

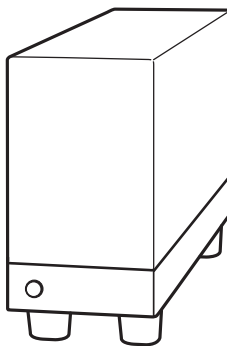
Part No. Z1-002-092, IA00235C

Apr. 2016

OPERATION MANUAL

PIA4800 SERIES
POWER-SUPPLY CONTROLLER

PIA4830



Use of Operation Manual

Please read through and understand this Operation Manual before operating the product. After reading, always keep the manual nearby so that you may refer to it as needed. When moving the product to another location, be sure to bring the manual as well.

If you find any incorrectly arranged or missing pages in this manual, they will be replaced. If the manual gets lost or soiled, a new copy can be provided for a fee. In either case, please contact Kikusui distributor/agent, and provide the “Kikusui Part No.” given on cover.

This manual has been prepared with the utmost care; however, if you have any questions, or note any errors or omissions, please contact Kikusui distributor/agent.

Disposing of used Kikusui products in the EU

Under a law adopted by member nations of the European Union (EU), used electric and electronic products carrying the symbol below must be disposed of separately from general household waste.

This includes the power cords and other accessories bundled with the products. When disposing of a product subject to these regulations, please follow the guidance of your local authority, or inquire with your Kikusui distributor/agent where you purchased the product.

The symbol applies only to EU member nations.



Disposal outside the EU

When disposing of an electric or electronic product in a country that is not an EU member, please contact your local authority and ask for the correct method of disposal.

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The specifications of this product and the contents of this Operation Manual are subject to change without prior notice.

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Safety Symbols

For the safe use and safe maintenance of this product, the following symbols are used throughout this manual and on the product. Understand the meanings of the symbols and observe the instructions they indicate (the choice of symbols used depends on the products).



Indicates that a high voltage (over 1,000 V) is used here. Touching the part causes a possibly fatal electric shock. If physical contact is required by your work, start work only after you make sure that no voltage is output here.

DANGER

Indicates an imminently hazardous situation which, if ignored, will result in death or serious injury.



Indicates a potentially hazardous situation which, if ignored, could result in death or serious injury.



Indicates a potentially hazardous situation which, if ignored, may result in damage to the product and other property.



Shows that the act indicated is prohibited.



Is placed before the sign “DANGER,” “WARNING,” or “CAUTION” to emphasize these. When this symbol is marked on the product, see the relevant sections in this manual.



Indicates a protective conductor terminal.



Indicates a chassis(frame) terminal.

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.



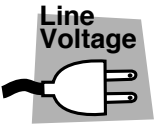
Users

- 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

- Do not use the product for purposes other than those described in the operation manual.



Input power

- Use the product with the specified input power voltage.
- For applying power, use the AC power cord provided. Note that the provided power cord is not use with some products that can switch among different input power voltages or use 100 V and 200 V without switching between them. In such a case, use an appropriate power cord. For details, see the relevant page of this operation manual.



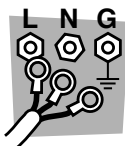
Fuse

- 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.



Installation

- When installing products be sure to observe "Precautions for Installation" 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.
- 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.



Operation

- 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 cord. Be sure to unplug the AC power cord or stop applying power before checking.
- If any abnormality or failure is detected in the products, stop using it immediately. Unplug the AC power cord or disconnect the AC power cord 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 Kikusui distributor/agent.



Maintenance and checking

- To avoid electrical shock, be absolutely sure to unplug the AC power cord or stop applying power before performing maintenance or checking.
- Do not remove the cover when performing maintenance or checking.
- 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 Kikusui distributor/agent.

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Preface

About this Manual

This is the Operation Manual for Power-Supply Controller PIA4830.

It focuses on the setup process prior to the start of control operations.

For details on connection to the DC power-supply unit and on remote control, refer to the "Connecting & Programming Guide" [index.html] in the CD-ROM as an attached accessory.

The "Connecting & Programming Guide" is HTML format that can be viewed with a WWW (World Wide Web) browser. Microsoft Internet Explorer 9 or later is required to view the file.

The list of messagees and connection of power supply of Connecting & Programming Guide is provided in a PDF file. Adobe Reader 10 or later is required to view the file.

The latest version of the "Connecting & Programming Guide" can be downloaded from Web site (http://www.kikusui.co.jp/en/kiku_manuals/).

■ ROM Version of the product applicable to this manual

- PIA4830

Ver. 2.2X

The version can be checked using the *IDN? message. For details, refer to the "Connecting & Programming Guide."

When inquiring about your product, identify the version number and the manufacturer's serial number indicated on the rear panel.

Product Outline

The PIA4830 is a controller designed to control Kikusui's DC power-supply unit with a digital remote control via GPIB or RS-232C. They can be used to control multiple DC power-supply units via your PC.

Further, the Kikusui DC power-supply unit with an analog remote-control function can be controlled using the expansion unit PIA4820 and the control board OP01-PIA/OP02-PIA.

■ Features

Multi-channel compatibility

The PIA4830 can control up to 32 (31: PMR series and PAM series) DC power-supply units with a digital remote-control function, if it is connected to them with a TP-BUS (Twisted-Pair BUS). (The TP-BUS has a total length of 200 m.)

GPIB/RS-232C

In addition to the GPIB, all PIA4830 models support the RS-232C (up to 19200 bps) to provide a simple interface with a notebook PC.

■ Application

When used in combination with more than one Kikusui DC power-supply unit with a remote-control function, the Power-Supply Controller PIA4830 can play a central role in multi-channel control systems, such as battery charge/discharge testers, electrical-component testing instruments, electroplating controllers, and electron-accelerator testing machines.

System Configuration

■ The relation between the PIA4830 and the sub system of power supply with an expansion unit.

All control operations are performed from a PC via GPIB or RS-232C. Fig. 1 shows the system configuration. First, a PC is connected to the PIA4830 with a GPIB or RS-232C. To control a DC power-supply unit with a digital remote-control function, the PIA4830 is directly connected to the power-supply unit using a TP-

BUS connector. When a DC power-supply unit with an analog remote-control function is controlled, the expansion unit PIA4820 is connected to the power-supply unit with a TP-BUS connector. The PIA4820 must be equipped with the control board OP01-PIA or OP02-PIA. For details on the PIA4820, OP01-PIA, and OP02-PIA, refer to the PIA4820 Operation Manual.

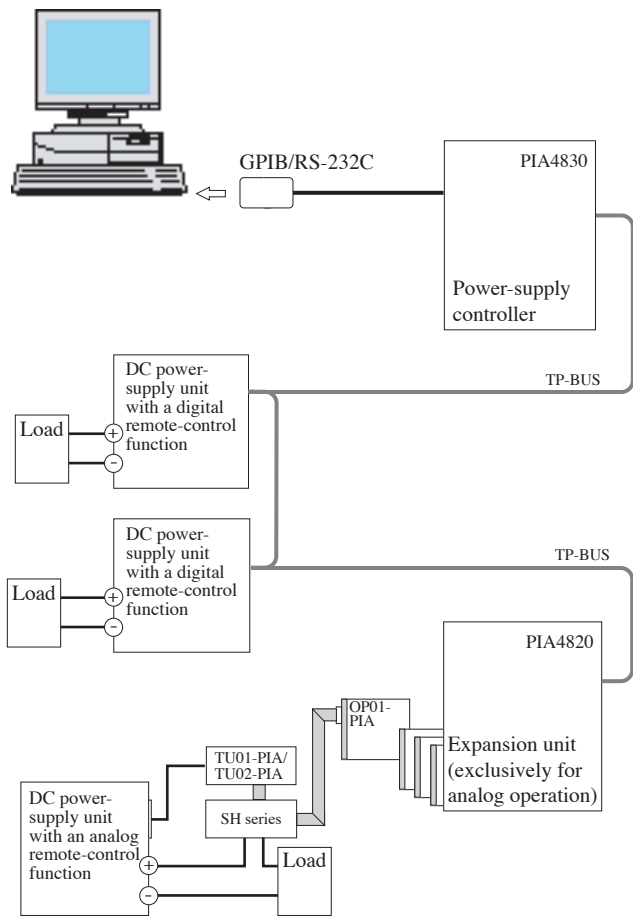


Fig. 1 System Configuration

■ PIA4830 Power-Supply Controller

The PIA4830 Power-Supply Controller is the main component of a system that controls Kikusui DC power-supply units with a digital remote-control function via GPIB or RS-232C.

■ PIA4820 Expansion Unit

The PIA4820 is an expansion unit designed to control Kikusui DC power-supply units with an analog remote-control function. Up to three expansion units can be connected to the PIA4830 unit via TP-BUS. This expansion unit can also be connected to up to four OP01-PIA or OP02-PIA control boards.

For details, see the PIA4820 Operation Manual.

■ OP01-PIA/OP02-PIA Control Board

The control board has two channels for control of two DC power-supply units.

Either OP01-PIA or OP02-PIA is selected, depending on the control parameters.

For details, see the PIA4820 Operation Manual.

■ TU01-PIA/TU02-PIA Terminal Unit

By connecting the TU01-PIA/TU02-PIA between the PIA4820 and a DC power-supply unit with an analog remote-control function, control parameters can be added.

For details, see the Operation Manual for the TU01-PIA/TU02-PIA and PIA4820.

■ SH-Series Shunt Resistor

The SH series ensures accurate current readback output when connected to the load cable on a DC power-supply unit with an analog remote-control function.

For details, see the operation manuals for the SH Series and DC power-supply unit.

Optional Equipment

Kikusui offers several options for incorporation into a rack. For details, contact Kikusui distributor/agent.

- Rack adapter KRA3 (Inch rack on EIA standard)
KRA150 (Millimeter rack on JIS)
- Blank panel KBP3-2
KBP3-3
BP191 (one unit panel on EIA standard)
BP1H (one unit panel on JIS)

For one unit blank panels BP191 and BP1H, a mesh type is also available.

NOTE

- To install the PIA4830 in a rack, provide space for one unit panel. (One unit panel: 44.5 mm on EIA, 50 mm on JIS)

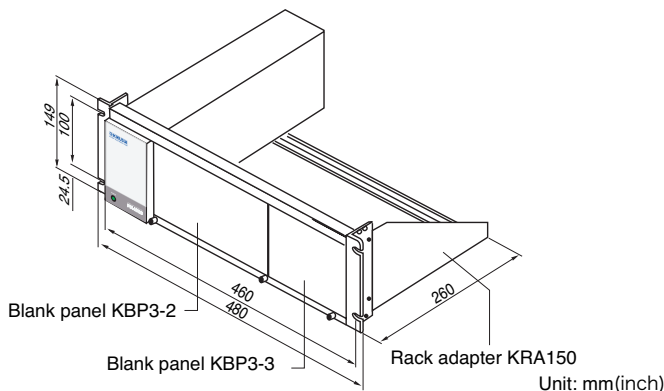
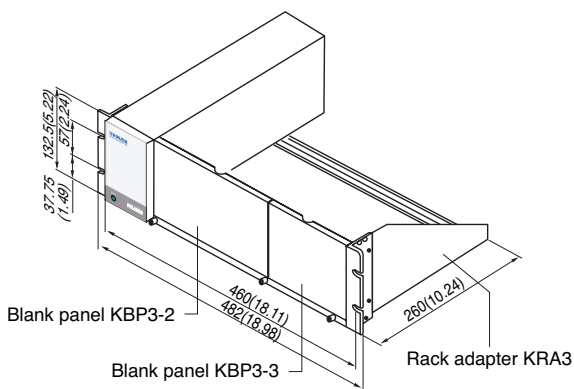


Fig. 2 KRA3 and KRA150

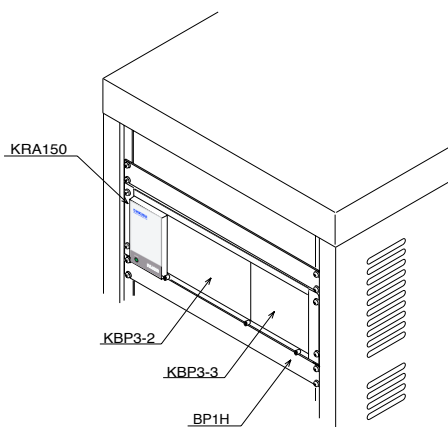


Fig. 3 One unit blank panel (for KRA150)

This chapter describes the steps from unpacking the PIA4830 through to putting it to use.

1.1 Checking at Unpacking

Upon receiving this product, make sure the package contains the necessary accessories and has not been damaged during transportation. If any part is damaged or missing, contact Kikusui distributor/agent.

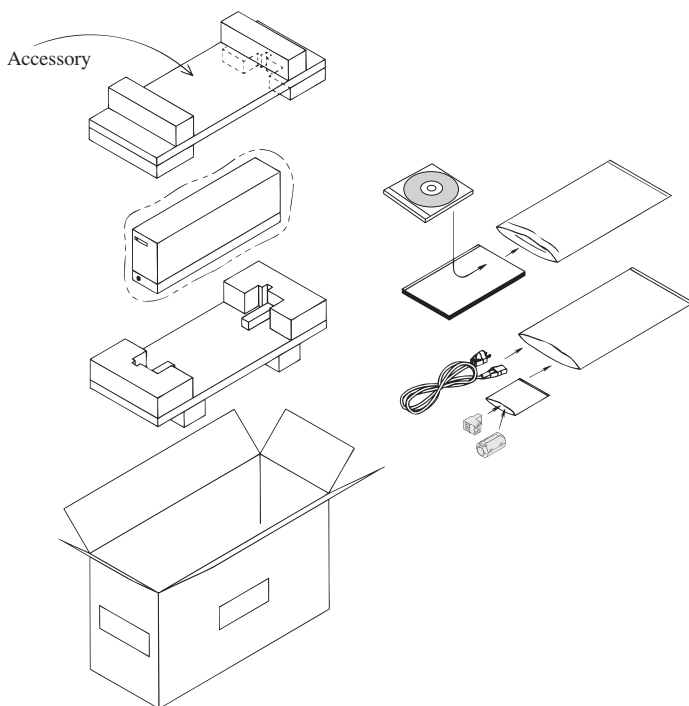


Fig. 1-1 Unpacking

NOTE

- Packing materials may be used for transport of the product, so it is recommended that they be retained.

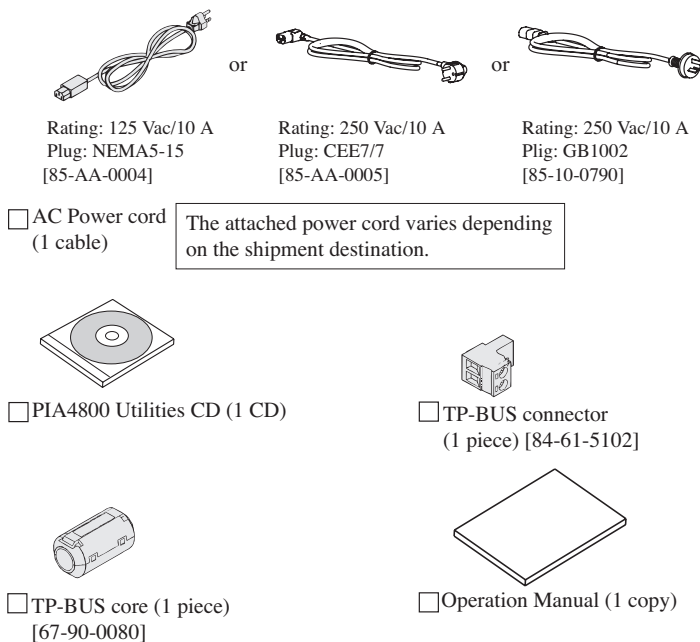


Fig. 1-2 Accessories

It is necessary for the user to obtain a GPIB interface cable and RS-232C interface cable (cross type), which are not included with the product.

For the interface cables, see 2.3 "Setup of Interface."

About PIA4800 Utilities CD

The PIA4800 Utilities CD includes the following software and the "Connecting & Programming Guide".

PIA4800 Configuration Wizard: wPIACONF.EXE, PIA4800 Calibration: wPIACAL.EXE

This software applies using the PIA4820 to control the power supply which has the analog remote control function.

Node Address check software (NCHK.EXE)

This software is to monitor the status of operating system.

1.2 Precautions for installation

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

■ **Do not use the product in a flammable atmosphere.**

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

■ **Avoid locations where the product is exposed to high temperatures or direct sunlight.**

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

Operating temperature range: 0°C to 40°C (32°F to 104°F)

Storage temperature range: -20°C to +70°C (-4 °F to 158°F)

■ **Avoid humid environments.**

Do not locate the product in a high-humidity environment—near a boiler, humidifier, or water supply.

Operating humidity range: 10% to 90% R.H

(no dew condensation is allowed)

Storage humidity range: 10% to 90% R.H

(no dew condensation is allowed)

Condensation may occur even within the operating humidity range. In that case, do not start using the product until the location is completely dry.

■ **Do not place the product in a corrosive atmosphere.**

Do not install the product in a corrosive atmosphere or one containing sulfuric acid mist or the like. This may cause corrosion of various conductors and imperfect contact with connectors, leading to malfunction and failure, or in the worst case, a fire.

■ **Do not locate the product in a dusty environment.**

Dirt and dust in the product may cause electrical shock or fire.

■ **Do not use the product where ventilation is poor.**

Prepare sufficient space around the product. Otherwise, heat may accumulate in the product, resulting in fire.

- **Do not place any object on the product.**

Particularly a heavy one, as doing so could result in a malfunction.

- **Do not place the product on a tilted surface or in a location subject to vibrations.**

If placed on a non-level surface or in a location subject to vibration, the product may fall, resulting in damage and injury.

- **Do not use the product in locations affected by strong magnetic or electric fields.**

Operation in a location subject to magnetic or electric fields may cause the product to malfunction, resulting in electrical shock or fire.

- **Secure adequate space around the power plug.**

Do not insert the power plug to an outlet where accessibility to the plug is poor. And, do not place objects near the outlet that would result in poor accessibility to the plug.

1.3 Precautions for moving

When moving or transporting the product to an installation site, observe the following precautions.

- **Turn the POWER switch off.**

Moving the product with the power on may result in electrical shock or damage.

- **Remove all wirings connected.**

Moving the product with cables connected may break the cables or cause the product to fall, resulting in injury.

- **For transportation, use the special packing material for the product.**

Transport the product in its original package to prevent vibration and falls, which may damage the product. If you require packing material, contact Kikusui distributor/agent.

1.4 AC power cord connection

⚠ WARNING Risk of electric shock.

- The PIA4830 conforms to IEC Safety Class I (equipment that has a protective conductor terminal). Be sure to earth ground the product to prevent electric shock.
 - The PIA4830 is grounded through the power cord ground wire. Connect the protective conductor terminal to earth ground.
-

NOTE

- Use the supplied power cord to connect to the AC line. If the supplied power cord cannot be used because the rated voltage or the plug shape is incompatible, have a qualified engineer replace it with an appropriate power cord that is 3 m or less in length. If obtaining a power cord is difficult, contact your Kikusui agent or distributor.
 - Do not use the supplied power cord with other instruments.
-

The PIA4830 falls under IEC Overvoltage Category II (energy-consuming equipment supplied from the fixed installation).

1. Check that the supply voltage is within the line voltage range of the power supply.
Input voltage range: 85 VAC to 250 VAC
Frequency range: 48 Hz to 62 Hz
2. Turn OFF the POWER switch.
3. Connect the AC power cord to the AC INPUT connector on the rear panel.
Use the provided power code or power code that is selected by qualified personnel.
4. Plug in the AC power cord.

This chapter explains the preparations to be made prior to the start of control operations and setting of interface.

For connection to a DC power-supply unit and messages and sample programs to be used in programming, refer to the "Connecting & Programming Guide"[index.html] in the CD-ROM as an attached accessory.

2.1 Settings on the Rear Panel

■ DIP switch



Fig. 2-1 DIP switch

Using the dip switch on the rear panel, make the settings specified below.

1. Setting PON SRQ (during GPIB control)

To use the PON SRQ (Power ON Service Request), turn the PON SRQ switch ON. This enables the status byte register to be used to check whether the POWER switch has been activated.

2. Address settings (during GPIB control)

Using the ADDRESS switch (1,2,4,8,16), set the GPIB address of the PIA4830. Do not use the same address more than once for the same system. The GPIB address can be determined by adding the figures located to the right of the switch that is ON.

3. Setting BAUD RATE (during RS-232C control)

Using GPIB address setting switches 1 and 2, set a baud rate for RS-232C control.

GPIB address setting switch		BAUD RATE
1	2	
ON	ON	19200 bps
OFF	ON	9600 bps
ON	OFF	4800 bps
OFF	OFF	2400 bps

Table 2-1 Baud rate settings

4. TERMN settings

Set the TERMN (Termination) switch to ON for the devices on both ends of the bus.

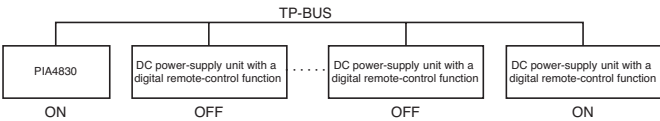


Fig. 2-2 Termination settings

NOTE

- Incorrect TERMN switch settings may cause unstable communication and malfunction.

■ SHUT DOWN

If the contact signal is input for at least one second, the outputs on all connected DC power-supply units are turned OFF. The positive (+) terminal on the SHUT DOWN connector is pulled up to +5 V through 4.7 kΩ. The SHUT DOWN signal is latched. To release the signal, send a *RST message.

Example of a circuit

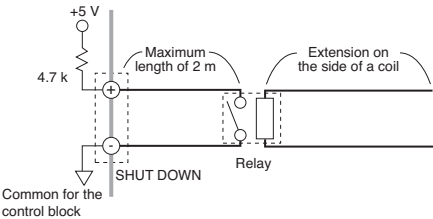


Fig. 2-3 Example of a shutdown circuit

Connection procedure

Applicable cables

- Single wire: $\phi 0.65$ (AWG 22)
- Twisted wire: 0.32 mm^2 (AWG 22), with an element wire diameter of $\phi 0.18$ or greater

1. Turn OFF the POWER switch of the PIA4830.
2. Using a wire stripper, remove 10 mm of insulation from the cable end.
3. As shown in Fig. 2-4, while pressing Point A with a slotted screwdriver, insert the cable.
4. Remove the screwdriver from Point A, and make sure the cable is securely fixed.

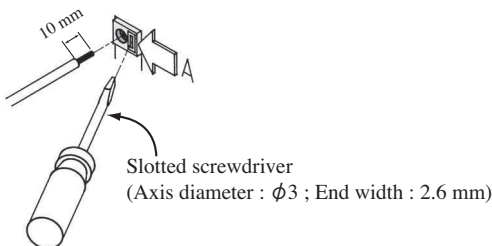


Fig. 2-4 Connection to the SHUT DOWN connector

2.2 Connection to the DC power-supply

■ DC Power-Supply Unit with an Digital Remote-Control Function

To connect the PIA4830 to a DC power-supply, refer to the "PIA4800 Utilities" CD-ROM as an attached accessory and open the "Connecting & Programming Guide" [index.html].

■ DC Power-Supply Unit with an Analog Remote-Control Function

To control the Kikusui DC power-supply unit with an analog remote-control function through the use of the PIA4830, you must have the expansion unit PIA4820 and control board OP01-PIA or OP02-PIA. For details, see the Operation Manual for the PIA4820 and the "Connecting & Programming Guide."

2.3 Setup of Interface

The product has equipped with an interface of both the GPIB and the RS-232C.

GPIB interface

■ GPIB card (recommended)

Use the GPIB which applies to the VISA library.

National Instruments, Agilent Technologies, Contec Co., LTD. or Interface Corp.

■ VISA Library

Do not install the plural number of VISA library to the PC. It may cause possible malfunction.

NI-VISA Ver.2.5 or later

Agilent I/O Library K.01.00 or later

KI-VISA2.2.3 or later.

(The latest version can be downloaded from Web site (<http://www.kikusui.co.jp/en/download/>)).

■ Connection

A standard IEEE488 cable is used to connect your PC to the PIA4830. If a GPIB interface is to be used, GPIB address settings must be made on the PIA4830. For the GPIB address setting procedure, see 2.1, "Settings on the Rear Panel."

NOTE

- The PIA4830 does not include an interface cable for connection to your PC. GPIB cables are available from Kikusui. Contact Kikusui distributor/agent.

GPIB cable 1 m (408J-101)

GPIB cable 2 m (108J-102)

GPIB cable 4 m (408J-104)

RS-232C interface

■ Serial communication port

COM1, COM2 or COM3

■ Protocol

Baud rate

For baud rate settings, see 2.1, “Settings on the Rear Panel.”

Data bit/stop bit/parity bit

The number of bits used is fixed as shown below. Make settings for these bits. For bit settings, see the operation manual for your PC.

- Data bit: 8 bits
- Stop bit: 1 bit
- Parity bit: None

Control communication via RS-232C using flow control or acknowledgement messages. One-way transmission may make proper communication difficult.

■ Connection

An RS-232C cross cable is used to connect your PC to the PIA4830. Use a D-sub 9-pin female-female AT type.

■ RS-232C pin layout

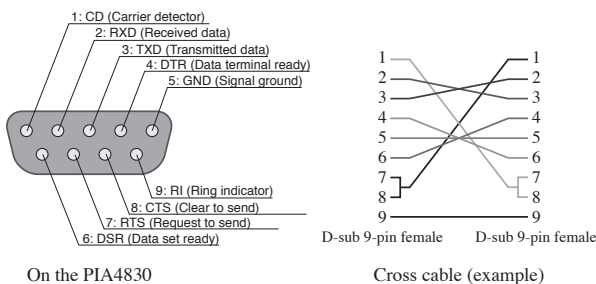


Fig. 2-7 Pin-9 AT-type connector

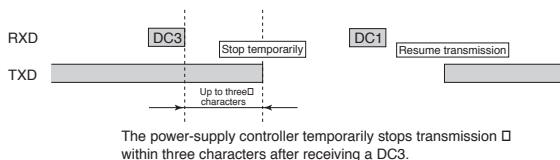
RS-232C flow control

By executing Xon/Xoff, communication between power-supply controller and device can be controlled. For control, DC (device control) codes are used.

	Function	ASCII code
DC1	Request transmission	11 h
DC3	Request termination of transmission	13 h

Table 2-2 Flow control

Control of transmission from the RS-232C terminal to the power-supply controller



Control of transmission from the power-supply controller to the RS-232C terminal

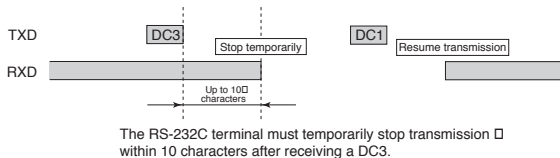


Fig. 2-8 Control of transmission

2.4 Program Message

For the command details, refer to the "Connecting & Programming Guide" in the CD-ROM as an attached accessory.

Chapter 3 Components and Functions

This chapter explains the switches, indicators, and connectors on the front and rear panels.

3.1 Front Panel

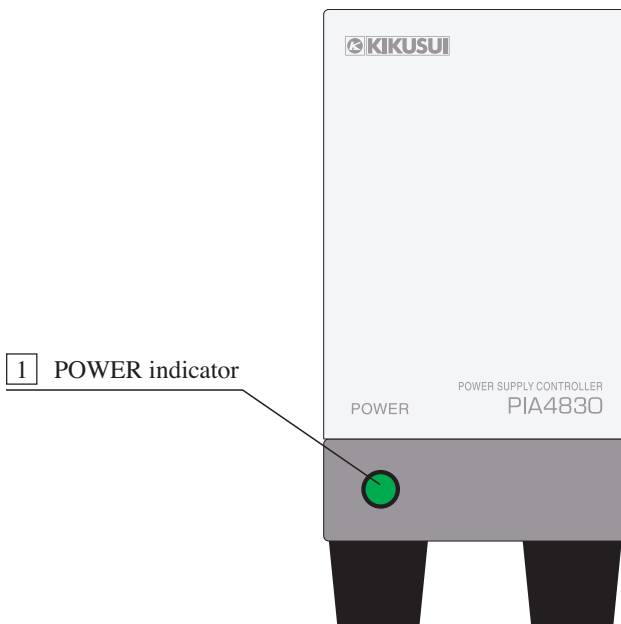


Fig. 3-1 Front panel

1 POWER indicator

Lights up when the POWER switch on the rear panel is ON.

3.2 Rear Panel

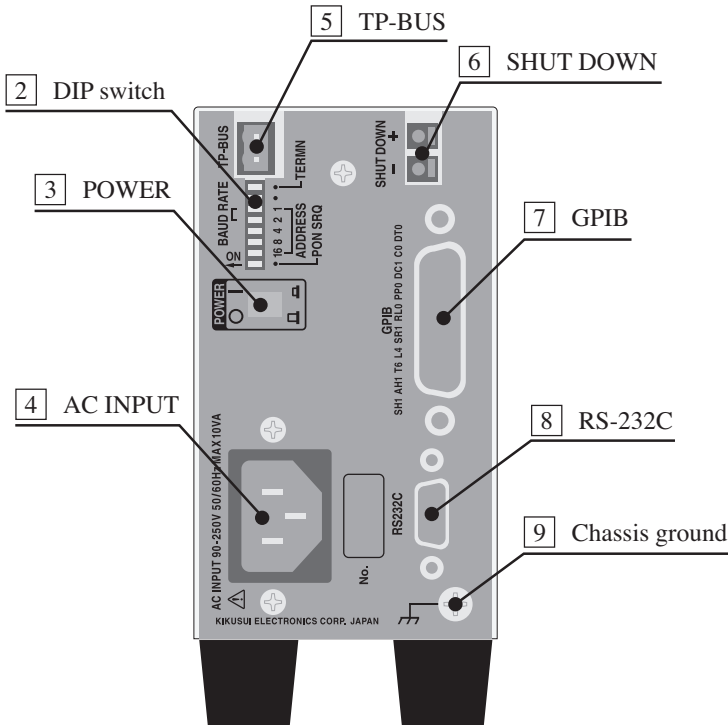


Fig. 3-2 Rear panel

2 DIP switch

The DIP switch is used to make the following settings:

- Device address during GPIB control
- ON/OFF of PON SRQ (Power ON Service Request) during GPIB control
- Baud rate during RS-232C control
- ON/OFF of TERMN (Termination)

3 POWER

Turn the power of the PIA4830 on and off. The power is ON (I) when the switch is in the pressed position, and OFF (O) when the switch is in the raised position.

4 AC INPUT ⚠

Connector for the AC power cord used to supply power to the PIA4830.



WARNING • Improper handling can cause electric shocks.

- To ensure safety, be sure to ground the connector.
-

5 TP-BUS

This is the connector used to connect the PIA4830 using a twisted-pair cable to the Kikusui DC power-supply unit with a digital remote-control function, or to the expansion unit PIA4820.

6 SHUT DOWN

Turns OFF the output of a connected power supply when the contact signal is input.

7 GPIB

A connector used to connect a GPIB cable.

8 RS-232C

A connector used to connect a RS-232C cable.

9 Chassis ground

Connected to the chassis of the PIA4830.



This chapter explains the maintenance and inspection of the PIA4830. To maintain high performance for an extended period, perform maintenance and inspect the PIA4830 regularly.

4.1 Cleaning

If the panel surface is stained, lightly wipe the stain using a cloth moistened with a water-diluted neutral detergent.

⚠ WARNING • Before cleaning, be sure to turn OFF the POWER switch and to unplug the power cord or turn OFF the switchboard.

⚠ CAUTION • Do not use volatile substances such as thinner or benzene for cleaning, as they may cause discoloration or erase printed characters.

4.2 Inspection

■ Power cord

Check the power cord for tearing of the insulation and loosening or cracking of the plug.

⚠ WARNING • Tearing of the insulation or other faults may cause electric shock. In such a case, discontinue use immediately.

To obtain accessories, contact Kikusui distributor/agent.

This chapter provides the specifications for the PIA4830.

Specifications

Item		Description
TP-BUS	Connection	Using the accompanying TP-BUS connector, connect the following: DC power-supply unit with a digital remote-control function: Up to 32 units (31 units: PMR series and PAM series) Expansion unit PIA4820: Up to three units (Total cable length: Up to 200 m; Number of twists: 1 or more/cm)
	Polarity	None
	Applicable cable	Twisted wire: 0.32 mm ² (AWG22)
SHUT DOWN	Input signal	The output of all connected DC power-supply units is turned off when a contact signal is input for at least 1 second.
	+ terminal	Pulled up to +5 V with 4.7 k Ω
	- terminal	Common for the control block
	Applicable cable	Single wire: \varnothing 0.65 (AWG22) Twisted wire: 0.32 mm ² (AWG22) Element wire diameter of at least \varnothing 0.18
Input	Voltage range	85 VAC to 250 VAC
	Frequency	48 Hz to 62 Hz
	Power consumption	Up to 17 VA
Installation location		Indoors and altitude of up to 2000 m
Operating ambient temperature and humidity		0°C 40°C (+32°F to +104°F), 10% to 90% (No dew condensation)
Storage ambient temperature and humidity		-20°C to 70°C (-4°F to +158°F), 10% to 90% (No dew condensation)
Insulation resistance	Input - chassis	30 M Ω or more at 500 VDC
	TP-BUS - chassis	30 M Ω or more at 1000 VDC
Withstand voltage	Input - chassis	1500 VAC, 1 minute
	Input - TP-BUS	1500 VAC, 1 minute
	TP-BUS - chassis	600 VAC, 1 minute

Item	Description
Electromagnetic compatibility (EMC) ^{*1, *2}	Conforms to the requirements of the following directive and standard. EMC Directive 2014/30/EU EN 61326-1 (Class A ^{*3}) EN 55011 (Class A ^{*3} , Group 1 ^{*4}) EN 61000-3-2 EN 61000-3-3
Safety ^{*1}	Conforms to the requirements of the following directive and standard. Low Voltage Directive 2014/35/EU ^{*2} EN 61010-1 (Class I ^{*5} , Pollution degree 2 ^{*6})
Weight	Approximately 2 kg (4.41 lbs)
Dimensions	See Fig. 5-1.
Accessory	AC power cord: 1 PIA 4830 Utilities CD: 1 TP-BUS connector: 1 TP-BUS core: 1 Operation Manual for the PIA4830: 1

*1. Does not apply to specially ordered or modified PIA4830.

*2. Limited to products that have the CE mark on their panels.

*3. This is a Class A equipment. This product is intended for use in an industrial environment. This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

*4. This is a Group 1 equipment. This product does not generate and/or use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose.

*5. This is a Class I equipment. Be sure to ground the this product's protective conductor terminal. The safety of this product is only guaranteed when the product is properly grounded.

*6. Pollution is addition of foreign matter (solid, liquid or gaseous) that may produce a reduction of dielectric strength or surface resistivity. Pollution Degree 2 assumes that only non-conductive pollution will occur except for an occasional temporary conductivity caused by condensation.

GPIB Interface

Code	Function
SH1	All source handshake functions
AH1	All acceptor handshake functions
T6	Talker function (basic outputs, serial poll, and talker cancellation through specification of a listener)
L4	Listener function (basic inputs, listener cancellation through specification of a talker)
SR1	All service request functions
RL0	No remote local function
PP0	No parallel poll function
DC1	All service request functions
C0	No controller function
DT0	No device trigger function

RS-232C Interface

Item	Description
Baud rate	One of 19200 bps, 9600 bps, 4800 bps, and 2400 bps can be selected using the DIP switch on the rear panel.
Data bit	8 bits (fixed)
Stop bit	1 bit (fixed)
Parity bit	None
Transmission/reception	Flow control or acknowledgement message
Cable	D-sub 9-pin, female-female AT type

External Dimensions

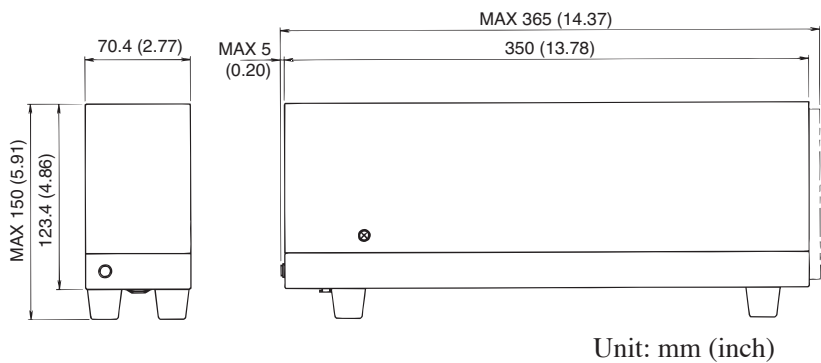


Fig. 5-1 External dimensions

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环境保护使用期限
Environment-friendly Use Period

该标记为适用于在中华人民共和国销售的电子信息产品的环境保护使用期限。

只要遵守有关该产品的安全及使用注意事项，从制造年月起计算，在该年度内，就不会对环境污染、人身、财产产生重大的影响。

产品的废弃请遵守有关规定。

产品的制造年月可以在以下网址中确认。

<http://www.kikusui.co.jp/pi/>

有毒有害物质或元素名称及含有标示
Name of hazardous materials and symbol of element
in the equipment and quantity

部件名称	有毒有害物质或元素					
	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr(VI)	多溴联苯 PBB	多溴二苯醚 PBDE
印刷电路板组装品	×	×	×	×	×	×
内部接线	×	○	×	×	○	○
外壳	×	○	×	×	○	○
底盘组装品（含变压器）	×	○	×	×	○	○
辅助设备	×	○	×	×	○	○

本表格依据SJ/T 11364 的规定编制。

- ：该部件所有均质材料的有毒有害物质的含量不超过GB/T 26572标准所规定的极限值要求。
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- ×：该部件至少有一种均质材料的有毒有害物质的含量超过GB/T 26572标准所规定的极限值要求。

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