Specifications

Speed & accuracy

	APT-1400F / APT-1400F-A	APT-1400F-SL / APT-1400F-SL-A
● Test time (at 2.5mm pitch movement)	Combination test : Max. 0.02 - 0.03sec. / step Single test : Max. 0.05 - 0.06sec. / step	Combination test : Max. 0.03 - 0.04sec. / step Single test : Max. 0.07 - 0.08sec. / step
● Positioning repeatability of flying probe (XY)	±25 to ±40μm in the high precision mode, approx.	±30 to ±40μm in the high precision mode, approx.
● Minimum pad size for flying probes	60 to 80μm in the high precision mode, approx.	80 to 100μm in the high precision mode, approx.

General (all models)

● Flying probes and sensors	Standard type	: 4 tilted contact probes
	Standard with single vertical Z type	: 4 tilted contact probes, 2 vertical contact probes or 2 IC-open test probes (changeable)
	Standard with dual vertical Z type	: 4 tilted contact probes, 2 vertical contact probes, 2 IC-open test probes
	LED color test sensors	: 2 sensors (option)
● Fixed probes / terminals for bottom side	Contact probes	: 3 vertical contact probes with magnet base
	Signal terminals (option)	: Max. 16 channels (32 terminals) with function scanner board 3 channels (6 terminals) with power relay board Max. 64 terminals with MDA scanner board
	IC-open check plate-probes (option)	: 8 check plate probes with magnet base
● Specifications of contact probes	Type : High precision spring probe, Current rating : 2A, Tip form : Needle, small 4-crown, etc.	
● Motors system for flying probes (XYZ axes)	High speed AC servo motors & control system	
● Positioning resolution of flying probes	X and Y axes : 1.25μm Z axis : 5μm	
● Minimum pad pitch for flying probes	150 to 190μm in use of needle probes (high precision mode)	

Test (all models)

● Signal sources for board test	DC Voltage / Current generator -1	: Four-quadrant source & measure system, max. ±20V/±2A[*1]
	DC Voltage / Current generator -2	: Four-quadrant source & measure system, max. ±20V/±2A[*1]
	DC Voltage / Current generator -3	: Four-quadrant source & measure system, max. ±80V/±1A (option)
	AC Constant Voltage generator	: Max. 20Vpk / 100mApk, f=1Hz to 0.5MHz (sine, square or triangle wave)
● Measuring range	DC Voltage, Current	: ±125V, ±2A[*1] (max.±40V) or ±1A (max. ±80V, option)
	AC Voltage	: 150mV to 75Vrms, f = 10Hz to 0.5MHz
	Frequency	: 1Hz to 20MHz / 2V to 20Vp-p
	Resistors	: 5mΩ to 50MΩ
	Capacitors	: 0.5pF to 100F
	Inductors	: 0.5μH to 500H
	Impedance / phase angle	: 2.5Ω to 3.3MΩ / ±90°
	Transformers	: Inductance, detection of winding, transmission ratio
	Forward voltage of PN junction	: 0.1V to 40V
	Zener voltage	: 0.1V to 40V (max.80V, option)
	Isolation test	: Threshold is programmable from 5Ω to 50MΩ
	Continuity test	: Threshold is programmable from 1Ω to 500KΩ
	Diodes / Transistors / FETs	: Forward voltage of PN junction, ON test, Gain, Static characteristics
	Relays / Opti couplers / SW devices	: ON test
	Open fault detection of IC leads	: Forward voltage measure of PN junction, or IC-open test probes
	Lighting color of LED (option)	: Hue, saturation and luminance measured by LED color test sensor
● Judgment tolerance set	-999.9% to +999.9% or absolute value	
● Test steps	Max. 350,000 steps	

Vision test system TOS-7F (all models)

● Video camera	1/3" CCD mega-pixel color digital type, View field :10 × 8mm approx.
● Light source	Ring-shaped white LED with 256 levels of brightness adjustable
● Application	Coordinates alignment, simple vision test, reading of barcode & 2D code, color real-map, etc.
● Vision test item	Non-mounted components, components shifting, missing components, polarity, color inspection of parts, etc.
● Image registration	Max. 2,000 scenes

Usage environment (all models)

● Embedded PC & OS	Windows® PC (with DVD drive, HDD or SSD, keyboard, mouse) OS : Windows 10 (64bit version)
● Display & Printer	LCD : 1920 × 1080 resolution Printer : Small thermal type (USB connection)
● Power & Air supply	Power : AC200 to 240V(single phase), 50/60Hz, max. 3.0KVA Air : 0.6 to 0.8Mpa (dry clean air)
● Operating environment	Temperature : 16 to 30℃ (60 to 86℉) Humidity : 30 to 75% (no condensation) Altitude : Below 1000m

Options

●Laser displacement measurement system ●LED color test system ●DC ±80V/±1A programmable source & measurement unit ●Function scanner board ●Power relay board ●MDA scanner board
●IC-Open check plate-probe unit for bottom side ●Marking unit ●Vacuum Unit ●CMD Line execution function ●NSW test function, etc.

*1 The maximum current can be applied by using function scanner board (option).
* The technology and the options under development are included in specifications as of April, 2022.
* Specifications are subject to change without any obligation on the part of the manufacturer.

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April, 2022

TAKAYA

ULTRAFAST SPEED & HIGH PERFORMANCE

FLYING PROBE TESTER

APT-1400F Series

The APT-1400F series is a next-generation flying probe test system that has unprecedented performance in terms of test speed, positioning accuracy and test coverage. Owing to a major improvement in test speed and positioning accuracy, the APT-1400F series is capable of having the probes contact extremely small test pads deployed on the latest SMT boards with a high degree of accuracy to test it in a small amount of time. Also, the APT-1400F series is provided with the breakthrough 4-heads & 6-flying probes, the sophisticated measuring system and many innovative test capabilities that achieve a real improvement in test coverage and contribute to the detection of previously impossible assembly faults.

The APT-1400F series includes a variety of models available for selection to flexibly meet different test needs, such as large-sized PCB testing and automated testing. It contributes to improving quality in the assembly process while reducing cost on testing regardless of PCB type, volume, and application.

FLYING PROBE TESTER
APT-1400F Series

ULTRAFAST TEST SPEED !!

The high power & fast-moving rotary motor system, which has superior performance in practical moving distance, and the new high-speed communication control contribute to speed up test 30 ~ 50% faster than the conventional models.

ATTENUATING CONTACT PRESSURE OF PROBES

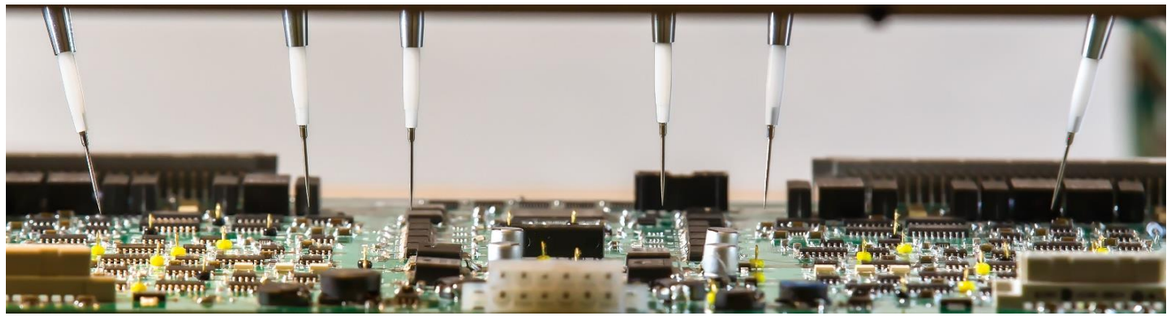
The APT-1400F series has outstanding ability in controlling the probing speed just before it contacts. This enables to minimize the probing marks on small and sensitive test lands without compromising on test speed.

SAFE AND HIGHLY ACCURATE MEASUREMENT SYSTEM

The APT-1400F series incorporates 16-bit DC 4-quadrant sources & measurement system and AC programmable generator which is also finding uses as a function generator in the measuring unit so that the tester is capable of applying the best-suited measuring signals according to the specification of each electronic component and the circuit conditions and realizes the circuit test and dynamic characteristics test. Also, the dedicated measuring mode for very small capacitance and the high measuring accuracy circuit give aid to detect a wide range of assembly faults.

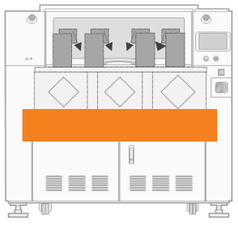
BREAKTHROUGH 4-HEADS & 6-FLYING PROBES SYSTEM

In addition to the four standard moving probes which are installed diagonally to the UUT, the APT-1400F series is designed to use other two Z-axis units (option) where either probe or IC-open test probe can move up and down vertically. The vertical Z-axis units enable to get access to the test points where are hard for the standard flying probes. Besides, it's possible to directly contact the through-holes and the head of connector pins by using different types of probes, resulting in increased test coverage.



HIGH ACCURACY ENSURED BY RIGID XY STAGE

The tester's XY stage, crucial to stable and accurate probe contact, is made of highly polished native granite, as well as the APT-9xxx series which is thought of as the global standard model of the flying probe testers. Also, the positioning accuracy is finely tuned tester by tester. Therefore, the APT-1400F series ensures superfast probe movement and increased positioning accuracy by 25% compared to the conventional models.



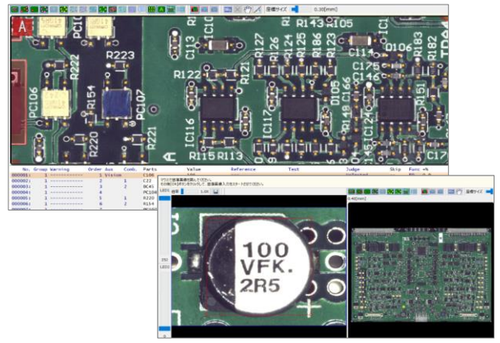
TEST ABILITY IN A CONSTANT STATE OF EVOLUTION

The APT-1400F series serves its customers with versatile option boards and software that achieves their particular needs, such as the LED color test system that measures hue, saturation and luminance of LED devices on the board under test, the component height test based on laser ranging, the Boundary testing, and the Functional testing. Also, the tester will have even more advantages to enhance its test coverage and speed up test although they are currently under development.

Support MES communication

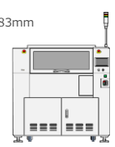
COLORED VISION SYSTEM AND REAL MAP

The APT-1400F series is equipped with new vision test system TOS-7F corresponding to color images as standard. Owing to the megapixel color digital camera and the ring illuminations with high-intensity white LED, the TOS-7F can import sharp color image to detect missing, wrong orientation and positioning error on the spot. Besides, the TOS-7F can not only read the barcodes (including 2D codes) but also offer color identification test and Library function which are supported by the optional software. Also, the APT-1400F series is equipped with the colored Real map function which is of remarkable help to check and modify the contact points during debugging the programs.



LARGER TEST AREA & AUTO TRANSFER

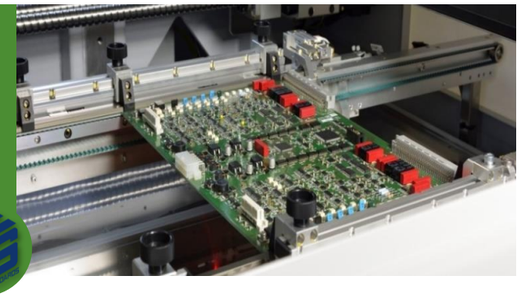
The "-SL" series, which provides 48% larger test area, and the "-A" series, which enables to transfer UUT automatically, are also available for selection to fit user needs.

Standard size		Large size (-SL series)	
OFFLINE model	INLINE model (-A series)	OFFLINE model	INLINE model (-A series)
Test area L540 x D483mm	Test area L540 x D483mm	Test area L635 x D610mm	Test area L635 x D610mm
			
W1400 x D1500 x H1400mm 1350kg	W1400 x D1500 x H1400mm 1400kg	W1520 x D1620 x H1400mm 1450kg	W1520 x D1620 x H1400mm 1500kg
APT-1400F	**APT-1400F-A**	**APT-1400F-SL**	**APT-1400F-SL-A**

AUTOMATED CONVEYOR SYSTEM

An automated conveyor system model can be built-to-order to establish a fully automated operation in your production line or rack-to-rack system. To meet various user's needs, it's possible to provide a buffer station with conveyor installed to cut down transport time as much as possible and an auto-conveyor width adjustment unit, as well as a shutter unit that operates when the conveyor carries a PCB in and out.

Support SEMI SMT-ELS (option)



Board specifications

	APT-1400F	APT-1400F-A	APT-1400F-SL	APT-1400F-SL-A
● Board size (min.)	L50 x D50mm			
● Board size (max.)	L540 x D483mm	L540 x D483mm / L890 x D483mm*2	L635 x D610mm	L635 x D610mm / L985 x D610mm*2
● Board thickness	0.6 to 5.0mm		0.6 to 10.0mm	
● Component height (max.)	Top side 60mm			
	Bottom side 120mm	Bottom side 60mm	Bottom side 120mm	Bottom side 60mm
● Component-free area on front & rear edges (for board clamp)	Top side 3mm or more			
	Bottom side 3mm or more			Bottom side 7mm or more
● Board weight (max.)	5kg	3kg	8kg or 15kg*3	10kg or 15kg*3

Automated conveyor specifications (Inline model only)

● Transfer speed and belt (speed selectable)	200 to 667mm/sec. (6 ranges) Timing belt (anti-static type)		200 to 333mm/sec. (2 ranges) Timing belt (anti-static type)
● Transfer direction / height	Direction selectable, FL 900mm (-15/+65mm)		
● Conveyor width adjustment	Front side - fixed, Rear side - auto-adjustable with inclination correction mechanism		
● Interface for loader / unloader	SMEMA standard or SEMI SMT-ELS (option)		
● Operation panel / Tower light	4.3" color TFT touch LCD / Color lamp (red / green / yellow) with buzzer		

*2 Divided PCB test function is required.
*3 Customized clamper with specific air pressure and transfer speed is required.