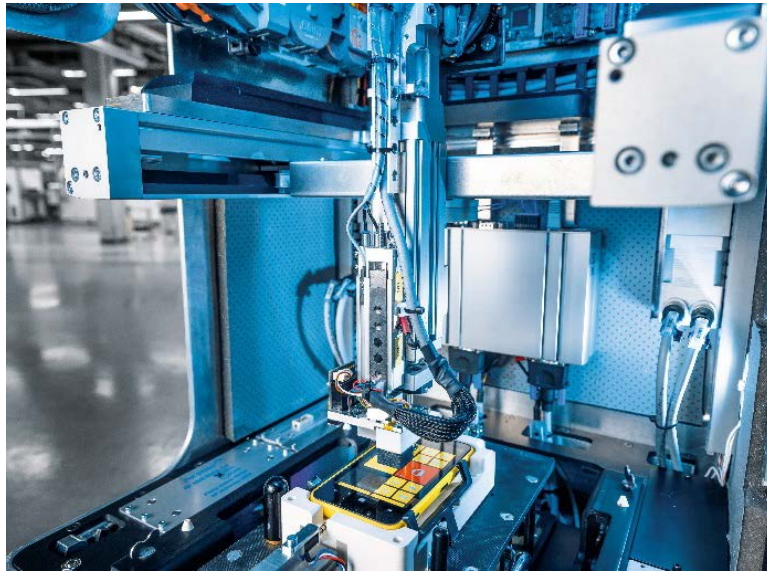


# Automatic testing of touchscreens and keys on mobile devices



**FESTO**

## Highlights

- Highly compact unit – installation space and working space are virtually identical
- Rapid and precise positioning
  - Maximum acceleration of 10 m/s<sup>2</sup>
  - Repetition accuracy ± 0.05 mm
- Complete handling solution (kinematics and controller) from a single source

## Customer

PKC Electronics Oy (Finland)  
Area of business: Turnkey solutions for testing and power management as well as designing and manufacturing electromechanics

## Project

Test system for testing various functions on mobile devices, such as immersion and swiping tests, performance tests of keys and switches as well as audio and frequency tests.

## Requirements

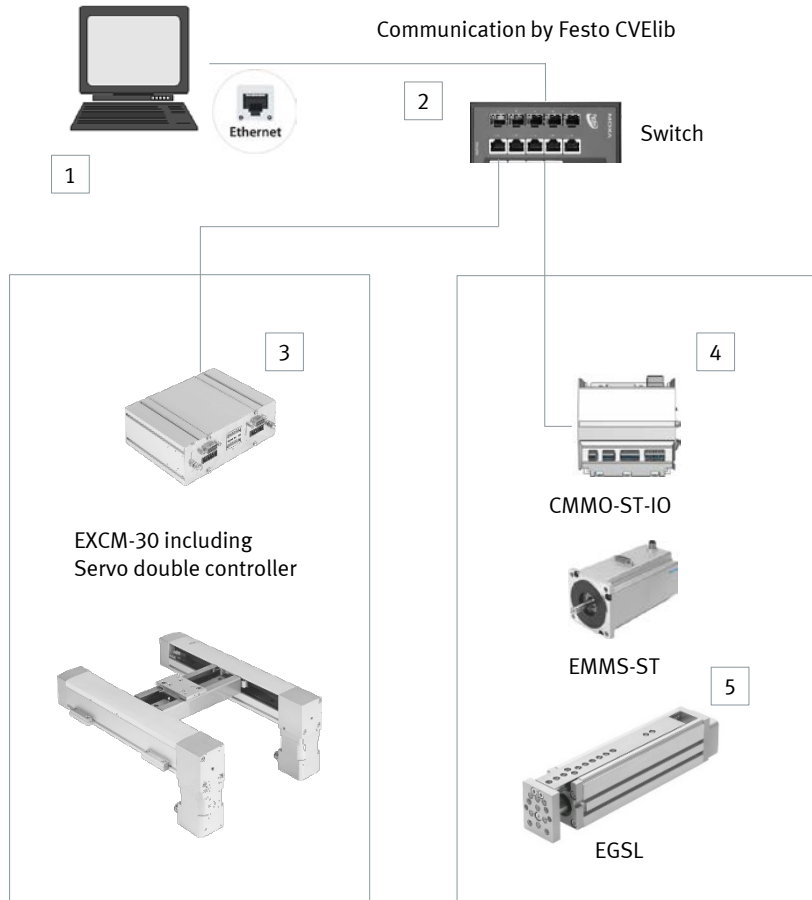
- Rapid and precise movement of the inspection unit to specific test areas
- Pressing keys and switches with a predefined force
- Precision tapping and swiping movements on touch displays with specific test parameters
- Monitoring the test process
- High flexibility:
  - Different test routines in one device
  - Rapid and simple adjustment of test procedures
  - Flexible system for testing different mobile devices
- Minimal space required

## Solution

- A compact planar surface gantry EXCM-30 is used to move and position the test tools
- An electric mini slide EGSL positions the test adapter ("finger adapter") precisely in the Z direction to perform the tap and swipe tests
- Microphones and light cubes are moved in the Z direction with a pneumatic slide DGSL (which is mounted on the EGSL) and moved towards the test object

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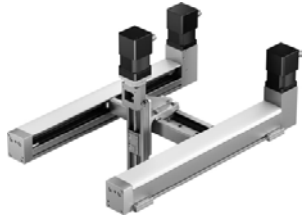
## Automation concept



- 1 PC control
- 2 Ethernet hub
- 3 XY movement with compact planar surface gantry EXCM with integrated drive and controller package
- 4 Controller CMMO-ST with integrated force and torque monitoring  
→ Controlled pressing force with a force limiter  
→ Gentle contact with the surface – no damage
- 5 Z movement with electric mini slide EGSL + stepper motor EMMS-ST

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## Components in detail



### Compact planar surface gantry EXCM-30

- Stroke length, X-axis: 100 ... 700 mm
- Stroke length, Y-axis: 110, 160, 210, 260, 360
- Rated load for maximum dynamic response: 3 kg
- Maximum acceleration: 10 m/s<sup>2</sup>
- Maximum speed: 0.5 m/s
- Stroke scalable in the X- and Y-axes
- Flexible motor mounting upwards or downwards
- Standardised Festo plug & work solution with functional drive-controller package
- Closed-loop servo operation



### Electric mini slide EGSL

- Sizes: 35, 45, 55, 75
- Stroke length: 50 ... 300 mm
- Force: 75 ... 450 N
- Maximum performance in a compact space
- Precision, load capacity and dynamic response
- Particularly suitable for vertical applications such as pressing or joining
- Safe against falling parts thanks to cover with magnetic sensors
- Efficient solution - outstanding value for money



### Stepper motors EMMS-ST

- Holding torques: 0.3 ... 6.5 Nm
- Voltage: 48 V DC
- Nominal current: 8 A
- Step angle: 1.8 ±5%
- With a long service life and a full range of positioning functions
- With optional brake
- Improved and optimised connection technology
- Two-phase hybrid stepper motor with a high torque and a high degree of protection



### Controller CMMO-ST

- Voltage: 24 V DC
- Nominal current: 5 A
- Micro step: 12,800 steps/revolution
- Closed-loop servo controller for stepper motors
- Closed-loop servo system
  - Maximum operational reliability
  - Use of the maximum motor characteristic curve
- Supports safety function STO
- Easy activation via:
  - I/O interface
  - IO-Link or I-Port
  - Modbus TCP
- Parameterisation possible via:
  - FCT (Festo Configuration Tool)
  - Ethernet interface with Integrated web server

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