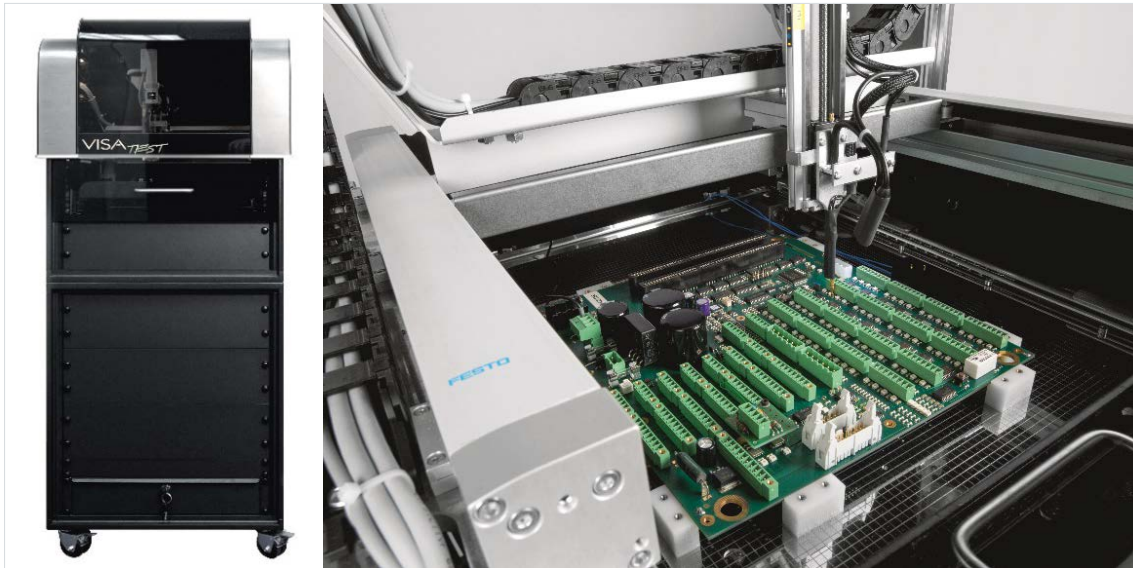


Automated testing of PCBs

FESTO



Highlights

- No expensive test adapter required:
 - The 2D gantry EXCM advances to the test points in accordance with an individualised test programme – very quickly and accurately
 - Economically efficient solution for automated testing of prototypes and small production series
- Very compact design: working space to installation space ratio is nearly 1:1
- Very good positioning accuracy of 0.1 mm and good repetition accuracy of ± 0.05 mm
- Highly dynamic with acceleration of up to 10 m/s^2 because the drives for the X and Y-axes are mounted stationary and don't contribute to moving mass

Customer

Visatronic GmbH (Germany)
Sphere of activities: Visatronic's portfolio of services ranges from development and design of electronic components through SMD and THT assembly, right on up to final testing of the PCBs.

Project

Development of a cost-effective flying-probe tester for the purpose of automated testing of prototypes and small lot quantities.

Requirements

- Compact, dynamic, inexpensive solution
- Quick and precise positioning
- Space-saving solution for installation into a compact testing machine
- Avoidance of complex, costly test adapters
- Quick changeovers for testing different PCBs
- Quick and simple integration into an existing machine concept

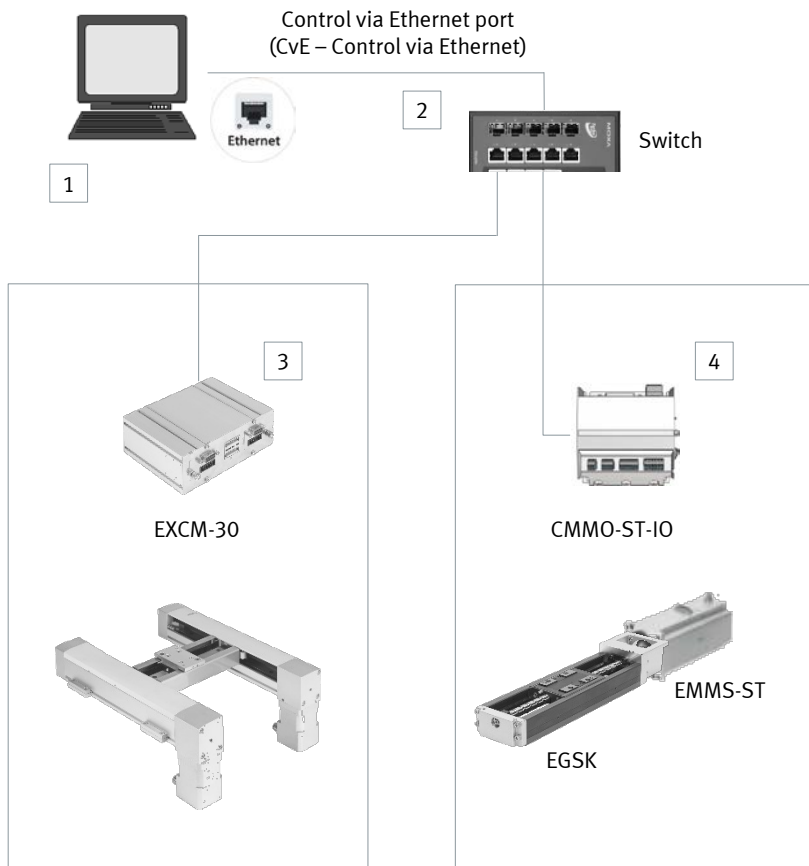
Solution

In order to test PCBs, the test needle is advanced quickly and accurately to the test position by the compact 2D gantry EXCM, and is then lowered onto the workpiece to be tested by an electric slide EGSK with predefined force and path.

- X-Y motion:
Miniature 2D gantry EXCM with electric slide EGSK for the Z-axis and controller CMMO
- Z motion:
Electric slide EGSK with stepper motor EMMS-ST operated by a controller CMMO-ST

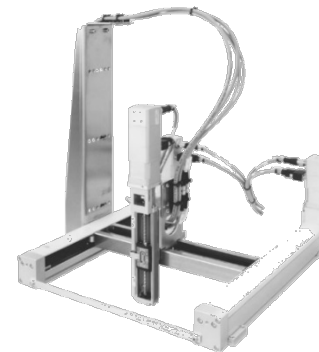
Automated testing of PCBs

Automation concept



- 1 PC
- 2 Ethernet hub
- 3 X-Y motion by means of compact 2D gantry EXCM with integrated drive package + double servo controller with ServoLite function ¹
- 4 Z motion via spindle axis EGSK, stepper motor EMMS-ST and controller CMMO-ST + EMMS-ST with ServoLite function ¹

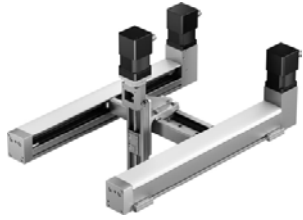
Example of a preassembled X-Y-Z system



¹ ServoLite = full servo functionality for stepper motors

Automated testing of PCBs

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/s²
- 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 slide EGSK

- Size: 15, 20, 26, 33, 46
- Stroke length: 25 ... 840 mm
- Force: 19 ... 392 N

- Recirculating ball bearing guide and ball screw
- Spindle axes with maximum precision, compactness and rigidity



Controller CMMO-ST

- Voltage: 24 V DC
- Nominal current: 5 A
- Micro step: 12,800 steps per revolution

- Closed-loop servo controller for stepper motors
- Closed-loop servo system
 - Maximum operational reliability
 - Use of the maximum characteristic motor curve
- Supports STO safety function
- Easy control via:
 - I/O interface
 - IO-Link or I-Port
 - Modbus TCP
- Parameters configuration possible via:
 - FCT (Festo configuration tool)
 - Ethernet-port with integrated web server

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