Power Supply Controller
PIA4800 Series

Capable of controlling various power supplies and electronic loads.
Supports multiple channels via a highly extensible slot-in system.
Equipped with a high-speed serial communication function.
The PIA4810 is a power supply controller capable of analog and digital control. It is equipped with the GPIB and RS-232C interfaces and 4 slots, which allow 4 each of PIA4800 Series-specific control boards to be installed. A control board is capable of analog control of 2 channels of DC power supplies or electronic loads; a total of 8 channels can be controlled.

Moreover, DC power supplies with a digital remote-control function, such as the Kikusui PMR Series, can be directly connected to the PIA4810 via a TP-BUS (twisted pair bus), enabling a maximum of 31 channels to be controlled digitally. PIA4820 is an expansion unit that can be connected to the PIA4810 or PIA4830 via a TP-BUS to provide additional control channels. In the same way as the PIA4810, it allows a maximum of 4 control boards to be installed.

Then it is possible to use up to 3 units of PIA4820 as an expansion that can be connected to the PIA4810 via the TP-BUS, the system is capable of controlling a maximum of 32 channels. Moreover, the combined use of the GPIB and TP-BUS allows the system to control a maximum of 448 channels.

PIA4830 is a power supply controller only for digital control. It is capable of digitally controlling a maximum of 31 channels of Kikusui PMR Series DC power supplies via the TP-BUS. OP01-PIA and OP02-PIA are control boards designed exclusively for the PIA4810 and PIA4820. A single control board is capable of analog control of 2 channels of DC power supplies or electronic loads. The OP01-PIA is a full-control board with voltage and current setting and read-back functions, while the OP02-PIA has only the voltage and current setting feature.
Power Supply Controller, Multiple Channels.

Control board slots 1 to 4
Used to insert control boards OP01-PIA and OP02-PIA. Up to four boards to be installed (use of the two types together is possible).

* The photo shows the controller with no blank panels installed.

TP-BUS
Extensible, flexible construction using the slot-in system (at the rear)

A single board can handle two channels.

Easy connection!

Line of the PIA4800 Series

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Name</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIA4810</td>
<td>Power supply controller</td>
<td>Allows both analog and digital control</td>
</tr>
<tr>
<td>PIA4820</td>
<td>Expansion unit</td>
<td>Up to 3 units of PIA4820 can be connected to each PIA4810, PIA4830 or PIA4850.</td>
</tr>
<tr>
<td>PIA4830</td>
<td>Power supply controller</td>
<td>For Digital control only</td>
</tr>
<tr>
<td>OP01-PIA</td>
<td>Control board</td>
<td>Full control</td>
</tr>
<tr>
<td>OP02-PIA</td>
<td>Control board</td>
<td>Allows only Voltage and Current setting.</td>
</tr>
</tbody>
</table>

The easy-to-connect TP-BUS is used for expansion. The total extension length of the TP-BUS is 200 m.
Excellent expandability and flexibility allows you to configure various power supply systems on both small and large scales.

**System Configuration**

**Example of connection 1**
Power supply control system for 2 to 8 channels using one PIA4810

**Example of connection 2**
Power supply control system for 32 channels per one GPIB address using one PIA4810 and three PIA4820s

**Example of connection 3**
Power supply control system in which a power supply is directly connected to the system between two PIA4820s (combination with power supply and power supply controllers)

**Example of connection 4**
Power supply control system using one PIA4830 (controls up to 31 channels)

**Supplementary Note**

1. When the power supply control system in “Example connection 2” is provided as a basic configuration, the additional use of GPIB addresses allows it to control a maximum of 448 channels. (32 channels x 14 addresses = 448 channels)

2. The only models that can be directly connected for control to a power supply controller via a TP-BUS, as in “Example connection 3” or “4”, are DC power supplies with a digital remote-control function.

3. When the power supply control system in “Example connection 4” is provided as a basis, the additional use of GPIB addresses allows it to control a maximum of 434 channels. (31 channels x 14 addresses = 434 channels) It is also possible to construct a system with the same connections using the PIA4810.

4. It is limited to use a TP-BUS for connecting up to 3 units of PIA4820. In case, if you wish to connect more than three PAI4820s, please consult with KIKUSUI.

5. The total extension length of the TP-BUS for connection is up to 200 m.

6. For advice on other connections, please consult with KIKUSUI.
## Description of Control

### OP01-PIA

<table>
<thead>
<tr>
<th>Applied Series</th>
<th>PAK-A*1</th>
<th>PAD-L</th>
<th>PAD-LA</th>
<th>PAN/PAN-A*7</th>
<th>PMC-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Type</td>
<td>PAK-1</td>
<td>PAK-2</td>
<td>PAD-1</td>
<td>PAD-2</td>
<td>PAD-3</td>
</tr>
<tr>
<td>Connection Method</td>
<td>Flat cable accompanying OP01-PIA or optional flat cable SC01-10/20</td>
<td>provided by the user Connector accompanying OP01-PIA</td>
<td>Flat cable accompanying OP01-PIA or optional flat cable SC01-10/20</td>
<td>provided by the user Connector accompanying OP01-PIA</td>
<td>Shielded cable SC05-PIA* (*9)</td>
</tr>
<tr>
<td>Peripheral options</td>
<td>SH</td>
<td>T01+SH</td>
<td>T01</td>
<td>T02+SH</td>
<td>T02</td>
</tr>
<tr>
<td>Output Voltage setting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output Current setting</td>
<td>✔</td>
<td>✔</td>
<td>▲*4</td>
<td>▲*4</td>
<td>✔</td>
</tr>
<tr>
<td>Output Voltage readback</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output Current readback</td>
<td>✔*2</td>
<td>✔*3</td>
<td>✔*2</td>
<td>▲*6</td>
<td>✔*2</td>
</tr>
<tr>
<td>Overvoltage protection setting</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output ON/OFF</td>
<td>✔</td>
<td>✔</td>
<td>▲*4</td>
<td>▲*4</td>
<td>✔</td>
</tr>
<tr>
<td>POWER switch OFF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Remote/Local switching</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power switch OFF monitoring</td>
<td>✔</td>
<td>✔</td>
<td>▲*5</td>
<td>▲*5</td>
<td>✔</td>
</tr>
<tr>
<td>C.V mode monitoring</td>
<td>✔</td>
<td>✔</td>
<td>▲*5</td>
<td>▲*5</td>
<td>▲*5</td>
</tr>
<tr>
<td>C.C mode monitoring</td>
<td>✔</td>
<td>✔</td>
<td>▲*5</td>
<td>▲*5</td>
<td>▲*5</td>
</tr>
<tr>
<td>Output ON/OFF monitoring</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overvoltage protection startup monitoring</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overheat monitoring</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm monitoring</td>
<td>✔*5</td>
<td>✔*5</td>
<td>✔*5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* ✔: controllable
  * No mark: not controllable
  * ▲: controllable under certain conditions

*1: OP02-PIA cannot be used for PAK-A Series
*2: Linearity 0.3% of FS
*3: Linearity 1.5% of FS
*4: Select between “Output current Settings” and “Output ON/OFF” (the Output ON/OFF function facilitates setting of the CC reference, to 0).
*5: A DIN connector is required (Some types are not supported). (Available as factory option)
*6: In regards to Model PAD16-100LA, PAD36-60LA, please ask our sales for details.
*7: OP01-PIA cannot control models with a rated output voltage exceeding 500 V.
*8: Using the electronic loads, read the output as a load value.
*9: In regard to the previous models (14-pin connector), please use SC03-PIA. In this case, Only 2 items, “Output voltage setting” and “Output current setting,” can be controlled. (However, “Output current readback” is also possible when using peripheral option SH.)
*10: Linearity 5% of FS

### OP02-PIA

<table>
<thead>
<tr>
<th>Applied Series</th>
<th>PAD-L</th>
<th>PAN/PAN-A</th>
<th>PMC-A</th>
<th>PLZ-W2*8</th>
<th>PAD-LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Type</td>
<td>PAD-4</td>
<td>PAN-4</td>
<td>PMC-3</td>
<td>PLZ-W</td>
<td>PAD-LA-2</td>
</tr>
<tr>
<td>Connection Method</td>
<td>Twisted wire (provided by the user)</td>
<td>Option SC04-PIA</td>
<td>Twisted wire (provided by the user)</td>
<td>2 wires flat cable</td>
<td></td>
</tr>
<tr>
<td>Output voltage setting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output current setting</td>
<td>✔</td>
<td>✔</td>
<td>▲*4</td>
<td>▲*4</td>
<td>✔</td>
</tr>
<tr>
<td>Output ON/OFF</td>
<td>✔</td>
<td>✔</td>
<td>▲*4</td>
<td>▲*4</td>
<td>✔</td>
</tr>
</tbody>
</table>

✔: controllable

### For Digital Control via TP-BUS Connection

<table>
<thead>
<tr>
<th>Applied Series</th>
<th>PAS/PWR</th>
<th>PAM</th>
<th>PMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage setting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output current setting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Queries the output voltage value</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Queries the output current value</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output voltage readback</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output current readback</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Designation / Queries of output channel number</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Designation of output channel number to be displayed</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Overvoltage protection startup monitoring</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Queries the overvoltage protection startup monitoring</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Overcurrent protection startup monitoring</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Queries the overcurrent protection startup monitoring</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output ON/OFF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Queries the output ON/OFF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Power switch OFF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Panel Lock ON/OFF</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

* ✔: controllable
  * No mark: not controllable
  * ▲: controllable under certain conditions

*1: OP02-PIA cannot be used for PAK-A Series
*2: Linearity 0.3% of FS
*3: Linearity 1.5% of FS
*4: Select between “Output current Settings” and “Output ON/OFF” (the Output ON/OFF function facilitates setting of the CC reference, to 0).
*5: A DIN connector is required (Some types are not supported). (Available as factory option)
*6: In regards to Model PAD16-100LA, PAD36-60LA, please ask our sales for details.
*7: OP01-PIA cannot control models with a rated output voltage exceeding 500 V.
*8: Using the electronic loads, read the output as a load value.
*9: In regard to the previous models (14-pin connector), please use SC03-PIA. In this case, Only 2 items, “Output voltage setting” and “Output current setting,” can be controlled. (However, “Output current readback” is also possible when using peripheral option SH.)
*10: Linearity 5% of FS
**Connection Diagram [For OP01-PIA]**

**PAK-A Series [PAK-1]**

[Diagram of PAK-A Series [PAK-1] connection]

**PAK-A Series [PAK-2]**

[Diagram of PAK-A Series [PAK-2] connection]

**PAD-L Series [PAD-1]**

[Diagram of PAD-L Series [PAD-1] connection]

**Description of Control**

- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output Current readback*  
- Overvoltage protection setting
- Output ON/OFF
- POWER switch OFF
- Remote/Local switching
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring
- Output ON/OFF monitoring
- Overvoltage protection startup monitoring
- Overheat monitoring
  * Conditionally controllable (see details in the table on page 5.)

**Note:** The PAK-A series requires the IF01-PAK-A (factory-installed option).

**Note:** The PAK-A series requires the IF01-PAK-A (factory-installed option).

**Note:** The TU01-PIA is installed in the rear panel.
### Description of Control

- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output ON/OFF
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring

* Conditionally controllable (for details, see the table on page 5.)

### Description of Control

- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output ON/OFF
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring

* Conditionally controllable (for details, see the table on page 5.)

### Description of Control

- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output ON/OFF
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring

*1: For Model PAD16-100LA/PAD36-60LA/PAD36-100LA/PAD60-60LA, please ask our Sales for details.

*2: It is required for the modification of attaching DIN connector to the Power Supply unit.

### Description of Control

- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output ON/OFF
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring

* Conditionally controllable (for details, see the table on page 5.)

Note: In case of using PIA3200 controller, it is required for the modification of replacing ROM.

Note: The TU01-PIA is installed in the rear panel.

Note: To connect the power supply side of the user-supplied cable, fasten it with screws using crimp terminals.

Note: The TU02-PIA is installed in the rear panel.

Note: In case of using PIA3200 controller, it is required for the modification of replacing ROM.

Note: The TU02-PIA is installed in the rear panel.
**PAN-A Series [PAN-2]**

- OP01-PIA
- OP01-PIA accessory flat cable
- TU02-PIA
- SLOT IN
- GPIB or RS232C
- PAN-A Series
- OUTPUT

**Description of Control**
- Output Voltage setting
- Output Current setting
- Output Voltage readback
- Output ON/OFF
- C.V mode monitoring
- C.C mode monitoring
- Alarm monitoring
  * Conditionally controllable (for details, see the table on page 5.)

**Note:** The TU01-PIA is installed in the rear panel.

**PAN-A Series [PAN-3]**

- OP01-PIA
- User-supplied cable
- OP01-PIA accessory connector
- SLOT IN
- GPIB or RS232C
- PAN-A Series
- OUTPUT

**Description of Control**
- Output Voltage setting
- Output Current setting

**Note:** To connect the power supply side of the user-supplied cable, remove the covering from the wires and insert them into the terminals.

**PMC-A Series [PMC-1]**

- OP01-PIA
- OP01-PIA accessory flat cable
- SC05-PIA shielded type cable (optional)
- SLOT IN
- GPIB or RS232C
- PIA4810
- PMC-A Series
- SH
- OUTPUT

**Description of Control**
- Output Voltage setting
- Output Current setting
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring
- Output ON/OFF monitoring
- Alarm monitoring
- Output Voltage readback
- Output Current readback
  * Conditionally controllable (for details, see the table on page 5.)

**PMC-A Series [PMC-2]**

- OP01-PIA
- SC05-PIA shielded type cable (optional)
- SLOT IN
- GPIB or RS232C
- PIA4810
- PMC-A Series
- OUTPUT

**Description of Control**
- Output Voltage setting
- Output Current setting
- Power switch OFF monitoring
- C.V mode monitoring
- C.C mode monitoring
- Output ON/OFF monitoring
- Alarm monitoring
- Output Voltage readback
- Output Current readback
Description of Control

- Output Voltage setting
- Output Current setting
- Output ON/OFF

Note: In case of using PIA3200 controller, it is required for the modification of replacing ROM.

Connection Diagram [For OP02-PIA]

### PAD-LA Series [PAD-LA-2]

- **OP02-PIA**
- **PIA4810**
- **PAD-LA Series**
- **2 wires shielded cable**
- **GPIB or RS232C**

### PMC-A Series [PMC-3]

- **OP02-PIA**
- **PIA4810**
- **PMC-A Series**
- **SC04-PIA shielded type cable (optional)**
- **GPIB or RS232C**

### PAD-L Series [PAD-4], PAN-A Series [PAN-4], PLZ-W2

- **OP02-PIA**
- **PIA4810**
- **PAD-L Series**
- **PAN-A Series**
- **PLZ-W2**
- **User-supplied cable**
- **GPIB or RS232C**

Description of Control

- Output Voltage setting
- Output Current setting*
- Output ON/OFF*

* Conditionally controllable (for details, see the table on page 5.)
Easy to control DC power supplies or electronic loads by using Microsoft Excel.

**Application Examples**

Knowledge of Microsoft Excel Visual Basic is required.

**PIA4800 IVI-COM Driver**

Installing PIA4800 IVI-COM Driver contained in the PIA4800 Utilities CD supplied with the PIA4800 Series (PIA4810 or PIA4830) under Windows allows a driver that can run when Microsoft Excel is installed. Microsoft Excel contains Excel Visual Basic for the macro feature. The driver uses this feature to control the power supplies or electronic loads. Moreover, pasting data loaded from a power supply into Microsoft Excel allows you to draw graphs of that data on the spot using the extensive graphing features of Excel.

**For Controlling Power Supplies or Electronic Loads**

If you write a simple program using Excel Visual Basic, simply entering voltage and current values and setting time in cells that allows you to control voltage and current as shown in the graph below. The table and graph below show the results obtained when two power supplies were simultaneously tested using two loads.

**Graphing Readout Data on the Spot**

Using the readout function of the OP01-PIA and pasting data written in Excel Visual Basic into cells in Microsoft Excel allows that data to be graphed on the spot using the extensive graphing features of Excel. The table and graph below show the results obtained when two power supplies were simultaneously tested using two loads.

**System Requirements of PIA4800 IVI-COM Driver**

- **For users using GPIB**
  - PC with Windows 98, Me, 2000 or XP
  - GPIB board that operates with VISA Library
  - GPIB cable
  - Microsoft Visual Basic 5.0 or later, or Microsoft Office 2000 or later

- **For users using RS-232C**
  - PC with Windows 98, Me, 2000 or XP
  - VISA Library
  - One or more free RS-232C ports
  - RS-232C cross-cable
  - Microsoft Visual Basic 5.0 or later, or Microsoft Office 2000 or later

**Notes**

- Microsoft Windows, Microsoft Excel 97, and Microsoft Visual Basic are registered trademarks of Microsoft Corporation in USA.
- When using the RS-232C interface, set the communications setting (baud rate) of the PIA4830 to 19,200 bps.
## Specifications (Main Unit)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU-BUS Connection</td>
<td>Using the accompanying TP-BUS connector, connect the following:</td>
</tr>
<tr>
<td></td>
<td>DC power supply unit with digital remote-control function: Up to 31 units (PAM,PMR) / Up to 32 units (PAS,PWR)</td>
</tr>
<tr>
<td></td>
<td>Expansion unit PIA4820: Up to three units</td>
</tr>
<tr>
<td></td>
<td>(Total cable length: Up to 200 m; Number of twists: 1 or more/cm)</td>
</tr>
<tr>
<td>Polarity</td>
<td>None</td>
</tr>
<tr>
<td>Applicable cable</td>
<td>Twisted wire: 0.32 mm² (AWG22)</td>
</tr>
<tr>
<td>SHUT Input signal</td>
<td>The output of all connected DC power-supply units is turned off when a contact signal is input for at least 1 second.</td>
</tr>
<tr>
<td>+ terminal</td>
<td>Pull up to +5 V with 4.7 kΩ</td>
</tr>
<tr>
<td>- terminal</td>
<td>Common for control block</td>
</tr>
<tr>
<td>Applicable cable</td>
<td>Single wire: φ0.65 (AWG22)</td>
</tr>
<tr>
<td></td>
<td>Twisted wire: 0.32 mm² (AWG22)</td>
</tr>
<tr>
<td></td>
<td>Element wire diameter: of at least φ0.18</td>
</tr>
<tr>
<td>Input Line voltage range</td>
<td>The following ranges can be selected using the voltage switch on the bottom of the unit.</td>
</tr>
<tr>
<td></td>
<td>90 VAC to 110 VAC / 106 VAC to 125 VAC / 180 VAC to 220 VAC / 211 VAC to 250 VAC</td>
</tr>
<tr>
<td>Frequency</td>
<td>48Hz to 62Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Up to 50VA</td>
</tr>
<tr>
<td>Operating ambient temperature and humidity</td>
<td>0°C to 40°C, 10% to 90% (No dew condensation)</td>
</tr>
<tr>
<td>Storage ambient temperature and humidity</td>
<td>-20°C to 70°C, 10% to 90% (No dew condensation)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>Input - chassis 500 VDC, 30MΩ or more</td>
</tr>
<tr>
<td></td>
<td>TP-BUS - chassis 1000 VDC, 30MΩ or more</td>
</tr>
<tr>
<td></td>
<td>CH terminals - chassis 500 VDC, 30MΩ or more</td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>Input - chassis 1500 V AC, 1 minute</td>
</tr>
<tr>
<td></td>
<td>Input - TP-BUS 1500 V AC, 1 minute</td>
</tr>
<tr>
<td></td>
<td>TP-BUS - chassis 600 V AC, 1 minute</td>
</tr>
<tr>
<td></td>
<td>CH terminals - chassis 600 V AC, 1 minute</td>
</tr>
<tr>
<td></td>
<td>Input - CH terminals 1500 V AC, 1 minute</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 5 kg</td>
</tr>
<tr>
<td>Dimensions</td>
<td>141.9 W × 123.4 (160) H × 350 (365) Dmm</td>
</tr>
<tr>
<td>Accessories</td>
<td>AC power cable: 1</td>
</tr>
<tr>
<td></td>
<td>PIA4800 Utilities CD: 1</td>
</tr>
<tr>
<td></td>
<td>TP-BUS connector: 1</td>
</tr>
<tr>
<td></td>
<td>TP-BUS core: 1</td>
</tr>
<tr>
<td></td>
<td>Operation Manual for controller: 1</td>
</tr>
<tr>
<td>PIA4810</td>
<td>AC power cable: 1</td>
</tr>
<tr>
<td></td>
<td>PIA4800 Utilities CD: 1</td>
</tr>
<tr>
<td></td>
<td>TP-BUS connector: 1</td>
</tr>
<tr>
<td></td>
<td>TP-BUS core: 1</td>
</tr>
<tr>
<td></td>
<td>Operation Manual for controller: 1</td>
</tr>
<tr>
<td>PIA4820</td>
<td>AC power cable: 1</td>
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<tr>
<td></td>
<td>PIA4800 Utilities CD: 1</td>
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<td></td>
<td>TP-BUS connector: 1</td>
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<tr>
<td></td>
<td>TP-BUS core: 1</td>
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<tr>
<td></td>
<td>Operation Manual for controller: 1</td>
</tr>
<tr>
<td>PIA4830</td>
<td>AC power cable: 1</td>
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<tr>
<td></td>
<td>PIA4800 Utilities CD: 1</td>
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<tr>
<td></td>
<td>TP-BUS connector: 1</td>
</tr>
<tr>
<td></td>
<td>TP-BUS core: 1</td>
</tr>
<tr>
<td></td>
<td>Operation Manual for controller: 1</td>
</tr>
</tbody>
</table>

## Dimensions (mm)

![PIA4810 / PIA4820 Dimensions](image1)

![PIA4830 Dimensions](image2)
Specifications (Control Boards)

<table>
<thead>
<tr>
<th>Item</th>
<th>OP01-PIA</th>
<th>OP02-PIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of channels</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### Setting

<table>
<thead>
<tr>
<th>Voltage setting</th>
<th>Output</th>
<th>Resolution</th>
<th>Linearity*1</th>
<th>Temperature coefficient*2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to +10V</td>
<td>0.025% of FS</td>
<td>0.025% of FS</td>
<td>50ppm/°C of FS</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.025% of FS</td>
<td>0.013% of FS</td>
<td>0.013% of FS</td>
<td>50ppm/°C of FS</td>
</tr>
</tbody>
</table>

### Current setting

| Output (H) | 0 to +10V | 0 to +10V |
| Output (M) | 0 to +1.5V | 0 to +1.5V |
| Output (L) | 0 to +0.4V | 0 to +0.4V |
| Resolution | 0.025% of FS | 0.025% of FS |
| Linearity*1 | 0.025% of FS | 0.025% of FS |
| Temperature coefficient*2 | 100ppm/°C of FS | 100ppm/°C of FS |

### Read-back

<table>
<thead>
<tr>
<th>Voltage read-back</th>
<th>Input</th>
<th>Resolution</th>
<th>Linearity*1</th>
<th>Temperature coefficient*2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 to +10V</td>
<td>0.025% of FS</td>
<td>0.025% of FS</td>
<td>100ppm/°C of FS</td>
</tr>
</tbody>
</table>

### Current read-back

| Input (H) | 0 to +10V |
| Input (L) | 0 to +1V |
| Resolution | 0.025% of FS |
| Linearity*1 | 0.025% of FS |
| Temperature coefficient*2 | 100ppm/°C of FS |

FS is at the rated voltage or current.

*1: After 30 minutes of warm-up under 23 ±5°C and 80% R.H or less environment.

*2: Indicates the standard value.

### Options

- Interface card
  - (Factory option)
  - IF01-PAK-A (PAK-A compatible)
- Shunt units
  - SH10 (output current rating: 2.5 A to 10 A)
  - SH50 (output current rating: 12.5 A to 50 A)
- Terminal units
  - TU01-PIA (PAD-L/LP compatible)
  - TU02-PIA (PAN-A compatible)
- Shielded 26-conductor flat cables
  - (OP01-PIA, PAD-L/LP, PAK-A, and PAN-A compatible)
  - SC01-10 (about 1.0 m)
  - SC01-20 (about 2.0 m)
- 2-core shielded cables
  - SC03-PIA (OP01-PIA and PMC-A compatible, about 1.0 m / for 14-pin)
  - SC04-PIA (OP02-PIA and PMC-A compatible, about 1.0 m)
  - SC05-PIA (OP01-PIA and PMC-A compatible, about 1.0 m / for 26-pin)
- GPIB cables
  - (Available for all models)
  - 408J-101 (about 1.0 m)
  - 408J-102 (about 2.0 m)
  - 408J-104 (about 4.0 m)

### Rack Mount Options

PIA4810/PIA4820

PIA4830

PIA4810/20 Bracket

PIA4810/20 Bracket

PIA4810/20 Bracket

<table>
<thead>
<tr>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack mount frame</td>
</tr>
<tr>
<td>RMF4</td>
</tr>
<tr>
<td>RMF4M</td>
</tr>
</tbody>
</table>

* When mounting the PIA4800 Series in racks, the specified space are required to be provided above and below the instruments. (Specified space: 44.45 mm in EIA standard or 50 mm in JIS standard) For more information, contact your Kikusui distributor.

* Only PIA4810 and PIA4820 can be equipped with RMF4 or RMF4M, PIA4830 can be equipped with KRA or KRA150.