

In-Circuit Tester

AT-01

In-Circuit Tester



[http:// www.dytest.co.kr](http://www.dytest.co.kr)

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DAI YANG MECHATRONICS CO.,LTD.

Outline of OKANO AT-01

The Okano AT-01 is a powerful In-Circuit Tester designed to detect board assembly faults. The AT-01 accurately detects shorts, opens, wrong components, missing components, and reversed mounted components for resistor, capacitor, diode, transistor, inductor, LED, and FET. And AT-01 is especially designed to detect open pins of ICs.

When used together with the Options (FrameScan & DeltaScan), it covers some of the test capabilities (Finding opens, other faults common to digital & mixed signal VLSI and ASIC device package) of the high-end testers in the market, way ahead of its closest competitors.

Features of AT-01

- Windows Platform

AT-01 Operating Software, overwhelmed by its user-friendly and dynamic features has adopted Windows-based testing concept. It runs on Windows 2000, which is today's newest technology. Being Windows-based also enables its compatibility with other Windows-based supporting softwares, further enhancing the functions and competitiveness of AT-01 system.

- Auto-Test Mode

When pressed down, the AT-01 executes PCB assembly test and automatically performs Press Up functions thereafter. In addition, the AT-01 contributes on the work efficiency minimizing the false inferiority under test by adding the functions for detecting the error components.

- Data-Edit

Editing of data can be done by a mouse or a keyboard. Icons are available for the easy and quick access to the supporting functions. Aids such as graphical presentation of measurement and V/I source are provided in the program debugging.

- Expandable Test Nodes

The number of the AT-01's standard test node is 384 and is expendable to 2048. The nodes can be expendable to 8192 when ordered with special specification. This caters to more sophisticated requirements of SMT process.

- Special Design of Press Down Unit

The standard height measured from PDU to fixture when fully pressed down is 123.5mm. For the taller components, which exceed 100mm, special customization allows the height to be adjusted to 193.5mm.

- Excel Data Compatibility

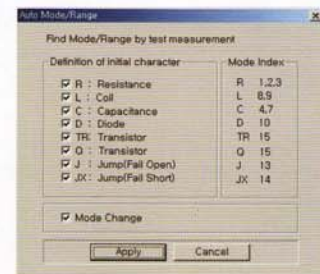
Windows multi-tasking capability has enabled copying of the AT-01 test data from / to Excel data format by using "Cut" and "Paste", for proper documentation.

- Powerful Automatic Guarding

Guarding pins are automatically assigned in the actual measurement. It effectively isolates other circuits of the accurate and consistent measurement of all the components on PCB assembly.



Auto-Test



Mode, Range Test & Auto Generation

- Mode, Range Test & Auto Generation Function

It tests the priority of the Range and Mode setting or automatically search for the Range and Mode that are appropriate for the designated component value. Consequently, the program writing can now be precisely executed with higher speed.

- Error Graphic Display

PCB Graphic display indicates the actual location of defective components. This assists the operator to find the position of the faults on the PCB during rework, thereby reducing the rework time.



Various Graphic Display function

- Password Protection

3- levels of password protection are set for Operator, Technician & Engineer to prevent unauthorized modification to the test data.

- Built-in Self-Diagnostic Program

Relay board checks and DC/AC measurement board checks are available to help isolating and identifying system failures.

- Lower Resistance and Capacitance Measurement

Kelvin Measurement (4-pin measurement) measures from 0.01 Ω resistance and lower capacitance from 1pF can be measured by applying 1 MHz AC signal.

	CV	CC	AC
200 Ω	203.3	201.2	
2 k Ω	2.02	2.01	
20 k Ω	20.2	20.1	--
200	202	199	--
1 nF	--	--	1.09
10 nF	--	--	10.3
100 nF	--	--	103
2.5V	2.53		

10 nF check OK.
100 nF check OK.

Self Test

- Stray Capacitance Cancellation

Capacitance between system and fixture is automatically eliminated from the measurement and offset to ensure more accurate measurement.

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- Photo Coupler Test

The newly designed DYM-5700 board assists the operation test for photo coupler with the maximum current of 100mA.

- Stamping tool

The AT-01 provides the stamping tool to print "OK" or "NG" on the PCB assembly according to the testing results.

- Fixture and data program compatibility

The AT-01 provides the smooth migration for fixture and data program from all the In-Circuit Testers of Okano family, Takaya's 300N, TCO-series and etc.

- Networking

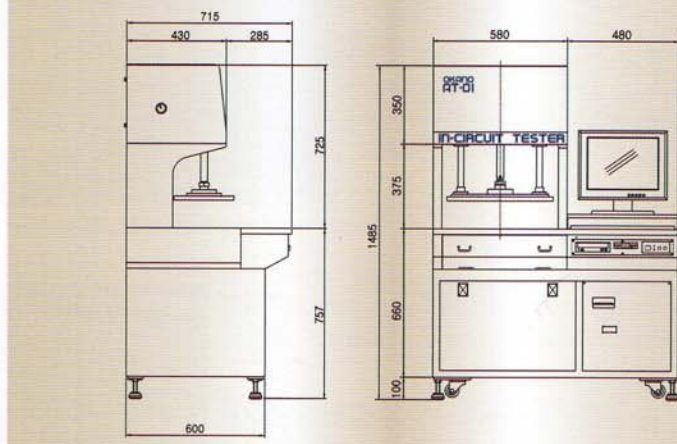
AT-01 Windows 2000 operating system allows the user to enjoy the built-in networking and connectivity functions. Networking allows the user to store test programs centrally and to control program revisions. LAN networking allows host PC to monitor the machines in production.

- Management Data Collection & Reports

Collection of individual "Fail" PCB step data and identification of the PCB by either Date/Time or by a serial number using barcode reader. This is useful for traceability.

This data can also be used for off-line rework station PC through networking to establish paperless rework system. Information on the quantity of the tested boards and test yield (test time/board), can be collected and printed out for the management reference purposes.

In-Circuit Tester



Specification

Measurement point	384 Pins(STD), 8192 Pins(Max.)		
Relay Board	128 Pins/BOARD		
Short/Open Speed	1ms / Pin		
Threshold Level	5Ω ~ 4MΩ		
Test Time	1ms ~ 12ms / Step		
Test Step	Unlimited		
Test Range	Resistance	0.01Ω to 40MΩ	0.001Ω
	Capacitance	1pF to 40mF	0.01pF
	Inductance	1μH to 400H	0.001μH
	Diode	0.1V~40V	0.001V
	DC Voltage	-40V~40V	0.001V
	DC Current	5nA to 200mA	0.1nA
	Zener Diode	VF=0.1V~40V	0.001V
	Transistor	Bias=5V ON/OFF	
Photo Coupler	Bias=5V ON/OFF		
Guard Pin	Up to 10 Pins		
Jumper Wire	5Ω~4MΩ		
Connector	5Ω~4MΩ		
Pass/Fail Tolerance	± 1%~+999%,-100% or Absolute Value		
Measurement Signal	DC Constant Voltage : 300mV (0~250mA)		
	DC Constant Current Low Voltage : 1μA to 100mA 6ranges (0~400mV)		
	DC Constant Current High Voltage : 1μA to 100mA 6ranges (0~40V)		
Measurement Range	AC Frequency : 1.6KHz/16KHz/16KHz (0.3Vp-p)		
	DC Voltage Measurement#1 : 0V to 10V f.s (6ranges)		
	DC Voltage Measurement#2 : -5V to 5V f.s		
	DC Voltage Measurement#3 : -40V to 40V f.s (12ranges)		
	DC Current Measurement: 5nA to 200mA (7ranges)		



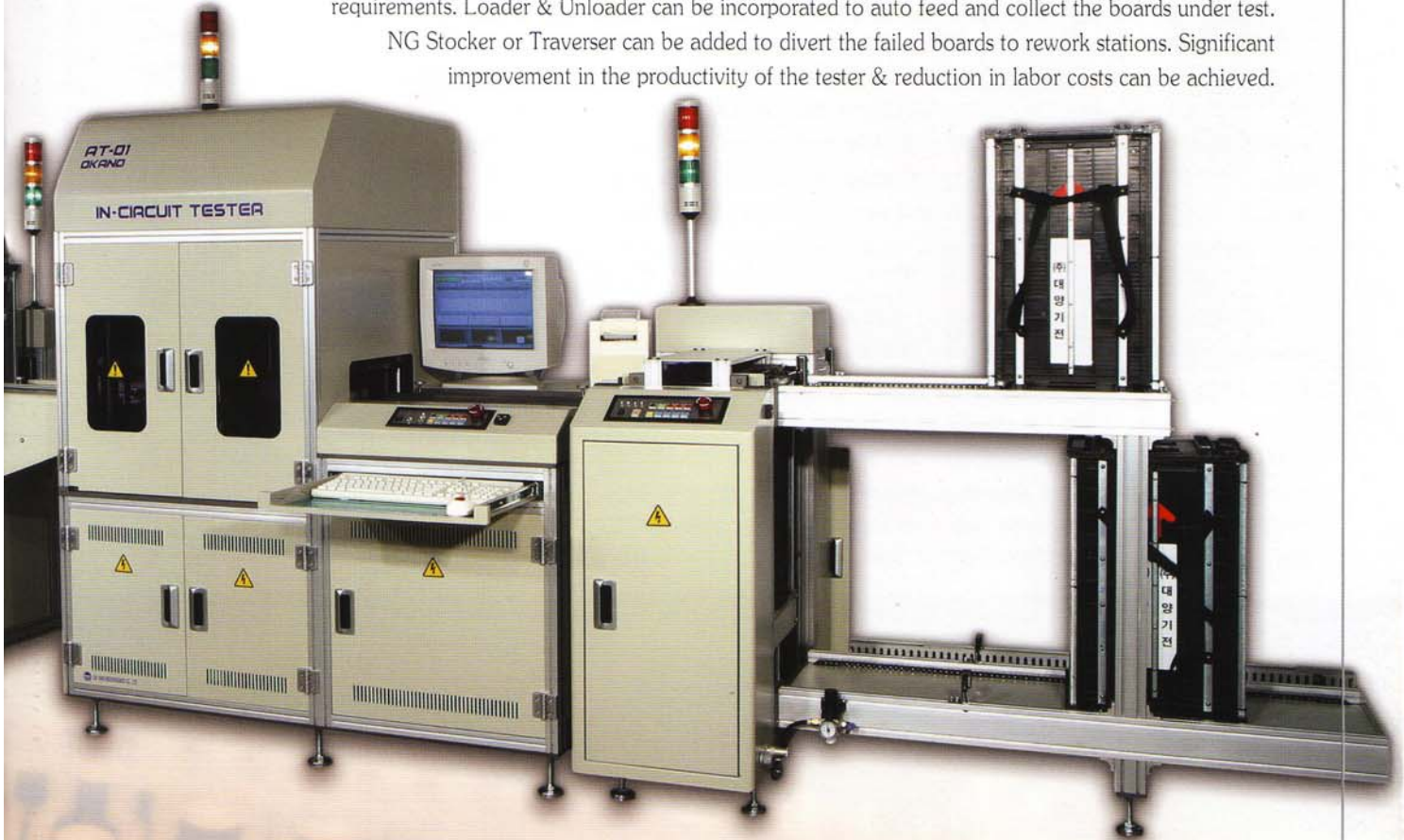
Specification

Power Source	AC90V~260V 500VA 50Hz or 60Hz
Air	4~6kg/cm ³ Dry Air
Environment	10°C~35°C, 20%~80%
Dimensions	1060mm:W×715mm:D×1485mm:H
Computer	Pentium III 800MHz 256Cache
RAM	256GB
HDD	40GB
Monitor	15inch LCD
O.S	Windows 2000 professional
Pin Board Size	500mm:W×315mm:D×150mm:H
Gross Weight	330kg

In-Line System

In-line AT-01, a fully automated In-Circuit Tester, can be customized to suit various production requirements. Loader & Unloader can be incorporated to auto feed and collect the boards under test.

NG Sticker or Traverser can be added to divert the failed boards to rework stations. Significant improvement in the productivity of the tester & reduction in labor costs can be achieved.



In-Line Dimension

Specification

Transfer Specification		PCB Thickness	0.8~2.0mm
Direction	Left ↔ Right	Valid height of loaded components	component side-100mm, substrate side-10mm
Reference	Front side reference	Controller	PLC Control
Medium	FLAT BELT TYPE	Power Consumption	2KVA
Height	900 ± 30mm	PIN-BOARD Size	310 × 460mm
Speed	15~18m/min	Dimensions	260 × 400mm
PCB loader width	2mm	Air	4~6kg/cmf Dry Air
PCB Size	80 × 80 ~ 250 × 300mm	Environment	10°C~35°C, 20%~80%

Option

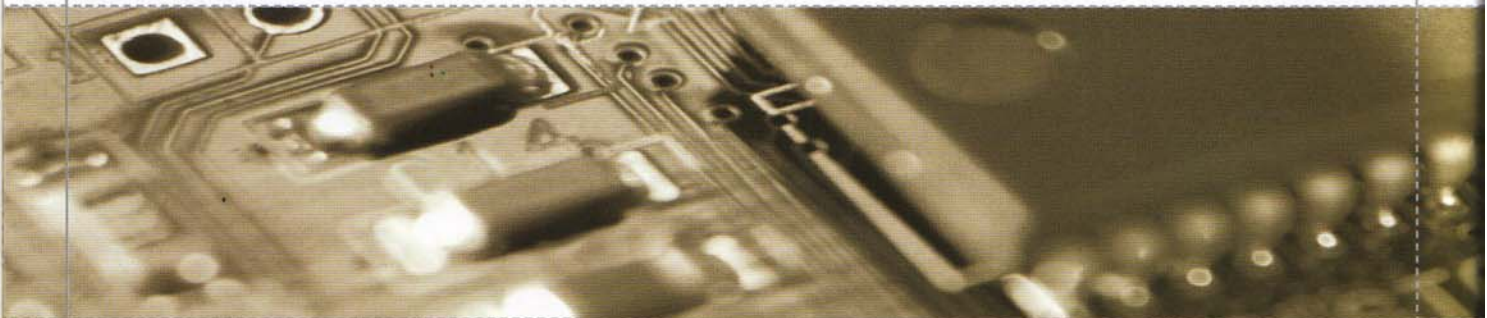
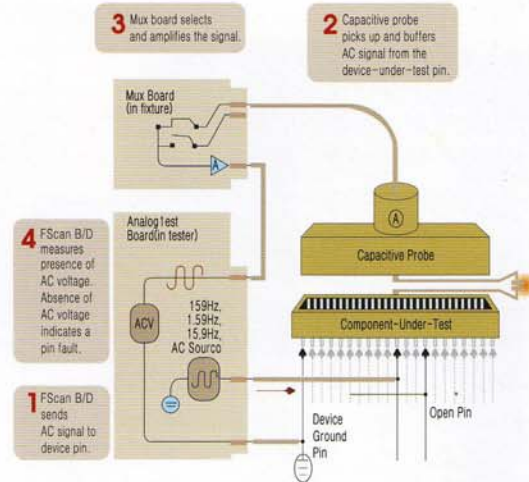
Options

- FrameScan test & DeltaScan test

FrameScan and DeltaScan are developed by U.S company, Teradyne Inc. These are used to filter out manufacturing defects such as cold solders and resistive solder joints of ICs. The trend of an increasing usage of SMT ICs has resulted in the increased number of packaging density from DIP to PGA, BGA, CSP and etc. AT-01, if incorporated with these Scans, provides a high speed, reliable and low-cost testing.

- FrameScan Test

FrameScan test detects the opens on SMT connectors, sockets, and some RAM arrays. FrameScan uses capacitive coupling to test the opens of the pins. Unlike the DeltaScan technique, which relies on the internal device circuitry. FrameScan relies on the presence of the metallic lead frame of the device to test the pins. Connectors and sockets, in addition to devices with lead frames, can be tested with FrameScan.

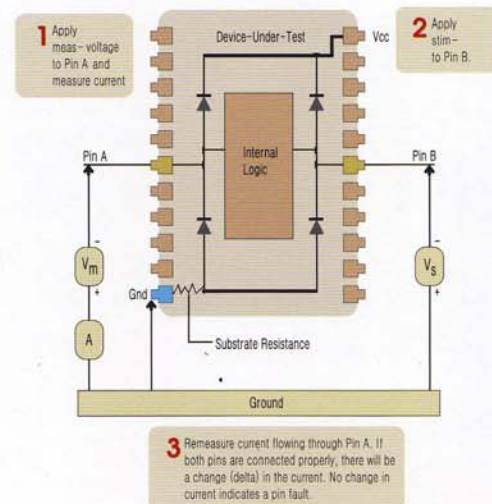


- DeltaScan Test

DeltaScan technique involves measuring the variation in the current of the electrostatic discharge (ESD) protection diodes that are intrinsic to most of ICs by applying low DC voltages to two pins at a time (As shown in Diagram). In order to check the connection problems, other common faults, besides pin opens can also be reviewed, including missing devices, wrongly oriented devices, bond wire opens and opens on single ground pins.

Superior Test Coverage

Measurement coverage	FrameScan	DeltaScan
Digital IC	○	○
Analog & Hybrid IC	○	
BGA		○
Connector, Socket	○	
Flip Chip & COB		○
Cold Soldering		○
BUS Device	○	
Reverse Insertion of Condenser	○	

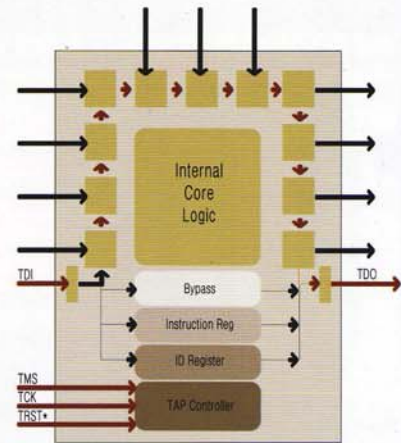


- BoundaryScan test and Flash Programming

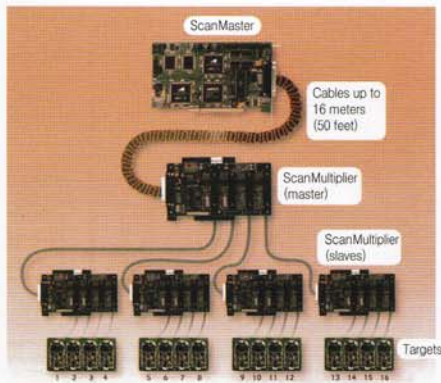
BoundaryScan test now comes with the standard AT-01 Tester. Boundary-scan test, as defined by the IEEE Std. 1149.1 standard, is an integrated method for testing interconnects on printed circuit boards that are implemented at the IC level. The inability to test highly complex and dense printed circuit boards using traditional In-Circuit Tester and bed of nail fixture was already evident in the mid eighties.

Due to physical space constraints and loss of physical access to fine pitch components and BGA devices, fixturing cost increased dramatically while fixture reliability decreased at the same time.

Applications are found in high volume, high-end consumer products, telecommunication products, defense systems, computers, peripherals, and avionics.



IEEE 1149.1 Device Architecture



- Advantage of BoundaryScan test

- Stuck-at fault, Bridge fault 100% Detection
- Fast test preparation time
- Cost effective Testing
- Easy-to-find Fault Location
- Flash memory programming

Flash Memory Download

- Flash Memory Download

Flash Memory and In System Programming can be download at the board level.

