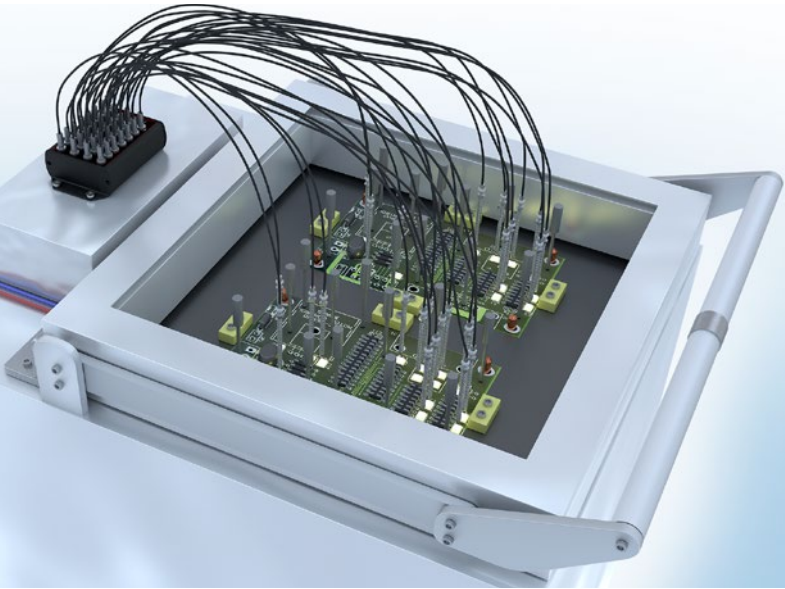




LED testing of electronic assemblies during the in-circuit test

colorCONTROL MFA LED test systems are used, among other things, in the electronics industry when quality control of printed circuit boards is performed by in-circuit testing (ICT) in the clean room. The correct functioning of electronic assemblies is checked in the in-circuit test when the boards are already equipped, many of them with LEDs. In-circuit testing ensures simultaneous tests of functionality, intensity and color in a test adapter.

The colorCONTROL MFA-28 multi-position color recognition system is used for this purpose. 28 receiver sensors receive the light and transmit it directly to the controller via optical fibers. The sensors are positioned exactly above the LEDs at a distance of approx. 1 mm. Thanks to their small design, the receiver sensors can be integrated between the test needles or test pins which are fastened in the cover of the test adapter. After the internal evaluation, the signal is transmitted via the internal RS422 interface to the higher-level controller for further processing and thus also the correct color values of the LEDs, the correct intensity and their installation position. In addition, defective LEDs are identified.

The great advantage of Micro-Epsilon's multi-point colorCONTROL MFA systems lies in the testing of different measuring positions, which can be far apart from each other. Their small sensor heads and thin optical fibers can also be used in confined spaces. In addition, 28 measurement channels can be tested synchronously and checked for function, color, intensity, color temperature (CCT) and dominant wavelength. This saves time and costs in quality control.

Requirements for the measurement system

- Measuring rate: 30 Hz
- Measuring range: 400 ... 700 nm
- Resolution: 5 nm
- Repeatability: $xy < 0.00005$
- Testing points: 28 measuring positions

Ambient conditions

- Clean environment in the clean room
- Constant room temperature 20 ... 23°C

System design

- 1 x controller: colorCONTROL MFA-28
- 28 x receiver sensors: MFS-K04-3
- 1 x power supply cable
- 1 x interface cable RS232

Advantages

- Saves time because LED testing and PCB testing are performed in parallel
- Reduces costs as 28 measuring points per controller are possible
- Color distinction, intensity test and function test in one test run
- High measuring rate and dynamics combined with high repeatability