

## MRI previews breakthrough hover touch technology for interactive displays

[Manufacturing Resources International](#) (MRI) has previewed its next generation InfiniteTouch® PCAP touchscreen technology. An optional feature exclusive to [BoldVu® displays](#), the All-Glass InfiniteTouch® sensor is now driven by an industry breakthrough Digital Touch Controller. With signal-processing tech by Austin-based start-up, [SigmaSense](#), the new controller promises high definition touch, including gloved-hand and hover detection. With this new technology users can navigate an interactive interface from many inches away from the glass, not using clunky camera-based motion

controls, but electrical capacitance – the energy that quite literally flows through our fingertips.

InfiniteTouch® is LG-MRI's large format ITO (indium tin oxide) touch sensor constructed entirely of index-matched glass, and which contains no plastic films, sense wires, or micro-mesh. It delivers the same optical transparency as a smart phone or tablet, but in a jumbo sizes up to 86 in. diagonal. This glass also utilizes a permanent, sputtered titanium dioxide first surface coating that exhibits both a degree of self-cleaning and anti-bacterial properties.

For interactive kiosks in sun-soaked spaces InfiniteTouch® ensures optimal optical performance, and is visually indistinguishable from a comparable display without a touch sensor, even after prolonged exposure to sunlight or other environmental challenges like extreme temperatures. Additionally, InfiniteTouch® is part of a stack of laminated vandal glass which is highly impact-resistant – a necessity in public spaces.

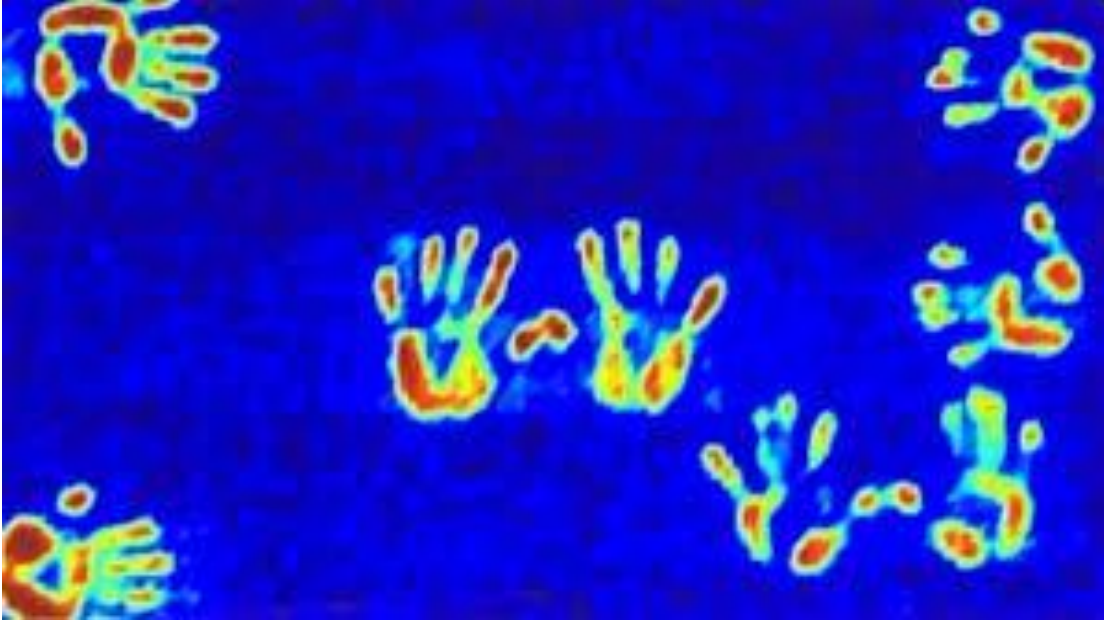
Up until now this kind of optical performance, durability, and longevity has been impossible in large format touch sensors. The inconsistent and high impedance of index-matched, optically transparent ITO transmit and receive lines, combined with transmission line length due to the sheer size of a 75 in. or 86 in. touch sensor has literally been impossible to electrically drive. There is just too much electrical noise and interference for the sensor to operate with any sense of stability. This is where SigmaSense's signal processing technology, SigmaDrive, makes all the difference.

## SigmaDrive Provides the Data Necessary for the Next Generation of Interactive Displays

SigmaDrive is a breakthrough sensing technology where a system can now both stimulate and receive sensing data on the same pin, simultaneously. This allows sensed signals to be referenced against the driven signals, enhancing the ability to more effectively control environmental and transmission issues that have plagued previous solutions.

Software control of the SigmaDrive modulators assures predictable performance in noisy environments. Powerful digital filtering rejects out-of-band noise and delivers high signal to noise ratio (SNR) at ultra-low drive voltages. The result is industry leading touch performance and hover sensing, without the painful sensor tuning associated with today's complex, unstable and noise susceptible analog systems. Tuning becomes a matter of minutes or hours instead of weeks or longer.

With this incredible SNR, SigmaDrive achieves *capacitive imaging*, where we are not just seeing touches as dots at X, Y coordinates, we can actually image the entire screen concurrently and tell the difference between rain water, objects on the screen, and can see a gloved hand interacting with the screen or in proximity to it. It's essentially a video stream of the entire touch surface. No touch technology has ever remotely approached this capability.



Touch imaging of InfiniteTouch® sensor, including gloved hands (lower right pair)

The SigmaDrive chips are embedded on SigmaVision controller boards, designed and manufactured by [Manufacturing Resources International](#). The controller reports touch events at 300Hz, up to 10X faster than possible in the past. This translates to a super responsive and more fluid-feeling user experience.

LG-MRI Chairman and MRI President/CEO, Bill Dunn comments, “from a remote monitoring perspective every other touch controller technology leaves us blind as to whether or not the touchscreen hardware is behaving as expected, but with SigmaDrive the blinders have been removed – we can monitor and test the entire touch surface in real-time and in X, Y, and Z space from any authorized IP device, totally independent from the media player.” No longer does a tech need to be onsite to evaluate touch performance. “The SigmaSense SigmaDrive controller is the only practical way to mass deploy touch enabled large format outdoor displays.”

MRI retains global exclusivity on the application of SigmaSense’s signal processing technology to interactive outdoor displays larger than 55 in. diagonal. Dunn continues, “There is tremendous value in the remote diagnostics capability of the touchscreen. Our displays operate in high traffic areas where onsite work can be very disruptive, with SigmaDrive, everything we need to know is available in the monitoring tools.”

## Touch in a World Changed by COVID-19

The launch of the new InfiniteTouch® sensor with Digital Touch Controller is timely in a world changed by COVID-19. While interactive displays and kiosks remain ubiquitous fixtures for

self-service in retail, travel, and entertainment venues there is understandable apprehension around touching surfaces whose cleanliness is unknown.

Some “hygienic” touchscreen solutions are being introduced to the market, from low-tech concepts like hand sanitizer pumps glued to the side of a kiosk, to software-based solutions where a user’s mobile phone proxies as a remote control. Unfortunately, in these and most of the other solutions being discussed in the industry, the extra steps and behavioral changes are being pushed onto the user. By no fault of their own, their interactive kiosk experience is now more cumbersome, and many are asking, “is it even worth it?”

MRI views this new reality from our characteristic engineering perspective, reflecting on the question – what can we do to improve our technology to address public concern over touching interactive displays? In this mindset, ‘hygienic interactivity’ is a challenge owned by the kiosk, not one where new behaviors or expectations are pushed onto the user. Our answer – improve the touchscreen technology so we can detect a hover state, many inches away from the glass. If we indicate, via a simple graphic on the screen that reads “Hover Enabled”, that a user can use all the normal touchscreen gestures without having to physically touch the glass we’ve kept that navigation experience intact without the user requirement for a post-interaction hand washing, or an impromptu neck exercise as they ping-pong their focus back and forth between their smartphone and a kiosk.

MRI believes that better touch sensing capability empowers human-empathetic workarounds for the traditional finger-to-glass interaction and hover touch is an intuitive start. After all, these machines are supposed to make our lives better, easier, more enjoyable, should not the onus for remaining relevant in light of increased hygienic awareness be on them?

If you’d like to talk to us about InfiniteTouch® technology, you can reach out [here](#).

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