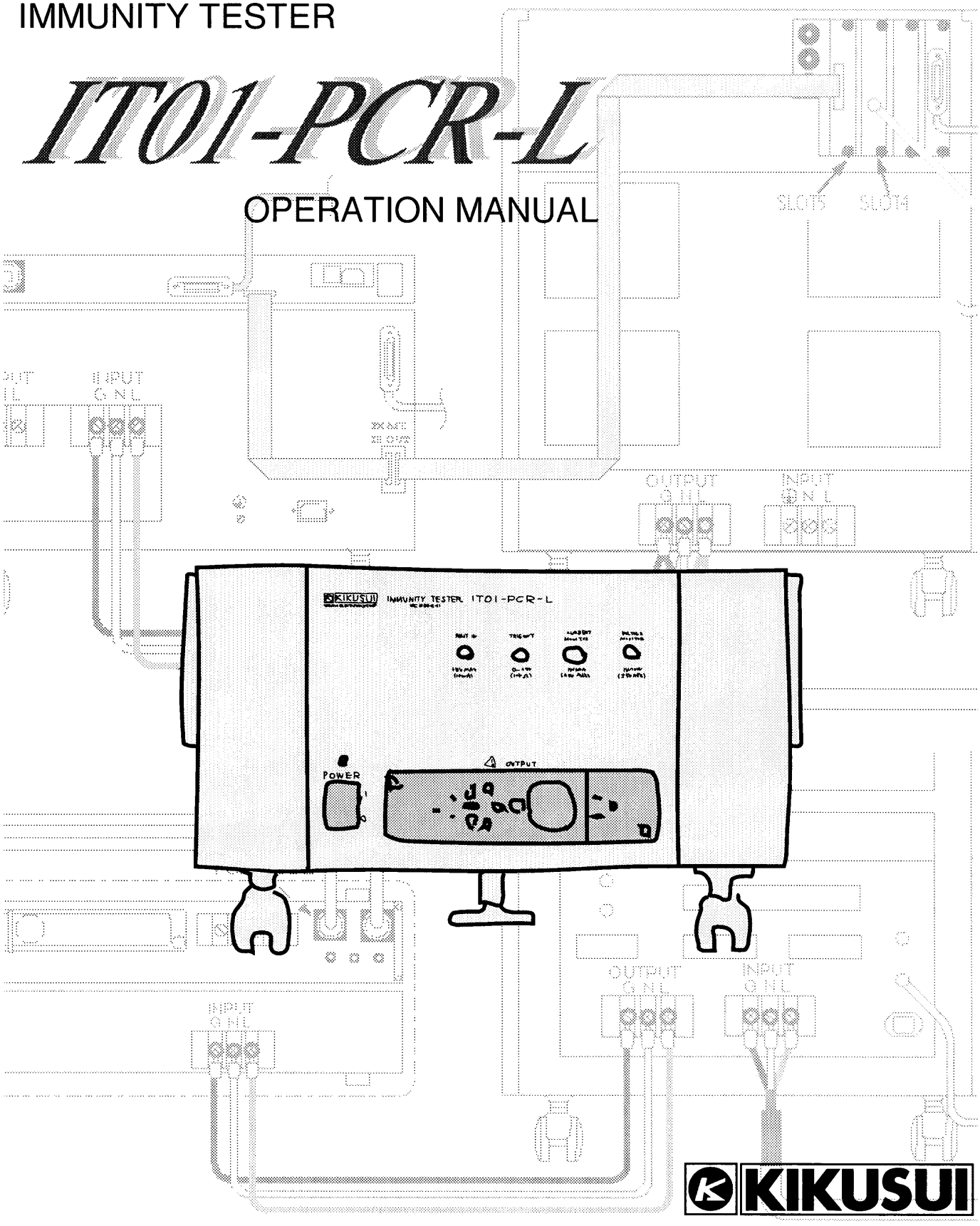
Electronic Test Instruments & Power Supplies

IMMUNITY TESTER

IT01-PCR-L

OPERATION MANUAL

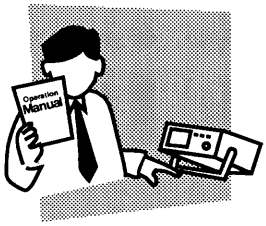


KIKUSUI

KIKUSUI PART No. Z1-001-722 IB001543

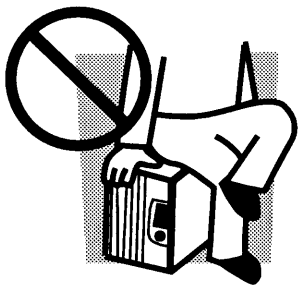
⚠Safety Precautions

The following safety precautions must be observed to avoid fire hazard, electrical shock, accidents, and other failures. Keep them in mind and make sure that all of them are observed properly. Kikusui assumes no liability against any damages or problems resulting from negligence of the precautions.



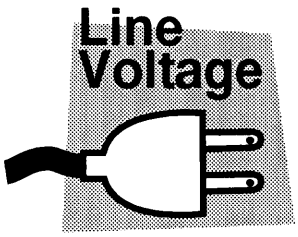
Users

- This product must be used only by qualified personnel who understand the contents of this operation manual.
- If it is handled by disqualified personnel, personal injury may result. Be sure to handle it under supervision of qualified personnel (those who have electrical knowledge.)



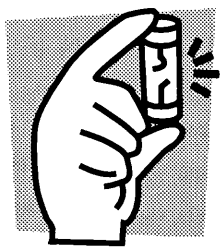
Purposes of use

- If the product is to be used for purposes not described in this manual, contact your Kikusui agent in advance.



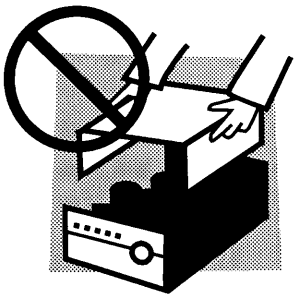
Input power

- Use the product with the specified input power voltage.
- For applying power, use the AC power cable provided. The shape of the plug differs according to the power voltage and areas. Use the cable which is suitable for the line voltage used.



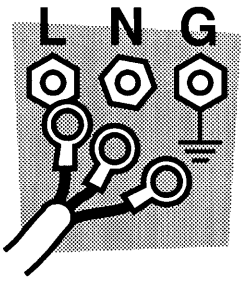
Fuse

- With products with a fuse holder on the exterior surface, the fuse can be replaced with a new one. When replacing a fuse, use the one which has appropriate shape, ratings, and specifications.



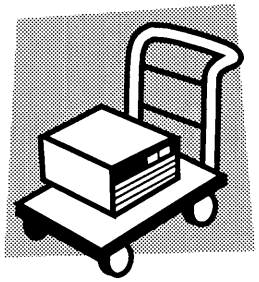
Cover

- There are parts inside the product which may cause physical hazards. Do not remove the external cover. If the cover must be removed, contact your Kikusui agent in advance.



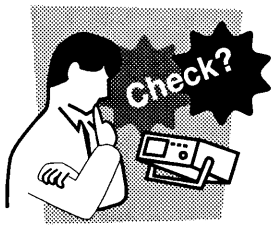
Installation

- When installing products be sure to observe "Conditions at the Installation Location" described in this manual.
- To avoid electrical shock, connect the protective ground terminal to electrical ground (safety ground).
- When applying power to the products from a switchboard, be sure work is performed by a qualified and licensed electrician or is conducted under the direction of such a person.
- Be sure to use the AC power cable provided. Consult your Kikusui agent if other cable than included is to be used for some reason.
- When installing products with casters, be sure to lock the casters.



Relocation

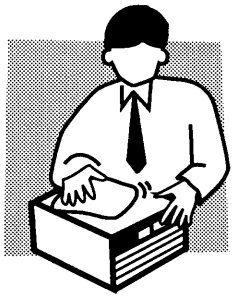
- Turn off the power switch and then disconnect all cables when relocating the product.
- Use two or more persons when relocating the product which weights more than 20 kg. The weight of the products can be found on the rear panel of the product and/or in this operation manual.
- Use extra precautions such as using more people when relocating into or out of present locations including inclines or steps. Also handle carefully when relocating tall products as they can fall over easily.
- Be sure the operation manual be included when the product is relocated.



Operations

- Check that the AC input voltage setting and the fuse rating are satisfied and that there is no abnormality on the surface of the AC power cable. Be sure to unplug the AC power cable or stop applying power before checking.

- If any abnormality or failure is detected in the products, stop using it immediately. Unplug the AC power cable or disconnect the AC power cable from the switchboard. Be careful not to allow the product to be used before it is completely repaired.
- For output wiring or load cables, use connection cables with larger current capacity.
- Do not disassemble or modify the product. If it must be modified, contact your Kikusui agent.



Maintenance and checking

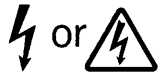
- To avoid electrical shock, be absolutely sure to unplug the AC power cable or stop applying power before performing maintenance or checking.
- Do not remove the cover when performing maintenance or checking. If the cover must be removed, contact your Kikusui agent in advance.
- To maintain performance and safe operation of the product, it is recommended that periodic maintenance, checking, cleaning, and calibration be performed.

Service

- Internal service is to be done by Kikusui service engineers. If the product must be adjusted or repaired, contact your Kikusui agent.

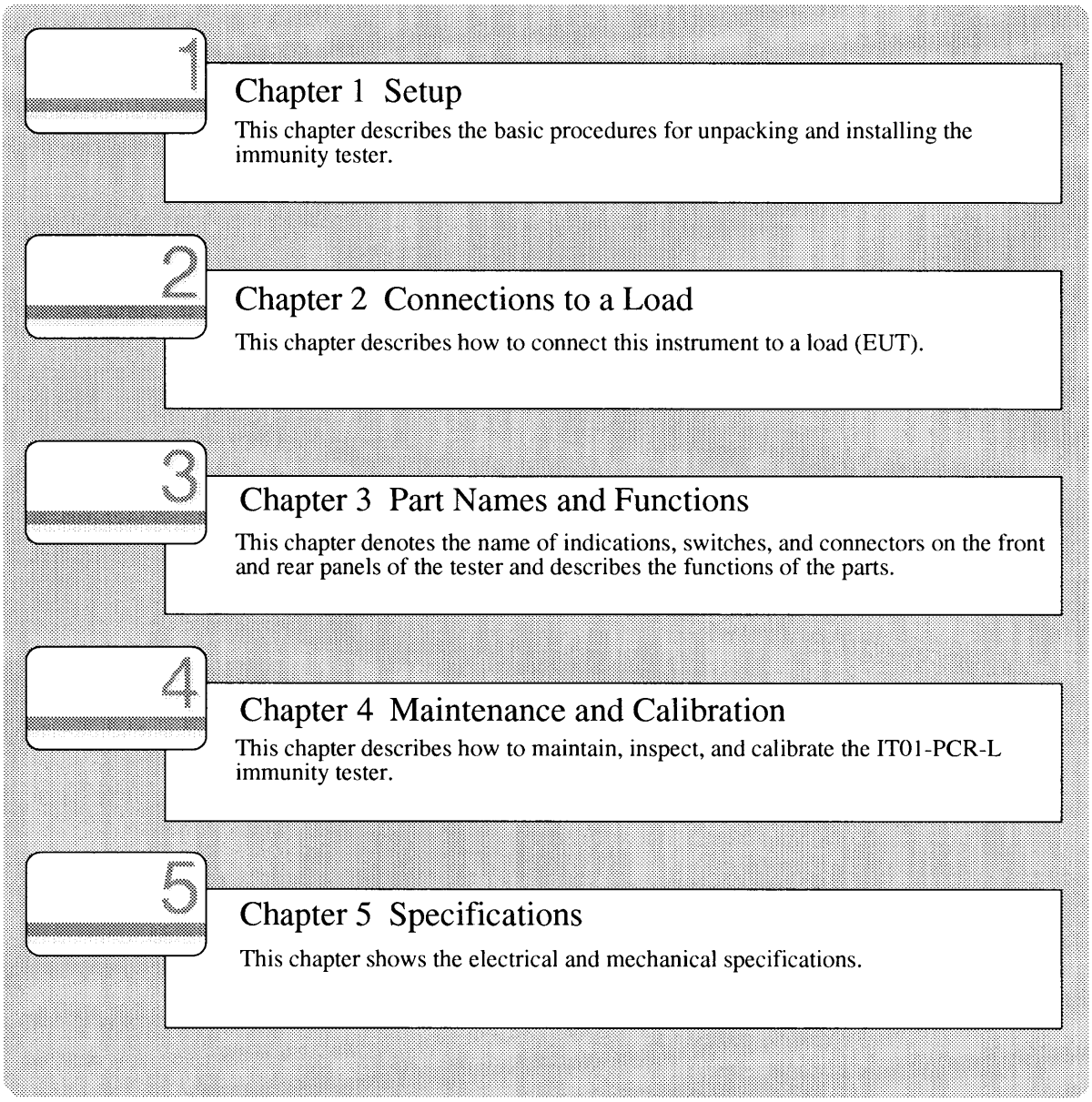
Safety Symbols

This operation manual and this product use the following safety symbols. Note the meaning of each of the symbols to ensure safe use of the product. (As using symbols depend on the product, all of symbols may not be used.)

	Indicates the voltage of 1000 V or higher. Inadvertently touching such a part may cause electrical shock resulting in death. If it is necessary to touch such a part to conduct work, first make sure no voltage is being supplied.
WARNING	Indicates the possibility of personal injury or death. Never fail to follow the operating procedure. Do not proceed beyond a WARNING sign until the noted conditions are fully understood and met.
CAUTION	Indicates the existence of damage to the product or connected equipment. Always follow the operating procedure. Do not proceed beyond a CAUTION sign until the indicted conditions are fully understood and met.
NOTE	Indicates additional information such as operating procedure.
Description	Describes technical terms used in this manual.
	Indicates action prohibited.
	Indicates general warning, caution, risk of danger. When this mark is indicated on the product, refer the relevant section of the Operation Manual.
	Indicates a grounding (earth) terminal.
	Indicates a chassis grounding terminal.

About This Manual

This manual consists of the following chapters:



Contents

Chapter 4 Maintenance and Calibration

Chapter 5 Specifications

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INTRODUCTION

This Operation Manual describes the structure and electrical parts of the IT01-PCR-L immunity tester.

For details on how to operate the tester, follow the instructions given in the operation manual for the dedicated software.

For instructions on how to handle hardware, including the PCR-L AC power supply, see the operation manual of the relevant equipment.

General

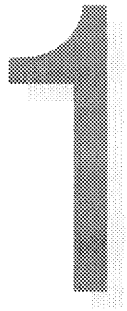
IT01-PCR-L immunity tester is intended for voltage dips, short interruptions and voltage variations immunity tests, and is in compliance with the IEC 1000-4-11 standards.

It uses semiconductor switches to achieve the high-speed voltage switching required by the IEC standards. It is equipped with Kikusui PCR-L Series AC Power Supplies, and can be operated from an external PC through the use of dedicated software.

The tester consists of the immunity tester and a PCR-L interface.

Features

- Capable of conducting tests in conformance with to the IEC 1000-4-11 standards.
- Because it uses a PCR-L Series AC power supply as a supply voltage source, the IT01-PCR-L can be used to consistently conduct tests under certain conditions with high stability and a low distortion factor, achieving good repeatability of the test results.
- Combined use of the instrument with an HA01F-PCR-L harmonic analyzer and LIN40MA-PCR-L line-impedance network enables a total testing system for low-frequency emission and immunity to be configured.



Chapter 1 Setup

This chapter describes the basic procedures for unpacking and installing the immunity tester.

1.1 Check at Unpacking

The tester should be checked upon receipt for damage that might have occurred during transportation. Also check that all accessories have been provided.

Should the tester be damaged or any accessory missing, notify your Kikusui agent.

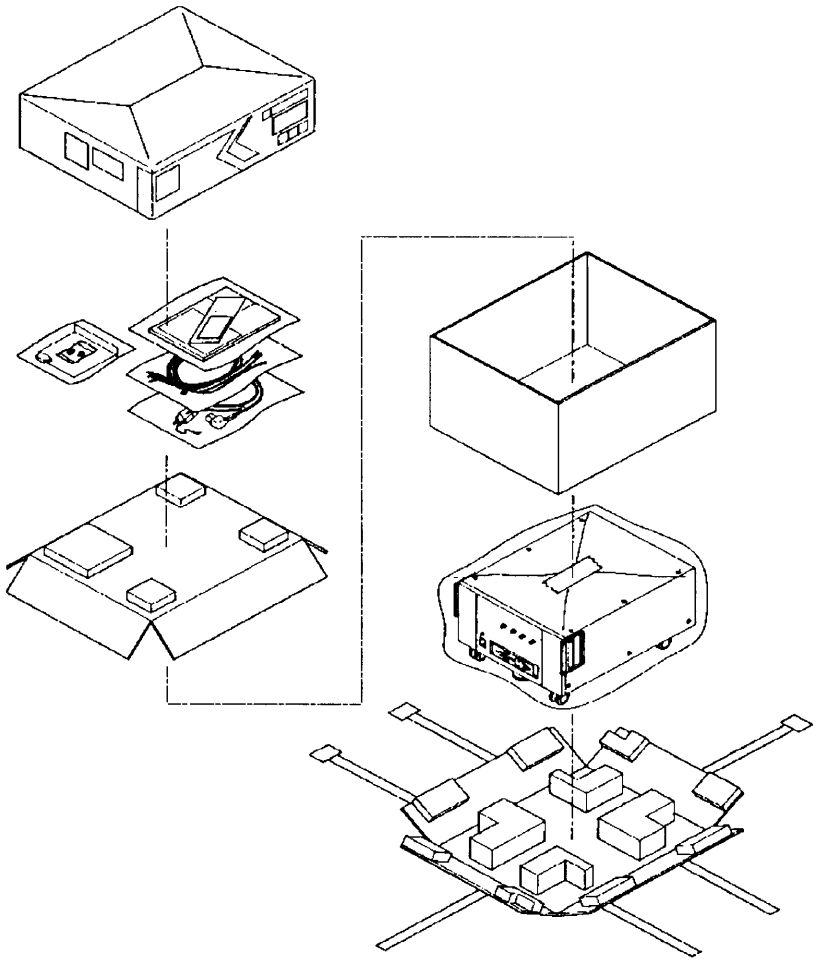


Fig. 1-1 Packing/Unpacking

Caution

- When the product needs to be transported, always use the dedicated packing materials (those used for delivery).

  If additional packing materials are required, contact your Kikusui agent.

- Disconnect the input power cable and other cables for packing.

	Accessories	Qty.	Check
1	PCR-L interface card	1	
2	Mounting screws (M3) for the PCR-L interface card	2	
3	Signal cable (1.2m)	1	
4	PCR-L connection cables (single-conductor cable 8㎟/1.5m with a crimping terminal for M6)	3	
5	Input power cable (2m)	1	
6	Operation manual	1	

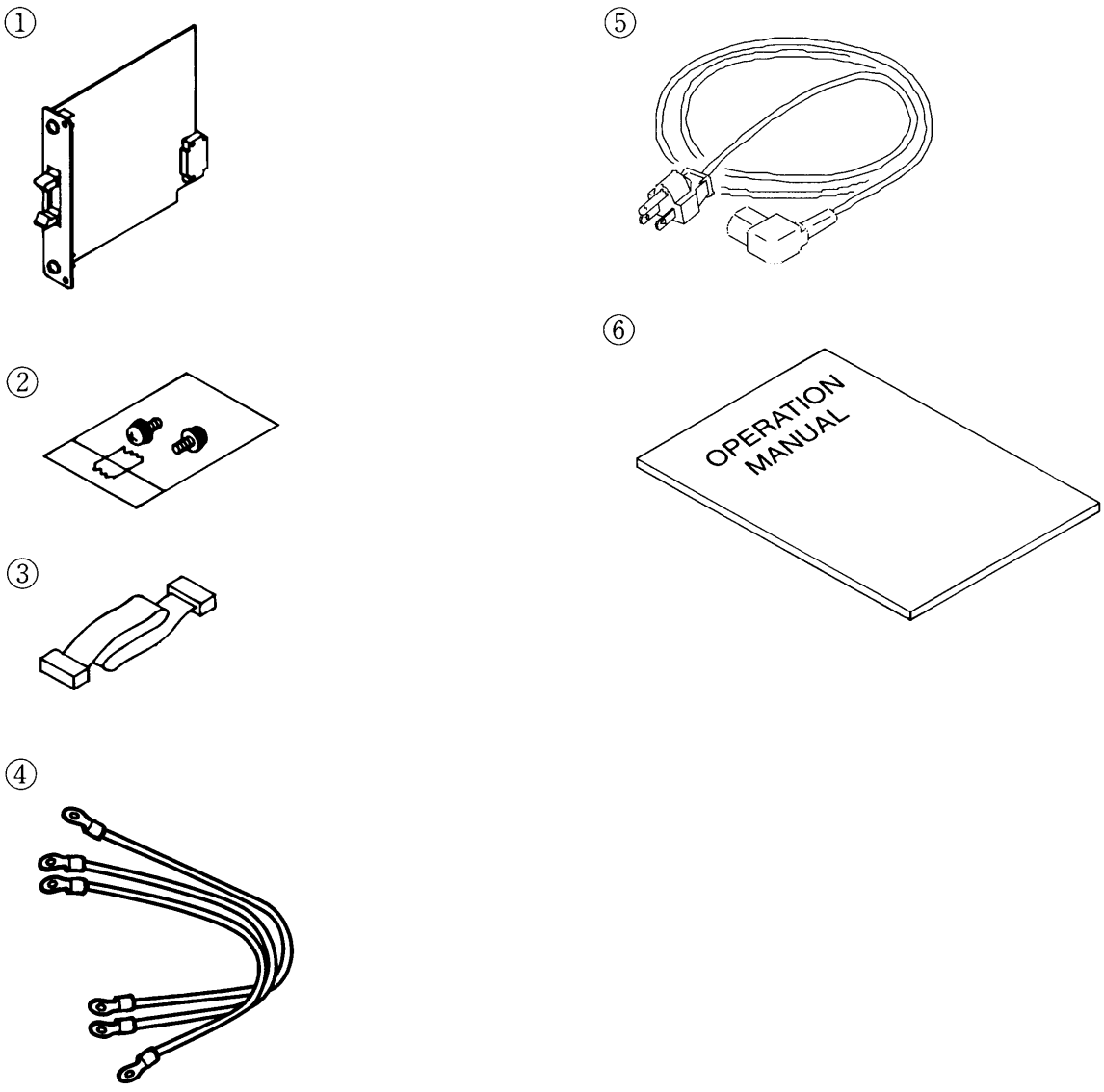


Fig. 1-2 Accessories

1.2 Conditions at the Installation Location

Be sure to observe the following precautions when installing the unit.

■ Do not use the unit in a flammable atmosphere.

To prevent explosion or fire, do not use the unit near alcohol or thinner, or in an atmosphere containing such vapors.

■ Avoid locations where the unit is exposed to high temperature or direct sunshine.

Do not locate the unit near a heater or in areas subject to drastic temperature changes.

Temperature range: 23±5℃

■ Avoid locations of high humidity.

Do not locate the unit in high-humidity locations, i.e., near a boiler, humidifier, water supply, etc.

Humidity range: 20% to 80% RH (without dew condensation)

Condensation may occur even within the operating humidity range. In such a case, do not use the instrument until the moisture dries completely.

■ Do not place the unit in a corrosive atmosphere.

Do not install the unit in a corrosive atmosphere or one containing sulfuric acid mist, etc.

■ Do not locate the unit in a dusty location.

■ Do not use the unit where ventilation is poor.

Leave sufficient space around the tester to allow air to flow through its front and rear ports.

■ Do not place the instrument where it will be unstable.

Do not install the unit along a tilted section of floor or in a location subject to vibrations.

■ Do not use the unit in locations affected by strong magnetic and/or electric fields.

Caution

- Do not place the tester on a PCR-L AC power supply.
- Do not place any articles on the tester.

1.3 Grounding

Ground the tester as follows:

① Connect terminal G of the INPUT terminal board of the tester to terminal G of the OUTPUT terminal board of the PCR-L AC power supply.

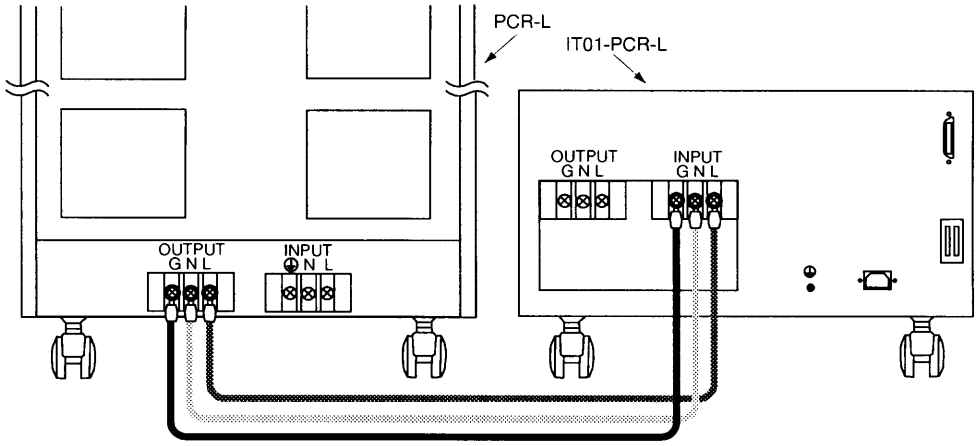


Fig. 1-3 Grounding

② Check that the ⏚ terminal of the INPUT terminal board of the PCR-L AC power supply has been grounded.

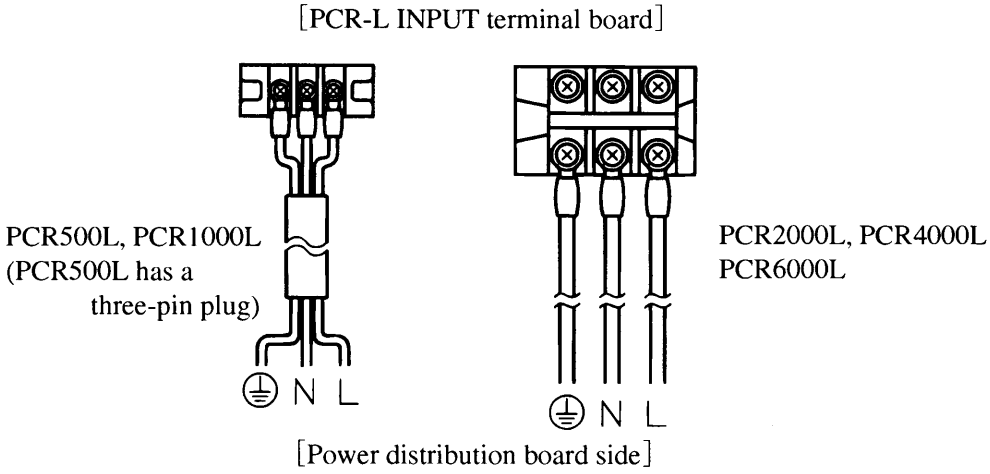


Fig. 1-4 Grounding Terminal of the PCR-L AC Power Supply

1.4 Connections to the PCR-L AC Power Supply (for Single-Phase Tests)

Caution

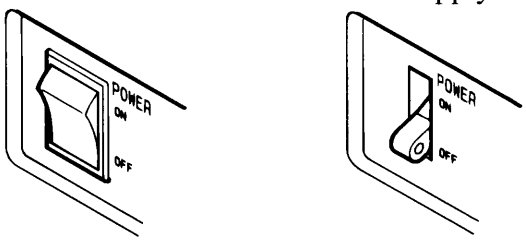
- The tester is used in conjunction with a PCR-L AC power supply. However, the PCR-L AC power supplies with a built-in EMI filter cannot be used.

1.4.1 INPUT Terminal Board

Follow the steps below while referring to Fig. 1-5, "Connection to the PCR-L AC Power Supply."

① Turn OFF the POWER switch of the PCR-L AC power supply and also cut off the power feed from the power distribution board.

Switch of PCR-L AC Power supply



② Remove the transparent cover from the INPUT terminal board of the tester.

③ Connect the INPUT terminal board to the OUTPUT terminal board of the PCR-L AC power supply. Using the PCR-L connection cable of the accessory, connect terminals L, N, and G to the appropriate terminals.

WARNING

- Never attempt to connect the INPUT terminal board to a commercial power supply as the internal circuits of the tester are not designed for such connections.

Note

- For more information on connection to the PCR-L AC power supply, see Chapter 5, "Connecting a Load" of the PCR-L Series Operation Manual.

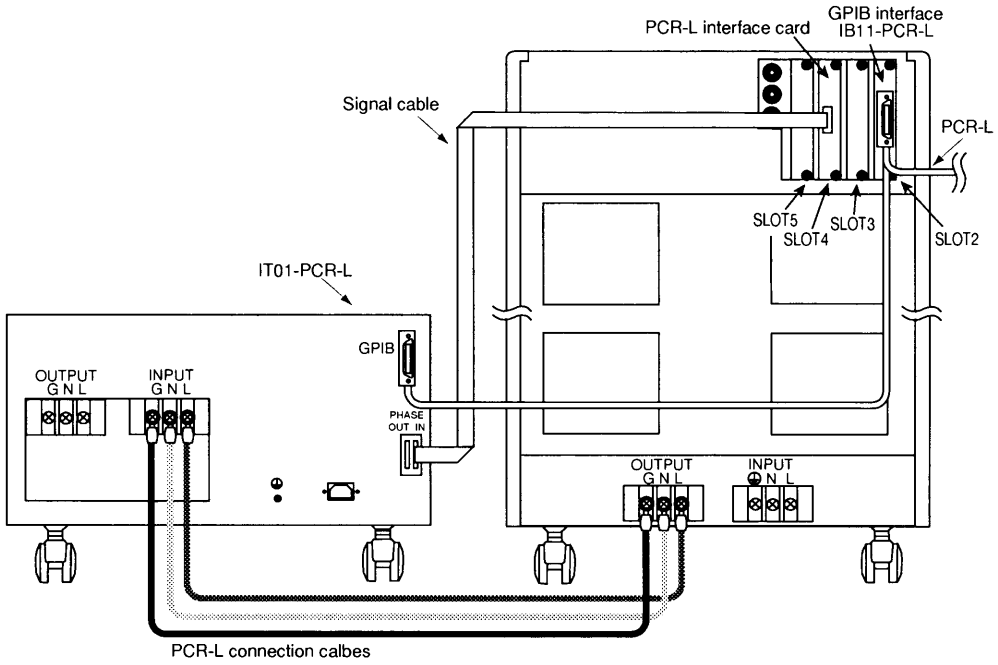


Fig. 1-5 Connections to the PCR-L AC Power Supply

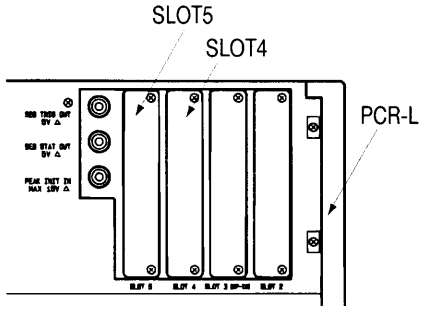
④ Replace the cover removed in step ②.

WARNING

- Never fail to install the cover on the INPUT terminal, to avoid electric shock hazards as high voltage will be applied to the terminal.

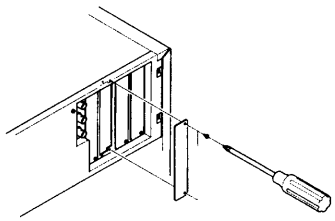
1.4.2 PCR-L Interface Card

A PCR-L interface card must be installed in slot 4 or 5 of the PCR-L AC power supply.



(1) Installing the PCR-L Interface Card

Before installing the interface card (hereafter referred to as "Card"), always turn OFF the POWER switch of the PCR-L AC power supply.



① Remove the slot cover.

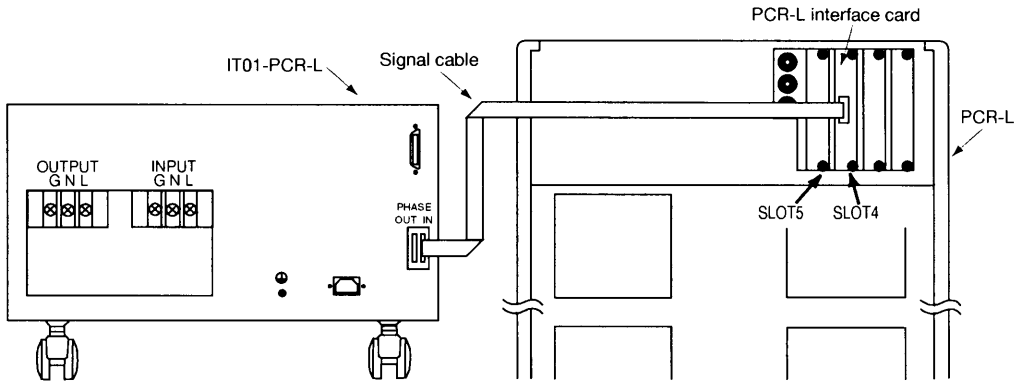
② Hold the panel part of the Card.

③ Hold the Card so that the parts-mounted side of the Card PCB is to the right, and lower the PCB part onto the grooves of the slot.

④ Carefully insert the Card into the far end of the slot, making sure that the Card stays in the grooves.

⑤ After inserting the Card to the far end of the slot, fix it to the PCR-L AC power supply with the provided screws. This completes installation of the Card.

⑥ Connect the flat cable provided for the tester between the Card's connector and the PHASE IN connector in the immunity tester.



1.5 Connecting the GPIB Cable

Caution

- Before connecting the GPIB cable, always turn OFF the POWER switches of the IT01-PCR-L immunity tester and personal computer (PC) used to control the tester.

Align the plug configuration of the GPIB cable with the connector configuration of the tester, then connect the cable.

For the requirements of PCs used to control the tester, other options, etc., see the Operation Manual of the dedicated software for the tester.

Note

- No GPIB cable is provided for the IT01-PCR-L.

1.6 Connecting the Power Supply

Connect the input power cable provided with the tester to the AC INPUT socket of the tester.

Power plug:

The power plug provided for the input power cable upon shipment is a three-prong (USA) grounded type.

A power plug of different type for other voltage should be provided by the customer.

Caution

- Always use the instrument within the rated input range (85 V to 250 V, 50/60 Hz).
- Use a commercial line as the input power supply. Do not feed output voltage from a PCR-L AC power supply connected to the tester.

1.7 Three-Phases Test Connections

1.7.1 When Using Three PCR-L AC Power Supplies and Three 3P02-PCR-Ls

See Fig. 1-6, "Connections to Three PCR-L AC Power Supplies".

- Connections to the W-phase equipment of PCR-L AC power supplies are the same as those described in 1.4, "Connections to the PCR-L AC Power Supply (for Single-Phase Tests)".
- PCR-L interface cards are not required for connections to the U- and V-phase equipment of the PCR-L power supplies.

Caution

- For the connection procedures, see 1.4, "Connections to the PCR-L AC Power Supply (for Single-Phase Tests)", 1.5, "Connecting the GPIB cable", and 1.6, "Connecting the Power Supply".

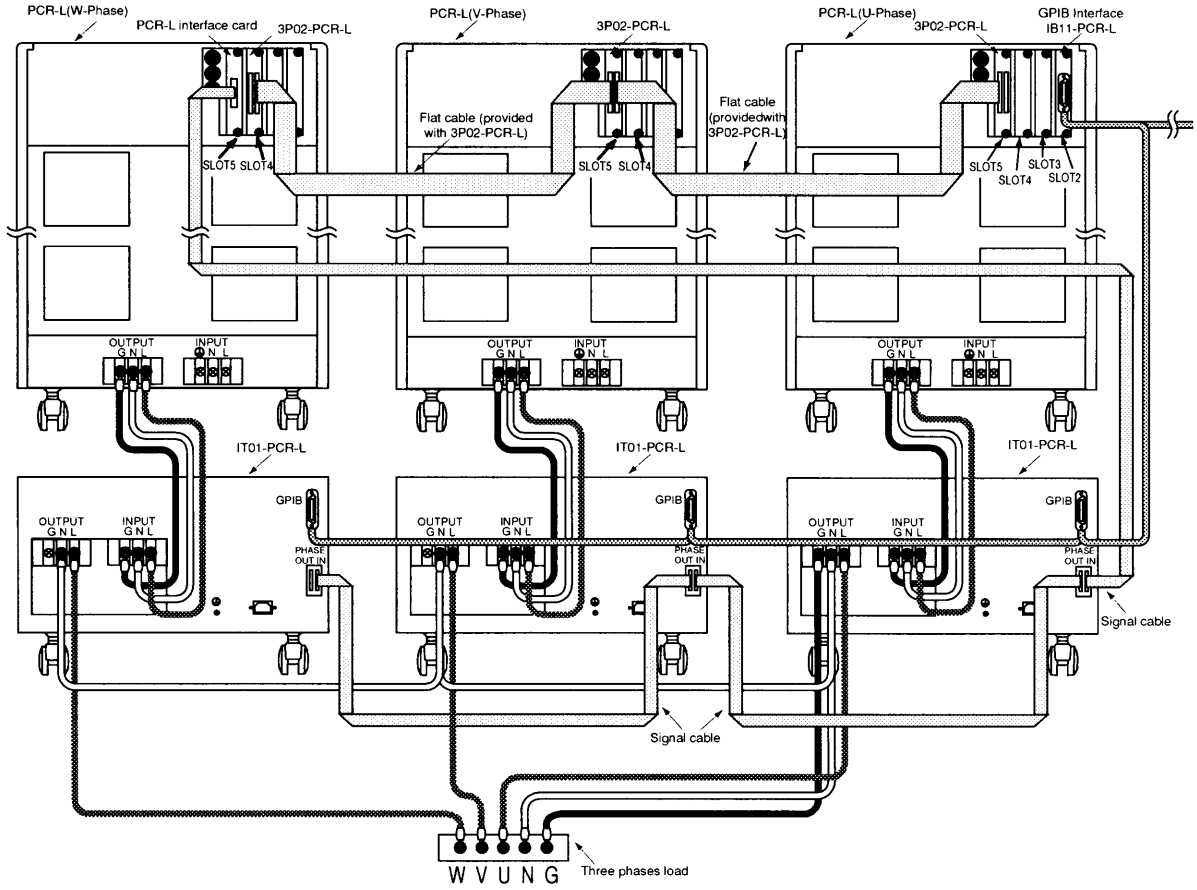


Fig. 1-6 Connections to Three PCR-L AC Power Supplies

1.7.2 When using PCR-LT AC Power Supply

See Fig. 1-7, "Connections to Three PCR-LT AC Power Supply".

Caution

- For the connection procedures, see 1.4, "Connections to the PCR-L AC Power Supply (for Single-Phase Tests)", 1.5, "Connecting the GPIB cable", and 1.6, "Connecting the Power Supply".

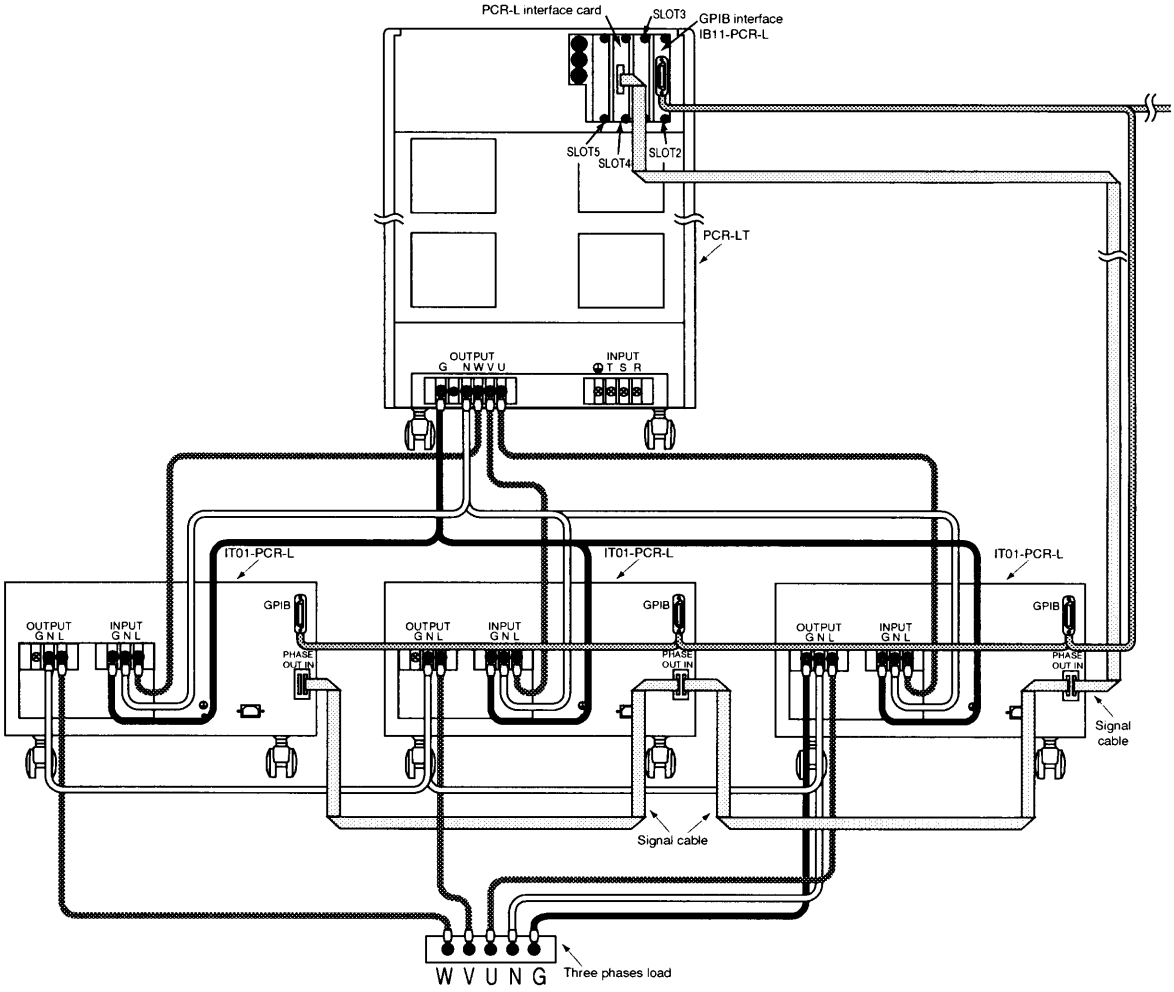


Fig. 1-7 Connections to Three PCR-LT AC Power Supply

1.8 When Using the Tester in Combination with HA01F-PCR-L and LIN40MA-PCR-L

For use of the tester in combination with an HA01F-PCR-L harmonics analyzer and LIN40M-PCR-L line-impedance network, see Fig. 1-8, "Connections to HA01F-PCR-L and LIN40MA-PCR-L".

Caution

- For connection procedures, see 1.4, "Connections to the PCR-L AC Power Supply (for Single-Phase Tests)", 1.5, "Connecting the GPIB cable", and 1.6, "Connecting the Power Supply" in this manual and the Operation Manuals for the HA01F-PCR-L Harmonics Analyzer and the LIN40MA-PCR-L Line-Impedance Network.

- When operating this system, the PCR-L, IT01-PCR-L, HA01F-PCR-L, and LIN40MA-PCR-L power switches must all be turned ON.

WARNING

- The PCR-L output voltage is generated from both the OUTPUT terminal board of the IT01-PCR-L and the OUTPUT terminal board of the HA01F-PCR-L's current sensor. Do not attempt to connect a load to both the terminals simultaneously.

  For example, when conducting measurement and testing of harmonic currents in a power line using the HA01-PCR-L, do not connect a load to the OUTPUT terminal board of the IT01-PCR-L. Otherwise, the output voltage set during measurement or testing might also be generated by the IT01-PCR-L, which might affect the load.

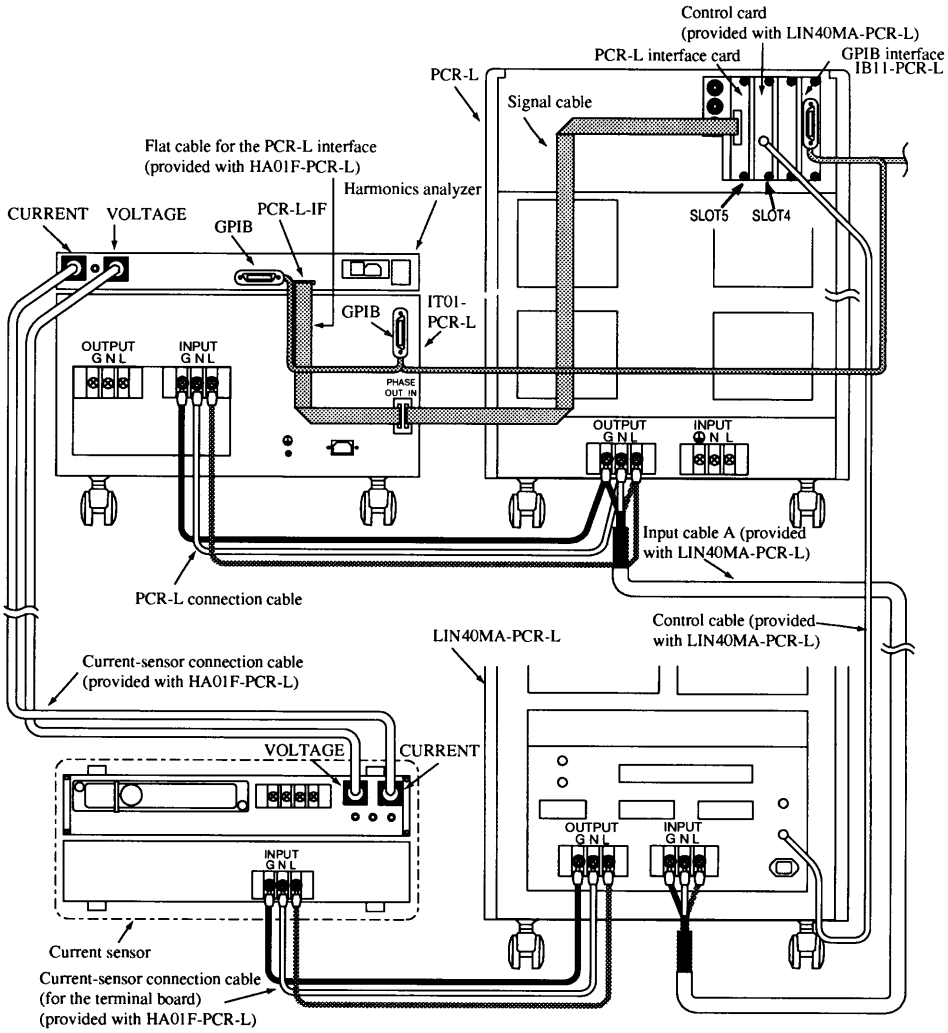


Fig. 1-8 Connections to HA01F-PCR-L and LIN40MA-PCR-L

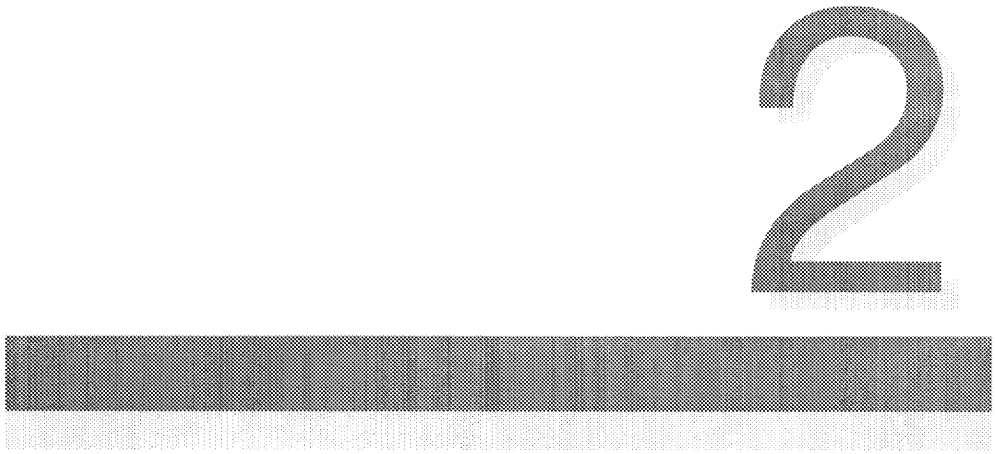
1.9 Rack Mount

The following optional rack-mounting brackets allow the tester to be installed in Kikusui's standard racks, KRO1600, KRO1250, KRO900, and RC322. For more information on the racks, see the catalogs and other documentation.

Model numbers of rack-mounting brackets:

KRB250 for JIS standards (in mm)

KRB5 for EIA standards (in inches)



Chapter 2
Connections to a Load

This chapter describes how to connect this tester to a load (EUT).

2.1 Connections to a Load

2.2.1 When Using an Outlet

An outlet is used when the end of the power cord of the equipment under test (EUT) is of the plug type.

The outlets are ready for the plug configurations shown in Table 2-1. Connect the power plug of the load (device being tested) to an appropriate outlet.

Countries	Standards	Plug configuration	Rating	
Japan USA Canada	JIS UL CSA		2P 15A 125V	✓
			Two pins and a ground 15A 125V	✓
Australia	AS		2P 15A 250V	✓
			2P 7.5A 250V	✓
			Two pins and a ground 10A 250V	✓
			Two pins and a ground 15A 250V	✓
Swiss	SEV		2P 10A 250V	✓
			Two pins and a ground 10A 250V	✓
Italy	CEI		Two pins and a ground 10A 250V	✓

Countries	Standards	Plug configuration	Rating	
Europe	CEE DIN		2P 2.5A 250V	✓
			2P 10/16A 250V	✓
			Two pins and a ground 10/16A 250V Side-part earth	✓
			Two pins and a ground 10/16A 250V Double earth	✓
			Two pins and a ground 10/16A 250V Pin earth	
			2P 5A 250V	✓
United Kingdom	BS		Two pins and a ground 5A 250V	✓
			Two pins and a ground 15A 250V	✓
			Two pins and a ground 13A 250V	✓

Excerpt from a catalog of Matsushita Electric Works

Table 2-1 List of Compatible Plug Configurations

Caution

- Do not connect more than one plug to the outlets simultaneously. Voltage will be applied to all outlets at the same time.
- Do not supply output current exceeding the rating of the outlets (250 V maximum, 15 A maximum).

2.2.2 When Using the OUTPUT Terminal Board

① Check that the POWER switch of the PCR-L AC power supply is OFF.

WARNING

- High voltage is applied to the terminals. Always turn OFF the POWER switch of a PCR-L AC power supply before connecting the tester under test.

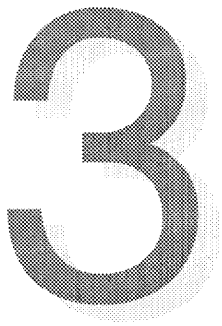
② Remove the transparent cover from the OUTPUT terminal board.

③ Connect the power cord of the EUT to the L, N, and G terminals of the OUTPUT terminal board of the tester.

④ Replace the cover removed in step ②.

2.2.3 When Using the OUTPUT Terminal Board and Outlet Simultaneously

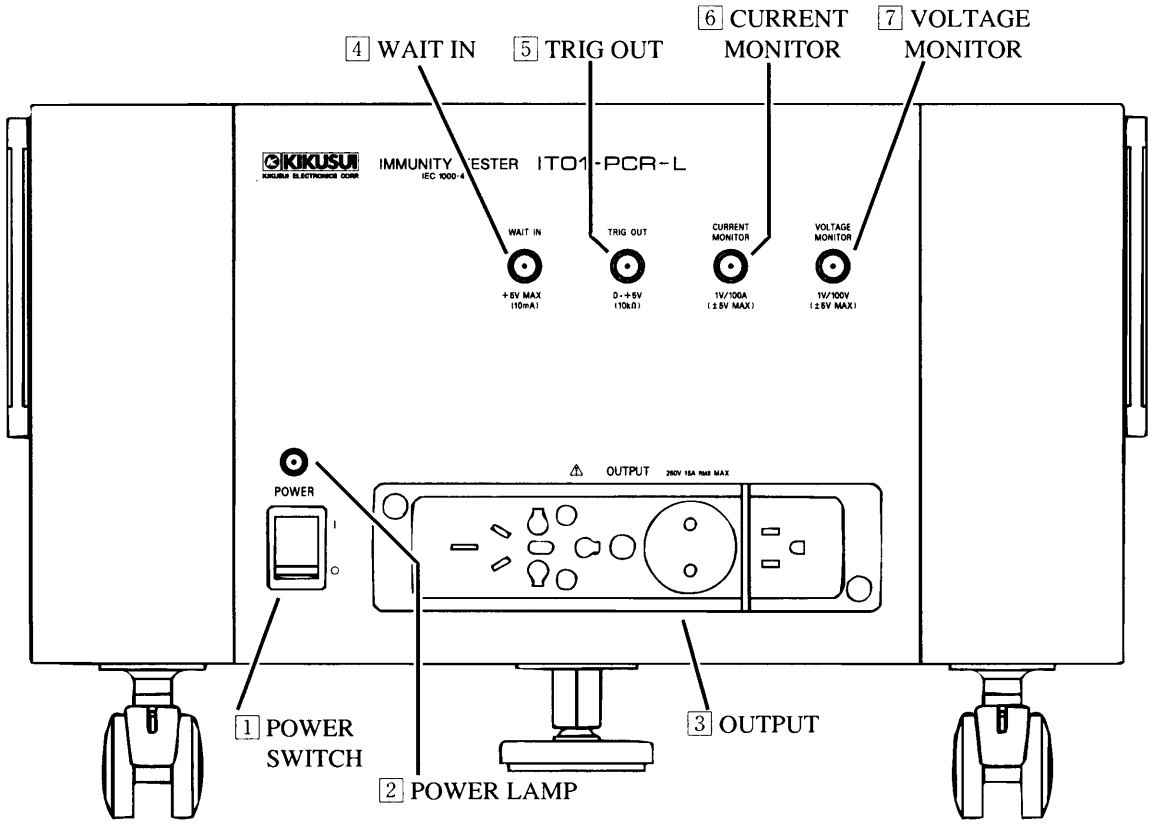
The OUTPUT terminal board and outlet may be used simultaneously. However, make sure that the total current of both outputs does not exceed the maximum current rating (40 A rms).



Chapter 3
Part Names and Functions

This chapter denotes the name of indications, switches, and connectors on the front and rear panels of the tester and describes the functions of the parts.

3.1 Front Panel



1 POWER switch

This is the power switch of the immunity tester. Pressing the upper part of the switch turns the tester ON (|), while pressing the lower part turns it OFF (○).

Caution

- The POWER switch of the tester must be turned ON before the POWER switch of a PCR-L AC power supply connected to it is turned ON. Turning on its POWER switch after turning on the PCR-L AC power supply's POWER switch may cause a failure.

2 POWER lamp

This is a power indicator lamp. It lights up in green when power is being fed to the tester.

[3] OUTPUT (outlets)

These are multi outlets. An appropriate outlet must be used when the input power cord of the EUT has a plug.

They support virtually every plug configuration in the world. For compatible plug configurations and rated currents, see Table 2-1, "List of Compatible Plug Configurations", in 2.2.1, "When Using an Outlet".

[4] WAIT IN terminal, +5 V MAX (10 mA)

This is a signal input terminal for extending the interval (power recovery) time in voltage dips and short interruptions tests.

The interval time will be extended when the WAIT IN signal is set to a low level (a flow of more than 10 mA) through the use of a contact signal or other signal. Note that if the period of a WAIT IN signal (low level) is shorter than the set interval time, the interval time will not be extended.

[5] TRIG OUT terminal, 0 to +5 V (10 kΩ)

This is a signal output terminal for sending a trigger signal in response to the start and end of a dip in a voltage dip/instantaneous power-failure test, or the start and end of variations in a voltage variation test.

The TRIG OUT terminal is normally set to a high level (2.5 V or more at a load resistance of 10 kΩ or more), but will be set to a low level (0.5 V or less) when a trigger signal is sent.

Whether a trigger signal is sent or not is set through the use of the dedicated software.

[6] CURRENT MONITOR terminal, 1 V/100 A (±5 V MAX)

This is a signal output terminal for monitoring the output-current waveform of the tester through the use of an oscilloscope. This terminal outputs a voltage signal of 1 V/100 A.

Description

- The CURRENT MONITOR terminal is primarily designed to monitor the waveform of a rush current flowing in the load. Thus, monitoring the waveform of a minute current may cause a lowvoltage-signal level, large waveform distortion, or the presence of noise.

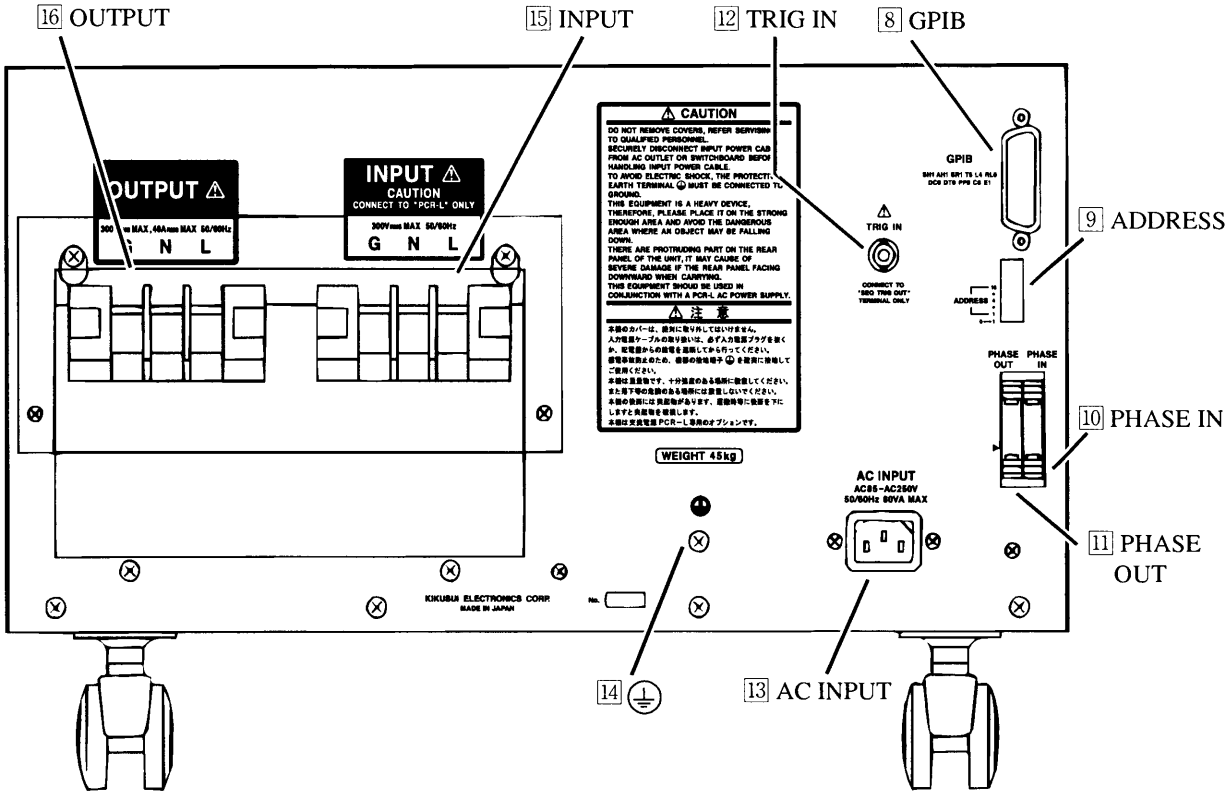
[7] VOLTAGE MONITOR terminal, 1 V/100 V (±5 V MAX)

This is a signal output terminal for monitoring the output-voltage waveform of the tester through the use of an oscilloscope. This terminal outputs a voltage signal of 1 V/100 V.

Description

- The peripheral metal parts of the WAIT IN and TRIG OUT terminals, as well as those of the CURRENT MONITOR and VOLTAGE MONITOR terminals, are connected to the internal circuits of the tester at the same potential respectively. Note that each terminal is isolated from the INPUT terminal board, OUTPUT terminal board, OUTPUT outlets, and AC INPUT socket of the tester.

3.2 Rear Panel



8 GPIB connector

This connector connects a GPIB cable.

9 ADDRESS switch

This is a GPIB address-setting switch. For information on setting, see the Operation Manual for the dedicated software. It is set to "6" upon shipment from the factory.

10 PHASE IN connector

This connector receives a synchronous clock signal from a PCR-L AC power supply connected to the tester.

Connect the signal cable provided with the tester to this connector.

11 PHASE OUT connector

This dedicated connector sends a synchronous clock signal received from a PCR-L AC power supply to the PHASE IN connector of another-phase equipment of PCR-L AC power supplies (for Three-Phase Tests).

Connect the signal cable provided with the tester to this connector.

12 TRIG IN terminal

This is a dedicated signal input terminal for receiving signals from a PCR-L AC power supply connected to the tester, in order to send a TRIG OUT signal.

This terminal connects to the SEQ TRIG OUT terminal at the upper part of the rear panel of a PCR-L AC power supply connected to the tester. This connection is required when a trigger signal is to be sent in voltage variation tests. For voltage dips and short interruptions tests, the tester can singly be used to send a trigger signal.

13 AC INPUT socket

This is the input power inlet socket of the tester.

Connect the input power cable provided with the tester to this socket.

14 ⏚ terminal

This is the grounding terminal of the tester. It has an M4 screw and a lock washer.

15 INPUT terminal board

This is the input terminal board of the tester.

Use a PCR-L connection cable provided with the tester to connect with the OUTPUT terminal board of the PCR-L AC power supply connected to the tester.

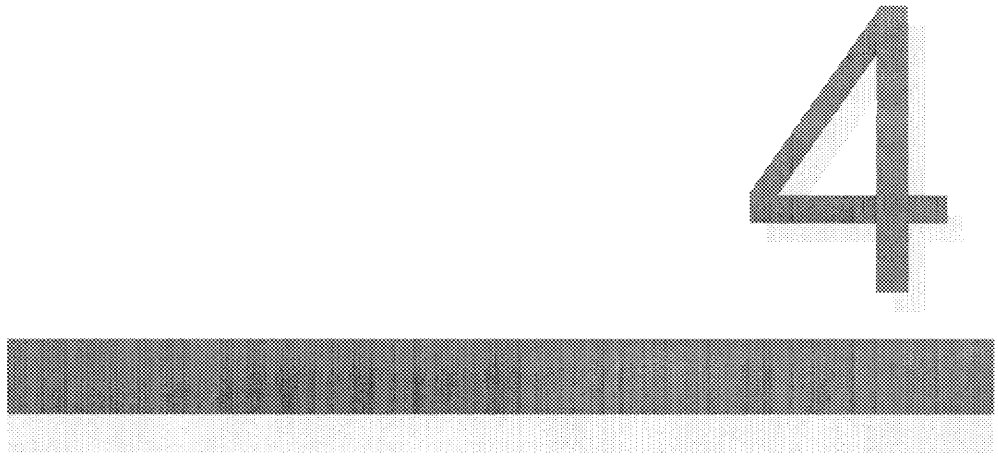
WARNING

- Never attempt to connect this terminal board to a commercial power line, as the internal circuits of the tester are not designed for such connections.

16 OUTPUT terminal board

This is the output terminal board of the tester. It connects to the power input terminal of the device being tested.

For information on the procedure for connection to an HA01F-PCR-L harmonics analyzer and LIN40MA-PCR-L line-impedance network when they are used together with the tester, see 1.8, "When Using the Tester in Combination with HA01F-PCR-L and LIN40MA-PCR-L".



Chapter 4
Maintenance and Calibration

This chapter describes how to maintain, inspect, and calibrate the IT01-PCR-L immunity tester.

4.1 Cleaning

If the panel surface becomes dirty, gently wipe the surface using a soft cloth dampened with a diluted, neutral detergent.

Caution

- Always turn the POWER switch OFF before cleaning.
- Do not use volatile substances such as thinner or benzene. Otherwise, the panel surface may become discolored, printed letters erased.

4.2 Inspection

■ Input power cable and cables provided

Check the input power cable and cables for torn coverings, loose plugs or connectors, or cracks.

WARNING

- The presence of a torn covering may result in electrical shock. Immediately stop using the tester and replace the torn cord or cable with a new one.

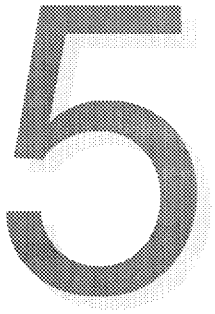
- For purchasing of accessories, contact your Kikusui agent.

4.3 Calibration

The IT01-PCR-L immunity tester has been properly calibrated upon shipment from the factory. However, recalibration may be necessary after long-term use.

WARNING

- Since the product handles high voltage, calibration can be a dangerous operations. Accordingly, recalibration should only be performed by a Kikusui service engineer.



Chapter 5 Specifications

This chapter shows the electrical and mechanical specifications.

5.1 Performance

Voltage Dips And Short Interruptions Tests

Item	Conditions		Description
Voltage accuracy of a voltage dips	Test voltage: UT 100V to 230V, no load	100% UT	Less than ±5% of the 100% UT value
		70% UT	Less than ±5% of the 70% UT value
		40% UT	Less than ±5% of the 40% UT value
Voltage-load variations of a voltage dips	Test voltage: UT 120 V to 230 V	100% UT(16A)	Less than ±5% of the 100% UT value
		70%UT(23A)	Less than ±7% of the 70% UT value
		40%UT(40A)	Less than ±10% of the 40% UT value
	Test voltage: UT 100V	100%UT(16A)	±5% of the 100% UT value (supplemental)
		70% UT(23A)	±7% of the 70% UT value (supplemental)
		40% UT(40A)	±10% of the 40% UT value (supplemental)
Voltage overshoot	Test voltage: UT 100V to 230V, 100Ω load, when changing from 0 to 100% of UT (at a 90° phase angle)		Less than 5% of the 100% UT value
Voltage undershoot	Test voltage: UT 100V to 230V, 100Ω load, when changing from 100% to 0% of UT (at 90° phase angle)		Less than 5% of the 100% UT value
Voltage rise time	Test voltage: UT 100V to 230V, 100Ω load, when changing from 0 to 100% of UT (at 90° phase angle)		1 µs to 5 µs
Voltage fall time	Test voltage: UT 100V to 230V, 100Ω load, when changing from 100% to 0% of UT (at 90° phase angle)		1 µs to 5 µs
Phase-setting accuracy of voltage dips	Test voltage: UT 100V to 230V, 100Ω load, phase angle: 0, 45, 90, 135, 180, 225, 270, 315, and 360 degrees		Less than ±10°
Continuous-time set point of voltage dips			+0.5, -0.5, 1, 5, 10, 25, and 50 cycles, and 2 to 3000 cycles (Any cycle count can be set with a resolution of 1 cycle.)
Interval-time setting accuracy	Setting range: 10s to 99s (default: 10s)		Within ±10%

UT: Rated voltage of the equipment under test

Voltage Variation Tests

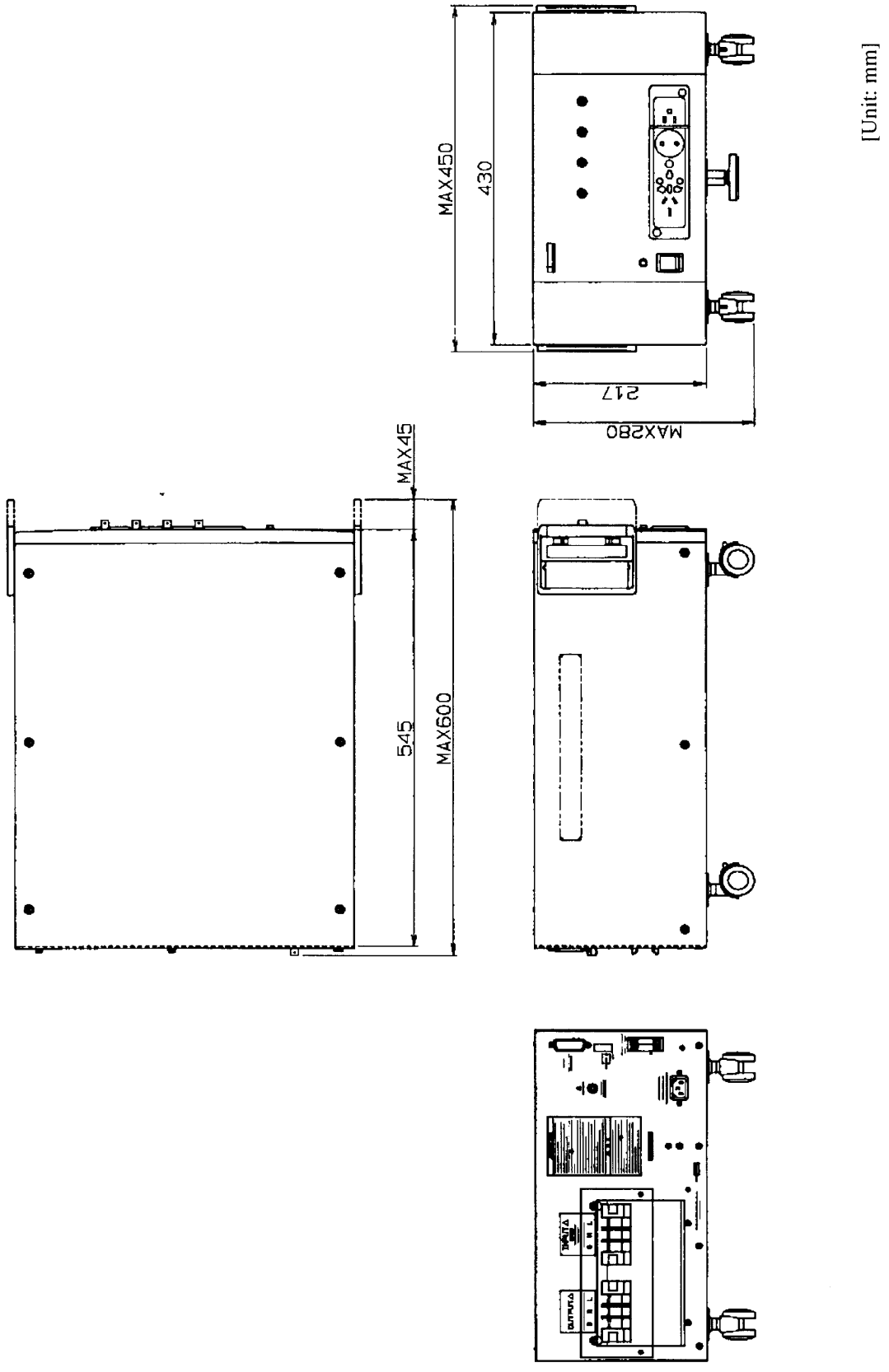
Item	Conditions		Description
Voltage accuracy in voltage variations	Test voltage: UT 100V to 230V, no load	100% UT	Within ±2%
		40% UT	Within ±2%
Voltage-load variations in voltage variations	Test voltage: UT 100 V to 230 V	100% UT(16A)	Within ±2%
		40% UT(40A)	Within ±2%
Voltage decrease time	Setting range: 1 s to 99 s (default: 2 s)		Within ±10%
Voltage-decrease maintenance time	Setting range: 1 s to 99 s (default: 1 s)		Within ±10%
Voltage increase time	Setting range: 1 s to 99 s (default: 2 s)		Within ±10%

5.2 General

Item		Conditions	Description
Input voltage range			85 V to 250 V
Input frequency			50/60Hz
Input current			0.7 A or less
Input apparent power			80 VA or less
Maximum output voltage			300Vrms
Maximum output current	rms value	When the test voltage is 40% of UT	40Arms
	peak value	1 s or less	500Apeak
Current-monitoring output		Load impedance: 10 kΩ or more	1V/100A
	Accuracy	At 16 A rms output current	Within ±3%
Voltage-monitoring output		Load impedance: 10 kΩ or more	1V/100V
	Accuracy	When the test voltage is UT 230 V rms	Within ±3%
WAIT IN signal input			Maximum input voltage: +5 V
TRIG OUT signal output		Load impedance: 10 kΩ or more	Trigger pulse width: 10 µs or more Trigger level: 0 to +5 V Low level: 0.5 V or less High level: 2.5 V or more
Insulation resistance		Input power (AC INPUT) to the case	500 V DC, 30 MΩ or more
		Input power (AC INPUT) to the input and output terminals	500 V DC, 30 MΩ or more
		Input and output terminals to the case	500 V DC, 10 MΩ or more
		Signal terminal (BNC) to the case	500 V DC, 30 MΩ or more
		Signal terminal (BNC) to input power (AC INPUT)	500 V DC, 30 MΩ or more
		Signal terminal (BNC) to the input and output terminals	500 V DC, 30 MΩ or more
Withstand voltage		Input power (AC INPUT) to the case	1500 V AC for 1 minute
		Input power (AC INPUT) to the input and output terminals	1500 V AC for 1 minute
		Input and output terminals to the case	1500 V AC for 1 minute
		Signal terminal (BNC) to the case	500 V AC for 1 minute
		Signal terminal (BNC) to input power (AC INPUT)	500 V AC for 1 minute
		Signal terminal (BNC) to the input and output terminals	500 V AC for 1 minute
Ambient temperature range for operation			23°C ± 5°C
Ambient humidity range for operation			20% to 80% R.H
Storage temperature			–10C° to +60°C
Wire connection screws for the input and output terminal boards			M6
Dimensions			See the Dimension Diagram.
Weight			Approximately 45 kg
Accessories		PCR-L interface card	1
		Mounting screws (M3) for the PCR-L interface card	2
		Signal cable (1.2 m)	1
		PCR-L connection cables (single-conductor cable 8 ㎟/1.5 m with a crimping terminal for M6)	3
		Input power cable (2 m)	1
		Operation Manual	1

5.3 Dimensional Diagrams

[Unit: mm]



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