Compact precision

Mobile electronic devices are developed in highly automated processes. Yet their touchscreens and keys are generally still tested manually. PKC Electronics decided to go in a completely new direction with its Chameleon test platform. It offers automated, fast and reliable testing of mobile devices using different adapters. The mini planar surface gantry EXCM is completely in its element in this environment.
The adaptive test platform from Finnish equipment manufacturer PKC Electronics heralds a new era in the testing of electronic devices, which until now was mostly still carried out manually. As mobile devices such as smartphones, tablet PCs or navigation devices with their touch displays and sophisticated audio or video functions become more and more complex, so too does the task of thoroughly testing them. The user interface performance tests, touchscreen swipe tests, operation of the keys and switches on the sides of the mobile devices and the speaker and microphone tests require extensive and quality-assured test procedures. The rapid expansion of the smartphone and tablet PC market is also set to further heighten the demand for reliable test devices. In 2013 alone, 1.4 billion smartphones were in use worldwide. The number of tablet computers grew from 17 million in 2010 to 195 million last year.

Demand calls for automation
“Today, it is important for us to be able to offer turnkey test devices where all you have to do is quickly change the adapter for the different terminal formats and retrieve the right software for the test routine at more or less the touch of a button”, explains Kimmo Hyrynkangas, Test Solution Business Area Manager at PKC Electronics in Finland. “Many end users need to change the adapters and associated programs twice a day on average”, continues Hyrynkangas.

“With the Chameleon brand name, PKC Electronics has developed exactly the flexible test device we require”, states Marko Anttila, Operation Manager at Elektrobit. Elektrobit is a Finnish manufacturer of mobile devices and infotainment systems for vehicles. “Equipped with the corresponding adapters, the solution allows even small and medium-sized series consisting of 10,000 to 100,000 units to be tested quickly and reliably”, he adds.

Highly flexible solution
The high level of flexibility and adaptability of the test device enables customers to respond to the wide variety and ever decreasing product life cycles of mobile devices. Development times are shortening all the time. Extensive tests now have to be carried out as early as the development phase. Ideally, the test systems should be able to be used in both the development phase and during series production. End customers also need to integrate multiple test functions in a single test phase in order to guarantee fast throughput in volume production. These
include display/touch tests, performance tests, audio tests and radio frequency tests, as well as thorough evaluations such as the fully integrated analysis of the audio test results. The Chameleon system thus sets a new standard in integrated test instruments, allowing tests to be performed on a single compact platform.

Integrated in a single unit
Another industry trend is also on the horizon: as the test facilities are integrated in the production cells, the test devices need to be made smaller and smaller. It is also important to have enough test capacity, so that the test process does not lead to supply bottlenecks. “This is another way in which the test devices from the Chameleon series set themselves apart from others on the market – because they can analyse the tests within the device”, explains Hyrynkangas.

Perfect position
“The mini planar surface gantry EXCM from Festo appeared on the market at exactly the right time”, says Risto Mäkelä, Chief Engineer at PKC Electronics. “With this compact, ready-to-install planar surface gantry, precise and fast positioning in tight installation conditions is now extremely easy.”

Jukka Merisalo, Key Account Manager at Festo Finland, adds: “The planar surface gantry EXCM really shows off its strengths in situations where every millimetre counts.” The compact planar surface gantry can travel to any position within its working space. It just needs an area equivalent to a DIN A4 sheet. The recirculating toothed belt moves the slide within a two-dimensional area (X- and Y-axes). The fixed motors are connected to the slide and thanks to the parallel-kinematic drive principle, the moving masses remain low. This allows fast positioning at speeds of up to 500 mm/s and repetition accuracies of the order of ±0.05 mm.

Together with the electric slide EGSL, the Z-axis is responsible for the correct functioning of the touch and swipe tests. The pneumatic slide DGSL is equipped with a microphone and light cube, allowing audio, camera and display tests to be performed.

Ready-to-install system solution
The gantry is quick to commission and can be integrated quickly into machines. The pre-parameterised drive and controller package gives users the security of knowing that they can concentrate on their own core competencies without having to concern themselves with the details of automation technology. “The fact that Festo could offer us a complete package consisting of hardware, software and a consultancy service is what tipped the balance in their favour”, says Mäkelä.

“We couldn’t have developed our test platform without the compact mini planar surface gantry EXCM.”

Kimmo Hyrynkangas, Test Solution Business Area Manager at PKC Electronics

PKC Electronics Oy
Pajuniittyntie 43
92120 Raahe
Finland
www.pkcelectronics.com
www.pkgroup.com

Area of business:
Turnkey solutions for testing and power management as well as the design and manufacturing of electromechanics.