



User Manual

RSST-2000

Stock number: 2010446 **RSST-2001**
2010448 **RSST-2002**

2010449 **RSST-2003**
2010450 **RSST-2004**

EN



rspro.com



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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 RSST-2000 unless you are qualified.

Position Guideline



WARNING

- The rear position of the RSST-2000 should be placed in an area with easy accessible for power disconnection, that is, unplugging the power cord with ease.
- Keep away from the device under test which connects with the RSST-2000 when test is underway. In addition, while test is ongoing, never touch the device under test, the RSST-2000 as well as other relevant units.
- Any inappropriate manner that is unspecified by the manufacturer may result in irreversible harms or impaired protection by the RSST-2000.

(Measurement categories) EN 61010-1:2010 specifies the measurement categories and their requirements as follows. The RSST-2000 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 RSST-2000

- 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 RSST-2000 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: $\leq 85\%$ (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.

GETTING STARTED

This chapter describes the safety analyzer in a nutshell, including its main features and front / rear panel introduction. After going through the overview, please read the safety considerations in the Set Up chapter.

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RSST-2000 Series Overview

Series lineup

The RSST-2000 Series Safety Analyzers are AC/DC withstanding voltage, insulation resistance, ground bond and continuity safety analyzers.

The RST-2001 is AC withstanding voltage and continuity tester, the RSST-2002 is AC/DC withstanding voltage and continuity tester and the RSST-2003 is AC/DC withstanding voltage, insulation resistance and continuity tester. The RSST-2004 includes all the test functions of the other models, plus the ground bond testing. See the following Lineup Overview for more details.

The RSST-2000 Series can store up to 100 manual tests, as well as run up to 10 manual tests sequentially as an automatic test, allowing the safety analyzers to accommodate any number of safety standards, including IEC, EN, UL, CSA, GB, JIS and others.

Note: Throughout this user manual, 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 |
|------------|-----|-----|----|----|------|
| RSST-2001 | ✓ | | | | ✓ |
| RSST-2002 | ✓ | ✓ | | | ✓ |
| RSST-2003 | ✓ | ✓ | ✓ | | ✓ |
| RSST-2004 | ✓ | ✓ | ✓ | ✓ | ✓ |

Main Features

- | | |
|-------------|--|
| Performance | <ul style="list-style-type: none"> • ACW: 5kVAC • DCW: 6kVDC • IR: 50V~1200V (50V steps) • GB: 3A~32A • CONT: 100mA |
| Features | <ul style="list-style-type: none"> • Ramp up time control • Ramp down time control • Safety discharge • 100 test conditions (MANU mode) • 100 automatic tests (AUTO mode) • Over temperature, voltage and current protection • Pass, Fail, Test, High Voltage and Ready indicators • PWM output (90% efficiency, increased reliability) • Interlock (configurable) • Rear panel output |

- | | |
|-----------|--|
| Interface | <ul style="list-style-type: none"> • Remote control start/stop interface terminal • RS232/USB interface for programming • Optional GPIB interface for programming • Signal I/O port for pass/fail/test monitoring and start/stop control/interlock |
|-----------|--|

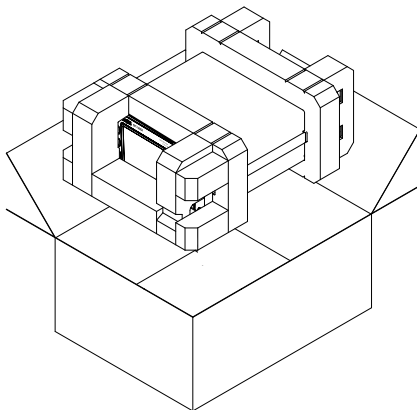
Accessories

| Standard Accessories | Part number | Description |
|----------------------|-----------------------|----------------------------------|
| | GHT-115x1 | Test lead |
| | Region dependent | Power cord |
| | GTL-215x1 | GB test lead (RSST-2004 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-246 | USB cable (A to B type) |
| Options | Part number | Description |
| | Opt.01 GPIB Interface | GPIB card |

Package Contents

Check the contents before using the RSST-2000 series.

Opening the box



Contents (single unit)

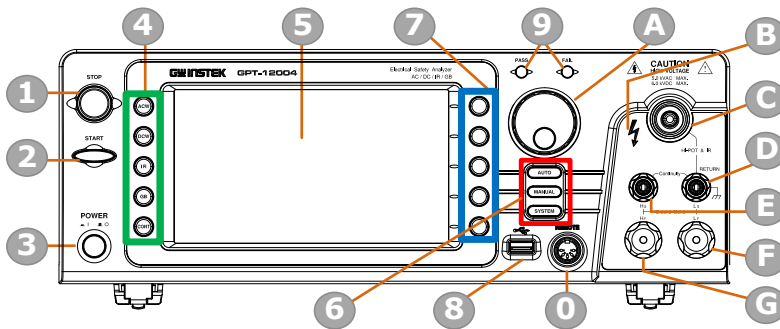
- RSST-2000 unit
- Quick Start Guide
- CTC (Calibration Traceable Certificate)
- Power cord x1 (region dependent)
- GHT-115 test leads x1
- GTL-215 GB test leads x1 (RSST-2004)
- GHT-119 Remote terminal cable
- Interlock key



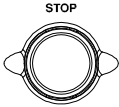
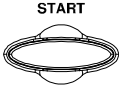




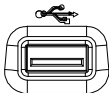
Note

Keep the packaging, including the box, polystyrene foam and plastic envelopes should the need arise to return the unit to RS PRO company.

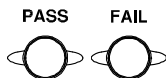
Front Panel Overview



| 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 (RSST-2004 only) |
| G | SOURCE H (RSST-2004 only) |

- | | | |
|--------------------|---|---|
| STOP button |  | The STOP button is used to stop/cancel tests. The STOP button will also put the safety analyzer in the READY status to begin testing. |
| START button |  | The START button is used to start tests. The START button can be used to start tests when the tester is in the READY status. Pressing the START button will put the tester in the TEST status. |
| POWER switch |  | Turns the power on. The safety tester will always start up with the setting which was performed and executed from the last test. |
| Test Function Keys | The keys indicate the 5 testing functions including ACW, DCW, IR, GB and CONT. Pressing one of the keys enters the function settings. | |
| Display | 7" Color TFT LCD display in 800 X 480 resolution | |
| AUTO button |  | Press to enter the AUTO test mode. |
| MANUAL button |  | Press to enter the MANUAL test mode. |
| SYSTEM button |  | Press to enter the SYSTEM mode. |
| Soft Keys | The Soft keys correspond to the menu keys directly above on the main display. | |
| USB Host Port |  | It can connect with USB flash drive for data and log import/export and for firmware update. Also, it is able to connect with USB disk for screenshot hardcopy and barcode scanner for convenient tests. |

Pass/Fail indicators



The PASS and FAIL indicators light up upon a PASS or FAIL test result at the end of a manual test or automatic test.

REMOTE terminal



The REMOTE terminal is used to connect to a remote controller.

Scroll wheel



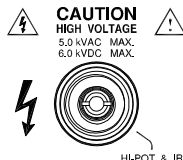
The scroll wheel is used to edit parameter values.

HIGH VOLTAGE indicator



The HIGH VOLTAGE indicator will light up red when an output terminal is active. Only after the test has finished or stopped will the indicator turn off.

HIGH VOLTAGE output terminal



The HIGH VOLTAGE terminal output is used for outputting the testing voltage in ACW, DCW and IR tests. The terminal is recessed for safety. This terminal is used in conjunction with the RETURN terminal.

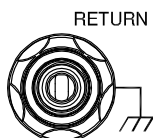


WARNING

USE EXTREME CAUTION.

Do not touch the HIGH VOLTAGE terminal during testing.

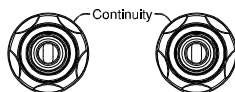
RETURN terminal



The RETURN terminal is used for ACW, DCW, IR and CONT tests.

**OUTPUT and
RETURN
terminals**

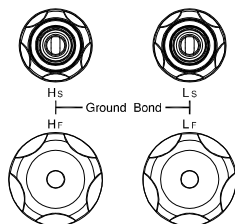
All models



The OUTPUT terminal (red) and RETURN terminal (black) are used for CONT (Continuity) test.

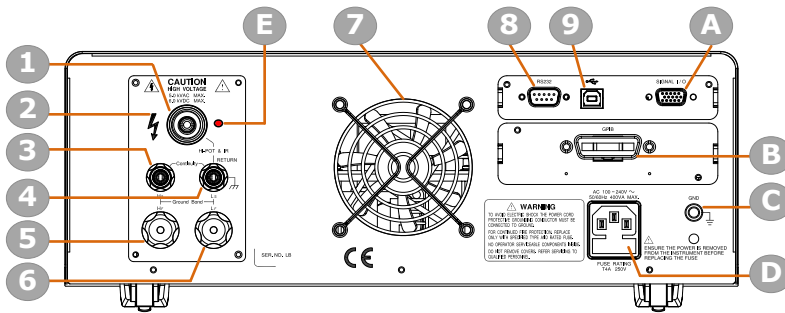
**SENSE H/L and
SOURCE H/L
terminals**

RSST-2004 only

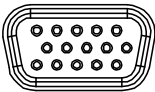




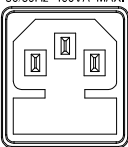



The SENSE H, SENSE L, SOURCE H and SOURCE L, terminals are used for GB (Ground Bond) test.

Rear Panel Overview



| Item | Description |
|------|------------------------------------|
| 1 | HIGH VOLTAGE Output Terminal |
| 2 | HIGH VOLTAGE Indicator |
| 3 | SENSE H & Output Terminal |
| 4 | SENSE L & RETURN Terminal |
| 5 | SOURCE H (RSST-2004 only) |
| 6 | SOURCE L (RSST-2004 only) |
| 7 | Fan |
| 8 | RS-232 Port |
| 9 | USB B-Type Interface Port |
| A | Signal I/O Port |
| B | GPIB Port (Optional) |
| C | GND |
| D | AC Mains Input (Power Cord Socket) |
| E | HIGH VOLTAGE pilot lamp |

| | | |
|----------------------|--|---|
| SIGNAL I/O port | <p>SIGNAL I / O</p>  | <p>The SIGNAL I/O port is used to monitor the tester status (PASS, FAIL, TEST) and input (START/STOP signals). It is also used with the Interlock key.</p> |
| USB B-Type port |  | <p>The USB B-Type port is used for remote control.</p> |
| RS232 interface port | <p>RS232</p>  | <p>The RS-232 port is used for remote control.</p> |
| Fan/Fan Vents |  | <p>Exhaust fan. Allow enough room for the fan to vent. Do not block the fan openings.</p> |
| GND | <p>GND</p>  | <p>Connect the GND (ground) terminal to the earth ground.</p> |
| AC Mains Input | <p>AC 100 ~ 240V ~ 50/60Hz 400VA MAX.</p>  <p>FUSE RATING T4A 250V</p> | <p>AC Mains Input for Power Cord Socket: 100 – 240 VAC $\pm 10\%$.</p> <p>The fuse holder contains the AC mains fuse. For fuse replacement details, see page 45.</p> |
| Optional GPIB port | <p>GPIB</p>  | <p>Optional GPIB interface for remote control.</p> |

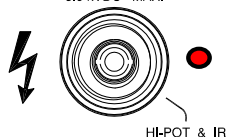
HIGH VOLTAGE
output terminal



CAUTION
HIGH VOLTAGE
5.0 kVAC MAX.
6.0 kVDC MAX.



The HIGH VOLTAGE terminal output is used for outputting the testing voltage in ACW, DCW and IR tests. The terminal is recessed for safety and used in conjunction with the RETURN terminal.



WARNING

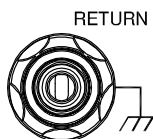
USE EXTREME CAUTION. Do not touch the HIGH VOLTAGE terminal during testing.

HIGH VOLTAGE
pilot lamp



The HIGH VOLTAGE pilot lamp will light up red when an output terminal is active. Only after the test has finished or stopped will the lamp turn off.

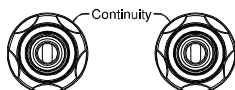
RETURN
terminal



The RETURN terminal is used for ACW, DCW, IR and CONT tests.

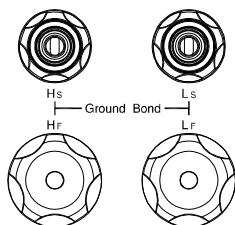
OUTPUT and
RETURN
terminals

All models



The OUTPUT terminal (red) and RETURN terminal (black) are used for CONT (Continuity) test.

SENSE H/L and RSST-2004 only
SOURCE H/L
terminals



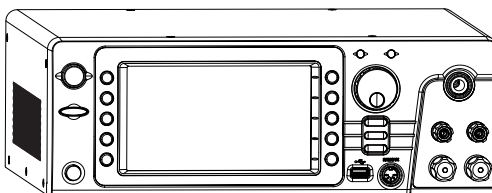
The SENSE H, SENSE L, SOURCE H and SOURCE L, terminals are used for GB (Ground Bond) test.

Set Up

Tilting the Stand

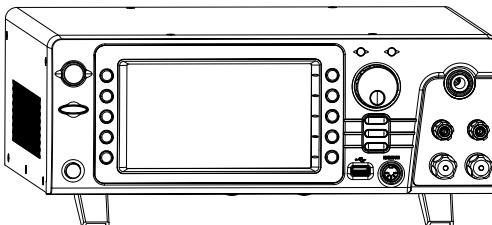
Horizontal
position

Place the unit on a flat surface horizontally.



Tilt stand
position

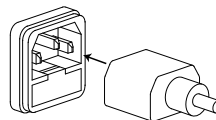
Gently pull the 2 stands out from the bottom and the unit will be placed in the tilt stand position.



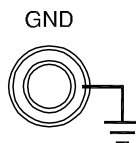
Line Voltage Connection and Power Up

Background The RSST-2000 accepts line voltages of 100 - 240V at 50Hz or 60Hz.

Steps Connect the power cord to the AC Mains Input socket on the rear panel.



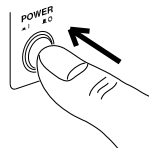
If the power cord does not have an earth ground, ensure the ground terminal is connected to an earth ground.



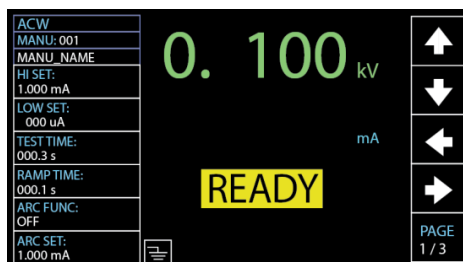
Warning

Ensure the power cord is connected to an earth ground. Failure could be harmful to the operator and instrument.

Press the Power button.



When the unit is powered up, the display will show the last time parameters in either MANU or AUTO test mode as shown below.



Installing the Optional GPIB Card

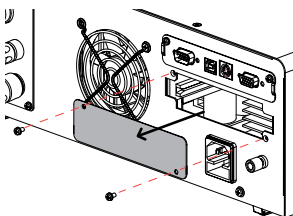
Background The optional GPIB is a user-installable option. Follow the instructions below to install the GPIB card.



WARNING

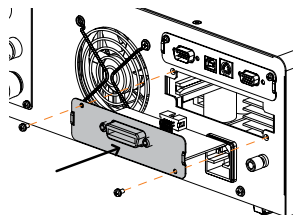
Before installing optional GPIB card ensure the RSST-2000 is turned off and disconnected from power.

Steps Remove screws from the rear panel cover plate.



Insert the GPIB card into the opening of rear panel. Push the card gently until it is fully inserted followed by fastening the screws.

GPIB Card



Workplace Precautions

Background The RSST-2000 is a high voltage instrument that outputs dangerous voltages. The following section describes precautions and procedures that must be followed to ensure a safe work environment.



WARNING

The RSST-2000 generates voltages in excess of 5kVAC or 6kVDC. Follow all safety precautions, warnings and directions given in the following section when using the instrument.

Only technically qualified personnel should be allowed to operate the safety analyzer.

The operating workplace must be fully isolated, especially when the instrument is in operation. The instrument should be clearly labeled with appropriate warning signage.

The operator should not wear any conductive materials, jewelry, badges, or other items, such as wrist watches.

The operator should wear insulation gloves for high voltage protection.

Ensure the earth ground of the line voltage is properly grounded.

Ensure any devices that are adversely affected by magnetic fields are not placed near the tester.

Operating Precautions

Background The RSST-2000 is a high voltage instrument that outputs dangerous voltages. The following section describes precautions and procedures that must be followed to ensure that the tester is operated in a safe manner.



WARNING

The RSST-2000 generates voltages of up to 5kVAC or 6kVDC. Follow all safety precautions, warnings and directions given in the following section when using the instrument.

Never touch the safety analyzer, lead wires, terminals, probes and other connected equipment when the tester is testing.

Do not turn the safety analyzer on and off quickly or repeatedly. When turning the power off, please allow a few moments before turning the power back on. This will allow the protection circuits to properly initialize.

Do not turn the power off when a test is running, unless in an emergency.

Only use those test leads supplied with the instrument. Leads with inappropriate gauges can be dangerous to both the operator and the instrument.

For GB testing, never use the Sense leads on the SOURCE terminals.

Do not short the HIGH VOLTAGE terminal with ground. Doing so could charge the chassis to dangerously high voltages.

Ensure the earth ground of the line voltage is properly grounded.

Only connect the test leads to the HIGH VOLTAGE/SOURCE H/SENSE H terminals before the start of a test. Keep the test leads disconnected at all other times.

Always press the STOP button when pausing testing.

Do not leave the safety analyzer unattended. Always turn the power off when leaving the testing area.

When remotely controlling the safety analyzer, ensure adequate safety measures are in place to prevent:

- Inadvertent output of the test voltage.
- Accidental contact with the instrument during testing. Ensure that the instrument and DUT are fully isolated when the instrument is remotely controlled.

Ensure an adequate discharge time for the DUT.

When DCW or IR tests are performed, the DUT, test leads and probes become highly charged. The RSST-2000 has discharge circuitry to discharge the DUT after each test. The time required for a DUT to discharge depends on the DUT and test voltage.

Never disconnect the safety analyzer before a discharge is completed.

Basic Safety Checks

Background The RSST-2000 is a high voltage device and as such, daily safety checks should be made to ensure safe operation.

Ensure all test leads are not broken and are free from defects such as cracks or splitting.

Ensure the safety analyzer is always connected to an earth ground.

Test the safety analyzer operation with a low voltage/current output:
Ensure the safety analyzer generates a FAIL judgment when the HIGH VOLTAGE and RETURN terminals are shorted (using the lowest voltage/current as the testing parameters).



WARNING

Do not use high voltages/currents when the HIGH VOLTAGE and RETURN terminals are shorted. It may result in damage to the instrument.

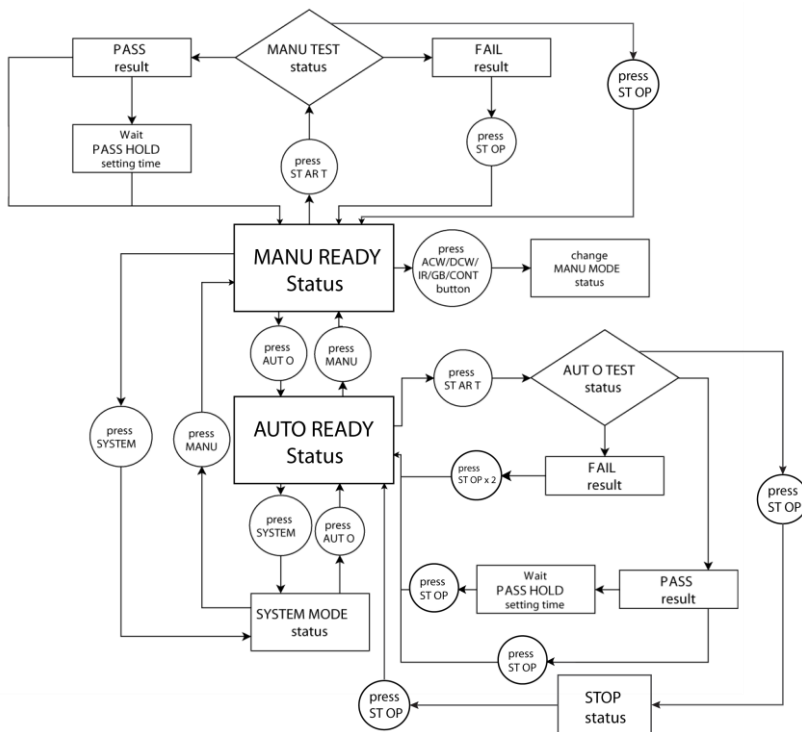
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| Time Setting..... | 137 |
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| Statistics Settings | 145 |
| USB Disk Settings | 148 |
| Contact Check Settings | 153 |

Menu Tree

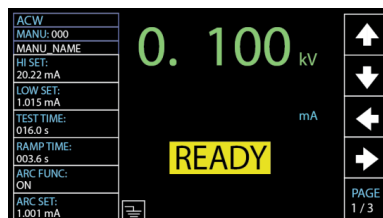
This section describes the overall structure of the operation statuses and modes for the RSST-2000 safety analyzers. The testers have two main testing modes (MANU, AUTO), one system mode (SYSTEM) and 5 main operation statuses (READY, TEST, PASS, FAIL and STOP).



Menu Tree Overview

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

MANU
mode



AUTO Mode 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.

AUTO mode

| AUTO-001 | | AUTO NAME | | | | READY | | |
|-----------|-----------|-------------|------------|-------------|-----------|-------|--|--|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | | |
| 026 | IR | 0.050kV | 49.99GΩ | 001.0MΩ | P.C/F.C | | | |
| | | | | | | | | |
| | | | | | | | | |
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SYSTEM Mode System mode covers the Display Set, Buzzer, Interface, Control, System Time, Data Initialize, Information, Statistics, USB Disk and CONTACT CHK settings. These settings are system-wide and applied to both MANU and AUTO tests.

SYSTEM
mode

| | | |
|--------------|-------------|-------|
| DISPLAY SET: | Year: 2019 | |
| BUZZER: | Month: 04 | |
| INTERFACE: | Date: 02 | |
| CONTROL: | Hours: 19 | |
| SYSTEM TIME: | Minutes: 08 | |
| DATA INIT: | Seconds: 52 | |
| INFORMATION: | | |
| STATISTICS: | | |
| USB DISK: | | |
| CONTACT CHK: | | |
| | | ENTER |

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.

The screenshot shows the ACW 1000 digital multimeter interface. On the left, a menu displays settings: MANU: 001, MANU NAME, HI SET: 1.000 mA, LOW SET: 000 uA, TEST TIME: 000.3 s, RAMP TIME: 000.1 s, ARC FUNC: OFF, and ARC SET: 1.000 mA. The main display shows a large green reading of 0.100 kV. Below this, the word 'READY' is shown in a yellow box. To the right of the reading is the unit 'mA'. On the far right, there are four navigation arrows (up, down, left, right) and a 'PAGE 1 / 3' indicator at the bottom.

| AUTO-001 | | AUTO_NAME | | | READY |   |
|-----------|-----------|-------------|------------|-------------|-----------|--|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F/H | SKIP |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.H/F.C | |
| 005 | IR | 0.050kV | 066.8MΩ | 000.1MΩ | P.C/F.S | |
| 010 | ACW | 0.200kV | 2.000mA | 000 uA | P.C/F.C | |
| 006 | DCW | 0.500kV | 1.500mA | 000 uA | P.H/F.S | DEL. |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | STEP HOLD |

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.

The screenshot shows the ACW 1000 digital multimeter interface. On the left is a menu with options: ACW, RANGE: 001, MENU: NAME, HI SET: 1.000 mA, LOW SET: 000 uA, TEST TIME: 010.0 s, RAMP TIME: 005.0 s, ARC FUNC: OFF, and ARC SET: 1.001 mA. The main display area shows a large green '0.099' followed by a red 'kV' unit, and a smaller 'mA' unit below it. A yellow 'TEST' button is centered below the main readout. On the right are four navigation buttons: up, down, left, and right. At the bottom right, it shows 'RAMP TIME: 004.5 s' and 'PAGE 1/3'. A small icon of the device is at the bottom left.

| | | | |
|--------------------|-------|--------------------|----------|
| ACW | 0.099 | kV | ↑ |
| RANGE: 001 | | | ↓ |
| MENU: NAME | | | ← |
| HI SET: 1.000 mA | | | → |
| LOW SET: 000 uA | | mA | |
| TEST TIME: 010.0 s | TEST | | |
| RAMP TIME: 005.0 s | | | |
| ARC FUNC: OFF | | | |
| ARC SET: 1.001 mA | | RAMP TIME: 004.5 s | PAGE 1/3 |

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.

STOP status
in AUTO
test

| AUTO-001 | | AUTO NAME | | | | IS1000 |
|--------------|--------------|---------------|---------------|--------------|----------------|---------------|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | TEST RESULT | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | |
| 001 | DCW | 0.000kV | 000 uA | T000.0s | SKIP | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | |
| 026 | IR | 0.049kV | 60.00GΩ | T000.3s | FAIL | |
| 001 | DCW | 0.097kV | 000 uA | T000.1s | STOP | |
| 002 | ACW | 0.000kV | 000 uA | T000.3s | | |
| | | | | | | PAGE 1 / 1 |

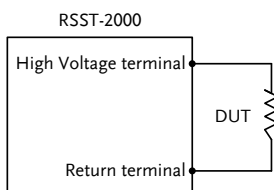
Test Lead Connection

This section describes how to connect the RSST-2000 to a DUT for 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

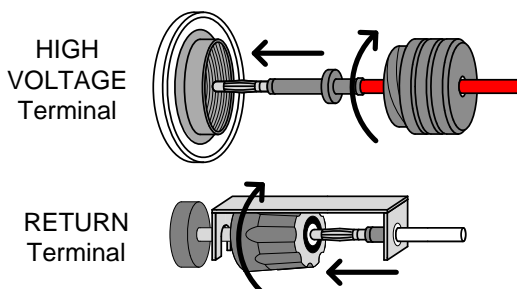


Steps

Turn the power off on the safety analyzer.

Connect the high voltage test lead (red) to the HIGH VOLTAGE terminal and screw firmly into place.

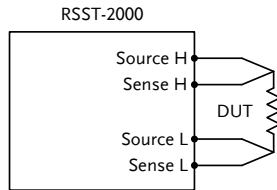
Connect the return test lead (white with holder) into the RETURN terminal and screw the protector bar into place, as shown below.



GB Connection

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

GB Connection



Steps

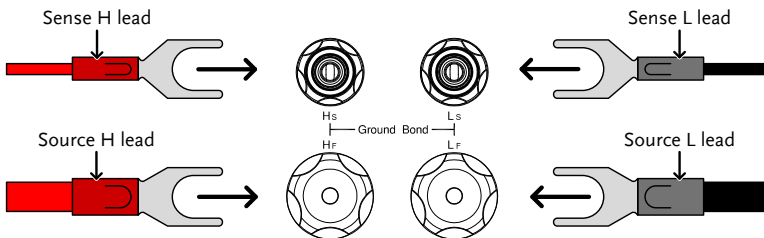
Turn the power off on the safety analyzer.

Connect the Sense H lead to the SENSE H terminal.

Connect the Sense L lead to the SENSE L terminal.

Connect the Source H lead to the SOURCE H terminal.

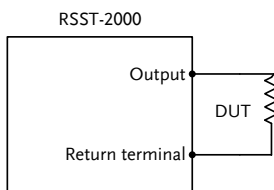
Connect the Source L lead to the SOURCE L terminal.



CONT Connection

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

CONT Connection

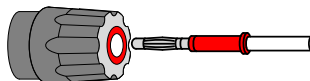


Steps Turn the power off on the safety analyzer.

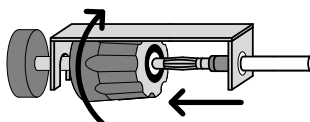
Connect the OUTPUT test lead (white) to the OUTPUT terminal.

Connect the RETURN test lead (white with holder) into the RETURN terminal and screw the protector bar into place, as shown below.

OUTPUT
Terminal



RETURN
Terminal



Manual Tests

This section describes how to create, edit and run a *single* ACW, DCW, IR, GB and CONT manual tests. Each Manual setting described in this chapter *only applies to the selected manual test – no other manual tests are affected.*

Each manual test can be stored/recalled to/from one of 100 memory locations. Each stored manual test can be used as a test step when creating an AUTO test (page 90).

- Setting the Test Function → from page 39.
- Choose/Recall a Manual Test Number → from page 40.
- Creating a MANU Test File Name → from page 41.
- Setting the Upper and Lower Limits → from page 42.
- Setting the Test Time → from page 44.
- Setting the Ramp Up Time → from page 46.
- Setting the Ramp Down Time → from page 48.
- Setting the Test Voltage or Test Current → from page 50.
- Setting the Test Frequency → from page 52.
- Setting a Reference Value → from page 53.
- Setting an Initial Voltage → from page 54.
- Setting the Wait Time → from page 56.
- Setting the ARC Function → from page 58.
- Setting MAX HOLD → from page 61.
- Setting PASS HOLD → from page 62.
- Setting IR Mode → from page 63.
- Setting GND OFFSET → from page 65.
- Setting GB Contact → from page 67.
- Zero Check for the Test Leads → from page 69.
- Setting the Grounding Mode → from page 72.
- Setting Contact Check → from page 76.
- Running a MANU Test → from page 78.
- PASS / FAIL MANU Test → from page 83.
- Special MANU Test Mode (000) → from page 88.
- Sweep Function → from page 90.

Setting the Test Function

Background There are five test functions, AC Withstand, DC Withstand, Insulation Resistance, Ground Bond and Continuity tests.

Steps If the tester is in AUTO or SYSTEM mode, press the MANUAL key to put the tester into MANU mode.

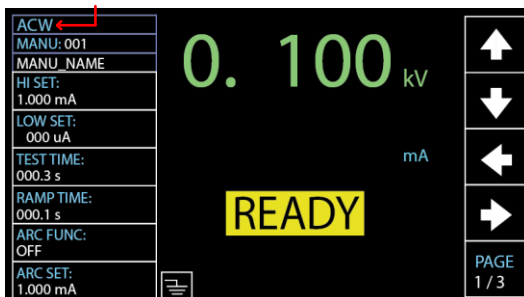
MANUAL

To choose the test function, press the ACW, DCW, IR, GB or CONT key on the front panel.



The key of selected test function is lit, and the test function selected is shown on the upper-left corner of the display.

Selected Test Function



Choose/Recall a Manual Test Number

Background ACW, DCW, IR, GB and CONT tests can only be created and edited in the MANU mode. MANU number 001 to 100 can be saved and thus be loaded when editing/creating a MANU test or AUTO test. MANU number 000 is a special mode. See page 88 for details on the special mode.

Steps If the tester is in AUTO or SYSTEM mode, simply press the MANUAL key

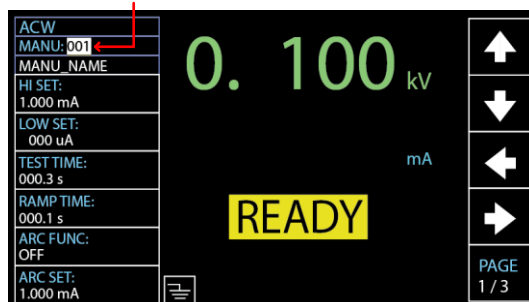


Use the scroll wheel to choose the MANU number.



MANU # 001~100
(MANU# 000 is a special mode)

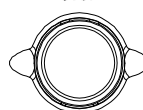
MANU number cursor



Note

Manual number can only be selected or recalled when the “READY” status shows on the screen. If the “FAIL” status appears, it is required to press STOP key first before selecting or recalling procedure.

STOP



Creating a MANU Test File Name

Background

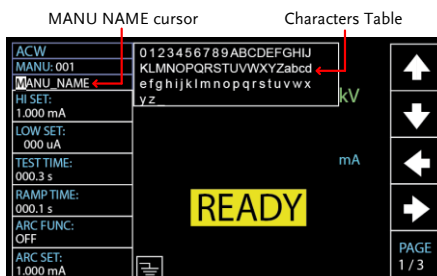
Each manual test can have a user-defined name (default: MANU_NAME) up to 10 characters long. See the available list of characters below.

Character List

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Steps

Press the UP / DOWN arrow soft-keys to bring the cursor to the MANU_NAME (default name) field. The characters table will appear in the right hand accordingly.



Use the scroll wheel to scroll through the available characters.



Press the LEFT / RIGHT arrow soft-keys to move the cursor to the next character.

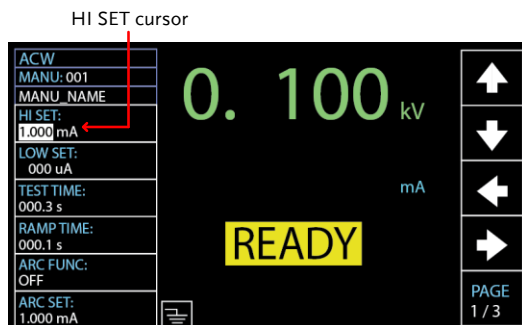


The MANU test file name is set when the cursor is moved to another setting.

Setting the Upper and Lower Limits

Background There is both a LOW and HI judgment setting. When the measured value is below the LOW SET setting, the test will be judged as FAIL. When the value exceeds the HI SET setting the test will be judged as FAIL. Any measurement between the LOW SET and HI SET setting is judged as PASS. The LOW SET limit cannot be made greater than the HI SET limit.

Steps Press the UP / DOWN arrow soft-keys to bring the cursor to the HI SET setting.



Use the scroll wheel to set the HI SET limit.



| | |
|-----------|----------------------|
| ACW (HI) | 001μA~42.00mA |
| DCW (HI) | 001μA~11.00mA |
| IR (HI) | 000.2MΩ~50.00GΩ, OFF |
| GB (HI) | 000.1mΩ~650.0mΩ |
| CONT (HI) | 00.01Ω~80.00Ω |

Press the UP / DOWN arrow soft-keys to bring the cursor to the LOW SET setting.



LOW SET cursor



Use the scroll wheel to set the LOW SET limit.



| | |
|------------|----------------------------------|
| ACW (LOW) | 000 μ A~41.99mA |
| DCW (LOW) | 000 μ A~10.99mA |
| IR (LOW) | 000.1M Ω ~49.99G Ω |
| GB (LOW) | 000.0m Ω ~649.9m Ω |
| CONT (LOW) | 00.00 Ω ~79.99 Ω |



Note

*Please note that the resolution of the measured value depends on the resolution of HI SET setting.



Note

The LOW SET setting is limited by the HI SET setting. The LOW SET limit cannot be greater than the HI SET limit.

When setting the current, be aware that a maximum of 200VA can be set for ACW and 50W for DCW, respectively.

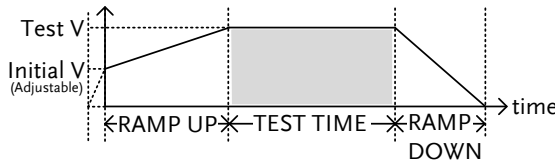
Setting the Test Time

Background

This setting is used to set the test time for a test. The test time determines how long the test voltage or current is applied to the DUT. This test time does not include RAMP UP time or RAMP DOWN time (note: GB and CONT do not have RAMP UP or RAMP DOWN). The test time can be set from 0.3 seconds to 999.9 seconds for ACW, DCW, IR, GB and CONT, with a resolution of 0.1 seconds for all modes. Also, the test time can be turned off when using the ACW or DCW test functions.

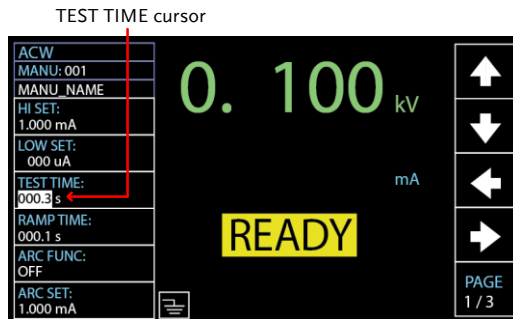
Each test has a RAMP UP and RAMP DOWN time (except GB and CONT), respectively. Refer to page 46 & 48 for more details.

Output Voltage Timing Chart (Resistive load)



Steps

Press the UP / DOWN arrow soft-keys to bring the cursor to the TEST TIME setting.



Use the scroll wheel to set the TEST TIMER value.



| | |
|------|--------------------|
| ACW | OFF, 000.3s~999.9s |
| DCW | OFF, 000.3s~999.9s |
| IR | 000.3s~999.9s |
| GB | 000.3s~999.9s |
| CONT | 000.3s~999.9s |



Note

With the ACW test function, when the test current is beyond 30mA, the Ramp Up Time + Test Time cannot exceed 240 seconds. At this current level, the tester also needs to pause after a test for a time equal to or greater than the output time.

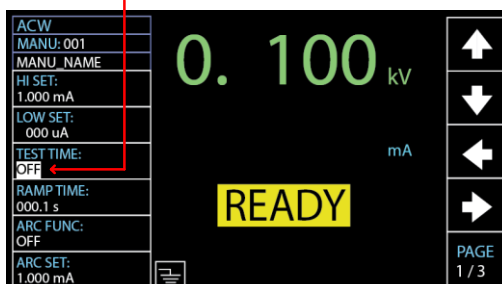
Turn Off Test Time

When in either ACW or DCW test, the TEST TIME can be turned off, which means the test without test time will last infinitely until FAIL judgment occurs.

Identical with the regular setting for TEST TIME, turn off the timer by using the scroll wheel to set OFF for TEST TIME value.



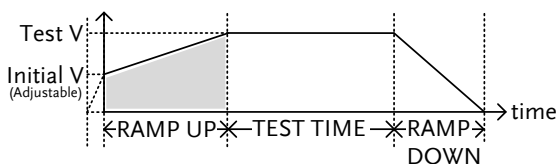
TEST TIME OFF



Setting the Ramp Up Time

Background The Ramp Up time is the total time taken for the tester to reach the test voltage level. The Ramp Up time can be set from 000.1 to 999.9 seconds. The Ramp Up time is only applicable for ACW, DCW and IR tests.

**Output Voltage
Timing Chart
(Resistive load)**



Steps

Press the UP / DOWN arrow soft-keys to bring the cursor to the RAMP TIME setting.



RAMP TIME cursor



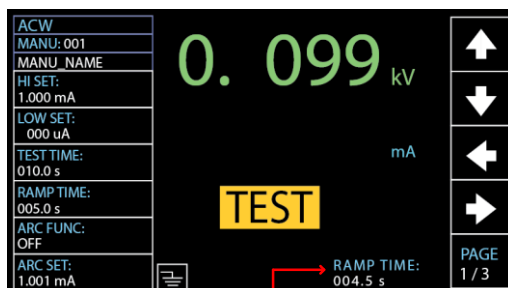
Use the scroll wheel to set the RAMP TIME value.



| | |
|-----|---------------|
| ACW | 000.1s~999.9s |
| DCW | 000.1s~999.9s |
| IR | 000.1s~999.9s |

Ramp Time Duration Indicator

After pressing START to begin a test with set RAMP TIME, a section at the lower right corner of display shows the counting duration of RAMP TIME, which will run to the set value followed by the test time. See the screenshot shown below.



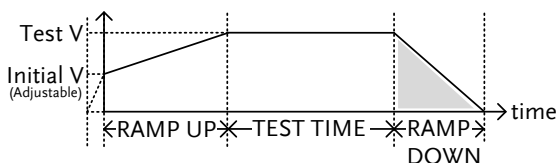
RAMP TIME duration indicator

Setting the Ramp Down Time

Background

The Ramp Down time is the time taken for tester to gradually lower down output test voltage from the set highest level to zero volt. The Ramp Down time can be set from 000.0 to 999.9 seconds. The Ramp DOWN time is only applicable for ACW, DCW and IR tests.

Output Voltage Timing Chart (Resistive load)



Steps

1. Press the PAGE soft-key to move to the 2/3 page where RAMP DOWN setting appears for ACW, DCW and IR.

PAGE
2 / 3

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the RAMP DOWN setting.



RAMP DOWN cursor



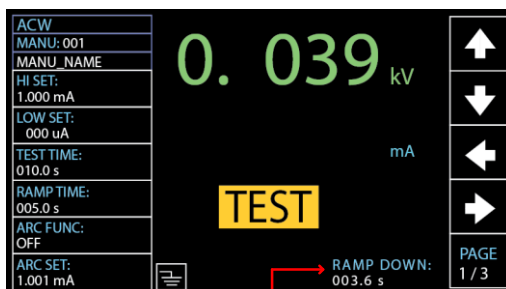
3. Use the scroll wheel to set the RAMP DOWN value.



| | |
|-----|---------------|
| ACW | 000.0s~999.9s |
| DCW | 000.0s~999.9s |
| IR | 000.0s~999.9s |

Ramp Down Duration Indicator

After the set TEST TIME is fully completed, a section at the lower right corner of display shows the counting duration of RAMP DOWN, which will run to the set value by user. See the screenshot shown below.



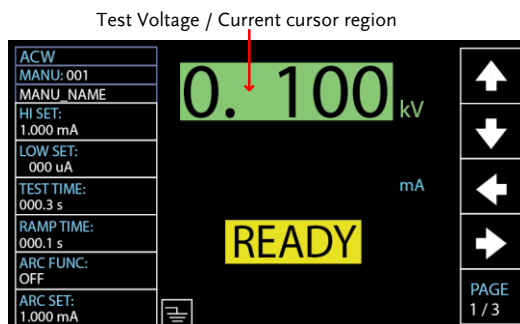
RAMP DOWN duration indicator

Setting the Test Voltage or Test Current

Background The test voltage can be set from 0.050kV to 5.1kV for ACW, 0.050kV to 6.1kV-12.1kV for DCW and 0.050 to 1.2kV for IR (50V steps*). For GB tests the test current can be set from 3A to 33A. As for CONT test, the test current is fixedly set at the default value of 100mA.

Steps

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the voltage or ampere setting depending on selected test function.



2. Use the scroll wheel to set the test voltage or ampere level.



| | |
|------|------------------------------|
| ACW | 0.050kV ~ 5.1kV ¹ |
| DCW | 0.050kV ~ 6.1kV ² |
| IR | 0.05kV ~ 1.2kV (50V steps) |
| GB | 3.00A ~ 33.00A |
| CONT | 100mA ³ |

- ¹ At least 0.3 seconds is needed to reach a set voltage of 50V/10mA.
 - ² At least 0.3 seconds is needed to reach a set voltage of 50V/2mA.
 - ³ Test current for CONT is fixed at 100mA
-



Note

When setting the current, be aware that a maximum of 200VA can be set for ACW and 50W for DCW respectively.

The ground bond voltage (GBV) is calculated as the HI SET limit x Test Current.

Setting the Test Frequency

Background A test frequency of 60Hz or 50Hz can be set, regardless of the input line voltage. The test frequency setting only applies to ACW and GB tests.



Note

The test frequency can only be set for ACW or GB tests.

Steps

1. Press the PAGE soft-key to move to the 2/3 page where FREQ setting appears for ACW.

PAGE
2 / 3

As for GB test, the FREQ setting shows in the 1/2 page directly.

PAGE
1 / 2

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the FREQ setting.



FREQ setting cursor




Use the scroll wheel to set the test frequency.





ACW, GB 50Hz, 60Hz


Setting a Reference Value

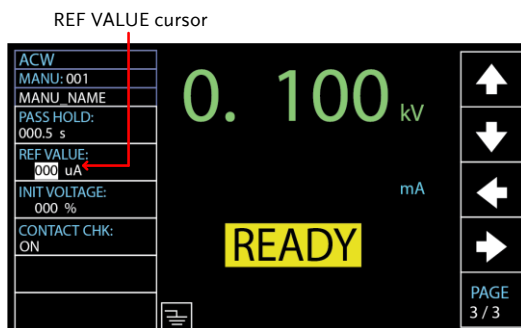
Background The REF VALUE acts as an offset. The REF VALUE is subtracted from the measured current (ACW, DCW) or measured resistance (IR, GB, CONT).


Steps 1. Press the PAGE soft-key to move to the 3/3 page where REF VALUE setting appears for ACW and DCW. 

As for IR and GB, the REF VALUE setting shows in the 2/2 page. 

The REF VALUE setting appears in the 1/1 page directly for CONT. 

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the REF VALUE setting. 



3. Use the scroll wheel to set the REF value. 

| | |
|------|---|
| ACW | 000uA~ HI SET current-0.1mA *HI SET + REF value \leq 42.00mA |
| DCW | 000uA~ HI SET current-0.1mA *HI SET + REF value \leq 11.00mA |
| IR | 000.0M Ω ~50.00G Ω |
| GB | 000.0m Ω ~650.0m Ω *ISET x (HI SET + REF value) is no greater than 7.2V |
| CONT | 00.00 Ω ~80.00 Ω *ISET(100mA) x (HI SET + REF value) is no greater than 8V |

**Note**

For IR test, a reference value of tester can be automatically created via the GND OFFSET function. See page 65 for details.

For GB and CONT tests, a reference value of test lead can be automatically created via the ZERO CHECK function. See page 69 for details.

Setting an Initial Voltage

Background

In essence, the test voltage for both ACW and DCW will gradually and linearly rise up, from zero, to the target set voltage in accord with the set RAMP TIME ahead of the TEST TIME.

Nevertheless, under certain circumstances, user may have preferences on the percentage of starting test voltage. Therefore, the INIT VOLTAGE provides another alternative for different applications on user side.

It is easy to set a preferred percentage of the test voltage in the INIT VOLTAGE setting and the starting test voltage will commence from the value corresponding to the set percentage relative to the target test voltage.



Note

INIT VOLTAGE setting is only applicable to both ACW and DCW tests.

Steps

1. Press the PAGE soft-key to move to the 3/3 page where the INIT VOLTAGE setting appears for ACW and DCW.

PAGE
3 / 3

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the INIT VOLTAGE setting.



INIT VOLTAGE cursor

Use the scroll wheel to set the percentage of INIT VOLTAGE.



INIT 000% ~ 099%
VOLTAGE

Setting the Wait Time

Background The Wait Time refers to the pending time before FAIL judgment appears. By default, FAIL judgment appears when test has reached 0.3 second at the earliest manner. However, when user sets 1.0 second for Wait Time on the tester with 0.5 second of Ramp Up time and 1.0 second of Test Time, the FAIL judgment will be shown when Test Time has reached 0.5 second. In short, Wait Time is the pending duration which dominates the priority over both Ramp UP time and Test Time in terms of timing of FAIL judgment.

The WAIT TIME is only applicable for ACW, DCW and IR tests.

Steps

1. Press the PAGE soft-key to move to the 2/3 page where WAIT TIME setting appears for ACW and DCW.

PAGE
2 / 3

As for IR test, the WAIT TIME setting shows in the 1/2 page.

PAGE
1 / 2

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the WAIT TIME setting.



WAIT TIME cursor



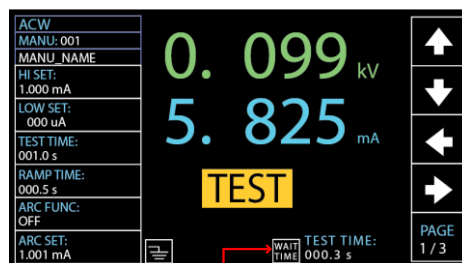
3. Use the scroll wheel to set the WAIT TIME value.



| | |
|-----|---------------|
| ACW | 000.0s~999.9s |
| DCW | 000.0s~999.9s |
| IR | 000.0s~999.9s |

Wait Time Indicator

While the WAIT TIME is set, the indicator of WAIT TIME will be shown on the display in the set duration during a test progress for clear identification for user.



WAIT TIME indicator

Setting the ARC Function

Background

ARC detection, otherwise known as flashover detection, detects fast voltage or current transients that are not normally detected. Arcing is usually an indicator of poor withstanding insulation, electrode gaps or other insulating problems that cause temporary spikes in current or voltage during ACW and DCW testing.

There are three ARC detection settings: OFF, ON & CONT, ON & STOP.

The ON & CONT setting will detect arcs over the ARC current level and continue the test, the ON & STOP setting will stop the test when an arc is detected.

ARC mode settings only apply to both ACW and DCW tests.

Steps

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the ARC FUNC setting.



ARC FUNC cursor

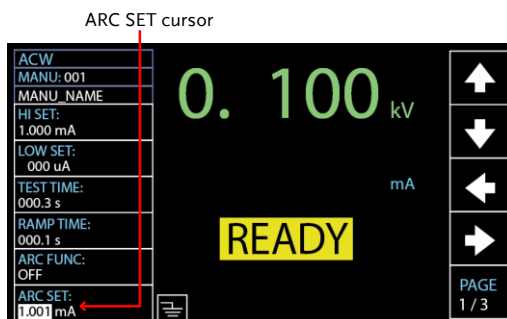


2. Use the scroll wheel to set the ARC modes setting.



ARC OFF, ON & CONT, ON & STOP
MODES:

- If the ARC MODE was set to either ON & CONT, or ON & STOP, the ARC current level can be edited. Press the DOWN arrow soft-key to bring the cursor to the ARC SET setting field.



- Use the scroll wheel to edit the ARC SET level.



ACW 1.000mA~80.00mA

DCW 1.000mA~20.00mA

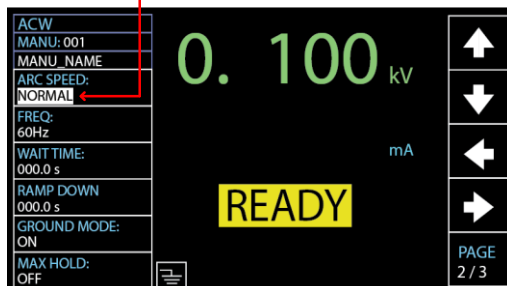
- If the ARC MODE was set to either ON & CONT, or ON & STOP, the ARC speed, which indicates the threshold for width of detected ARC, can be edited. Press the PAGE soft-key to move to the 2/3 page where ARC SPEED setting appears for ACW and DCW.

PAGE
2 / 3

- Press the UP / DOWN arrow soft-keys to bring the cursor to the ARC SPEED setting field.



ARC SPEED cursor



7. Use the scroll wheel to select the ARC SPEED modes.



ARC SPEED FAST

Threshold for the narrowest width of detected arc, which is the most sensitive manner.

NORMAL

Threshold for the general width of detected arc.

SLOW

Threshold for the widest width of detected arc, which is the manner of high tolerance.

Setting MAX HOLD

Background

The MAX HOLD setting will hold the maximum current measured in the ACW and DCW tests or the maximum resistance measured in the IR and GB tests.

For instance, when running an IR test with 120 seconds of test time and MAX HOLD enabled, the highest resistance measured in the 30 seconds of the test time will be retained on display until the next largest value. If there is no further maximum resistance occurred, the value measured in 30 seconds will be remained till the end of the test of 120 seconds.

Steps

1. Press the PAGE soft-key to move to the 2/3 page where MAX HOLD setting appears for ACW and DCW.

PAGE
2 / 3

As for IR and GB, the MAX HOLD setting shows in the 2/2 page.

PAGE
2 / 2

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the MAX HOLD setting.



MAX HOLD cursor



3. Use the scroll wheel to set MAX HOLD.



MAX HOLD OFF, ON

Setting PASS HOLD

Background The PASS HOLD setting refers to the holding duration after PASS judgment is shown on the display. When the PASS HOLD setting is set, a PASS judgment is held until the set duration is fully reached.



Note

The PASS HOLD setting only applies to MANU tests. This setting is ignored when running AUTO test.

Steps

1. Press the PAGE soft-key to move to the 3/3 page where PASS HOLD setting appears for ACW.

PAGE
3 / 3

And it is the 2/3 page where PASS HOLD setting appears for DCW.

PAGE
2 / 3

As for IR and GB, the PASS HOLD setting shows in the 2/2 page.

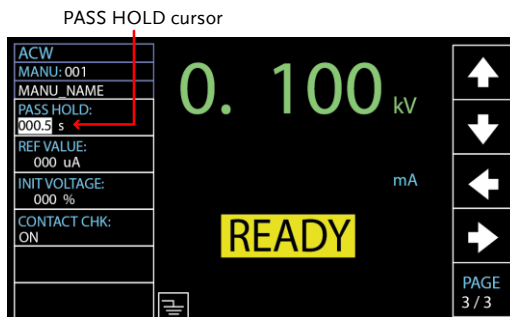
PAGE
2 / 2

The PASS HOLD setting appears in the 1/1 page directly for CONT.

PAGE
1 / 1

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the PASS HOLD setting.





3. Use the scroll wheel to set PASS HOLD duration.



PASS HOLD 000.0s ~ 999.9s, ON



Note

- The STOP key can be pressed at any time in the set duration of PASS HOLD to promptly halt the set PASS HOLD duration. In short, user can stop, if necessary, the duration of PASS HOLD any time.
- When ON is selected, the duration of PASS HOLD will remain indefinitely until the STOP key is further pressed.

Setting IR Mode

Background

The IR MODE setting, which contains three options, STOP ON FAIL, STOP ON PASS, TIMER, only applies to IR test.

When IR MODE is set to STOP ON FAIL, the tester will show the FAIL judgment, if available, in the 0.3 second of test time at the earliest manner, regardless of the set test time.

When set to PASS ON FAIL, the tester will show the PASS judgment, if available, in the 0.3 second

of test time at the earliest manner, regardless of the set test time.

The TIMER mode will run a test in a full course completely in accordance with the set test time, whether the final judgment is PASS or FAIL.



Note

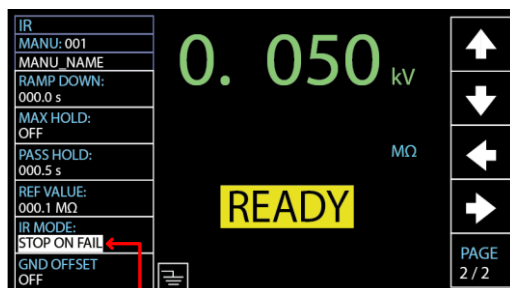
If the DUT is under the situation of abnormal measurement, e.g., short circuit, the FAIL judgment of SHORT warning, though TIMER is set, will appear in the early manner regardless of the set test time.

Steps

1. Press the PAGE soft-key to move to the 2/2 page where IR MODE setting appears for IR test.

PAGE
2 / 2

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the IR MODE setting.



IR MODE cursor

3. Use the scroll wheel to set the IR MODE.



IR MODE STOP ON FAIL
 STOP ON PASS
 TIMER

Setting GND OFFSET

Background The GND OFFSET is used to determine the offset resistance of the tester. When a GND OFFSET is performed, the reference is automatically set to the measured resistance.



Note

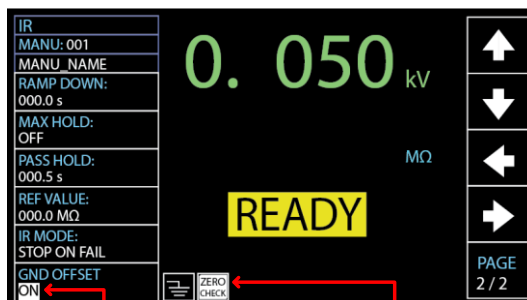
GND OFFSET setting is only applicable to IR test.

Steps

1. Press the PAGE soft-key to move to the 2/2 page where GND OFFSET setting appears for IR testing.

PAGE
2 / 2

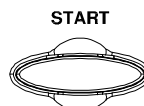
2. Press the UP / DOWN arrow soft-keys to bring the cursor to the GND OFFSET setting. When selecting ON, the ZERO CHECK indicator will be shown on the display.

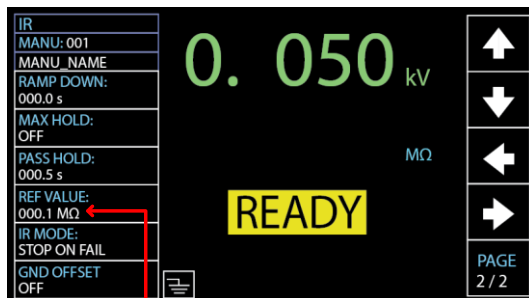


GND OFFSET cursor

ZERO CHECK indicator

3. Press the START button to perform the GND OFFSET. The resistance of the tester, after the GND OFFSET has finished, will be added into the REF VALUE field as the display shown below.





Resistance of the tester

Setting GB Contact

Background Basically, GB test has no ramp up time and thus starts from the set test time by user directly. However, due to some cases where a buffer time before test time is in fact required for GB test, e.g., in conveyor where DUTs are tested for GB by batches and certain buffer duration needed for test leads or jigs connecting with DUTs, the GB CONTACT setting practically allows user to apply to customized scenarios when necessary occurs.

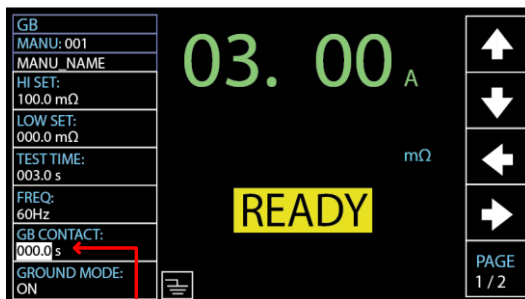


Note

GB CONTACT setting is only applicable to GB test.

Steps

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the GB CONTACT setting.



GB CONTACT cursor

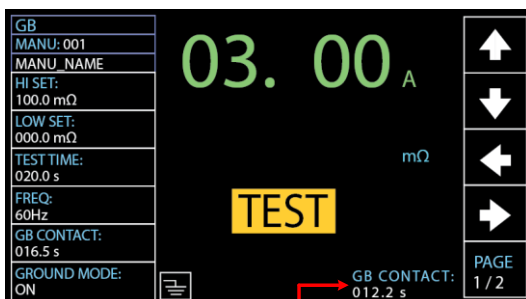
2. Use the scroll wheel to set the value of GB CONTACT



GB CONTACT 000.0 s ~ 999.9 s

GB CONTACT Duration Indicator

After every parameter including GB CONTACT is well set, press START to begin the GB test. A section at the lower right corner of display shows the counting duration of GB CONTACT, which will run to the set value followed by the test time. See the screenshot shown below.



GB CONTACT duration indicator

Zero Check for the Test Leads

Background

The Zeroing function is used to determine the resistance of the test leads for GB and CONT tests. When a ZERO CHECK is performed, the reference is automatically set to the measured resistance of the test leads.

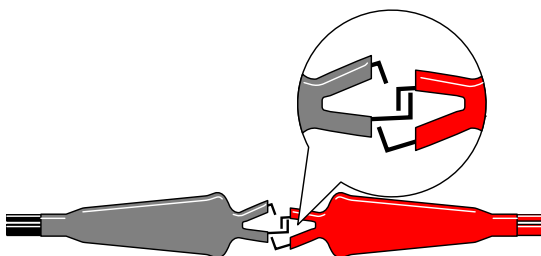


Note

ZERO CHECK setting is only applicable to both GB and CONT tests.

Steps

1. Short the positive and negative alligator clips as shown below.



2. Press the PAGE soft-key to move to the 2/2 page where ZERO CHECK setting appears for GB testing.

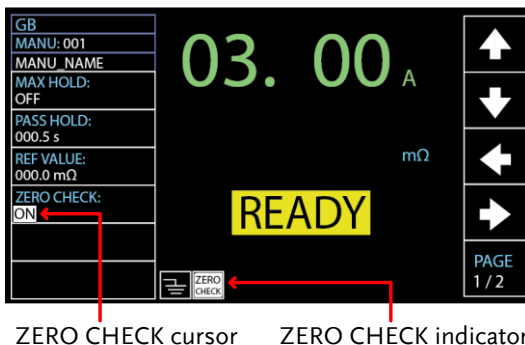
PAGE
2 / 2

As for CONT, ZERO CHECK setting shows in the 1/1 page directly.

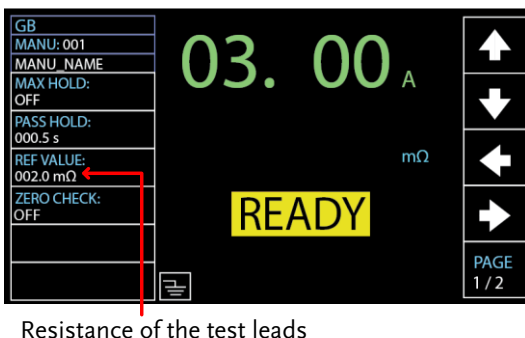
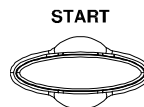
PAGE
1 / 1

3. Press the UP / DOWN arrow soft-keys to bring the cursor to the ZERO CHECK setting. When selecting ON, the ZERO CHECK indicator will be shown on the display.





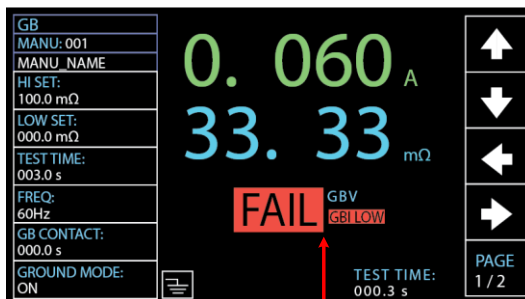
4. Press the START button to perform the zero check. The resistance of the test leads, after the ZERO CHECK has finished, will be added into the REF VALUE field as the display shown below.



Note

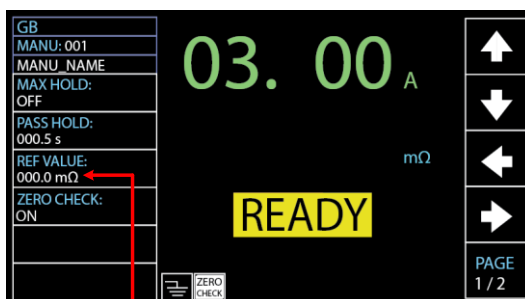
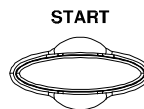
Remember to replace the test leads to the proper position on the DUT before testing.

FAIL – GBI LOW If SOURCE H/L terminals are open or poorly connected, the FAIL – GBI LOW status will appear on the screen. Please re-check the connection of SOURCE H/L terminals again.



FAIL – GBI LOW status

REF VALUE = 0 Press STOP button to exit and the resistance of test leads were not properly added into the REF VALUE, which shows 000.0 mΩ as shown below. Re-check the connection of SOURCE H/L terminals and press START button again to proceed to the ZERO CHECK procedure.



REF VALUE = 0

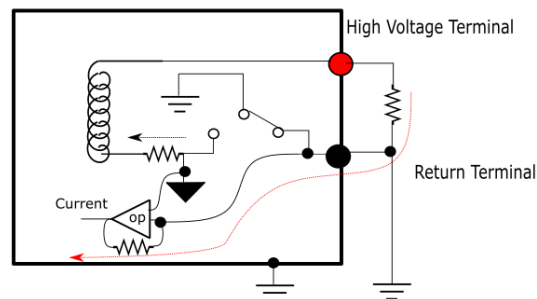
Setting the Grounding Mode

Background

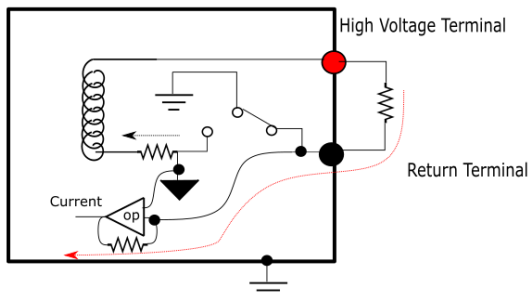
When GROUND MODE is set to ON, the RSST-2000 grounds the return terminal to the ground. This mode is best for DUTs that are grounded to an earth ground by their chassis, fixtures or operation environment. This mode measures the potential of the HIGH VOLTAGE terminal with respect to earth ground. This means that additional noise which leaks to earth ground will also be measured. This is the safest testing mode, though potentially not as accurate.

When GROUND MODE is set to OFF, the return terminal is floating with respect to the earth ground. This mode is for DUTs that are floating and not directly connected to an earth ground. This is more accurate than when GROUND MODE is set to ON as less noise will be measured. For this reason, this testing mode is able to measure with better stability.

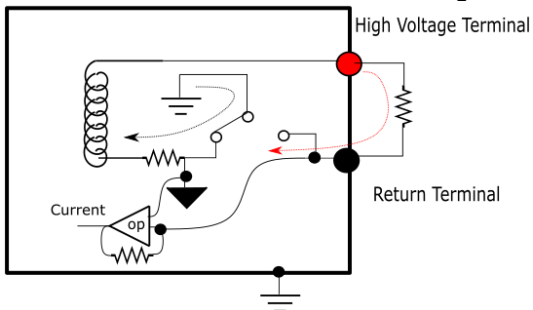
IR, GROUND MODE ON, DUT grounded



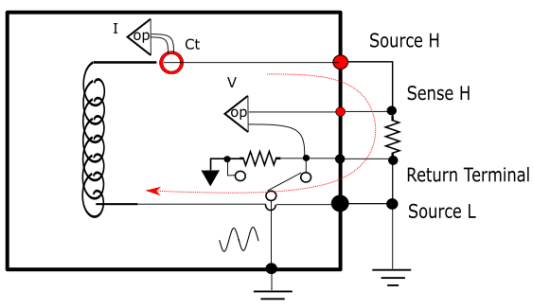
IR, GROUND MODE ON, DUT floating



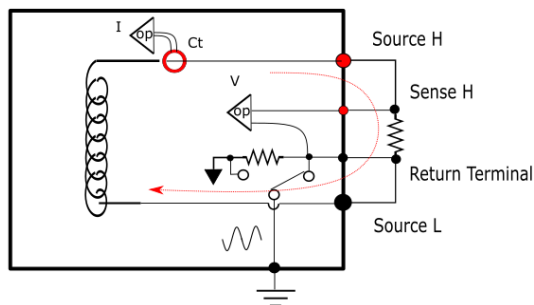
IR, GROUND MODE OFF, DUT floating



GB, GROUND MODE ON, DUT grounded



GB, GROUND MODE ON, DUT floating



Warning

When GROUND MODE is set to OFF, the DUT, fixtures or connected instrumentation cannot be grounded. This will short circuit the internal circuitry during a test.

For ACW and DCW tests, if it is not known whether the DUT test setup is grounded or not, always set GROUND MODE to ON.

Only set GROUND MODE to OFF when the DUT is floating electrically.

Steps

1. Press the PAGE soft-key to move to the 2/3 page where GROUND MODE setting appears for ACW and DCW.

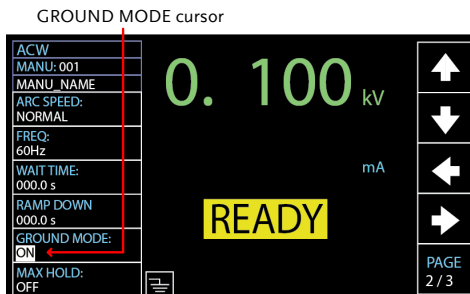
PAGE
2 / 3

As for IR and GB, the GROUND MODE setting shows in the 1/2 page.

PAGE
1 / 2

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the GROUND MODE setting.



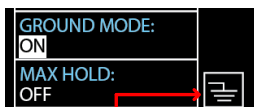


3. Use the scroll wheel to set the GROUND MODE.

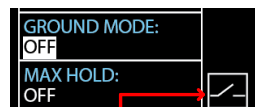


GROUND MODE OFF, ON

4. The GROUND MODE icon on the display changes accordingly.



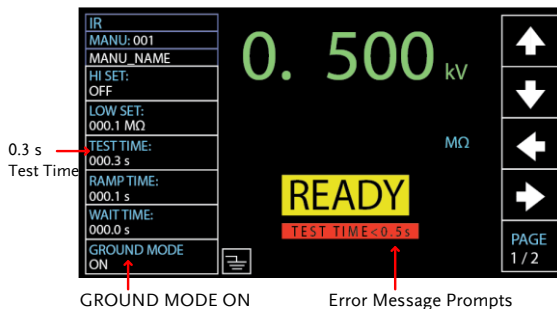
GROUND MODE ON



GROUND MODE OFF



Under the IR test mode, when GROUND MODE is ON but test time is set $t < 0.5s$, the error message "TEST TIMR<0.5s" will be shown, by which user is not able to start the IR test mode unless the test time is reset to $> 0.5s$. Refer to page 44 for how to set the test time manually.



Setting Contact Check

Background The CONTACT CHK function is used to determine if open circuit or short circuit occurs between the test leads and DUT under the ACW, DCW and IR tests. Before activating this function, it is first required to define a reference value along with relevant thresholds, for which refer to page 153.



Note

CONTACT CHK setting is only applicable to ACW, DCW and IR test modes.

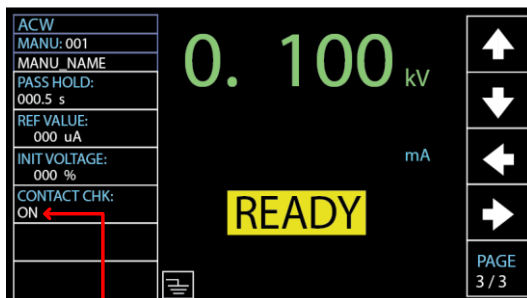
Step

1. Press the PAGE soft-key to move to the 3/3 page where CONTACT CHK setting appears for ACW, DCW and IR tests.

PAGE
3 / 3

2. Press the UP / DOWN arrow soft-keys to bring the cursor to the CONTACT CHK and turn it ON.

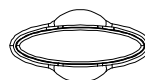
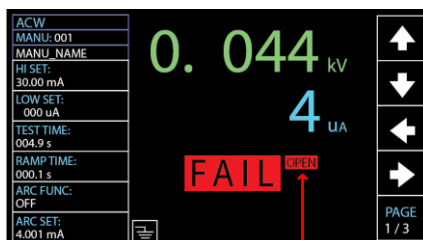




CONTACT CHK ON

3. After pressing the START button, the RSST-2000 unit will perform the CONTACT CHK before running a MANU test. If the measured current is lower than the reference value by user-defined percentage, the "OPEN" status appears on the screen. While the measured current is higher than the reference value by user-defined percentage, the "SHORT" status appears instead.

START

OPEN
Status

OPEN Status detected

SHORT
Status



SHORT Status detected

Running a MANU Test

Background

A test can be run when the tester is in READY status.



Note

The tester cannot start to run a test under the following conditions:

- A protection setting has been tripped; when a protection setting has been tripped the corresponding error message is displayed on the screen. See page 225 for a comprehensive list of the all the setting errors.
- The INTERLOCK function is ON and the Interlock key is not inserted in the signal I/O port (page 123).
- The STOP signal has been received remotely.
- If Double Action is ON, ensure the START button is pressed immediately after the STOP button (<0.5s).



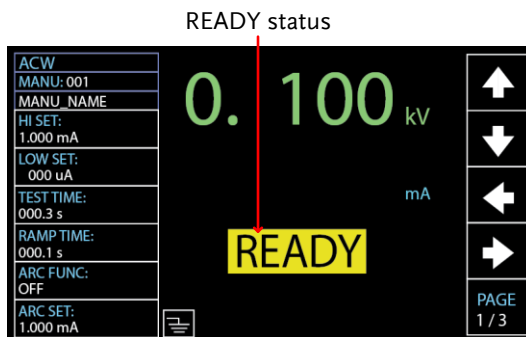
Note

When a test is running the voltage output cannot be changed, unless the test is under the special manual mode. See page 88 for details.

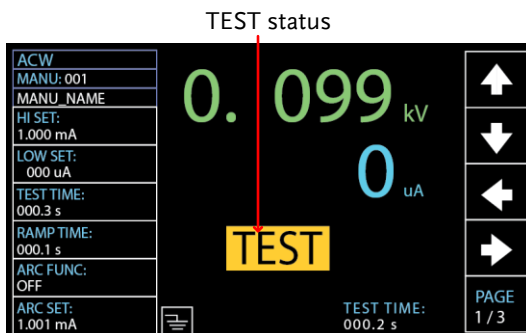
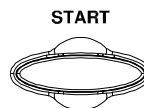
Steps

1. Ensure the tester is in READY status for the test to come.

Page 32

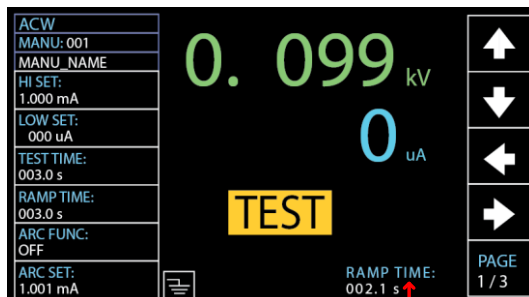


2. Press the START button when the tester is in the READY status. The manual test starts accordingly and the tester goes into the TEST status.



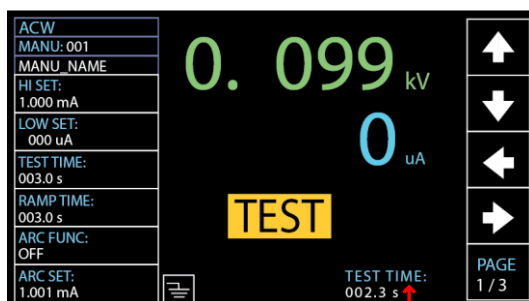
3. The test will start by showing the ongoing ramp up time followed by the ongoing test time and the ongoing ramp down time. The test will continue until the test is finished or stopped.

RAMP UP TIME



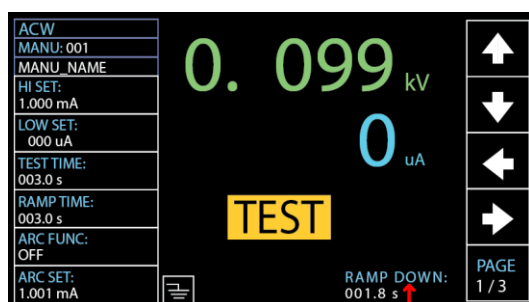
Ongoing RAMP UP TIME

TEST TIME



Ongoing TEST TIME

RAMP DOWN TIME



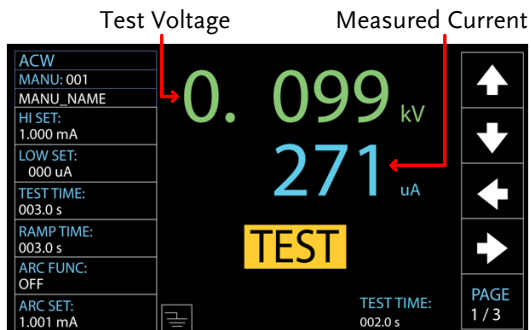
Ongoing RAMP DOWN TIME



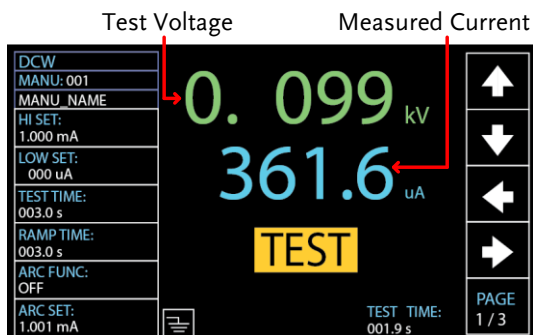
Note

RAMP DOWN time only appears when user has activated it. See page 48 for details.

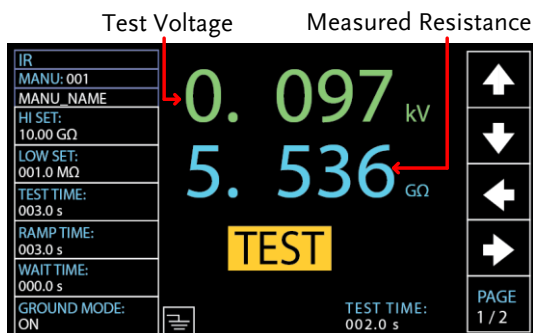
ACW Example



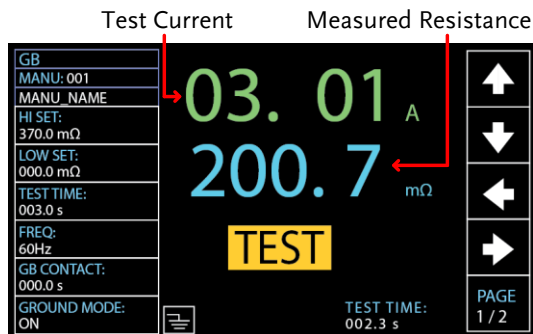
DCW Example



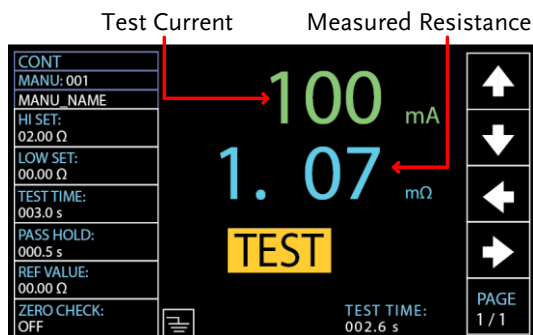
IR Example



GB Example

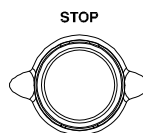


CONT Example



Stop the Test

1. To stop the test at any time when it is running, press the STOP button. The test will stop immediately. When the STOP button is pressed, a judgment is not made and the tester will restore to READY status.



Note

Do not touch any terminals, test leads or any other connections when the test is on.

PASS / FAIL MANU Test

Background If the test is allowed to run to completion (the test is not stopped or a protection setting is not tripped) then the tester will judge the test as either PASS or FAIL.



Note

The test will be judged PASS when:

- The HI SET and LO SET limits have not been tripped during the test time.

The test will be judged FAIL when:

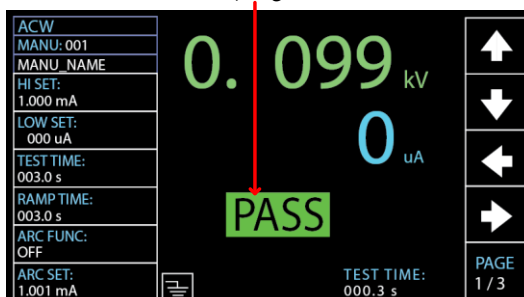
- Either the HI SET or LO SET limit has been tripped during the test time.
- A protection setting has been tripped during the test time. See page 225 for a list of error messages.

PASS Judgment 1. When the test is judged as PASS, PASS will be displayed on screen, the buzzer will sound and the PASS indicator will be lit green.

PASS

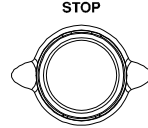


PASS Judgment



2. The tester will immediately restore back to the READY status after PASS judgment. However, if the PASS HOLD is activated, PASS judgment will persist until the set duration of PASS HOLD is fully met. Refer to page 62 for details.

In addition, pressing the STOP button during the set duration of PASS HOLD can return to READY status immediately.



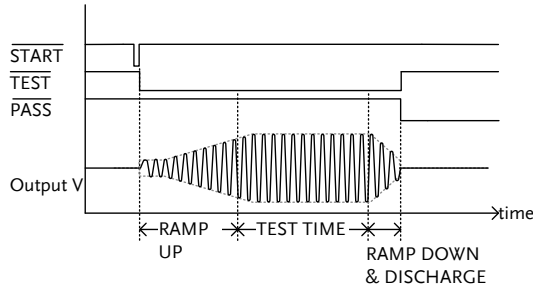
Note

The START button is disabled when the buzzer is beeping.

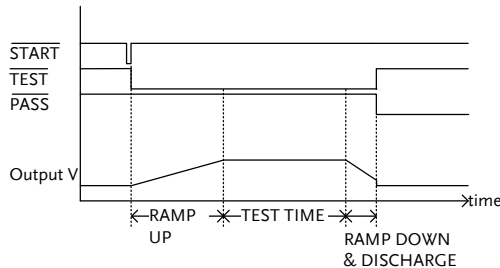
PASS Timing Diagrams

The timing diagrams below show the ACW, DCW, IR, GB and CONT timing for the START status, TEST status and PASS judgment.

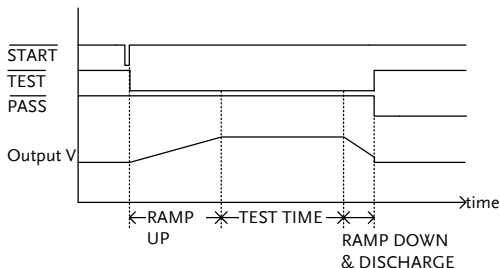
ACW PASS Timing



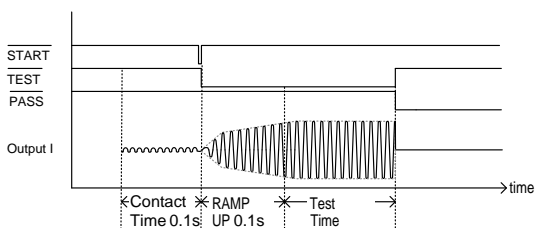
DCW PASS Timing



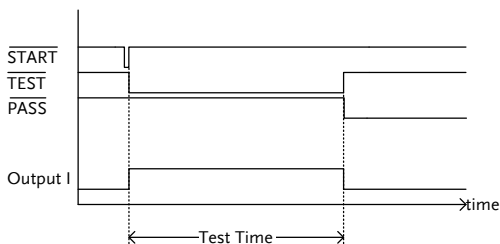
IR PASS Timing



GB PASS Timing

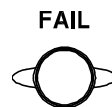


CONT PASS Timing

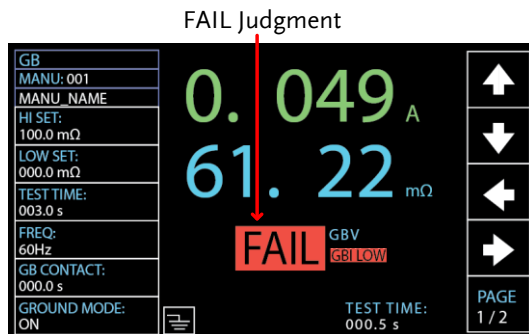


FAIL Judgment

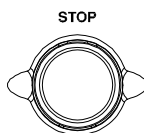
1. When the test is judged as FAIL, FAIL will be displayed on screen, the buzzer will sound and the FAIL indicator will be lit red.



As soon as a test is judged FAIL, power is cut from the terminals.



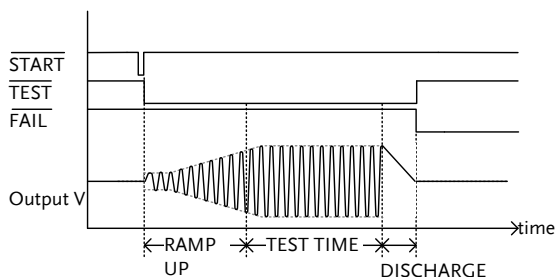
- The FAIL judgment will be held on the display until the STOP button is pressed. Pressing the STOP button will return the tester back to the READY status.



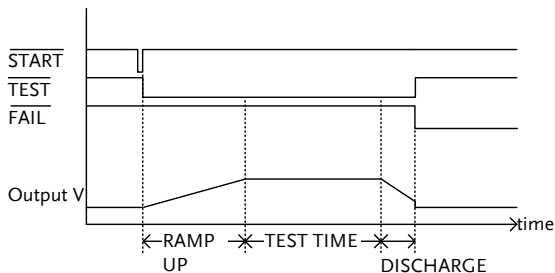
FAIL Timing Diagrams

The timing diagrams below show the ACW, DCW, IR, GB and CONT timing for the START status, TEST status and FAIL judgment.

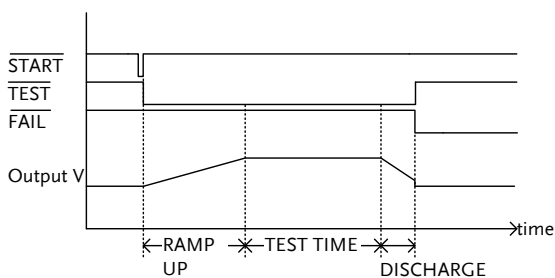
ACW FAIL Timing



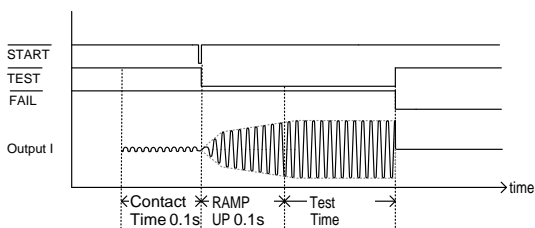
DCW FAIL Timing



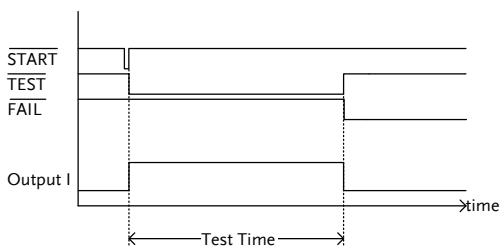
IR FAIL Timing



GB FAIL Timing




CONT FAIL Timing



Special MANU Test Mode (000)

Special Test Mode Overview When MANU number 000 is selected, the special test mode is activated. Under the special test mode, the voltage can be changed during a test in real time (ACW, DCW only). The test function can also be changed when in READY status, unlike under normal operation.

Separate settings can be saved under the special test mode for each of the testing functions: ACW, DCW, IR, GB and CONT. This means different test setups for ACW, DCW, IR, GB and CONT can be saved within the MANU number 000 concurrently.

| | | |
|-------|---|--|
| Steps | 1. Choose MANU number 000 to enter the special test mode. | Page 40 |
| | 2. The settings of a previous test can be loaded by pressing the corresponding soft-keys on the front panel. |  |
| | <p>For example, if you are currently in DCW mode, pressing the ACW key will load the ACW settings that were previously stored in the special manual mode.</p> | |
| | 3. Set all the necessary parameters for a test and save. | Pages 41 ~ 72 |



Note

A different test setup can be saved for each test function (ACW, DCW, IR, GB and CONT). Below is an example of ACW function in special manual mode.

Special MANU Number 000



Running the Test 1. In special test mode (000), tests are started and stopped in the same way as for the normal manual test mode. See page 76 for details.

2. If required, the scroll wheel can be used to set the voltage level in real-time as the test is running under either ACW or DCW mode.



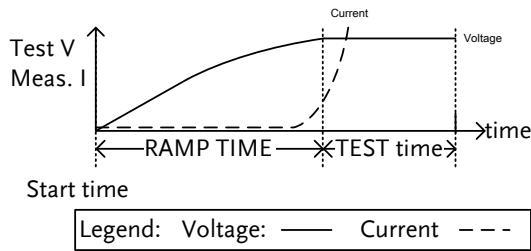
| | |
|-----|---------------|
| ACW | 0.050kV ~ 5kV |
| DCW | 0.050kV ~ 6kV |

Results Test judgments are the same as those Page 83 for the normal manual tests. Please see the PASS/FAIL MANU Test section for details.

Sweep Function

Sweep Function Overview The RSST-2000 Series has access to the sweep mode function, which creates a graph of one of the ACW, DCW, IR, GB or CONT tests in either Manual test or the special MANU mode. The graph will plot the output voltage, current or resistance versus time. After the test has been completed, the test current, voltage or resistance at any point in time can be fetched and viewed in the graph.

Below is an example of the resultant sweep plot of a DCW test where a DC voltage is ramped up to a user-defined level until the HI SET current level has been tripped or the test time runs out.

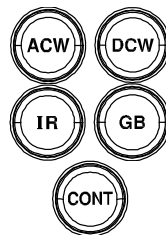


The test items that are plotted on the sweep graph depend on the type of test that is performed.

| TEST | Graph Test Items |
|------|--|
| ACW | Measured voltage, measured current (V, I) |
| DCW | Measured voltage, measured current (V, I) |
| IR | Measured voltage, measured resistance (V, R) |
| GB | Measured current, measured resistance (I, R) |
| CONT | Measured current, measured resistance (I, R) |

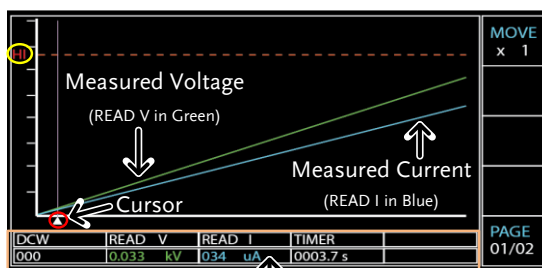
Steps of View Sweep Graph

- When a test has finished, press the corresponding button, e.g., DCW button for DCW test, to view the result of the sweep in an intuitive graph.



| Graph Test Items: | | |
|-------------------|------------------|---------------------|
| TEST | GREEN | BLUE |
| ACW | Measured voltage | Measured current |
| DCW | Measured voltage | Measured current |
| IR | Measured voltage | Measured resistance |
| GB | Measured current | Measured resistance |
| CONT | Measured current | Measured resistance |

DCW Sweep Graph Example



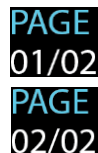
The values of point by cursor

2. Use the scroll wheel to move the cursor on the time axis (red highlight in x-axis). The measured values on the green and blue lines at that particular point in time are shown within the table below (orange highlight). Also, the test function along with the test number is clearly shown within the table. The HI in y-axis (yellow highlight) along with the dotted line in red indicates the HI SET value and the point of tripped time.



Turn Pages

3. The resultant graph will be over 1 page when test time is beyond 650 steps (the interval of each step is 0.1s). In this case, press PAGE soft-key to switch among each page for full graphs.



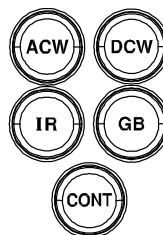
Fast-forward

4. Press the MOVE soft-key before moving the cursor to fast-forward steps by 10 times (x 10), which is practical when steps are many. Press the MOVE soft-key again to return back to the normal "x 1" speed.



Exit the Results Graph

To exit the sweep graph, press the corresponding button again to return back to Manual test.



Automatic Tests

This section describes how to create, edit and run automatic tests. Automatic tests allow you to link up to 10 different MANU tests and run them sequentially within a single AUTO test. Each stored MANU test is used as a test step when creating an AUTO test. In addition, up to 5 groups of AUTO test can be interconnected together to present an ever-advanced AUTO tests.

- Choose/Recall an AUTO Test → from page 94
- Creating an AUTO Test File Name → from page 95
- Adding a Step to the AUTO Test → from page 96
- Continuous AUTO Tests → from page 97
- AUTO Test Page Editing → from page 100
- Running an Automatic Test → from page 104
- Automatic Test Results → from page 110

Before operating the RSST-2000 please read the safety precautions as outlined in the Set Up chapter on page 21.

Choose/Recall an AUTO Test

Background The tester must first be put into AUTO mode to create or run automatic tests.

Up to 100 automatic tests can be saved or recalled.

Steps

1. If the tester is in MANU or SYSTEM mode, press the AUTO key on the front panel. This will put the tester into Auto mode.



2. After entering the AUTO mode, first use the scroll wheel to choose the AUTO number.



AUTO # 001~100

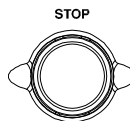
AUTO number cursor READY status

| | | | | | | | |
|----------|-----------|---------|---------|---------|------|-------|---|
| AUTO-001 | AUTO_NAME | | | | | READY | |
| MANU | TEST | V/I | H/I | LOW | STEP | | ↑ |
| STEP | MODE | SETTING | SETTING | SETTING | HOLD | | ↓ |
| | | | | | | | ← |
| | | | | | | | → |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



Note

3. The AUTO number can only be chosen in READY status. If the status is either PASS or FAIL, press the STOP button to restore back to the READY status.



Creating an AUTO Test File Name

Background

Each automatic test can have a user-defined test file name (Default: AUTO_NAME) up to 10 characters long. See the character list below for the allowed characters.

Character List

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | - | | | | | | | | | | | | | | | |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |

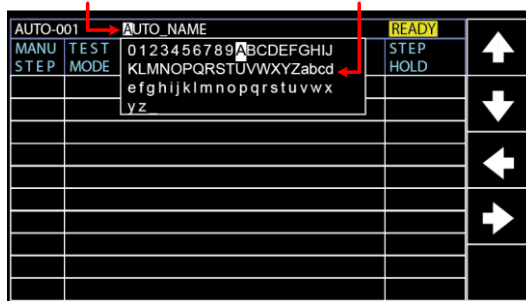
Steps

1. Use the LEFT/RIGHT arrow soft-keys to move the cursor to the AUTO_NAME (default name) field. The characters table will appear in the right hand accordingly.



AUTO name cursor

Character Table



2. Use the scroll wheel to scroll through the available characters.
3. Press the LEFT / RIGHT arrow soft-keys to move the cursor to the next character.



4. The AUTO test file name is set when the current AUTO test is saved or when the cursor is moved to another setting.

Adding a Step to the AUTO Test

Background Up to 10 MANU tests (steps) can be added to an automatic (AUTO) test. Each step is added in a sequential order.

Steps

1. Press the DOWN arrow key to bring the cursor to the MANU STEP number.



MANU STEP number cursor

| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | ↓ |
| | | | | | | | SKIP |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

2. Use the scroll wheel to choose a MANU STEP number to add to the automatic test.



MANU STEP number 001~100, CON

CON It indicates that this group of AUTO test can be connected with the next group. Refer to page 97 for more details.

3. Further press the DOWN arrow key followed by using the scroll wheel to choose another MANU STEP number to add to the automatic test.



MANU STEP number cursor (2nd)

| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | ↓ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| | | | | | | | SKIP |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

4. Repeat the previous steps for any other MANU tests that you wish to add to the automatic test.

Continuous AUTO Tests

Background

As mentioned previously, up to 10 MANU steps can be grouped to form an AUTO test and user can designate each step from MANU step number 1 to 100 for an AUTO test. However, it is available to interconnect different AUTO tests together to present a series of AUTO tests.

Steps

1. Follow the steps of "Adding a Step to the AUTO Test" in page 96 first. See the example below where 5 MANU steps have been added into the AUTO-001 group.

| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.H | SKIP | ↓ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.H/F.C | | |
| 005 | IR | 0.050kV | 066.8MΩ | 000.1MΩ | P.C/F.S | | |
| 010 | ACW | 0.200kV | 2.000mA | 000 uA | P.C/F.C | | |
| 006 | DCW | 0.500kV | 1.500mA | 000 uA | P.H/F.S | | |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

2. Press the DOWN arrow key to bring the cursor to the next MANU STEP field followed by using the scroll wheel to choose CON from the MANU STEP options.



| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.H | SKIP | ↓ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.H/F.C | | |
| 005 | IR | 0.050kV | 066.8MΩ | 000.1MΩ | P.C/F.S | | |
| 010 | ACW | 0.200kV | 2.000mA | 000 uA | P.C/F.C | | |
| 006 | DCW | 0.500kV | 1.500mA | 000 uA | P.H/F.S | | |
| CON | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

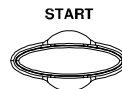
CON is chosen from MENU STEP

3. Repeat the step 1 to form another group of AUTO-002 test as the following display shown.

AUTO-002 comprising 3 MANU steps

| AUTO-002 | | AUTO_NAME | | | | READY | ↑ |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.H | SKIP | ↓ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.H/F.C | | |
| 026 | IR | 0.150kV | 069.8MΩ | 000.6MΩ | P.C/F.S | | |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

4. After the previous steps, return to the AUTO-001 test page followed by pressing START button for automatic test. The AUTO-002 test will ensue from the end of AUTO-001 test. The continuous AUTO tests are thus established perfectly.



Note

- Up to 5 groups of AUTO tests can be interconnected. The former 4 groups of AUTO tests, due to CON occupation, owns up to 9 MANU steps, respectively, whereas the last group can own up to 10 MANU steps. Thus, it is 46 MANU steps at the maximum for a continuously interconnected AUTO test.
- The interconnected groups of AUTO test are limited in serial numbers. That is to say, when initializing from AUTO-005, for example, the next group will be definitely AUTO-006 followed by AUTO-007, if available, and so forth up to 5 groups.

AUTO Test Page Editing

Background The AUTO test page contains each added MANU step (up to 10 steps) in order on the list along with the corresponding settings including Test Mode, Test V/I Setting, HI & LOW Settings as well as Step Hold action, respectively. Each step can be skipped, deleted or edited for its Step Hold actions.

Skip a MANU STEP

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the target MANU STEP on list.



Target MANU STEP cursor

| AUTO-001 | | AUTO_NAME | | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| | | | | | | | SKIP |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

2. Press the SKIP soft-key.

SKIP

3. The designated MANU STEP will be grayed out in color of setting.

The gray-out MANU STEP

| AUTO-001 | | AUTO_NAME | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↑ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↓ |
| | | | | | | SKIP |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |



Note

When the AUTO test is run next time, the grayed-out steps will be simply skipped.

Delete a MANU STEP

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the target MANU STEP on list.



Target MANU STEP cursor

| AUTO-001 | | AUTO_NAME | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↑ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↓ |
| | | | | | | SKIP |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |

2. Press the DEL. soft-key.

DEL.

3. The designated MANU STEP will be deleted from the list.

The designated MENU STEP is removed

| AUTO-001 | | AUTO_NAME | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↑ |
| | | | | | | ↓ |
| | | | | | | SKIP |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |

Step Hold Editing

1. Press the UP / DOWN arrow soft-keys to bring the cursor to the target MANU STEP on list.



Target MANU STEP cursor

| AUTO-001 | | AUTO_NAME | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↑ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↓ |
| | | | | | | SKIP |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |

2. Press the STEP HOLD soft-key to bring the cursor to the STEP HOLD setting field.

STEP HOLD

STEP HOLD cursor

| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|--------------|--------------|----------------|---------------|----------------|--------------|-------|--------------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | ↓ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| | | | | | | | SKIP |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

3. Use the scroll wheel to choose the options from STEP HOLD setting as listed below.



P.H/F.H Step which is judged PASS will be held until START button pressed by user for next step. Step which is judged FAIL will be held until START button pressed by user for next step.

P.H/F.S Step which is judged PASS will be held until START button pressed by user for next step. The AUTO test will be immediately stopped when Step is judged FAIL.

P.H/F.C Step which is judged PASS will be held until START button pressed by user for next step. The AUTO test will automatically continue although the step is judged FAIL.

| | |
|---------------|--|
| P.C/F.H | The AUTO test will automatically continue when the step is judged PASS. Step which is judged FAIL will be held until START button pressed by user for next step. |
| P.C/F.S | The AUTO test will automatically continue when the step is judged PASS. The AUTO test will be immediately stopped when step is judged FAIL. |
| P.C/F.C | The AUTO test will automatically continue when the step is judged PASS. The AUTO test will automatically continue although the step is judged FAIL. |
| 0.1 ~ 999.9 s | The step will be held for specified seconds (0.1 ~ 999.9s) until the next step, regardless of PASS or FAIL judgment. |

Running an Automatic Test

| | |
|------------|--|
| Background | An automatic test can be run when the tester is in READY status. |
|------------|--|



Note

The tester cannot start to run an AUTO test under the following conditions:

- Any protection modes have been tripped.
- The INTERLOCK function is ON and the Interlock key is not inserted in the signal I/O port (page 162).
- The STOP signal has been received remotely.

If Double Action is ON, ensure the START button is pressed immediately after the STOP button (<0.5s).



Warning

Do not touch any terminals, test leads or the DUT when a test is running.

Steps

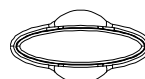
1. Ensure the tester is in READY status for the AUTO test to come. Page 94

READY status indicator

| AUTO-001 | | AUTO_NAME | | | | READY | ↑ |
|--------------|--------------|----------------|---------------|----------------|--------------|-------|--------------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.H | | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.H/F.C | | |
| 005 | IR | 0.050kV | 066.8MΩ | 000.1MΩ | P.C/F.S | | |
| 010 | ACW | 0.200kV | 2.000mA | 000 uA | P.C/F.C | | SKIP |
| 006 | DCW | 0.500kV | 1.500mA | 000 uA | P.H/F.S | | |
| | | | | | | | DEL. |
| | | | | | | | STEP HOLD |

2. Press the START button when the tester is in the READY status. The AUTO test starts automatically and the display changes to each MANU TEST in sequence.

START



3. Each test will start by showing the ongoing ramp up time followed by the ongoing test time and the ongoing ramp down time. Each test will be tested in sequence until the last test has finished or the test is stopped.



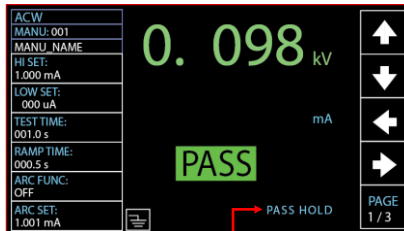
Note

RAMP DOWN time only appears when user has activated it. See page 48 for details.

PASS & FAIL HOLD

1. If P.H (Pass Hold) or F.H (Fail Hold) is set for a MANU STEP, then the tester will “hold” the testing when a PASS or FAIL judgment for that particular MANU STEP occurs. See page 103 for more details.

PASS HOLD Indicator



PASS HOLD indicator

FAIL HOLD Indicator

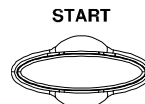


FAIL HOLD indicator

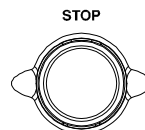
2. The PASS or FAIL indicator on the front panel will also be lit and the buzzer will sound accordingly.



3. To continue to the next MANU STEP after HOLD is displayed on-screen, press the START button.



4. To stop the whole AUTO test when HOLD is displayed on-screen, press the STOP button.





Note

When in HOLD status, only the START and STOP buttons can be pressed, all other keys are disabled.

FAIL STOP

1. If F.S (Fail Stop) is set for a MANU STEP, then the tester will "Stop" the whole AUTO test immediately when a FAIL judgment for that particular MANU STEP occurs. See page 104 for more details.

FAIL STOP Setting

| AUTO-001 | | AUTO_NAME | | | | REPAIR |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | |
| 026 | IR | 0.150kV | 069.8MΩ | 000.6MΩ | P.C/F.S | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | |
| | | | | | | SKIP |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |

FAIL STOP setting

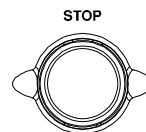
FAIL HOLD Result Indicator

AUTO test stops in FAIL status

| AUTO-001 | | AUTO_NAME | | | | FAIL |
|-----------|-----------|------------|------------|-----------|-------------|------------|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | TEST RESULT | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | |
| 026 | IR | 0.049kV | 60.00GΩ | T000.3s | FAIL | |
| 001 | DCW | 0.000kV | 000 uA | I000.0s | | |
| 002 | ACW | 0.100kV | 000 uA | I000.0s | | |
| | | | | | | |
| | | | | | | |
| | | | | | | PAGE 1 / 1 |

FAIL STOP indicator on exact MANU STEP

2. The FAIL indicator on the front panel will also be lit and the buzzer will sound accordingly.
3. When FAIL is displayed on-screen, press the STOP button twice to return to the READY status.



Return to
READY
status

Restore to READY status

| | | | | | | | |
|----------|------|-----------|---------|---------|---------|-------|------|
| AUTO:001 | | AUTO_NAME | | | | READY | ↑ |
| MANU | TEST | V/I | HI | LOW | STEP | | |
| STEP | MODE | SETTING | SETTING | SETTING | | HOLD | ↓ |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| 026 | IR | 0.150kV | 069.8MΩ | 000.6MΩ | P.C/F.S | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | SKIP |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | |
| | | | | | | | DEL. |
| | | | | | | | STEP |
| | | | | | | | HOLD |



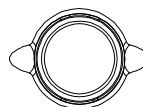
Note

When in FAIL status, only the STOP button can be pressed, all other keys are disabled.

Stop a
Running Test

1. To stop the AUTO test at any time when it is running, press the STOP button. The AUTO test will stop immediately. When the STOP button is pressed, a judgment is not made on the current test and any remaining tests are aborted.

STOP



All panel keys except the STOP and START buttons are disabled when the tester has been stopped. All the results up until when the AUTO test was stopped are shown on-screen. See page 110 for more details on automatic test results.

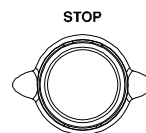
Below is example of an automatic test that has been stopped in the midway. The remaining MANU STEPs are aborted without test results.

AUTO test stops

| AUTO_001 | | AUTO_NAME | | | | STOP |
|-----------|-----------|------------|------------|-----------|-------------|------------|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | TEST RESULT | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | |
| 026 | IR | 0.022kV | 000.0MΩ | R000.0s | STOP | |
| 001 | DCW | 0.000kV | 000 uA | I000.0s | | |
| 002 | ACW | 0.100kV | 000 uA | I000.0s | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | PAGE 1 / 1 |

The exact stopped MANU STEP

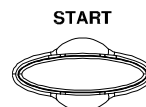
- To put the tester back into READY status, press the STOP button again.



Restore to READY status

| AUTO_001 | | AUTO_NAME | | | | READY |
|-----------|-----------|-------------|------------|-------------|-----------|-----------|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↑ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | ↓ |
| 026 | IR | 0.150kV | 069.8MΩ | 000.6MΩ | P.C/F.S | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | SKIP |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | |
| | | | | | | DEL. |
| | | | | | | STEP HOLD |

- Or press the START button to restart the AUTO TEST again directly.



Note

When in STOP status, only the START and STOP buttons can be pressed, all other keys are disabled.

Automatic Test Results

Background If all the test steps are allowed to run to completion (the AUTO test is not stopped or a protection setting is not tripped) then the tester will judge each step as either PASS or FAIL. This is shown as a table after the automatic test has finished running. If the test has been stopped, then any remaining tests will not be run and thus the AUTO test will not finish running.

Overview

AUTO TEST result indicator

| AUTO-001 | | AUTO_NAME | | | | | TEST RESULT | |
|--------------|--------------|---------------|---------------|--------------|------|--|----------------|--|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | | | | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | | | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | | | |
| 001 | DCW | 0.000kV | 000 uA | T000.0s | SKIP | | | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | | | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | | | |
| 026 | IR | 0.049kV | 60.00GΩ | T000.3s | FAIL | | | |
| 001 | DCW | 0.097kV | 000 uA | T000.1s | STOP | | | |
| 002 | ACW | 0.000kV | 000 uA | T000.3s | | | | |
| | | | | | | | PAGE 1 / 1 | |

MANU STEP results indicators



Note

The PASS/FAIL/STOP result shown on the top-right corner for an AUTO TEST as a whole depends on the results of all the steps (MANU STEPs) that compose an AUTO TEST:

If Interlock function is enabled but without interlock inserted into Signal I/O port, the Interlock Open message will be shown on top-right corner and AUTO test will be unable to start. Refer to page 136 for details.

PASS Judgment Each MANU STEP must be passed to present a PASS judgment on an AUTO TEST. (Excluding skipped MANU STEPs in gray color).

PASS



When all the tests have been judged as PASS, the PASS indicator will be lit green and the buzzer will sound accordingly.

AUTO TEST PASS judgment

[illegible]All MANU STEP^s with PASS results

| | |
|---------------|---|
| FAIL Judgment | A FAIL result from a single MANU STEP will result in FAIL judgment for the whole AUTO TEST. |
|---------------|---|

FAIL



When any of the tests have been judged as FAIL, the FAIL indicator will be lit red and the buzzer will sound accordingly.

AUTO TEST FAIL judgment

[illegible]

One of the MANU STEPs with FAIL result

Once a MANU STEP is stopped, the AUTO TEST will be presented STOP in its result. In other words, if a MANU STEP is stopped, the entire AUTO TEST is in STOP result, neither PASS nor FAIL judgment. And the remaining MANU STEP(s) will be ignored with blank in test result field.

| AUTO-001 | | AUTO_NAME | | | | TEST RESULT |
|--------------|---------------|---------------|--------------|----|---------|----------------|
| MANU STEP | TEST DATA1 | READ DATA2 | TEST TIME | | | |
| 001 | DCW | 0.099kV | 000 | uA | T000.3s | PASS |
| 002 | ACW | 0.099kV | 000 | uA | T000.3s | PASS |
| 001 | DCW | 0.000kV | 000 | uA | T000.0s | SKIP |
| 001 | DCW | 0.099kV | 000 | uA | T000.3s | PASS |
| 002 | ACW | 0.099kV | 000 | uA | T000.3s | PASS |
| 026 | IR | 0.49kV | 60.00G | | | FAIL |
| 001 | DCW | 0.097kV | 000 | uA | T000.1s | STOP |
| 002 | ACW | 0.000kV | 000 | uA | T000.3s | |

<

One of the MANU STEPS was stopped

1. When an AUTO TEST is finished, the detailed test results along with values of each MANU STEP will be presented within the resultant table. The Read Data1 indicates the actual test V/I. The Read Data2 refers to the measured I/R. The Test Time simply means the set test time for MANU STEP.

[illegible]

Test results & values of each MANU STEP

2. Turn the scroll wheel right to flip page for checking parameter settings of each MANU STEP in table. Turn left to return back to previous page.



Refer to page 100 for more details on parameters including Step Hold, Test Mode, Test V/I Setting and HI & LOW Settings.

[illegible]

Parameter settings of each MANU STEP

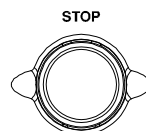


Note

Press STOP button before turning the scroll wheel right when FAIL judgment of AUTO TEST occurs.

Return to Ready Status

1. The PASS/FAIL/STOP results will be held on the screen until the STOP button is pressed.
2. To put the tester back into READY status, simply press the STOP button (twice for a FAIL result).



3. The READY indicator will be shown on the top of display.

READY status indicator

| AUTO-001 | | AUTO_NAME | | | | READY | |
|-----------|-----------|-------------|------------|-------------|-----------|-------|---|
| MANU STEP | TEST MODE | V/I SETTING | HI SETTING | LOW SETTING | STEP HOLD | | |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | ↑ |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA | P.C/F.C | | ↓ |
| 026 | IR | 0.050kV | 49.99GΩ | 001.0MΩ | P.C/F.C | | ← |
| | | | | | | | → |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Check Multiple Pages of Results

The tester is able to interconnect up to 5 groups of AUTO TESTs and present a result of multiple pages. In this case, it is available to toggle between pages for checking. Refer to page 97 for how to organize a continuous AUTO TEST.

Steps

1. After a continuous AUTO TEST is completed, press PAGE soft key on the front panel to flip among different pages

PAGE
1 / 2

Test Result of Page 1/2

| AUTO-001 | | AUTO_NAME | | | | FAIL | |
|-----------|-----------|------------|------------|-----------|-------------|------|--|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | TEST RESULT | | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | | |
| 026 | IR | 0.049kV | 60.00GΩ | T000.3s | FAIL | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

PAGE
1 / 2

Multiple Pages indicator - 1/2

Test Result of Page 2/2

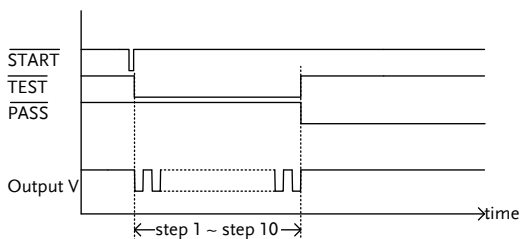
| AUTO-002 | | AUTO_NAME | | | | FAIL | |
|-----------|-----------|------------|------------|-----------|-------------|------|--|
| MANU STEP | TEST MODE | READ DATA1 | READ DATA2 | TEST TIME | TEST RESULT | | |
| 001 | DCW | 0.099kV | 000 uA | T000.3s | PASS | | |
| 002 | ACW | 0.099kV | 000 uA | T000.3s | PASS | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

PAGE
2 / 2

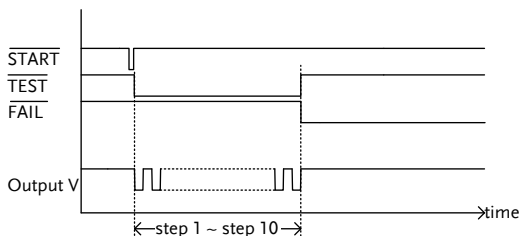
Multiple Pages indicator - 2/2

2. The test results in multiple pages of continuous AUTO TEST are almost identical with that of single AUTO TEST. Refer to page 110 to 112 for details on checking test results.

PASS Timing
Diagram



FAIL Timing
Diagram



System Settings

The System settings are system-wide settings that apply to both MANU tests and AUTO tests.

The System menu includes the following settings:

- Display Set settings → from page 117.
- Buzzer Settings → from page 119.
- Interface Settings → from page 121.
- Control settings → from page 123.
- Time Setting settings → from page 137.
- Data Initialize settings → from page 142.
- Information section → from page 144.
- Statistics settings → from page 145.
- USB Disk settings → from page 148.
- Contact Check settings → from page 153.

Display Set Setting

Description The Display Set page includes both brightness level and language settings.

Steps

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

SYSTEM

2. The SYSTEM page will be shown where DISPLAY SET is on top of the left-side list. Press the ENTER soft-key to enter the setting page.

ENTER



3. Use the scroll wheel to set the Brightness level.



LCD Brightness 1 bar (low) ~ 10 bars (high)

4. Press the UP/DOWN arrow soft-keys to move the cursor to the Language setting followed by using the scroll wheel to set the options of Language setting.



Language options English
 繁體中文 (Traditional Chinese)
 简体中文 (Simplified Chinese)

5. Press the EXIT soft-key to exit from the DISPLAY SET page.

EXIT**Note**

- The changes in DISPLAY SET are saved instantly.
- The AUTO or MANUAL button can be pressed at any time to jump to its belonging page, individually. Alternatively, it is available to promptly return back to the previous page with settings, whether it's AUTO or MANUAL mode, by simply pressing SYSTEM button.

Buzzer Settings

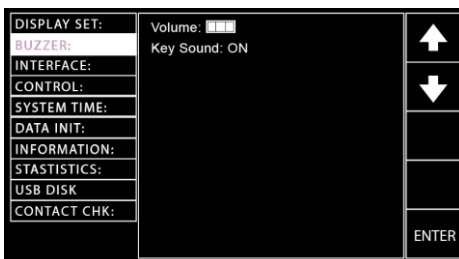
| | |
|-------------|--|
| Description | The Buzzer settings allow you to set the volume of buzzer sound for PASS/FAIL judgments. Also, it is available to set Key Sound for buttons being pressed. |
|-------------|--|

Steps

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

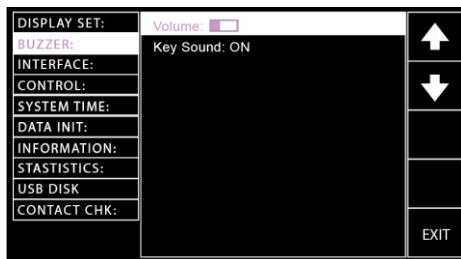


2. The SYSTEM page will be shown. Press the UP/DOWN arrow soft-keys to move the cursor to the BUZZER setting.



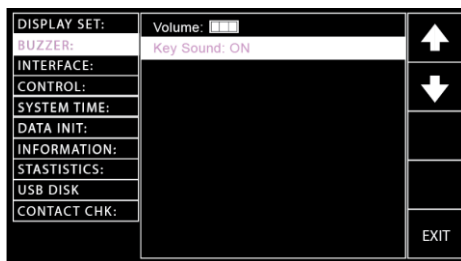
3. Press the ENTER soft-key to enter the Volume setting followed by using the scroll wheel to set the Volume level.

ENTER



Buzzer Volume 1 bar (low) ~ 3 bars (high)

4. Press the UP/DOWN arrow soft-keys to move the cursor to the Key Sound setting followed by using the scroll wheel to set the Key Sound setting.



Key Sound ON, OFF

5. Press the EXIT soft-key to exit from the BUZZER page.



Note

When in the AUTO test, the Buzzer sound only applies to the overall judgment of an AUTO test. There will no Buzzer sound for judgment of each test step within a group of an AUTO test.



Note

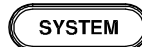
The changes in BUZZER setting are saved instantly.

Interface Settings

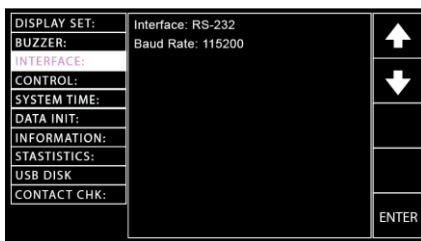
Description The interface settings allows user to choose the remote interface configuration. USB, RS232, and GPIB (optional) can be selected.

Steps

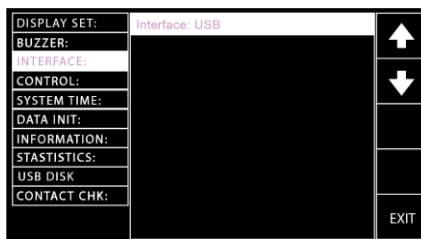
1. Press the SYSTEM button on the front panel when the tester is under READY status in either MANU or AUTO test.



2. The SYSTEM page will be shown. Press the UP/DOWN arrow soft-keys to move the cursor to the INTERFACE setting.



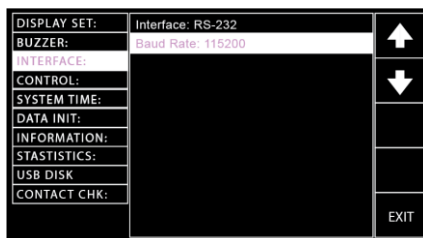
3. Press the ENTER soft-key to enter the Interface setting followed by using the scroll wheel to select the Interface options.



Interface Options

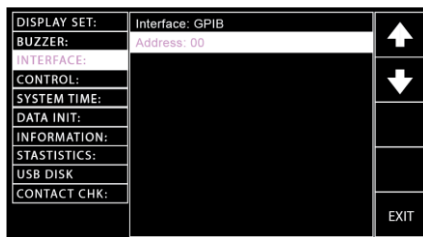
RS-232, USB, GPIB

4. When RS-232 is selected, press the UP/DOWN arrow soft-keys to move the cursor to the Baud Rate setting followed by using the scroll wheel to set the Baud Rate setting.



Baud Rate Setting 9600, 19200, 38400,
for RS-232 57600, 115200,

5. When GPIB is selected, press the UP/DOWN arrow soft-keys to move the cursor to the Address setting followed by using the scroll wheel to set the Address setting.



Address Setting for GPIB 00~31

6. Press the EXIT soft-key to exit from the INTERFACE page.

EXIT



Note

Ensure the baud rate settings or GPIB address matches the host machine.



Note

The changes in INTERFACE setting are saved instantly.

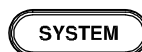
Control Settings

| | |
|-------------|---|
| Description | <p data-bbox="380 266 993 391">The Control settings include 7 options: Control By, Double Action, Key Lock, Interlock, Start Click For 1 Second, Power GND Check and Barcode Function Setting.</p> <ul data-bbox="380 422 993 1394" style="list-style-type: none"><li data-bbox="380 422 993 550">• Control By is used to determine how a test is started. Tests can be started via the front panel (START/STOP buttons), from a remote controller or via the SIGNAL I/O port.<li data-bbox="380 582 993 805">• The Double Action function is a safety feature used to prevent accidentally starting a test. Normally to start a test, the START button is pressed when the tester is in the READY status. To start a test when Double Action is ON, the STOP button must first be pressed, followed by the START button within 500ms.<li data-bbox="380 837 993 1021">• Key Lock disables the front panel keys from changing the test number, mode or testing parameters. Only the START & STOP buttons required for testing are not disabled. Also, the SYSTEM button remains functional for user to return back to the system setting.<li data-bbox="380 1053 993 1236">• The Interlock function is a safety feature. The interlock function prevents a test from running, unless the interlock pins on the signal I/O port connector are shorted. The included interlock key can be used for this purpose. See page 163 for details.<li data-bbox="380 1268 993 1394">• The Start Click For 1 Second indicates another safety feature that requires the START button being pressed for 1 second so that a test, whether MANU or AUTO, can be started. |
|-------------|---|

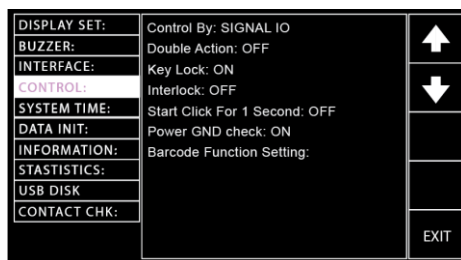
- The Power GND Check detects if the ground terminal from power cord of instrument connects to earth ground properly.
- Barcode Function Setting is a feature which facilitates fast yet convenient MANU and AUTO tests for, in particular, assembly line application. It enables RSST-2000 series, with additional barcode scanner plugged in, to scan barcodes and edit into a list for prompt utilization in diversified tests.

Steps

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

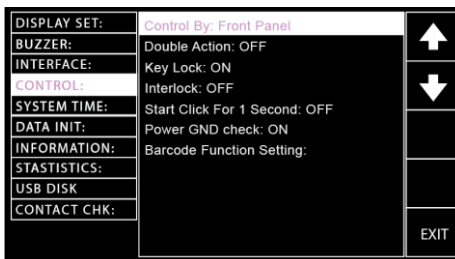


2. The SYSTEM page will be shown. Press the UP/DOWN arrow soft-keys to move the cursor to the CONTROL setting.



3. Press the ENTER soft-key to enter the Control By setting followed by using the scroll wheel to select the following options.



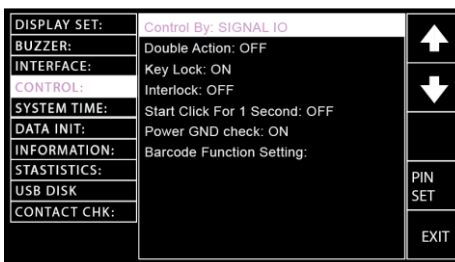


Control By
settings

Front Panel
Remote
SIGNAL IO

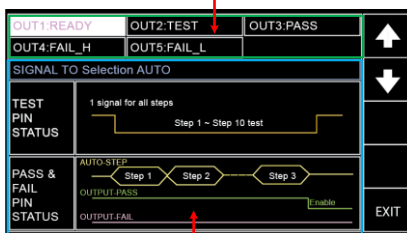
When SIGNAL IO is selected, press the PIN SET soft-key to enter the specific setting page.

**PIN
SET**



The setting page is divided into 2 sections; the upper is for output pins settings, whilst the lower part indicates the methods of Signal IO selections under AUTO test mode. Refer to the figure below.

SIGNAL IO Output PINs (green zone)



SIGNAL IO Selection for AUTO Test (blue zone)

Press the UP/DOWN arrow soft-keys to move the cursor to target PINs (1~5) followed by using the scroll wheel to select the following 6 options for each pin.



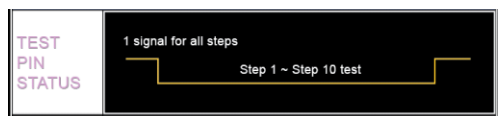
PINs
Settings

READY, TEST, PASS, FAIL,
FAIL_H, FAIL_L

Further press the UP/DOWN arrow soft-keys to move the cursor to the TEST PIN STATUS followed by using the scroll wheel to select the following 2 options for TEST PIN under AUTO test mode.



1 signal for all steps It means one signal output of TEST PIN will be delivered to all steps all the way till the end of an AUTO test.



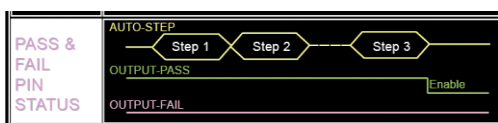
1 signal for each step It means one signal output of TEST PIN will be delivered to each step with continuous counters within each interval between each step, which is particularly practical for certain applications.



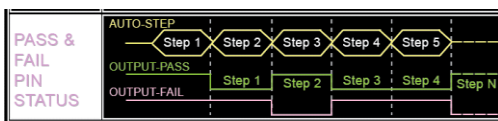
Further press the UP/DOWN arrow soft-keys to move the cursor to the PASS & FAIL PIN STATUS followed by using the scroll wheel to select the following 2 options for PASS & FAIL PINs under AUTO test mode.



Pass & Fail judgment in final step Regardless of judgments of each step in an AUTO test, a PASS or FAIL will be given after the whole steps are completed. However, an AUTO test will be stopped in the mid way when F.S is activated. Refer to page 103 for details.

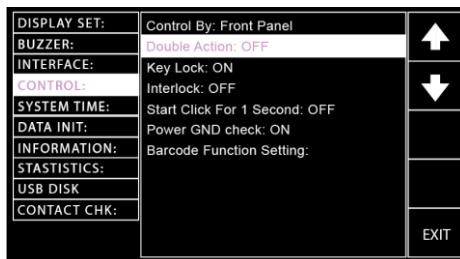


Pass & Fail judgment for each step Pass or Fail judgment will be given for each step within an AUTO test. By doing so, the judgments of each step can be concretely recognized, individually for user.



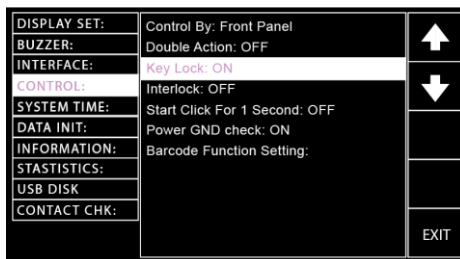
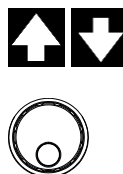
1. Press the UP/DOWN arrow soft-keys to move the cursor to the Double Action setting followed by using the scroll wheel to set the Double Action setting.





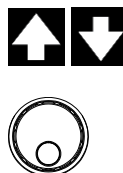
Double Action settings ON, OFF

2. Press the UP/DOWN arrow soft-keys to move the cursor to the Key Lock setting followed by using the scroll wheel to set the Key Lock setting.



Key Lock settings ON, OFF

3. Press the UP/DOWN arrow soft-keys to move the cursor to the Interlock setting followed by using the scroll wheel to set the Interlock setting.



| | | |
|--------------|-------------------------------|------|
| DISPLAY SET: | Control By: Front Panel | ↑ |
| BUZZER: | Double Action: OFF | |
| INTERFACE: | Key Lock: ON | ↓ |
| CONTROL: | Interlock: OFF | |
| SYSTEM TIME: | Start Click For 1 Second: OFF | |
| DATA INIT: | Power GND check: ON | |
| INFORMATION: | Barcode Function Setting: | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | EXIT |

Interlock settings ON, OFF

4. Press the UP/DOWN arrow soft-keys to move the cursor to the Start Click For 1 Second setting followed by using the scroll wheel to set the Start Click For 1 Second setting.

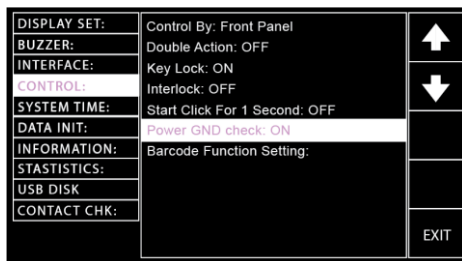


| | | |
|--------------|-------------------------------|------|
| DISPLAY SET: | Control By: Front Panel | ↑ |
| BUZZER: | Double Action: OFF | |
| INTERFACE: | Key Lock: ON | ↓ |
| CONTROL: | Interlock: OFF | |
| SYSTEM TIME: | Start Click For 1 Second: OFF | |
| DATA INIT: | Power GND check: ON | |
| INFORMATION: | Barcode Function Setting: | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | EXIT |

Start Click For 1 Second settings ON, OFF

5. Press the UP/DOWN arrow soft-keys to move the cursor to the Power GND Check setting followed by using the scroll wheel to set the Power GND Check setting.





Power GND Check settings

ON, OFF

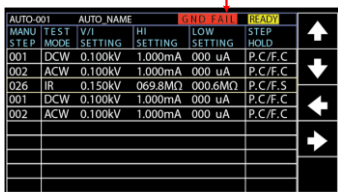
When Power GND Check setting is ON but the instrument doesn't connect to earth ground, the prompt message will appear in either MANU or AUTO mode as the figures below shown.

MANU
MODE

POWER GND FAIL Message

AUTO
MODE

GND FAIL Message



- Press the UP/DOWN arrow soft-keys to move the cursor to the Barcode Function Setting followed by pressing the SET soft-key to enter the specific setting page.



| | | |
|--------------|-------------------------------|------|
| DISPLAY SET: | Control By: Front Panel | ↑ |
| BUZZER: | Double Action: OFF | |
| INTERFACE: | Key Lock: ON | ↓ |
| CONTROL: | Interlock: OFF | |
| SYSTEM TIME: | Start Click For 1 Second: OFF | |
| DATA INIT: | Power GND check: ON | SET |
| INFORMATION: | Barcode Function Setting: | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | EXIT |

The barcode setting page is composed of a table with several columns and rows. First use the scroll wheel to choose PAGE number.



PAGE # 001~010

BAR PAGE number cursor BAR setting indicator

| PAGE-001 | BAR | | | | |
|----------|-----------|----------|-----------|----------------|------|
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| | | | | | ↓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | EXIT |

Press the DOWN arrow key to bring the cursor to the PAGE table. Use a connected barcode scanner to scan a target barcode and the scanned barcode information will be written in the 1st row of the PAGE table.



The scanned barcode

| PAGE-001 | BAR | | | | ↑ |
|---------------|-----------|----------|-----------|----------------|------|
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | | | OFF | | ↓ |
| | | | | | ← |
| | | | | | → |
| | | | | | |
| | | | | | |
| | | | | | EXIT |



Note

- Use an USB virtual com port-compatible barcode scanner, which plugs into the USB Host Port on the front panel of RSST-2000 series, for ideal function result.
- The length limit of barcode to be scanned is within 15 characters, which means up to 15 characters is displayed in BARCODE column for each barcode.

When a compatible barcode scanner connects to the GTP-10000 series, the corresponding icon will be shown on either MANU or AUTO display.

Barcode icon in MANU



Barcode scanner connected

Barcode icon in AUTO

Barcode scanner connected

| AUTO-001 | AUTO NAME | BAR | READY | |
|-----------|-----------|------------|-------------|-----------------|
| MANU TEST | V/I | HI SETTING | LOW SETTING | STEP HOLD |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA P.C/F.C |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA P.C/F.C |
| 026 | IR | 0.150kV | 0.69.8MO | 000.6MO P.C/F.C |
| 001 | DCW | 0.100kV | 1.000mA | 000 uA P.C/F.C |
| 002 | ACW | 0.100kV | 1.000mA | 000 uA P.C/F.C |
| | | | | SKIP |
| | | | | DEL. |
| | | | | STEP HOLD |

Use the LEFT/RIGHT arrow soft-keys to move the cursor to the TEST MODE followed by using the scroll wheel to select desired mode.



TEST MODE AUTO, MANU

Use the LEFT/RIGHT arrow soft-keys to move the cursor to the TEST NUM followed by using the scroll wheel to determine the number of selected test mode. Refer to page 40 & 94 for test number creation.



TEST NUM 001 - 100

Further use the LEFT/RIGHT arrow soft-keys to move the cursor to the AUTO TEST followed by using the scroll wheel to turn on or off the auto test function, which indicates the test will start automatically when the matched barcode is scanned later.



AUTO TEST ON, OFF

The MANU/AUTO NAME column automatically reflects file name corresponding to the existed file name from the selected test number in either mode. Refer to page 41 & 95 for test name creation.

Example of a scanned barcode with complete settings

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

| | | | | | |
|---------------|-----------|----------|-----------|----------------|------|
| PAGE-001 | | BAR | | | ↑ |
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | AUTO | 001 | ON | AUTO_NAME | ↓ |
| | | | | | ← |
| | | | | | → |
| | | | | | EXIT |
| | | | | | |
| | | | | | |
| | | | | | |

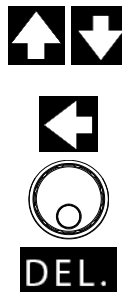
Repeat the above steps to scan more barcodes and edit the ensuing settings if necessary.

Example of multiple scanned barcodes with complete settings

3 scanned barcodes with varied settings in PAGE-001 table

| PAGE-001 | | | | | BAR |
|---------------|-----------|----------|-----------|----------------|------|
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | AUTO | 001 | ON | AUTO_NAME | ↑ |
| GPT-9801 | MANU | 022 | OFF | MANU_NAME | ↓ |
| ABC-abc-1234 | AUTO | 006 | ON | AUTO_NAME | ← |
| | | | | | → |
| | | | | | |
| | | | | | |
| | | | | | EXIT |

Delete scanned barcode If you want to delete a scanned barcode from list barcode, use the UP/DOWN arrow soft-keys to move the cursor to the row of target barcode followed by using the LEFT arrow soft-key to move the cursor to the BARCODE column where the target barcode is highlighted. Press the DEL. soft-key to remove it from the table.



The selected barcode to be removed

| PAGE-001 | | | | | BAR |
|---------------|-----------|----------|-----------|----------------|------|
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | AUTO | 001 | ON | AUTO_NAME | ↑ |
| GPT-9801 | MANU | 022 | OFF | MANU_NAME | ↓ |
| ABC-abc-1234 | AUTO | 006 | ON | AUTO_NAME | ← |
| | | | | | → |
| | | | | | |
| | | | | | |
| | | | | | EXIT |

Delete soft-key

Barcode repeat When an existed barcode is scanned again, a warning message, "Barcode Repeat" will be shown on the top-right corner with buzzer beep.

Barcode Repeat message

| | | | | | |
|---------------|-----------|--------------------|-----------|----------------|------|
| PAGE-001 | | BAR Barcode Repeat | | | ↑ |
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | AUTO | 001 | ON | AUTO_NAME | ↓ |
| GPT-9801 | MANU | 022 | OFF | MANU_NAME | |
| ABC-abc-1234 | AUTO | 006 | ON | AUTO_NAME | ← |
| | | | | | |
| | | | | | → |
| | | | | | |
| | | | | | EXIT |
| | | | | | |

Barcode data full

When registered barcodes number reach the maximum 100, a warning message “DATA FULL” appears on the top bar with a warning sound composed of a short beep followed by a long beep indicating no available space for new barcode to be imported.

Barcode data full

| | | | | | |
|---------------|-----------|---------------|-----------|----------------|------|
| PAGE-001 | | DATA FULL BAR | | | ↑ |
| BARCODE | TEST MODE | TEST NUM | AUTO TEST | MANU/AUTO NAME | |
| 4710123134556 | AUTO | 001 | ON | AUTO_NAME | ↓ |
| GPT-9801 | MANU | 022 | OFF | MANU_NAME | |
| ABC-abc-1234 | AUTO | 006 | ON | AUTO_NAME | ← |
| GPT-9803 | MANU | 042 | OFF | MANU_NAME | |
| ABC-efg-1233 | AUTO | 008 | ON | AUTO_NAME | → |
| 4710123134576 | AUTO | 006 | ON | AUTO_NAME | |
| GPT-9100 | MANU | 099 | OFF | MANU_NAME | EXIT |
| ABC-abc-2345 | AUTO | 003 | ON | AUTO_NAME | |
| GPT-9900 | MANU | 077 | OFF | MANU_NAME | |
| ABC-efg-9999 | AUTO | 009 | ON | AUTO_NAME | |

Barcode test running

After configuring the barcode page, switch to the MANU or AUTO mode with READY status first. Use an USB virtual com port-compatible barcode scanner, which plugs into the USB Host Port on the front panel, to scan the matching barcodes and the screen will jump to the corresponding test page or the corresponding test will launch automatically, depending on the AUTO TEST setting.

Press the EXIT soft-key to exit from the CONTROL page.

EXIT



Note

The changes in CONTROL setting are saved instantly.



Note

The Double Action setting is ignored when the RSST-2000 is being controlled remotely via the USB, RS232 or GPIB interface.



Note

A beeper sounds twice when an unregistered barcode is scanned. Confirm if target barcode has been registered before barcode test operation.



Note

If a test is started with INTERLOCK ON, but the interlock signal I/O pins are not shorted (either with the included interlock key or manually), the Interlock Open message will be displayed, whether in MANU or AUTO test, to prevent the test from starting for safety reason.

MANU Test

ACW
MANU: 000
MANU_NAME
HI SET: 355 uA
LOW SET: 000 uA
TEST TIME: 002.0 s
RAMP TIME: 004.0 s
ARC FUNC: OFF
ARC SET: 2.556 mA

0.045 kV
20 uA

FAIL BLOCK OPEN

PAGE 1/3

Interlock Open Message

AUTO
Test

[illegible]

Interlock Open Message

Time Setting

Description The date and time for tester system can be edited under this section. The button cell battery used for system date & time has the lifecycle of approximate 2 years in general. Hence, it is suggested to replace with new battery of the type of CR-2032 every 2 years.

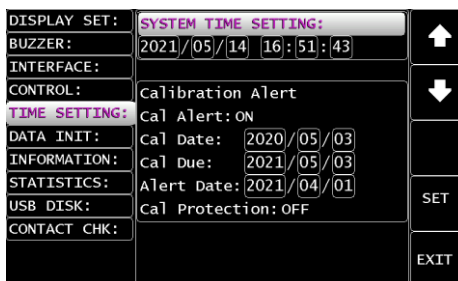
Also, this section provides alert relevant setting, which is specific for calibration.

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. Press the UP/DOWN arrow soft-keys to move the cursor to the SYSTEM TIME SETTING.



3. Press the ENTER soft-key to enter the Year setting followed by using the scroll wheel to select the Year setting for system. Also, repeat the actions for the rest month, date, hour, minute and second settings.




| | | |
|---------------|------------------------|------|
| DISPLAY SET: | SYSTEM TIME SETTING: | ↑ |
| BUZZER: | 2021/05/14 16:53:00 | |
| INTERFACE: | | ↓ |
| CONTROL: | Calibration Alert | |
| TIME SETTING: | Cal Alert: ON | → |
| DATA INIT: | Cal Date: 2020/05/03 | |
| INFORMATION: | Cal Due: 2021/05/03 | ← |
| STATISTICS: | Alert Date: 2021/04/01 | |
| USB DISK: | Cal Protection: OFF | EXIT |
| CONTACT CHK: | | |

Year setting 2000 ~ 2099

Month setting 01 ~ 12

Date setting 01 ~ 31

Hours setting 00 ~ 23

Minutes setting 00 ~ 59

Seconds setting 00 ~ 59

4. Press the UP/DOWN arrow soft-keys to move the cursor to the Cal Alert setting followed by using the scroll wheel to turn On or Off the Cal Alert setting, which indicates if the warning message function for due calibration date is turned or off.



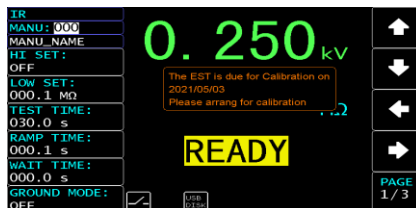
| | | |
|---------------|------------------------|------|
| DISPLAY SET: | SYSTEM TIME SETTING: | ↑ |
| BUZZER: | 2021/05/14 16:52:47 | |
| INTERFACE: | | ↓ |
| CONTROL: | Calibration Alert | |
| TIME SETTING: | Cal Alert: ON | → |
| DATA INIT: | Cal Date: 2020/05/03 | |
| INFORMATION: | Cal Due: 2021/05/03 | ← |
| STATISTICS: | Alert Date: 2021/04/01 | |
| USB DISK: | Cal Protection: OFF | EXIT |
| CONTACT CHK: | | |

Cal Alert

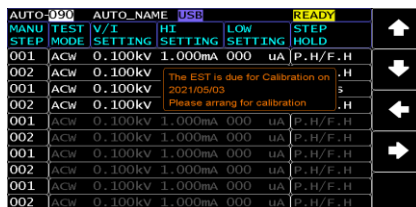
ON, OFF

When Cal Alert is turned on and the system time is beyond either Cal Date or Cal Due setting, the display will be shown as follows.

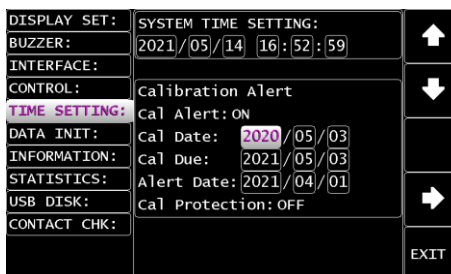
MANU
Display



AUTO
Display



5. Press the UP/DOWN arrow soft-keys to move the cursor to the Cal Date setting followed by using the scroll wheel to set the Cal Date setting, which indicates the date for calibration.



Cal Date 2000 ~ 2099
 01 ~ 12
 01 ~ 31

6. Press the UP/DOWN arrow soft-keys to move the cursor to the Cal Due setting followed by using the scroll wheel to set the Cal Due setting, which indicates next due date for calibration.



| | | |
|---------------|------------------------|------|
| DISPLAY SET: | SYSTEM TIME SETTING: | |
| BUZZER: | 2021/05/14 16:53:05 | ↑ |
| INTERFACE: | | |
| CONTROL: | Calibration Alert | ↓ |
| TIME SETTING: | Cal Alert: ON | |
| DATA INIT: | Cal Date: 2020/05/03 | |
| INFORMATION: | Cal Due: 2021/05/03 | |
| STATISTICS: | Alert Date: 2021/04/01 | → |
| USB DISK: | Cal Protection: OFF | |
| CONTACT CHK: | | EXIT |

Cal Due 2000 ~ 2099

01 ~ 12

01 ~ 31

7. Press the UP/DOWN arrow soft-keys to move the cursor to the Alert Date setting followed by using the scroll wheel to set the Alert Date setting, which indicates the pre-alert function for due date of calibration.



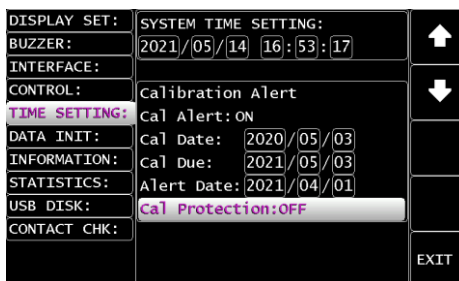
| | | |
|---------------|------------------------|------|
| DISPLAY SET: | SYSTEM TIME SETTING: | |
| BUZZER: | 2021/05/14 16:53:11 | ↑ |
| INTERFACE: | | |
| CONTROL: | Calibration Alert | ↓ |
| TIME SETTING: | Cal Alert: ON | |
| DATA INIT: | Cal Date: 2020/05/03 | |
| INFORMATION: | Cal Due: 2021/05/03 | |
| STATISTICS: | Alert Date: 2021/04/01 | → |
| USB DISK: | Cal Protection: OFF | |
| CONTACT CHK: | | EXIT |

Alert Date 2000 ~ 2099

01 ~ 12

01 ~ 31

8. Press the UP/DOWN arrow soft-keys to move the cursor to the Cal Protection setting followed by using the scroll wheel to set the Cal Protection setting, which indicates if the output protection setting is turned on or off when due date of calibration expires.



Cal Protection ON, OFF

When Cal Protection is turned on and the system time is beyond either Cal Due or Alert Date setting, the display will be shown as follows in which calibration output protection is effectively activated.

MANU
Display



9. Press the EXIT soft-key to exit from the SYSTEM TIME page.

EXIT



Note

The changes in Time Setting setting are saved instantly.

Data Initialize Settings

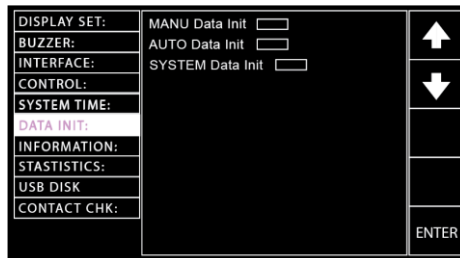
Description The settings of AUTO test, MANU test and SYSTEM saved by user can be initialized within this section.

Steps

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

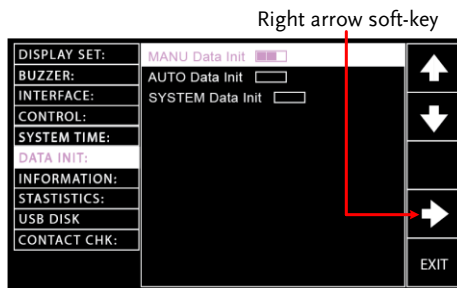


2. The SYSTEM page will be shown. Press the UP/DOWN arrow soft-keys to move the cursor to the DATA INIT setting.



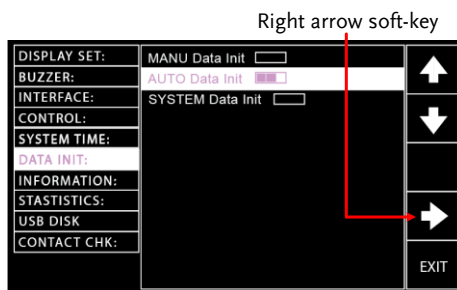
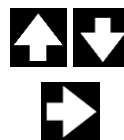
3. Press the ENTER soft-key to enter the Manu Data Init setting followed by pressing the right arrow soft-key for consecutive 3 times to initialize the Manu Data settings.





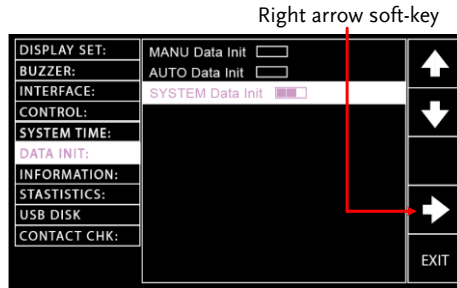
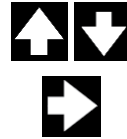
The status bar of Manu Data Init consists of 3 bars, which indicate the initializing action will not be implemented until 3 bars are fully achieved. After the initializing, the “OK” message appears.

- Press the UP/DOWN arrow soft-keys to move the cursor to the Auto Data Init setting followed by pressing the right arrow soft-key for consecutive 3 times to initialize the Auto Data settings.



The status bar of Auto Data Init consists of 3 bars, which indicate the initializing action will not be implemented until 3 bars are fully achieved. After the initializing, the “OK” message appears.

- Press the UP/DOWN arrow soft-keys to move the cursor to the System Data Init setting followed by pressing the right arrow soft-key for consecutive 3 times to initialize the System Data settings.



- Press the EXIT soft-key to exit from the DATA INIT page.



Note

The status bar of System Data Init consists of 3 bars, which indicate the initializing action will not be implemented until 3 bars are fully achieved. After the initializing, the “OK” message appears.

Information Section

| | |
|-------------|---|
| Description | The Information section here discloses some basic information including model name, firmware version and the available functions. |
|-------------|---|

Steps

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



- The SYSTEM page will be shown.
Press the UP/DOWN arrow soft-keys to move the cursor to the INFORMATION section.



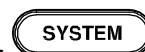
- The basic information of the tester will be clearly exposed on the screen.

Statistics Settings

| | |
|-------------|---|
| Description | This section allows user to have a comprehensive overview of not only total test counts including PASS and FAIL amounts, individually, but also the respective counts of each test mode. More than that, user is able to view those data from an intuitive histogram. |
|-------------|---|

Steps

- 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. Press the UP/DOWN arrow soft-keys to move the cursor to the STATISTICS setting where PASS and FAIL amounts and TOTAL amounts to date are shown in the green highlight below. Also, the detailed distributions of PASS and FAIL amounts from each test functions are well disclosed for viewing in the blue highlight below.



PASS, FAIL amounts & TOTAL amounts

| | | | | | |
|--------------|----------------------|-------|-------|-------|---|
| DISPLAY SET: | TOTAL AMOUNT = 00032 | | | ↑ | |
| BUZZER: | PASS AMOUNT = 00023 | | | | ↓ |
| INTERFACE: | FAIL AMOUNT = 00009 | | | | |
| CONTROL: | FUNCTION | PASS | FAIL | ENTER | |
| SYSTEM TIME: | ACW | 00003 | 00002 | | |
| DATA INIT: | DCW | 00003 | 00002 | | |
| INFORMATION: | IR | 00002 | 00003 | | |
| STATISTICS: | GB | 00003 | 00002 | | |
| USB DISK | CONT | 00012 | 00000 | | |
| CONTACT CHK: | | | | | |

PASS & FAIL amounts
distributions in each test function

3. Press the ENTER soft-key to enter the statistics table. It is available to press the DATA INIT soft-key to initialize the accumulated statistics.

ENTER**DATA
INIT**

| | | | | | |
|--------------|----------------------|-------|-------|--------------|---|
| DISPLAY SET: | TOTAL AMOUNT = 00032 | | | ↑ | |
| BUZZER: | PASS AMOUNT = 00023 | | | | ↓ |
| INTERFACE: | FAIL AMOUNT = 00009 | | | | |
| CONTROL: | FUNCTION | PASS | FAIL | DATA INIT | |
| SYSTEM TIME: | ACW | 00003 | 00002 | | |
| DATA INIT: | DCW | 00003 | 00002 | | |
| INFORMATION: | IR | 00002 | 00003 | | |
| STATISTICS: | GB | 00003 | 00002 | | |
| USB DISK | CONT | 00012 | 00000 | | |
| CONTACT CHK: | | | | EXIT | |

DATA INIT soft-key



Note

After pressing the DATA INIT soft-key, all the statistics shown on this page will be initialized to 0 and the future tests will be re-accumulated from zero.

4. Press the UP/DOWN arrow soft-keys to move the cursor to the table below. Place the cursor in target test function followed by pressing ANALY soft-key to enter the specific analysis page.



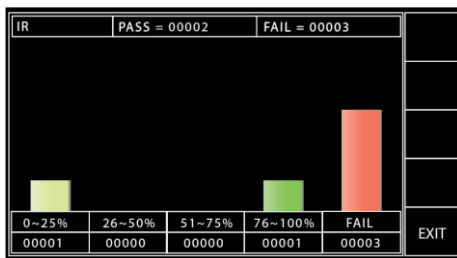
ANALY

ANALY soft-key

| | | | | |
|--------------|----------------------|-------|-------|-------|
| DISPLAY SET: | TOTAL AMOUNT = 00032 | | | ↑ |
| BUZZER: | PASS AMOUNT = 00023 | | | |
| INTERFACE: | FAIL AMOUNT = 00009 | | | |
| CONTROL: | FUNCTION | PASS | FAIL | ↓ |
| SYSTEM TIME: | ACW | 00003 | 00002 | |
| DATA INIT: | DCW | 00003 | 00002 | |
| INFORMATION: | IR | 00002 | 00003 | ANALY |
| STATISTICS: | GB | 00003 | 00002 | |
| USB DISK: | CONT | 00012 | 00000 | |
| CONTACT CHK: | | | | EXIT |

Selected target test function

5. The distributions of PASS and FAIL statistics are well illustrated in the histogram with table display in which the upper side reads the individual PASS and FAIL amounts for test function. The mid and lower side depicts FAIL amounts in the far-right red strip with number below, whilst the PASS amounts are described in strips of different colors with numbers below indicating the percentage of varied measured values in relation to the set HI & LOW range.



6. Press the EXIT soft-key to exit from the STATISTICS page.

EXIT

USB Disk Settings

Description

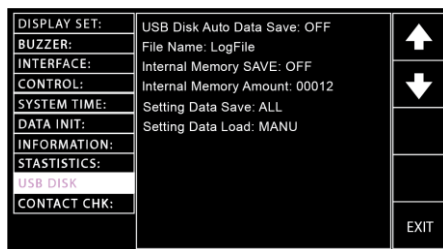
The measurements data can be stored in the connected USB disk. In this section user can determine a user-defined name for data to be saved into the inserted USB disk. Refer to page 14 for details on USB port in the front panel.

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. Press the UP/DOWN arrow soft-keys to move the cursor to the USB DISK setting.



3. Press the ENTER soft-key to enter the USB Disk Auto Data Save setting followed by using the scroll wheel to turn on or off the setting, which automatically saves the test data into the inserted USB disk when enabled.

ENTER

| | | |
|--------------|-------------------------------|--|
| DISPLAY SET: | USB Disk Auto Data Save: ON |   EXIT |
| BUZZER: | File Name: LogFile | |
| INTERFACE: | Internal Memory SAVE: OFF | |
| CONTROL: | Internal Memory Amount: 00012 | |
| SYSTEM TIME: | Setting Data Save: ALL | |
| DATA INIT: | Setting Data Load: MANU | |
| INFORMATION: | | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | |

USB Disk Auto Data Save setting ON, OFF

4. Press the UP/DOWN arrow soft-keys to move the cursor to the File Name field, which sets file name for USB Disk Auto Data Save. The characters table will appear beneath accordingly.



| | | |
|--------------|---|---|
| DISPLAY SET: | USB Disk Auto Data Save: ON |   EXIT |
| BUZZER: | File Name: <u>LogFile</u> | |
| INTERFACE: | 0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J | |
| CONTROL: | K L M N O P Q R S T U V W X Y Z a b c d | |
| SYSTEM TIME: | e f g h i j k l m n o p q r s t u v w x | |
| DATA INIT: | y z | |
| INFORMATION: | Setting Data Load: MANU | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | |

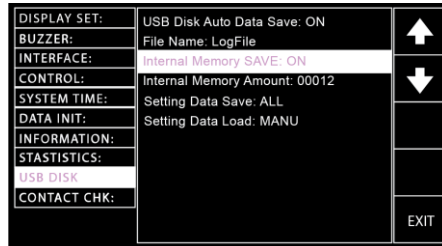
5. Use the scroll wheel to scroll through the available characters.



6. Press the LEFT / RIGHT arrow soft-keys to move the cursor to the next character and finish the naming.

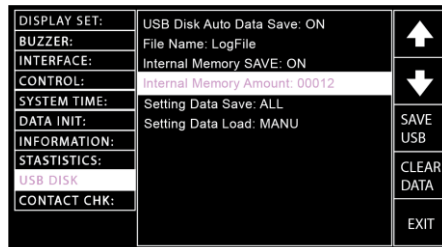


7. Press the UP/DOWN arrow soft-keys to move the cursor to the Internal Memory SAVE setting followed by using the scroll wheel to turn on or off the setting, which automatically saves the test data into the internal memory of RSST-2000 series when enabled.



Internal Memory SAVE setting ON, OFF

8. Press the UP/DOWN arrow soft-keys to move the cursor to the Internal Memory Amount setting, which displays the total amount of test data.



Note

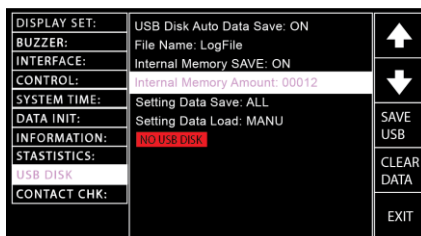
Only when “Internal Memory SAVE” is enabled can test data be stored into the internal memory amount.

9. Press the SAVE USB soft-key to save test data into the inserted USB disk.

**SAVE
USB**

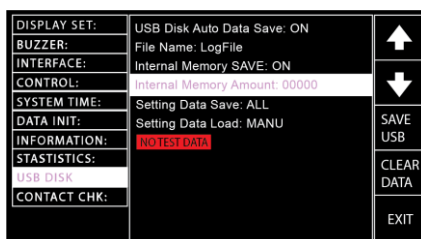
NO USB DISK Warning

If USB disk is Not properly inserted into RSST-2000 series, prompt message “NO USB DISK” pops up.



NO TEST DATA Warning

If there is no test data available in internal memory (Amount: 00000), even though USB disk is inserted, prompt message “NO TEST DATA” pops up.

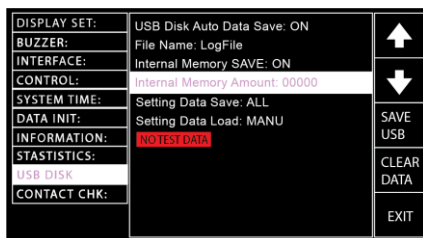


10. Press the CLEAR DATA soft-key to clear the internal memory amount.

**CLEAR
DATA**

NO TEST DATA Warning

If there is no test data available (Amount: 00000), prompt message “NO TEST DATA” pops up.



Note

Due to the 30,000 counts capacity limitation on internal memory amount, the warning message is shown on either MANU or AUTO mode when the maximum limitation is reached.

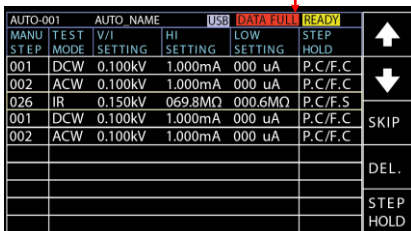
DATA
FULL in
MANU
Test



Data Full Message

DATA
FULL in
AUTO
Test

Data Full Message



11. Press the EXIT soft-key to exit from the USB DISK page.

EXIT

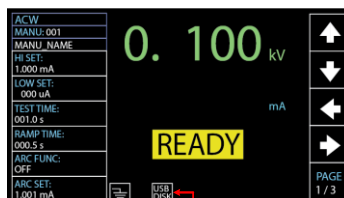


Note

- The changes in USB DISK setting are saved instantly.

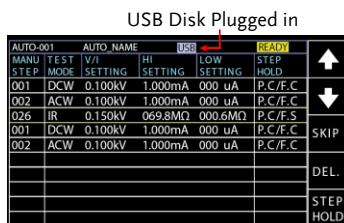
Make sure an USB disk is plugged into GTP-10000 unit before saving measurement data into the disk. Once an USB disk is well inserted, the USB icon, in either MANU or AUTO mode, appears accordingly.

USB icon in MANU



USB Disk Plugged in

USB icon in AUTO



USB Disk Plugged in

Contact Check Settings

Background

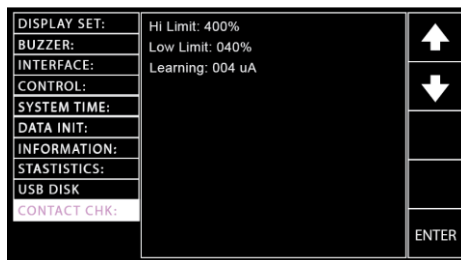
The CONTACT CHK function is used to determine if open circuit or short circuit occurs between the test leads and DUT under the ACW, DCW and IR tests. The section here allows user to define a reference value via learning process and also to assign Hi limit and Low limit for Short and Open status check, respectively.

Steps

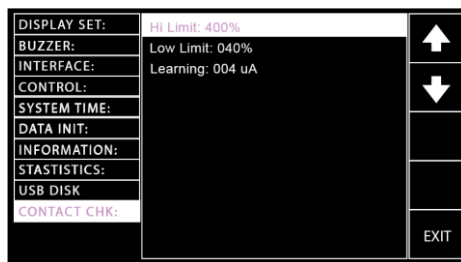
- Press the SYSTEM button on the front panel when the tester is under READY status in either MANU or AUTO test.



2. The SYSTEM page will be shown. Press the UP/DOWN arrow soft-keys to move the cursor to the CONTACT CHK setting.



3. Press the ENTER soft-key to enter the Hi Limit setting followed by using scroll wheel to determine an exact scale of Hi Limit threshold that triggers the SHORT status warning.



Hi Limit settings OFF, 110% ~ 500%

4. Press the UP/DOWN arrow soft-keys to move the cursor to the Low Limit setting followed by using scroll wheel to determine an exact scale of Low Limit threshold that triggers the OPEN status warning.



| | | |
|--------------|------------------|------|
| DISPLAY SET: | Hi Limit: 400% | ↑ |
| BUZZER: | Low Limit: 040% | |
| INTERFACE: | Learning: 004 uA | ↓ |
| CONTROL: | | |
| SYSTEM TIME: | | |
| DATA INIT: | | |
| INFORMATION: | | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | EXIT |

Low Limit settings 10% ~ 90%

5. Press the UP/DOWN arrow soft-keys to move the cursor to the Learning setting followed by pressing the RUN soft-key to obtain the current reference value.



| | | |
|--------------|------------------|------|
| DISPLAY SET: | Hi Limit: 400% | ↑ |
| BUZZER: | Low Limit: 040% | |
| INTERFACE: | Learning: 040 uA | ↓ |
| CONTROL: | | |
| SYSTEM TIME: | | |
| DATA INIT: | | RUN |
| INFORMATION: | | |
| STATISTICS: | | |
| USB DISK | | |
| CONTACT CHK: | | EXIT |



Note

- Prior to RUN the Learning process, be sure to well set up test leads connection between the RSST-2000 unit and the DUT.
 - When reference value, for example, is defined as 40uA, and Hi and Low limits are set 400% and 40%, respectively, the OPEN status will be triggered when measured value is less than 16uA. The SHORT status, by contrast, will be triggered while measured value is above 160uA.
6. Press the EXIT soft-key to exit from the CONTACT CHK page.

EXIT



Note

The changes in CONTACT CHK setting are saved instantly.

EXTERNAL CONTROL

The External Control chapter covers the
REMOTE terminal and the SIGNAL I/O port.

| | |
|--|-----|
| External Control Overview | 158 |
| Remote Terminal Overview | 158 |
| Remote Controller Operation..... | 159 |
| SIGNAL I/O Overview..... | 160 |
| Using the SIGNAL I/O to Start/Stop Tests | 162 |
| Using the Interlock Key..... | 163 |

External Control Overview

The External Control section describes the front panel REMOTE terminal connection and the rear panel SIGNAL I/O port.

Remote Terminal Overview

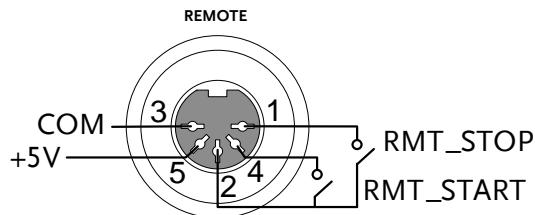
Overview The REMOTE terminal connector is a standard 5-pin DIN terminal suitable for a remote controller.



WARNING

Keep any cables that are connected to the REMOTE terminal away from the HIGH VOLTAGE and RETURN terminals.

Pin Assignment and Connection



| Pin | Pin name | Description |
|-----|-----------|---------------------|
| 1 | RMT_STOP | Remote Stop signal |
| 2 | COM | Common line |
| 3 | COM | Common line |
| 4 | RMT_START | Remote Start signal |
| 5 | +5V | +5V Output |

Signal Properties

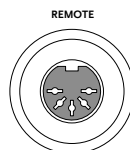
| | |
|--------------------------|----------------|
| High level input voltage | 3.3V~5.0V |
| Low level input voltage | 0~0.8V |
| Input period | minimum of 1ms |

Remote Controller Operation

Description The RSST-2000 accepts external remote controllers with a START and STOP button. To use the REMOTE terminal, the RSST-2000 must first be configured to accept a remote controller.

Operating a remote controller is the same as operating the START and STOP buttons on the front panel.

Steps 1. Insert the lead of remote controller into the REMOTE terminal.



2. Configure the CONTROL option to REMOTE in the SYSTEM mode. [Page 123](#)
3. The tester will now only be able to start a test using a remote controller.
-



Even if the RSST-2000 is configured to use the REMOTE option, the STOP button on the front panel can still be used to stop a test.

4. To return the operation control to the front panel, configure the CONTROL option to Front Panel. [Page 123](#)

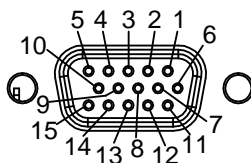
SIGNAL I/O Overview

Overview The SIGNAL I/O port can be used to remotely start/stop tests and monitor the test status of the instrument.

The SIGNAL I/O port is also used for the interlock function. Refer to page 163 for details.

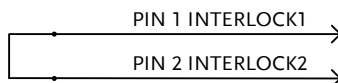
The SIGNAL I/O port basically uses a DB-15 pin female connector.

Pin Assignment

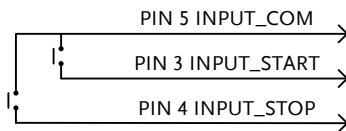


| Pin name | Pin | Description |
|-------------|-----|---|
| INTERLOCK1 | 1 | When INTERLOCK is ON, a test is only allowed to start when both INTERLOCK pins are shorted. |
| INTERLOCK2 | 2 | |
| INPUT_START | 3 | Start signal input |
| INPUT_STOP | 4 | Stop signal input |
| INPUT_COM | 5 | Common input line |
| NC | 6 | NC |
| OUTPUT_1 | 7 | OUTPUT1 SIGNAL |
| OUTPUT_2 | 8 | OUTPUT2 SIGNAL |
| OUTPUT_3 | 9 | OUTPUT3 SIGNAL |
| OUTPUT_4 | 10 | OUTPUT4 SIGNAL |
| OUTPUT_5 | 11 | OUTPUT5 SIGNAL |
| NC | 12 | NC |
| NC | 13 | NC |
| NC | 14 | NC |
| OUTPUT_COM | 15 | Common output line |

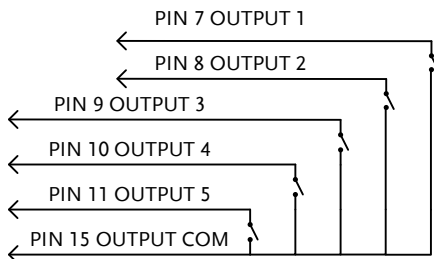
Interlock connection



Input Connection



Output Connection



Signal Properties

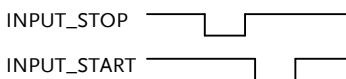
Input Signals

| | |
|--------------------------|-----------------|
| High level input voltage | 5V ~ 32V |
| Low level input voltage | 0V ~ 1V |
| Low level input current | Maximum of -5mA |
| Input period | Minimum of 1ms |

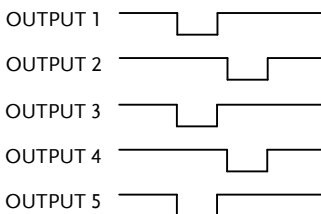
Output Signals

| | |
|------------------------|--------------|
| Output Type | Relay form A |
| Output Rated Voltage | 30VDC |
| Maximum output current | 0.5A |

Input Stop and Input Start Timing



Output Timing



Note

Output is able to be deployed by programming.

Using the SIGNAL I/O to Start/Stop Tests

| | |
|------------|---|
| Background | To use the SIGNAL I/O port the CONTROL settings have to be set to SIGNAL IO in the SYSTEM mode. |
|------------|---|

- | | |
|-----------------|---|
| Panel operation | <div style="display: flex; justify-content: space-between;"><div><ol style="list-style-type: none">1. Set the CONTROL option to SIGNAL IO in the SYSTEM mode.2. Connect the Input/Output signals to the SIGNAL I/O port.3. To start the testing, short the INPUT_STOP and INPUT_COM line for a minimum of 1ms to put the tester into READY status.4. To start the testing, short the INPUT_START and INPUT_COM lines for a minimum of 1ms.5. To stop the testing, temporarily short the INPUT_STOP and INPUT_COM line again.</div><div style="text-align: right; padding-right: 20px;">Page 122</div></div> |
|-----------------|---|
-

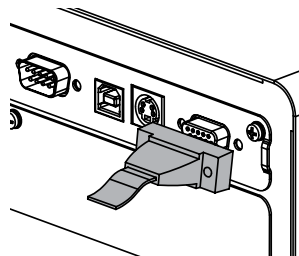
**NOTE**

Even if the RSST-2000 is configured to use the SIGNAL I/O interface, the STOP button on the front panel can still be used to stop a test.

Using the Interlock Key

Background When the INTERLOCK function is set to ON, tests are only allowed to start when both Interlock pins on the signal I/O port are shorted. Using the Interlock key will short the INTERLOCK1 and INTERLOCK2 pins on the signal I/O port. See page 160 for the Signal I/O pin assignment.

Panel operation 1. Insert the Interlock key into the SIGNAL I/O port on the rear panel.



2. Set the Interlock option to ON in the SYSTEM mode. Page 123



Note

With INTERLOCK set to ON, the tester can now only start a test when the Interlock key is connected. Please note that removing the interlock key after starting a test leads to interruption of test.

Set Interlock to OFF to disable this feature.

REMOTE CONTROL

This chapter describes basic configuration of IEEE488.2 based remote control. The remote interface supports USB, RS232 and GPIB.

| | |
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| Interface Configuration..... | 165 |
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| RS232 Remote Interface | 165 |
| GPIB Remote Interface..... | 166 |
| USB/RS232/GPIB Remote Control Function Check ... | 167 |
| Return to Panel Control | 168 |
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| Auto Commands | 216 |
| Sweep Commands | 220 |
| Common Commands | 222 |
| Remote Commands | 224 |
| Error Messages | 225 |

Interface Configuration

USB Remote Interface

| | | |
|-------------------|--------------------------|---|
| USB Configuration | PC side connector | Type A, host |
| | RSST-2000 side connector | Rear panel Type B |
| | USB Class | CDC (communications device class) (VCP, Virtual Com Port) |

- Panel operation
1. Connect the USB cable to the rear panel USB B-Type port.



2. Set the Interface to USB from the SYSTEM mode. Page 121
-



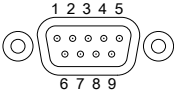
Note

When USB is used for remote control, an RS232 port is simulated. Check the Windows Device Manager for the baud rate and other RS232 settings. Check the RS232 configuration below for more details.

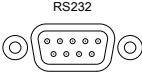
Note the baud rate is fixed to 115200 baud when using the USB interface.

RS232 Remote Interface

| | | |
|---------------------|------------|-----------------------------------|
| RS232 Configuration | Connection | Null modem cable |
| | Baud rate | 9600, 19200, 38400, 57600, 115200 |
| | Parity | None |
| | Data bits | 8 |


| | |
|----------------|--|
| Stop bit | 1 |
| Flow control | None |
| Pin Assignment |  <p> 1: No connection 2: RxD (Receive Data) 3: TxD (Transmit Data) 4: No connection 5: GND 6-9: No connection </p> |

| Connection | PC | | Tester | |
|------------|---------|--------|--------|--------|
| | DB9 Pin | Signal | Signal | DB9Pin |
| | 2 | RxD | TxD | 3 |
| | 3 | TxD | RxD | 2 |
| | 5 | GND | GND | 5 |

- Panel operation
1. Connect the Null modem cable to the rear panel RS232 port. 
 2. Set the Interface to RS-232 from the SYSTEM mode. [Page 121](#)

GPIB Remote Interface

| | | |
|--------------------|---------|------|
| GPIB Configuration | Address | 0-31 |
|--------------------|---------|------|

- Panel operation
1. Connect the GPIB cable to the rear panel GPIB port. 
 2. Set the Interface to GPIB and set the GPIB address from the SYSTEM mode. [Page 121](#)

USB/RS232/GPIB Remote Control Function Check

Functionality check

Invoke a terminal application such as RealTerm.

To check COM port number and other settings, see the Device Manager in PC. For WinXP; Control panel → System → Hardware tab.

Run this query command via the terminal after the instrument has been configured for USB, RS-232 or GPIB remote control.

*idn?

This should return Model number, Serial number and Firmware version in the format below:

RSST-2004, xxxxxxxx, T0.011

Model number : RSST-2004

Serial number :8 characters serial number

Firmware version : V1.00

CR, LF, CR+LF can be used as the terminal character when entering queries/commands from a terminal application. Refer to page 170 for details.

RMT Display

When the panel is being remotely controlled via the USB, RS232, LAN or GPIB interfaces, the RMT indicator will be displayed on the screen.



RMT indicator

Err Display

When an incorrect command is sent to the tester, the Err indicator will be displayed on the screen indicating there is an error in command.



Err indicator

Return to Panel Control

Background

When the instrument is remotely controlled all panel keys except the STOP button are disabled. Receive a stop signal from either mode of Control By (Front Panel, Remote, SIGNAL IO), while the RMT indicator is displayed, or simply send a RMTOff command (page 224) to return the instrument back to the READY status.



Note

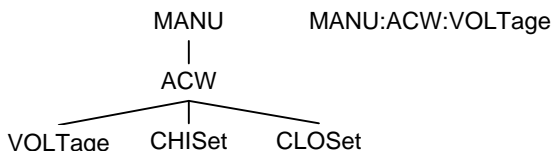
To put the tester back to the RMT, simply issue another remote control command.

Command Syntax

| | | |
|---------------------|------------|-----------------------|
| Compatible Standard | IEEE488.2 | Partial compatibility |
| | SCPI, 1999 | Partial compatibility |

Command Structure SCPI commands follow a tree-like structure, organized into nodes. Each level of the command tree is a node. Each keyword in an SCPI command represents each node in the command tree. Each keyword (node) of an SCPI command is separated by a colon (:).

For example, the diagram below shows an SCPI sub-structure and a command example.



Command types There are a number of different instrument commands and queries. A command sends instructions or data to the unit and a query receives data or status information from the unit.

Command types

| | |
|---------|---|
| Setting | A single or compound command with/without a parameter |
|---------|---|

| | |
|---------|-------------|
| Example | MANU:STEP 1 |
|---------|-------------|

| | |
|-------|--|
| Query | A query is a simple or compound command followed by a question mark (?). A parameter (data) is returned. |
|-------|--|

| | |
|---------|-------------------|
| Example | MANU:ACW:VOLTage? |
|---------|-------------------|

Command Forms Commands and queries have two different forms, long and short. The command syntax is written with the short form of the command in capitals and the remainder (long form) in lower case.

The commands can be written in capitals or lower-case, just so long as the short or long forms are complete. An incomplete command will not be recognized.

Below are examples of correctly written commands.

| | |
|------------|--|
| Long form | SYSTem:BUZZer:KEYSound SYSTEM:BUZZER:KEYSOUND system:buzzer:keysound |
| Short form | SYST:BUZZ:KEYS syst:buzz:keys |

| | | |
|-----------------------|---|-------------------|
| Command Format | MANU:STEP 100 | 1. Command header |
| |  | 2. Space |
| | | 3. Parameter |

| Parameters | Type | Description | Example |
|------------|-----------|-------------------|-----------------|
| | <Boolean> | Boolean logic | 0, 1 |
| | <NR1> | integers | 0, 1, 2, 3 |
| | <NR2> | decimal numbers | 0.1, 3.14, 8.5 |
| | <NR3> | floating point | 4.5e-1, 8.25e+1 |
| | <NRf> | any of NR1, 2, 3 | 1, 1.5, 4.5e-1 |
| | <string> | ASCII text string | TEST_NAME |

| | | |
|---------------------------|---------------|--|
| Message Terminator | CR, LF, CR+LF | Carriage Return, Line feed code, Carriage Return + Line feed code |
|---------------------------|---------------|--|

Command List

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| | SYSTem:STATistics | 175 |
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| | | |
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| MANU:DCW:MAXHold | 201 |
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System Commands

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SYSTem:LCD:BRIGhtness

Set →

→ Query

| | | |
|-----------------------------------|--|------------------------|
| Description | Sets the brightness of the LCD display from 1(dark) to 10(bright). | |
| Syntax | SYSTem:LCD:BRIGhtness <NR1> | |
| Query Syntax | SYSTem:LCD:BRIGhtness? | |
| Parameter/ Return parameter | <NR1> | 1 (dark) ~ 10 (bright) |
| Example | SYST:LCD:BRIG 10 Sets the display brightness to the brightest 10. | |

Set →

→ Query

SYSTem:BUZZer:VOLume

| | | |
|--------------|--|--|
| Description | Sets buzzer volume from 1(low) to 3(high). | |
| Syntax | SYSTem:BUZZer:VOLume <NR1> | |
| Query Syntax | SYSTem:BUZZer:VOLume | |

| | | |
|-----------------------------------|-------|--------------------|
| Parameter/ Return parameter | <NR1> | 1 (low) ~ 3 (high) |
|-----------------------------------|-------|--------------------|

Example SYST:BUZZ:VOLUME 3
Sets the buzzer volume to the highest 3.

Set →

→ Query

SYSTem:BUZZer:KEYSound

| | | |
|-----------------------------------|---|-----------------------|
| Description | Turns the buzzer on or off for key sound. | |
| Syntax | SYSTem:BUZZer:KEYSound {ON OFF} | |
| Query Syntax | SYSTem:BUZZer:KEYSound? | |
| Parameter/ Return parameter | ON | Buzzer Key Sound on. |
| | OFF | Buzzer Key Sound off. |

Example SYST:BUZZ:KEYS ON
Turns the buzzer on for key sound.

Set →

→ Query

SYSTem:TIME

| | | |
|-----------------------------------|----------------------------------|--|
| Description | Sets or Queries the system time. | |
| Syntax | SYSTem:TIME {TYY_MM_DD_hh:mm:ss} | |
| Query Syntax | SYSTem:TIME? | |
| Parameter/ Return parameter | TYY_MM_D | Year (YY)_Month (MM)_Day |
| | D_hh:mm:ss | (DD)_Hour (hh)_Minute (mm)_Second (ss) |
| | <string> | Returns the system date & time as a string |

Example SYST:TIME T19_12_05_17_10_20
Sets the system time as 2019-12-05 17:10:20

SYSTem:STATistics

→ Query

| | |
|--------------|---|
| Description | Queries the latest statistics of PASS and FAIL. |
| Query Syntax | SYSTem:STATistics? |

| | | |
|------------------|----------|--|
| Return parameter | <string> | Returns the latest statistics of all the function tests with counts of PASS and FAIL judgments respectively. |
|------------------|----------|--|

Query Example SYST:STAT?

```

>TOTAL AMOUNT=00071
>PASS AMOUNT=00059
>FAIL AMOUNT=00012
>FUNC,PASS ,FAIL ,
>ACW ,00026,00009,
>DCW ,00000,00000,
>IR ,00017,00003,
>GB ,00000,00000,
>CONT,00016,00000,

```

SYSTem:ANALysis



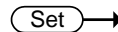
| | | |
|------------------|--|--|
| Description | Queries the latest analysis of each test function. | |
| Query Syntax | SYSTem:ANALysis {ACW DCW IR GB CONT} | |
| Return parameter | <string> | Returns the latest analysis of the select test with PASS and FAIL judgments and distributions. |

Query Example SYST:ANAL IR

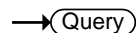
```

>IR,PASS=00017,FAIL=00003
>000~025%=00003
>026~050%=00000
>051~075%=00000
>076~100%=00014
>FAIL=00003

```



SYSTem:USBDisK:AUTosave



| | | |
|--------------|--|----------------------------------|
| Description | Sets or returns the USB disk auto data save on or off. | |
| Syntax | SYSTem:USBDisK:AUTosave {ON OFF} | |
| Query Syntax | SYSTem:USBDisK:AUTosave? | |
| Parameter | ON | Turns the USB disk auto save on. |

| | | |
|------------------|--|-----------------------------------|
| | OFF | Turns the USB disk auto save off. |
| Return parameter | ON | USB disk auto save on. |
| | OFF | USB disk auto save off. |
| Example | SYST:USBBD:AUTOSAVE ON Turns USB disk auto save on. | |

Set →

SYSTem:USBDisK:AMOut

→ Query

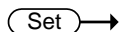
| | | |
|------------------|---|---|
| Description | Saves, clears or returns the amount of tests. When saving, there are 2 results as follows. If no USB disk is inserted, the message "NO USB DISK" shows. If USB disk is inserted properly, the message "SAVE OK" is shown. | |
| Syntax | SYSTem:USBDisK:AMOut {SAVE CLEAR} | |
| Query Syntax | SYSTem:USBDisK:AMOut? | |
| Parameter | SAVE | Saves the amount of tests into USB disk. |
| | CLEAR | Clears the amount of tests from internal memory. |
| Return parameter | <value> | Returns the amount of tests from internal memory. |
| Example | SYST:USBBD:AMOUNT SAVE Saves the amount of tests into USB disk. | |

Set →

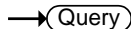
SYSTem:USBDisK:FILEname

→ Query

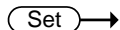
| | | |
|--------------------------------|---|---------------------|
| Description | Sets or returns the data file name to be saved into the inserted USB disk. Note only alphanumeric characters (A-Z, a-z, 0-9) and the "_" underscore character can be used to set the file name. | |
| Syntax | SYSTem:USBDisK:FILEname <"string"> | |
| Query Syntax | SYSTem:USBDisK:FILEname? | |
| Parameter/ Return parameter | <"String"> | 8 character string. |
| Example | SYST:USBBD:FILENAME "File1" Sets the data file name to "File1". | |



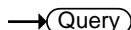
SYSTem:INteRnal:SAVe



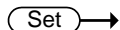
| | | |
|------------------|---|-----------------------------------|
| Description | Sets or returns the internal data save on or off. | |
| Syntax | SYSTem:INteRnal:SAVe {ON OFF} | |
| Query Syntax | SYSTem:INteRnal:SAVe? | |
| Parameter | ON | Turns the internal data save on. |
| | OFF | Turns the internal data save off. |
| Return parameter | ON | Internal data save on. |
| | OFF | Internal data save off. |
| Example | SYST:INTERNAL:SAVE ON Turns internal data save on. | |



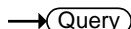
SYSTem:CONtAct:HiLimit



| | | |
|------------------|--|--|
| Description | Sets or returns the threshold of Hi Limit scale for contact check function. | |
| Syntax | SYSTem:CONtAct:HiLimit {value OFF} | |
| Query Syntax | SYSTem:CONtAct:HiLimit? | |
| Parameter | <value> | 110% ~ 500% |
| | OFF | Disables the threshold of Hi Limit scale. |
| Return parameter | <value> | 110% ~ 500% |
| | OFF | The threshold of Hi Limit scale is disabled. |
| Example | SYST:CONt:HiLIMIT 200% Sets the threshold of Hi Limit scale as 200% to the reference value. | |



SYSTem:CONtAct:LOWLimit



| | | |
|--------------|--|-----------|
| Description | Sets or returns the threshold of Low Limit scale for contact check function. | |
| Syntax | SYSTem:CONtAct:LOWLimit {value} | |
| Query Syntax | SYSTem:CONtAct:LOWLimit? | |
| Parameter | <value> | 10% ~ 90% |

| | | |
|------------------|---------|-----------|
| Return parameter | <value> | 10% ~ 90% |
|------------------|---------|-----------|

Example SYST:CONT:LOWLIMIT 80%

Sets the threshold of Low Limit scale as 80% to the reference value.

SYSTem:CONtact:LEARning

Set →

→ Query

| | | |
|------------------|---|--------------------------------------|
| Description | Sets or returns the current reference value for contact check function. | |
| Syntax | SYSTem:CONtact:LEARning RUN | |
| Query Syntax | SYSTem:CONtact:LEARning? | |
| Parameter | RUN | Sets the current reference value. |
| Return parameter | <value> | Returns the current reference value. |
| Example | SYST:CONT:LEARNING RUN | |
| | The current reference value for contact check is set. | |

SYSTem:ERRor

→ Query

| | | |
|-------------------|---|---|
| Description | Returns error code of the previous error. See the error code table below for details. | |
| Query Syntax | SYSTem:ERRor ? | |
| Return parametera | <string> | Returns an error string that includes an error code and an error description. |

Error Code Table

Error code, Error description

0, No Error
 20, Command Error
 21, Value Error
 22, String Error
 23, Query Error
 24, Mode Error
 25, TIME OVER 240s
 26, DC Over 50W

27,GBV > 7.2V
28,ARC <= HI Set
29,HI Set => ARC
30,Voltage Setting Error
31,Current Setting Error
32,Current HI SET Error
33,Current LO SET Error
34,Resistance HI SET Error
35,Resistance LO SET Error
36,REF Setting Error
37,Frequency Setting Error
38,ARC Setting Error
39,RAMP Time Setting Error
40,TEST Time Setting Error
41,WAIT Time Setting Error
42,RAMP Down Setting Error
43,PASS Hold Setting Error
44,GB Contact Setting Error
45,Setting Over 200W
46,CONT Setting Over 8V
47,Auto Step Add Full
48,This Is The Last Step
49,Auto Connect Set Error
50,USB DISK BUSY
51,Filter Setting Error
70,Read Buffer Error
71,Send Buffer Error

Example

SYST:ERR ?

>0,No Error

Returns "0,No Error" as the error message.

Function Commands

| | | |
|----------|---------------------|-----|
| Function | FUNCTion:TEST | 181 |
| Commands | MEASure<x> | 181 |
| | MAIN:FUNCTion..... | 185 |
| | TESTok:RETurn..... | 185 |

FUNCTion:TEST

Set →

→ Query

Description Turns the currently selected test (output) on or off.

When HOLD is displayed on the screen during AUTO tests, use the FUNCTion:TEST command to move on to the next step.

Setting the FUNCTion:TEST command to OFF at the end of a test will also temporarily turn the PASS/FAIL buzzer sound off.

| | | |
|------------------|--------------------------------------|---------------------|
| Syntax | FUNCTion:TEST {ON OFF} | |
| Query Syntax | FUNCTion:TEST? | |
| Parameter | ON | Turns the test on. |
| | OFF | Turns the test off. |
| Return parameter | TEST ON | Test is on. |
| | TEST OFF | Test is off. |
| Example | FUNG:TEST ON Turns the output on. | |

MEASure<x>

→ Query

| | |
|--------------------|---|
| Description | <p>Returns the test parameters & results of the tester in either MANU or AUTO mode.</p> <p>MANU mode: Returns the test parameters & results of a MANU test.</p> <p>AUTO mode: Returns the test parameters & results of the selected step (1-50) of the AUTO</p> |
|--------------------|---|

test.

Return parameters: Function, Status, Test Value1, Test Value2, Test Time.

| | | |
|-----------------------|-------------|--|
| Query Syntax | MEASure<x>? | |
| Parameter (MANU mode) | | No parameter needed for MANU mode. |
| Parameter (AUTO mode) | <x> | <NR1>1~50. MANU Step number. |
| Return parameter | <string> | Returns the test status of the test in the following format: Function, Status, Test Value1, Test Value2, Test Time. |

| | |
|-------------|---|
| Function | ACW, DCW, IR, GB, CON |
| Status | Refer to the table with affiliated contents below for details |
| Test Value1 | Voltage+unit |
| Test Value2 | Current+unit Resistance+unit |
| Test Time | I= Initial Time+s R=Ramp Time+s T=Test Time+s D=Ramp Down Time+s |

| Function | Status | TEST Value1 | TEST Value2 | TEST TIME |
|----------|--------|-----------------|---------------------|--------------------|
| ACW | TEST | X . X X X k V , | X X X . X u A , | I = X X X . X s |
| DCW | READY | | X X X u A , | R |
| | PASS | | X . X X X m A , | T |
| | FAIL | | X X . X X m A , | D |
| | ERROR | | X X X . X m A , | |
| | HFAIL | | | |
| IR | LFAIL | X . X X X k V , | > 1 0 o h m , | V<150V and R > 10G |
| | VOVER | | > 2 0 o h m , | V<500V and R>20G |
| | VLOW | | > 5 0 o h m , | V>=500V and R>50G |
| | SHORT | | X X . X X G o h m , | |
| | OPEN | | X . X X X G o h m , | |
| | IOVER | | X X X . X M o h m , | |
| | ILOW | | | |
| GB | GFAIL | X X . X X A | X X X . X m o h m , | |
| | ARC | | X X . X X m o h m , | |
| | STOP | | X . X X X m o h m , | |
| | HOLDP | | R O V E R | |
| | HOLDF | | | |
| CON | HOLDT | 1 0 0 . 0 m A , | X X . X X o h m , | |
| | | | R O V E R | |

Status - HFAIL

Applied Function: ACW, DCW, IR, GB, CON

Description: Read Data > HI SET

Status – LFAIL

| | |
|-----------------------|--|
| Applied Function: | ACW, DCW, IR, GB, CON |
| Description: | Read Data < LOW SET |
| Status - VOVER | |
| Applied Function: | ACW, DCW, IR, GB, CON |
| Description: | ACW, DCW, IR: Read V > V set 110% GB: GBV > 7.2V CON: Read CONT V > 8V |
| Status - V LOW | |
| Applied Function: | ACW, DCW, IR |
| Description: | Read V < V set 90% |
| Status - SHORT | |
| Applied Function: | ACW, DCW, IR |
| Description: | Read V < 10V Contact Check LOW Error |
| Status - IOVER | |
| Applied Function: | GB |
| Description: | Read I > I SET 110% |
| Status - I LOW | |
| Applied Function: | GB |
| Description: | Read I < I SET 90% |
| Status - ARC | |
| Applied Function: | ACW, DCW |
| Description: | Read T > ARC Set Current |
| Status - GFAIL | |

Applied Function: ACW, DCW, IR

Description: GFCI ERROR

Status - OPEN

Applied Function: ACW, DCW, IR

Description: Contact Check LOW Error

Status - HOLDP

Applied Function: ACW, DCW, IR, GB, CON

Description: When the PASS HOLD is set for AUTO mode, the HOLDP status will be returned after executing MEAS command.

Status - HOLDF

Applied Function: ACW, DCW, IR, GB, CON

Description: When the FAIL HOLD is set for AUTO mode, the HOLDF status will be returned after executing MEAS command.

Status - HOLDT

Applied Function: ACW, DCW, IR, GB, CON

Description: When HOLD TIME is kept running on, the HOLDT status will be returned after executing MEAS command.

Example MEAS?

(in MANU mode) > CON,FAIL ,100.0mA,99.99 ohm,T=000.1s

Returns the test result of the current MANU test.

Example MEAS21?
 (in AUTO mode) > DCW,FAIL ,0.004kV, 000.0 uA ,T=000.3s
 Returns the step 21 of the current AUTO test
 result.

Set →

→ Query

MAIN:FUNction

Description Changes the mode between AUTO and MANU.

Syntax MAIN:FUNction {MANU|AUTO}

Query Syntax MAIN:FUNction ?

Parameter/ MANU Puts the tester mode to MANU.

Return AUTO Puts the tester mode to AUTO.

Example MAIN:FUNC MANU

Sets the tester to MANU mode.

Set →

→ Query

TESTok:RETurn

Description Turns on or off the "OK" message for test result,
 which is shown when a test finishes.

Syntax TESTok:RETurn {ON|OFF}

Query Syntax TESTok:RETurn ?

Parameter/ ON Turns on the "OK" message for test result.

Return OFF Turns off the "OK" message for test result.

Example TEST:RETURN ON

Turns of the OK message return function.

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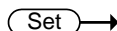
MANU:STEP

Set →

→ Query

| | |
|-----------------------------------|--|
| Description | Sets the MANU test number. |
| Syntax | MANU:STEP <NR1> |
| Query Syntax | MANU:STEP? |
| Parameter/ Return parameter | <NR1> 0~100 |
| Example | MANU:STEP 100 Sets the manual test number to 100. |

MANU:INITial



Description Loads the initial (default) settings for the selected MANU test number. The initial settings that are loaded depend on the test function (ACW, DCW, IR, GB or CONT).

Syntax MANU:INITial

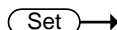
Initial Settings

| Parameter | Function | | | | |
|--------------|---------------|---------------|---------------|-------------|--------|
| | ACW | DCW | IR | GB | CONT |
| REF# | 000uA | 000uA | 000.0M Ω | 000.0m Ω | 00.00Ω |
| FREQ | 60Hz | X | X | 60Hz | X |
| HI SET | 1.000m A | 1.000m A | OFF | 100.0m Ω | 01.00Ω |
| LOW SET | 000uA | 000uA | 000.1M Ω | 000.0m Ω | 00.00Ω |
| I or V | V=0.100 kV | V=0.100 kV | V=0.050 kV | 03.00A | 100mA |
| TEST TIME | 000.3s | 000.3s | 000.3s | 000.3s | 000.3s |
| RAMP TIME | 000.1s | 000.1s | 000.1s | X | X |

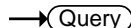
Example

MANU:INITial

Loads the initial settings for the selected MANU number.



MANU:NAME



Description Sets or returns the test name for the selected manual test. The test must be in MANU mode before this command can be used.
Note only alphanumeric characters (A-Z, a-z, 0-9) and the “_” underscore character can be used to set the MANU test name.

Syntax MANU:NAME <“string”>

Query Syntax MANU:NAME?

Parameter/Return parameter <“string”> 10 character string.

Example **MANU:NAME "test1"**
Sets the manual test name to "test1".

Set →

MANU:RTIME

→ Query

Description Sets or returns the Ramp Up time for ACW, DCW and IR tests in seconds.



Note

An "Err" message will be shown on display if the Ramp Time + Test Time is > 240 seconds when the HI SET limit + REF is ≥ 30mA. This applies to the ACW function only. An "TIME OVER 240s" message will be returned after using the query command "SYSTem:ERRor ?" in remote control.



Note

When tester is in GB or CONT mode, due to without RAMP TIME setting, only an "Err" message will be shown if issuing this remote command.

Syntax **MANU:RTIME <NR2>**

Query Syntax **MANU:RTIME?**

Parameter/Return parameter **<NR2>** 0.1~999.9 seconds

Example **MANU:RTIM 0.5**
Sets the ramp time to half a second.

Set →

MANU:EDIT:MODE

→ Query

Description Sets or returns the mode (ACW, DCW, IR, GB, CONT) of the selected manual test.

Syntax **MANU:EDIT:MODE {ACW|DCW|IR|GB|CONT}**

Query Syntax **MANU:EDIT:MODE?**

| | | |
|-----------------------------------|-------------|----------------------------|
| Parameter/Return parameter | ACW | AC Withstand mode |
| | DCW | DC Withstand mode |
| | IR | Insulation Resistance mode |
| | GB | Ground Bond mode |
| | CONT | Continuity mode |

Example MANU:EDIT:MODE ACW
Sets the mode to ACW.

MANU:ACW:VOLTage

Set →

→ Query

Description Sets or returns the ACW voltage in kV. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:VOLTage <NR2>

Query Syntax MANU:ACW:VOLTage?

Parameter/
Return
parameter <NR2> 0.050 ~ 5.100 (kV)

Example MANU:ACW:VOLT 1
Sets the ACW voltage to 1 kV.

Set →

→ Query

MANU:ACW:CHISet

Description Sets or returns the ACW HI SET current value in milliamps. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:CHISet <NR2>

Query Syntax MANU:ACW:CHISet?

Parameter/
Return
parameter <NR2> 0.001 ~ 41.9 (mA)

Example MANU:ACW:CHIS 30.0
Sets the ACW HI SET current to 30 mA.

MANU:ACW:TTIME

Set →

→ Query

Description Sets or returns the ACW test time in seconds. The test must first be in ACW mode before this command can be used.



Note

An “Err” message will be shown on display if the Ramp Time + Test Time is > 240 seconds when the HI SET limit + REF is ≥ 30mA. This applies to the ACW function only. An “TIME OVER 240s” message will be returned after using the query command “SYSTem:ERRor ?” in remote control.

Syntax MANU:ACW:TTIME {<NR2>|OFF}

Query Syntax MANU:ACW:TTIME?

| | | |
|------------------|-------|---------------------|
| Parameter | <NR2> | 0.3 ~ 999.9 seconds |
| | OFF | TIMER OFF |

| | | |
|-------------------------|----------|---------------------|
| Return parameter | <NR2> | 0.3 ~ 999.9 seconds |
| | TIME OFF | TIMER is OFF |

Example MANU:ACW:TTIM 1
Sets the ACW test time to 1 second.

Set →

→ Query

MANU:ACW:ARCFFunction

Description Sets or returns the ACW ARC function. The test must first be in ACW mode before this command can be used. Note that this command is only workable when ARC SET>HI SET.

Syntax MANU:ACW:ARCFFunction

Query Syntax {OFF|ON_CONT|ON_STOP}

MANU:ACW:ARCFFunction?

| | | |
|-----------------------------------|---------|------------------------|
| Parameter/Return parameter | OFF | ARC function off |
| | ON_CONT | ARC function ON & CONT |
| | ON_STOP | ARC function ON & STOP |

Example MANU:ACW:ARCF OFF
Sets the ACW ARC function off.

MANU:ACW:ARCCurrent

Set →

→ Query

Description Sets or returns the ACW ARC current value in mA. ARC must be enabled before the ARC current can be set. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:ARCCurrent <NR2>

Query Syntax MANU:ACW:ARCCurrent?

Parameter/Return parameter <NR2> 1.000 ~ 80.00mA

Example MANU:ACW:ARCC 1.233

Sets the ACW ARC value to 1.233 mA.

Set →

→ Query

MANU:ACW:ARCSpeed

Description Sets or returns the ACW ARC speed. ARC must be enabled before the ARC speed can be set. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:ARCSpeed {FAST|NORMAL|SLOW}

Query Syntax MANU:ACW:ARCSpeed?

| | | |
|-----------------------------------|--------|------------------|
| Parameter/Return parameter | FAST | ARC speed fast |
| | NORMAL | ARC speed normal |
| | SLOW | ARC speed slow |

Example MANU:ACW:ARCS SLOW

Sets the ACW ARC speed slow.

Set →

→ Query

MANU:ACW:FREQuency

Description Sets or returns the ACW test frequency in Hz. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:FREQuency {50|60}

Query Syntax MANU:ACW:FREQuency?

| | | |
|------------|----|-------|
| Parameter/ | 50 | 50 Hz |
| Return | 60 | 60 Hz |
| parameter | | |

Example MANU:ACW:FREQ 50

Sets the ACW test frequency to 50Hz.

Set →

MANU:ACW:WAITtime

→ Query

Description Sets or returns the ACW wait time in seconds. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:WAITtime <NR2>

Query Syntax MANU:ACW:WAITtime?

| | | |
|------------|-------|-------------------|
| Parameter/ | <NR2> | 0 ~ 999.9 seconds |
| Return | | |
| parameter | | |

Example MANU:ACW:WAIT 10.1

Sets the ACW wait time to 10.1 s.

Set →

MANU:ACW:RAMPdown

→ Query

Description Sets or returns the ACW Ramp Down Time in seconds. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:RAMPdown <NR2>

Query Syntax MANU:ACW:RAMPdown?

| | | |
|------------|-------|-------------------|
| Parameter/ | <NR2> | 0 ~ 999.9 seconds |
| Return | | |
| parameter | | |

Example MANU:ACW:RAMP 999.9

Sets the ramp down time to 999.9 seconds.

MANU:ACW:GROundmode

Set →

→ Query

Description Sets or returns the ACW Ground Mode. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:GROundmode {ON|OFF}

Query Syntax MANU:ACW:GROundmode?

| | | |
|-----------------------------------|-----|---------------------|
| Parameter/Return parameter | ON | ACW Ground Mode ON |
| | OFF | ACW Ground Mode OFF |

Example MANU:ACW:GRO OFF
Sets the ACW Ground Mode off.

Set →

→ Query

MANU:ACW:MAXHold

Description Sets or returns the ACW MAX Hold. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:MAXHold {ON|OFF}

Query Syntax MANU:ACW:MAXHold?

| | | |
|-----------------------------------|-----|------------------|
| Parameter/Return parameter | ON | ACW MAX Hold ON |
| | OFF | ACW MAX Hold OFF |

Example MANU:ACW:MAXH OFF
Sets the ACW MAX Hold off.

Set →

→ Query

MANU:ACW:PASShold

Description Sets or returns the duration of ACW PASS Hold in seconds. The test must first be in ACW mode before this command can be used.

Syntax MANU:ACW:PASShold {<NR2>|ON}

Query Syntax MANU:ACW:PASShold?

| | | |
|-----------------------------------|-------------|--|
| Parameter/ Return parameter | <NR2> ON | 0 ~ 999.9 seconds Indefinite duration |
|-----------------------------------|-------------|--|

Example MANU:ACW:PASS 999.9
Sets the ACW PASS Hold time to 999.9 seconds.

Set →

MANU:ACW:REF

→ Query

Description Sets or returns the ACW reference value in uA or mA. The test must first be in ACW mode before this command can be used.

The ACW reference value shares the identical limit of HI SET value, which is 42mA at the maximum. For instance, when HI SET value is set 10mA, the reference value can therefore be set up to 32mA.

| | | |
|-----------------------------------|--------------------|--------------------|
| Syntax | MANU:ACW:REF <NR2> | |
| Query Syntax | MANU:ACW:REF? | |
| Parameter/ Return parameter | <NR2> | 0.000 ~ 41.99 (mA) |

Example MANU:ACW:REF 40
Sets the ACW reference to 40 mA.

Set →

MANU:ACW:INITvoltage

→ Query

Description Sets or returns the ACW percentage of initial voltage. The test must first be in ACW mode before this command can be used.

| | | |
|-----------------------------------|----------------------------|---------|
| Syntax | MANU:ACW:INITvoltage <NR1> | |
| Query Syntax | MANU:ACW:INITvoltage? | |
| Parameter/ Return parameter | <NR1> | 0 ~ 99% |

Example MANU:ACW:INIT 87
Sets the ACW Initial Voltage to 87%.

MANU:ACW:CONtAct

Set →

→ Query

| | | |
|-----------------------------------|--|---|
| Description | Sets or returns the CONTACT CHK function on or off. | |
| Syntax | MANU:ACW:CONtAct {ON OFF} | |
| Query Syntax | MANU:ACW:CONtAct? | |
| Parameter/ Return parameter | ON OFF | CONTACT CHK in ACW test ON CONTACT CHK in ACW test OFF |
| Example | MANU:ACW:CONt OFF Sets the CONTACT CHK off in ACW test. | |

Set →

→ Query

MANU:DCW:VOLTage

| | | |
|-------------|--|--|
| Description | Sets or returns the DCW voltage in kV. The test must first be in DCW mode before this command can be used. | |
|-------------|--|--|

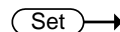
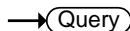


Note

An “Err” message will be shown on display if the DCW Voltage X (HI SET value + REF) is > 50 watts. An “DC Over 50W” or “DC Over 100W” message will be returned after using the query command “SYSTem:ERRor ?” in remote control.

| | | |
|-----------------------------------|--|--------------------|
| Syntax | MANU:DCW:VOLTage <NR2> | |
| Query Syntax | MANU:DCW:VOLTage? | |
| Parameter/ Return parameter | <NR2> | 0.050 ~ 6.100 (kV) |
| Example | MANU:DCW:VOLT 6 Sets the DCW voltage to 6 kV. | |

MANU:DCW:CHISet

| | |
|-------------|--|
| Description | Sets or returns the DCW HI SET current value in milliamps. The test must first be in DCW mode before this command can be used. |
|-------------|--|


Note

An “Err” message will be shown on display if the DCW Voltage X (HI SET value + REF) is > 50 watts. An “DC Over 50W” or “DC Over 100W” message will be returned after using the query command “SYSTem:ERRor ?” in remote control.


| | |
|--------|-----------------------|
| Syntax | MANU:DCW:CHISet <NR2> |
|--------|-----------------------|

| | |
|--------------|------------------|
| Query Syntax | MANU:DCW:CHISet? |
|--------------|------------------|

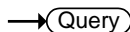
| | |
|-----------------------------------|--------------------------|
| Parameter/ Return parameter | <NR2> 0.001 ~ 11.00 (mA) |
|-----------------------------------|--------------------------|

| | |
|---------|-----------------|
| Example | MANU:DCW:CHIS 5 |
|---------|-----------------|

Sets the DCW HI SET current to 5mA.



MANU:DCW:CLOSet



| | |
|-------------|--|
| Description | <p>Sets or returns the DCW LOW SET current value in milliamps. The LOW SET value must be less than the HI SET value. The test must first be in DCW mode before this command can be used.</p> |
|-------------|--|

The LOW SET range must use the HI SET range. If all the digits in the LOW SET range are outside the HI SET range, an Err will be produced. All digits outside the HI SET range are ignored and will not be used.

For example:

HI SET value: 10.99

LOW SET value: 11.00 → error

| | |
|--------|----------------------|
| Syntax | MANU:DCW:CLOSet<NR2> |
|--------|----------------------|

| | |
|--------------|------------------|
| Query Syntax | MANU:DCW:CLOSet? |
|--------------|------------------|

| | | |
|-----------------------------------|-------|--------------------|
| Parameter/ Return parameter | <NR2> | 0.000 ~ 10.99 (mA) |
|-----------------------------------|-------|--------------------|

Example MANU:DCW:CLOS 2.00
Sets the DCW LO SET current to 2mA.

Set →

MANU:DCW:TTIME

→ Query

Description Sets or returns the DCW test time in seconds. The test must first be in DCW mode before this command can be used.

Syntax MANU:DCW:TTIME {<NR2>|OFF}

Query Syntax MANU:DCW:TTIME?

| | | |
|-----------|-------|---------------------|
| Parameter | <NR2> | 0.3 ~ 999.9 seconds |
| | OFF | TIMER OFF |

| | | |
|---------------------|----------|---------------------|
| Return parameter | <NR2> | 0.3 ~ 999.9 seconds |
| | TIME OFF | TIMER is OFF |

Example MANU:DCW:TTIM 1
Sets the DCW test time to 1 second.

Set →

MANU:DCW:ARCFUNCTION

→ Query

Description Sets or returns the DCW ARC function. The test must first be in DCW mode before this command can be used. Note that this command is only workable when ARC SET>HI SET.

Syntax MANU:DCW:ARCFUNCTION

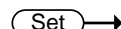
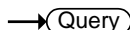
Query Syntax {OFF|ON_CONT|ON_STOP}

MANU:DCW:ARCFUNCTION?

| | | |
|-----------------------------------|---------|------------------------|
| Parameter/ Return parameter | OFF | ARC function off |
| | ON_CONT | ARC function ON & CONT |
| | ON_STOP | ARC function ON & STOP |

Example MANU:DCW:ARCF OFF
Sets the DCW ARC function off.

MANU:DCW:ARCCurrent

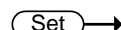
| | |
|-------------|--|
| Description | Sets or returns the DCW ARC current value in mA. ARC must be enabled to set the ARC current. The test must first be in DCW mode before this command can be used. |
|-------------|--|

| | |
|--------|---------------------------|
| Syntax | MANU:DCW:ARCCurrent <NR2> |
|--------|---------------------------|


| | |
|--------------|----------------------|
| Query Syntax | MANU:DCW:ARCCurrent? |
|--------------|----------------------|

| | |
|-----------------------------------|--------------------------|
| Parameter/ Return parameter | <NR2> 1.000 ~ 80.00 (mA) |
|-----------------------------------|--------------------------|

| | |
|---------|---|
| Example | MANU:DCW:ARCC 10 Sets the DCW ARC value to 10mA. |
|---------|---|



MANU:DCW:ARCSpeed



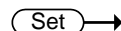
| | |
|-------------|---|
| Description | Sets or returns the DCW ARC speed. ARC must be enabled before the ARC speed can be set. The test must first be in DCW mode before this command can be used. |
|-------------|---|

| | |
|--------|--------------------------------------|
| Syntax | MANU:DCW:ARCSpeed {FAST NORMAL SLOW} |
|--------|--------------------------------------|


| | |
|--------------|--------------------|
| Query Syntax | MANU:DCW:ARCSpeed? |
|--------------|--------------------|

| | |
|-----------------------------------|----------------------------|
| Parameter/ Return parameter | FAST ARC speed fast |
| | NORMAL ARC speed normal |
| | SLOW ARC speed slow |

| | |
|---------|--|
| Example | MANU:DCW:ARCS SLOW Sets the DCW ARC speed slow. |
|---------|--|



MANU:DCW:WAITtime



| | |
|-------------|---|
| Description | Sets or returns the DCW wait time in seconds. The test must first be in DCW mode before this command can be used. |
|-------------|---|

| | |
|--------|-------------------------|
| Syntax | MANU:DCW:WAITtime <NR2> |
|--------|-------------------------|

| | |
|--------------|--------------------|
| Query Syntax | MANU:DCW:WAITtime? |
|--------------|--------------------|

| | |
|-----------------------------------|-------------------------|
| Parameter/ Return parameter | <NR2> 0 ~ 999.9 seconds |
|-----------------------------------|-------------------------|

Example MANU:DCW:WAIT 10.1
Sets the DCW wait time to 10.1 s.

Set →

MANU:DCW:RAMPdown

→ Query

| | |
|-------------|--|
| Description | Sets or returns the DCW Ramp Down Time in seconds. The test must first be in DCW mode before this command can be used. |
|-------------|--|

| | |
|--------|-------------------------|
| Syntax | MANU:DCW:RAMPdown <NR2> |
|--------|-------------------------|

| | |
|--------------|--------------------|
| Query Syntax | MANU:DCW:RAMPdown? |
|--------------|--------------------|

| | |
|-----------------------------------|-------------------------|
| Parameter/ Return parameter | <NR2> 0 ~ 999.9 seconds |
|-----------------------------------|-------------------------|

Example MANU:DCW:RAMP 999.9
Sets the DCW ramp down time to 999.9 seconds.

Set →

MANU:DCW:GROundmode

→ Query

| | |
|-------------|--|
| Description | Sets or returns the DCW Ground Mode. The test must first be in DCW mode before this command can be used. |
|-------------|--|

| | |
|--------|------------------------------|
| Syntax | MANU:DCW:GROundmode {ON OFF} |
|--------|------------------------------|

| | |
|--------------|----------------------|
| Query Syntax | MANU:DCW:GROundmode? |
|--------------|----------------------|

| | |
|-----------------------------------|--|
| Parameter/ Return parameter | ON DCW Ground Mode ON OFF DCW Ground Mode OFF |
|-----------------------------------|--|

Example MANU:DCW:GRO OFF
Sets the DCW Ground Mode off.

MANU:DCW:MAXHold

Set →

→ Query

| | | |
|-----------------------------------|---|------------------|
| Description | Sets or returns the DCW MAX Hold. The test must first be in DCW mode before this command can be used. | |
| Syntax | MANU:DCW:MAXHold {ON OFF} | |
| Query Syntax | MANU:DCW:MAXHold? | |
| Parameter/ Return parameter | ON | DCW MAX Hold ON |
| | OFF | DCW MAX Hold OFF |
| Example | MANU:DCW:MAXH OFF Sets the DCW MAX Hold off. | |

Set →

→ Query

MANU:DCW:PASShold

| | | |
|-----------------------------------|--|---------------------|
| Description | Sets or returns the duration of DCW PASS Hold. The test must first be in DCW mode before this command can be used. | |
| Syntax | MANU:DCW:PASShold {<NR2> ON} | |
| Query Syntax | MANU:DCW:PASShold? | |
| Parameter/ Return parameter | <NR2> | 0 ~ 999.9 seconds |
| | ON | Indefinite duration |
| Example | MANU:DCW:PASS 999.9 Sets the DCW PASS Hold time to 999.9 seconds. | |

Set →

→ Query

MANU:DCW:REF

| | | |
|-------------|---|--|
| Description | Sets or returns the DCW reference value in uA or mA. The test must first be in DCW mode before this command can be used. The DCW reference value shares the identical limit of HI SET value, which is 11mA at the maximum. For instance, when HI SET value is set 5mA, the reference value can therefore be set up to 6mA. | |
|-------------|---|--|

| | |
|-----------------------------------|---|
| Syntax | MANU:DCW:REF <NR2> |
| Query Syntax | MANU:DCW:REF? |
| Parameter/ Return parameter | <NR2> 0.000 ~ 10.99 (mA) |
| Example | MANU:DCW:REF 10 Sets the DCW reference to 10 mA. |

Set →

MANU:DCW:INITvoltage

→ Query

| | |
|-----------------------------------|--|
| Description | Sets or returns the DCW percentage of initial voltage. The test must first be in DCW mode before this command can be used. |
| Syntax | MANU:DCW:INITvoltage <NR1> |
| Query Syntax | MANU:DCW:INITvoltage? |
| Parameter/ Return parameter | <NR1> 0 ~ 99% |
| Example | MANU:DCW:INIT 87 Sets the DCW Initial Voltage to 87%. |

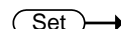
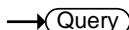
Set →

MANU:DCW:CONtAct

→ Query

| | |
|-----------------------------------|--|
| Description | Sets or returns the CONTACT CHK function on or off. |
| Syntax | MANU:DCW:CONtAct {ON OFF} |
| Query Syntax | MANU:DCW:CONtAct? |
| Parameter/ Return parameter | ON CONTACT CHK in DCW test ON OFF CONTACT CHK in DCW test OFF |
| Example | MANU:DCW:CONt OFF Sets the CONTACT CHK off in DCW test. |

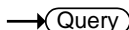
MANU:IR:VOLTage

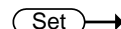
| | |
|-----------------------------------|--|
| Description | Sets or returns the IR voltage in kV. The test must first be in IR mode before this command can be used. |
| Syntax | MANU:IR:VOLTage <NR2> |
| Query Syntax | MANU:IR:VOLTage? |
| Parameter/ Return parameter | <NR2> 0.05 ~ 1.2 (0.05kV to 5kV: steps of .05) |
| Example | MANU:IR:VOLT 1 Sets the IR voltage to 1 kV. |



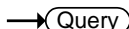
MANU:IR:RHISet



| | |
|-----------------------------------|--|
| Description | Sets or returns the IR HI SET resistance value in MΩ or GΩ. The test must first be in IR mode before this command can be used. |
| Syntax | MANU:IR:RHISet <NR2> NULL |
| Query Syntax | MANU:IR:RHISet? |
| Parameter/ Return parameter | <NR2> 000.2M ~ 999.9M (Ω) 1.000G ~ 9.999G (Ω) 10.00G ~ 50.00G (Ω) |
| | NULL Sets the HI SET value to OFF. |
| Example | MANU:IR:RHIS 10M Sets the IR HI SET resistance to 10 MΩ. |



MANU:IR:RLOSet



| | |
|--------------|---|
| Description | Sets or returns the IR LO SET resistance value in MΩ or GΩ. The LO SET value must be less than the HI SET value. The test must first be in IR mode before this command can be used. |
| Syntax | MANU:IR:RLOSet<NR2> |
| Query Syntax | MANU:IR:RLOSet? |

| | |
|-----------------------------------|--|
| Parameter/ Return parameter | <NR1> 000.1M ~ 999.9M (Ω) 1.000G ~ 9.999G (Ω) 10.00G ~ 50.00G (Ω) |
|-----------------------------------|--|

Example MANU:IR:RLOS 10M
Sets the IR LO SET resistance to 10M Ω .

Set →

MANU:IR:TTIME

→ Query

Description Sets or returns the IR test time in seconds. The test must first be in IR mode before this command can be used.

Syntax MANU:IR:TTIME <NR2>

Query Syntax MANU:IR:TTIME?

| | |
|-----------------------------------|---------------------------|
| Parameter/ Return parameter | <NR2> 0.3 ~ 999.9 seconds |
|-----------------------------------|---------------------------|

Example MANU:IR:TTIM 1
Sets the IR test time to 1 second.

Set →

MANU:IR:WAITtime

→ Query

Description Sets or returns the IR wait time in seconds. The test must first be in IR mode before this command can be used.

Syntax MANU:IR:WAITtime <NR2>

Query Syntax MANU:IR:WAITtime?

| | |
|-----------------------------------|-------------------------|
| Parameter/ Return parameter | <NR2> 0 ~ 999.9 seconds |
|-----------------------------------|-------------------------|

Example MANU:IR:WAIT 10.1
Sets the IR wait time to 10.1 s.

MANU:IR:RAMPdown

Set →

→ Query

| | |
|-------------|--|
| Description | Sets or returns the IR Ramp Down Time in seconds. The test must first be in IR mode before this command can be used. |
|-------------|--|

| | |
|--------|------------------------|
| Syntax | MANU:IR:RAMPdown <NR2> |
|--------|------------------------|

| | |
|--------------|-------------------|
| Query Syntax | MANU:IR:RAMPdown? |
|--------------|-------------------|

| | |
|-----------------------------------|-------------------------|
| Parameter/ Return parameter | <NR2> 0 ~ 999.9 seconds |
|-----------------------------------|-------------------------|

| | |
|---------|--------------------|
| Example | MANU:IR:RAMP 999.9 |
|---------|--------------------|

Sets the IR ramp down time to 999.9 seconds.

Set →

→ Query

MANU:IR:GROundmode

| | |
|-------------|--|
| Description | Sets or returns the IR Ground Mode. The test must first be in IR mode before this command can be used. |
|-------------|--|

| | |
|--------|-----------------------------|
| Syntax | MANU:IR:GROundmode {ON OFF} |
|--------|-----------------------------|

| | |
|--------------|---------------------|
| Query Syntax | MANU:IR:GROundmode? |
|--------------|---------------------|

| | |
|-----------------------------------|--|
| Parameter/ Return parameter | ON IR Ground Mode ON OFF IR Ground Mode OFF |
|-----------------------------------|--|

| | |
|---------|-----------------|
| Example | MANU:IR:GRO OFF |
|---------|-----------------|

Sets the IR Ground Mode off.

Set →

→ Query

MANU:IR:MAXHold

| | |
|-------------|---|
| Description | Sets or returns the IR MAX Hold. The test must first be in IR mode before this command can be used. |
|-------------|---|

| | |
|--------|--------------------------|
| Syntax | MANU:IR:MAXHold {ON OFF} |
|--------|--------------------------|

| | |
|--------------|------------------|
| Query Syntax | MANU:IR:MAXHold? |
|--------------|------------------|

| | | |
|-----------------------------------|-----------|-----------------------------------|
| Parameter/ Return parameter | ON OFF | IR MAX Hold ON IR MAX Hold OFF |
|-----------------------------------|-----------|-----------------------------------|

Example MANU:IR:MAXH OFF
Sets the IR MAX Hold off.

Set →

MANU:IR:PASShold

→ Query

Description Sets or returns the duration of IR PASS Hold. The test must first be in IR mode before this command can be used.

Syntax MANU:IR:PASShold {<NR2>|ON}

Query Syntax MANU:IR:PASShold?

| | | |
|-----------------------------------|-------|---------------------|
| Parameter/ Return parameter | <NR2> | 0 ~ 999.9 seconds |
| | ON | Indefinite duration |

Example MANU:IR:PASS 999.9
Sets the IR PASS Hold time to 999.9 seconds.

Set →

MANU:IR:REF

→ Query

Description Sets or returns the IR reference value in MΩ or GΩ. The test must first be in IR mode before this command can be used.



Syntax MANU:IR:REF <NR2>

Query Syntax MANU:IR:REF?

| | | |
|-----------------------------------|-------|---|
| Parameter/ Return parameter | <NR2> | 000.0M ~ 999.9M (Ω) 1.000G ~ 9.999G (Ω) 10.00G ~ 50.00G (Ω) |
|-----------------------------------|-------|---|

Example MANU:IR:REF 900M
Sets the IR reference to 900 MΩ.

MANU:IR:MODE


| | |
|-------------|---|
| Description | Sets or returns the IR Mode in IR. The test must first be in IR mode before this command can be used. |
|-------------|---|

| | |
|--------|--------------|
| Syntax | MANU:IR:MODE |
|--------|--------------|


| | |
|--------------|--|
| Query Syntax | {STOP_ON_FAIL STOP_ON_PASS TIMER} MANU:IR:MODE? |
|--------------|--|

| | | |
|-----------------------------------|--------------|-------------------------|
| Parameter/ Return parameter | STOP_ON_FAIL | IR Mode in Stop On FAIL |
| | STOP_ON_PAS | IR Mode in Stop On PASS |
| | S | |
| | TIMER | IR Mode in Timer |

| | |
|---------|--|
| Example | MANU:IR:MODE TIMER Sets the IR Mode in Timer setting. |
|---------|--|



MANU:IR:CONtact




| | |
|-------------|---|
| Description | Sets or returns the CONTACT CHK function on or off. |
|-------------|---|

| | |
|--------|--------------------------|
| Syntax | MANU:IR:CONtact {ON OFF} |
|--------|--------------------------|


| | |
|--------------|------------------|
| Query Syntax | MANU:IR:CONtact? |
|--------------|------------------|

| | | |
|-----------------------------------|-----|----------------------------|
| Parameter/ Return parameter | ON | CONTACT CHK in IR test ON |
| | OFF | CONTACT CHK in IR test OFF |

| | |
|---------|--|
| Example | MANU:IR:CONt OFF Sets the CONTACT CHK off in IR test. |
|---------|--|



MANU:GB:CURRent



| | |
|-------------|---|
| Description | Sets or returns the GB current in A. The test must first be in GB mode before this command can be used. |
|-------------|---|

| | |
|--------|-----------------------|
| Syntax | MANU:GB:CURRent <NR2> |
|--------|-----------------------|

| | |
|--------------|------------------|
| Query Syntax | MANU:GB:CURRent? |
|--------------|------------------|

| | | |
|-----------------------------------|-------|------------|
| Parameter/ Return parameter | <NR2> | 3.00~33.00 |
|-----------------------------------|-------|------------|

Example MANU:GB:CURR 3.00
Sets the GB current to 3.00A.

Set →

MANU:GB:RHISet

→ Query

| | |
|-------------|--|
| Description | Sets or returns the GB HI SET resistance value in mΩ. The test must first be in GB mode before this command can be used. |
|-------------|--|

| | |
|--------|----------------------|
| Syntax | MANU:GB:RHISet <NR2> |
|--------|----------------------|

| | |
|--------------|-----------------|
| Query Syntax | MANU:GB:RHISet? |
|--------------|-----------------|

| | | |
|-----------------------------------|-------|--------------------|
| Parameter/ Return parameter | <NR2> | 000.1 ~ 650.0 (mΩ) |
|-----------------------------------|-------|--------------------|

Example MANU:GB:RHIS 100.0
Sets the GB HI SET value to 100mΩ.



Note

If the GB current x (HI SET resistance + REF) > 7.2V, an “Err” message will be shown on display. And an “GBV > 7.2V” message will be returned after using the query command “SYSTem:ERRor ?” in remote control.

Set →

MANU:GB:RLOSet

→ Query

| | |
|-------------|---|
| Description | Sets or returns the GB LOW SET resistance value in mΩ. The LOW SET value must be less than the HI SET value. The test must first be in GB mode before this command can be used. |
|-------------|---|

| | |
|--------|---------------------|
| Syntax | MANU:GB:RLOSet<NR2> |
|--------|---------------------|

| | |
|--------------|-----------------|
| Query Syntax | MANU:GB:RLOSet? |
|--------------|-----------------|

| | | |
|-----------------------------------|-------|--------------------|
| Parameter/ Return parameter | <NR2> | 0.000 ~ 649.9 (mΩ) |
|-----------------------------------|-------|--------------------|

Example **MANU:GB:RLOS 50**
 Sets the GB LO SET resistance to 50mΩ.

Set →

MANU:GB:TTIME

→ Query

Description Sets or returns the GB test time in seconds. The test must first be in GB mode before this command can be used.

Syntax **MANU:GB:TTIME <NR2>**

Query Syntax **MANU:GB:TTIME?**

| | | |
|-----------------------------------|--------------------|---------------------|
| Parameter/Return parameter | <NR2> | 0.3 ~ 999.9 seconds |
|-----------------------------------|--------------------|---------------------|

Example **MANU:GB:TTIM 1**
 Sets the GB test time to 1 second.

Set →

MANU:GB:FREQuency

→ Query

Description Sets or returns the GB test frequency in Hz. The test must first be in GB mode before this command can be used.

Syntax **MANU:GB:FREQuency {50|60}**

Query Syntax **MANU:GB:FREQuency?**

| | | |
|-----------------------------------|-----------|-------|
| Parameter/Return parameter | 50 | 50 Hz |
| | 60 | 60 Hz |

Example **MANU:GB:FREQ 50**
 Sets the GB test frequency to 50Hz.

Set →

MANU:GB:CONtact

→ Query

Description Sets or returns the GB Contact Time in seconds. The test must first be in GB mode before this command can be used.

| | |
|-----------------------------------|---|
| Syntax | MANU:GB:CONtact <NR2> |
| Query Syntax | MANU:GB:CONtact? |
| Parameter/ Return parameter | <NR2> 0 ~ 999.9 seconds |
| Example | MANU:GB:CONtact 999.9 Sets the GB Contact time to 999.9 seconds. |

Set →

MANU:GB:GROundmode

→ Query

| | |
|-----------------------------------|--|
| Description | Sets or returns the GB Ground Mode. The test must first be in GB mode before this command can be used. |
| Syntax | MANU:GB:GROundmode {ON OFF} |
| Query Syntax | MANU:GB:GROundmode? |
| Parameter/ Return parameter | ON GB Ground Mode ON OFF GB Ground Mode OFF |
| Example | MANU:GB:GRO OFF Sets the GB Ground Mode off. |

Set →

MANU:GB:MAXHold

→ Query

| | |
|-----------------------------------|---|
| Description | Sets or returns the GB MAX Hold. The test must first be in GB mode before this command can be used. |
| Syntax | MANU:GB:MAXHold {ON OFF} |
| Query Syntax | MANU:GB:MAXHold? |
| Parameter/ Return parameter | ON GB MAX Hold ON OFF GB MAX Hold OFF |
| Example | MANU:GB:MAXH OFF Sets the GB MAX Hold off. |

MANU:GB:PASShold

Set →

→ Query

| | |
|----------------------------|--|
| Description | Sets or returns the duration of GB PASS Hold. The test must first be in GB mode before this command can be used. |
| Syntax | MANU:GB:PASShold {<NR2> ON} |
| Query Syntax | MANU:GB:PASShold? |
| Parameter/Return parameter | <div> <div><NR2></div> <div>0 ~ 999.9 seconds</div> </div> <div> <div>ON</div> <div>Indefinite duration</div> </div> |
| Example | MANU:GB:PASS 999.9 Sets the GB PASS Hold time to 999.9 seconds. |

Set →

→ Query

MANU:GB:REF

| | |
|----------------------------|---|
| Description | Sets or returns the GB reference value in mΩ. The test must first be in GB mode before this command can be used. Beware that when ISET x (HIEST + REF) is greater than 7.2V, an "Err" message will be shown on display. And an "GBV > 7.2V" message will be returned after using the query command "SYSTem:ERRor ?" in remote control. |
| Syntax | MANU:GB:REF <NR2> |
| Query Syntax | MANU:GB:REF? |
| Parameter/Return parameter | <div> <div><NR2></div> <div>0.000 ~ 650.0 (mΩ)</div> </div> |
| Example | MANU:GB:REF 100 Sets the GB reference to 100 mΩ. |

MANU:GB:ZERocheck

Set →

→ Query

Description Performs the zero check function. The test must first be in GB mode and in the Ready Status before this command can be used.

See page 69 for details on the ZERO function.

Syntax MANU:GB:ZERocheck {ON|OFF}

Query Syntax MANU:GB:ZERocheck?

| | | |
|-----------------------------------|-----|------------------------------|
| Parameter/Return parameter | ON | Zero function is active. |
| | OFF | Zero function is not active. |

Example MANU:GB:ZER OFF
Activates the GB ZERO function.

Set →

→ Query

MANU:CONTInuity:RHISet

Description Sets or returns the CONT HI SET resistance value in Ω . The test must first be in CONT mode before this command can be used.

Syntax MANU:CONTInuity:RHISet <NR2>

Query Syntax MANU:CONTInuity:RHISet?

| | | |
|-----------------------------------|-------|------------------------|
| Parameter/Return parameter | <NR2> | 00.01 ~ 80.00 Ω |
|-----------------------------------|-------|------------------------|

Example MANU:CONT:RHIS 30.0
Sets the CONT HI SET resistance to 30 Ω .

Set →

→ Query

MANU:CONTInuity:RLOSet

Description Sets or returns the CONT LOW SET resistance value in Ω . The LOW SET value must be less than the HI SET value. The test must first be in CONT mode before this command can be used.

The LOW SET range must use the HI SET range.

If all the digits in the LOW SET range are outside the HI SET range, an Err message will be produced. All digits outside the HI SET range are ignored and will not be used.

For example:

HI SET value: 10.00

LOW SET value: 10.01 → error

| | |
|-----------------------------------|---|
| Syntax | MANU:CONTInuity:RLOSet <NR2> |
| Query Syntax | MANU:CONTInuity:RLOSet? |
| Parameter/ Return parameter | <NR2> 00.00 ~ 79.99 Ω |
| Example | MANU:CONT:RLOS 20.0 Sets the CONT LO SET resistance to 20 Ω. |

Set →

MANU:CONTInuity:TTIME

→ Query

| | |
|---------------------|---|
| Description | Sets or returns the CONT test time in seconds. The test must first be in CONT mode before this command can be used. |
| Syntax | MANU:CONTInuity:TTIME <NR2> |
| Query Syntax | MANU:CONTInuity:TTIME? |
| Parameter | <NR2> 0.3 ~ 999.9 seconds |
| Return parameter | <NR2> 0.3 ~ 999.9 seconds |
| Example | MANU:CONT:TTIM 1 Sets the CONT test time to 1 second. |

Set →

MANU:CONTInuity:PASShold

→ Query

| | |
|--------------|--|
| Description | Sets or returns the duration of CONT PASS Hold. The test must first be in CONT mode before this command can be used. |
| Syntax | MANU:CONTInuity:PASShold {<NR2> ON} |
| Query Syntax | MANU:CONTInuity:PASShold? |

| | | |
|------------|-------|---------------------|
| Parameter/ | <NR2> | 0 ~ 999.9 seconds |
| Return | ON | Indefinite duration |
| parameter | | |

Example MANU:CONT:PASS 999.9
Sets the CONT PASS Hold time to 999.9 seconds.

Set →

MANU:CONTInuity:REF

→ Query

Description Sets or returns the CONT reference value in Ω . The test must first be in CONT mode before this command can be used.



Note

when HI SET+REF VALUE is over 80 Ω , an “Err” message will be shown on display. And an “CONT Setting Over 8V” message will be returned after using the query command “SYSTem:ERRor ?” in remote control.

Syntax MANU:CONTInuity:REF <NR2>

Query Syntax MANU:CONTInuity:REF?

| | | |
|------------|-------|------------------------|
| Parameter/ | <NR2> | 00.00 ~ 79.99 Ω |
| Return | | |
| parameter | | |

Example MANU:CONT:REF 0.01
Sets the CONT reference to 00.01 Ω .

Set →

MANU:CONTInuity:ZEROCHECK

→ Query

Description Performs the zero check function. The test must first be in CONT mode and in the Ready Status before this command can be used.

See page 69 for details on the ZERO function.

Syntax MANU:CONTInuity:ZEROCHECK {ON|OFF}

Query Syntax MANU:CONTInuity:ZEROCHECK?

| | | |
|------------|-----|------------------------------|
| Parameter/ | ON | Zero function is active. |
| Return | OFF | Zero function is not active. |
| parameter | | |

Example

MANU:CONT:ZEROCHECK OFF

Deactivates the CONT ZERO function.

Auto Commands

| | | |
|---------------|-------------------------|-----|
| Auto Commands | AUTO:STEP | 216 |
| | AUTO:NAME | 216 |
| | AUTO:EDIT:ADD | 217 |
| | AUTO<x>:EDIT:HOLD | 217 |
| | AUTO<x>:EDIT:SKIP | 218 |
| | AUTO:EDIT:DEL | 218 |
| | AUTO:TEST:RETurn | 218 |
| | AUTO:EDIT:SHOW | 219 |

AUTO:STEP

Set →


→ Query

| | | |
|-----------------------------------|--|-------|
| Description | Sets or queries the AUTO number (automatic test number). | |
| Syntax | AUTO:STEP <NR1> | |
| Query Syntax | AUTO:STEP? | |
| Parameter/ Return parameter | <NR1> | 1~100 |
| Example | AUTO:STEP 100 Sets the current AUTO number to 100 | |

Set →

→ Query

AUTO:NAME

| | | |
|--|---|--|
| Description | Sets or returns the AUTO name for the selected automatic test. The test must be in AUTO mode before this command can be used. | |
|  Note | Only alphanumeric characters (A-Z, a-z, 0-9) and the “_” underscore character can be used to set the AUTO test name. | |
| Syntax | AUTO:NAME <”string”> | |
| Query Syntax | AUTO:NAME? | |

| | | |
|-----------------------------------|---|----------------------|
| Parameter/ Return parameter | <"string"> | 10 character string. |
| Example | AUTO:NAME "program1" Sets the AUTO name to "program1". | |

AUTO:EDIT:ADD

Set →

| | | |
|-----------------------------------|---|-----------------|
| Description | Add the selected MANU test to the current AUTO number. | |
| Syntax | AUTO:EDIT:ADD {<NR1> CON} | |
| Parameter/ Return parameter | <NR1> | 1~100 |
| | CON | Continuous step |
| Example | AUTO:EDIT:ADD 7 Adds MANU STEP 007 to the current AUTO number. | |

AUTO<x>:EDIT:HOLD

Set →

→ Query

| | | |
|-----------------------------------|---|---|
| Description | Sets or returns the actions for STEP HOLD of each MANU STEP in AUTO test. | |
| Syntax | AUTO<x>:EDIT:HOLD {PH_FH PH_FS PH_FC PC_FH PC_FS PC_FC PC_FC_PREVOLT PC_FS_PREVOLT} AUTO<x>:EDIT:HOLD? | |
| Parameter/ Return parameter | <x> | MAMU step 1 ~ 10 |
| | PH_FH | Sets Pass Hold & Fail Hold action |
| | PH_FS | Sets Pass Hold & Fail Stop action |
| | PH_FC | Sets Pass Hold & Fail Continue action |
| | PC_FH | Sets Pass Continue & Fail Hold action |
| | PC_FS | Sets Pass Continue & Fail Stop action |
| | PC_FC | Sets Pass Continue & Fail Continue action |
| Example | AUTO1:EDIT:HOLD PH_FH Sets the Pass Hold & Fail Hold action for MANU STEP 1 in the current AUTO test. | |

AUTO<x>:EDIT:SKIP

Set →

→ Query

| | | |
|-----------------------------------|---|--|
| Description | Sets or returns the SKIP action for each MANU STEP in AUTO test. | |
| Syntax | AUTO<x>:EDIT:SKIP {ON OFF} | |
| Query Syntax | AUTO<x>:EDIT:SKIP? | |
| Parameter/ Return parameter | <x> | Sets MANU STEP from 1 – 10 for skip |
| | ON | Turns SKIP action for the designated MANU STEP on |
| | OFF | Turns SKIP action for the designated MANU STEP off |
| Example | AUTO1:EDIT:SKIP ON Enables SKIP function for MANU STEP 1 in AUTO test. | |

AUTO:EDIT:DEL

Set →

| | | |
|-------------|--|---------------------------------------|
| Description | Deletes the designated MANU STEP within the current AUTO test. | |
| Syntax | AUTO:EDIT:DEL {<NR1> ALL} | |
| Parameter | <NR1> | Deletes selected MANU STEP from 1~ 10 |
| | ALL | Deletes all the MANU STEPs |
| Example | AUTO:EDIT:DEL 3 Deletes the MANU STEP 3 from the current AUTO test. | |

AUTO:TEST:RETurn

→ Query

| | | |
|---------------------|---|--|
| Description | Returns the number of AUTO test and MANU STEP that is being tested currently. | |
| Query Syntax | AUTO:TEST:RETurn? | |
| Return parameter | String | The returned string will be in the format of AUTO number followed by MANU STEP number. AUTO-XXX,STEP-XX |

Example AUTO:TEST:RET?
 AUTO-004,STEP-03
 The MANU STEP-03 of AUTO-004 is being tested.

AUTO:EDIT:SHOW

→ Query

| | | |
|------------------|--|--|
| Description | Returns all the information of the current AUTO test page. | |
| Query Syntax | AUTO:EDIT:SHOW? | |
| Return parameter | String | The returned strings will be shown in the way almost identical to the contents displayed on an AUTO test page. |
| Example | AUTO:EDIT:SHOW? >AUTO-001 AUTO_NAME >STEP,MODE,V/I SET,HI SET ,LOW SET,STEP HOLD > _____ _____ >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C >001 ,ACW ,0.100kV,1.000mA,000 uA,P.C/F.C | |

Sweep Commands

| | | |
|----------|-------------------------|-----|
| Sweep | SWEEP:DATA:STATus | 220 |
| Commands | SWEEP:DATA:SHOW | 220 |
| | SWEEP:GRAPh:SHOW | 221 |

SWEEP:DATA:STATus

→ Query

| | | |
|------------------|---|--|
| Description | Returns the basic status of get data. | |
| Query Syntax | SWEEP:DATA:STA? | |
| Return parameter | <String> | The returned string will be in the format below: STEP, TEST MODE, V SET, HI SET, TOTAL DATA |
| Example | SWEEP:DATA:STA? > STEP, MODE, V SET , HI SET , TOTAL DATA 000 , DCW , 0.450kV, 1.700mA, 00076 | |

SWEEP:DATA:SHOW

→ Query

| | | |
|------------------|---|---|
| Description | Returns the full measured readings of get data. | |
| Query Syntax | SWEEP:DATA:SHOW<NR1> | |
| Return parameter | <NR1> | 0~10000 0 stands for the full steps. 1~10000 indicates the designated step. |
| Example | SWEEP:DATA:SHOW 0 > TIMER , READ V, READ I 0000.1s , 0.003kV, 007uA 0000.2s , 0.008kV, 026uA 0000.3s , 0.019kV, 064uA 0000.4s , 0.028kV, 095uA 0000.5s , 0.037kV, 126uA 0000.6s , 0.045kV, 153uA | |

SWEEP:GRAPh:SHOW

Set →

→ Query

| | |
|-------------|--|
| Description | Displays or turns off Sweep graph on LCD screen. Also Returns if Sweep graph is shown on LCD. |
|-------------|--|

| | |
|--------|---------------------------|
| Syntax | SWEEP:GRAPh:SHOW {ON OFF} |
|--------|---------------------------|

| | |
|--------------|-------------------|
| Query Syntax | SWEEP:GRAPh:SHOW? |
|--------------|-------------------|

| | | |
|-----------------------------------|-----|--|
| Parameter/ Return parameter | ON | To enable Sweep graph on LCD |
| | OFF | To disable Sweep graph on LCD |
| | ? | Returns if Sweep graph is shown on LCD |

| | |
|---------|---|
| Example | SWEEP:GRAP:SHOW? |
| | > OFF |
| | Sweep graph is Not displayed on LCD screen. |

Common Commands

| | | |
|----------|------------|-----|
| Common | *CLS | 222 |
| Commands | *IDN | 222 |
| | *SRE | 223 |

*CLS



| | |
|-------------|---|
| Description | The *CLS command clears the internal registers and error message, if any. |
|-------------|---|

| | |
|--------|------|
| Syntax | *CLS |
|--------|------|

*IDN



| | |
|-------------|--|
| Description | Queries the model number, serial number, and firmware version of the tester. |
|-------------|--|

| | |
|--------------|-------|
| Query Syntax | *IDN? |
|--------------|-------|

| | |
|------------------|--|
| Return parameter | <div><string></div> <div>Returns the instrument identification as a string in the following format:</div> <div>>RSST-2004, xxxxxxxx, T0.011</div> <div>Model number: RSST-2004</div> <div>Serial number: 8 characters serial number</div> <div>Firmware version: T0.011</div> |
|------------------|--|

***SRE**

→ Query

| | |
|-------------|--|
| Description | AUTO MODE only. Use this command to get measurement step number at the current point in time during AUTO MODE testing. |
|-------------|--|

| | |
|--------------|-------|
| Query Syntax | *SRE? |
|--------------|-------|

| | |
|------------------|-------------|
| Return parameter | <NR1> 00~50 |
|------------------|-------------|

| | |
|---------|-------|
| Example | *SRE? |
|---------|-------|

>5

The current test step is number 5. This indicates that steps 1~4 have already been completed and the results for those steps can now be retrieved.

Remote Commands

| | | |
|-----------------|---------------|-----|
| Remote Commands | *RMToff | 224 |
|-----------------|---------------|-----|

*RMToff



| | |
|-------------|--|
| Description | This command can be used to terminate a remote session. When this command is used "RMT" will no longer be displayed on the front panel, indicating that remote mode has been terminated. |
| Syntax | *RMToff |

Error Messages

| | | |
|------------|--|-------------------|
| Background | The possible error messages returned from SYST:ERR? query are well listed below. | |
| | Error | Error Code |
| | No Error | 0 |
| | Command Error | 20 |
| | Value Setting Error | 21 |
| | String Setting Error | 22 |
| | Query Error | 23 |
| | MODE Error | 24 |
| | TIME Error | 25 |
| | DC Over 50W | 26 |
| | GBV > 7.2V | 27 |
| | ARC <= HI Set | 28 |
| | HI Set => ARC | 29 |
| | Voltage Setting Error | 30 |
| | Current Setting Error | 31 |
| | Current HI Set Error | 32 |
| | Current LO Set Error | 33 |
| | Resistance HI Set Error | 34 |
| | Resistance LO Set Error | 35 |
| | REF Setting Error | 36 |
| | Frequency Setting Error | 37 |
| | ARC Setting Error | 38 |
| | RAMP Time Setting Error | 39 |
| | TEST Time Setting Error | 40 |
| | WAIT Time Setting Error | 41 |
| | RAMP Down Setting Error | 42 |
| | PASS Hold Setting Error | 43 |

| | |
|--------------------------|----|
| GB Contact Setting Error | 44 |
| Setting Over 200W | 45 |
| CONT Setting Over 8V | 46 |
| Auto Step Add Full | 47 |
| This Is The Last Step | 48 |
| Auto Connect Set Error | 49 |

FAQ

- The tester will not turn on.
- The panel keys are not working.
- The measured value of IR, GB or Continuity test does not match the specification.
- When I press the START button the tester will not start testing?

The tester will not turn on?

Ensure the power cord is connected. Check and make sure the fuse is not blown and properly installed. See page 229.

The panel keys are not working?

Ensure the tester is not in the SIGNAL I/O or Remote Control mode (page 122). If it is, refer to page 168 for how to return to front panel control. Also, if Key Lock is enabled, all panel keys except START and STOP are disabled. Refer to page 123 for details.

The measured value of IR test does not match the specification?

Make sure the tester is powered on for warm-up of at least 30 minutes, within +15°C~+35°C. This is necessary to stabilize the tester to match the specification. After warm-up, please proceed to Contact Check procedure.

The measured value of GB test does not match the specification?

Make sure the tester is powered on for warm-up of at least 30 minutes, within +15°C~+35°C. This is necessary to stabilize the

tester to match the specification. After warm-up, please proceed to Zero Check procedure. Refer to page 69 for details.

The measured value of Continuity test does not match the specification?

Make sure the tester is powered on for warm-up of at least 30 minutes, within +15°C~+35°C. This is necessary to stabilize the tester to match the specification. After warm-up, please proceed to Zero Check procedure. Refer to page 69 for details.

When I press the START button the tester will not start testing?

The tester must first be in the READY status before a test can be started. Ensure the tester displays READY before pressing the START button, page 78 (manual test), 104 (automatic test).

If Double Action is enabled, the START button must be pressed within 0.5 seconds after the STOP button is pressed, otherwise the tester will not start testing.

If Interlock is enabled, the interlock key must be inserted into the signal I/O port on the rear before a test starts. See page 163.

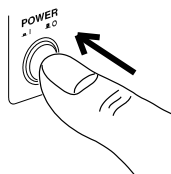
Lastly, if Start Click For 1 Second is enabled, it is required to press and hold the START button for 1 second above to initiate a test. Pressing the START button below 1 second will not start a test.

APPENDIX

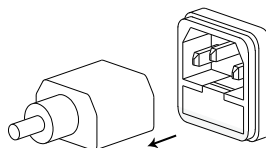
Fuse Replacement

Steps

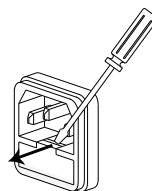
1. Turn the instrument off.



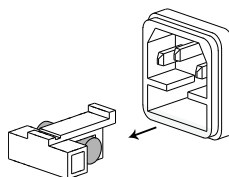
2. Remove the power cord.



3. Remove the fuse socket using a flat screwdriver.



4. Replace the fuse in the fuse holder.



Fuse Rating

T 4A, 250V

Tester Errors

The following test error messages highlighted in red may appear on the RSST-2000 display when completing a running test.

| Test Error | Description |
|------------|---|
| HI FAIL | Test result is beyond the HI SET value |
| LOW FAIL | Test result is below the LOW SET value |
| V OVER | Measured voltage is beyond the set value by 1.1 times |
| V LOW | Measured voltage is below the set value by 0.9 time |
| SHORT | Voltage short-circuit detected |
| GBI OVER | Measured current is beyond the set value by 1.1 times |
| GBI LOW | Measured current is below the set value by 0.9 time |
| GBV OVER | Measured GB voltage is beyond 7.2V |
| CONT V ERR | Measured CONT voltage is beyond 9.0V |
| ARC ERR | ARC abnormality detected |
| GFCI ERR | Ground current abnormality detected |

The following setup error messages highlighted in red may appear on the RSST-2000 display when abnormality occurs in the settings of MANU steps.

| Setup Error | Description |
|-------------------|---|
| TEST MODE ERROR | Setting error in ACW/DCW |
| VOLTAGE SET ERROR | Setting error in voltage |
| CURRENT SET ERROR | Setting error in current |
| MANU STEP ERROR | Setting error in MANU STEP value |
| MANU NAME ERROR | Setting error in MANU NAME |
| HI SET ERROR | Setting error in HI SET value |
| HISET <= LOWSET | Set value of HI SET is less than or equal to LOW SET value |
| HISET >= ARC | Set value of HI SET is greater than or equal to ARC SET value |

| | |
|-------------------|---|
| LOW SET ERROR | Setting error in LOW SET |
| TEST TIME ERROR | Setting error in TEST TIME |
| RAMP TIME ERROR | Setting error in RAMP TIME |
| ARC FUNC ERROR | Setting error in ARC FUNC |
| ARC SET ERROR | Setting error in ARC SET |
| ARC SPEED ERROR | Setting error in ARC SPEED |
| FREQ SET ERROR | Setting error in FREQ of ACW/GB |
| WAIT >= TEST+RAMP | Setting error in WAIT TIME |
| GB CONTACT ERROR | Setting error in GB CONTACT |
| RAMP DOWN ERROR | Setting error in RAMP DOWN |
| GROUND ERROR | Setting error in GROUND MODE |
| MAX HOLD ERROR | Setting error in MAX HOLD |
| PASS HOLD ERROR | Setting error in PASS HOLD |
| REF SET ERROR | Setting error in REF VALUE |
| GBV OVER | Setting Error in ISET x (HI SET + REF) > 7.2V of GB Mode |
| INIT VSET ERROR | Setting error in INIT VOLTAGE |
| IR MODE ERROR | Setting error in IR MODE |
| DCW OVER 50W | Setting error in $V * I > 50W$ of DCW Mode |
| GB OVER 200W | Setting error in $V * I > 200W$ of GB Mode |
| ZERO SET ERROR | Setting Error in ZERO CHECK |
| CONT. TEST V OVER | Setting Error in ISET(100mA) x (HI SET + REF) > 8V of CONT Mode |
| TIME OVER 240s | TIME OVER 240s is displayed when, under ACW test mode, HI SET is greater than 30mA and the RAMP TIME plus the TEST TIME setting is > 240 seconds. |
| POWER GND FAIL | Power cord fails to connect with earth ground |

RSST-2000 Specifications

The specifications apply when the RSST-2000 is powered on for at least 30 minutes at 15°C~35°C.

Specifications

General

| | | |
|---------------------|--|--|
| DISPLAY | 7" color LCD | |
| MEMORY | AUTO/MANU mode 100 memory blocks total | |
| POWER SOURCE | AC 100V~240V \pm 10%, 50Hz/60Hz | |
| | Power cord x1 | |
| | Quick Start Guide | |
| | GHT-115 x1 for RSST-2001/2002/2003 | |
| | GHT-115 x1, GTL-215 x1 for RSST-2004 | |
| DIMENSIONS & WEIGHT | RSST-2001 | 380(W) x 148(H) x 436(D), 11kg Approx. |
| | RSST-2002 | |
| | RSST-2003 | |
| | RSST-2004 | 380(W) x 148(H) x 454(D), 15kg Approx. |

Environment

| Range | Temperature | Humidity |
|-----------------------|---|------------------------------|
| Warranty | 15°C ~ 35°C | \leq 70% (No condensation) |
| Operation | 0°C ~ 40°C | \leq 70% (No condensation) |
| Storage | -10°C ~ 70°C | \leq 85% (No condensation) |
| Installation Location | Indoors at an amplitude of up to 2000m. | |

AC Withstanding Voltage

| | |
|----------------------------|--|
| Output Voltage Range | 0.050kV~ 5.000kV ¹ |
| Output Voltage Resolution | 1V |
| Output Voltage Accuracy | \pm (1% of setting +5V) with no load |
| Maximum Rated Load(Table1) | 200VA (5kV/40mA) |
| | 40mA |
| Maximum Rated Current | 0.001mA~10mA(0.05kV \leq V \leq 0.5kV) 0.001mA~40mA(0.5kV<V \leq 5kV) |
| Output Voltage Waveform | Sine wave |
| Frequency | 50 Hz / 60 Hz |
| Voltage Regulation | \pm (1% +5V)[Maximum rated load \rightarrow no load] |
| Voltmeter Accuracy | \pm (1% of reading+ 5 V) |
| Current Measurement Range | 0.001mA~40.00mA |

| | |
|--------------------------------|---|
| Current Best Resolution | 1μA 1μA (1μA~9.999mA) 10μA(10.00mA~40.00mA) |
| Current Measurement Accuracy | ± (1.5% of reading+30μA) |
| Current Offset | 60μA Maximum |
| Judgment Accuracy | ± (3% of setting+30μA) |
| Window Comparator Method | Yes |
| ARC DETECT | Yes |
| Rise-time Control Function | Yes |
| RAMP TIME (Rise Time) | 0.1~999.9s |
| Fall-time Control Function | Yes |
| RAMP DOWN Time | 0.0~999.9s |
| TIMER (Test Time) ² | OFF, 0.3s~999.9s |
| TIMER Accuracy | +/(100ppm+20ms) |
| GND | ON/OFF |
| WAIT TIME | 0.0~999.9s |

¹ At least ramp 0.3 seconds is needed to reach a set voltage of 50V/10mA.

² Timer can only be turned off when the upper current is set below 30mA.

DC Withstanding Voltage

| | |
|-------------------------------------|---|
| Output Voltage Range | 0.050kV~ 6.000kV ¹ |
| Output Voltage Resolution | 1V |
| Output Voltage Accuracy | ±(1% of setting +5V) With no load |
| Maximum Rated Load | 50W(5kV/10mA) |
| Maximum Rated Current | 10mA 0.001mA~2mA(0.05kV≤V≤0.5kV) 0.001mA~10mA(0.5kV≤V≤6kV) |
| Voltmeter Accuracy | ± (1% of reading+ 5 V) |
| Voltage Regulation | ± (1% +5V)[Maximum rated load ->no load] |
| Current Measurement Range | 0.001mA-10.00mA |
| Current Measurement Best Resolution | 0.1μA 0.1μA (0.1μA~999.9μA) 1μA(1μA~9.999mA) 10μA(10.00mA) |
| Current Measurement Accuracy | ±(1.5% of reading+3μA) when I<1mA ±(1.5% of reading+30μA) when I≥1mA |
| Current Offset | 5μA Maximum |
| Judgment Accuracy | ± (3% of setting+30μA) |
| Window Comparator Method | Yes |
| ARC DETECT | Yes |
| Rise-time Control Function | Yes |
| RAMP TIME (Rise Time) | 0.1~999.9s |
| Fall-time Control Function | Yes |
| RAMP DOWN Time | 0.0~999.9s |
| TIMER (Test Time) | OFF, 0.3s~999.9s |

| | |
|-------------------------|-------------------|
| TIMER Accuracy | +/- (100ppm+20ms) |
| GND | ON/OFF |
| WAIT TIME | 0.0~999.9s |
| Maximum Capacitive Load | 1μF |
| DC Mode | |

¹ At least ramp 0.3 seconds is needed to reach a set voltage of 50V/2mA.

Insulation Resistance Test

| | | |
|------------------------------|--|---------------------------------------|
| Output Voltage | 50V-5000V | |
| Output Voltage Resolution | 50V | |
| Output Voltage Accuracy | ±(1% of setting +5V) with no load | |
| Resistance Measurement Range | 0.1MΩ~50GΩ | |
| Test Voltage | Measurement Range | Accuracy |
| 50V≤V≤450V | 0.1MΩ~1MΩ | 5% of reading + 3 count |
| | 1.1MΩ~50MΩ | 5% of reading + 1 count |
| | 50.1MΩ~2GΩ | 10% of reading + 1 count |
| 500V≤V≤1200V | 0.1MΩ~1MΩ | 5% of reading + 3 count |
| | 1.1MΩ~500MΩ | 5% of reading + 1 count |
| | 500.1MΩ~9.999GΩ | 10% of reading + 1 count |
| 1250V≤V≤5000V | 10G~50GΩ | 20% of reading + 1 count ¹ |
| | 0.1MΩ~1MΩ | 5% of reading + 3 count |
| | 1.1MΩ~500MΩ | 5% of reading + 1 count |
| | 500.1MΩ~9.999GΩ | 10% of reading + 1 count |
| | 10G~50GΩ | 15% of reading + 1 count ¹ |
| Test Voltage | Display Range | |
| 50V≤V≤100V | 0.100MΩ~10.00GΩ | |
| 150V≤V≤450V | 0.100MΩ~20.00GΩ | |
| 500V≤V≤5000V | 0.100MΩ~50.00GΩ | |
| Voltage regulation | ± (1% +5V) [Maximum rated load ->no load | |
| Voltmeter Accuracy | ±(1% of reading +5V) | |
| Resistance Judgment Range | 0.1MΩ~50GΩ | |
| Test Voltage | Judgment Range | Accuracy |
| 50V≤V≤450V | 0.1MΩ~1MΩ | 5% of setting + 3 count |
| | 1MΩ~50MΩ | 5% of setting + 1 count |
| | 51MΩ~2GΩ | 10% of setting + 1 count |
| 500V≤V≤1200V | 0.1MΩ~1MΩ | 5% of setting + 3 count |
| | 1MΩ~500MΩ | 5% of setting + 1 count |
| | 500.1MΩ~9.999GΩ | 10% of setting + 1 count |
| 1250V≤V≤5000V | 10G~50GΩ | 20% of setting + 1 count ¹ |
| | 0.1MΩ~1MΩ | 5% of setting + 3 count |
| | 1.1MΩ~500MΩ | 5% of setting + 1 count |
| | 500.1MΩ~9.999GΩ | 10% of setting + 1 count |
| | 10G~50GΩ | 15% of setting + 1 count ¹ |
| Short-Circuit Current | 10mA max. | |

| | |
|----------------------------|--------------------------|
| Output Impedance | 2k Ω |
| Window Comparator Method | Yes |
| Rise-time Control Function | Yes |
| RAMP TIME (Rise Time) | 0.1~999.9s |
| Fall-time Control Function | Yes |
| RAMP DOWN Time | 0.0~999.9s |
| WAIT TIME | 0.0~999.9s |
| TIMER (Test Time) | 0.3s~999.9s ² |
| TIMER Accuracy | +/- (100ppm+20ms) |
| GND | ON/OFF |

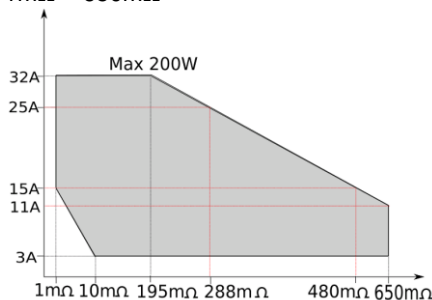
NOTE: It is required to implement GND OFFSET action when IR Ground Mode is On.

¹ When IR Ground Mode is On, 50V~1200V the maximum 30Gohm, 1200V~5000V the maximum 10Gohm measurement range is guaranteed.

² When IR Ground Mode is On, test time starts from 0.5 second.

Ground Bond Test

| | |
|----------------------------|--|
| Output Current Range | 3.00A~32.00A |
| Output Current Accuracy | $\pm(1\% \text{ of setting} + 0.2\text{A})$ when $3\text{A} \leq I \leq 8\text{A}$ $\pm(1\% \text{ of setting} + 0.05\text{A})$ $8\text{A} < I \leq 32\text{A}$ |
| Output Current Resolution | 0.01A |
| Test Voltage | Approximately max. 8VAC (open-circuit) |
| Frequency | 50Hz/60Hz selectable |
| Ohmmeter Measurement Range | 1m Ω ~ 650m Ω |



| | |
|---------------------------------|---|
| Ohmmeter Measurement Resolution | 0.1m Ω |
| Ohmmeter Measurement Accuracy | $\pm(1\% \text{ of reading} + 2\text{m}\Omega)$ |
| Ohmmeter Judgment Accuracy | $\pm(1\% \text{ of setting} + 2\text{m}\Omega)$ |
| Window Comparator Method | Yes |
| TIMER (Test Time) | 0.3s~999.9s |
| TIMER Accuracy | +/- (100ppm+20ms) |
| GND | ON/OFF |

Continuity Test

| | |
|----------------|-----------|
| Output Current | 100mA(DC) |
|----------------|-----------|

| | |
|---------------------------------|----------------------|
| Ohmmeter Measurement Range | 0.10Ω~70.00Ω |
| Ohmmeter Measurement Resolution | 0.01Ω |
| Ohmmeter Measurement Accuracy | ±(10% of reading+2Ω) |
| Ohmmeter Judgment Accuracy | ±(10% of setting+2Ω) |
| Window Comparator Method | Yes |
| TIMER (Test Time) | 0.3s~999.9s |
| TIMER Accuracy | +/- (100ppm+20ms) |

Interface

| | |
|---------------------------------|----------------|
| REMOTE (Remote terminal) | Yes |
| SIGNAL IO | Yes |
| RS232 | Yes |
| USB (Device) | Yes (USB 2.0) |
| Rear Output | Yes |
| USB (Host) for data output port | Yes (USB 2.0) |
| GPIO | Yes (Optional) |

Table 1: Output Limitation in Withstanding Voltage Testing

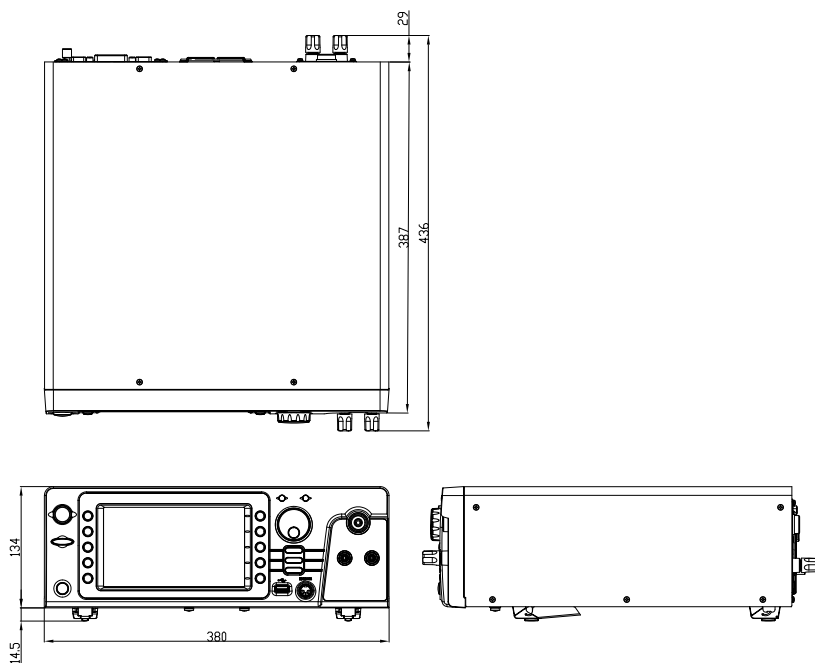
| Function | Upper Current | Pause | Output Time |
|----------|----------------|-------------------------------------|----------------------------|
| AC | 30mA≤I≤40mA | At least as long as the output time | Maximum 240 seconds |
| | 0.001mA≤I<30mA | Not necessary | Continuous output possible |
| DC | 0.001mA≤I≤10mA | Not necessary | Continuous output possible |
| GB | 15A<I≤32A | At least as long as the output time | 999.9 seconds |
| | 3A≤I≤15A | Not necessary | 999.9 seconds |

NOTE: Output Time = Ramp Time + Test Time.

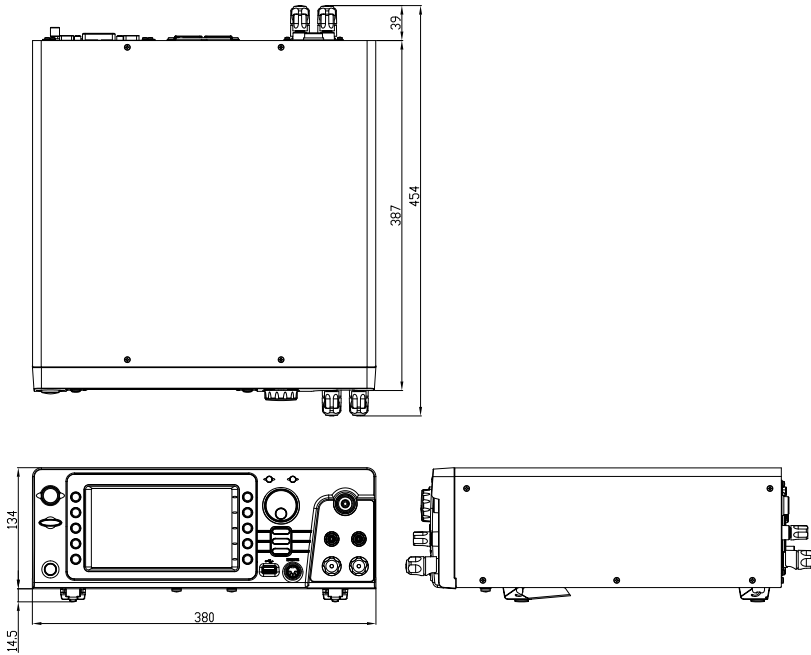
Table 2: RSST-2000 capacitive load table

| | Test Voltage DCW | Test Condition HI-SET Current | RAMP Time ↗ | Maximum Capacitive Load |
|---|---------------------|-------------------------------------|----------------|----------------------------|
| 1 | 1.000kV | I ≥ 10.00mA | T ≥ 1.0s | 4.7μF |
| 2 | 2.000kV | I ≥ 7.00mA | T ≥ 1.0s | 1.65μF |
| 3 | 3.000kV | I ≥ 8.00mA | T ≥ 1.0s | 1.32μF |
| 4 | 4.000kV | I ≥ 11.00mA | T ≥ 1.0s | 1.32μF |
| 5 | 5.000kV | I ≥ 7.00mA | T ≥ 1.0s | 0.66μF |
| 6 | 6.000kV | I ≥ 8.00mA | T ≥ 1.0s | 0.66μF |

RSST-2001/2002/2003 Dimensions



RSST-2004 Dimensions



Certificate Of Compliance

We

declare that the CE marking mentioned product satisfies all the technical relations application to the product within the scope of council:

Directive: EMC; LVD; WEEE; RoHS

The product is in conformity with the following standards or other normative documents:

| | |
|--|--|
| ⊙ EMC | |
| EN 61326-1 | Electrical equipment for measurement, control and laboratory use — EMC requirements |
| Conducted & Radiated Emission EN 55011 / EN 55032 | Electrical Fast Transients EN 61000-4-4 |
| Current Harmonics EN 61000-3-2 / EN 61000-3-12 | Surge Immunity EN 61000-4-5 |
| Voltage Fluctuations EN 61000-3-3 / EN 61000-3-11 | Conducted Susceptibility EN 61000-4-6 |
| Electrostatic Discharge EN 61000-4-2 | Power Frequency Magnetic Field EN 61000-4-8 |
| Radiated Immunity EN 61000-4-3 | Voltage Dip/ Interruption EN 61000-4-11 / EN 61000-4-34 |
| ⊙ Safety | |
| EN 61010-1 : | Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements |

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| | | | |
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