# Electrical Safety Tester

GPT-9000 Series

## QUICK START GUIDE
**GW INSTEK PART NO. 82PT-99040MA1**

**GWINSTEK**

**Good Will Instrument Co., Ltd.**
**No. 7-1, Jhongsing Rd., Tucheng Dist., New Taipei City 236, Taiwan.**

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# INTRODUCTION

This Quick Start Guide is intended as a fast introduction to operating the GPT-9000 Series Safety Testers. This Quick Start Guide assumes that the user is familiar with safety testers.

For comprehensive instructions on the GPT-9000 Series, please see the User Manual, located on the accompanying CD.

## GPT-9000 Series Overview

The GPT-9000 Series Safety Testers are AC/DC withstanding voltage, insulation resistance and ground bond safety testers. The GPT-9801 is an AC withstanding voltage tester, the GPT-9802 is an AC/DC withstanding voltage tester and the GPT-9803 is an AC/DC withstanding voltage and insulation resistance tester. The GPT-9804 includes all the functions of the other models as well as ground bond testing. All models can operate at up to 5kVAC for AC withstanding voltage testing. The GPT-9802, GPT-9803 and GPT-9804 can also operate at up to 6kVDC for DC withstanding voltage testing.

The GPT-9000 Series can store up to 100 manual tests, as well as run up to 16 manual tests sequentially as an automatic test, allowing the safety testers to accommodate any number of safety standards, including IEC, EN, UL, CSA, GB, JIS and others.

### Series lineup

| Model name | ACW | DCW | IR | GB |
|------------|-----|-----|-----|-----|
| GPT-9801 | ✓ | | | |
| GPT-9802 | ✓ | ✓ | | |
| GPT-9803 | ✓ | ✓ | ✓ | |
| GPT-9804 | ✓ | ✓ | ✓ | ✓ |

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# Panel Overview

### Front Panel (GPT-9801/9802/9803)
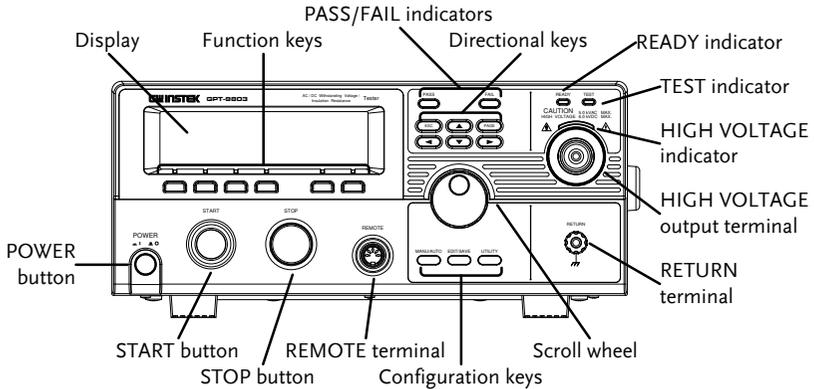


### Front Panel (GPT-9804)
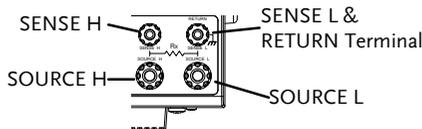


### Rear Panel (All models)

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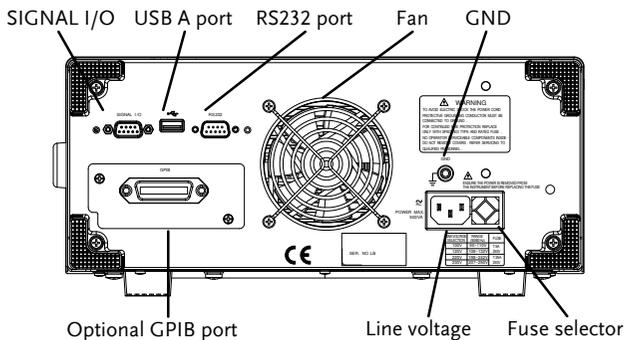
# OPERATION

## Menu Tree

This section describes the overall structure of the operation statuses and modes for the GPT-9000 safety testers. The testers have two main testing modes (MANU, AUTO) and 5 main operation statuses (VIEW, EDIT, READY, STOP and TEST).
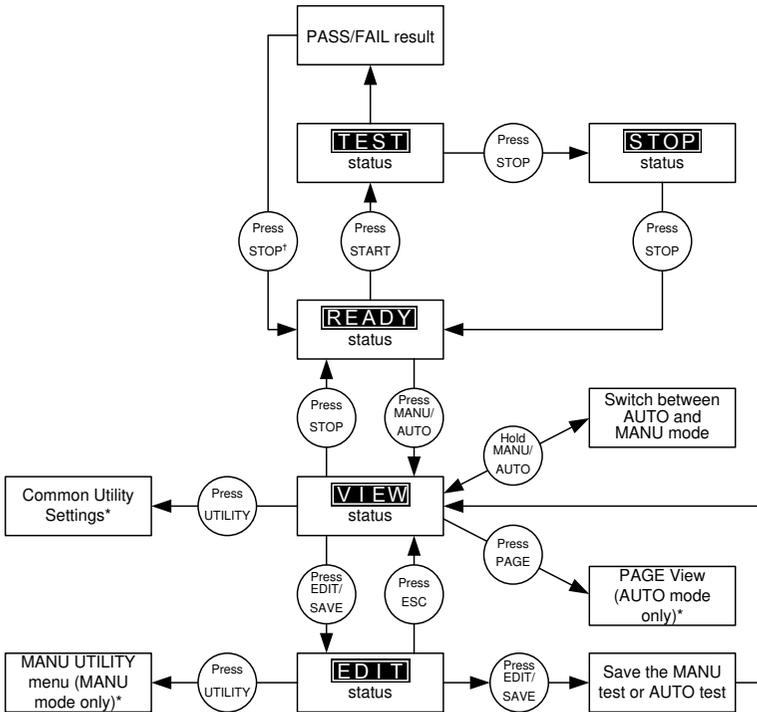


\* Press EDIT/SAVE to save settings, or ESC to cancel and return to the previous screen.
† Press the STOP key twice for a FAIL result.

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## VIEW Status

Description                 VIEW status is used to select a manual test in
                           the MANU mode or an automatic test/step in
                           AUTO mode. VIEW status will display all the
                           parameters of the current test.

                           VIEW status is also used to put the tester into
                           MANU or AUTO mode.

AUTO number   MANU number

A U T O = 0 0 1 - 0 0 2    A U T O _ N A M E          VIEW status

M A N U = * * * - 0 0 2    M A N U _ N A M E        R E F # = 0 0 . 0 0 mA
F R E Q =   6 0 H z     H I   S E T = 0 1 . 0 0 mA    A R C =   O F F

0.100 kV                              mA        V I E W
                           R A M P ⁄ = 0 0 0 . 1 S    T I M E R = 0 0 1 . 0 S

ACW     DCW     I R     GB    ⏚
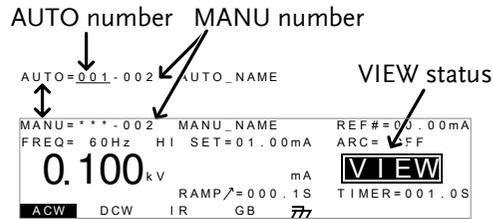
Switch Between AUTO/MANU

• Press and hold the MANU/AUTO key to switch          MANU/AUTO
  between AUTO and MANU when the tester is in
  VIEW status.

Choose a MANU Number (MANU mode)

• Use the scroll wheel to choose a test number.
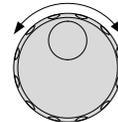
Choose AUTO Number and MANU Number
(AUTO mode)

• Use the UP/DOWN cursors to highlight either the     ▲
  AUTO number (automatic test) or MANU number         ▼
  (step).
• Use the scroll wheel to select the AUTO/MANU
  number.

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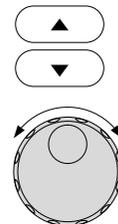
Go to EDIT Status

EDIT/SAVE

• Press the EDIT/SAVE key.

Go to READY Status

STOP

• Press the STOP button when a MANU test or AUTO test has been selected.
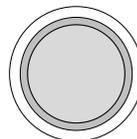
## AUTO/MANU Mode

Description          MANU mode is used to create and execute manual tests.

AUTO mode is used to create automatic tests that execute up to 16 steps (manual tests) sequentially.

AUTO mode

MANU mode

```
AUTO = 0 0 1 - 0 0 2
⇕
MANU = * * * - 0 0 2    MANU _ NAME          REF # = 0 0 . 0 0 mA
FREQ =  6 0 Hz    H I  SET = 0 1 . 0 0 mA    ARC =  OFF
  0.100 k V                          V I EW
                         mA
                RAMP ↗ = 0 0 0 . 1 S    T IMER = 0 0 1 . 0 S
ACW    DCW    I R    GB    ⏚
```
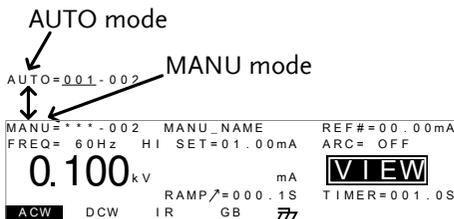
Switch Between AUTO/MANU Mode

MANU/AUTO

• Press and hold the MANU/AUTO key to switch between AUTO and MANU when the tester is in VIEW status.

## EDIT Status

Description          EDIT status is accessed by pressing the
                     EDIT/SAVE key when in VIEW status. EDIT
                     status is used to edit the current manual test or
                     the automatic test. Pressing the EDIT/SAVE
                     key again will save any changes. Pressing the
                     ESC key will cancel any changes.

MANU MODE
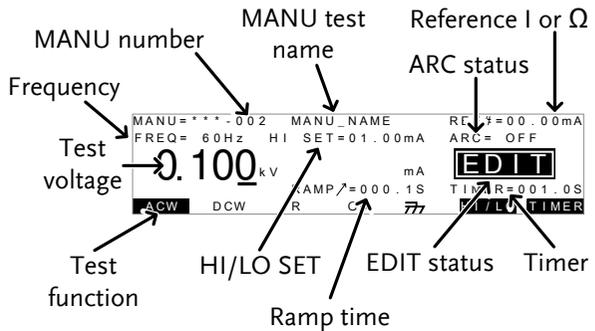


AUTO MODE
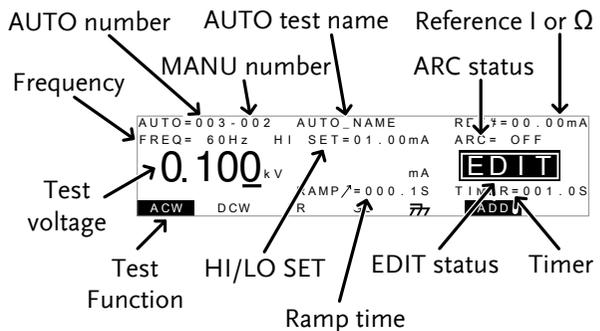


Choose the Test Function (MANU mode only)
- Choose the test function by pressing the
  corresponding ACW, DCW, IR or GB soft-key.
- The chosen function will be highlighted.

ACW

(Example)

Set the Test Voltage/Current (MANU mode only)
- Use the UP/DOWN arrow keys to bring the cursor to the Test voltage/Current.
- Use the scroll wheel to set the voltage/current.
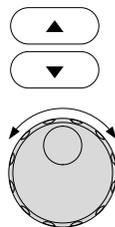
Choose HI/LO SET limits (MANU mode only)
- Press the HI/LO soft-key or use the UP/DOWN arrow keys to choose either HI or LO SET.
- Use the scroll wheel to edit the setting.
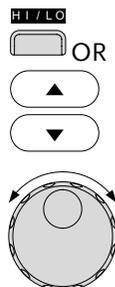
Ramp↗ Time (MANU mode only)
- Use the UP/DOWN arrow keys to bring the cursor to Ramp↗ time.
- Use the scroll wheel to set the ramp time.
- ACW, DCW and IR only
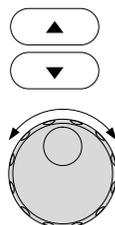
Test Time (MANU mode only)
- Press the TIMER soft-key or use the UP/DOWN arrow keys to select TIMER.
- Use the scroll wheel to set the test time.
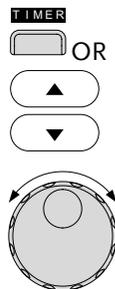
Reference (MANU mode only)
- Use the UP/DOWN arrow keys to bring the cursor to REF#.
- Use the scroll wheel to set the reference.
- For GB tests, the ZERO function can be used to automatically set a reference offset to compensate for the resistance of the test leads (see page 13).
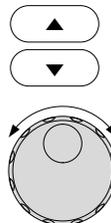
Frequency (ACW, GB/MANU mode only)
- Use the UP/DOWN arrow keys to bring the cursor to FREQ.
- Use the scroll wheel to set the test frequency (ACW and GB mode only).
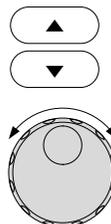
Set the AUTO or MANU Test Name
- Use the UP/DOWN arrow keys to bring the cursor to MANU_NAME or AUTO_NAME.
- Use the scroll wheel to select a character.
- Press the LEFT or RIGHT arrow keys to go to the next/previous character.
- Continue to enter characters until the test name is entered.
- The test name will be saved when MANU/AUTO is saved.
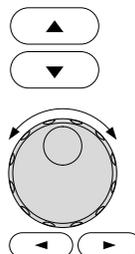
Save MANU/AUTO and Return to VIEW Status
- Press the EDIT/SAVE key. The current test is saved in memory.
- The tester reverts back to VIEW status.

EDIT/SAVE

Exit the EDIT Status and Return to VIEW Status
- Press the ESC key.
- The tester does not save and returns back to VIEW status.

ESC

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Add a Test to the AUTO Test (AUTO mode only)

- Use the DOWN arrow key to bring the cursor to MANU number.
- Use the scroll wheel to select a MANU test number.
- Press the ADD soft-key to add the test as the last step of the AUTO test.

ADD
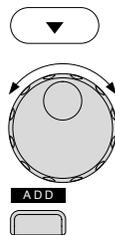
## READY Status

Description          The tester is put into READY status when the STOP button is pressed while in VIEW status. When the tester is in READY status, it is ready to begin testing. The READY indicator will be lit when the tester is in READY status. Pressing the START button will begin testing and put the tester into TEST status. Pressing the MANU/AUTO key will return the tester to VIEW status.

For ground bond testing, the READY status is also used to start the ZERO function which sets the reference offset to compensate for the resistance of the test leads.

READY status

```
MANU=***-002   MANU_NAME        REF#=000.0mΩ
FREQ= 60Hz   HI SET=300.0mΩ
  03.01 A              mΩ        READY
GBV=        V                    TIMER=003.2S
ACW    DCW     IR      GB        ZERO
```
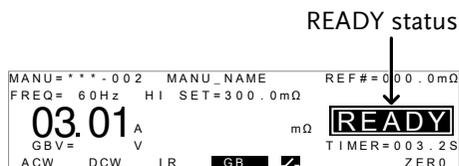
Start Testing

- Press the START button to begin testing.
- The tester will go into TEST status.
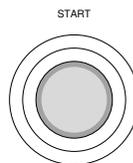
START

| ⚠ WARNING | If Double Action is active, the START button must be pressed 500ms after the STOP button was pressed to be able to start testing. |
|---|---|
| ⚠ WARNING | If INTERLOCK is set to ON and the interlock connector is not connected to the SIGNAL I/O port, INTERLOCK OPEN will be displayed on the screen, preventing the test from starting. See page 18 for the Common Utility settings. |

Return to VIEW Status

- Press the MANU/AUTO key when in READY status to return to VIEW status.

MANU/AUTO

ZERO function (GB test only)

ZERO

- Short the SOURCE H/L & SENSE H/L terminals using the GLT-115 alligator clips.
- In the READY status, press the ZERO soft-key.
- Press the START button to perform the zeroing.
- The tester will go into the ZERO status.
- When finished the tester will return to the VIEW status and the REF# will be set as measured resistance from the zeroing.

START
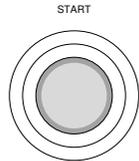
## TEST Status

Description  TEST status is active when a MANU test or AUTO test is running. Pressing STOP will cancel the current test and any remaining steps in the case of an AUTO test.

TEST status

```
MANU=***-002   MANU_NAME        REF#=00.00mA
FREQ= 60Hz   HI SET=01.00mA     ARC=  F
  0.100kV  00.33mA            TEST
             RAMP↗=000.1S      TIMER=001.0S
 ACW    DCW     IR     GB   ⏚
```

Get Test Results
• Wait for the MANU/AUTO test to finish.

Abort MANU Test/AUTO Test

STOP

• Press the STOP button
• The tester will go into the STOP status.
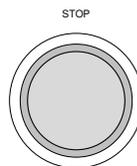
⚠ NOTE          If PASS/FAIL HOLD is active, the START button
                can be used to continue to the next step in AUTO
                mode whereas the STOP button can be used to
                cancel the test in AUTO mode.

## Results

Results          When the tester is allowed to run to
                 completion, a MANU test or AUTO test result
                 is shown as a PASS or FAIL.

                 For MANU mode, the screen will show PASS or
                 FAIL on the screen and the PASS or FAIL
                 indicators will light up.

                 For AUTO mode, a PASS or FAIL judgment
                 will be shown for each step in a table. The
                 AUTO test as a whole will be judged either as
                 PASS if all steps have passed, or as FAIL if any
                 one step has failed.

MANU MODE                                       ┌─────────┐
Results                                         │  F A I L │
                                                └─────────┘
                                                     ↕
        MANU=***-002   MANU_NAME      REF#=00.00mA
        FREQ= 60Hz   HI SET=01.00mA   ARC= OFF
          0.100 kV  00.33 mA          ┌─────────┐
                         RAMP↗=000.1S  │  P A S S │  TIMER=001.0S
         ACW    DCW    IR    GB   ⏚    └─────────┘

AUTO MODE
Results

Overview:

```
AUTO=001-***   AUTO_NAME
#01:PASS   #02:PASS   #03:PASS   #04:PASS
#05:PASS   #06:FAIL   #07:FAIL   #08:PASS
#09:      #10:      #11:      #12:
#13:      #14:      #15:      #16:
```

Step view:

```
STEP: 01-002   MANU_NAME      REF#=00.00mA
FREQ= 60Hz   HI SET=01.00mA   ARC= OFF
  0.100kV   00.33mA    PASS
                RAMP∕=000.1S   TIMER=001.0S
  ACW    DCW    IR    GB   ⏚
```

View AUTO Mode Test Results

- Turn the scroll when clockwise to cycle through each step result.
- Turn the scroll anticlockwise to return back to the overview page.
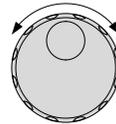
Return to READY Status

- Press the STOP button
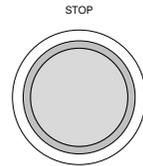
STOP

## STOP Status

Description

STOP status is shown when a MANU test or AUTO test does not finish running and has been stopped by the operator. When in STOP status, pressing STOP will return the tester to READY status.

MANU MODE

STOP status

```
MANU=***-002   MANU_NAME      REF#=00.00mA
FREQ= 60Hz   HI SET=01.00mA   ARC= OFF
  0.100kV   00.33mA    STOP
                RAMP∕=000.1S   TIMER=001.0S
  ACW    DCW    IR    GB   ⏚
```

AUTO MODE

STOP status

```
AUTO=001-***   AUTO_NAME
#01:PASS   #02:PASS   #03:PASS   #04:PASS
#05:PASS   #06:FAIL   #07:FAIL   #08:STOP
#09:----   #10:----   #11:----   #12:----
#13:----   #14:----   #15:----   #16:----
```

Return to READY Status
• Press the STOP button

STOP
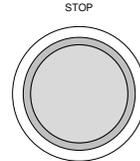
## Page View

Description        Page View is accessible by pressing the PAGE
                   key when the tester is in AUTO mode/VIEW
                   status. Each AUTO test contains up to 16 steps.
                   Each step is made up of a single MANU test.
                   Page View is used to see which MANU test is
                   loaded for each step. Steps can be re-arranged
                   and deleted in Page View.

Step number

```
AUTO=001-010   AUTO_NAME
MANU_NAME   ACW=0100V,HI _SET=01.00mA
#01:010    #02:001   #03:003   #04:004
#05:002    #06:003   #07:038   #08:005
#09:       #10:      #11:      #12:
#13:       #14:      #15:      #16:
MOVE  SWAP   SKIP   DEL
```

MANU number

Move Steps
- Use the arrow keys to highlight the step you wish to move.
- Press the MOVE soft-key.
- Use the arrow keys to move the cursor to the desired step (destination).
- Press the MOVE soft-key again to move.

Swap Steps
- Use the arrow keys to highlight the first step you wish to SWAP.
- Press the SWAP soft-key.
- Use the arrow keys to move the cursor to the second step that is to be swapped.
- Press the SWAP soft-key again to swap the 1st and 2nd steps that were chosen.

Skip Steps
- Use the arrow keys to highlight the step you wish to skip.
- Press the SKIP soft-key.
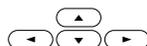
    The step will have an asterisk(*) to denote that it will be skipped when the AUTO test is run.

    Pressing the SKIP soft-key again will remove the asterisk.

Delete Steps
- Use the arrow keys to highlight the step you wish to delete.
- Press the DEL soft-key.

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The step will be removed from the table as soon as the DEL soft-key is pressed.

Save Page View

- To save, press the EDIT/SAVE key.

EDIT/SAVE

The tester will return to the VIEW status.

Cancel and Exit Page View

- To exit and cancel any changes, press the ESC key.

ESC

The tester will return to the VIEW status.

## Common Utility Settings

Description          The Common Utility menu is accessed by pressing the UTILITY key when the tester is in VIEW status. This utility controls the LCD, buzzer, interface and control settings. These settings are system wide.

The Common Utility settings include:
LCD: Contrast, Brightness
BUZZ: Pass Sound, Fail Sound
INTR: Interface (RS232, USB), Baud
CTRL: Start Ctrl (FRONT PANEL, SIGNAL I/O, REMOTE CONNECT), Double Action, Key Lock, Interlock

```
COMMON  UTILITY
Start  Ctrl:FRONT PANEL
Double Action:OFF
Key  Lock:OFF          INTERLOCK:OFF
 LCD    BUZZ INTER CTRL
```
Utility selection

Select a Utility Setting.

- Choose a utility by pressing the corresponding LCD, BUZZ, INTER or CTRL soft-key.
- The chosen utility will be displayed.
- Use the UP/DOWN arrow keys to highlight a setting.
- Use the scroll wheel to choose a parameter for the setting.

LCD

(Example)

▲

▼
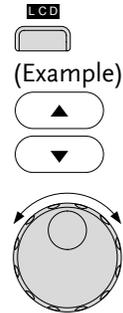
⚠ NOTE | The INTERLOCK function is set to OFF by default in the Common Utility>CTRL menu. To increase safety, set INTERLOCK to ON and use the accompanying Interlock connector to enable testing.

Save the Common Utility Setting

- To save any changes, press the EDIT/SAVE key.

EDIT/SAVE

The tester will return to the VIEW status.

Cancel and Exit the Common Utility Menu

ESC

- To exit and cancel any changes, press the ESC key.

The tester will return to the VIEW status.

## MANU Utility Settings

Description          The MANU Utility menu is accessed by
                     pressing the UTILITY key when the tester is in
                     MANU mode/EDIT status.

                     The MANU Utility settings are configured for
                     each MANU test separately.

                     The settings include: ARC MODE, PASS
                     HOLD, FAIL HOLD, MAX HOLD and
                     GROUND MODE.

```
MANU=***-002   MANU UTILITY
ARC   MODE:OFF
PASS HOLD:OFF
FAIL HOLD:OFF
MAX   HOLD:OFF
GROUND MODE:ON
```

Select a Setting.
• Use the UP/DOWN arrow keys to highlight a test
  setting.
• Use the scroll wheel to choose a parameter for the
  setting.

▲

▼
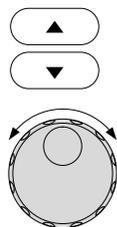
Save the Utility Setting
• To save any changes, press the EDIT/SAVE key.          EDIT/SAVE

                     The tester will return to the EDIT status.

Cancel and Exit the MANU Utility Menu
• To exit and cancel any changes, press the ESC key.          ESC

                     The tester will return to the EDIT status.

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