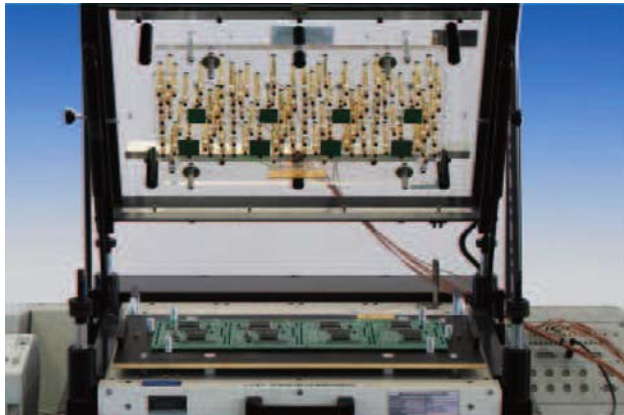# COMPACT LINE

Seica Test Solutions

In-Circuit and Functional Test Platform

**WCM compliant**

WCM Compliant

The World Class Manufacturing (WCM) guideline was created with the intention of defining manufacturing practices according to standards recognized worldwide. The basic tenet of the guideline is the systematic reduction of all types of waste and loss through the use of rigorous methods and standards, with the involvement of everyone in the organization.

Seica's new Compact Line builds on the experience and success of our previous lines of in-circuit and functional testers, and is designed to meet the "lean production" challenge in general, and more specifically, the requirements of electronic board manufacturing. It is ergonomically sophisticated, and technologically competitive, offering the highest flexibility, measurement accuracy and test throughput in a small package with a minimum footprint and limited consumption, making for a cutting edge, sustainable product.

Compact Line Design

Following the WCM guidelines, particular attention has been given to the ergonomics and safety of the work area: proper location of the parts in motion or in contact with the operator (position of the upper contrast, foot-room, weight of the fixture for fixture exchange, automated tools for support (fixture frames).
All of the gauges and indicators for system service (compressed air, network inlets, current plugs) are placed for easy monitoring by the operator, the systems are engineered to facilitate maintenance and include features designed to reduce or eliminate potential causes of downtime, for example: air conduits for cooling, protection of the electronics from dust and water, and service inlet protected against accidental impacts.
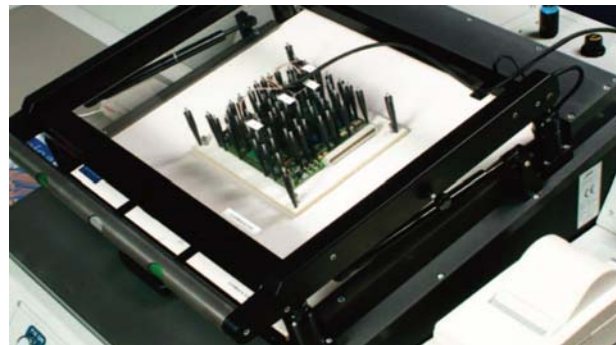
High Performance, Flexibility and Throughput

Based on Seica's VIP platform, the Compact series has been designed to maximize configurability to meet the most diverse test requirements, allowing the user to choose the configuration which best suits the application: in-circuit tester, functional test bench or a completely automated test solution which can be integrated directly in the production line.Spare parts are shared across the platform, keeping maintenance costs to a minimum. The Compact VIP Series includes a full set of SW tools, allowing the user to focus on achieving the best test results, rather than on resolving limitations of a software environment.

The ACL Synthetic Instrument is the core of every system: designed to respond to both in-circuit and functional test requirements, the ACL is based on DSP technology and uses independent D/A and A/D converters for each synthesized instrument. Measurements are fast, accurate and repetitive, and each ACL card hosts three independent Arbitrary Waveform Generators (AWG), a Multimeter, a Timer-Counter and large on-board memory and processing capability to

All Of The Compact Systems Can Be Configured In Multi-Receiver and Multi-job Arrays:

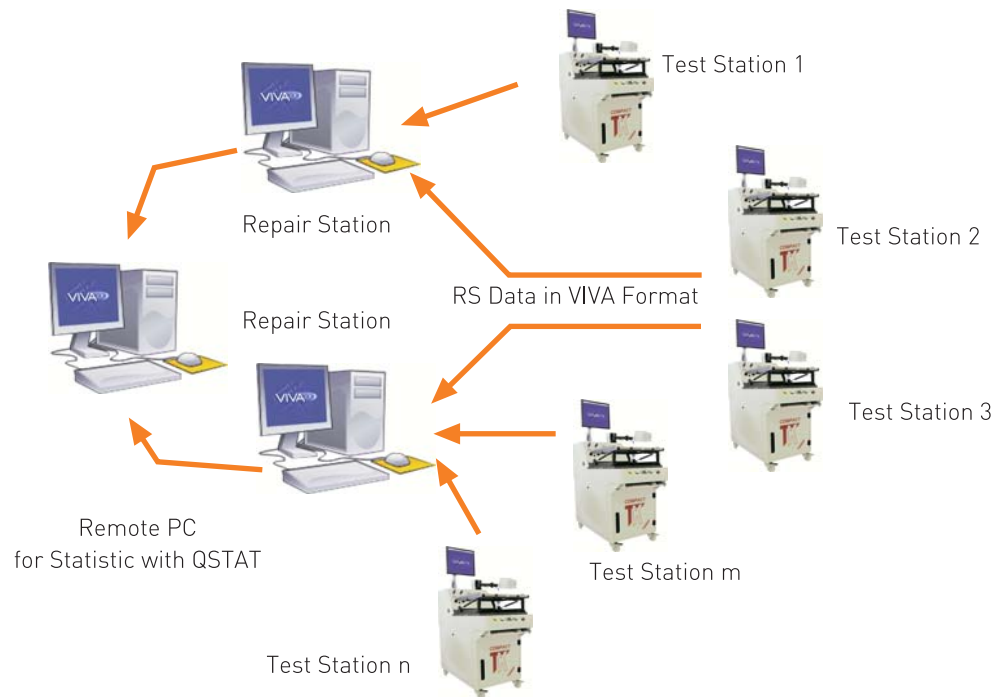| N° OF RECEIVERS	SINGLE JOB	MULTI-JOBS (2/4)
Single Receiver	Standard	Synchronous parallel test High throughput, typical for panels
Two receivers	Alternate Mode	Asynchronous Parallel test High throuput, sharing expensive resources
The systems an be housed in a variety of ergonomic enclosures that offer different levels of expandability: COMPACT TK, COMPACT MULTI and COMPACT SL.		

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COMPACT LINE

Repair Station and Statistics

The Repair Station module provides a comprehensive graphic software environment for fault location and repair. Once the test phase has been completed, the operator can recall (manually or via a barcode reader) and visualize the faults detected on every tested board and the relative circuit connections of the implicated components. An intuitive and self explanatory dialog displays all the critical points requiring inspection, and allows the operator to enter the information regarding the repair actions performed, which are then stored in a database.

The QSTAT™ tool uses this database to generate troubleshooting tips and repair information for the operator, and can create reports related to repair activity on boards tested.

The software can be installed either on the test system (local) or on a dedicated PC (remote) networked to the test systems. The database can collect repair actions on multi-panel boards, on board panels and single boards with no limit on inserted data or dimensions (except for the available space on disk). The SPC Tool enables the statistical analysis of test data, and the generation of CP, CPK and Gauge R&R reports.

Test Station 1

Repair Station

Test Station 2

RS Data in VIVA Format

Repair Station

Test Station 3

Remote PC
for Statistic with QSTAT

Test Station m

Test Station n

Quick Test

QUICK TEST™ is a global Virtual Instrument environment, to access all Seica hardware. QuickTest allows the user to graphically interact in real time' with the tester hardware and the UUT to create test sequences that can be prepared off-line (hardware emulation) or directly executed and viewed. Results can be stored and become part of the overall test program. QuickTest allows technicians to use any part of the powerful and complex platform of the COMPACT Series with the same ease that they use any familiar lab instrument, without requiring knowledge of the system and time-consuming data base preparation.
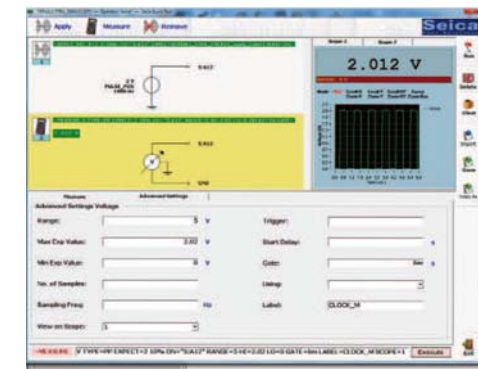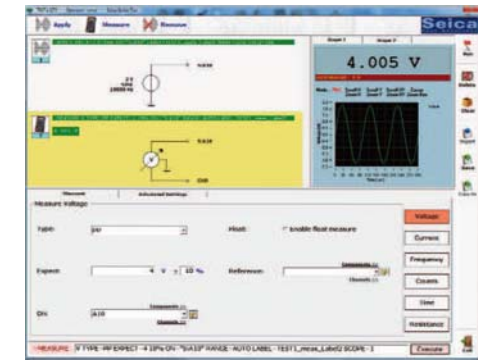
COMPACT LINE

COMPACT TK

This is the smallest configuration, and is generally recommended for ICT and on-board programming applications. It is characterized by a high level of ergonomy, small footprint, easy maintenance, low power consumption and enhanced operator safety

COMPACT MULTI

This configuration is recommended for pre-functional, functional and combinational testing. The versatility and scalability of the Compact MULTI test system is perfectly suited for the integration of external instrumentation.capabilities and techniques in a single test program.

- Small stand-alone solution on wheels
- PARALLEL TEST option up to 4 JOBS
- Up to 1536 analog channels
- Up to 128 hybrid channels (max.10 MHz digital)
- Openfix vectorless test option
- Up to 3 user power supplies

- Functional test expandability
- On board programming features
- Boundary scan test option
- Pneumatic/vacuum fixture receiver included
- Cabinet fully integrated with PC and receiver
- 230 V, 500 W, compressed air needed

- Analog channels capabilities (S64)
- Hybrid channels capabilities (P32)
- Power channels capabilities (HRELE)
- Functional test capabilities
- Optional Software in-circuit capabilities
- Labview/TestStand operating software

- GPIB instruments pre-wiring
- CAN, LIN, K-line protocols
- Manual fixture receiver integrated (TM1)
- Up to 6 programmable power supplies
- Resistive loads modules
- High voltage/current capabilities

COMPACT LINE

MAXIMUM CONFIGURABILITY AND FLEXIBILITY

COMPACT SL

Configuration offers a completely automated solution via an integrated, SMEMA-compatible transport system, allowing completely automatic board handling and easy integration into high volume production lines. Configurable as ICT, pre-functional, functional and combinational

- SMEMA compliant in-line or stand alone solution
- Up to 4608 analog channels
- Up to 1024 hybrid channels (max. 10 Mhz digital)
- Openfix capabilities
- Up to 16 user power supplies
- Functional test expandability
- On board programming features
- GPIB, RS232, CAN, and other protocols management
- Pneumatic/vacuum motorized fixture receiver
- 19" internal rack for 3rd party instruments
- 230 V, 1kW, compressed air needed
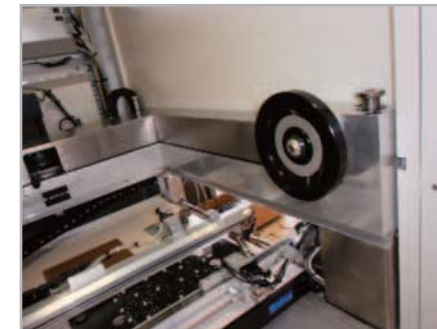
COMPACT LINE

On-Board Programming

SEICA offers a fully-integrated On-Board Programming (OBP) solution which can be included in any Compact Series system. With respect to "fixture-level" integration, this solution offers important advantages in terms of operational costs, speed and ease of use, ensured by the dedicated SW management environment.

In the maximum configuration, up to 16 devices can be programmed simultaneously, and SEICA has a library of dozens of available plug-ins, as well as providing development services for custom requirements.
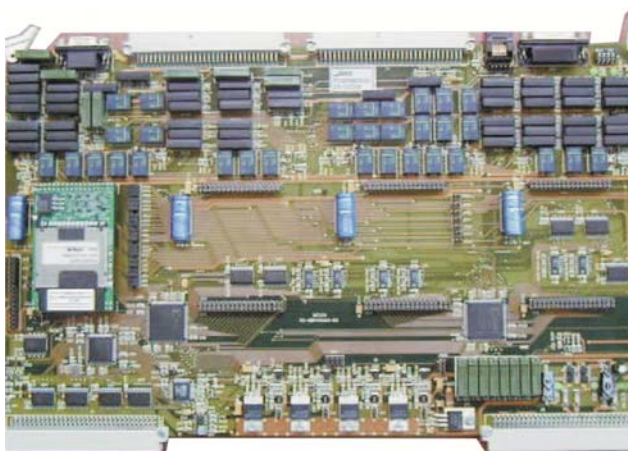
High Voltage Testing

If the test requirements includes high voltage analysis (up to 1KW), there are modules that can manage up to 12 external resources transformers, variacs, active loads, custom bread board circuits, etc.), and up to 72 input/output bipolar channels.

All the instruments needed for the required measurements are integrated into the test rack containing the switching matrix and backplane.

The software allows the user to generate a single program which can include standard ICT testing as well as functional testing routines. To improve electrical signal integrity, the fixture can then be used with dual level capability.
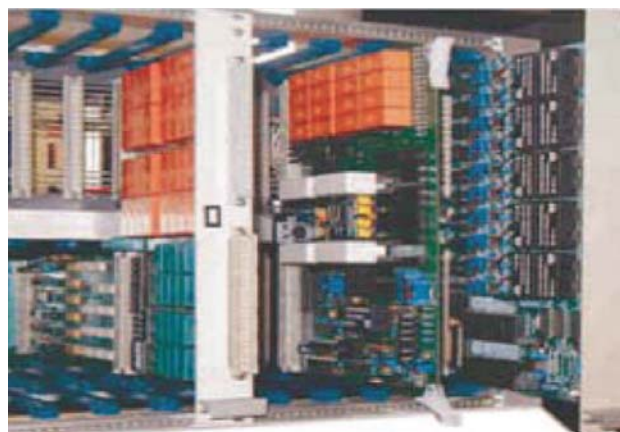
Boundary Scan

The high flexibility provided by the open architecture of the VIP platform, enables the easy integration of external software and hardware modules, managing not only test, but also with programming capabilities.

The Virtual Bed of Nails (VBN) capability developed by SEICA is particularly useful to increase test coverage using the pins of the JTAG components present on the UUT as a group of I/O virtual channels, adding driving and sense capability even though direct access is not available for that group of pins.

The VBN module is fully integrated in VIVA and does not required additional hardware resources.

VIRTUAL CHANNELS

ATE Stimuli & Responses   Real Channels

The VBN Test strategy
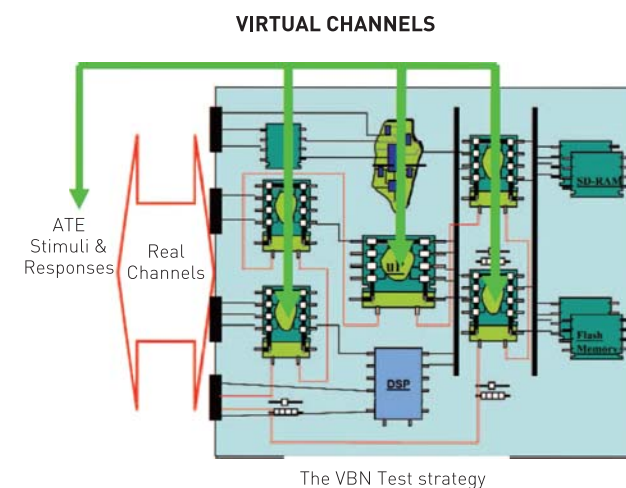
COMPACT LINE

Openfix Test

The OPENFiX™ module is available for testing today's complex integrated circuits without the need to power up the UUT. The dedicated sensors, placed on the IC under test, measure the transmitted AC signal to verify for opens; this technique also includes the verification of shorts between adjacent pins. Fast, easy generation of the test and autoleaning make for rapid and extremely efficient implementation.

Enable signal analysis and digital scope functionalities. Four high speed digital channels are also available and routed, like other signals, through the analog signal bus, or directly accessible on the front panel. Controlled by the system PC through the highspeed fiber-optic bus, the VIP test backplane hosts channel cards, routing cards and internal instrumentation. The VIP test backplane offers unrivalled flexibility, with full connection to the test receiver, ample room for expansion, built-in signal and power buses to accommodate all requirements of stimuli and measurement distribution to the UUT (Unit Under Test).

Fast, Powerful, Automatic Test Program Development

Like all SEICA systems, the Compact Series is based on the powerful VIVA software environment. Capitalizing on over 20 years of test experience, the VIVA environment offers unique power, ease of use, flexibility and a rich set of tools to deal with all issues related to test program generation, debug, execution, diagnostics, repair and data logging. Furthermore, all effort has been made to combine speed of test generation, comprehensiveness of test coverage and throughput without compromise. VIVA is a completely process-oriented test environment, designed to streamline test program development and the Functional Graphic Environment (FGE) guides the user through a series of automated operations in an intuitive, self-explanatory environment. CAD data are directly imported to create a comprehensive data base for test generation, validation and diagnostics (a library of more than 35 CAD converters is available), and the board schematics, layout and nomenclature are dynamically linked and controllable by the user.

A series of complete test libraries for both analog and digital components is available in our dedicated test language NVL (Neutral VIVA Language), and the VIP platform ensures that programs developed on other VIP systems can be deployed on the Compact VIP Series; for example a program developed on a Pilot Series system can be moved to a Compact system, allowing the user to optimize production testing according to volume, throughput, test requirements, etc.

The Compact Series is specialized for high throughput, offering configurations for synchronous and asynchronous parallel test according to the user's production requirements
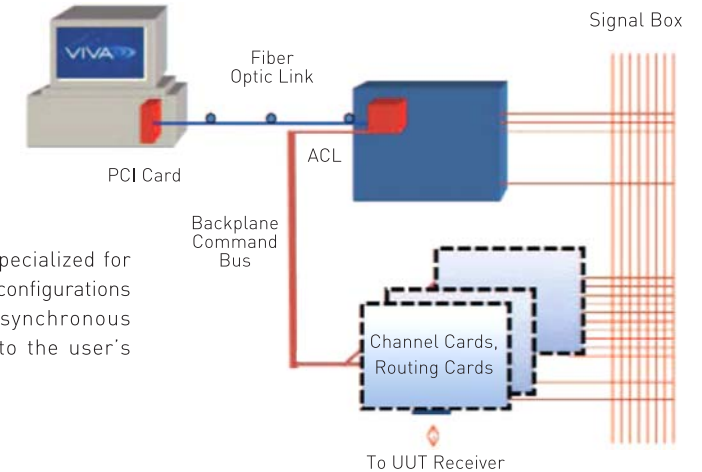
Thanks to its unique open architecture, VIVA is also compatible with numerous other "front-end" packages and allows easy integration of external (.EXE. and .DLL) software modules as well as third party languages and sequencers such as Labview© and Test-Stand©, allowing the user to utilize existing know-how and procedures. that might better respond to the desire of commonality with tools already in use at the end user site.

COMPACT LINE

Customized Systems

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