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**ADVANTEST**<sup>®</sup>  
ADVANTEST CORPORATION

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**Q8182**  
***Optical Programmable***  
***Attenuator***  
***Operation Manual***

MANUAL NUMBER FOE-8324197B01

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Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

TABLE OF CONTENTS

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TABLE OF CONTENTS

1. GENERAL INFORMATION .....	1 - 1
1.1 General .....	1 - 1
1.2 Checking the Appearance and Accessories .....	1 - 2
1.3 Operating Environment and Notes .....	1 - 3
1.4 Grounding .....	1 - 4
1.5 Fuse Replacement .....	1 - 5
2. PANEL DESCRIPTION .....	2 - 1
2.1 Front Panel .....	2 - 1
2.2 Rear Panel .....	2 - 3
3. BASIC OPERATIONS .....	3 - 1
3.1 Operation Procedure .....	3 - 1
4. GPIB .....	4 - 1
4.1 Performance .....	4 - 1
4.2 GPIB Connector and Address Switch .....	4 - 3
4.3 Talker Format .....	4 - 4
4.3.1 Header and Unit .....	4 - 4
4.3.2 Data .....	4 - 4
4.3.3 Delimiters .....	4 - 4
4.4 Remote Programming .....	4 - 6
4.4.1 Setting Commands .....	4 - 6
4.4.2 Status Request Commands .....	4 - 6
4.4.3 Other Commands .....	4 - 6
4.5 Service Request (SRQ) .....	4 - 7
4.6 Addressing .....	4 - 8
5. OUTLINE OF OPERATION .....	5 - 1
5.1 Introduction .....	5 - 1
5.2 Optical System .....	5 - 2
5.3 Block Diagram .....	5 - 3
6. BEFORE REQUESTING REPAIR .....	6 - 1
7. PERFORMANCE .....	7 - 1
7.1 Standards .....	7 - 1
7.2 General Specifications .....	7 - 2

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## Safety Summary

To ensure thorough understanding of all functions and to ensure efficient use of this instrument, please read the manual carefully before using. Note that Advantest bears absolutely no responsibility for the result of operations caused due to incorrect or inappropriate use of this instrument.

If the equipment is used in a manner not specified by Advantest, the protection provided by the equipment may be impaired.

- **Warning Labels**

Warning labels are applied to Advantest products in locations where specific dangers exist. Pay careful attention to these labels during handling. Do not remove or tear these labels. If you have any questions regarding warning labels, please ask your nearest Advantest dealer. Our address and phone number are listed at the end of this manual.

Symbols of those warning labels are shown below together with their meaning.

**DANGER:** Indicates an imminently hazardous situation which will result in death or serious personal injury.

**WARNING:** Indicates a potentially hazardous situation which will result in death or serious personal injury.

**CAUTION:** Indicates a potentially hazardous situation which will result in personal injury or a damage to property including the product.

- **Basic Precautions**

Please observe the following precautions to prevent fire, burn, electric shock, and personal injury.

- Use a power cable rated for the voltage in question. Be sure however to use a power cable conforming to safety standards of your nation when using a product overseas.
- When inserting the plug into the electrical outlet, first turn the power switch OFF and then insert the plug as far as it will go.
- When removing the plug from the electrical outlet, first turn the power switch OFF and then pull it out by gripping the plug. Do not pull on the power cable itself. Make sure your hands are dry at this time.
- Before turning on the power, be sure to check that the supply voltage matches the voltage requirements of the instrument.
- Connect the power cable to a power outlet that is connected to a protected ground terminal. Grounding will be defeated if you use an extension cord which does not include a protected ground terminal.
- Be sure to use fuses rated for the voltage in question.
- Do not use this instrument with the case open.
- Do not place anything on the product and do not apply excessive pressure to the product. Also, do not place flower pots or other containers containing liquid such as chemicals near this

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## Safety Summary

product.

- When the product has ventilation outlets, do not stick or drop metal or easily flammable objects into the ventilation outlets.
- When using the product on a cart, fix it with belts to avoid its drop.
- When connecting the product to peripheral equipment, turn the power off.

- **Caution Symbols Used Within this Manual**

Symbols indicating items requiring caution which are used in this manual are shown below together with their meaning.

**DANGER:** Indicates an item where there is a danger of serious personal injury (death or serious injury).

**WARNING:** Indicates an item relating to personal safety or health.

**CAUTION:** Indicates an item relating to possible damage to the product or instrument or relating to a restriction on operation.

- **Safety Marks on the Product**

The following safety marks can be found on Advantest products.



: ATTENTION - Refer to manual.



: Protective ground (earth) terminal.



: DANGER - High voltage.



: CAUTION - Risk of electric shock.

- **Replacing Parts with Limited Life**

The following parts used in the instrument are main parts with limited life.

Replace the parts listed below before their expected lifespan has expired to maintain the performance and function of the instrument.

Note that the estimated lifespan for the parts listed below may be shortened by factors such as the environment where the instrument is stored or used, and how often the instrument is used.

The parts inside are not user-replaceable. For a part replacement, please contact the Advantest sales office for servicing.

Each product may use parts with limited life.

For more information, refer to the section in this document where the parts with limited life are described.

## Main Parts with Limited Life

Part name	Life
Unit power supply	5 years
Fan motor	5 years
Electrolytic capacitor	5 years
LCD display	6 years
LCD backlight	2.5 years
Floppy disk drive	5 years
Memory backup battery	5 years

- **Hard Disk Mounted Products**

The operational warnings are listed below.

- Do not move, shock and vibrate the product while the power is turned on.  
Reading or writing data in the hard disk unit is performed with the memory disk turning at a high speed. It is a very delicate process.
- Store and operate the products under the following environmental conditions.  
An area with no sudden temperature changes.  
An area away from shock or vibrations.  
An area free from moisture, dirt, or dust.  
An area away from magnets or an instrument which generates a magnetic field.
- Make back-ups of important data.  
The data stored in the disk may become damaged if the product is mishandled. The hard disc has a limited life span which depends on the operational conditions. Note that there is no guarantee for any loss of data.

- **Precautions when Disposing of this Instrument**

When disposing of harmful substances, be sure dispose of them properly with abiding by the state-provided law.

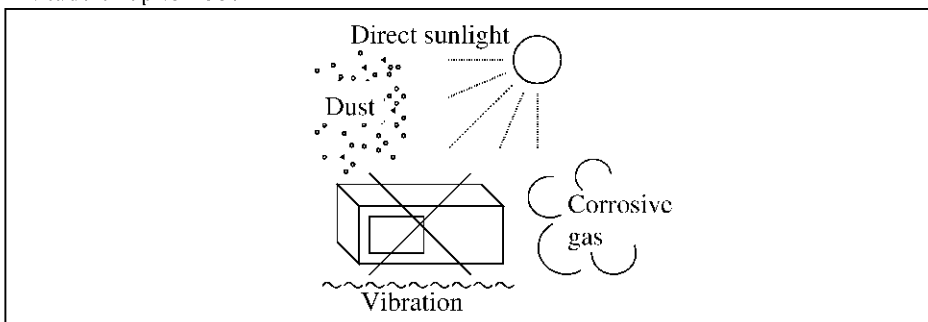
Harmful substances: (1) PCB (polycarbon biphenyl)  
(2) Mercury  
(3) Ni-Cd (nickel cadmium)  
(4) Other  
Items possessing cyan, organic phosphorous and hexadic chromium and items which may leak cadmium or arsenic (excluding lead in solder).

Example: fluorescent tubes, batteries

# Environmental Conditions

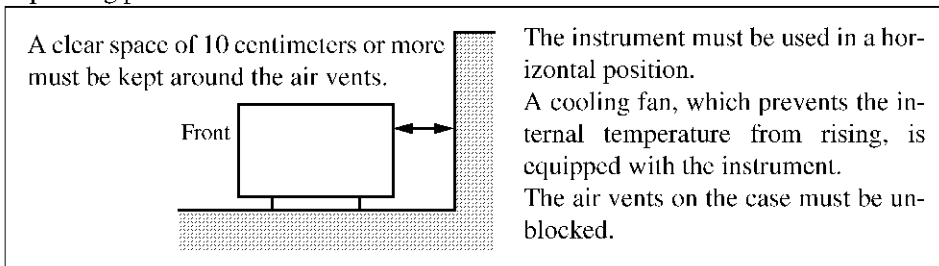
This instrument should only be used in an area which satisfies the following conditions:

- An area free from corrosive gas
- An area away from direct sunlight
- A dust-free area
- An area free from vibrations
- Altitude of up to 2000 m



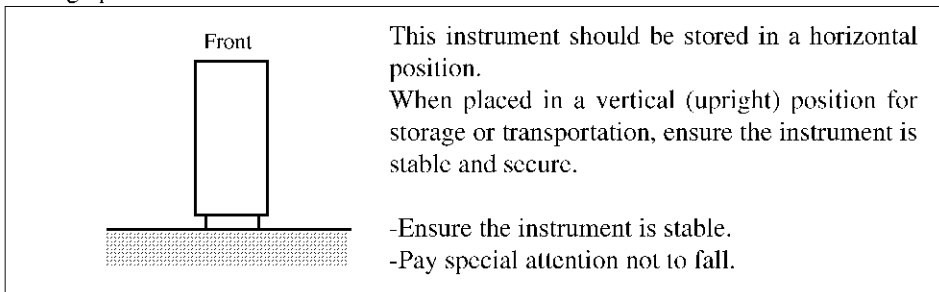
**Figure-1 Environmental Conditions**

- Operating position



**Figure-2 Operating Position**

- Storage position



**Figure-3 Storage Position**

- The classification of the transient over-voltage, which exists typically in the main power supply, and the pollution degree is defined by IEC61010-1 and described below.

Impulse withstand voltage (over-voltage) category II defined by IEC60364-4-443

Pollution Degree 2

## Types of Power Cable

Replace any references to the power cable type, according to the following table, with the appropriate power cable type for your country.

Plug configuration	Standards	Rating, color and length	Model number (Option number)
	PSE: Japan  Electrical Appliance and Material Safety Law	125 V at 7 A Black 2 m (6 ft)	Straight: A01402  Angled: A01412
	UL: United States of America  CSA: Canada	125 V at 7 A Black 2 m (6 ft)	Straight: A01403 (Option 95)  Angled: A01413
	CEE: Europe DEMKO: Denmark NEMKO: Norway VDE: Germany KEMA: The Netherlands CEBEC: Belgium OVE: Austria FIMKO: Finland SEMKO: Sweden	250 V at 6 A Gray 2 m (6 ft)	Straight: A01404 (Option 96)  Angled: A01414
	SEV: Switzerland	250 V at 6 A Gray 2 m (6 ft)	Straight: A01405 (Option 97)  Angled: A01415
	SAA: Australia, New Zealand	250 V at 6 A Gray 2 m (6 ft)	Straight: A01406 (Option 98)  Angled: -----
	BS: United Kingdom	250 V at 6 A Black 2 m (6 ft)	Straight: A01407 (Option 99)  Angled: A01417
	CCC: China	250 V at 10 A Black 2 m (6 ft)	Straight: A114009 (Option 94)  Angled: A114109





Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

LIST OF FIGURES

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LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Page</u>
Figure 1-1	Power Cable Plug and Adapter	1 - 4
Figure 1-2	Replacing the Power Fuse	1 - 5
Figure 2-1	Front Panel	2 - 1
Figure 2-2	Rear Panel	2 - 3
Figure 4-1	GPIB Connector	4 - 2
Figure 4-2	ADDRESS Switch	4 - 8



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

LIST OF TABLES

LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page</u>
Table 1-1	Accessories supplied	1 - 2
Table 4-1	Interface functions	4 - 1
Table 4-2	Address Code List	4 - 9



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

1.1 General

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1. GENERAL INFORMATION

1.1 General

The optical programmable attenuator Q8182 is equipped with a general-purpose interface bus (GPIB) which allows full-remote operation of this attenuator (hereafter called equipment).

This equipment can set attenuation within the range from 0 to 60dB with a resolution of up to 0.01dB and the OFF range (crosstalk > 70dB) which shields the light.

This equipment has easy-to-use up/down keys for attenuation setting which allow the respective digits of attenuation level to be set manually. When pressed continuously, the key can also set the higher digits in succession.

This equipment will handle a single-mode fiber and is accurately calibrated at 1.31 and 1.55 $\mu$ m.

This equipment calibrates attenuation automatically by setting wave length within the range from 1.1 to 1.6 $\mu$ m for every 0.01 $\mu$ m.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

1.2 Checking the Appearance and Accessories

1.2 Checking the Appearance and Accessories

Upon receiving this equipment, check that no damage has occurred in transit. Then check the quantity and specification of each accessory supplied according to Table 1-1 below.

If any damage or omitted accessory is found, contact your local ADVANTEST office or agency.

Table 1-1 Accessories supplied

Name	Specification	Component code	Qty.	Remarks
Power cable	MP-43B	DCB-DD2428X01	1	
Fuse for AC power supply		DFT-AH1A-1 DFT-AHR5A-1	2	AC100V/120V AC120V/240V
Instruction manual		J8182	1	Japanese version
		E8182		English version
Adapter	A09034	JCD-AL003EX03	1	

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

1.3 Operating Environment and Notes

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1.3 Operating Environment and Notes

(1) Ambient Temperature

Use this equipment at an ambient temperature between 0 and +50°C with relative humidity of 85% or less to assure the specified performance.

(2) Installation Site

Since this equipment is a precision measuring instrument, avoid using it in any location where it is exposed to much dust or vibration, direct sunlight, or corrosive gas.

(3) Storage

This equipment at a temperature within the range from -25 to +70°C. When this equipment is not be operated for a long period of time, wrap it in a vinyl sheet and store it in a cardboard box in a location with low humidity protected from direct sunlight.

(4) Precaution Against Dewing

Because the equipment incorporates lenses, avoid dewing on this equipment caused by rapid change in temperature. If the equipment shows any water drops on the surface, dry before use.

(5) Warm-up Time

Before starting operation, be sure to warm up the equipment for one hour or more to ensure its measurement accuracy.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

1.4 Grounding

1.4 Grounding

When using this equipment on AC power, be sure to connect the central pin of the power Q8182 power connector to ground to avoid electric shock.

The attached power cable plug has three pins. The round pin in the center is for grounding. When the cable is plugged into a three-pole outlet the central pin accordingly is connected to ground.

When plugging the power cable into a two-pole outlet, use the attached 3-pin-to-2-pin adapter A09034. In this case, be sure to connect either the ground lead of the adapter or the GND terminal on the rear panel of this equipment to ground (see Figure 1-1).

The attached adapter A09034 conforms to the Electric Appliance Regulations.

As shown in Figure 1-1, the widths A and B of two pins of the A09034 differ, so check orientation when inserting this plug in the receptacle.

If the A09034 is not applicable to your outlets, purchase an KPR-13 adapter.

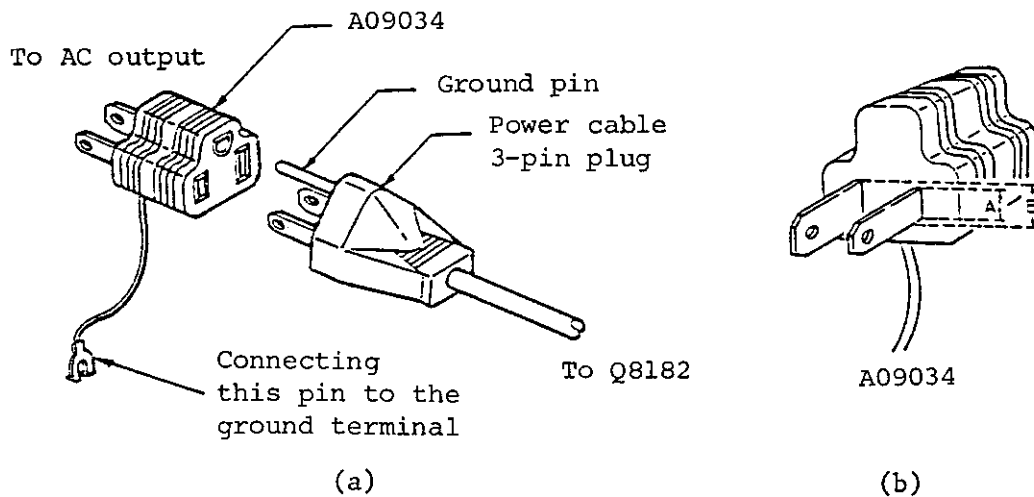


Figure 1-1 Power Cable Plug and Adapter



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

1.5 Fuse Replacement

1.5 Fuse Replacement

If this equipment will not operate with the POWER switch turned on, the most probable cause is that the power fuse has blown. If this is the case, replace the fuse.

Replace the fuse at the right of the power connector with a new fuse as specified below:

AC 90V to 132VAC :	DFT-AH1A-1
AC 198V to 250VAC:	DFT-AHR5A-1

Replacement method

NOTE

Before replacing the fuse, be sure to turn the POWER switch off and remove the power cable from the receptacle.

Before replacing the fuse, first turn the POWER switch off and disconnect the power cable from the power connector.

Then move the plastic lid of the fuse box on the right side of the power connector to the left, and pull the FUSE PULL lever to remove the fuse. See Figure 1-2 below:

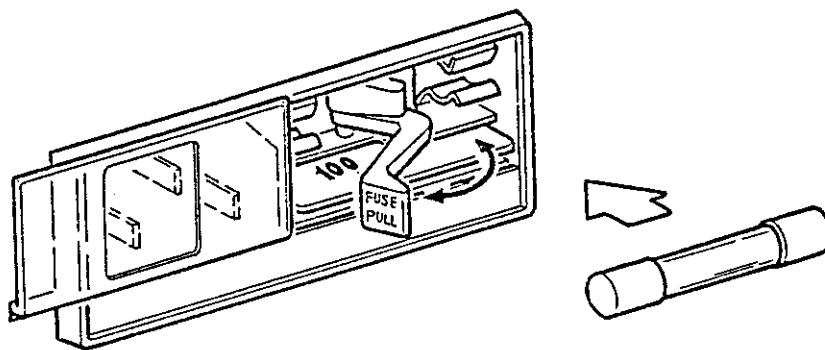


Figure 1-2 Replacing the Power Fuse

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Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

2.1 Front Panel

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2. PANEL DESCRIPTION

See Figure 2-1 for the front panel of this equipment and Figure 2-2 for the rear panel. This section describes the functions of parts on both panels in numerical order.

2.1 Front Panel

① POWER Switch

This switch powers the equipment.

When this switch is pressed, it is set to the ON position and supplies power to all circuits in the equipment. When the switch is once again pressed, it is set to the OFF position to disconnect the power.

② LOCAL Key

When the equipment is under remote control via the GPIB (with the REMOTE indicator on), this key releases the equipment from external control and allows manual settings from the front panel.

When the equipment is turned on, it enters LOCAL status.

③ REMOTE Indicator

The LED lights up to indicate that the equipment is in remote control status on the GPIB interface.

④ ATTENUATION LEVEL Display

This display of four-digit seven-segment LEDs indicates attenuation from 00.00 to 60.00dB. When the OFF range is set, OFF is displayed.

⑤ Attenuation Set Keys

These up/down keys set the respective digits of an attenuation value.

Pressing the key continuously allows the higher digits to be set in succession using the key repeat function.

Each key increments the value of attenuation when pressed on the UP side and decrements it when pressed to the DOWN side.

(Note that the key for the 10dB range does not have this function.)

When the 10dB range key is pressed to the UP side with 60.00dB set on the display, the key can change the setting to OFF.

MEMO 

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

2.1 Front Panel

⑥ WAVE LENGTH Display

This display of four-digit seven-segment LEDs indicates the wave length in nm units.

⑦ Wave Length Setting Key

This up/down key sets the calibration wave length.

This key usually switches the calibration wave length to 1550nm when pressed to the UP side and 1310nm when pressed to the DOWN side. When the VAR indicator lamp is on, this key sets the wave length within the range from 1100 to 1600nm by 10nm.

⑧ VAR Indicator

This lamp lights up to indicate that the equipment is in the VARIABLE mode in which a calibration wave length can be set within the range from 1100 to 1600nm by 10nm.

⑨ VAR Setting Switch

This switch changes the wave length set mode from the normal mode (1310/1550nm switching mode) to the VAR mode and vice versa.

When this switch is pressed with the VAR indicator lamp on, the VAR mode returns to the normal mode.

⑩ Optical INPUT Connector

Normal FC Connector for Optical Input

⑪ Optical OUTPUT Connector

Normal FC connector for optical output

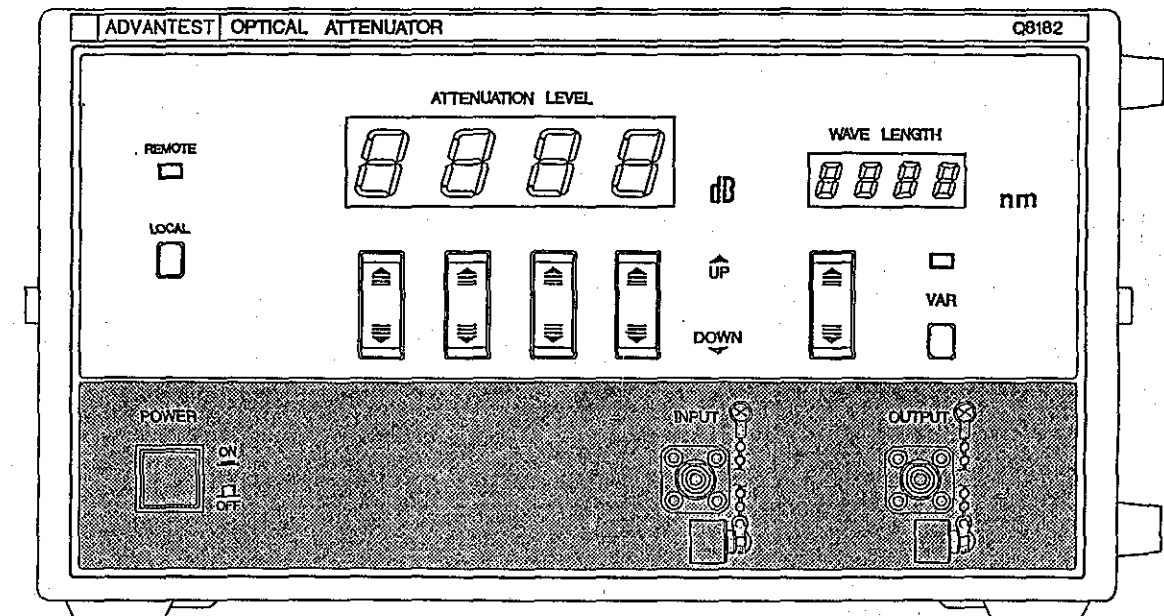


Figure 2-1 Front Panel

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

2.2 Rear Panel

2.2 Rear Panel

⑫ GPIB Connector

24-pin connector for an IEEE-488 bus (see Section 4.2.)

⑬ ADDRESS Switch

This DIP switch allows the equipment to be addressed using the GPIB program. (See Section 4.2.)

⑭ GND Terminal

This terminal grounds the chassis of the equipment.

When plugging the power cable into an outlet using a 2-pin adapter, be sure to connect either the ground lead of the adapter or this GND terminal to ground.

⑮ AC Power Connector

This connector provides AC power to the equipment.

⑯ Power Fuse

A 1.0A (or 0.5A) slow blow fuse is used for this equipment.

⑰ AC Supply Voltage Setting Card

Set this card to the working voltage according to the table printed below the AC power connector.

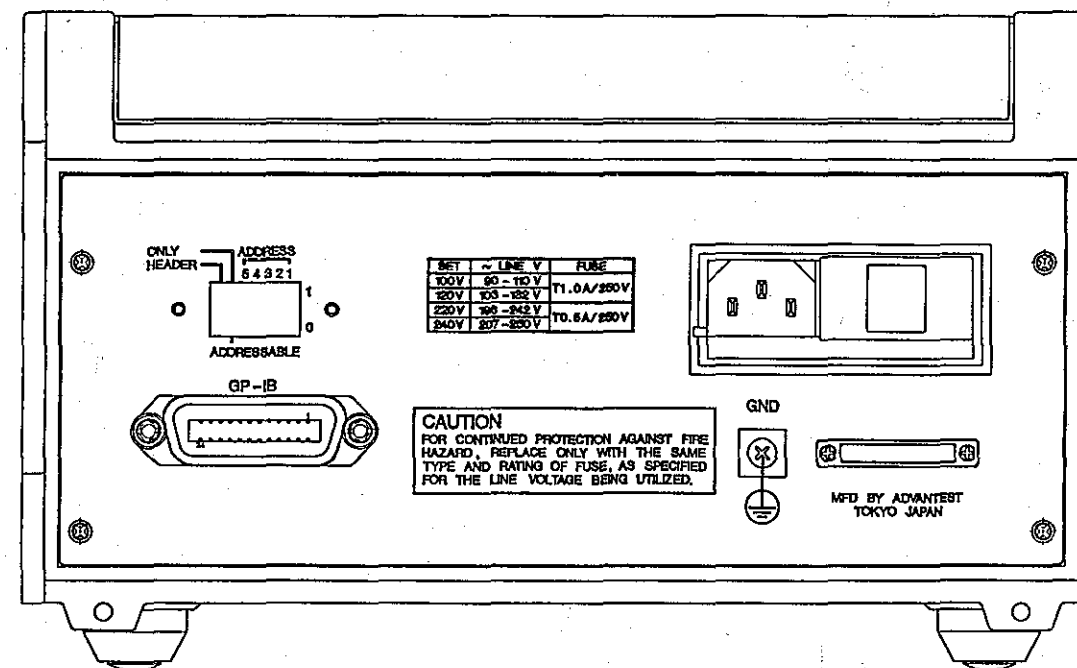


Figure 2-2 Rear Panel

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

3.1 Operation Procedure

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3. BASIC OPERATIONS

3.1 Operation Procedure

- ① Connect an Optical Fiber to the I/O Connector.
- ② Plug the Power Cable to the Receptacle and Turn the POWER Switch on.

When this equipment is powered up, it enters the local mode and the setting which has been stored by the back-up function at power-off.

- ③ Set the Calibration Wave Length.

<Normal mode>

When the WAVE LENGTH set key is pressed to the UP or DOWN side in this mode, the wave length can be set to 1550 or 1310nm, respectively.

<VAR mode>

To set the wave length arbitrarily within the range from 1100 to 1600nm in 10nm steps, press the VAR set switch, check that the VAR indicator is on, and press the WAVE LENGTH setting key.

NOTE

The automatic attenuation calibration function works when the attenuation is set. Thus, if the wave length setting is changed while using this equipment, reset the attenuation.

- ④ Set Attenuation.


Attenuation can be set on the ATTENUATION LEVEL display by operating the attenuation set key for each digit.

The keys for 0.01 to 1dB have the key repeat function which allows the higher digits to be set in succession when they are pressed continuously.

When the 10dB range key is pressed to the UP side with 60.00dB on the display, the OFF range can be set to shield the light.

NOTE

When this equipment is under remote control, neither the calibration wave length nor attenuation is changed if the WAVE LENGTH set key and attenuation set key are operated.

MEMO 



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.1 Performance

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4. GPIB

This equipment is equipped with a general-purpose interface bus (GPIB). The GPIB allows calibration wave length and attenuation to be set from the other end of the bus line.

4.1 Performance

Governing standard : IEEE standard 488-1978

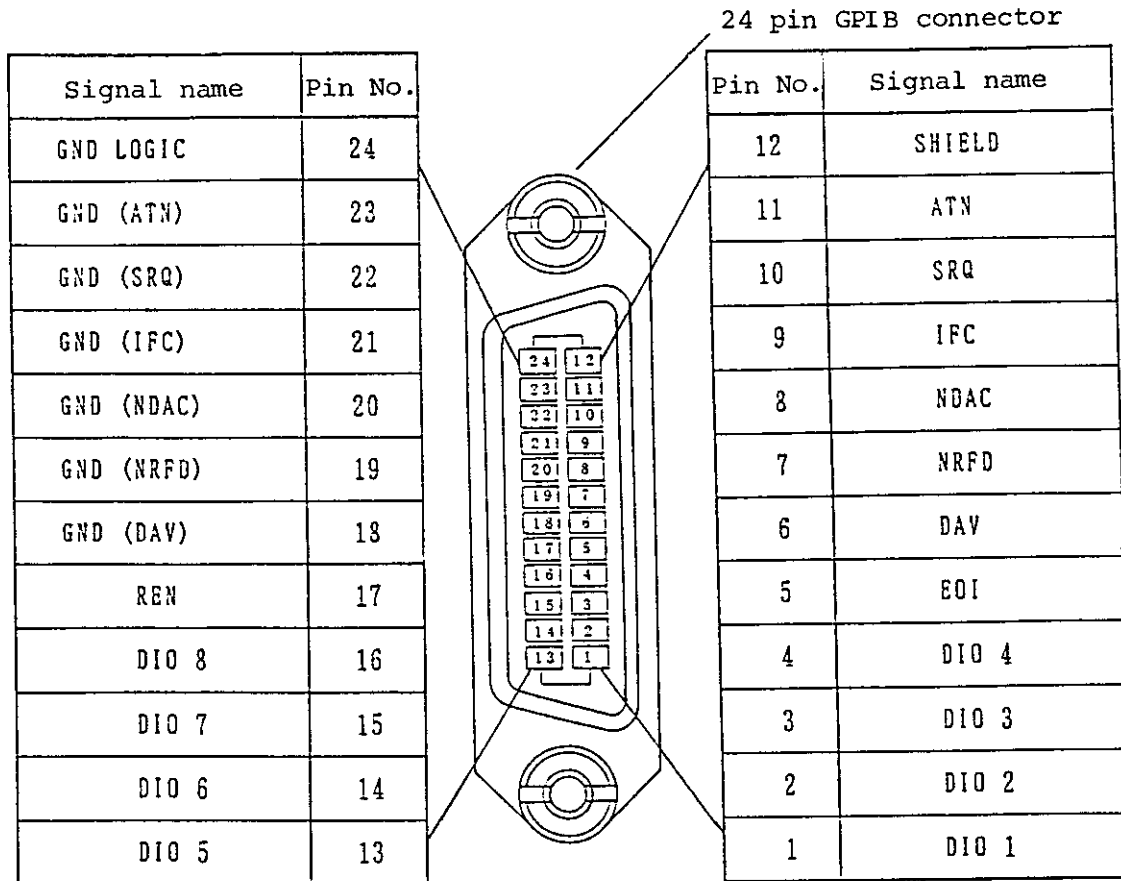
Interface functions: See Table 4-1 below:

Table 4-1 Interface functions

Code	Description
SH1	Source handshake function
AH1	Acceptor handshake function
T6	Basic talker functions and serial poll function
L4	Basic listener functions
SR1	Service request function
RL1	Remote/local switching function
PP0	No parallel poll function
DC1	Device clear function
DT0	Device trigger function
C0	No controller function
E2	Tristate output

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.1 Performance



- Logical level : Logical 0 (High state) ---> +2.4V or more
- Logical level : Logical 1 (Low state) ---> +0.4V or less
- Driver specifications : Tristate system
- Low-state output voltage : +0.4V or less, 48mA
- High-state output voltage : +2.0V or more, -5.2mA
- Receiver specifications : Low state at +0.6V or less
- High state at +2.0V or more
- Addressing : 31 talk/listen addresses can be assigned as desired by using the address selection switches.
- Remote programming : Optical output setting for each channel is possible by remote programming.
- Ambient operating temperature : 0 to 50°C
- Ambient operating humidity : 85% RH or less
- Storage temperature : -25 to +70°C

Figure 4-1 GPIB Connector

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

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4.2 GPIB Connector and Address Switch

4.2 GPIB Connector and Address Switch

See Figure 2-2. This section describes ⑫ and ⑬ in the figure.

⑫ GPIB Connector

The GPIB connector is a 24-pin connector for an IEEE-488 bus. Since it is a piggyback connector, more than one connector of the same type can be stacked to use more than one standard bus cable. However, avoid stacking three or more connectors.

⑬ Address Switch

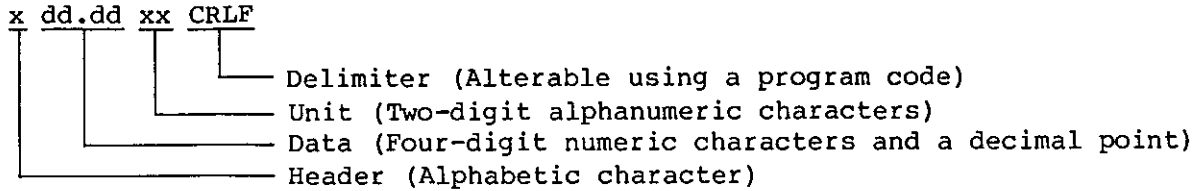
This seven-bit DIP switch assigns the device address of this attenuator using the first to fifth bits. 31 types of addresses from 0 to 30 can be set.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.3 Talker Format

4.3 Talker Format

Example:



4.3.1 Header and Unit

A combination of a one-digit alphabetic characters for the header and two-digit alphabetic characters for the unit indicates the type of setdata. It is transmitted in ASCII code.

Header	Unit	Set data
W	UM	Wave length
A	DB	Attenuation

4.3.2 Data

Data, attenuation, and wavelength are transmitted in four-digit numeric characters with a decimal point, dB unit, and  $\mu\text{m}$  unit, respectively.

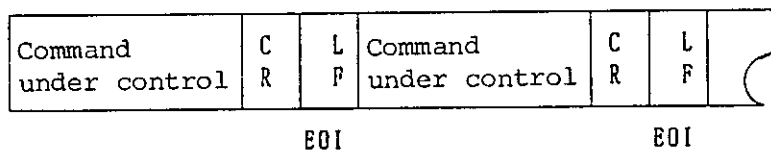
4.3.3 Delimiters

A delimiter indicates the end of single data item.

Any one of the following three different delimiters can be selected using program codes:

- ① Delimiter Consisting of Two Bytes, CR (15.) and LF (12.)

When LF is output, a uniline message, EOI, is also output.

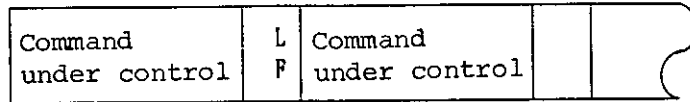


Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

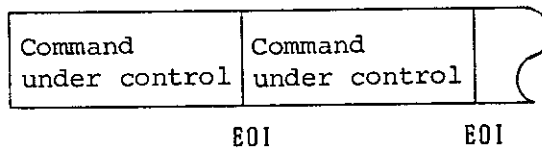
4.3 Talker Format

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- ② Delimiter Consisting of One-byte Data, LF (12.)



- ③ Delimiter Consisting of a Uniline Message, EOI  
Output at the same time as the last byte of data.



Note that the initial state is ① with CR and LF (EOI).

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.4 Remote Programming

4.4 Remote Programming

This equipment can set attenuation and calibration wave length under remote control by an external controller.

4.4.1 Setting Commands

Setting item	Command	Parameter
Calibration wave length	WL	XXXX: Four-digit numeric characters in $\mu\text{m}$ unit (1100 to 1600)
Attenuation	AT	XXXX: Up to four-digit numeric character(s) in 0.01dB unit (0 to 6000)
Optical output OFF	O	No parameter

4.4.2 Status Request Commands

Status	Command	Parameter
Calibration wave length	RW	None
Attenuation	RA	None

4.4.3 Other Commands

Command	
S0	Sends SRQ.
S1	Does not send SRQ.
DL0	Sends CR and LF with EOI as a delimiter.
DL1	Sends only LF as a delimiter.
DL2	Sends only EOI as a delimiter.
C	Initializes the equipment as it is powered on.
Z	Initializes all the parameters.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.5 Service Request (SRQ)

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4.5 Service Request (SRQ)

On completion of settings or reception of an undefined code, this equipment in the S0 mode issues a service request (SRQ) to the controller.

When the unit is serially polled by the controller after issuing the service request, it sends out the status byte. In S1 mode, it does not issue a service request, but sends out the status byte.

(1) Service Request on Completion of Setting

If the equipment is not addressed to talk when the setting ends, it issues a service request. When serially polled, it sends out the status byte as shown below. The status byte is not cleared until the equipment is addressed to talk to transmit measured data.

MSB								LSB		ASCII code : A
	0	1	0	0	0	0	0	1		Decimal code: 65

(2) Service Request Resulting from a Syntax Error

If an undefined program code is received during remote program operation, the equipment issues a service request.

The status byte is as shown below. It is not cleared until the equipment is addressed to listen to enable remote setting.

MSB								LSB		ASCII code : B
	0	1	0	0	0	0	1	0		Decimal code: 66

\* If a setting end and a syntax error occur at the same time, two bits are set in the status byte. (ASCII code: C, decimal code: 71)

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

4.6 Addressing

4.6 Addressing

(1) Using the ADDRESS Switch

To set the talk address and listen address of this equipment for operation via the GPIB, use the ADDRESS switch on the rear panel.

Any address selected from up to 31 different addresses may be set on the five bit (position) switches, ADDRESS1 thru 5, or the ADDRESS switch. In the example shown in Figure 4-2, the five bits are set to 01110, which is 14 in decimal notation. When they are set to 11111, that is, 31 in decimal, however, note that the equipment does not operate.

Table 4-2 lists the address codes.

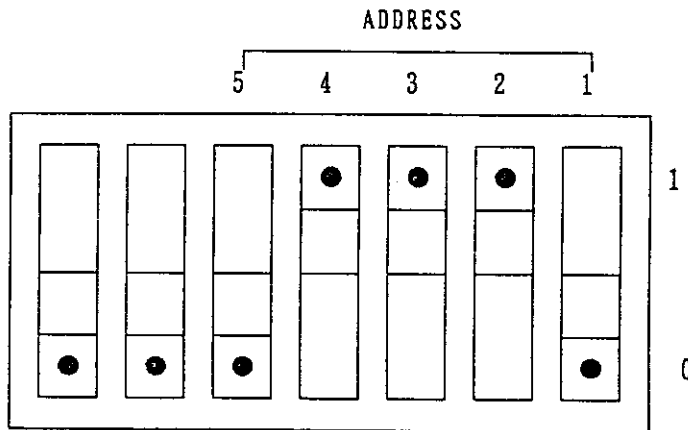


Figure 4-2 ADDRESS Switch



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

Table 4-2 Address Code List

ADDRESS switch					Decimal code
A5	A4	A3	A2	A1	
0	0	0	0	0	0
0	0	0	0	1	1
0	0	0	1	0	2
0	0	0	1	1	3
0	0	1	0	0	4
0	0	1	0	1	5
0	0	1	1	0	6
0	0	1	1	1	7
0	1	0	0	0	8
0	1	0	0	1	9
0	1	0	1	0	10
0	1	0	1	1	11
0	1	1	0	0	12
0	1	1	0	1	13
0	1	1	1	0	14
0	1	1	1	1	15
1	0	0	0	0	16
1	0	0	0	1	17
1	0	0	1	0	18
1	0	0	1	1	19
1	0	1	0	0	20
1	0	1	0	1	21
1	0	1	1	0	22
1	0	1	1	1	23
1	1	0	0	0	24
1	1	0	0	1	25
1	1	0	1	0	26
1	1	0	1	1	27
1	1	1	0	0	28
1	1	1	0	1	29
1	1	1	1	0	30

(2) Preparations for Operation

- ① Connect the equipment to peripheral devices such as a controller using the bus cable. Connect AC power and ground the equipment.
- ② Turn on the equipment, controller, and other peripheral devices. Set the address using the ADDRESS switch.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

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4.6 Addressing

(3) General Operating Precautions

This equipment recognizes the setting of the ADDRESS switch on being powered up. If the setting is changed during operation, the equipment operates on the initial setting. After changing the setting of the ADDRESS switch, therefore, be sure to reset the POWER switch.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

5.1 Introduction

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5. OUTLINE OF OPERATION

5.1 Introduction

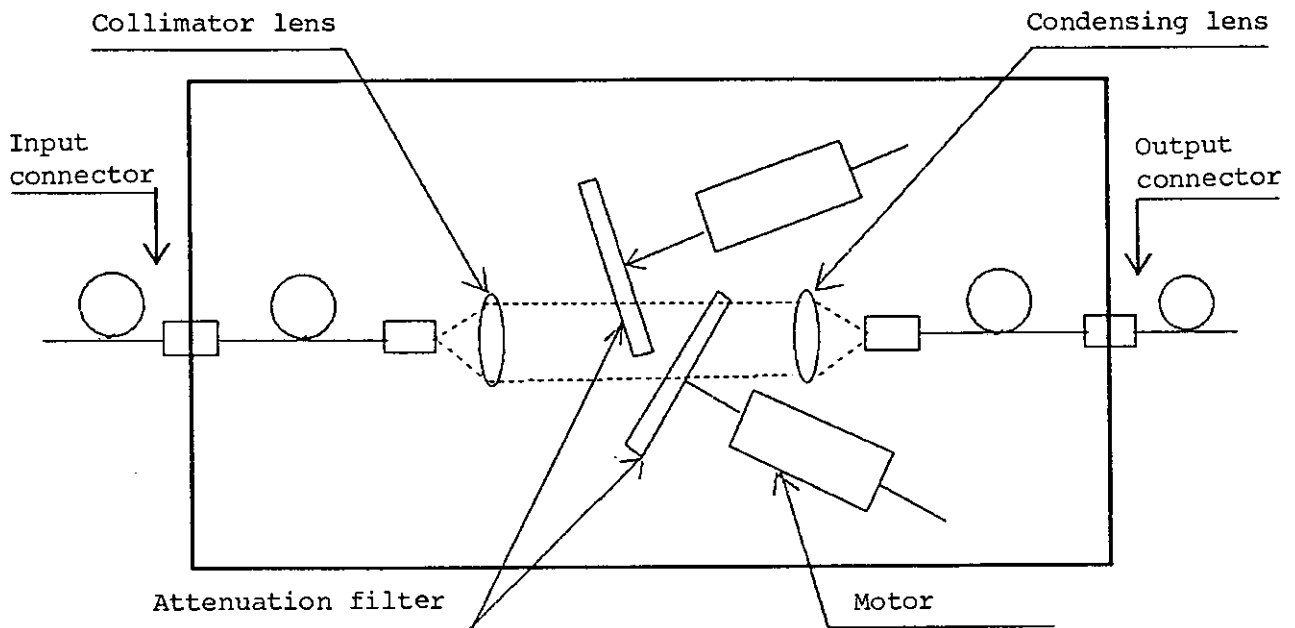
The optical system for this equipment comprises a collimator lens which collimates the light from the input connector, a condensing lens which concentrates collimated light to the emission fiber via the output connector, and attenuation filters inserted between the lenses. The attenuation filters are of two types, one is a continuously variable attenuation type and the other is a step attenuation type.

According to the set value sent via the key switch on the front panel or the GPIB interface, the motor controlled by the CPU rotates to vary the attenuation filters to set the specified attenuation.

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

5.2 Optical System

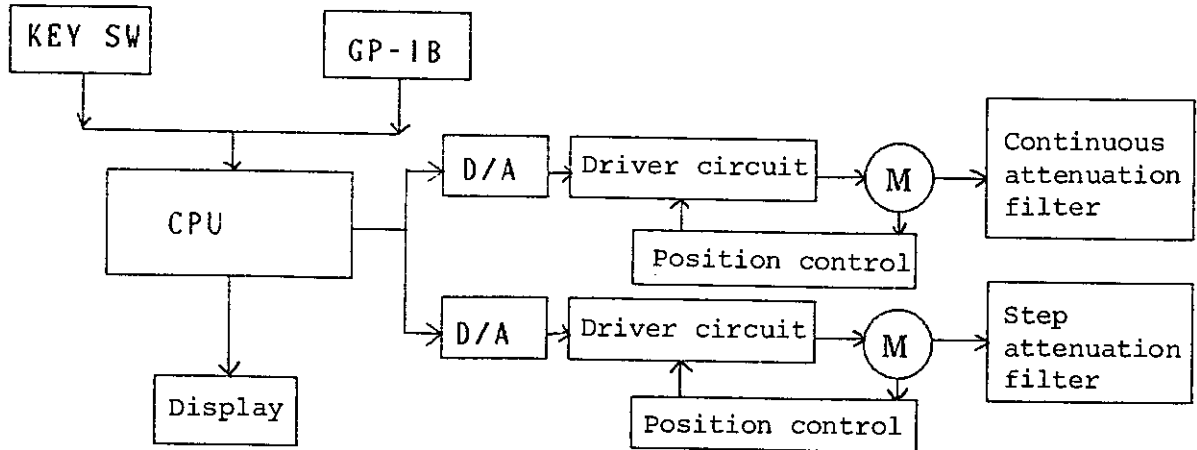
5.2 Optical System



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

5.3 Block Diagram

5.3 Block Diagram



MEMO 

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

6. Before Requesting Repair


6. BEFORE REQUESTING REPAIR

If your Q8182 develops any problems during operation, contact your local ADVANTEST office or agency after checking it according to the table below.

Be sure to carefully check the equipment beforehand, referring to the table below and other sections of this instruction manual. You will be charged for any repairs made by ADVANTEST or its representative even if they are covered by the table or are minor.

Since the optical system of this equipment is assembled and adjusted precisely, avoid touching the inside of the equipment as far as possible.

Condition	Possible cause	Correction
POWER indicator does not light.	Power fuse is blown.	See Section 1.5, and replace the fuse with the attached spare.
Optical output is unstable.	End face of the optical fiber connector is stained.	Wipe the end of the connector gently with lens cleaning paper or gauze degreased with alcohol.

MEMO 



Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

7.1 Standards

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7. PERFORMANCE

7.1 Standards

The standards below are specified using a 1.3/1.55 $\mu$ m laser stabilized illuminant and 10/125 $\mu$ m single mode fiber:

Wave length range	1100 to 1600nm
I/O connector	FC type
Optical fiber used	Single mode (10/125 $\mu$ m)
Maximum attenuation	60dB/ (oo .... OFF range)
Attenuation linearity	$\pm 0.5$ dB
Minimum setting resolution	0.01dB
Insertion loss	3dB or less
Switching repeatability	$\pm 0.03$ dB
Switching time	500 msec or less

Q8182  
OPTICAL PROGRAMMABLE ATTENUATOR  
INSTRUCTION MANUAL

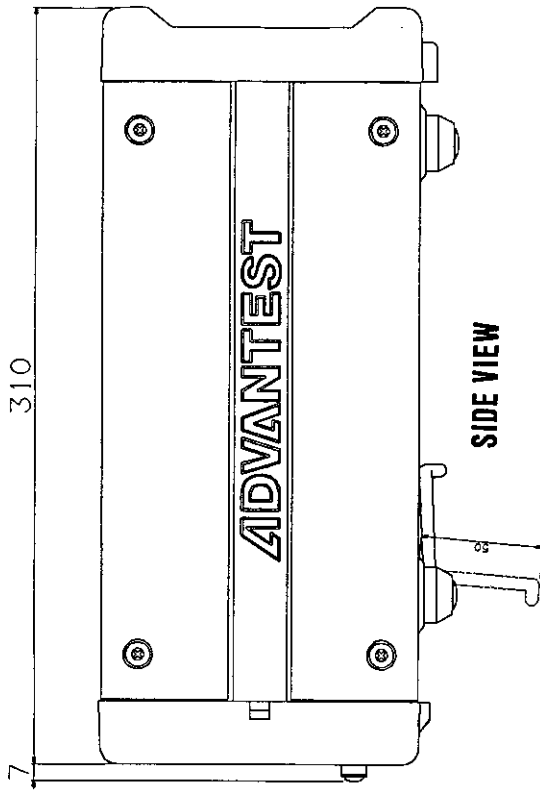
7.2 General Specifications

7.2 General Specifications

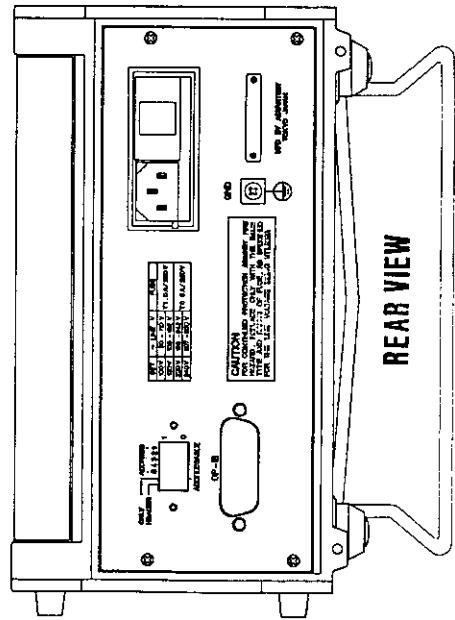
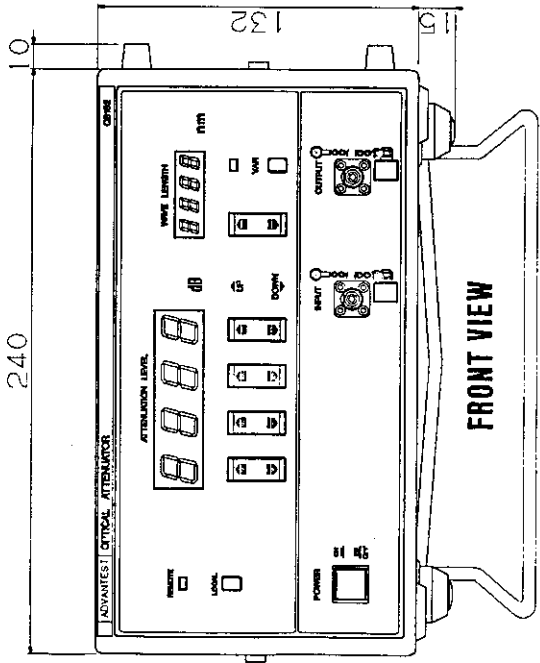
Operating environment: Ambient temperature: 0 to +50°C  
Relative humidity : 85% or less  
Storage environment : Ambient temperature: -25 to +70°C  
Power supply : 90 to 110VAC, 48 to 66Hz  
Power consumption : 50 VA or less  
Power change :

Option No.	Standard	32	42	44
Supply voltage	90 to 110V	103 to 132V	198 to 242V	207 to 250V

Major dimensions : Approx. 240 (width) x 132 (height) x 310 (depth)mm  
Weight : Body: 7kg or less

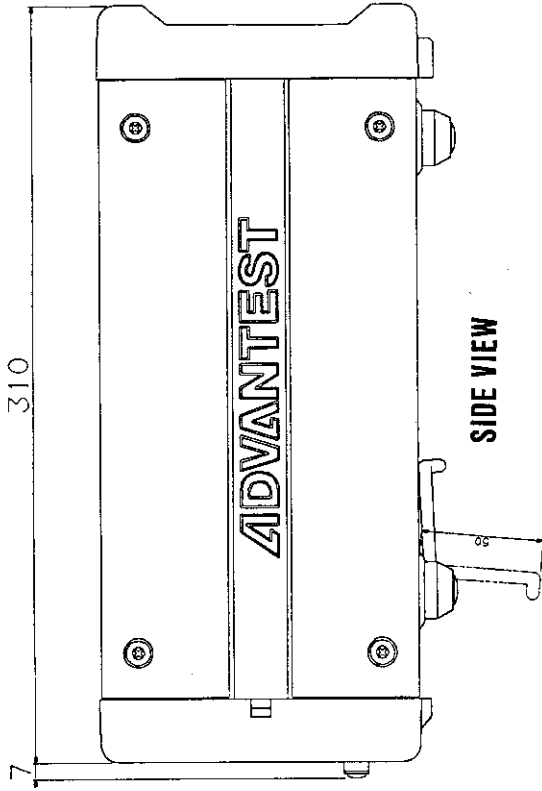


Unit : mm

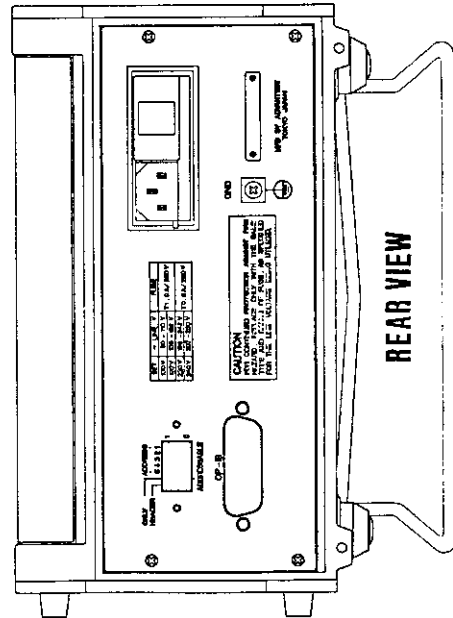
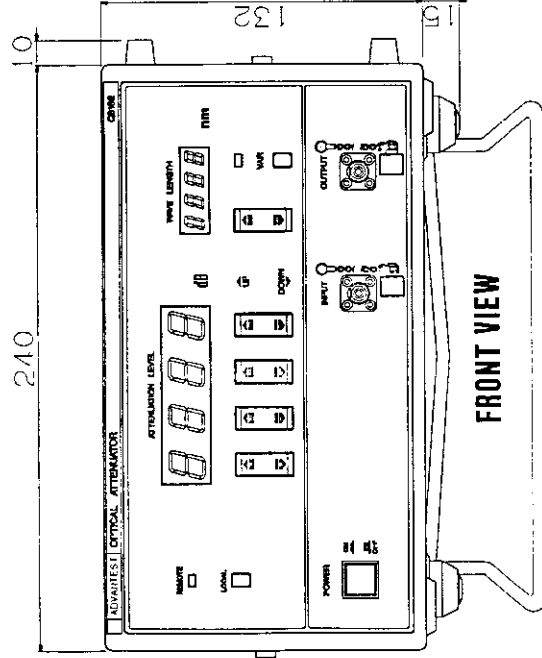


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EXTERNAL VIEW





Unit : mm



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EXTERNAL VIEW

Q8182EXT1-910-B



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Some of the components and parts of this Product have a limited operating life (such as, electrical and mechanical parts, fan motors, unit power supply, etc.). Accordingly, these components and parts will have to be replaced on a periodic basis. If the operating life of a component or part has expired and such component or part has not been replaced, there is a possibility that the Product will not perform properly. Additionally, if the operating life of a component or part has expired and continued use of such component or part damages the Product, the Product may not be repairable. Please contact the nearest Advantest office listed at the end of this Operation Manual or Advantest's sales representatives to determine the operating life of a specific component or part, as the operating life may vary depending on various factors such as operating condition and usage environment.

## SALES & SUPPORT OFFICES

Advantest Korea Co., Ltd.

22BF, Kyobo KangNam Tower,  
1303-22, Seocho-Dong, Seocho-Ku, Seoul #137-070, Korea  
Phone: +82-2-532-7071  
Fax: +82-2-532-7132

Advantest (Suzhou) Co., Ltd.

Shanghai Branch Office:  
Bldg. 6D, NO.1188 Gumei Road, Shanghai, China 201102 P.R.C.  
Phone: +86-21-6485-2725  
Fax: +86-21-6485-2726

Shanghai Branch Office:  
406/F, Ying Building, Quantum Plaza, No. 23 Zhi Chun Road,  
Hai Dian District, Beijing,  
China 100083  
Phone: +86-10-8235-3377  
Fax: +86-10-8235-6717

Advantest (Singapore) Pte. Ltd.

438A Alexandra Road, #08-03/06  
Alexandra Technopark Singapore 119967  
Phone: +65-6274-3100  
Fax: +65-6274-4055

Advantest America, Inc.

3201 Scott Boulevard, Suite, Santa Clara, CA 95054, U.S.A  
Phone: +1-408-988-7700  
Fax: +1-408-987-0691

ROHDE & SCHWARZ Europe GmbH

Mühldorfstraße 15 D-81671 München, Germany  
(P.O.B. 80 14 60 D-81614 München, Germany)  
Phone: +49-89-4129-13711  
Fax: +49-89-4129-13723

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