with any object – bare finger or gloved hand
- Very reliable

Cons:

- Visible frame
- Can be affected by direct light

Who benefits and how?

The inherent qualities of true-bonded capacitive touch give you the state-of-the-art responsiveness and accuracy you need for free-flowing collaboration, creativity, design work and technical documentation, all in an elegant sleek form.

Sleek & stylish

Embedded touch technology providing edge-to-edge infinity effect – spot-on in setting where aesthetics really matter.

Accurate & responsive

The extreme responsiveness and accuracy gives a very natural experience like writing or drawing with a pen. No ghosting. No time lag.

Light & thin

Displays can be lighter and thinner for flexible installation – easy to hang flat against a wall, mount on a freestanding unit, or integrate into furniture.

Natural & familiar

All the same pinch-and-zoom, swipe gestures now second nature for smartphone and tablet users for walk-in-and-use familiarity.

Clarity & detail

Clear images and detail visible in high ambient light and unaffected by dust and condensation.

Ideal for:

- Corporate huddle spaces, meeting and board rooms where natural collaboration is essential
- Creative, design and other agencies who need touch technology to enable creativity, not get in its way
- Any organisation with high aesthetic values
- Users for whom clarity of detail is essential
- Architects and construction working with blueprints
- Technical design
- Users of CAD packages which utilise pressure sensitivity
- Automotive design
- Engineering
- Higher & Further Education for these subjects

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