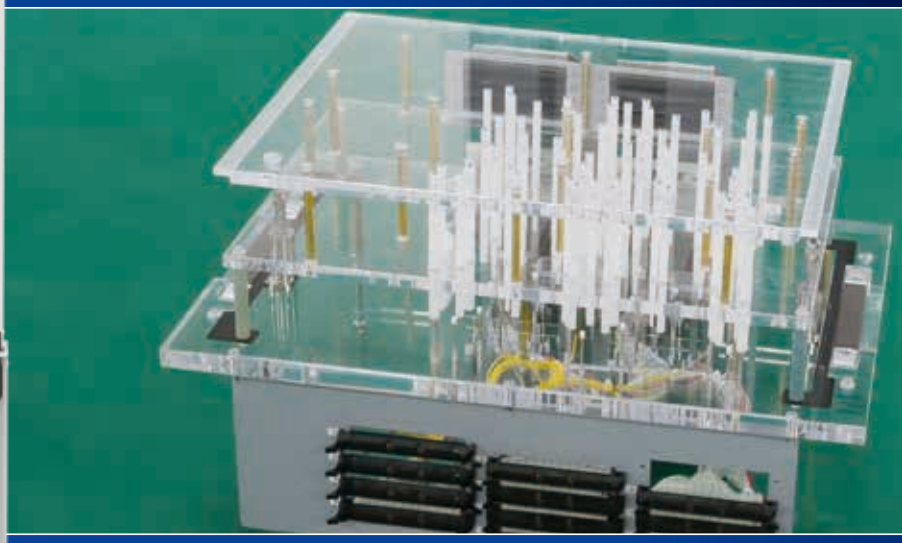
HIOKI

IN-CIRCUIT TESTER FA1220-02

NEW

Batch Testing System for Improved Populated Circuit Board Productivity



Extensive functionality for improving productivity

Slide-in mechanism that's operator-friendly

Three-year warranty and safe, CE Mark-compliant design

CE 3years Guarantee

Operator-friendly design

Productivity, quality, and safety

In the manufacture of populated boards, testing systems serve a key purpose, but they don’t play the main role. Hioki testing systems continue to evolve so that the people who use them can shine. One example of that evolution is the FA1220-02’s slide-in mechanism and enlarged front opening, which together allow operators to change test fixtures quickly and easily. Reflecting its commitment to bring speed and comfort to the production floor by streamlining testing, Hioki’s proud to introduce a populated board tester designed with people in mind.

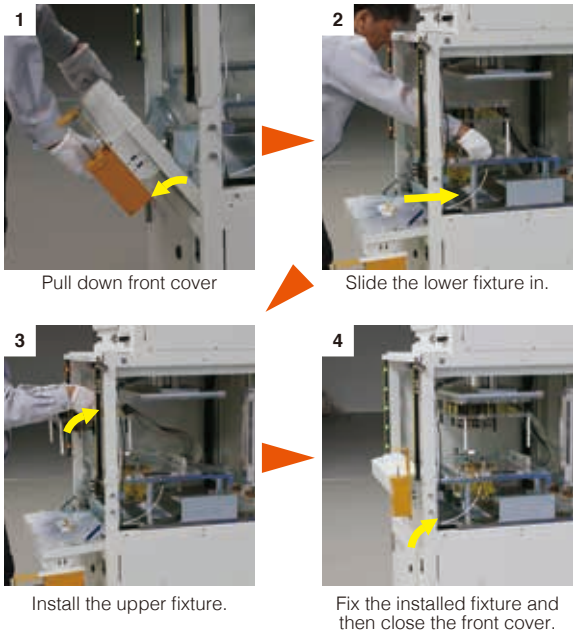
Productivity — Using Time Efficiently

Standard model

Slide-in mechanism for test fixtures

Test fixture can be installed easily by sliding it into FA1220-02 while the upper fixture and the lower fixture gets together. Pulling down front cover so that operator can install fixture easily while his/her body posture is comfortable. Also, not required to do cable connection/disconnection process because you can install the fixture while connection cable between the upper fixture and the lower fixtures is remained connected. Existing fixture of 1220 series can be used on new model too.

Slide-in Structure of Test Fixture



1 Pull down front cover

2 Slide the lower fixture in.

3 Install the upper fixture.

4 Fix the installed fixture and then close the front cover.

*Test fixtures that have been fabricated for batch setup only.

Standard model

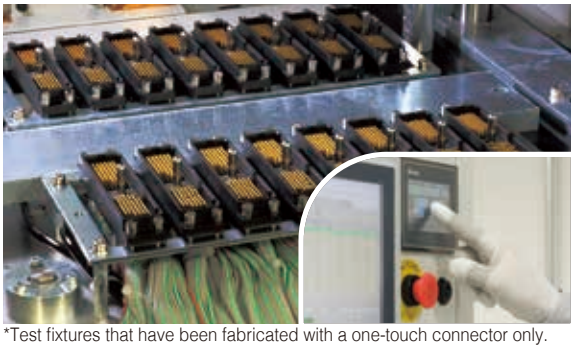
Mouse-free operation

Data selection, test mode selection, and test start can all be performed using the touch panel. In production operation that doesn't require debugging, setup changeover can be made without a mouse.

ONE-TOUCH CONNECTOR E4268 (1024CH), ONE-TOUCH CONNECTOR E4269 (2048CH)

Automatic, one-touch connectivity*

The test fixture's one-touch connector can be engaged simply by operating the touch panel. This design makes it possible to ensure reliable connector contact without the need to operate a lever.



*Test fixtures that have been fabricated with a one-touch connector only.

ONE-TOUCH PRESS FUNCTION E4283 *

One-touch testing

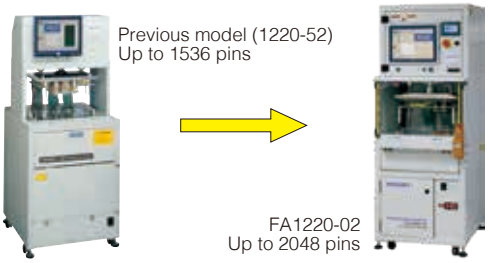
Ordinarily, testing starts when the operator presses two buttons simultaneously, one with each hand. With the FA1220-02, one-touch test fixture operation combines with other safety devices to allow testing to be started simply by exerting light pressure on a wand-style switch.

*Requires Light Curtain E4280, Rear Safety Door E4282, and PLC Unit E4285.

Standard model

Ample support for boards with numerous nets

The FA1220-02's highly integrated measurement unit serves as the system's testing core. Even when equipped with the maximum 2,048 pins*, the system takes up no more floor space than the previous 1220-52. Test programs and test fixtures provide upstream compatibility with previous models.



*Requires 16 additional scanner boards.

PLC UNIT E4285

PLC-based automation of various setup changes

The FA1220-02's various productivity-enhancing functions, including 2D code scanning and automatic one-touch connectivity, are designed around the system's PLC unit.

Standard model

Automatic loading of board-specific test programs

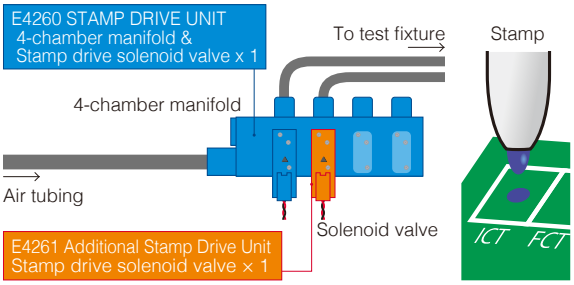
The FA1220-02 can load test programs automatically by scanning 2D codes on boards*. The proper program can be automatically loaded from a multi-model program library containing various production variants and used to configure the system automatically.

*Requires separate 2D code reader.

STAMP DRIVE UNIT E4260, ADDITIONAL STAMP DRIVE UNIT E4261

Judgment result stamps

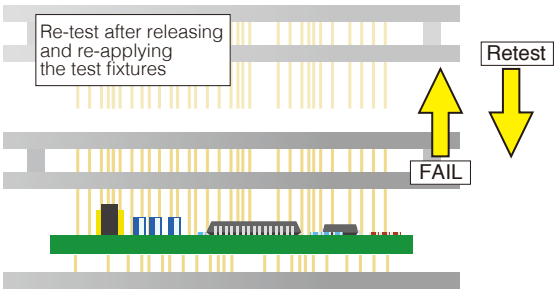
The system can operate up to 16 stamps, which are installed on the test fixtures. Up to four E4260 units can be added to the FA1220-02. Each E4260 unit can accommodate up to three E4261 units.



AUTO RETEST FUNCTION E4284*

Auto retest for improved contact

In the event a contact error between the test fixture and the board under test results in a fail judgment, the FA1220-02 can press down the test fixtures again to improve contact. This feature improves production yields.

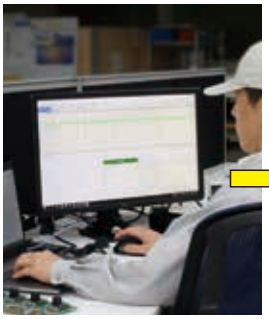


*Requires Light Curtain E4280, Rear Safety Door E4282, and PLC Unit E4285.

1220 DATA COMPOSITION SOFTWARE1137-05

Data creation that doesn't monopolize the line

The application can be installed on a standard computer, allowing data creation and analysis work to be performed without regard to whether the production line is operating.



Create data in the office.

Debug and test on the production floor.

Standard model

Worldwide adoption

The FA1220-02's standard software supports English, Chinese, and Japanese. Its 100 V to 240 V free power supply supports supply voltages around the world. It also complies with CE, Chinese RoHS, WEEE, and other standards.

Quality

Extensive Testing Functionality for Detecting Defects

Standard model

Extensive component testing capability

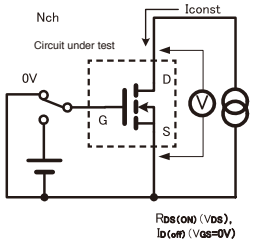
The FA1220-02 ships standard with extensive testing capability, including a polarity check to detect electrolytic capacitors that have been mounted backwards and milliohm-range resistance testing using 4-terminal measurement.

.cro	*	0	1	131.0	Ω	13
.cro	*	0	2	1.715	MΩ	1.
.cro	*	0	3	994.9	Ω	99
.cro	*	0	4	278.0	Ω	27
.cro	*	0	5	646.8	Ω	64
.cro	*	0	8	131.0	Ω	13
.cro	*	0	9	1.075	kΩ	1.
rmDiode	*	0	10	437.5	Ω	43
.cro	*	0	11	112.0	Ω	11
.cro	*	0	4	278.0	Ω	27
.cro	*	0	5	646.8	Ω	64
.cro	*	0	8	131.0	Ω	13
.cro	*	0	9	1.075	kΩ	1.
rmDiode	*	0	10	437.5	Ω	43
.cro	*	0	11	112.0	Ω	11

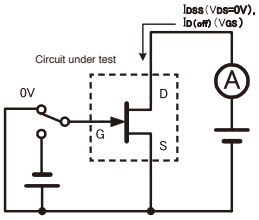
Standard model

Active-state testing of semiconductors

The FA1220-02 can measure drain-source voltage and current while applying on/off voltages to MOS-FET and J-FET gates. In this way, it can generate pass/fail judgments for FET operation under active conditions.



Pass/fail judgment based on off-current and on-resistance

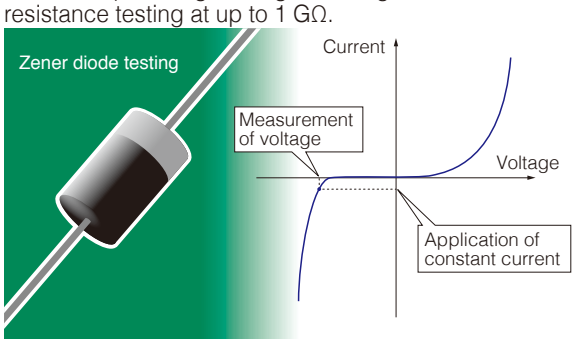


Pass/fail judgment based on off-current and measured current (IDSS)

INSULATION MEASUREMENT FUNCTION E4210

Zener voltage and high-voltage insulation testing

High-voltage circuitry with configurable limits broadens testing options by making possible functionality including high-voltage (HV) Zener voltage testing, varistor operating voltage testing, and insulation resistance testing at up to 1 GΩ.

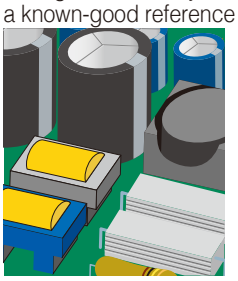


*Requires Scanner Board E4203.

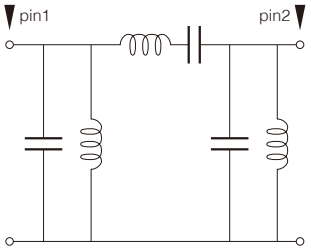
Standard model

Component testing less measurement pins

When it's difficult to set probe contact with a component's pads, the FA1220 can generate judgments based on the composite impedance of multiple components. Macro testing allows the system to acquire measured values from a known-good reference board for use as reference values.



Use with boards that lack sufficient space for probing.

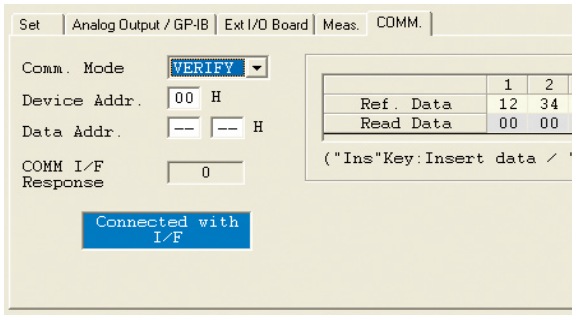


Judgments are based on impedance measurements that group together multiple components.

I2C TEST UNIT 1960-10

I²C-compatible testing

The FA1220 can use the I²C bus to write data to ICs mounted on the board under test, verify written data, and generate controller DIO output.



ONBOARD PROGRAMMING FUNCTION E4231

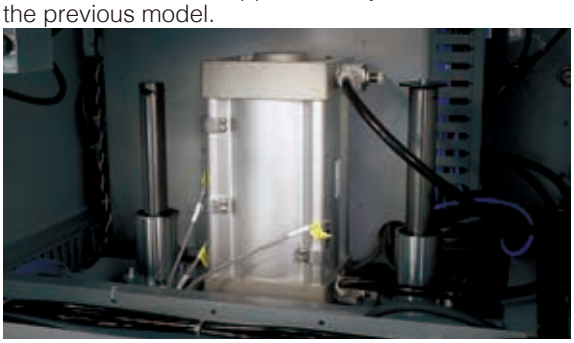
Post-testing writing of programs

This function allows you to use a ROM writer to write programs to a microcontroller with built-in flash memory after testing has been completed. It uses a ROM writer from DTS Insight.

Standard model

Optimal test fixture application force for reliable testing

The FA1220-02 ships standard with a press cylinder that has a large, 125 mm diameter. This design allows the system to press down the test fixtures with theoretical thrust of approximately 1.5 times that of the previous model.



IONIZER UNIT E4287

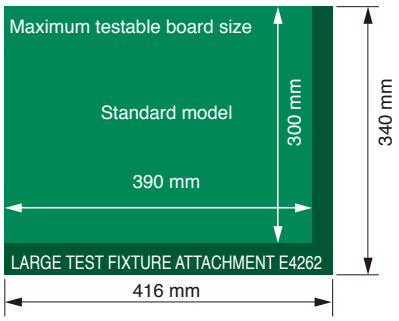
Elimination of static electricity for safe testing

An ionizer unit installed beside the testing area eliminates static charges from boards.

LARGE TEST FIXTURE ATTACHMENT E4262

Testing of even larger boards

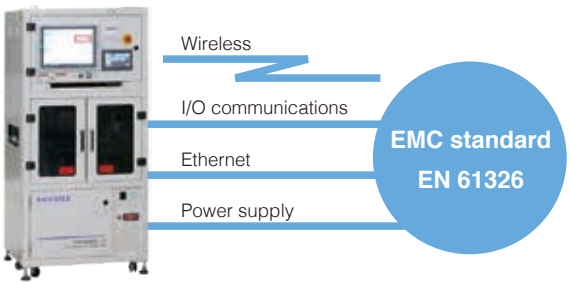
When equipped with the large test fixture support option, the FA1220-02 can accommodate maximum board dimensions of 416 mm × 340 mm.



Standard model

Reduction of noise-related issues

Hioki has carried out immunity (electromagnetic susceptibility) and emission (electromagnetic compatibility) testing to ensure compliance with the EN61326-1 EMC standard. This design limits issues caused by electrical wiring and radiative noise.



Standard model

3-year warranty and CE Mark compliance

Hioki has evaluated the quality of the FA1220-02 through EMC testing and safety verifications to ensure CE Mark compliance. The system is covered by a three-year product warranty.

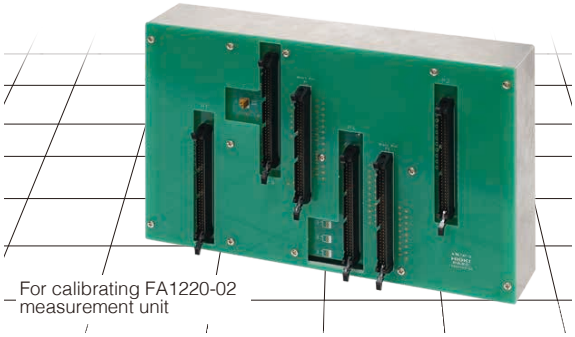
CE 3year Warranty

*Requires Light Curtain E4280, Rear Safety Door E4282, and PLC Unit E4285.

CALIBRATION UNIT FOR MEASUREMENT SECTION 1330

Measurement unit calibration for more reliable testing

An optional calibration unit calibrates the measurement unit. Periodic calibration makes possible reliable, traceable testing.



PRINTER UNIT E4243

Output of analytical data

Standard functionality allows measurement data to be output to a datafile. Additionally, an optional printer unit can be used to print test results on the production floor.

[Test Results]
File HIOKI
Component

DATE	TIME	PinNo 1-1	PinNo 2-2	···	PinNo 19-19	PinNo 20-20
2010.12.1	10:00:00	6.29E+08	2.46E+08	···	3.93E+08	1.00E+12
2010.12.1	10:01:00	6.29E+08	2.46E+08	···	3.93E+08	1.00E+12
2010.12.1	10:02:00	6.29E+08	2.46E+08	···	3.93E+08	1.00E+12
2010.12.1	10:03:00	6.29E+08	2.46E+08	···	3.93E+08	1.00E+12

explanation

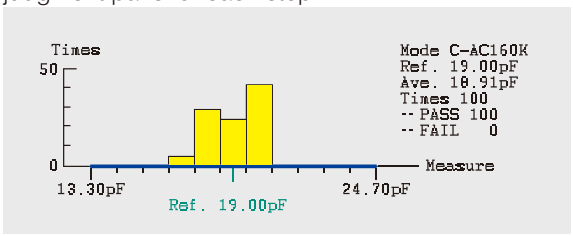
Display	Description
[Test Results]	Header

Example electronic data file output

Standard model

Statistics function for checking quality trends

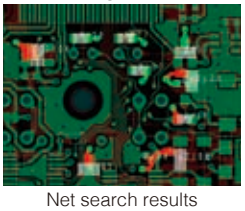
This function allows you to review a histogram of measured values inside the test software. The software stores up to 100 measured values and judgment pairs for each step.



FAIL VIEWER UA1782

Single-click visualization of FAIL information

The FAIL VIEWER UA1782 is a software application that aids in analyzing populated circuit boards by adding component and probe search functions to an analytical database viewer. The application provides functionality for not only searching for component mounting positions and probe contact positions on boards, but also searching for components that connect to the user-specified probe number, all with a one click. With the UA1782, there's no longer any need to view parts allocation diagrams while performing repair work. Additionally, you can search for contiguous locations between pins (patterns), allowing the software to be used to search for solder bridge defects.

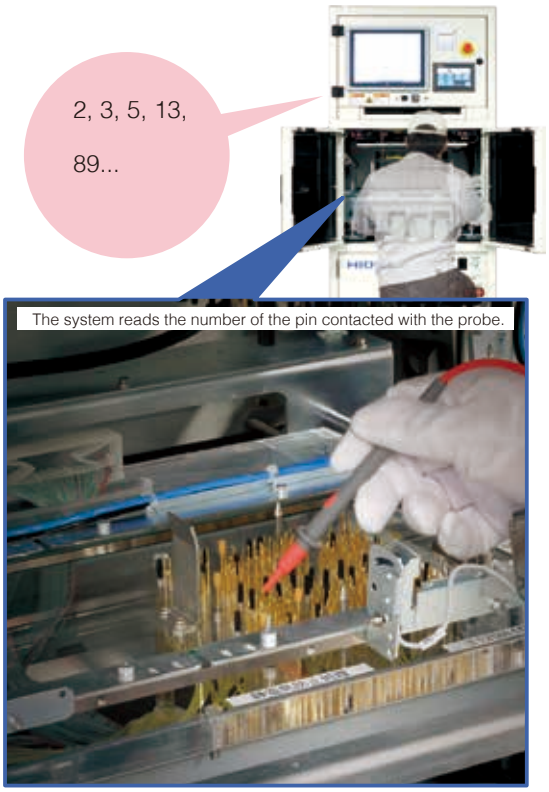


Net search results

Standard model

Audio pin number guidance function

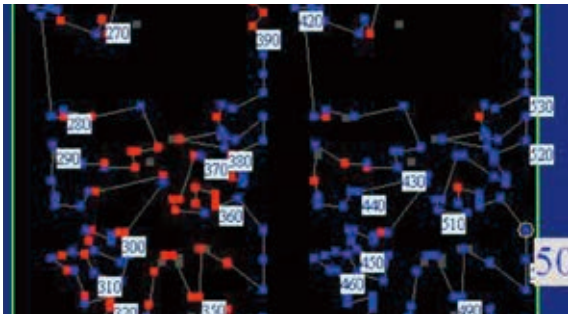
This function provides audio guidance for pin numbers while the operator conducts a pin search. By eliminating the need to look at the screen, it allows the operator to concentrate on identifying target pins.



Standard model

FAIL board analysis point viewer

The point viewer displays pin coordinates as points, which is helpful when performing test fixture maintenance. This functionality allows you to refer to information immediately on-site instead of needing to carry printed material with you.
The viewer allows you to switch board surfaces (top/bottom) as well as the view surface and display zoom factor, among other settings. Pins associated with FAIL results are shown in red. When conducting a pin search, the point's pin number is shown in larger text.



When you have Hioki fabricate test fixtures, you can add point information files as an option. To use the viewer function, simply place the test program file and point information file in the same folder.

Safety

Safeguard people, products, and lines

RESIDUAL PRESSURE EXHAUST UNIT E4270

Emergency features

The FA1220-02 ships standard with an emergency stop switch. An available residual pressure exhaust unit allows the cylinder lock to be released while the system is stopped.

Emergency stop switch

RESIDUAL PRESSURE EXHAUST UNIT E4270

LIGHT CURTAIN E4280

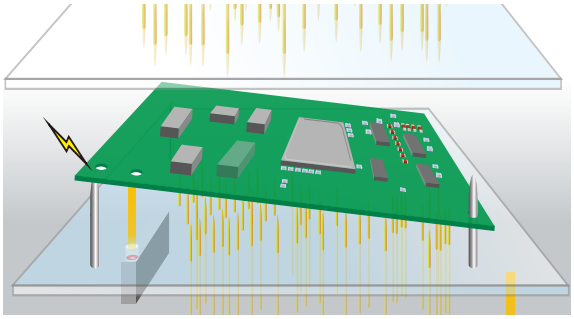
Prevention of accidents

Accidentally touching one of the test fixtures once they've been applied to the board can lead to a serious accident. A light curtain detects any foreign objects entering the test area and halts movement of the upper fixture.

BOARD CONFIRMATION UNIT E4265

Verification of proper board positioning

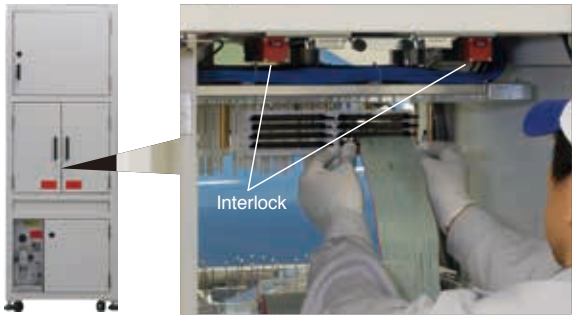
This feature inter-operates with sensors installed on the test fixture to detect and warn the operator about issues including board float, backward insertion, improper board type, and board absence.



REAR SAFETY DOOR E4282

Rear cable connections

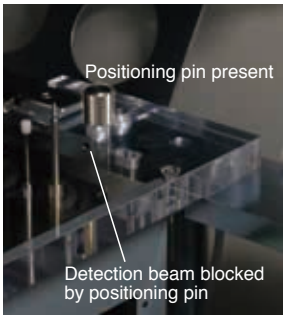
A rear safety door makes the process of connecting the upper and lower flat cables safer, while an interlock prevents another operator from moving the test fixtures while work is being performed.

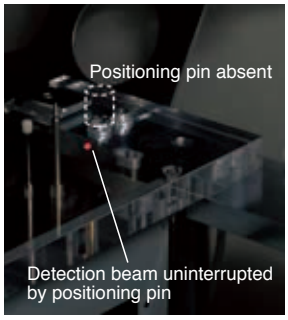


FIXTURE VERIFICATION FUNCTION E4263 (For upper test fixture)
FIXTURE VERIFICATION FUNCTION E4264 (For lower test fixture)

Test fixture verification function

The test fixtures' alignment pins are checked using an optical sensor to ensure that the fixtures have been installed properly.





TEST FIXTURE ID DETERMINATION UNIT E4266

Prevention of erroneous test fixture installation

This feature prevents the test fixtures pressing down if the ID assigned to each board model's test program doesn't match the test fixtures' IDs. In this way, it prevents damage from mismatching between boards and test fixtures.

BACKUP POWER SUPPLY E4242

Resilience in the face of sudden power outages

This option continues to power the system's control computer and LCD even in the event of an outage so that you can shut them down normally.

RECOVERY CD FA1395

Computer restoration

This option creates a recovery disc at the time of shipment for use with individual products. The disc can be used to restore the operating system, settings, and other files to their state at the time of shipment.

* The FA1220-02 does not have a CD or DVD drive. You will need to provide an external CD or DVD drive in order to use the Recovery Disc FA1395.

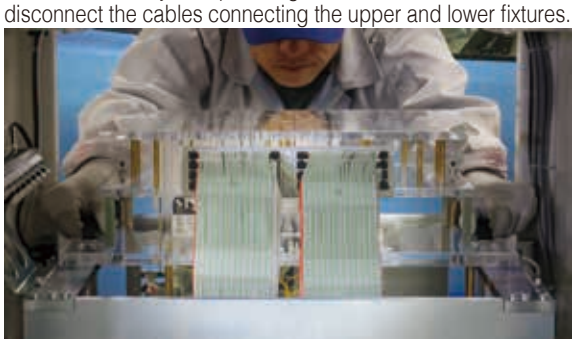
Test fixtures

Measurement and comprehensive assistance

Specify at time of test fixtures order.

Preconnected test fixture cables

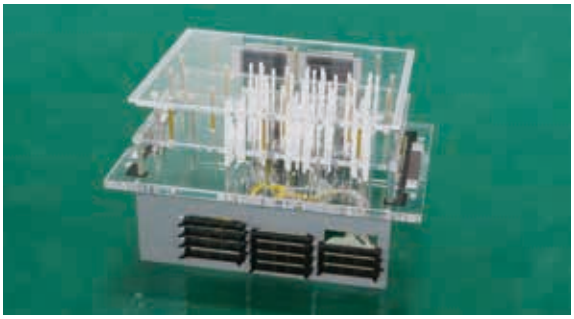
Test fixtures can be installed in the system as a single, integrated unit that combines upper and lower fixtures. This design reduces the number of man-hours that would otherwise be consumed by setup changes since there's no need to disconnect the cables connecting the upper and lower fixtures.



Specify at time of test fixtures order.

No need for specially designed storage boxes

The upper and lower test fixtures can be stored as a single, integrated unit. No specially designed storage box is necessary since the lower test fixture supports itself.



Specify at time of test fixtures order.

Streamline repair work by creating an analytical database from Gerber data and mounting data

From the standpoint of the thermal contraction of boards, the previous method of acquiring probing information from the board under tested is an extremely effective technique for ensuring stable contact.
However, it is becoming increasingly common to fabricate test fixtures based on electronic data such as Gerber data and mounting data (component mounting information) in order to accommodate finer-pitch circuit trace layouts as well as shorter lead times. Hioki has gone beyond computerizing the fabrication of test fixtures by providing analytical databases that can also be used in repair work and test fixture maintenance. Since repair work can be computerized, there's no longer any need for paper documentation such as component schematics and pin assignments.

Support for high-density boards

High-precision drilling machines can space probes as close as 1.27 mm apart. This precision makes it possible to accurately probe minuscule points.

Optimal test program

Populated circuit board experts carry out debugging work to determine the appropriate tolerances, wait times, and guarding. Performing this debugging work on the customer's system helps minimize post-delivery debugging.

Probes

Test fixtures are fabricated using optimal probes while taking into account tip profile, diameter, downward force, and structure.

Extension range of options

Stamp units
This option applies stamps to boards. Our extensive selection of stamp units includes water-based ink, oil-based ink, and seal face variants. (Requires Stamp Drive Unit E4260 on the FA1220-02.)

Missing connector and reverse insertion testing
This option uses switch probes to check for manual connectors that have been inserted backwards.

Capacitor reverse insertion testing
This option uses special probes to touch on the top of electrolytic capacitors and detect backward mounting.

Counter function, anti-static design, etc.

Designs that minimize stress on boards

Flexure of boards at the time of test fixture press down stresses not only the board, but also its components. Many years of experience allow Hioki to provide flex-free, stable probing.

Short lead times

The amount of time available between prototyping and volume production continues to decline. The most effective way to assure product quality is to introduce In-Circuit Test as early in this process as possible. Hioki works continuously to review and rationalize fabrication processes to accommodate demand for shorter lead time.

Materials required for test fixture fabrication
Circuit schematics, BOM (Bill of Material), PCB (bare board), populated boards (multiple boards), component schematics, net list, etc.

Electronic data required for test fixture fabrication
Gerber data and drill data (274D, 274X)
Mount data (CSV, Excel)
BOM (Bill of Material: CSV, Excel)

Specifications

Testable board size

External dimensions	Details vary with test fixture specifications. Standard model: Max. 390 (W) × 300 (D) mm With E4262: Max. 416 (W) × 340 (D) mm
Thickness	0.8 to 2.0 mm
Others	Weight, Shape, and Mountable area vary with test fixture specifications.

Test program structure

Number of test points	Standard 0 pins (scanner boards optional) Max. 2048 pins (expandable in blocks of 128 pins)*
Group data	256 groups
Round-robin S/O data*	2048 pins*
Macro data	2048 pins/ 2048 steps (regardless of pin count)*
Component data	10000 steps
Charge data	40 groups
Pin contact data	2048 pins*
IC data	500 steps (max. 2048 pins/ step)*

*The maximum number of active pins for each test type depends on the total number of scanner board pins installed in the product.

Test types and ranges

Round-robin S/O test*	4 Ω to 400 kΩ
Macro test	1 Ω to approx. 10MΩ (impedance)
Component test	Resistance : 400 µΩ to 40 MΩ Low resistance : 40 µΩ to 400 mΩ (Requires E4203) Capacitance : 10 pF to 400 mF Inductance : 1 µH to 1 H Impedance : 1 Ω to 10 MΩ Diode VF : 0 V to 25 V Zener diode : 0 V to 25 V Digital transistor : 0 V to 25 V MOSFET on-resistance : 0 Ω to 1 kΩ JFET drain current : -20 mA to 20 mA Photocoupler : 0 V to 25 V DC voltage : 0 V to 25 V DC current measurement while applying constant DC voltage : 100 nA to 100 mA Open : 4 Ω to 4 MΩ Short : 0.4 Ω to 400 kΩ Discharge function Electrolytic capacitor polarity check
IC test	IC reverse insertion test: 0 A to 500 µA/ 0 V to 4 V IC pin-to-pin S/O test*: 4 Ω to 400 Ω
High-voltage insulation measurement (Requires E4210 and E4203.)	High-voltage Zener diode VZ : 1 V to 100 V High-voltage measurement : 1 mV to 200 V Insulation resistance measurement : 200 Ω to 1 GΩ High-voltage resistance measurement : 400 mΩ to 1 GΩ

*S/O: Short/ open

Measurement unit

Test signals	DC constant voltage : -200 mV to 10 V, 4 ranges DC constant current : 200 nA to 20 mA, 11 ranges : 100 mA range only (Requires E4203) AC constant voltage During component testing : 0.1 Vrms, 1 range During impedance testing : 0.2 Vrms to 2.0 Vrms, 0.1 V steps AC frequency During component testing : 160 Hz to 160 kHz, 4 modes During impedance testing : 1.6 kHz to 160 kHz, 2 modes HV constant voltage : 1 V to 100 V (Requires E4210 and E4203.) HV constant current : 1 mA to 20 mA (Requires E4210 and E4203.)
Measurement unit	DC voltmeter : 800 µV f.s. to 25 V f.s., 8 ranges DC ammeter : 100 nA f.s. to 250 mA f.s., 9 ranges AC ammeter : 10 µArms to 10 mArms, 4 ranges HV voltmeter : 25 mV f.s. to 250 V f.s. (Requires E4210 and E4203.) HV ammeter : 1.2 µA f.s. to 120 mA f.s. (Requires E4210 and E4203.)
Scanner unit	E4201 and E4202 Switch type : Analog Number of channels : 128 per board Input protection : ±15 V E4203 Switch type : Read relay Number of channels : 128 per board Input protection : None
Judgment range	-99.9% to +999.9%, or absolute value
Guarding	5 points per step
Measurement time	Round-robin S/O test : From approx. 0.8 msec per pin Macro test : From approx. 2.0 msec per pin Component test : From approx. 0.9 msec to 280 msec per step Charge test : From approx. 3.0 msec per group Pin contact test : From approx. 1.0 msec per pin IC test : From approx. 1.0 msec per pin Insulation measurement test : 20ms to 100ms, Depends on the measurement target (Requires E4210 and E4203.)
Protective functionality	HV constant current : Current-limiting function (Requires E4210 and E4203.) HV constant voltage : Voltage-limiting function (Requires E4210 and E4203.)

Stamp

Number of drivable stamps	Up to 16

Combinations of drivable stamp counts and required options

Number of drivable stamps		1	2	3	4	5	6	7	8
Required number of options	E4260	1				2			
	E4261	0	1	2	3	3	4	5	6

Number of drivable stamps		9	10	11	12	13	14	15	16
Required number of options	E4260	3				4			
	E4261	6	7	8	9	9	10	11	12

Measurement control

Control device	Single-board computer
Operating system	Real-time operating system
Storage device	SD card (for booting system)
External I/O	Ethernet (LAN) 100Base-TX × 1 (for computer connection only)

Main unit control

Hardware	Industrial computer
Operating system	Windows 10 Pro 64-bit, English/ Japanese (specified at time of order)
Storage device	64 GB SSD
Operation	Keyboard and mouse
Display	15-inch display
Printer	E4243 (optional)
External I/O	Ethernet (LAN) 100Base-TX × 1 (Contact Hioki for more information about external connectivity.) USB 2.0 × 1, USB1.0 × 2

Architecture

Theoretical thrust when applying test fixtures	6.1 kN (at 0.5 MPa)

Safety

Machine safety features	Emergency stop switch, Safety light curtain (Requires E4280), Rear safety door (Requires E4282)
Warning devices	Buzzer (Requires E4285)

Functional specifications

Data creation functionality	ATG function (automatically acquires values from a known-good reference board and configures guarding points) Acquisition of reference values, stray admittance values, and residual impedance values from known-good reference board Group specification
Retest functionality	Retry, retry with polarity change, retest
Control during automatic testing	FAIL stop, test jump, test hold
Test result output	Output of results to a printer or as text data for the specified unit (by test, group, step, etc.) and content (off, all results, or FAIL results) once automatic testing completes
Data output	Output of test program, statistical data, and settings data to a printer or as text data.
Self-test functions	AD function, DC function, AC function, scanner boards, test fixtures, at power-on, at automatic test
Statistics functions	Defect rate tabulation and graph display for by pin, test, group, or overall Hours of operation: Cumulative, subtotals Histogram data display for component testing

Other functionality

FAIL map display	Display of the names of components that received a FAIL judgment during automatic testing as a map by part position
Mask pin configuration	Setting to disable testing of specified pins
Surplus test	Used when the component at a specified step is not present (resulting in the opposite judgment of other tests)
Stop at consecutive FAIL results	Function for stopping testing when the set number of FAIL results are encountered consecutively during automatic testing
Password protection	Function for limiting the operations that can be performed by setting a password
Save/ load Hioki test program as a text file	Function for saving test program to, or loading it from, a text file
Load Hioki 1105 data	Function for converting 1105 test program for use by the FA1220
Test program selection (A/B data)	Function for loading two sets of test program and selecting which to use
Barcode support	Function for scanning barcode IDs
Fixture ID verification (Barcode-related function)	Function for verifying that the test program ID and scanned barcode ID match
Automatic setup (Barcode-related function)	Function for automatically selecting test program based on scanned barcodes
Application interface	Function that enables communication between a computer and the FA1220
External I/O control	Function for controlling the FA1220 using external I/O
Overall PASS/FAIL stamp application	Function for controlling stamps based on PASS/FAIL judgments during automatic testing
Area sensor detection area display clear function	Function for clearing the overall judgment display at the end of automatic testing if the area sensor activated
Pin search with audio guidance	Function for outputting pin search results as audio
Point viewer	Function for displaying test fixture pin coordinates graphically

General specifications

Location of use	Indoors, Pollution Level 2, maximum elevation of 2000 m
Operating temperature and humidity range	Temperature 23°C ±10°C, 75% RH or less (non-condensing)
Storage temperature and humidity range	Temperature 10°C to 43°C, 75% RH or less (non-condensing)
Environment	Do not use in a setting where the product would be exposed to dust, vibration, corrosive gases, or other adverse environmental characteristics.
Vibration	Avoid use in locations with excessive vibration.
Standard compliance	Safety : EN 61010-1 (Requires E4280 and E4282) EMC : EN 61326-1
Product warranty	3 years
Power supply	Rated supply voltage: 100 to 240 V AC, 50Hz/ 60 Hz Maximum power consumption: 1 kVA
Compressed air	Pressure Primary side (supply): 0.5 MPa to 1.0 MPa (dry air) Secondary side (inside system): 0.5 MPa ±0.1 MPa Air consumption 150 L/min. (ANR, Calculated when testing 6 boards per minute.)
Dimensions	655 ±20 (W) × 705 ±15 (D) × 1830 ±20 (H) mm (excluding protruding parts)
Weight	310 ±20 kg (when equipped with all options)
Paint color	PANTONE CoolGray 1C
Accessories	User Manual (with warranty certificate) × 1, test lead × 1, application disc × 1, positioning screws × 4, maintenance key (for opening and closing the maintenance door) × 1

Options

1. Basic options

-1. Scanner boards

				RELAY POWER SUPPLY E4241	Factory option
	SCANNER BOARD	**E4201**	Semiconductor switches, 128 channels per board Cannot be combined with other scanner board models.	-	Yes
	SCANNER BOARD	**E4202**	Semiconductor switches, no guarding Cannot be combined with other scanner board models.	-	Yes
	RELAY POWER SUPPLY	**E4241**	Required if adding two or more E4203 boards.	<-	Yes
	SCANNER BOARD	**E4203**	Reed relay, 128 channels per board Cannot be combined with other scanner board models.	Required*	Yes

*If at least two E4203 units installed.

-2. Connection

				PLC UNIT E4285	Factory option
P.3	ONE-TOUCH CONNECTOR	**E4268**	1024CH	Required	Yes
P.3	ONE-TOUCH CONNECTOR	**E4269**	2048CH	Required	Yes
	64 SCANNER CABLE	**1152-04**	Scanner cable (64 pins), Length: 800 mm, ribbon cable	-	No

-3. Test fixtures

				Factory option
P.9	PIN-BOARD	**1160**	Compatible with CP probes	No
	TEST FIXTURE	**CP1167**	Compatible with 75 mil probes. Compatible with Ingun probes.	No

2. Productivity

				PLC UNIT E4285	LIGHT CURTAIN E4280	REAR SAFETY DOOR E4282	STAMP DRIVE UNIT E4260	Factory option
P.3	ONE-TOUCH PRESS FUNCTION	**E4283**	Start test simply by exerting light pressure on a wand-style switch.	Required	Required	Required	-	Yes
P.4	PLC UNIT	**E4285**		<-	-	-	-	Yes
P.4	STAMP DRIVE UNIT	**E4260**	4-chamber manifold + stamp drive solenoid valve × 1; FA1220 can accommodate up to 4 units.	-	-	-	<-	Yes
P.4	ADDITIONAL STAMP DRIVE UNIT	**E4261**	Stamp drive solenoid valve × 1; each E4260 can accommodate up to 3 units.	-	-	-	Required	Yes
P.4	AUTO RETEST FUNCTION	**E4284**	Test fixture is upped and pressed down again to improve contact.	Required	Required	Required	-	Yes
P.4	1220 DATA COMPOSITION SOFTWARE	**1137-05**	For editing data on a computer	-	-	-	-	No

3. Quality

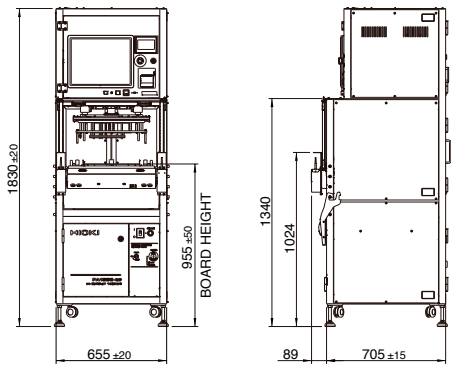
				SCANNER BOARD E4203	Factory option
P.5	I2C TEST UNIT	**1960-10**	Protocol emulator: REX-USB61 (Ratoc Systems). Requires 24 V power supply and MMCT special-order cable. Some components manufactured on a special-order basis; contact Hioki in advance.	-	Yes
P.5	ONBOARD PROGRAMMING FUNCTION	**E4231**	Compatible with EEPROM. Uses Hioki-specified ROM writer AF430 (DTS Insight). Some components manufactured on a special-order basis; contact Hioki in advance.	-	Yes
P.5	INSULATION MEASUREMENT FUNCTION	**E4210**	Coming January 2021. Requires Scanner Board E4203.	Required	Yes
P.6	IONIZER UNIT	**E4287**	Eliminates static electricity from board surface.	-	Yes
P.6	LARGE TEST FIXTURE ATTACHMENT	**E4262**	Max. 416 (W) × 340 (D) mm	-	Yes
P.6	CALIBRATION UNIT FOR MEASUREMENT SECTION	**1330**	For calibrating the measurement unit	-	No
P.7	PRINTER UNIT	**E4243**	For printing test results	-	Yes
	RECORDING PAPER	**1197**	For E4243, Set of 10 rolls (length: 30 m)	-	No

4. Safety

				PLC UNIT E4285	Factory option
P.8	RESIDUAL PRESSURE EXHAUST UNIT	**E4270**	Exhausts air while stopped to prevent lock.	-	Yes
P.8	LIGHT CURTAIN	**E4280**	Detects any foreign objects entering the test area and halts movement of the upper fixture.	-	Yes
P.8	BOARD CONFIRMATION UNIT	**E4265**	Detects float, reverse insertion, improper board type, and board absence with support for up to 3 detection sensors.	Required	Yes
P.8	REAR SAFETY DOOR	**E4282**		-	Yes
P.8	FIXTURE VERIFICATION FUNCTION	**E4263**	For upper test fixture	Required	Yes
P.8	FIXTURE VERIFICATION FUNCTION	**E4264**	For lower test fixture	Required	Yes
P.8	TEST FIXTURE ID DETERMINATION UNIT	**E4266**	Checks board and test fixture against test program. Requires separately purchased reader.	Required	Yes
P.8	BACKUP POWER SUPPLY	**E4242**	For use with FA1220 control computer and LCD (UPS)	-	Yes
P.8	RECOVERY DISC*	**FA1395**	For restoring the operating system, settings, and other files to their state at the time of shipment	-	No

*The FA1220-02 does not have a CD or DVD drive. You will need to provide an external CD or DVD drive in order to use the included application disc.

Dimensions



The “O” in Hioki isn’t round, but rather elliptical. The shape, which evokes the image of the Earth embracing an egg, symbolizes the company as an entity that fosters the development of people so that they can contribute to the development of society by creating new things. Armed with passion for developing technologies that are the first of their kind in the world, enthusiasm for providing solutions to customers worldwide, and a commitment to create new measurement value, Hioki will continue to contribute to customers and society going forward.

DISTRIBUTED BY

HIOKI

HIOKI E. E. CORPORATION

HEADQUARTERS
81 Koizumi,
Ueda, Nagano 386-1192 Japan
https://www.hioki.com/

Scan for all regional contact information

All information correct as of Dec. 10, 2020. All specifications are subject to change without notice.

FA1220-02E1-0ZB Printed in Japan