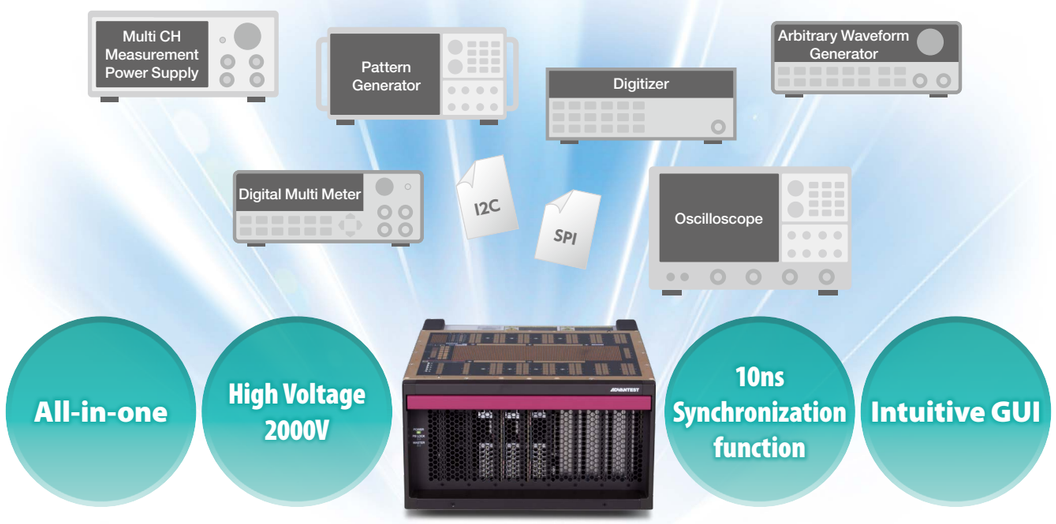
ADVANTEST®

Evolutionary Value Added Measurement System

EVA100

Powerful Support for Characteristics Evaluation, Functional Evaluation, and Production

Highly Accurate, Highly Reliable, Compact



Main Specifications

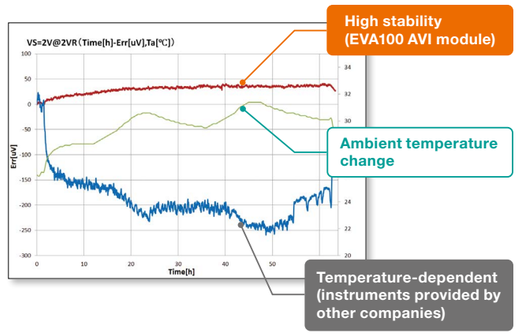
Function	Module Name		Description
Core Module			
Synchronization	EMS		System Bus and Synchronization; External Instruments Control and Synchronization (Incl. Thermal Unit) Utility Power Supply: +5V, +12V, +15V, -15V
General Control	GCM	8ch:	I2C, SPI, JTAG and Custom Interface; 100Mbps Pattern Generator; Digital Function Test; 4 Quadrant Per Pin Parametric Measurement Unit (PPMU) Time Measurement Unit (1ch): 0.373Hz to 100MHz Frequency; TPD; Tr/Tf; Period
		64ch:	Relay Control 5V, 12V
Measurement Module			
Multi Channel Voltage/Current Source and Measurement	AVI	6ch:	Voltage Source: 4.5 digits, +/- 64V or -32V to +96V; Resolution: 62.5µV to 4mV Current Source: +/-500mA at +/-2V to +/-8V Range, +/-200mA at +/-16V Range, +/-80mA at +/-32V to +/-64V Range, +/-30mA at -32V to +96V Range; Resolution: 0.25nA to 25µA Voltage Measurement: Max. 96V (5.5 digits); Min. Resolution: 15.625µV Current Measurement: Max. 500mA; Min. Resolution: 62.5pA Ramp / Program Generation; Parallel (Gang) / Stack Connection; Digitizer; Arbitrary Waveform Generator
Middle Power Voltage/Current Source and Measurement	MVI	2ch:	Voltage Source: 4.5 digits, +/-128V; Min. Resolution: 62.5µV Current Source: +/-5 A pulsed; Min. Resolution: 0.25 nA Voltage Measurement: Max. 128V (5.5 digits); Min. Resolution: 15.625µV Current Measurement: Max. 5A; Min. Resolution: 62.5pA Ramp / Program Generation; Parallel (Gang) Connection; Digitizer; Arbitrary Waveform Generator
High Voltage Voltage/Current Source and Measurement (Floating)	HVI	1ch:	Voltage Source: 1000V; Min. Resolution 3.125mV Current Source: 10mA, 20mA Pulsed; Min. Resolution 390.6pA Voltage Measurement: 1000V; Min Resolution 3.125mV Current Measurement: 1µA to 20mA Range; Min. Resolution 9.7656pA Stack/Parallel (Gang) Connection: Max. 2000V, 20mA Pulsed (Stack); Max. 1000V, 40mA Pulsed (Parallel) High Speed Settling 1000V/ms; Digitizer; Arbitrary Waveform Generator; Ramp/Pulse waveform generation
Pattern Generator*	DM	32ch:	100Mbps Pattern Generator; Digital Function Test, 128MW main/SCAN (channel link, max. 2GW)/ subroutine/fail analysis/digital capture memory; 4 Quadrant Per Pin Parametric Measurement Unit (PPMU) ; Time Measurement Unit (4ch): 0.373Hz to 100MHz Frequency; TPD; Tr/Tf; Period Low Jitter Clock (8ch)
Arbitrary Waveform Generator Digitizer	LF	4ch:	Arbitrary Waveform Generator (AWG): 200ksps/24bit, 80kHz Band Width Digitizer (DGT): 625ksps/24bit, 200kHz Band Width 4 Quadrant Parametric Measurement Unit (PMU)
	HF	2ch:	Arbitrary Waveform Generator (AWG): 512Msps/16bit 200MHz Band Width, Low Distortion Mode: <–100dB at 1MHz, Sinusoidal Wave Generator: 0.1Hz to 200MHz, Max. 6Vpp Digitizer (DGT): 250Msps/16bit 200MHz Band Width 4 Quadrant Parametric Measurement Unit (PMU)
Oscilloscope	SCAP	4ch:	1Gsps 500MHz Band Width (PB Direct Input: 50 ohm), 300MHz Band Width (BNC Input: 1M ohm); 8,000 Point Per Channel, High Speed Sampling Mode (2Gsps/2ch)

* A digital pattern can execute individually on each module.

Product Features

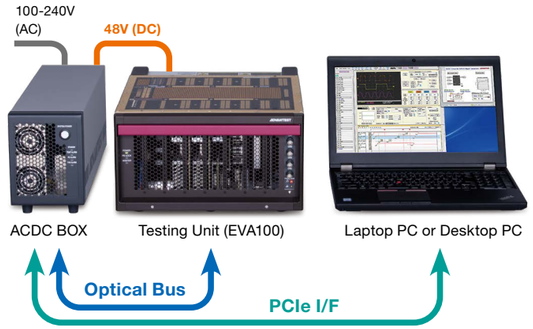
High Accuracy & Excellent Stability

In the future, more and more accuracy will be required for battery monitoring devices and high-precision sensors as well as high voltage devices. The EVA100 provides an optimal test environment for these devices due to its high-precision power supply and measurement functionality. Its excellent stability reduces measurement time required for evaluation, and will contribute to shorter product development times.



System Configuration

The EVA100 is used in connection with a laptop / desktop PC. Power to the system can be any 100V to 240V including commercial power, so that the system can be used in any work area.
Target devices to be measured are connected by cables from the upper part of the main body of the PB (Performance Board). In addition, by connecting external measuring instruments, the user can add additional functionality to build an optimal system for their measurement needs.



Main Functions

Functional Evaluation

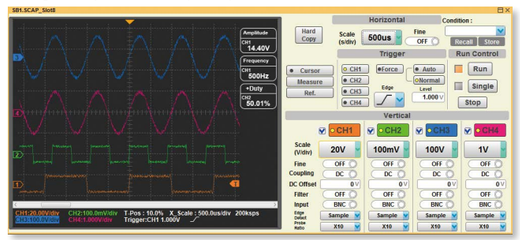
Sequence Editor makes it easy to synchronize multiple hardware channels based on how the user determines when events occur. The Sequence Editor also supports continuous measurement or conditional loop settings enabling greater control of automated measurements.

■ Synchronized Sequence Control (Sequence Editor)

Characteristics Evaluation

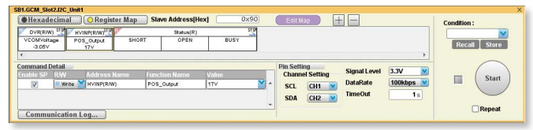
4 channels of high frequency sampling to observe and measure transient response waveforms or behavior of Device Under Test (DUT).

■ Signal Capture Module(SCAP)



I2C, SPI, and JTAG I/F are supported by protocol based control. By preparing the Register Map, we can use the register name for digital patterns instead of mnemonics so that Register Map gives you a clear overview for the digital pattern and improve the readability and efficiency of digital pattern debug.

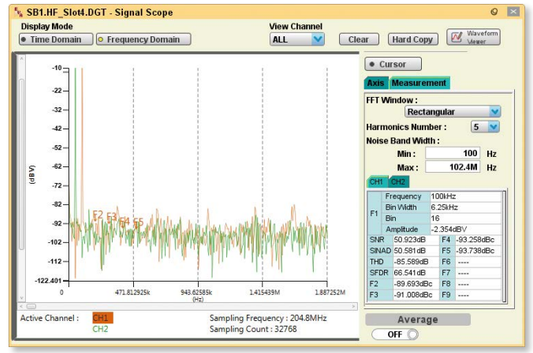
■ Protocol Support (Register Map)



FFT Analysis Tool

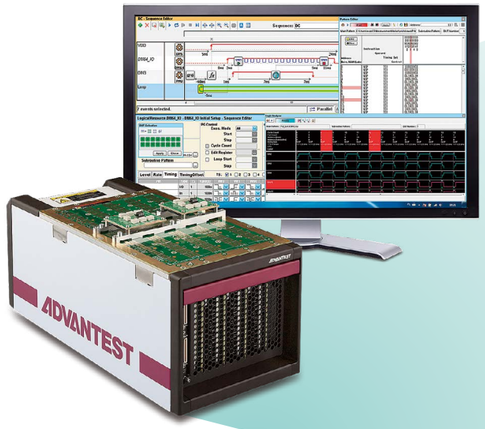
Signal Scope is the tool for waveform Analysis using FFT, and provides an efficient working environment for applications from analysis of basic noise components to distorted harmonics measurement, and from evaluation through troubleshooting.

■ Signal Scope



EVA100 E-Model　Digital Solution for Engineering

Accelerates New Product Time-To-Market & Boost Competitiveness



All-in-one

Intuitive GUI

Compact

- Package Verification IP Verification
- Characterization Failure analysis
- System Level Test BOST Reference Tester
- Wafer Sort Final Test DFT

Main Specifications

Function	Module Name		Description
Core Module			
Synchronous Control	SYNC		System Bus and Synchronization; External Instruments Control and Synchronization (Incl. Thermal Unit) Utility Power Supply: +5V, +12V, +15V, -15V
		1set	I2C, SPI bus
		64ch	Relay control bit : 5V, 12V
Measurement Module*			
General-purpose digital-to-analog and Device Power	DM64	64ch	Digital I/O: 100Mbps base rate, double clock function (200MHz), match, timing set function 128MW pattern memory, SCAN pattern (channel link, max. 2GW), subroutine memory, fail analysis memory, digital capture memory, pattern trigger, TDR Calibration function
		4ch	Device Power Supply (DPS): Voltage output -6V to +7V, Current output -400mA to +500mA IDDq, Vbump, Parallel (Gang) operation enabled
		64ch	Per Pin Parametric Measurement Unit (PPMU): Voltage output -1.25V to +7V, Current output ±32mA Per Pin Device Power Supply (PDPS): Voltage output -1.25V to +7V, Current output ±64mA (Gang)
		16ch	High voltage driver (VPP): up to 13.5V (pattern control possible)
		8ch	Time Measurement Unit (TMU): frequency measurement, from 15.3kHz to 200MHz, Tr/Tf, TPD, Period Internal connecting path through Digital I/O
		2ch	Contact Parametric Measurement Unit (CPMU): Voltage output -2V to +7V Internal connection to AWG, DGT, VREF, VPP
		4port (1ch)	Arbitrary Waveform Generator (AWG): 18bit resolution, Sampling frequency 500ksps Internal connecting path through digital pins
		2port (1ch)	Digitizer (DGT): 18bit resolution, Sampling frequency 500ksps Internal connecting path through digital pins
		1ch	Reference Voltage (VREF): 0.5mV resolution, Voltage output 0V to +6V Internal connecting path through digital pins

*AVI, MVI, HVI, LF and SCAP modules are also supported.

Product Features

The EVA100's intuitive GUI is the most differentiating value proposition and provides a measurement environment with new test sequences that will contribute to the timely introduction of customer products.

Product Snapshot

❶No need special programming skills
❷Ultra-compact for table-top use
❸Common environment from design to volume production

In addition, Advantest's DM64 module, developed for digital applications, offers 64 channel digital I/O, high-voltage drivers for flash measurement, a time measurement function, PerPin PMU, AWG, DGT, VREF and device power supply. These features can be easily mastered in the "Measurement Atelier" development environment software.

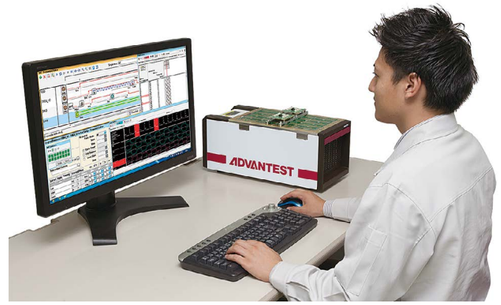
Target Devices

MCU　Small FPGA/ASIC　Std Logic
Finger Print IC　Digital Sensor　Flash

System Configuration

As with the EVA100 Standard Testing Unit for analog, the digital system(Mini) is used in connection with a laptop / desktop PC.

E-Model (for Engineering) : 128ch (DM64x2)
P-Model (for Production)　: 256ch, 512ch, 768ch, 1024ch

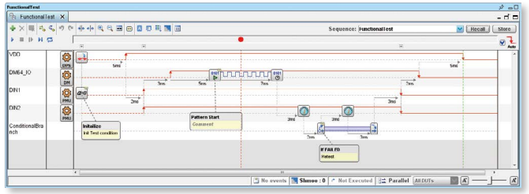


Main Functions

Sequence Editor

Test sequences from set-up to measurement and post-measurement are created with the sequence editor which is an intuitive GUI. Operations determined for each module are represented by icons, making them easy to understand, so that operators do not require special training.

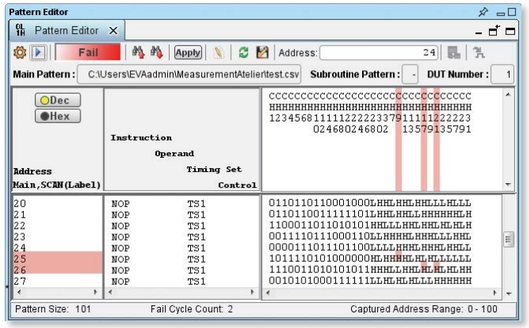
■ Set up the setup and measurement events



Digital Pattern Editor

The pattern editor displays the results of executing digital patterns. Using long-term digital pattern data, user can compare patterns and check fail information for them. The Measurement Atelier supports tool linkage function*, making debugging more efficient.

■ Displays the pattern execution results

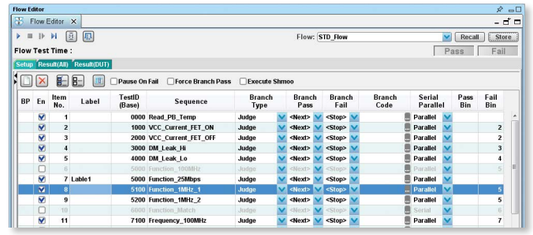


*Tool Linkage Function: This function passes settings information and display position to other tools, enabling seamless system debug.

Flow Editor

Test sequences created can be executed in batches by placing them on the flow editor. In addition, the flow also supports complex branching functions determined by sequence result.

■ Define the order of test sequences



Logic Analyzer Tool

The logic analyzer displays input and output waveforms of DUT in waveform images. By visualizing the timing and level of changes in waveforms, which cannot be confirmed with the pattern editor, this tool strongly supports the identification and inspection of defective circuits.

■ Displays digital waveform images

EVA100 P-Model　Production Solution

Product Features

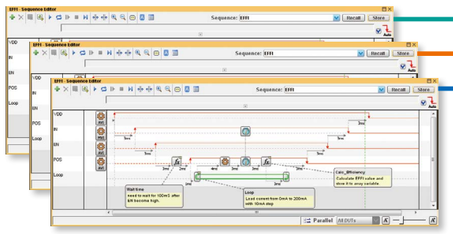
You can choose to take advantages of the EVA100's ability to scale up from product design evaluation to volume production, reducing product development time and contributing to market competitiveness.

- **Optimal for high-mix low-volume production lines**
- **Multiple testing units can be stacked together (analog and digital)**
- **System configurations can be changed with single testing unit**
- **Total Turn Around Time is dramatically reduced by utilizing Engineering model through Production model**

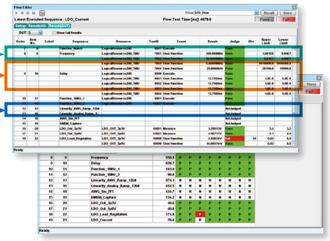
Software

By using the same measurement sequences created during the evaluation phase can be easily re-utilized.
Volume production issues around correlation, yield, and failure analysis can be swiftly resolved.

■ Engineering Sequences

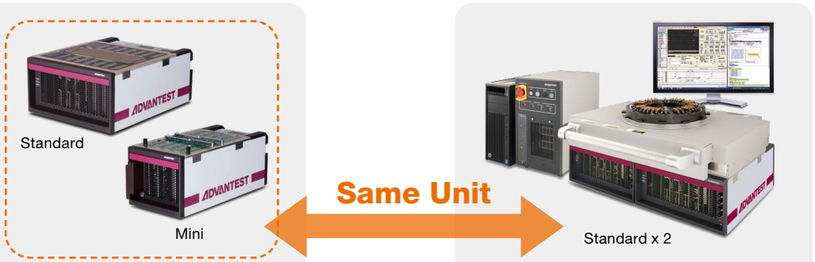


■ Production Flow



Testing Unit

Using the same units reduce several correlation issues.
e.g.) without changing conditions such as range and settling time because of identical resources.



E-Model/P-Model Spec Comparison

	E-Model	P-Model
Operating System	Measurement Atelier	
Testing Unit	Mini/Standard	
Maximum Testing Unit	1	4 (Max)
Diagnostic Board (PB)	Option	Required
Power Supply Unit	ACDC Box	AC-CONT
Power Supply Specs	100V-240V single-phase	200V single-phase
Control Computer	Laptop PC/ Desktop PC*	Engineering Workstation
Control Interface	PCIe I/F*	Optical I/F
Production Software	Option	Standard Accessory
EMO Switch	—	Mounted on AC-CONT

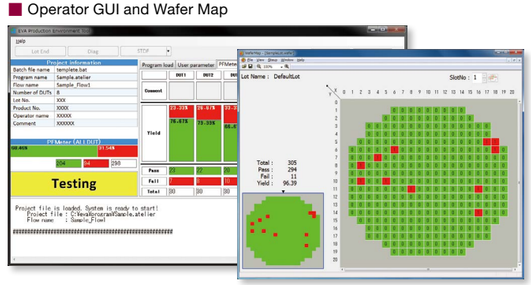
* Connection cable and control computer not included. Must be provided by user.

Production Environment Tool

Production Environment Tool supports stable and efficient volume production.
Supporting the control of various types of equipment via a graphical interface, it also offers customization for features such as the output format and communication sequences.

Main Functions
GUI for operator, measurement summary, file output, prober / handler driver editor, monitoring options, etc (WaferMap / Yield)

■ Operator GUI and Wafer Map

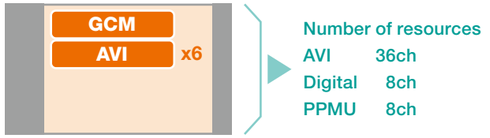


Example of Production Configuration

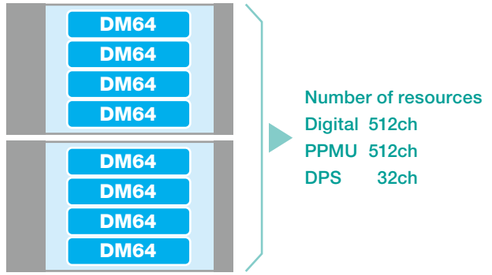
It is possible to build optimal mass production lines that fit customers' production plans, requirements for the parallel measurement, devices under test, etc. When combining multiple testing units of different configurations, users can change the system merely by connecting cables. In addition, maintenance training is offered users to perform maintenance and expansion work on the testing units themselves.
*Only applies to the testing units with replaceable modules.

Testing unit configuration example

Configuration Example 1) for LDO, DC converters, and OpAmp

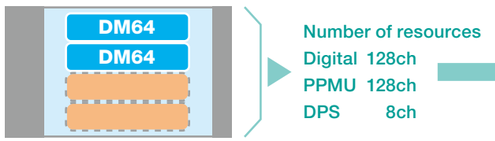


Configuration Example 2) for MCU, SmartCard, and NOR-Flash

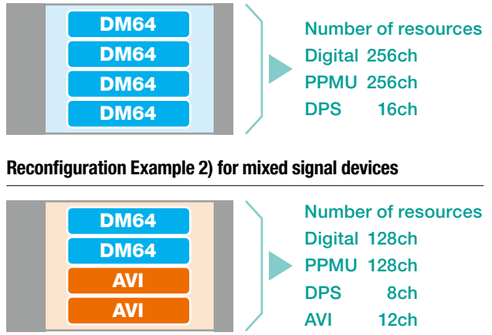


Testing unit reconfiguration examples

Initial Configuration: for MCU, SmartCard, and Flash



Reconfiguration Example 1) for MCU, SmartCard, and NOR-Flash



Reconfiguration Example 2) for mixed signal devices

Docking Kit (Option)

Advantest offers a docking kit for probers and handlers that connect with volume production lines.
Connection method (direct / cable) can be selected.

Docking Fixture for 2 Testing Units
The docking fixture for probers can connect two standard types.

Docking Fixture for 1 Testing Unit
A docking fixture for probers

Cable Connection PB
PB for connecting cables. Cable length and connectors can be customized to suit the DUT board to be connected.

P-Model set up with Manipulator (provided by 3rd party supplier)
Manipulator for handler and prober connections. Up to two standard types can be used.

Option/Specifications

Option Hardware

Item		Description
AC Cable (Single-Phase 200V)		200V AC Cable 2.5m (UL/CSA)/(PSE)/(IEC)/(Without Plug)
AC Cable (Single-Phase 100V-240V)		AC Cable (PSE/UL/CSA)/(CEE)/(CCC)/(EU-SEV)/(UK)
Diagnostics PB (Performance Board)*1		Mini Digital/ Mini Analog/ Standard
Connection Cable Set		P-Model cables for 1 Testing Unit/ 2 Testing Units/ 3 Testing Units/ 4 Testing Units
External EMO Switch		Additional EMO Switch
Docking Fixture for Standard Testing Unit		Docking Fixture for 1 Testing Unit/ 2 Units Lock Shaft for 1 Testing Unit/ 2 units/ Lock Shaft Jig
Other Peripherals		Monitor Arm/ Keyboard Tray
General PB for Mini*1		General PB + PB Cover/ PB Cover/ General PB/ Stiffener(12V)/ Stiffener(5V)
General PB for Standard*1		General PB + PB Cover/ PB Cover/ General PB/ Stiffener(12V)/ Stiffener(5V)/ SB&C PB + PB Cover/ SB&C PB/ Cable Connection PB
Standard Board & Circuit (SB&C)	LPF	Low Pass Filter for LF band (100Hz, 200Hz, 500Hz, 1kHz, 2kHz, 5kHz, 10kHz, 20kHz, 50kHz and through)
	BEF	Band Elimination Filter for LF band (100Hz, 200Hz, 500Hz, 1kHz, 2kHz, 5kHz, 10kHz, 20kHz, 50kHz and through)
	SENT	SENT(Single Edge Nibble Transmission) Receiver 4ch
	PSI5	PSI5 Protocol Transceiver with Logic Controller
	CAN	CAN Protocol Transceiver with Logic Controller
	CANFD	CANFD Protocol Transceiver with Logic Controller
	LIN	LIN Protocol Transceiver with Logic Controller
DMM Cable		Cable for Traceable Calibration

*1 Dedicated Board is required for HVI module.

Option Software

Item	Description
EVA100 System Software Pro	Advanced Option Software (Optimizer, Event Profiler, Test Condition Editor extension) (Network License) R2.00 or later
EVA100 Atelier Editor	Software for Test Sequence/ Project creation (Network License)
STILReader Plus for EVA100	Software for Pattern Conversion (STIL, WGL) (Network License), DM/DM64 supported
CATVert® VCD for EVA100	Software for Pattern Conversion (VCD, EVCD) (Network License) DM/DM64 supported
Basic Production Environment Tool	Basic Production Software (aPal*2 License) (Operator GUI, Measurement Summary, File Output, Prober/ Handler Driver Editor)
Basic + Advanced Production Environment Tool	Advanced Production Software (aPal*2 License) (Monitoring Option (Wafer Map/Yield))

*2 Advantest Performance Licensing

System Size

Testing Unit	Mini: 220 mm (W) × 472 mm (D) × 206 mm (H) Standard: 363 mm (W) × 472 mm (D) × 206 mm (H) Weight: Approximately 8.2kg or less (lightest configuration) to19.4kg or less
ACDC BOX	140 mm (W) x 462 mm (D) x 206 mm (H) Weight: Approximately 6.4kg
AC-CONT	265 mm (W) x 529 mm (D) x 475 mm (H) Weight: Approximately 16.9kg
EWS (Engineering WorkStation)	169 mm (W) x 432 mm (D) x 445 mm (H) Weight: Approximately 17.7kg

Please inquire about testing unit configurations and system configurations.

System Operating Conditions

Basic Operation Software	Microsoft Windows 10 Pro 64bit, Microsoft Windows 10 Enterprise 2016 LTSB 64bit
Processor	4th generation Intel® Core™ i7-4720 Processor, 7th generation intel® Core™ i7-7500U Processor or more
Memory	8GB or more
HDD	128GB or more
Display resolution	1366 x 768 pixels or higher
Interface	USB 2.0 x 1 or more
	ExpressCard/34 or ExpressCard/54
	CD-ROM Drive
GPIB	Recomend NI GPIB-USB-HS or NI GPIB-USB-HS+
Others	Internet access environment

● All specifications and images in this catalog are correct at the time of publication, but may change without notice.
Please contact us to ensure you have the most up-to-date information on our products and services.

ADVANTEST®

https://www.advantest.com/

ADVANTEST CORPORATION
Shin-Marunouchi Center Building, 1-6-2 Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan Phone: +81-3-3214-7500

E-mail : info_eva@advantest.com