

# Seica



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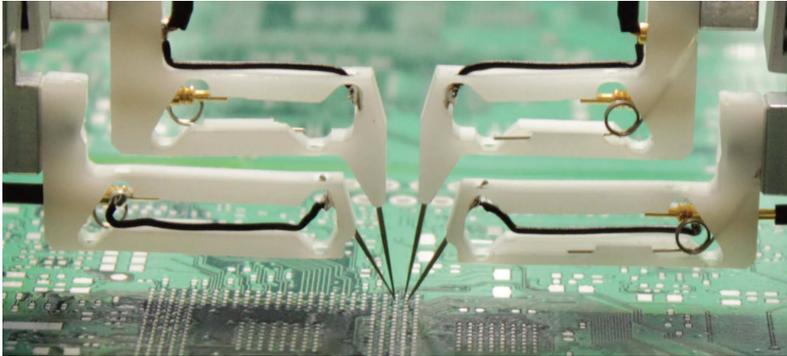
## **RAPID LINE**

**FLYING PROBE TEST FOR PCB**

**NEXT** SERIES

# RAPID NEXT> LINE

is the new generation of seica solutions **flying probers** for PCBs, Ceramics and Substrate Technologies



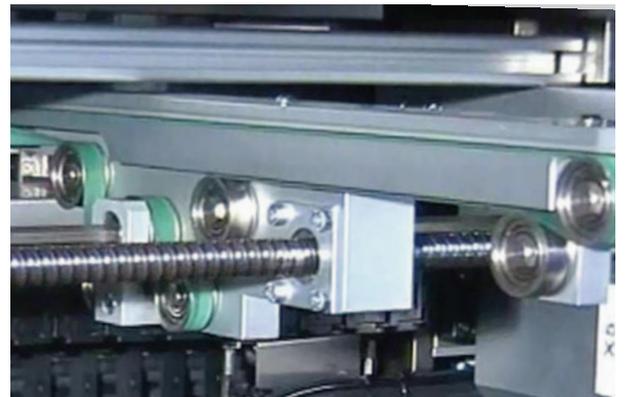
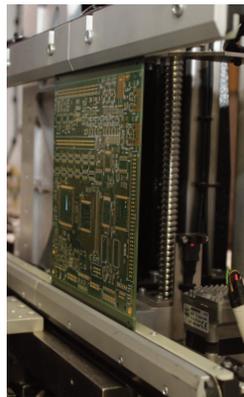
**NEXT>** is the **new generation of flying probers** featuring a renovated and sleek look thanks to the premium materials of the chassis, and innovative electrical worth discovering performances, undoubtedly the most complete flying probing test platform on the market. Printed circuit boards are becoming increasingly complex, featuring dozens of increasingly smaller layers and pads, and as products become smaller and smaller, designers have

begun to integrate both passive and active components, such as microcontrollers, voltage regulators or even power devices like MOSFETs directly into the PCB. The result is, rather than being a passive support for the electronics, the PCB has become an integral part of the circuitry of the finished product. This technological shift presents new challenges to PCB manufacturers across their entire process, including test; the electrical test strategy must now be extended to cover the verification of the **embedded components** and have the means to differentiate the types of stimuli and measurements required to test the entire PCB without damaging these components.

## INDUSTRY 4.0

Information, and the technology needed to collect and analyze data is key to the successful digitalization of the manufacturing process, which is at the heart of the **Industry 4.0** concept.

All the **RAPIDNEXT>** testers feature the **Industrial Monitoring solution "4.0 ready"** by Seica, to monitor current absorption, supply voltage, temperature, light indicators and other parameters useful to indicate the correct operation, to ensure predictive maintenance and make the systems compatible with the new standards of the fourth industrial revolution ongoing nowadays.



## FLEXIBLE ARCHITECTURES FOR DIFFERENT MARKETS

To better meet the requirements of different operational and manufacturing process flows, the **RAPIDNEXT>** Line includes two mechanical architectures.

The **horizontal architecture** presents systems oriented to the in-line configuration for a completely operator-free test process, whether it be high-volume, low mix or in today's market, in-line automation can also mean, or low-volume, high mix.

The **vertical architecture** presents a reduced footprint, optimizing the use of space, and has a highly ergonomic configuration in terms of operator access and ease of use.

## VERSATILITY AND INNOVATION

The **RAPIDNEXT>** line of Flying Probe test systems offers unparalleled versatility eliminating the need to manufacture a dedicated fixture for every type of board. This considerably reduces the time and costs needed for test setup.

These solutions are perfectly suited for testing **prototypes** and **pre-**, as well as the **low-volume**, high mix production lots which are typical in many of today's manufacturing scenarios.

Design modifications or variations can be implemented immediately, and since there is no constraint for a specific PCB layout, the system can test on any geometry of today's substrates and have the capability to adapt to future requirements. This maintains the value of the capital investment over time.

## RAPID NEXT: TEST CHARACTERISTICS

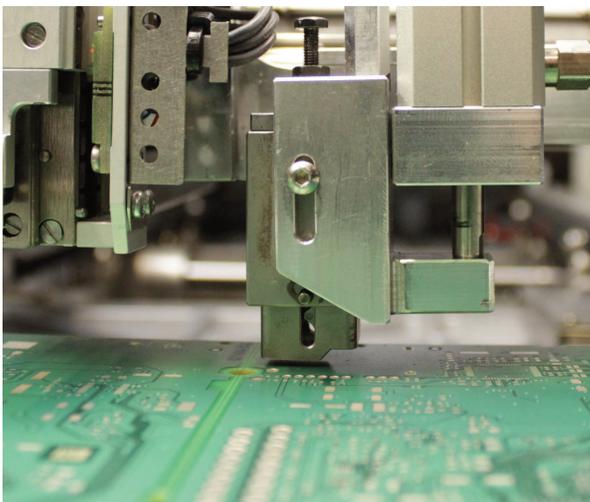
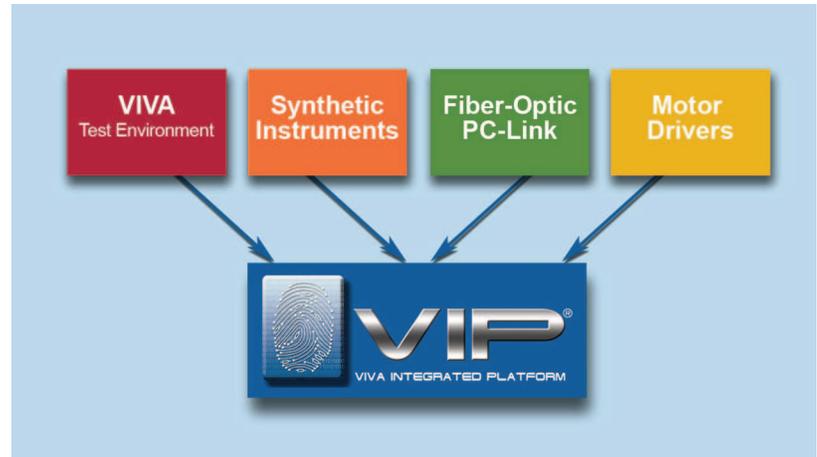
The **RAPID NEXT** line of flying probe systems is based on the **VIVA Integrated Platform (VIP)**, Seica's common-core hardware and software platform which includes a complete set of high performance automated tools and instruments to develop and execute test programs.

### DIGITAL SIGNAL PROCESSOR

The integrated DSP-based instrumentation takes advantage of the high definition and resolution of the digital world to execute precision testing of even the lowest value parameters. This ensures repeatable, full-range measurements even in the most critical test situations and pushing fault coverage to maximum levels.

### FIBER OPTIC BUS

The proprietary, optical bus included in VIP ensure noise-free communication between real time devices and the system PC.



### DRIVER/CONTROLLERS

The **VIP platform** includes proprietary motion driver/controllers that are specifically designed for flying probe test applications, which means optimised test time, and no electrical interference in test measurements caused by general-purpose motion electronics.

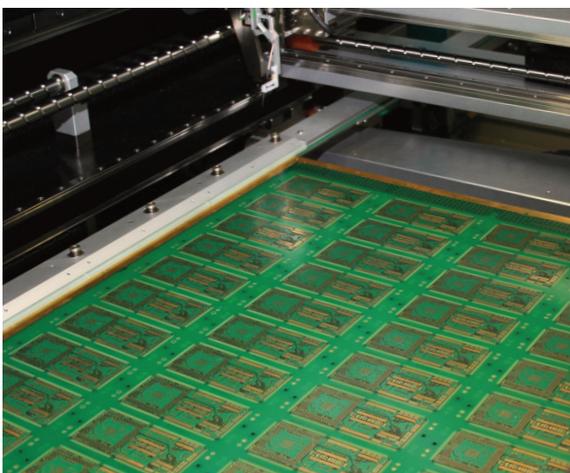
### VIVA SOFTWARE

The innovative VIVA software organizes test program development into a simple 3-step, Prepare-Verify-Test process, which guides the user through a series of automated operations in an intuitive, self-explanatory environment. This drastically reduces programming time and practically eliminates the possibility for error and omissions, consequently ensuring the quality of the final test program.



### ULTRA FAST AND HIGH PRECISION

The new capacitive measurement unit, integrated directly on the mobile probes and based on DSP technology, enables the **RAPID NEXT** Line testers to perform high-precision capacitive measurements, further minimizing the test time.



### GUARANTEED MECHANICAL RELIABILITY

With twenty years of experience as a leader in Flying Probe test technology, **Seica** has the know-how and capability to equip the Rapid line with a reliable, accurate and integrated mechanical system. The X-Y axes utilize the latest generation technology linear guides and ball screws, controlled by brushless motors, and are arranged in a geometry designed to minimize the overall dimensions while optimizing the motion and positioning accuracy.

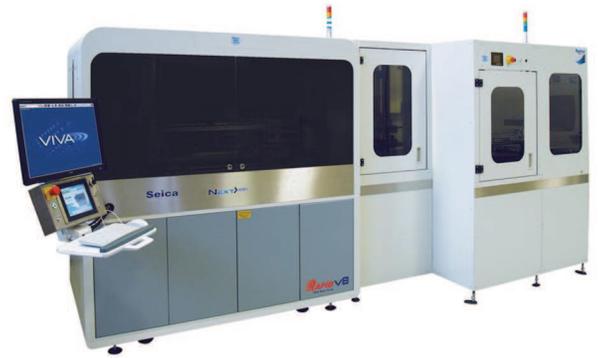
The Z axes are driven by linear motors and are designed for maximum accuracy and controlled dynamics of the probes.

Motion control is achieved with new generation **Seica** digital drivers, connected via optical fiber digital channels, for electrical noise-free operation.

# RAPIDNEXT

## FLYING PROBE TEST PLATFORM FOR PCBs

**RAPIDNEXT** is SEICA's line of Flying Probe testers for printed circuit boards with the highest performance available on the market. It meets the requirements of industry segments through models with horizontal or vertical architecture, **4 or 8 independent flying probes** and a complete range of measurement techniques. Through **Seica** architecture flexibility all unique market segments can be easily addressed due to the advanced hardware and software integration.



## VERTICAL SYSTEMS



### RAPID V8 A NEXT

- Double side 8 heads (4+4)
- Automated loading
- MTBH conveyer
- 9000 hits/min
- Ultrafast capacitive test
- Stretch fixture system built-in
- Kelvin/Barrel
- ICT (embedded components)
- Automatic marker system
- Laser warpage calculation
- Medium volumes
- Soft touch probe
- Soft land

### RAPID V8/V4 NEXT

- Manual loading
- Double side 8 heads (4+4) / 4 heads (2+2)
- 9000 hits/min / 4500 hits/min
- Laser warpage calculation
- Small volumes and prototypes (V4)
- Medium/Low volumes (V8)
- Ultrafast capacitive test
- Kelvin/Barrel
- ICT (embedded components)
- Soft touch probe
- Soft land

## HORIZONTAL SYSTEMS

### RAPID H8 NEXT

- Double side 8 heads (4+4)
- Automated
- In-line conveyer
- Pass / Fail magazine
- 9000 hits/min
- Automatic marker system
- Kelvin Barrel Test
- Laser warpage calculation
- Medium volumes
- ICT (embedded components)
- Soft touch probe
- Soft land



## SOLUTIONS FOR CERAMIC AND FLEXIBLE CIRCUITS



### RAPIDH4A/H4 NEXT

- Single side 4 heads
- Up to 4500 hits/min
- Automatic / Manual loading
- Automatic test generation for embedded components
- ICT test R,L,C, Junction
- Soft land to minimize pad impact
- Soft touch probe



### RAPID H4 FLEX NEXT

- Vacuum table
- Unwinder, rewriter
- Integrated ionizer
- Single side 4 heads
- Up to 4500 hits/min
- Automatic / Manual loading
- Automatic test generation for embedded components
- ICT test R,L,C, Junction
- Soft land to minimize pad impact
- Soft touch probe

## DIFFERENT ARCHITECTURES FOR DIVERSE SOLUTIONS



### RAPIDNEXT

### VB A

### VB

### V4

### H8 A

### H4 A

### H4

Architecture	Vertical	Vertical	Vertical	Horizontal	Horizontal	Horizontal
Max Mobile Resources	4+4	4+4	2+2	4+4	4 <sup>1</sup>	4 <sup>1</sup>
Loading	Aut/Man	Manual	Manual	Aut/Man	Aut/Man	Manual
Trace parameter test	●	●	●	●	●	●
Test of passive components	●	●	●	●	●	●
Test of active components	●	●	○	●	●	●
Kelvin test	●	●	○	●	●	●
Barrel test	●	●	●	●	○	○
Multipanel Test	●	●	●	●	●	●
Barcode reading	●	●	●	●	●	●
Stamper	●	●	●	●	●	●
Repair station	●	●	●	●	●	●
Programming Station	●	●	●	●	●	●
Vacuum table	○	○	○	●	●	●
Best for	Med. volumes	Med/Low. volumes and prototypes	Low volumes. & prototypes	Med. volumes	Ceramics med./low volumes & prototypes	Ceramics/Flex low volumes & prototypes

● = available ○ = not possible

<sup>1</sup> probes on TOP side only - <sup>2</sup> H4 Flex

# TEST TOOLS FOR SUBSTRATES

## HIGH ACCURACY TESTS

The capability of each probe to contact precisely any point of the PCB independently of the location, enables the even the most sophisticated tests to verify the circuit.

**Trace Parameter Test:** checks the continuity and isolation between the PCB tracks through a resistive test.

**Micro Short Identifier:** checks for the presence of a short circuit between tracks due to the manufacturing process.

**100 GΩ isolation:** isolation test up to 100 GΩ, applying 1000 Volts (optional).

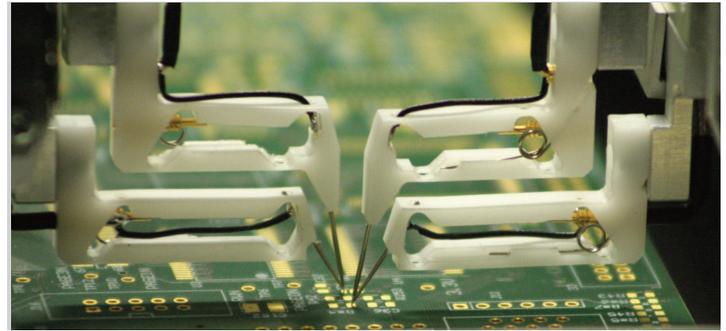
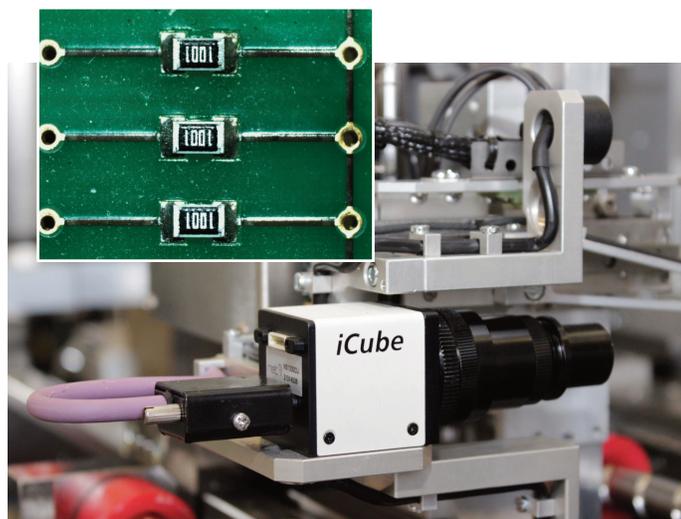
**Trace Capacitance Test:** autolearns and tests the capacitance between tracks and ground planes of the PCB.

**Kelvin Test:** thanks to its architecture, Seica can perform Kelvin measurements using standard probes, and positioning two probes on the same pad.

**Barrel Test:** performs continuity and parametric tests on the vias of the PCB, by simultaneously positioning two probes on each side.

## CAMERAS AND OPTICAL INSPECTION

All of the **RAPIDNEXT** line systems are equipped with high-definition, color mobile cameras, one on each side, allowing the automated optical centering of the PCB and the visual inspection of the probes during the test. In addition to simplifying the execution and debug operations of test programs, **VIVA software** includes the capability to utilize the cameras for the automatic acquisition of barcodes.



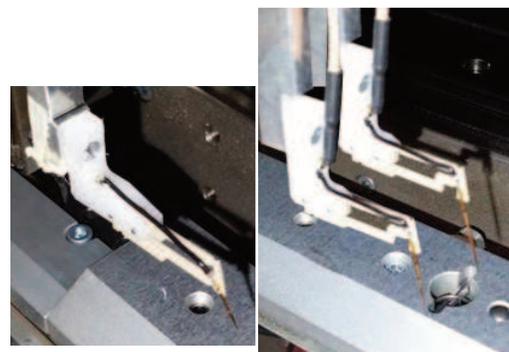
**Component Test:** The **RAPIDNEXT** systems can generate and perform all of the parametrical and functional tests of passive and active embedded components, thanks to Seica's decades of experience and technology developed for full, loaded board tests.

**Link to Grid Test:** enables retesting of boards, or sections of boards previously tested on a bed of nails system.

**Flexible Circuits:** Seica has designed a new mechanical locking system for flex circuits and inner layers with a unique clamping device to minimize board warpage, and for testing the extremely thin flex circuits, a vacuum table, insertable in the test area, is available to simplify testing.

## PROBE

The **RAPIDNEXT** test system are equipped with test probes designed specifically to enable the fast, accurate testing of all types of board layouts: even the most critical layouts and the smallest-sized pads can be probed, thanks to the geometry, accuracy and repeatability intrinsic to Seica systems. The innovative design of the latest probe pins guarantees an extended life with no maintenance (over 8 million hits). Particular attention has been dedicated to minimize the electric noise which can affect measurements, so it is possible to verify even very small value parameters on tracks in a constant and repeatable manner. The new generation of Soft Touch Probes allows the testing of the PCB almost leaving witness marks on the pad surface.



## AUTOMATIC LOADER

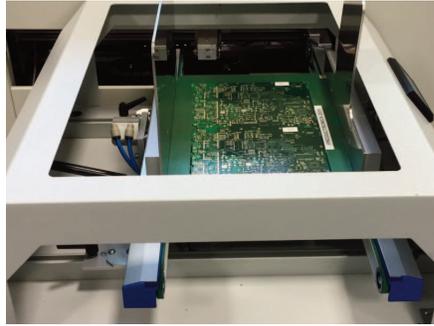
The RAPIDNEXT Line features the automation of both the horizontal and vertical testers. This is a absolute innovation in the market of flying probers for PCBs.

The horizontal system may be combined with Seica Automation stackers and destackers, while a simple menu is used to select the test sequence so that the system, upon loading the selected test program, automatically adjusts the clamping rails width. At the end of the test, the PCB is unloaded and, using the **pass-through capability**, can be stored/routed according to the test result (pass/fail).

The vertical system may be combined with a single or multi-rack loader capable of holding up to 50 PCBs at a time; these may all be the same part number or all different part numbers.

The system automatically selects the correct test program and adjusts the clamping rails, and the PCBs will be automatically divided according to the test result.

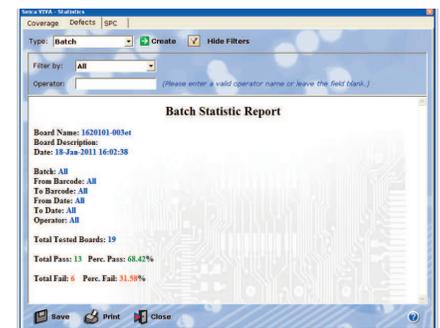
Both systems provide the opportunity to install a labeling module to apply a label with barcode on the failed boards.



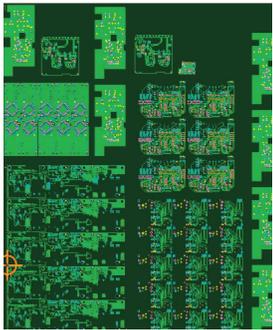
## STATISTICAL MONITORING TOOLS

The statistical monitoring tools are essential for the quality analysis and defect reports.

The RAPIDNEXT systems provide the user with the different functions needed to collect data on the batch defects through self created reports capable of providing statistical information both in graphic and text format.



## MULTIPANEL AND PARALLEL TEST

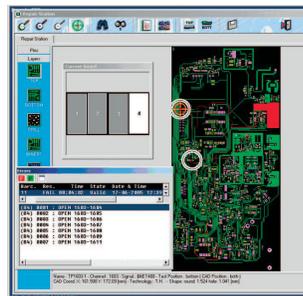


The test program can easily address multi-panel formats, providing numerous options to manage any layout, in an easy to use visual environment. The tests defined for a single printed circuit are multiplied and applied to the entire panel with a simple click on the screen, and the test report

provides the result of each single figure.

The possibility of executing the test of two PCBs simultaneously on the **8 probe systems** allows the user to maximize his investment and significantly increase test throughput.

## REPAIR AND PROGRAMMING STATIONS



The VIVA software includes a graphical repair environment, which enables the user to locate and view the parts of the PCB which have failed during the test, facilitating repair operations.

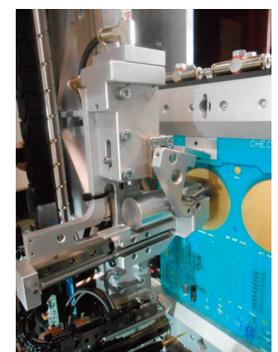
This operation can be done directly on the test system, however it is also possible to

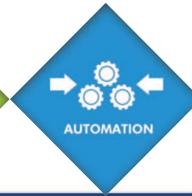
send the test information to a remote PC for the repair activity offline.

The Programming Station option allows test program development to be done offline, therefore optimizing system availability for testing PCBs.

## BOARD MARKER

In the manufacturing environments there is an increasing request to "mark" the boards with a "pass" annotation after electric test. To meet this requirement, Seica has introduced an automatic marking device. The marker uses either a stamp or a motorized pin mechanism to mark the PCB in a location which has been defined using a dedicated guided procedure integrated in the VIVA software.





## GLOBAL SUPPORT NETWORK

Thanks to the global extension of Seica and its subsidiaries, **Seica** can ensure local service support wherever the customer needs it, in addition to 24-hour telephone assistance.



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