Electrical Safety Analyzer

GPT-10000 Series

QUICK START GUIDE

GW INSTEK PART NO. 82PT-10K00MB1

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

The information in this manual was correct at the time of printing. However, Good Will continues to improve products and reserves the right to change specification, equipment, and maintenance procedures at any time without notice.

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SAFETY INSTRUCTIONS

This chapter contains important safety instructions that you must follow during operation and storage. Read the following before any operation to ensure your safety and to keep the instrument in the best possible condition.

Safety Symbols

These safety symbols may appear in this manual or on the instrument.

 WARNING	Warning: Identifies conditions or practices that could result in injury or loss of life.
 CAUTION	Caution: Identifies conditions or practices that could result in damage to the instrument or to other properties.
	DANGER High Voltage
	Attention Refer to the Manual
	Protective Conductor Terminal
	Frame or Chassis Terminal
	Earth (ground) Terminal

Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased.

Safety Guidelines

General Guideline

CAUTION

- Do not place any heavy object on the instrument.
- Avoid severe impact or rough handling that leads to damaging the instrument.
- Do not discharge static electricity to the instrument.
- Use only mating connectors, not bare wires, for the terminals.
- Do not block the cooling fan opening.
- Do not disassemble the GPT-10000 unless you are qualified.

(Measurement categories) EN 61010-1:2010 specifies the measurement categories and their requirements as follows. The GPT-10000 does not fall under category II, III or IV.

- Measurement category IV is for measurement performed at the source of low-voltage installation.
- Measurement category III is for measurement performed in the building installation.
- Measurement category II is for measurement performed on the circuits directly connected to the low voltage installation.

Power Supply

WARNING

- AC Input voltage range:
  AC 100V – 240V ± 10%
- Frequency: 50Hz/60Hz
- To avoid electrical shock connect the protective grounding conductor of the AC power cord to an earth ground.

Cleaning the GPT-10000	• Disconnect the power cord before cleaning. • Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid. • Do not use chemicals containing harsh material such as benzene, toluene, xylene, and acetone.
Operation Environment	• Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (Note below) • Relative Humidity: ≤ 70% (no condensation) • Altitude: < 2000m • Temperature: 0˚C~40˚C (Pollution Degree) EN 61010-1:2010 specifies the pollution degrees and their requirements as follows. The GPT-10000 falls under degree 2. Pollution refers to "addition of foreign matter, solid, liquid, or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity". • Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. • Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected. • Pollution degree 3: Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. In such conditions, equipment is normally protected against exposure to direct sunlight, precipitation, and full wind pressure, but neither temperature nor humidity is controlled.
Storage environment	• Location: Indoor • Temperature: -10°C to 70°C • Relative Humidity: ≤ 85% (no condensation)
Disposal 	Do not dispose this instrument as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased. Please make sure discarded electrical waste is properly recycled to reduce environmental impact.

INTRODUCTION

This Quick Start Guide is intended as a fast introduction to operate the GPT-10000 Series Safety Testers. This Quick Start Guide assumes that the user is familiar with safety testers.

For comprehensive instructions on the GPT-10000 Series, please see the User Manual, located on the accompanying CD.

GPT-10000 Series Overview

The GPT-10000 Series are AC/DC withstanding voltage, insulation resistance, ground bond and continuity safety testers. By and large, GPT-10000 Series has 2 major categories, one is GPT-12XXX models, and the other is GPT-15XXX models. The subordinate models of 2 categories share the same test functions but with different specifications. We use the term "X" for the 2nd digit of model names described below to stand for both 2 categories in common.

The GPT-1X001 is AC withstanding voltage and continuity tester, the GPT-1X002 is AC/DC withstanding voltage and continuity tester and the GPT-1X003 is AC/DC withstanding voltage, insulation resistance and continuity tester. The GPT-1X004 includes all the test functions of the other models, plus the ground bond testing. See the following Lineup Overview for more details.

Note: Throughout this quick guide, the terms ACW, DCW, IR, GB and CONT refer to AC Withstanding, DC Withstanding, Insulation Resistance, Ground Bond and Continuity testing, respectively.

Lineup Overview

Model name	ACW	DCW	IR	GB	CONT
GPT-12001	✓				✓
GPT-12002	✓	✓			✓
GPT-12003	✓	✓	✓		✓
GPT-12004	✓	✓	✓	✓	✓
GPT-15001	✓				✓
GPT-15002	✓	✓			✓
GPT-15003	✓	✓	✓		✓
GPT-15004	✓	✓	✓	✓	✓

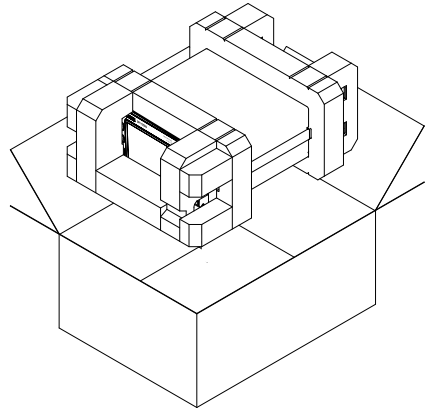
Accessories

Standard Accessories	Part number	Description
	GHT-115x1	Test lead
	Region dependent	Power cord
	GTL-215x1	GB test lead (GPT-12004/GPT-15004 only)
	GHT-119	Remote terminal cable
	N/A	Interlock key
Optional Accessories	**Part number**	**Description**
	GHT-205	High Voltage Test Probe
	GHT-113	High Voltage Test Pistol
	GTL-232	RS232C cable
	GTL-248	GPIB cable
	GTL-247	USB cable
Options	**Part number**	**Description**
	Opt.01 GPIB Interface	GPIB module
	Opt.02 LAN Interface	LAN module

Package Contents

Check the contents before using the GPT-10000 series.

Opening the box



Contents (single unit)

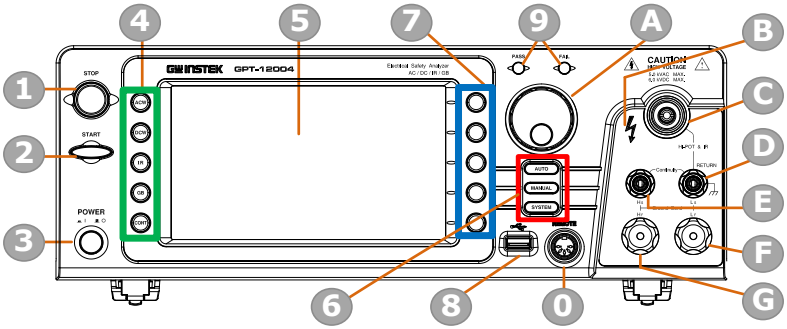
- GPT-10000 unit
- Quick Start Guide
- User manual CD
- CTC (Calibration Traceable Certificate)
- Power cord x1 (region dependent)
- GHT-115 test leads x1
- GTL-215 GB test leads x1 (GPT-12004/GPT-15004 only)
- GHT-119 Remote terminal cable
- Interlock key

Note

Keep the packaging, including the box, polystyrene foam and plastic envelopes should the need arise to return the unit to GW Instek.

Front Panel Overview

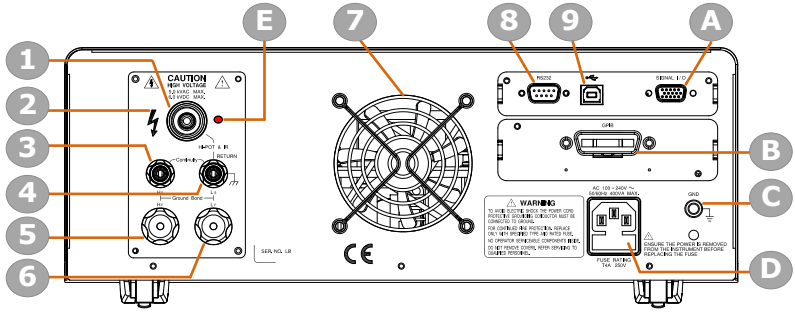
GPT-12001/12002/12003/12004/15001/15002/15003/15004



Item	Description
1	STOP Button
2	START Button
3	POWER Switch
4	Test Function Keys (Green Zone)
5	Display
6	Mode Keys (AUTO, MANUAL, SYSTEM in Red Zone)
7	Soft Keys (Blue Zone)
8	USB A-Type Host Port
9	PASS/FAIL Indicators
0	REMOTE Terminal
A	Scroll Wheel
B	HIGH VOLTAGE Indicator
C	HIGH VOLTAGE Output Terminal
D	SENSE L & RETURN Terminal
E	SENSE H & Output Terminal
F	SOURCE L (GPT-12004/GPT-15004 only)
G	SOURCE H (GPT-12004/GPT-15004 only)

Rear Panel Overview

GPT-12001/12002/12003/12004/15001/15002/15003/15004

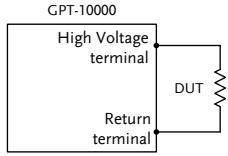


Item	Description
1	HIGH VOLTAGE Output Terminal
2	HIGH VOLTAGE Indicator
3	SENSE H & Output Terminal
4	SENSE L & RETURN Terminal
5	SOURCE H (GPT-12004/GPT-15004 only)
6	SOURCE L (GPT-12004/GPT-15004 only)
7	Fan
8	RS-232 Port
9	USB B-Type Interface Port
A	Signal I/O Port
B	GPIB Port/Ethernet LAN Port (Optional)
C	GND
D	AC Mains Input (Power Cord Socket)
E	HIGH VOLTAGE pilot lamp

TEST LEAD CONNECTION

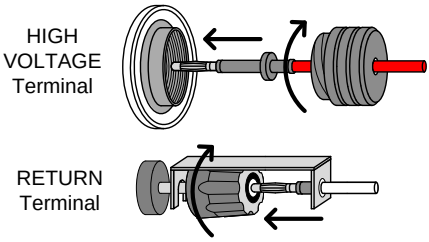
This section describes how to connect the GPT-10000 to a DUT for AC/DC withstanding, insulation resistance, ground bond as well as continuity testing.

ACW, DCW, IR Connection

Background	ACW, DCW and IR tests use the HIGH VOLTAGE terminal and RETURN terminal with the GHT-115 test leads.
ACW, DCW, IR Connection	

Steps

1. Turn the power off on the safety tester.
2. Connect the high voltage test lead (red) to the HIGH VOLTAGE terminal and screw firmly into place.
3. Connect the return test lead (white) into the RETURN terminal and screw the protector bar into place, as shown below.

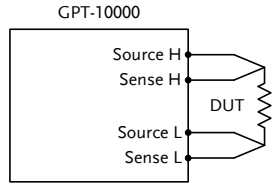


GB Connection

Background

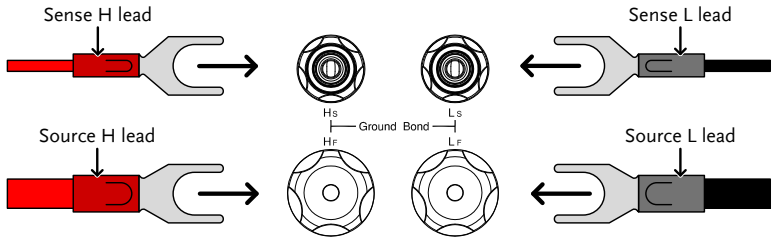
GB tests use the SENSE H/L and SOURCE H/L terminals with the GTL-215 test leads.

GB Connection

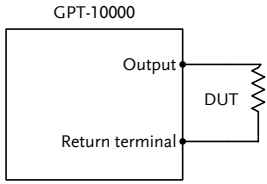


Steps

1. Turn the power off on the safety tester.
2. Connect the Sense H lead to the SENSE H terminal.
3. Connect the Sense L lead to the SENSE L terminal.
4. Connect the Source H lead to the SOURCE H terminal.
5. Connect the Source L lead to the SOURCE L terminal.

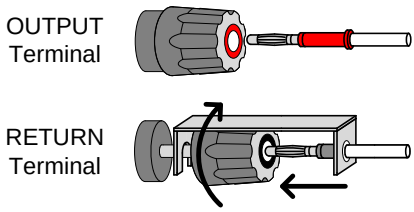


CONT Connection

Background	CONT tests use the OUTPUT and RETURN terminals with the GTL-115 test leads.
GONT Connection	

Steps

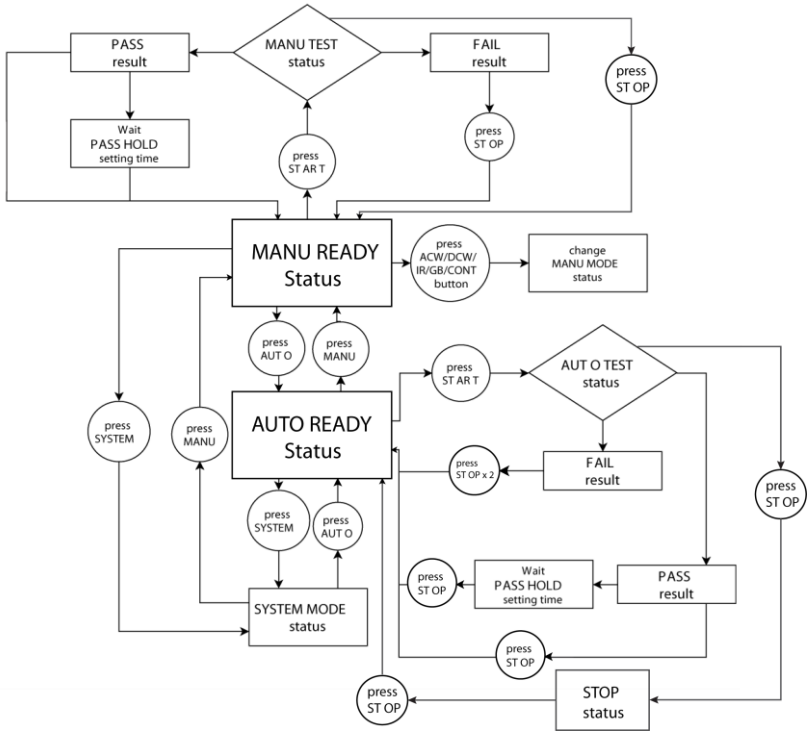
1. Turn the power off on the safety tester.
2. Connect the OUTPUT test lead (red) to the OUTPUT terminal.
3. Connect the RETURN test lead (black) into the RETURN terminal and screw the protector bar into place, as shown below.



OPERATION

This section describes the overview of the operation modes along with statuses for the GPT-10000 safety testers. The testers have two main testing modes (MANU, AUTO), one system mode (SYSTEM) and 5 main operation statuses (READY, TEST, PASS, FAIL and STOP).

Operation Flow Chart



MANU Mode

Background

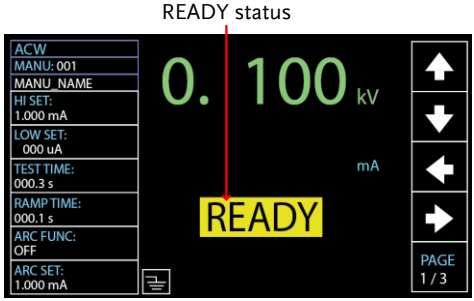
MANU mode is used to create and execute a single test. Only under MANU mode can parameters be edited for each manual test.

Steps

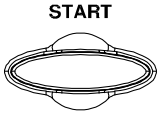
1. Press the MANUAL key on the front panel.

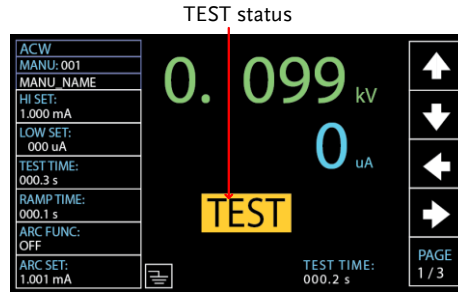
2. Press one of the Test Function Keys on the front panel followed by setting the relevant parameters for select function. Refer to the User Manual for details of parameter settings.

3. Ensure the tester is in the READY status.



4. Press the START button when tester is in READY status. The MANU test starts accordingly and tester goes into the TEST status.





5. The test will start by showing the ongoing ramp up time followed by the ongoing test time. The test will continue until the test is finished or stopped.

WARNING

If Double Action is ON, ensure the START button is pressed immediately after the STOP button was pressed within 0.5s.

WARNING

If INTERLOCK is set to ON and the interlock key is not connected to the SIGNAL I/O port, Interlock Open message will be displayed on the screen to prevent the test from starting for safety concern.

WARNING

A protection setting has been tripped; when a protection setting has been tripped the corresponding error message is displayed on the screen. Refer to the User Manual for a comprehensive list of the all the error messages.

AUTO Mode

Background

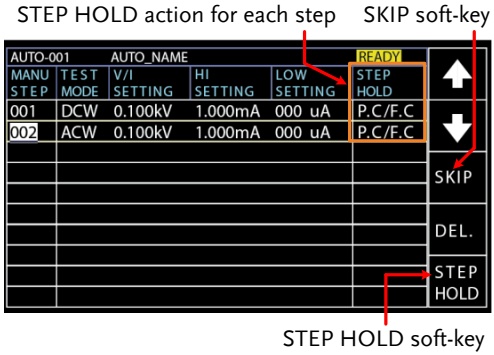
AUTO mode indicates that the tester is automatic, which consists of a sequential AUTO test of up to 10 MANU steps. Also, several groups of AUTO tests can be further interconnected for an advanced AUTO test.

Steps

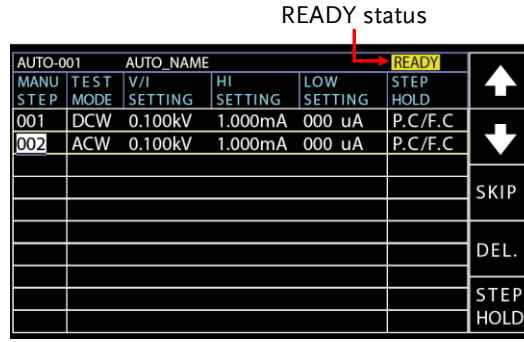
1. Press the AUTO key on the front panel.

2. After entering the AUTO mode, first use the scroll wheel to choose the AUTO group number followed by pressing the DOWN arrow soft-key to add desired MANU steps into the list of AUTO test.

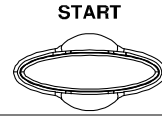
3. Set the STEP HOLD action for each MANU step and press the SKIP soft-key to dodge select MANU step, if necessary. The parameters of each MANU step should be set up in MANU mode in advance. Refer to the User Manual for more details.



4. Ensure the tester is in the READY status.



5. Press the START button when the tester is in the READY status. The AUTO test starts automatically and the display changes to each MANU step test in sequence until the last MANU step test is finished or stopped.



WARNING

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WARNING

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WARNING

A protection setting has been tripped; when a protection setting has been tripped the corresponding error message is displayed on the screen. Refer to the User Manual for a comprehensive list of the all the error messages.

SYSTEM Mode

Background

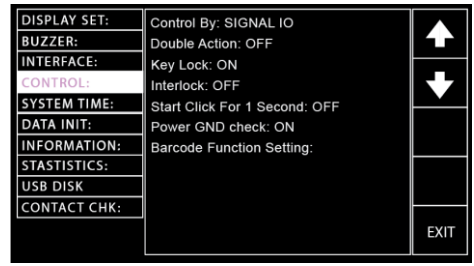
System mode covers the Display Set, Buzzer, Interface, Control, System Time, Data Initialize, Information, Statistics and USB Disk settings. These settings are system-wide and applied to both MANU and AUTO tests.

Steps

1. Press the SYSTEM button on the front panel when the tester is under READY status in either MANU or AUTO test.

2. The SYSTEM page will be shown as the figure below where several settings are displayed in the left-side list.

3. Press the UP/DOWN arrow soft-keys to move the cursor to whichever settings you are about to set up. The bright indicator represents the settings to be configured.



4. Press the ENTER soft-key to enter the page of desired setting for further configurations.

5. Refer to the User Manual for detailed info of pages of each setting.

Note

The AUTO and MANUAL buttons can be pressed at any time to jump to their belonging pages. Alternatively, it is available to promptly return back to the previous page, whether it's AUTO or MANUAL mode, by simply pressing SYSTEM button.

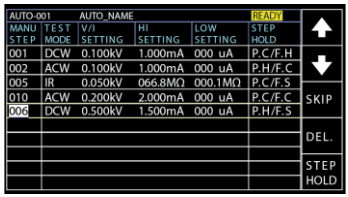
READY Status

Background

When the tester is in READY status of MANU or AUTO test, it is ready to begin testing. Pressing the START button will begin testing and put the tester into TEST status. Pressing the AUTO key will change from MANU – READY status to AUTO – READY status and vice versa.

READY status in MANU test

READY status in AUTO test

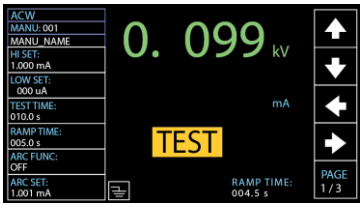


TEST Status

Background

TEST status is active when a MANU test or AUTO test is running. Pressing STOP will cancel the MANU test or the remaining steps in an AUTO test instantly. The TEST status in AUTO test is identical with that of MANU test.

TEST status in MANU test



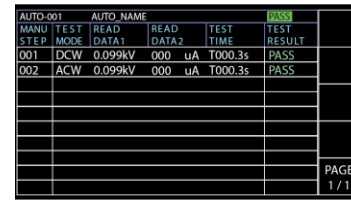
PASS Status

Background

When a MANU test result is within the range of HI and LOW sets, the PASS status is shown on display. For AUTO test, the PASS status only shows when all the affiliated test steps are passed.

PASS status in MANU test

PASS status in AUTO test

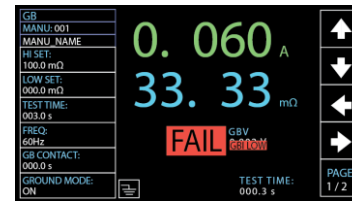


FAIL Status

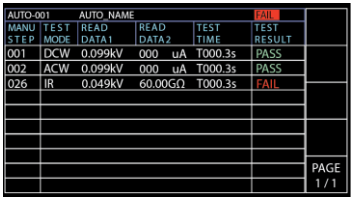
Background

When a MANU test result is beyond the range of HI and LOW sets, the FAIL status is shown on display. For AUTO test, the FAIL status is shown when any of the test steps fails, even only one of them.

FAIL status in MANU test



FAIL status in AUTO test



STOP Status

Background

STOP status is shown when an AUTO test did not finish running and has been stopped by user. Pressing STOP will return the tester to READY status. STOP status is not shown in MANU test as it returns to READY status directly after user pressed STOP button in MANU test.

STOP status in AUTO test