

# Revolutionized. Package Board Testing.

Meeting ever increasing demands for greater analytical power, faster testing speeds and reduced costs.

▶▶▶ Achieve both high precision contact and high-speed probing in a space of  $\square 10\mu\text{m}$ .

A total probing precision of  $\square 10\mu\text{m}$  achieves stable contact on fine pads on the C4 side.

▶▶▶ Double test method delivers an operation rate of 100%.

Switch the BGA side to select either a resistance test by the TEST FIXTURE or a capacitance test by the VACUUM UNIT FOR CAPACITANCE TEST.



TEST FIXTURE



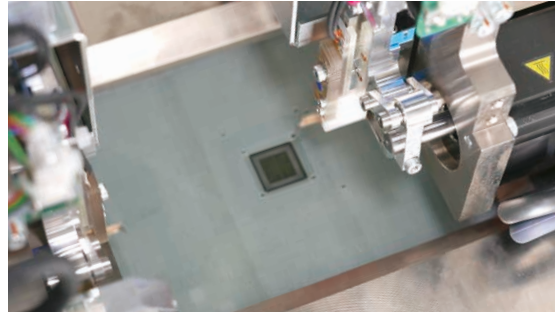
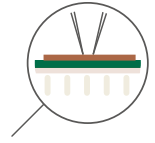
VACUUM UNIT FOR CAPACITANCE TEST

▶▶▶ Square form perfect for automation >>>



# Package Board Testing Is Evolving Through Contact Performance and Testing Speed

C4 side:  $\square 10\mu\text{m}$  high-precision flying probe  
Target: line and space  $10\mu\text{m}/10\mu\text{m}$



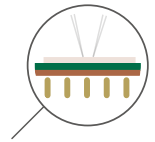
FLYING PROBE UNIT

- Total probing precision:  $\square 10\mu\text{m}$
- Minimum probe pitch:  $40\mu\text{m}$  - Work area:  $75\text{ mm (2.95 in)} \times 75\text{ mm (2.95 in)}$

Maximum contact performance pursued in consideration of next generation package board inspection needs.

Designed specifically for package board testing, the FA1811 achieves both high-precision contact with a total probing precision of  $\square 10\mu\text{m}$ , and testing speed rivalling general-purpose flying probe testers. Expensive test heads with ultra-fine probes or flying test probes that sacrifice speed and require long-term contact are no longer necessary.

Switch the stage on the BGA side for  
an operation rate of 100%



Full-net insulation continuity test using resistance: x10 max. speed\*  
High-speed test using capacitance: x2 max. speed\*

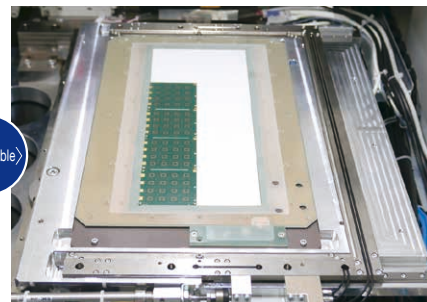


TEST FIXTURE  
CP1165-11

#### Resistance testing

- Board size: Max of  $\square 80\text{ mm (3.15 in)}$
- Maximum number of pins: 8192

Use the TEST FIXTURE to perform full-net insulation testing and high-speed 4-terminal testing on the BGA side. High speed clock stability required for measurement of insulation performance and wiring resistance of package board is realized quickly and inexpensively.



VACUUM UNIT FOR  
CAPACITANCE TEST E4101

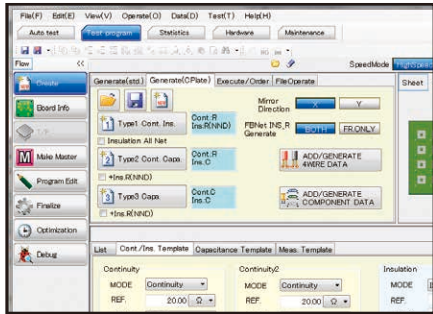
#### Capacitance testing

- Board size:  $105 \times 250\text{ mm (4.13} \times 9.84\text{ in)}$

The FA1811 is equipped with a STEP & REPEAT testing stage for high-speed testing using capacitance. Use this as a generic flying tester, such as for strip-shaped boards or for handling tight deadlines until the test fixture is completed.

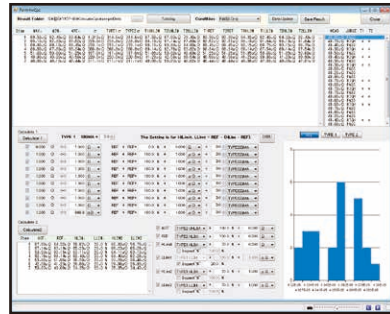
\* Compared to the double-sided 4-arm FLYING PROBE TESTER

### Improved operation software achieves a new level of operability.



#### Work flow menu

Just follow the work flow to easily perform basic work such as data creation. Everything can be done using a mouse.

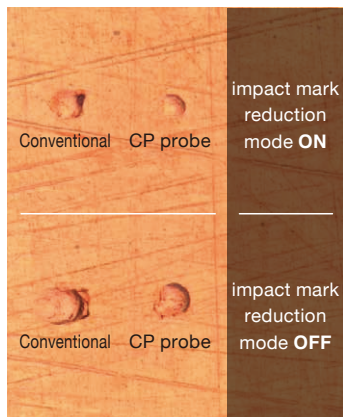


#### New applications

Filled with new functions essential for quality management of prototype boards.  
 Low-resistance measurement: Reference value management function using statistical processing (Option)  
 Capacitance testing: Data created from dual-side data central management

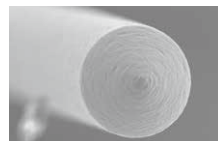


### Combine with the latest probe to reduce impact marks



#### Improved impact mark depth

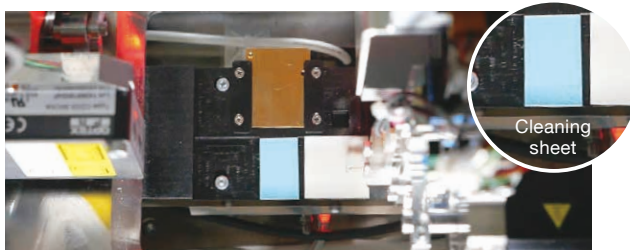
With an aim to decrease impact mark size and depth, HIOKI developed the FA1811-exclusive impact mark reduction probe. Even compared to the conventional machine FA1116, which reduced the impact mark depth by half, this probe improves impact mark performance. The size and depth of the impact mark can be selected by combining three types of speed setting, "high-precision mode", "medium-speed mode", and "high-speed mode", and the impact mark reduction mode.



#### SEM material analysis

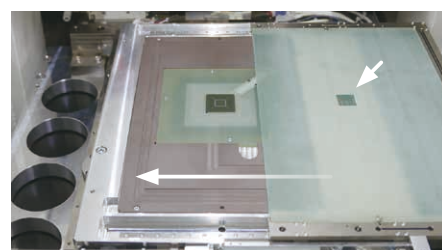
We used an SEM to analyze the materials and tip shape used in the probe, achieving contact performance that rivals a semiconductor prober.

### Added offset station and probe cleaning functions



#### Offset station

The shuttle has an offset station and completes the offset in 1/10 of the conventional time. Use probe tip automatic cleaning, a new function, to maintain stable measurements.



#### Shutter covering

When the TEST FIXTURE is in use, the board clamping method vacuums the board, together with the shutter which is open in only the C4 area. It also supports multi-tip boards with multiple C4 areas.

## Model: FLYING PROBE TESTER FA1811

Model No. (Order Code)	(Note)
FA1811	4096 channels (bundled)

### Flying Probe Unit

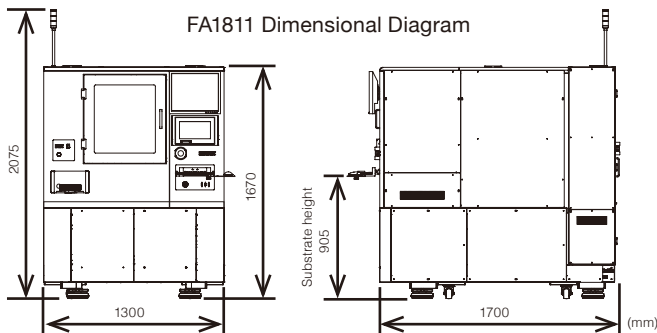
No. of arms	2 (Upper: 2)
Supported range of board thicknesses for clamping	Follow option on BGA side
Probing area	75 mm (2.95 in) x 75 mm (2.95 in)
Total probing precision	□10 μm
Probing pitch	Min. 40 μm (when using CP1073-01)
Alignment light	Select red or blue

### Measurement

Test types and measurement ranges	Resistance measurement	: 400.0 μ to 40.00 MΩ : 4.000 to 4.000 MΩ (T)	
	Capacitance measurement	: 100.0 f to 10.00 μF	
	MLCC measurement	: 100.0 n to 100.0 μF	
	Insulation measurement	: 1.000 k to 100.0 GΩ : 1.000 k to 250.0 MΩ (T)	
	Capacitor insulation measurement	: 1.000 k to 10.00 MΩ	
	High-voltage resistance measurement	: 1.000 k to 100.0 GΩ : 1.000 k to 250.0 MΩ (T)	
	Leak current measurement	: 1.000 μ to 10.00 mA	
	Continuity	: 400 m to 1.000 kΩ	
	Open measurement	: 4.000 to 4.000 MΩ	
	Short measurement	: 400.0 m to 40.00 kΩ (T): When measuring via the TEST FIXTURE	
	Judgment range	-99.9% to +999.9% or absolute value	
	Static electricity countermeasures	TEST FIXTURE Ionizer	
Automatic cleaning	Flying probe cleaning using dedicated sheets Fixture cleaning using dedicated brush		

### General specifications

Power supply used	200 VAC ±10% (three phase) 50/60 Hz (*200 VAC, 220 VAC specified upon shipment) Maximum power consumption: 5 kVA
Pneumatic system	Pressure used (primary): 0.5 M to 0.99 MPa (dry air) Set pressure (secondary): 0.5 M ±0.1 MPa
Air consumption	Max. 0.3 NI/min
Environmental conditions	Temperature: 23°C ±3°C Humidity: 60% RH or less (no condensation) Environment: Avoid use in the presence of excessive dust, vibration, or corrosive gases. Floor strength: 1000 kg (2205 lb) per m <sup>2</sup> or more
Dimensions and mass	Dimensions: 1300 mm (51.18 in) W x 1670 mm (65.75 in) H x 1700 mm (66.93 in) D (* Excluding signal tower and other protrusions) Mass: 2000 kg (70,546.7 oz)
Supplied accessories	IMPRESSION SHEETS 1134-02 CLEANING SHEETS E4117, CLEANING BRUSH E4118 Grease, grease gun, hex wrench (2.5) (for replacing probes), setup disk, power cable (uncrimped end, 3 m (9.84 ft)), Instruction manual (with warranty card)



Note: Company names and product names appearing in this brochure are trademarks or registered trademarks of various companies.

# HIOKI

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Scan for all regional contact information

## Options

Testing requires either the CP1165-11 or the E4101.

### TEST FIXTURE CP1165-11

Board dimensions	□10 mm (0.39 in) to □80 mm (3.15 in)
Supported range of board thicknesses for clamping	0.1 mm (0.004 in) to 5.0 mm (0.20 in)
Notes	Designed for each board
Board clamping	Holder, shutter, and vacuum pump required separately
Supported pad diameter	200 μm or larger, 300 μm or larger when using Kelvin probe
Maximum number of pins	8192

### VACUUM UNIT FOR CAPACITANCE TEST E4101

Board dimensions	50 (1.97 in) W x 90 (3.54 in) D to 105 (4.13 in) x 250 mm (9.84 in)
Supported range of board thicknesses for clamping	0.1 mm (0.004 in) to 0.8 mm (0.031 in)
Notes	To accommodate the entire range of substrate thickness, it is necessary to replace the spacer for substrate thickness adjustment.
Board clamping	VACUUM PUMP E4106 required separately

Model	Product name	Specifications
<b>Utilities</b>		
E4100	THERMAL MINI-PRINTER	Cord included
E4101	VACUUM UNIT FOR CAPACITANCE TEST	
E4104	EXPANSION IONIZER	For flying area
E4106	VACUUM PUMP	If there is no factory vacuum E4106 is required.
E4511	GENERIC SCANNER BOARD	128ch, max. applied voltage: 250 V
CP1165-11	TEST FIXTURE	
E4107	SHUTTER	Board clamping unit
E4108	DEDICATED HOLDER	Board clamping unit
E4109	UNIVERSAL HOLDER	Board clamping unit
<b>Probes</b>		
CP1073-01	SINGLE PROBE	Reduced-impact type
CP1073-11	KELVIN PROBE	Min. pad size: 70 μm
CP1073-12	KELVIN PROBE	Min. pad size: 20 μm
<b>Testing data creation</b>		
E4110	OFF-LINE SOFTWARE	
UA1781	FEB-LINE INSPECTION DATA CREATION SYSTEM	
UA1782	FAIL VIEWER	Supports UA1780 database input
UA1782-01	FAIL VIEWER	Supports IPC-356 input
<b>Other</b>		
1330-05	MEASUREMENT SECTION CALIBRATION UNIT (ELEMENT)	E4501 is required to connect the 1330-05 and the main unit.
E4501	MEASUREMENT SECTION CALIBRATION UNIT	
1196	PRINTER PAPER	10 rolls
E4115	FLYING PROBE SHORT PANEL	Supplied accessory
E4116	TEST FIXTURE SHORT PANEL	Supplied accessory
E4117	CLEANING SHEETS	Supplied accessory
E4118	CLEANING BRUSH	Supplied accessory