

Huge breakthrough in touchscreen market with launch of first touchscreen controller IC optimised for industrial and automotive applications

- *New aXiom series of touchscreen controllers from TouchNetix enables radical new display user interface designs featuring curved and contoured overlays, hover and proximity functions, force sensing and integrated haptics control*
- *Multiple performance advantages over existing touchscreen controllers include extreme immunity to conducted noise, ultra-low RF emissions, dramatically reduced risk of premature touchscreen failure, superior sensitivity to touch using wet or gloved fingers, and support for large and non-standard display form factors*

Fareham, UK, 22 October 2018 – TouchNetix, a manufacturer of system and component technology for high-performance touchscreens, today announced the introduction of the first in its aXiom series of touchscreen controller ICs, marking a breakthrough in the performance and capabilities of capacitive touchscreens for the industrial and automotive markets.

The aXiom AX310 is the industry's first touchscreen controller to be designed specifically for industrial and automotive applications. A superior alternative to the modified consumer-grade touchscreen controllers supplied to the industrial and automotive markets today, the AX310 enables OEMs for the first time to:

- Design responsive touchscreens that have a thick, varying-thickness or contoured overlay while maintaining uniform sensitivity across the whole screen's surface
- Implement sophisticated hover, proximity, touch and concurrent force-sensing functions with a single capacitive touchscreen controller which also integrates haptics control. With this combination, OEMs can realise 3D touch effects.
- Support touchscreen designs in arbitrary and non-standard display formats, including ultra-wide aspect ratios and non-rectangular form factors
- Achieve reliable touch-sensing performance in the presence of multiple high-power noise sources
- Easily meet CISPR25 Level 3 specifications for radiated emissions without implementing expensive noise counter-measures
- Dramatically reduce the risk of early touchscreen failure due to materials degradation in hot and humid environments

The aXiom controllers have been designed from the ground up for operation in harsh and noisy industrial and automotive environments and over a wide temperature range. Its all-new, highly digital architecture gives it performance advantages that are impossible for modified consumer-grade touchscreen controllers to match.

The aXiom products owe their outstanding performance to a combination of a novel analogue front end which uses a narrowband, low-voltage sinusoidal drive waveform, an innovative seamless frequency-changing capability to avoid noisy frequency ranges, and a high-performance proprietary digital signal processor (DSP) engine. The most striking feature of this new architecture is its high signal-to-noise ratio (SNR) of 80dB, compared to the typical 50-55dB of competing products in the market.

This high SNR is enabled with TouchNetix' aXiom controller while driving the sensor at a low DC-neutral $2.5V_{pk-pk}$, whereas other controllers often use a drive voltage of +30V or higher to achieve even a modest SNR. The aXiom IC's low drive voltage produces very low levels of radiated emissions. The DC neutral bias also dramatically reduces the stresses experienced by the touchscreen materials. High drive voltages can result in optical damage and even metal migration - a form of galvanic corrosion - in the sensor material leading to premature failure of the touchscreen sensor stack.

The aXiom IC's high SNR also enables reliable multi-point touch sensing through thick overlays, including acrylic thicker than 10mm or with an air gap in the stack, and even when the user wears gloves. Touch response to wet fingers, or when the screen is wet, is also superior to that of existing touchscreen controllers.

The chip's powerful DSP engine enables micro-adjustment of the sensitivity at each node in the sensor matrix: the screen's touch-sensing behaviour can be tuned regionally to provide uniform responsiveness to touch across a screen with an overlay of variable thickness. This allows OEMs to rethink the display user interface (UI), building in contours, ridges or valleys to guide the user's finger while the user looks away from the screen.

The aXiom controller can also perform capacitive proximity sensing at a distance of up to 10 cm, and coarse position sensing of a finger as much as 6 cm distant from the screen. This supports new hover and proximity functions in touchscreen UIs. In addition, the AX310 integrates concurrent force sensing and haptics control, to allow the touchscreen to guide the user's finger through space to their chosen button, touch it, and only register a button press when force is detected at the button's location. The AX310's high-performance force-sensing measurement engine detects displacement of as little as 5 μm .

Chris Ard, managing director of TouchNetix, said: 'In the industrial, aerospace, medical and automotive markets, performance, reliability and long operating lifetime are crucial differentiators, but today's consumer-grade touchscreen controllers are not built to meet these industries' needs. This makes the market ripe for disruption led by technical innovation, and that's what TouchNetix is providing with the aXiom touchscreen controllers. In every industry sector, the aXiom series of controllers can enable OEMs to revolutionise the display UI, bringing additional value and functionality, and making the touchscreen a key focus in end products such as cars and home appliances.'

The aXiom controller ICs support touchscreens with up to 56x56 sensing channels, and touch and force-sensing sampling rates of more than 200Hz. They are suitable for use with displays bigger than 15.6" diagonal, and in non-standard form factors and arbitrary aspect ratios. TouchHub development software is provided with the aXiom controllers to ease the design and tuning of touchscreen designs.

The AX310 will be available for sampling in Q1/2019 and will be AEC-Q100 Grade 2 qualified by Q4/2019. For information on pricing and to request samples or a datasheet, contact TouchNetix directly at www.touchnetix.com/contact.

About TouchNetix

TouchNetix was founded in 2010 to bring capacitive touch technology to the broadest possible range of applications and customers through our deep knowledge and passion for the technology.

The four founders of TouchNetix bring combined experience of more than 50 man years in capacitive touch technology and implementation with hundreds of successful projects delivered for a diverse customer base, from the biggest blue chip to the smallest custom project. We managed the team that delivered capacitive touchscreens for Samsung™ and Motorola™ mobile handsets even before the iPhone® mobile digital device was launched.

TouchNetix founders previously formed the core management team of the Touch Technology Products Group at Atmel® Corporation and prior to that were the Management Team within Quantum Research Group in the UK (acquired by Atmel Corporation in 2008). They were responsible for the definition and delivery of the Atmel maXTouch® touchscreen driver IC product lines which have won hundreds of designs in the Mobile Handset and Mobile Internet Device (MID) markets and which set the standard for these products.

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