

HIOKI



1118 X-Y INTEGRATED HiTESTER

Automatic Testing
Equipment



1118-02 (Double shuttle; standard bottom alignment)
1118-12 (Single shuttle; standard bottom alignment)

**Low-cost testing of high-density boards:
HIOKI's combination flying probe (top) and bed-of-nails fixture (bottom) system**

The 1118 X-Y INTEGRATED HiTESTER is a high-speed testing system designed for use with high-density, multi-layer boards such as the FC-BPA, MCM, and LTCC packages. Combining super-high-speed, high-precision flying probes for the high-density pads found on the top surfaces of boards with low-cost test heads (bed-of-nails fixtures) for use with comparatively low-density bottom surfaces, the new model delivers a test architecture that promises optimum performance for all interposers. An optional vacuum unit allows the system to double as a C HiTESTER, which does not use test heads.

Precision instrument manufacturer HIOKI provides high-value-added solutions for nondestructive electric testing, detection of latent circuit defects, and parametric testing of embedded passive (EP) components.



ISO14001
JQA-E-90091



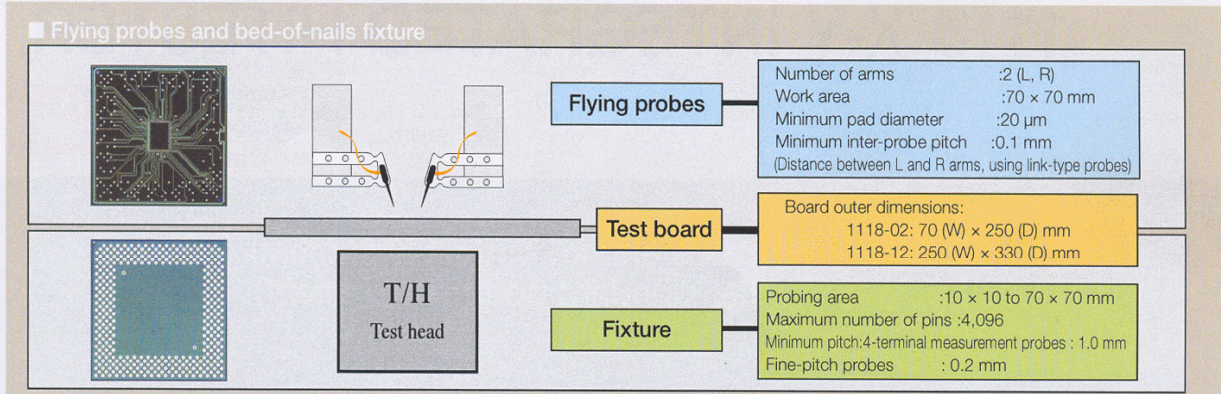
<http://www.hioki.co.jp/>

HIOKI company overview, new products, environmental considerations and other information are available on our website.

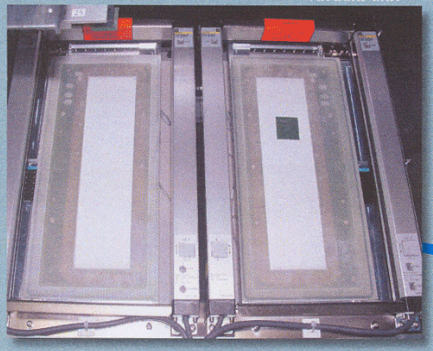
Bare Board Test System (1118 X-Y INTEGRATED HiTESTER)

Super-high-speed testing at up to 100 steps/second

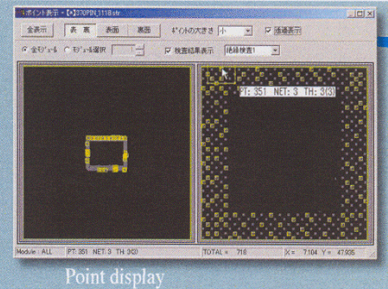
Combination flying probe and bed-of-nails fixture design



◆ Capacitance testing (requires optional vacuum unit)
 *Enables short/open testing using capacitance measurement.
 (*Pictured: 1118-02)



◆ Standard point display function
 In addition to test results, the standard point display function allows you to view net number, pin number, and scanner channel information by hovering the cursor over test points on the display. This feature is extremely useful when checking test fixtures.



■ Test types

Test target	Test type
Same net	Continuity tests 1, 2
Different nets	Isolation tests 1, 2
Standard measurements	Capacitance test Component test

*Continuity tests 1 and 2 and isolation tests 1 and 2 can be configured to use different test conditions.

■ Isolation and continuity test conditions recommended by HIOKI

HIOKI recommends testing with the largest possible test voltage and test current that do not exceed the board's maximum ratings.

- Continuity testing
HIOKI believes that continuity testing with an applied current of at least 100 mA is necessary when testing boards created with specifications of at least 100 mA.

- Isolation testing
Applying more than 100 V between patterns on boards that operate at voltages of 5 V or less may damage the board.

Inter-pattern breakdown voltage: Reference table

Voltage	Required pattern distance
Up to 63 V	100 μm
63 to 125 V	200 μm
125 to 160 V	300 μm
160 to 200 V	400 μm
200 to 250 V	600 μm

(From IEC 60950-1)

Accommodate multiple board sizes with a single test head.

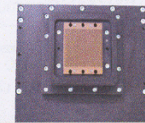
Now there's no need to change test heads for LGAs (land grid arrays) with board patterns that are the same pitch.

- Use a single test head with a wide range of board sizes.
- Setup is limited to changing test data and the board clamp unit.
- Compatible with 4-terminal wiring.

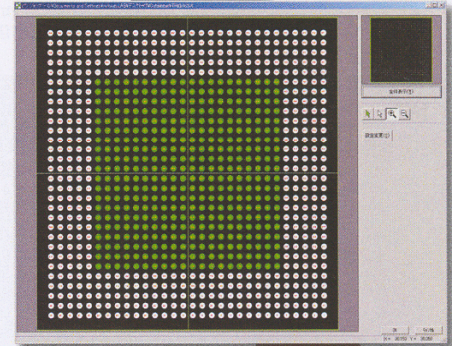
Data creation is easy, too.

- Convert Gerber data editor output into test data without modification.
- Point numbering (pin numbering) uses the same serial numbering scheme as the individual board data.
- Support for manual point jump settings.

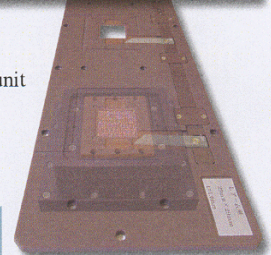
Universal test head



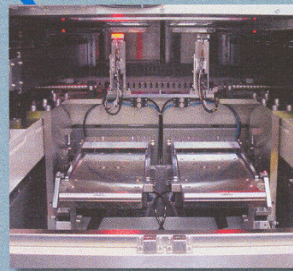
Measurement pin selection



Board clamp unit



HiTESTER jig installation mechanism



Model 1118-02



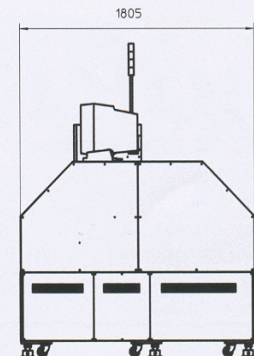
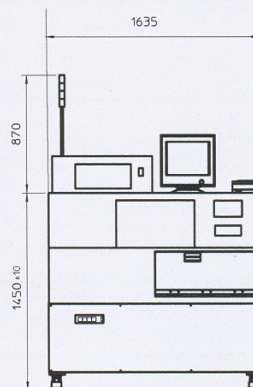
1118-02 (Double Shuttle)
1118-12 (Single Shuttle)

Features

- High-speed isolation and continuity testing (test head)
- Guaranteed probing of 20- μm pads (flying probes)
- Guaranteed IVH low-resistance testing (high-precision low-resistance measurement mode)
- Microshort detection function
- Automatic alignment function
- Support for multi-board layouts (step-and-repeat function)
- Shorter cycle times by eliminating loss typically due to transport time (when using double test heads with 1118-02)

1118 Specifications

No. of measurement channels	Standard: 512 (test head) Maximum: 8,192 (1118-02) Maximum: 4,096 (1118-12)
Continuity test	Minimum: 400 m Ω
Isolation test	Maximum: 200 M Ω
Resistance measurement	Low resistance: Min. 400 $\mu\Omega$ (when using 4-terminal probes) Insulation resistance: Maximum 500 M Ω



1118-02

Specifications

1118-02 INTEGRATED HITESTER (Double Shuttle) 1118-12 INTEGRATED HITESTER (Single Shuttle)

Number of arms	2 (L, R)
Number of board transport shuttles	2 (1118-02) or 1 (1118-12)
XY repeatability precision	±20 µm
Number of test steps	20,000 (maximum)
Measurement ranges	Data types Step data: 1-to-1 (high/low potential) S/O data: Net data
	Number of measurement channels Test head: 512 standard (8,192 max.) Flying probes: 2
Judgment range	Continuity test: 400 mΩ to 60 Ω at 150 mA 400 mΩ to 200 Ω at 50 mA Isolation test: Up to 500 MΩ at 250 V1 Up to 200 MΩ at 100 V (Test voltage is variable in 1 V steps.) 1S/O data: Up to 200 MΩ DC measurement Resistance: 400 µΩ to 40 MΩ Capacitance: 4 µF to 400 mF
	AC measurement (flying probes) Resistance: 100 Ω to 100 MΩ Capacitance: 10 fF to 10 µF Inductance: 10 µH to 100 H
Minimum pad diameter	20 µm
Positioning repeatability precision	Within ±50 µm (probing position)
Inter-probe pitch	Minimum 0.1 mm (between L and R arms, using link-type probes)
Probe work area	70 × 70 mm (area above test head) Range of XY movement: 320 × 100 mm
Testable board dimensions	Thickness: 0.3 mm to 3.2 mm
	Dimensions 1118-02: 10 × 10 to 70 × 250 mm 1118-12: 10 × 10 to 250 × 330 mm

Safety equipment	Emergency stop switch, safety covers, software to prevent arm interference, insulated transformer
Warning equipment	Signal tower (3-light) and buzzer
Display	17" color display
Power supply	Specify at time of order: 200/220/230/240 V AC (single phase), 50/60 Hz Power consumption: 3 kVA
Air pressure	0.5 to 0.99 MPa (dry air)
Air consumption	Maximum 0.3 NI/min
Operating conditions	Temperature: 23° ±10° C Humidity: 70% RH or lower (non-condensing) Air quality: Avoid use in environments where the HITESTER would be subject to dust, vibration, corrosive gasses, etc. Floor strength: At least 500 kg/m2
	Storage conditions HITESTER: 10° to 43° C, 80% RH or lower (non-condensing) Test heads: 23° ±10° C, 70% RH or lower (non-condensing)
Standard accessories	1172-81 Contact Probe × 2, thermal miniprinter, printer cable, hexagonal wrench (2.5) (for replacing probes), socket wrench (6 mm diagonal), air gun, special grease, grease gun, keyboard, PS/2 mouse, computer accessories, uninterruptible power supply (for computer), setup disc, leveling jacks × 6, anti-slip sheets × 6, color display (17"), power cord (3 m; terminates in bare wires), spare fuse, probe impression sheet, offset board (t = 2 mm), offset board attachment
Dimensions	Approximately 1,630 (W) × 1,600 (H) × 1,810 (D) mm (excluding protruding parts)
Mass	Approximately 2,000 kg

Test head vertical drive unit

Maximum installed test heads	2 (1118-02) or 1 (1118-12)
Horizontal probing precision	Within ±100 µm
Horizontal repeatability precision	Within ±20 µm

Test heads

Probing area	10 × 10 to 70 × 70 mm
Maximum number of pins	4,096
Minimum pitch	4-terminal measurement probes: 1.0 mm Fine-pitch probes: 0.2 mm

Factory Options

	1118-02		1118-12
	For R shuttle	For L shuttle	
VACUUM UNIT	1948-03	1948-04	1948-05
STAMP UNIT	1941-41	1941-42	1941-43
STAMP UNIT WITH CAP	1941-45	1941-46	1941-47
COAXIAL DOWNWARD ILLUMINATION UNIT	1945-33	1945-34	1945-35
MEASUREMENT CLAMP UNIT	1166-03		1166-04
	1118-02/1118-12		
	For R arm	For L arm	
COAXIAL DOWNWARD ILLUMINATION UNIT	1945-31	1945-32	
1.2x LENS UNIT	1947-31	1947-32	

1138-03 SCANNER BOARD (256 channels/board)
1139-04 1118 DATA CONVERSION SOFTWARE
1139-54 FL-LINK 5 FLY-LINE LINK SOFTWARE
1152-02 512 SCANNER CABLE (length: 1,480 mm)
1165-04 TEST HEAD
1330-06 MEASUREMENT CALIBRATION UNIT
1355-01 VACUUM PUMP
1356 MAINTENANCE TOOL SET
1911-01 EXPANSION SCANNER RACK UNIT (1118-02 only)
1944-01 EXPANSION I/O BOARD
1946-05 MONITOR CAMERA

Options

1134-02 PROBE IMPRESSION SHEET (1 box supplied as standard accessory)
1196 PRINTER PAPER
1350-04 OFFSET BOARD (t = 2 mm)
1172-66 LINK PROBE
1172-67 4-TERMINAL PROBE (double link)
1172-68 BLADE PROBE (link)
1172-69 BLADE 4-TERMINAL PROBE (double link)
1172-74 CALIBRATION PROBE (double link)
1172-80 PROBE (3 mm stroke)
1172-81 PROBE (high-speed version)
1172-82 PROBE (super-high-speed version)
1172-83 4-TERMINAL PROBE (35 µm between terminals)

Machine test records and proof of calibration must be ordered separately to ensure availability at time of purchase.

HIOKI

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