Intelligent Safety Analyzer

GW Instek GPT-15000

Electrical Safety Analyzer

New Product Announcement

This document allows GW Instek's partners to quickly grasp product's main features, FAB and ordering information.

GPT-15000 Series Electrical Safety Analyzer
New Product Announcement

GW Instek introduces the flagship model (500VA output capacity) safety analyzer-the GPT-15000 series, which is the first safety analyzer in the world to comply with IEC 61010-2-034 (Safety requirement for electrical requirement for measurement, control and laboratory use – particular requirements for measurement equipment for insulation resistance and test equipment for electric strength), which stipulates that the requirements of the software and hardware interfaces must be followed while designing high voltage and insulation resistance test and measurement instruments so as to ensure that users are provided with necessary protection and warning while using the instruments.

The GPT-15000 series safety analyzer has four models: GPT-15004 features AC/DC withstanding voltage test, insulation resistance test, AC ground bond test and continuity test; GPT-15003 conducts AC/DC withstanding voltage test, insulation resistance test, and continuity test; GPT-15002 carries out AC/DC withstanding voltage test and continuity test; GPT-15001 executes   AC withstanding voltage test and continuity test. The entire series provides an output capacity of 500VA and utilizes a high-efficient PWM amplifier to effectively exclude the influence from the fluctuating input voltage or distorted waveforms so as to guarantee a stable high-voltage output while conducting AC withstanding voltage test on the DUT to meet the safety regulations such as IEC、EN、UL、CSA、GB、JIS that demand the test requirements for various electronic/electrical products or parts.

To comply with IEC 61010-2-034 requirements, the series takes into account of safety by adopting the double insulation design for input power supply and output voltage to enhance user safety. Additionally, the retracted on-off switch design (START key) and various (optional) mechanisms for test activation (for instance, press and hold for 1 second to activate, activation by pressing double keys, etc.) are incorporated into the series to avoid accidentally touching that results in high voltage/large current output causing damage and danger to products or users. High illumination LED lights (flashing or permanently lit) and a high volume audial indicator are included in designing the series to provide warnings of the status of the on-going tests or judgement results from the safety analyzer. On top of that, the DUT will be automatically discharged to the safe voltage (approximately 30V) after each test to prevent large residual test voltage from causing harm to users.

The series utilizes 7-inch color TFT LCD and inherits the consistent simplicity key design style of the product family to allow users to experience easy operations and a clear observation of the test results. The major test functions include AC withstanding voltage test (AC 5kV/100mA), DC withstanding voltage test (DC 6kV/20mA), insulation resistance test (DC 50V~1200V/50GΩ max.), ground bond test (AC 32A /650mΩ max.), and grounding continuity test (DC 100mA fixed/70Ω max.). The series also collocates with superb output adjustment resolution, measurement resolution (AC withstanding

voltage: 1μA; DC withstanding voltage: 0.1μA; insulation resistance: 0.1MΩ; ground bond: 0.1MΩ; continuity test: 0.01Ω), controllable voltage ramp up and ramp down time settings, and upper/lower limit judgement settings, and large capacitance test capability (up to 47uF) for DUT with large capacitance such as surge absorber and large capacitance on the input terminal of EMC/EMI prevention.　For Insulation resistance, provides 10mA pre-charged current (fixed) to first rapidly fully charge the DUT's capacitive load and then to conduct test and measurement so as to avoid misjudgment from fluctuating inrush current. All the above features of the series facilitate a more flexible execution of the required tests so that users can obtain accurate test and measurement results.

The statistic function is the highlight of the series. Test items, number of tests, judgement results are recoded after testing and the test results can be shown by bar graph on the display. Users can immediately learn the status of product tests and judgement distribution during the manufacturing process without using a PC. The other strong feature is the sweep function, which can be used for the analysis on product's crash point. Users can use the sweep mode to see the curve diagram of the test results after finishing the functional tests. Users can also select any time point during the process to analyze the relation between voltage and current (when ACW or DCW is selected). The test result of the certain period of time can be swept by setting start and stop time points to analyze the relation between voltage and current under that time frame. Furthermore, the tabular continuity test function can combine 10 manual memory sets to carry out automatic tests or 9 manual memory sets with one connection device to connect next automatic test so as to increase the test items of the continuity test. Users can obtain various test values and judgement results without switching to a different display screen.

Other functions and features of the GPT-15000 series include 100 sets of manual test　as well as 100 sets of auto test memory for the storage of different test conditions and the saved test conditions can be exported to another GPT-15000 through USB flash drive to quick replication and expansion of production line equipment; barcode scanner can be conducted to the front panel USB host of GPT15000　for managing test condition of DUT and then be able to quick and correctly recall required test condition; rear output terminal for system integration; front panel remote control terminal mount/rear panel Signal I/O for users to conveniently control the analyzer's output/stop based upon the requirements. The USB storage function allows test results to be stored in the USB flash drive or internal memory to save the trouble of using a PC, and the function is conducive to the follow-up data analysis. For users with the requirements of PC control and test results recording, the series also provides RS-232C, USB and option GPIB or LAN.

GW INSTEK

Analyze Your Safety Tests

Meets IEC 61010-2-034 design requirements
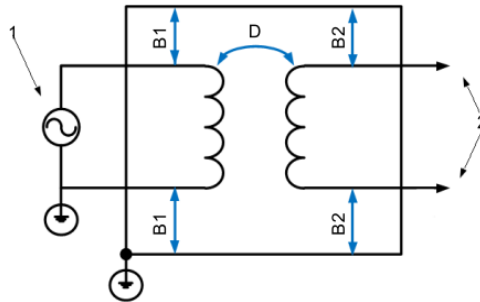
Providing the markets with safe electronic products is the responsibility of every manufacturer! Similarly, safety analyzer that tests whether electronic products meet safety regulations must attach the importance to the safety it provides! GPT-15000 is the world's first safety analyzer to comply with IEC 61010-2-034 (Safety requirement for electrical requirement for measurement, control and laboratory use – particular requirements for measurement equipment for insulation resistance and test equipment for electric strength). Apart from this, the safety considerations also include double insulation for input and output voltages, safe output/warning mechanism, post-test discharge mechanism, etc. to ensure user safety during the operation.

High Accuracy and High Resolution Testing Performance
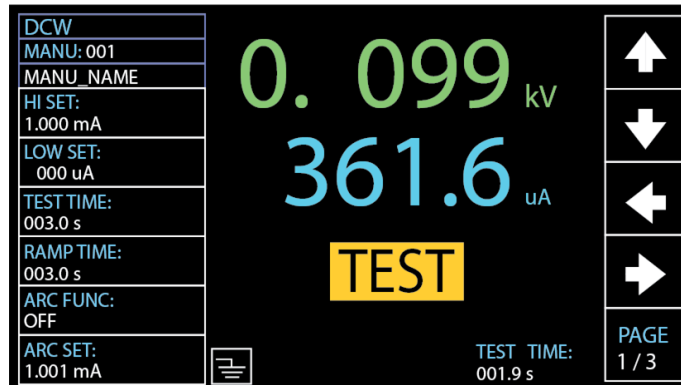
High Adjustment & Measurement Resolution

For production tests and characteristic verification, the GPT-15000 series provides a withstand voltage test voltage (AC 5kV / DC 6kV) that can be adjusted in 1V steps with current measurement resolutions up to 1µA (ACW) or 0.1µA (DCW) to realize the small leakage current measurement for products or components. In addition, the insulation resistance test voltage can be adjusted in 50V steps from a DC output range of 50V to 1200V, and the resistance measurement resolution can reach 0.1MΩ. Since most safety regulations require AC power supply for ground bond test, the GPT-15000 series provides 8Vac (open) and 3A to 32Aac current for ground bond test with a resistance measurement resolution of 0.1mΩ. The entire series provides the continuity grounding test function with a 100mAdc (fixed) test source and a measurement resolution of 0.01Ω to detect if the tested equipment is correctly grounded. With these functions, users can perform various safety tests and verifications with high accuracy and reliability.

Flexible supplementary testing mechanism
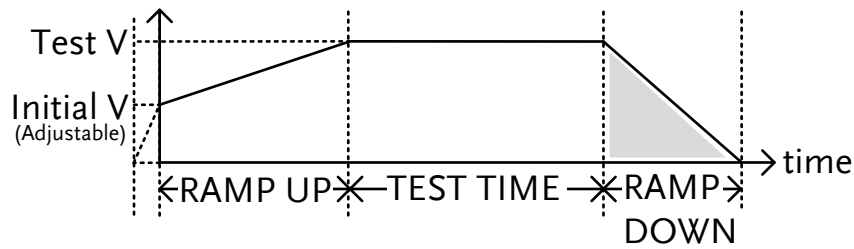
Testing Period Timing

To make tests compliant with the test requirements of relevant safety regulations, the GPT-15000 series provides a more flexible output sequence setting starting from the start point of the test. Taking the AC/DC withstand voltage test as an example, the initial voltage can be set. Users determine the initial voltage ratio (i.e., the ratio of the rated test voltage), and then the voltage ramp up can also be set to reduce the risk of insulation breakdown or damage to the DUT caused by transient high voltages. After the rated test voltage is reached, the upper/lower limit judgement window, delay judgment and test timer mechanism can be set to assist users to conduct tests smoothly and correctly. The new voltage ramp down time setting allows users to test with a ramp down voltage to avoid the impact of excessively high rated test voltage to instantaneous discharge on the DUT. With respect to the insulation resistance test, other than the newly added grounding mode to perform test in accordance with the actual grounding state of the DUT, the setting mechanism of the supplementary upper/lower limit judgement is also added to shorten the test time. The user-definable mode mechanisms include: STOP ON FAIL: The test is terminated as soon as the FAIL setting is met; STOP ON PASS: The test is terminated as long as the PASS setting is met, or TIMER: judgement is conducted when the timer time is reached.
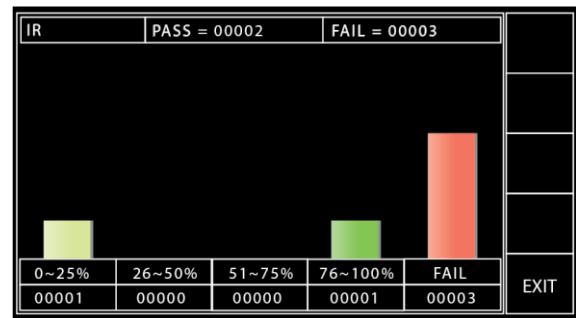
Statistic and analysis

Statistic

Analysis

The GPT-15000 series provides the statistic function, which can record the test functions and judgment results in the temporary storage area (60,000 lots max.). Users can immediately learn the test of each function during the test without using a PC. The distribution of the good products can be analyzed to understand the quality of the batch based on the data. If most of them fall at the critical point that is close to be categorized as defect product, the results can be found in the test process in time so as to improve the manufacturing process and stop the defect products from entering the markets to ensure the reliability of products after leaving the factory.

Sweep and tabular automatic test

AUTO TEST result indicator

The values of point by cursor

MANU STEP results indicators

Sweep function

Tabular automatic test

The GPT-15000 series features a unique sweep function, which displays a curve diagram of the test results of the DUT. Test readings are recorded point by point based on the applied test voltage or current and relevant settings (such as initial voltage, ramp up time, test time, or ramp down time). After the test is completed, users can learn the amount of applied energy (voltage or current) at a specific time point and the results of measurement parameters by moving the cursor position so as to help users understand the changes of the measurement parameters (current or resistance) during the test. The function can also be used to determine the critical break down of the DUT.

With respect to the automatic test function, each automatic test has up to 10 manual test items and all related settings and result judgement are presented in a table, so that users can easily obtain the results of all test items at a time. Other than that, if there are multiple automatic test connection requirements, uses only need to select CON in the last item of the table to automatically connect the automatic measurement of the next position (such as AUTO-012 ~ AUTO-013)

Barcode function

The scanned barcode is set with
AUTO-001 with AUTO TEST ON

Barcode Setting

Barcode Execute

GPT-15000 supports the connection mechanism of the barcode machine. Users can manage the test conditions of each DUT through the use and setting of the barcode machine, which is especially suitable for mixed-type production lines. By scanning the barcode of the DUT, GPT-15000 can automatically reveal the corresponding test conditions, which can avoid using wrong conditions and causing damage to the DUT.

Setting Data Export / Import mechanism


Setting Data Export / Import

In order to expedite the deployment of the production line and achieve the consistency of test conditions, GPT-15000 provides a mechanism that can replicate test conditions. Users only need to set test conditions for one unit, and all settings can be copied via a USB flash drive. Other than the rapid setting of consistent test conditions, it can also avoid the difference while conducting settings.

Complete test data retrieval interface
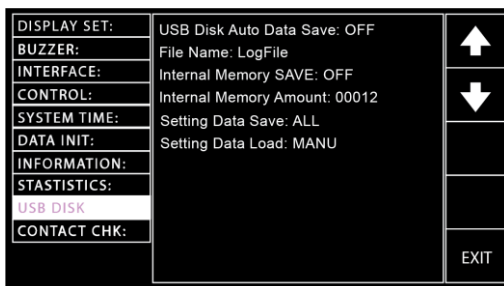
Storage function
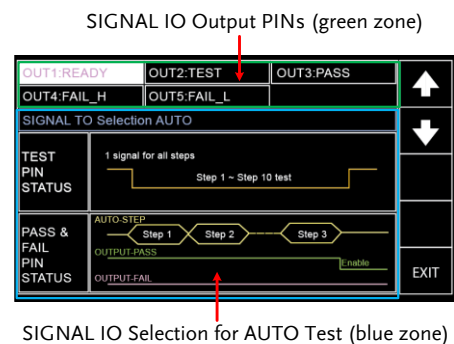
Self-defined Signal I/O

In order to facilitate users to analyze the results of the safety test, GPT-15000 provides the USB storage function in addition to its own statistic and analysis functions. When a USB is inserted and the storage function is activated, each time the test button (START) is pressed, the test results of all tests (every manual or automatic test item) are automatically saved to the USB in the form of a text file (txt) for follow-up analysis. When there is no USB flash drive available, users can turn on the internal memory storage function (up to 30,000 lots) to store the results of each test in the internal memory first, and then transfer them to an external device via a USB flash drive when available.

For interface connections, the GPT-15000 series offers external control or a variety of remotely connected ports such as a signal I/O port that can be used to connect an external controller or PLC. The signal I/O's output signal pins can be self-defined so as to collocate with various PLC control requirements. Besides, the entire series is equipped with RS-232C and USB device (GPIB is optional) for easy retrieval of test data and results by connecting a PC.

Key Features

- **500VA AC Test Capacity** (short circuit current > 200mA)
- **7" TFT LCD**
- **Comply with IEC 61010-2-034 design requirement**
- **Manual / Auto Mode**
- **RMS Current Measurement**
- **Zero Crossing Turn-on Operation**
- **Controllable Ramp-up & Ramp-down Time**
- **Statistics & Analysis Function**
- **Capacitive Load Testing Capability up to 47µF**
- **Sweep Function for DUT Characteristic Analysis**
- **Convenience Listed AUTO mode easy to read result and judge**
- **Internal Storage and USB Storage available**
- **Barcode function available**
- **Setting Data Export/Import**
- **Rear panel output available**
- **Interface : RS-232C, USB host/device, Signal I/O and option GPIB or LAN**
- **Universal power input**

7" TFT LCD, supporting a grater view of setting parameters, testing value as well as Statistics result.

High Intensity LED Indictors to show the Output or Judgment status of Analyzer.

High Voltage Output for AC 5kV, DC 6kV or 50V~1200V in 50V per step for Insulation Resistance testing.

100mA fixed Continuity test function

High Current Output up to 32A ac for 4 wires Ground Bond testing.
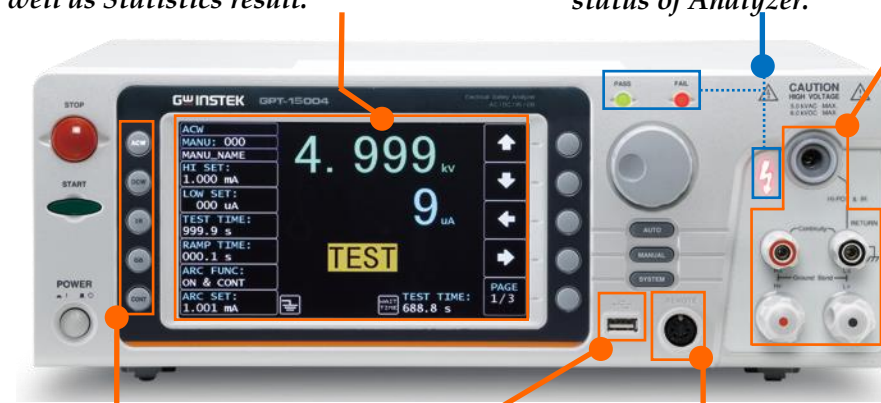
Testing Function Selection keys

For USB flash drive or barcode scanner connecting

Remote Terminal provides "start" and "stop" control by an external controller.

Rear output terminal & Indicator provides safe and convenience for system integration

USB and RS-232 as well as optional GPIB or LAN communication ports facilitate the easy & convenient communication.

Universal Power Input & Fuse Holder

Specifications comparison ~ GPT-15004 vs GPT-9904

Specifications highlighted in blue represent better performance

"X" represents "no such function" or "function not available"

(NOTE)

1. **The GPT-9900 series will continue serve in the market.**

2. **GPT-15000 provides better display, adjustment and measurement resolution, ground continuity check, more features such as statistics, analysis, sweep and rear output, more functionalities such as IR mode, listed AUTO mode and user-defined signal I/O output signal, capacitive load test capability up to 47μF and USB storage.**

		GPT-15000 Series	GPT-9900 Series
	Models	**GPT-15001 : ACW/GC**	**GPT-9901A : ACW**
		GPT-15002 : ACW/DCW/GC	**GPT-9902A : ACW/DCW**
		GPT-15003 : ACW/DCW/IR/GC	**GPT-9903A : ACW/DCW/IR**
		GPT-15004 : ACW/DCW/IR/GB/GC	**GPT-9904 : ACW/DCW/IR/GB**
(※) Functions supports depending on Models		**500VA**	**500VA**
AC Withstanding (ACW)			
Output-Voltage Range		0.050kV~5.000kV	0.050kV~5.000kV
Output-Voltage Resolution		**1V**	2V
Output-Voltage Accuracy		± (1% of setting + 5V) [no load]	± (1% of setting + 5V) [no load]
Maximum Rated Load		500 VA (5kV/100mA)	500 VA (5kV/100mA)
Maximum Rated Current		100mA (0.5kV< V ≦5kV)	100mA (0.5kV< V ≦5kV)
		10mA (0.05kV≦ V ≦0.5kV)	10mA (0.05kV≦ V ≦0.5kV)
Output-Voltage Waveform		Sine wave	Sine wave
Output-Voltage Frequency		50 Hz / 60 Hz selectable	50 Hz / 60 Hz selectable
Voltage Regulation		± (1% + 5V) [maximum rated load → no load]	± (1% + 5V) [maximum rated load → no load]
Voltmeter Accuracy		± (1% of reading + 5V)	± (1% of reading + 5V)
Current Measurement Range		1μA~100.0mA	0.001mA~100.0mA
Current Best Resolution		1μA / 10μA/ 100μA	0.001mA / 0.01mA/ 0.1mA
Current Measurement Accuracy			±(1.5% of reading + 30 counts) when HI SET <1.11mA
		±(1.5% of reading + 30μA)	±(1.5% of reading + 3 counts) when HI SET ≥1.11mA
Window Comparator Method		Yes	Yes
ARC Detect		Yes	Yes
RAMP UP (Rise Time)		0.1s~999.9s	0.1s~999.9s
RAMP DOWN (Fall Time)		**0.0s~999.9s**	X
TIMER (Test Time)		**OFF, 0.3s~999.9s**	OFF*, 0.5s~999.9s
WAIT TIME		**0.0s~999.9s**	X
GND		ON/OFF	ON/OFF

DC Withstanding (DCW)			
Output-Voltage Range		0.050kV~6.000kV	0.050kV~6.000kV
Output-Voltage Resolution		**1V**	2V
Output-Voltage Accuracy		± (1% of setting + 5V) [no load]	± (1% of setting + 5V) [no load]
Maximum Rated Load		100W (5kV/20mA)	100W (5kV/20mA)
Maximum Rated Current		20mA (0.5kV< V ≦6kV)	20mA (0.5kV< V ≦6kV)
		2mA (0.05kV≦ V ≦0.5kV)	2mA (0.05kV≦ V ≦0.5kV)
Voltage Regulation		± (1% + 5V) [maximum rated load → no load]	± (1% + 5V) [maximum rated load → no load]
Voltmeter Accuracy		± (1% of reading + 5V)	± (1% of reading + 5V)
Current Measurement Range		1µA~20.00mA	0.001mA~20.0mA
Current Best Resolution		**0.1µA** /1µA /10µA	0.001mA / 0.01mA/ 0.1mA
Current Measurement Accuracy		±(1.5% of reading + 3µA) when I Reading < 1mA	±(1.5% of reading + 30 counts) when HI SET <1.11mA
		±(1.5% of reading + 30µA) when I Reading ≧1mA	±(1.5% of reading + 3 counts) when HI SET ≥1.11mA
Window Comparator Method		Yes	Yes
ARC Detect		Yes	Yes
RAMP UP (Rise Time)		0.1s~999.9s	0.1s~999.9s
RAMP DOWN (Fall Time)		**0.0s~999.9s**	X
TIMER (Test Time)		**OFF, 0.3s~999.9s**	OFF*, 0.5s~999.9s
WAIT TIME		**0.0s~999.9s**	X
GND		ON/OFF	ON/OFF
Insulation Resistance (IR)			
Output Voltage		50V~**1200V** dc	50V~1000V dc
Output-Voltage Resolution		50V	50V
Output-Voltage Accuracy		± (1% of setting + 5V) [no load]	± (1% of setting + 5V) [no load]
Resistance Measurement			

Test Voltage	Display Range	Measurement Range / Accuracy	Measurement Range / Accuracy
50V≦V≦100V	0.1MΩ~10.00GΩ	**0.1MΩ~1MΩ：** **±(5% of reading + 3 count)**	X
		1 MΩ~50MΩ： ±(5% of reading + 1 count)	0.001GΩ~0.050GΩ： ±(5% of reading + 1 count)
150V≦V≦450V	0.1MΩ~20.00GΩ	51MΩ~2GΩ： ±(10% of reading + 1 count)	0.051GΩ~2.000GΩ： ±(10% of reading + 1 count)
500V≦V≦1200V	0.1MΩ~50.00GΩ	**0.1MΩ~1MΩ：** **±(5% of reading + 3 count)**	X
		1 MΩ~500MΩ： ±(5% of reading + 1 count)	0.001GΩ~0.500GΩ： ±(5% of reading + 1 count)
		501MΩ~9.999GΩ： ±(10% of reading + 1 count)	0.501GΩ~9.999GΩ： ±(10% of reading + 1 count)
		10GΩ~50GΩ： ±(20% of reading + 1 count)	10.00GΩ~50.00GΩ： ±(20% of reading + 1 count)
Voltage Regulation		± (1% + 5V) [maximum rated load → no load]	X
Voltmeter Accuracy		± (1% of reading + 5V)	X

Short-Circuit Current		10mA max.	X
Output Impedance		2kΩ	600kΩ
Window Comparator Method		Yes	Yes
RAMP UP (Rise Time)		0.1s~999.9s	0.1s~999.9s
RAMP DOWN (Fall Time)		0.0s~999.9s	X
TIMER (Test Time)		0.3s~999.9s	0.5s~999.9s
WAIT TIME		0.0s~999.9s	X
GND		ON/OFF	OFF
IR Mode		Available	X
Ground Bond (GB)			
Output-Current		03.00A~32.00A ac	03.00A~32.00A ac
Output-Current Resolution		0.01A	0.01A
Output-Current Accuracy		3A≦I≦8A：±(1% of reading + 0.2A)	3A≦I≦8A：±(1% of reading + 0.2A)
		8A<I≦32A：±(1% of reading + 0.05A)	8A<I≦32A：±(1% of reading + 0.05A)
Test-Voltage		8Vac max (open circuit)	6Vac max (open circuit)
Test-Voltage Frequency		50Hz/60Hz selectable	50Hz/60Hz selectable
Ohmmeter Meas.Range		1mΩ~ 650mΩ	10mΩ~ 650mΩ
Ohmmeter Meas. Resolution		0.1mΩ	0.1mΩ
Ohmmeter Meas. Accuracy		±(1% of reading + 2 mΩ)	±(1% of reading + 2 mΩ)
Window Comparator Method		Yes	Yes
TIMER (Test Time)		0.3s~999.9s	0.5s~999.9s
Test Method		Four Terminal	Four Terminal
GND		ON/OFF	OFF
Ground Continuity (GC)			
Output-Current		100mA dc (fixed)	X
Ohmmeter Meas. Range		0.10Ω~ 70.00Ω	X
Ohmmeter Meas. Resolution		0.01Ω	X
Ohmmeter Meas. Accuracy		±(10% of reading + 2 Ω)	X
Memory			
Single Step Memory		MANU：100 blocks	MANU：100 blocks
Automatic Testing Memory		AUTO：100 blocks, manu per auto：10; Allows AUTO in sequence number	AUTO：100 blocks, manu per auto：16
Special Features			
Sweep Function		Standard	Standard
Statistics		Standard	X
User Defined Signal I/O		Standard	X
Internal Memory saving		Available	X

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USB Storage		**Available**	**X**
Setting Data Export/Import		**Available**	**X**
Barcode Scanner		**Available**	**X**
Interface			
Front	REMOTE	Standard	Standard
	USB host	**Standard**	**X**
Rear	Rear Output	Standard	Standard
	RS-232C	Standard	Standard
	USB device	Standard	Standard
	SCAN Terminal	X	**Standard (for optional GSB-01/02)**
	Signal I/O	Standard	Standard
	GPIB	Option	Option
	LAN	**Option**	**X**
General			
Display		**7" color LCD**	240 x 64 Ice Blue Dot Matrix LCD
Power Source & Consumption		**AC 100V~240V ± 10%, 50Hz/60Hz; Max. 1000VA**	AC 100V/120V/230V/240V ± 10%, 50Hz/60Hz; Max. 1000VA
DIMENSION & WEIGHT	01/02/03	**380(W) x 148(H) x 492(D) mm; Approx. 17kg**	330(W) x 148(H) x 482(D) mm; Approx. 23kg
	04	**380(W) x 148(H) x 546(D) mm; Approx. 21kg**	330(W) x 148(H) x 587(D) mm; Approx. 27kg

Specifications comparison ~ GPT-15000 vs GPT-12000

(NOTE1) "Yellow" mark, shows the difference between two series.

(NOTE2) "Green" mark, differences can be achieved through firmware upgrade.

(NOTE3) New optional LAN interface works with GPT-15000 and GPT-12000 series

		GPT-15000 Series	GPT-12000 Series
		500VA	200VA
AC Withstanding (ACW)			
Output-Voltage Range		0.050kV~5.000kV	0.050kV~5.000kV
Maximum Rated Load		500 VA (5kV/100mA)	200 VA (5kV/40mA)
DC Withstanding (DCW)			
Output-Voltage Range		0.050kV~6.000kV	0.050kV~6.000kV
Maximum Rated Load		100W (5kV/20mA)	50W (5kV/10mA)
Insulation Resistance (IR)			
Output Voltage		50V~1200V dc	50V~1200V dc
Resistance Measurement		0.1MΩ~50GΩ	0.1MΩ~50GΩ
Ground Bond (GB)			
Output-Current		03.00A~32.00A ac	03.00A~32.00A ac
Ohmmeter Meas. Range		1mΩ~ 650mΩ	1mΩ~ 650mΩ
Ground Continuity (GC)			
Output-Current		100mA dc (fixed)	100mA dc (fixed)
Ohmmeter Meas. Range		0.10Ω~ 70.00Ω	0.10Ω~ 70.00Ω
Memory			
Single Step Memory		MANU：100 blocks	MANU：100 blocks
Automatic Testing Memory		AUTO：100 blocks, Manu per auto：10; Allows AUTO in sequence number	AUTO：100 blocks, Manu per auto：10; Allows AUTO in sequence number
Special Features			
Sweep Function		Standard	Standard
Statistics		Standard	Standard
User Defined Signal I/O		Standard	Standard
USB Storage		Available	Available
Internal Memory saving		Available	Firmware upgrade (V1.06)
Setting Data Export/Import		Available	Firmware upgrade (V1.06)
Barcode function		Available	Firmware upgrade (V1.06)
Interface			
Front	REMOTE	Standard	Standard
	USB host	Standard	Standard
Rear	Rear Output	Standard	Standard
	RS-232C	Standard	Standard
	USB device	Standard	Standard
	Signal I/O	Standard	Standard
	GPIB	Option	Option
	LAN (NEW)	Option	Option*
General			
Display		7" color LCD	7" color LCD
Power Source & Consumption		AC 100V~240V ± 10%, 50Hz/60Hz; Max. 1000VA	AC 100V~240V ± 10%, 50Hz/60Hz; Max. 400VA
Dimension & Weight 01/02/03		380(W) x 148(H) x 492(D) mm; Approx. 17kg	380(W) x 148(H) x 436(D) mm; Approx. 11kg
04		380(W) x 148(H) x 546(D) mm; Approx. 21kg	380(W) x 148(H) x 454(D) mm; Approx. 15kg

（※) To use LAN interface, GPT-12000 should be firmware version V1.06 or later

Key Dates for Product Announcement

1. **Distributor Announcement & Demo Unit Order and Shipping (27th of August)**
2. **Global Market Announcement (18th of September)**

Service Policy

1. **2 year warranty**

2. **Service Support**

   The service instructions in the Service Manual will help distributors repair defective units promptly. Should a board replacement be necessary to fix a defective unit, a board swapping service is provided by Good Will Instrument to facilitate the repairs done at a distribution site.

3. **GW Instek continues to provide the after sales support through its website. The most updated version of the service manual and Marcom material for GPT-15000 will be posted on the distributor zone of GW Instek Website at https://www.gwinstek.com**

Product Outlook

GPT-15004 (Front)   **GPT-15003/15002/15001 (Front)**

GPT-15004 (Rear)   **GPT-15003/15002/15001 (Rear)**

(For all models with optional GPIB)

Application and Target Markets

■ **Production and Compliance Testing of electrical products**

- ➢ **Household and electrical appliances**

- ➢ **Luminaries**

- ➢ **Audio, video and similar electronic apparatus**

- **7" TFT LCD display and high intensity status indicators for clear and easy observation.**

- **Variety safe considerations, fast cutoff / protective Interlock key/ discharge after testing, to ensure the safety of operator.**

- **PWM amplifier design to ensure the precision tests of the DUT and the reliability and service lifetime of tester.**

- **Various control methods, manual / remote terminal / signal I/O, to fit with the actual requirement of workplace environment.**

- **Testing condition reserved up to 100 sets memory for multi-production.**

- **Up to 10 reserved testing conditions can be combined as sequence testing.**

- **Barcode function to manage and execute test condition of DUT.**

- **Internal memory & USB storage to keep test result during testing for further analysis.**

- **Setting data export / import to expedite the deployment of the production line and achieve the consistency of test conditions**

- **Remote Communication ports, RS-232C/ USB device/ GPIB or LAN (optional), retrieving test data and results is convenient via a PC connection.**

■ **Quality Assurance Verification**

- **7" TFT LCD display and high intensity status indicators for clear and easy observation.**

- **Various control methods, manual/remote terminal/signal I/O, to fit with the actual requirement of workplace environment.**

- **Statistics & Analysis function provides**

- **Testing condition reserved up to 100 sets memory for multi-production.**

- **Up to 10 reserved testing conditions can be combined as sequence testing.**

- **Internal memory & USB storage to keep test result for further analysis.**

- **Remote Communication ports, RS-232C/ USB device/ GPIB or LAN (optional), retrieving test data and results is convenient via a PC connection for further analysis.**

■ **Development validation**

- **7" TFT LCD display and high intensity status indicators for clear and easy observation.**

- **High testing performance, 1V/step for withstanding output voltage adjustment and 50V/step for insulation resistance voltage output setting, to verify the capability of electrical product or component.**

- **Remote Communication ports, RS-232C/ USB device/ GPIB or LAN (optional), retrieving test data and results is convenient via a PC connection for further analysis.**

Specifications

AC WITHSTANDING	
Output-Voltage Range	0.050kV~5.000kV
Output-Voltage Resolution	1V
Output-Voltage Accuracy	± (1% of setting + 5V) [no load]
Maximum Rated Load	500 VA (5kV/100mA)
Maximum Rated Current	100mA (0.5kV< V ≦5kV) 10mA (0.05kV≦ V ≦0.5kV)
Output-Voltage Waveform	Sine wave
Output-Voltage Frequency	50 Hz / 60 Hz selectable
Voltage Regulation	± (1% + 5V) [maximum rated load → no load]
Voltmeter Accuracy	± (1% of reading + 5V)
Current Measurement Range	1µA~100.0mA
Current Best Resolution	1µA / 10µA / 100µA
Current Measurement Accuracy	±(1.5% of reading + 30µA)
Current Offset	60uA maximum
Window Comparator Method	Yes
ARC Detect	Yes
RAMP UP (Rise Time)	0.1s~999.9s
RAMP DOWN (Fall Time)	0.0s~999.9s
TIMER (Test Time)	OFF, 0.3s~999.9s
WAIT TIME	0.0s~999.9s
GND	ON/OFF
DC WITHSTANDING	
Output-Voltage Range	0.050kV~6.000kV
Output-Voltage Resolution	1V
Output-Voltage Accuracy	± (1% of setting + 5V) [no load]
Maximum Rated Load	100W (5kV/20mA)
Maximum Rated Current	20mA (0.5kV< V ≦6kV) 2mA (0.05kV≦ V ≦0.5kV)
Voltage Regulation	± (1% + 5V) [maximum rated load → no load]
Voltmeter Accuracy	± (1% of reading + 5V)
Current Measurement Range	1µA~20.00mA
Current Best Resolution	0.1µA /1µA /10µA
Current Measurement Accuracy	±(1.5% of reading + 3µA) when I Reading < 1mA ±(1.5% of reading + 30µA) when I Reading ≧1mA
Current Offset	5uA maximum
Window Comparator Method	Yes
ARC Detect	Yes
RAMP UP (Rise Time)	0.1s~999.9s
RAMP DOWN (Fall Time)	0.0s~999.9s
TIMER (Test Time)	OFF, 0.3s~999.9s
WAIT TIME	0.0s~999.9s
GND	ON/OFF
INSULATION RESISTANCE	
Output Voltage	50V~1200V dc
Output-Voltage Resolution	50V
Output-Voltage Accuracy	± (1% of setting + 5V) [no load]
Resistance Measurement	

Test Voltage	Display Range	Measurement Range / Accuracy
50V≦V≦100V	0.1MΩ~ 10.00GΩ	0.1MΩ~1MΩ：±(5% of reading + 3 count)
150V≦V≦450V	0.1MΩ~ 20.00GΩ	1 MΩ~50MΩ：±(5% of reading + 1 count) 51MΩ~2GΩ：±(10% of reading + 1 count)
500V≦V≦1200V	0.1MΩ~ 50.00GΩ	0.1MΩ~1MΩ：±(5% of reading + 3 count)

		1 MΩ~500MΩ：±(5% of reading + 1 count)
		501MΩ~9.999GΩ：±(10% of reading + 1 count)
		10.00GΩ~50.00GΩ：±(20% of reading + 1 count)*
Voltage Regulation		± (1% + 5V) [maximum rated load → no load]
Voltmeter Accuracy		± (1% of reading + 5V)
Short-Circuit Current		10mA max.
Output Impedance		2kΩ
Window Comparator Method		Yes
RAMP UP (Rise Time)		0.1s~999.9s
RAMP DOWN (Fall Time)		0.0s~999.9s
TIMER (Test Time)		OFF, 0.3s~999.9s
WAIT TIME		0.0s~999.9s
GND		ON/OFF
Ground Bond		
Output-Current		03.00A~32.00A ac
Output-Current Resolution		0.01A
Output-Current Accuracy		3A≦ I≦ 8A：±(1% of reading + 0.2A)
		8A<I≦ 32A：±(1% of reading + 0.05A)
Test-Voltage		8Vac max (open circuit)
Test-Voltage Frequency		50Hz/60Hz selectable
Ohmmeter Measurement Range		1mΩ~ 650mΩ
Ohmmeter Measurement Resolution		0.1mΩ
Ohmmeter Measurement Accuracy		±(1% of reading + 2 mΩ)
Window Comparator Method		Yes
TIMER (Test Time)		0.3s~999.9s
Test Method		Four Terminal
GND		ON/OFF
Continuity Test		
Output-Current		100mA dc (fixed)
Ohmmeter Measurement Range		0.10Ω~ 70.00Ω
Ohmmeter Measurement Resolution		0.01Ω
Ohmmeter Measurement Accuracy		±(10% of reading + 2Ω)
Window Comparator Method		Yes
TIMER (Test Time)		0.3s~999.9s
MEMORY		
Single Step Memory		MANU：100 blocks
Automatic Testing Memory		AUTO：100 blocks, manu per auto：10
INTERFACE		
Front panel		REMOTE terminal, USB host
Rear panel		Rear Output, RS-232C, USB device, Signal I/O, GPIB or LAN (Opt.)
DISPLAY		
		7" color LCD
POWER SOURCE		
		AC 100V~240V ± 10%, 50Hz/60Hz; Consumption: 1000VA
DIMENSION & WEIGHT		
GPT-15001/15002/15003		380(W) x 148(H) x 492(D) mm; Approx. 17kg
GPT-15004		380(W) x 148(H) x 546(D) mm; Approx. 21kg

* When Ground Mode is "ON", the measurement range is 30GΩ max. and adding 10% error for accuracy.

Ordering information

GPT-15004   **AC 500VA AC/DC/IR/GB Electrical Safety Analyzer**

GPT-15003   **AC 500VA AC/DC/IR Electrical Safety Analyzer**

GPT-15002   **AC 500VA AC/DC Withstanding Voltage Electrical Safety Analyzer**

GPT-15001   **AC 500VA AC Withstanding Voltage Electrical Safety Analyzer**

 (*) Two years warranty, excluding accessories

Included Accessories
Quick Start Guide x 1, CD x1(completed user manual), Power cord x 1,
Interlock key x 1, Remote terminal Cable GHT-119 x 1,
Test lead GHT-115 x 1 for GPT-15003/15002/15001
Test lead GHT-115 x 1, GTL-215 x 1 for GPT-15004

Option
Opt.1 GPIB card
Opt.2 LAN card

Optional Accessories
GHT-113	**High Voltage Test Pistol**
GHT-117	**High Voltage Adapter Box**
GHT-117(EU)	**High Voltage Adapter Box**
GHT-118	**High Voltage / Ground Bond Adapter Box**
GHT-118(EU)	**High Voltage / Ground Bond Adapter Box**
GHT-205	**High Voltage Test Probe**
GTL-232	**RS232C Cable, 9-pin Female to 9-pin, null Modem for Computer**
GTL-246	**USB Cable, A-B type, approx. 1.2m**
GTL-248	**GPIB Cable, approx. 2m**
GRA-440	**Rack Adapter Panel (19', 4U)**

Should you have any questions on the GPT-15000 announcement, please don't hesitate to contact us.

Sincerely yours,

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