HIOKI IN-CIRCUIT TESTER FA1220-22 High SpeedAndHigh PerformanceMeasurementEngine Owner's Manual

Contents

HIOKI IN-CIRCUIT TESTER FA1220-22 High SpeedAndHigh PerformanceMeasurementEngine

Product Information

Specifications

- **Product Name:** IN-CIRCUIT TESTER FA1220-22
- **Origin:** Japan
- **Manufactured in:** India
- **Measurement Engine** Technology: Highspeed & High performance
- **Component Testing Capability:** Extensive

- **Test Pins:** 512 scanner pins standard; expandable to 1,024 pins
- Resistance Measurement Capability: Ultra-low resistance

Features

- Extensive component testing capability
- Polarity check to detect electrolytic capacitors mounted backwards
- Milliohm-range resistance testing using 4-terminal measurement
- Active-state testing of semiconductors
- Measurement of drain-source voltage and current for MOS-FET and J-FET gates
- Pass/fail judgment based on off-current and on-resistance
- Judgment result stamps with up to 16 stamps
- E4271 STAMP DRIVE UNIT with 4-chamber manifold & stamp drive solenoid valve

Dimensions and Weight

- **Dimensions:** [Insert Dimensions]
- **Weight:** [Insert Weight]
- **Paint Color:** PANTONE Cool Gray 1C

Accessories
[Insert List of Accessories]

Product Usage Instructions

Component Testing
The FA1220-22 is equipped with extensive component testing capability. To perform component testing, follow these steps:

1. [Insert Step 1]
2. [Insert Step 2]
3. [Insert Step 3]

Polarity Check
The FA1220-22 can detect electrolytic capacitors that have been mounted backwards. To perform a polarity check, follow these steps:

1. [Insert Step 1]
2. [Insert Step 2]
3. [Insert Step 3]

Resistance Testing
The FA1220-22 can perform milliohm-range resistance testing using 4-terminal measurement. To perform resistance testing, follow these steps:

1. [Insert Step 1]

2. [Insert Step 2]
3. [Insert Step 3]

Active-State Testing of Semiconductors
The FA1220-22 can measure drain-source voltage and current for MOS-FET and J-FET gates. To perform active-state testing of semiconductors, follow these steps:

1. [Insert Step 1]
2. [Insert Step 2]
3. [Insert Step 3]

Judgment Result Stamps
The FA1220-22 can generate pass/fail judgments and stamp the result on the test fixtures. To use judgment result stamps, follow these steps:

1. [Insert Step 1]
2. [Insert Step 2]
3. [Insert Step 3]

E4271 STAMP DRIVE UNIT
The FA1220-22 can accommodate up to four E4271 units, each of which can accommodate up to three E4272 units. To use the E4271 STAMP DRIVE UNIT, follow these steps:

1. [Insert Step 1]
2. [Insert Step 2]
3. [Insert Step 3]

FAQ

- **Q: How many test pins does the FA1220-22 have?**
  A: The FA1220-22 comes with 512 scanner pins as standard, but it can be expanded to 1,024 pins.
- **Q: What is the maximum number of active pins for each test type?**
  A: The maximum number of active pins depends on the total number of scanner board pins installed in the product.
- **Q: What is the rated supply voltage for the FA1220-22?**
  A: The rated supply voltage is 220 to 240VAC, 50Hz.
- **Q: What is the maximum power consumption of the FA1220-22?**
  A: The maximum power consumption is 1kVA.
- **Q: What is the pressure range for the compressed air?**
  A: The primary side (supply) pressure range is 0.5MPa to 1.0MPa (dry air).
- **Q: What is the warranty period for the product?**
  A: The product comes with a 3-year warranty.
- **Q: What is the operating system of the FA1220-22?**
  A: The FA1220-22 uses Windows 10 Pro 64-bit, English.

IN-CIRCUIT TESTER FA1220-22

NEW ARRIVAL
MAKE IN INDIA
High-speed & High-performance Measurement engine Technology From Japan

For Indian Market Hioki's IN-CIRCUIT TESTER Manufacturing in India

Key Features

- Extensive component testing capability
- Component testing with less test pins
- 512 scanner pins standard; expandable to 1,024 pins
- Ultra-low resistance measurement capability

JAPANESE TECHNOLOGY

- Pricing, delivery and service, suitable for the Indian market
- For More Details Contact 98710 99074 / info@hioki.co.in

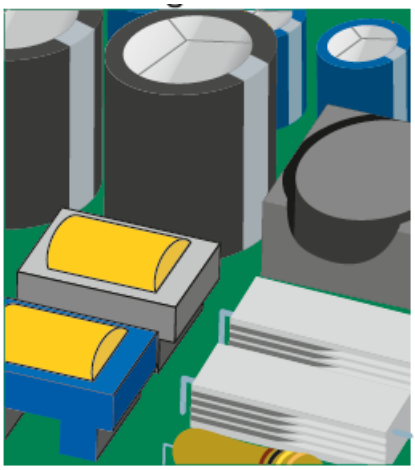
Features

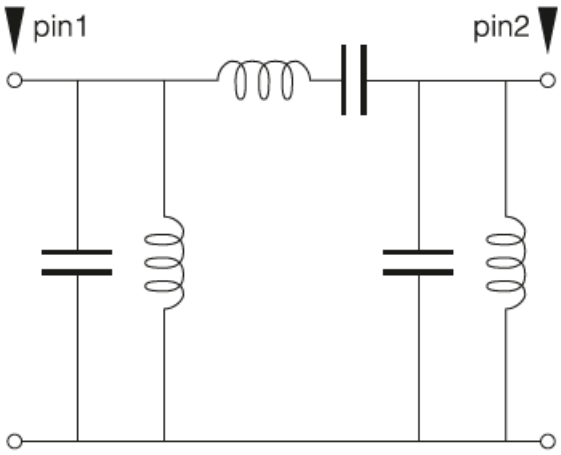
Standard model

- **Extensive component testing capability**
  The FA1220-22 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

- **Component testing less measurement pins**
  When it's difficult to set probe contact with a component's pads, the FA1220-22 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.

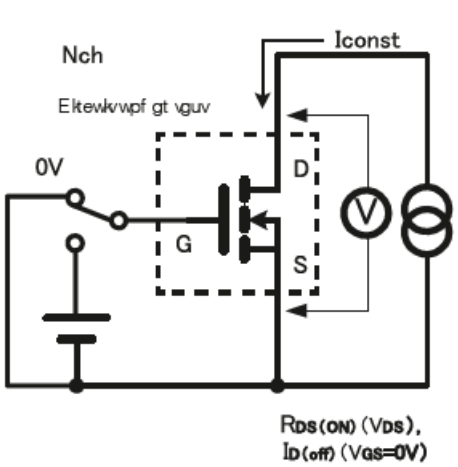


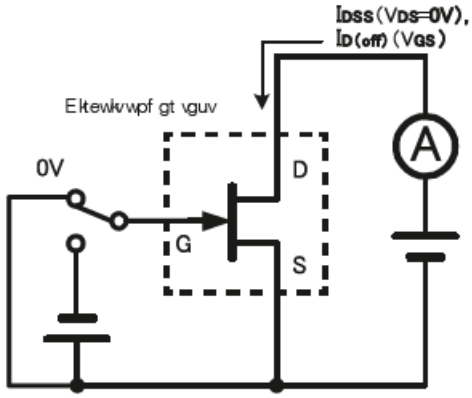


- Use with boards that lack sufficient space for probing.
- Judgments are based on impedance measurements that group together multiple components.

- **Active-state testing of semiconductors**

  The FA1220-22 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)

- **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
File	Header

- **Example electronic data file output**

- **Automatic loading of board-specific test programs**

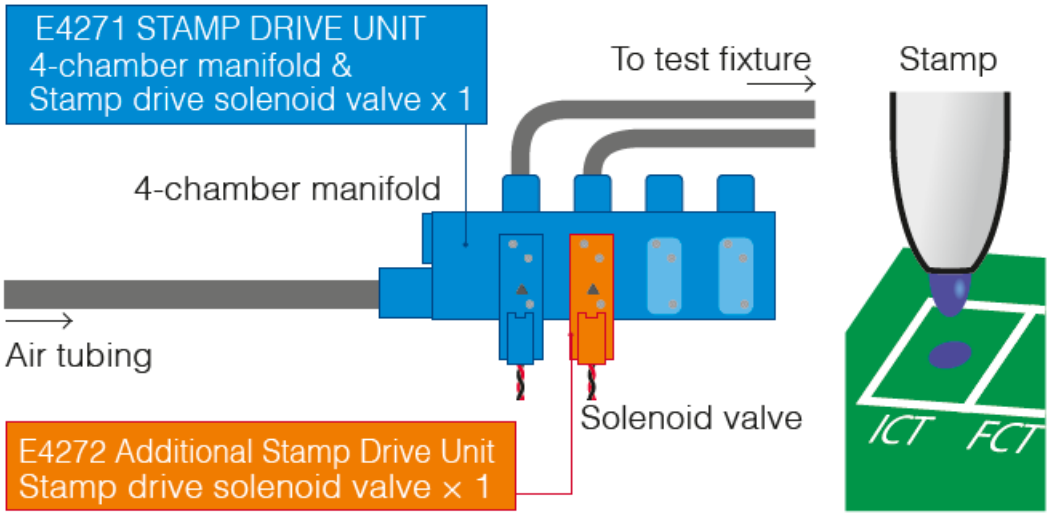
  The FA1220-22 can load test program automatically by scanning 20 codes on boards*. The proper program can be automatically loaded from a multi-model program library containing various production variants and used to configure the system automatically.

  *Requires separate 2D code reader.

- **STAMP DRIVE UNIT E4271, ADDITIONAL STAMP DRIVE UNIT E4272**

  Judgment result stamps

  The system can operate up to 16 stamps, which are installed on the test fixtures. Up to four E4271 units can be added to the FA1220-22. Each E4271 unit can accommodate up to three E4272 units.



Specifications

Testable board size

External dimensions	Details vary with test fixture specifications. Standard model: Max. 390 (W) × 300 (D) mm With E4273: 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 512 pins (scanner boards optional) Max. 1024 pins (expandable in blocks of 128 pins)*
Group data	256 groups
Round-robin S/O data*	1024 pins*
Macro data	1024 pins/ 1024 steps (regardless of pin count)*
Component data	10000 steps
Charge data	40 groups
Pin contact data	1024 pins*
IC data	500 steps (max. 1024 pins/ step)*

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 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 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

Measurement unit

Test signals	DC constant voltage : -200 mV to 10 V, 4 ranges DC constant current : 200 nA to 20 mA, 11 ranges 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
Measurement unit	DC voltmeter : 800 µV f.s. to 25 V f.s., 8 ranges DC ammeter : 100 nA f .s. to 25 mA f. s., 8 ranges AC ammeter : 10 µArms to 10 mArms, 4 ranges
Scanner unit	E4201 Switch type : Analog Number of channels : 128 per board Input protection : ±15 V
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

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	E4271	1				2			
	E4272	0	1	2	3	3	4	5	6

Number of drivable stamps		9	10	11	12	13	14	15	16
Required number of options	E4271	3				4			
	E4272	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) I/O board standard section input/output 28 points each Expansion section input/output 32 points each

Main unit control

- **Hardware** Personal Computer
- **Operating** system Windows 10 Pro 64-bit, English
- **Storage** device 256 GB SSD
- **Operation** Keyboard and mouse
- **Display** 17-inch display
- **Printer** Panel Mount type, Paper width 58mm
- **External I/O**
  - Ethernet (LAN) 100Base-TX × 1 (Contact Hioki for more information about external connectivity.)
  - USB 2.0 X4, USB 3.2 Gen 1 Type – Ax4 (Keyboard and mouse occupy 2 ports)

Architecture

Theoretical thrust when applying test fixtures	3.96 kN (at 0.5 Mpa)

Safety

Machine safety features	Emergency stop switch
Electrical safety parts	Circuit breaker 5A,

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
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
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
Inhibit press up on Fail	Function to prohibit automatic press-up when test is FAIL judgement
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, corros ive gases, or other adverse environmental characteristics.
Vibration	Avoid use in locations with excessive vibration.
Product warranty	3 years
Power supply	Rated supply voltage: 220 to 240 V AC, 50Hz Maximum power consumption: 1 kVA
Compressed air	• Pressure Primary side (supply): 0.5 MPa to 1.0 MPa (dry air) Secondary side (insi de system): 0.5 MPa ±0.1 MPa • Air consumption 130 L/min. (ANR, Calculated when testing 6 boards per minute.)
Dimensions	652 ±20 (W) × 789 ±15 (D) × 1671 ±20 (H) mm (excluding protruding parts)
Weight	235 ±20 kg
Paint color	PANTONE Cool Gray 1C
Accessories	User Manual (with warranty certificate) × 1, test lead × 1, application CD × 1, position ing screws × 4,

Options

1. Basic options

			Factory option
SCANNER BOARD	**E4201**	Semiconductor switches, 128 channels per board Cannot be combined with other scanner board models.	**Yes**
64 SCANNER CABLE	**1152-04**	Scanner cable (64 pins), Length: 800 mm, ribbon cable	**Yes**

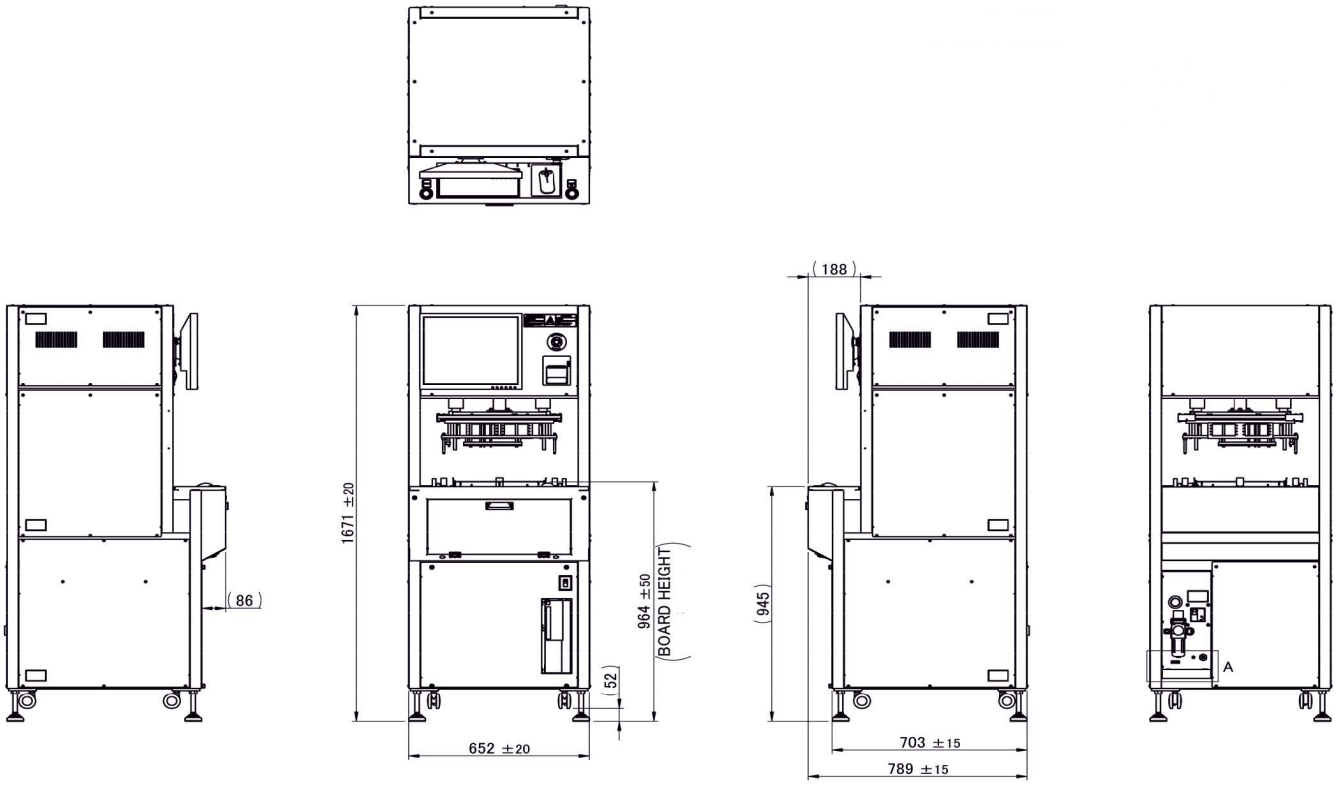
2. Productivity

STAMP DRIVE UNIT	**E4271**	4-chamber manifold + stamp drive solenoid valve x 1; FA1220-22 can accommodate up to 4 units.	**Yes**
ADDITIONAL STAMP DRIVE UNIT	**E4272**	Stamp drive solenoid valve x 1; each E4271 can accommodate up to 3 units.	**Yes**

3. Quality

LARGE TEST FIXTURE ATTACHMENT	**E4273**	Max. 416 (W) × 340 (D) mm	**Yes**
RECORDING PAPER	**1197**	Set of 10 rolls (length: 30 m)	No

Dimensions



INDIA HEADQUARTERS

- Unit No. 123 & 124, 1st Floor, Suncity
- Business Tower, Golf Course Road, Sector-54,
- Gurgaon – 122003, Haryana, India

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Documents / Resources

	**HIOKI IN-CIRCUIT TESTER FA1220-22 High SpeedAndHigh PerformanceMeasurementEngine** [pdf] Owner's Manual FA1220-22, IN-CIRCUIT TESTER FA1220-22 High Speed And High Performance Measurement Engine, IN-CIRCUIT TESTER FA1220-22, High Speed And High Performance Measurement Engine, High Performance Measurement Engine, Measurement Engine, Engine

References

- **User Manual**