
**User's
Manual**

**AQ6376
Optical Spectrum Analyzer
Getting Started Guide**

Product Registration

Thank you for purchasing YOKOGAWA products.

YOKOGAWA provides registered users with a variety of information and services.

Please allow us to serve you best by completing the product registration form accessible from our homepage.

<http://tmi.yokogawa.com/>

Thank you for purchasing the AQ6376 Optical Spectrum Analyzer. This instrument enables high speed measurement of the optical properties of LD and LED light sources, optical amps, and other devices. To improve ease of use, it includes mouse-based user operation and a brand-new zoom function.

This getting started guide describes the instrument's functions, operating procedures, and handling precautions, and provides other important information for use of the instrument. For correct operation, please read this manual thoroughly before use. After reading this manual, keep it in a convenient location for quick reference in the event a question arises during operation. There are three manuals for the AQ6376 including this one. Read them along with this manual.

List of Manuals

| Manual Title | Manual No. | Description |
|---|----------------|---|
| AQ6376 Optical Spectrum Analyzer User's Manual | IM AQ6376-01EN | The manual is located on the CD included in your package (pdf format). Explains all functions and operating procedures of the AQ6376 except remote control and program functions. |
| AQ6376 Optical Spectrum Analyzer Remote Control User's Manual | IM AQ6376-17EN | The manual is located on the CD included in your package (pdf format). Explains functions for controlling the instrument with communication commands and program functions. |
| AQ6376 Optical Spectrum Analyzer Getting Started Guide | IM AQ6376-02EN | This guide. Provided as a printed manual. This guide explains the handling precautions, basic operations, and specifications of the AQ6376. |
| AQ6376 Optical Spectrum Analyzer | IM AQ6376-92Z1 | A document for China. |

The "-EN" in the manual number is the language code.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

| Document Description | Description |
|----------------------|----------------------------|
| PIM 113-01Z2 | List of worldwide contacts |

Notes

- The contents of this manual are subject to change without prior notice as a result of improvements in the instrument's performance and functions. Display contents illustrated in this manual may differ slightly from what actually appears on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.

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- Other company and product names are trademarks or registered trademarks of their respective companies.

Revisions

- 1st Edition: April 2016
- 2nd Edition: April 2017
- 3rd Edition: October 2017
- 4th Edition: April 2019

Checking the Contents of the Package

After opening the package, check the following items before beginning use. If any of the contents are incorrect, missing, or appear to be abnormal, please contact your Yokogawa dealer or representative.

AQ6376 Main Unit

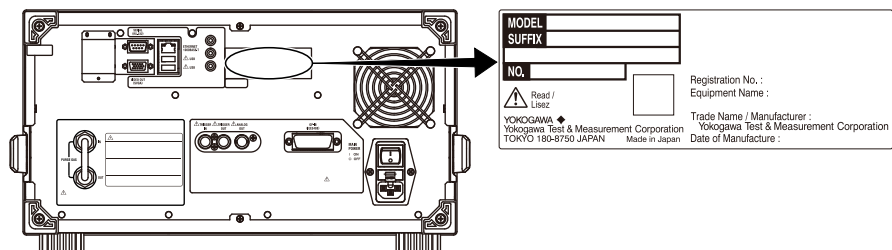
Check that the model and suffix code on the name plate on the rear of the instrument match those of your order. When contacting the dealer from which you purchased the instrument, please give them the instrument number.

| MODEL | Suffix Code ² | Description |
|-------------------------|--------------------------|--|
| AQ6376 | | Optical Spectrum Analyzer AQ6376 |
| Specification | -10 | Standard Model |
| Built-in light source | -L1 | Wavelength reference source |
| Power cord ¹ | -D | UL/CSA standard and PSE compliant, Rated voltage: 125 V |
| | -F | VDE/Korean standard, Rated voltage: 250 V |
| | -R | Australian standard, Rated voltage: 250 V |
| | -Q | British standard, Rated voltage: 250 V |
| | -H | Chinese standard, Rated voltage: 250 V |
| | -N | Brazilian standard, Rated voltage: 250 V |
| | -T | Taiwanese standard, Rated voltage: 125 V |
| | -B | Indian standard, Rated voltage: 250 V |
| | -U | IEC Plug Type B, Rated voltage: 250 V |
| | -Y | No power cord included. ³ |
| Options | /FC | AQ9447 (FC) Connector Adapter (for optical input) ⁴ |
| | /SC | AQ9447 (SC) Connector Adapter (for optical input) ⁴ |
| | /RFC | AQ9441 (FC) Connector Adapter (for calibration light source output) ⁵ |
| | /RSC | AQ9441 (SC) Connector Adapter (for calibration light source output) ⁵ |

- 1 Make sure that the attached power cord meets the designated standards of the country and area that you are using it in.
- 2 For products whose suffix code contains "Z," an exclusive manual may be included. Please read it along with the standard manual.
- 3 Prepare a power cord that complies with the standard specified by the country or region that the instrument will be used in.
- 4 Already attached to the optical input of the AQ6376 front panel.
- 5 Already attached to the calibration light source output of the AQ6376 front panel.

- **No. (Instrument Number)**

Please contact your nearest Yokogawa representative.



Checking the Contents of the Package

Accessories

| Part Name | Model or Part No. | Quantity | Specifications and Notes |
|-----------------|-------------------|----------|---|
| Power cord* | A1006WD | 1 | UL/CSA standard and PSE compliant |
| | A1009WD | | VDE/Korean standard |
| | A1024WD | | Australian standard |
| | A1054WD | | British standard |
| | A1064WD | | Chinese standard |
| | A1088WD | | Brazilian standard |
| | A1100WD | | Taiwanese standard |
| | A1101WD | | Indian standard |
| A1102WD | IEC Plug Type B | | |
| Rubber feet | A9088ZM | 2 | 1 A9088ZM sheet |
| Manuals | | | |
| Printed Manuals | IM AQ6376-02EN | 1 | Getting Started Guide |
| | IM AQ6376-92Z1 | 1 | Document for China |
| | PIM 113-01Z2 | 1 | List of worldwide contacts |
| Manual CD | A1022US | 1 | Contains PDFs of the user's manuals (For the types of manuals that CD contains, see Manual CD below.) |

* Make sure that the attached power cord meets the designated standards of the country and area that you are using it in. If the suffix code is -Y, a power cord is not included.

Manual CD

The English directory in the manual CD contains the PDF files shown below. The CD also contains Japanese manuals.

| File Name | Manual Title | Manual No. |
|---------------------------------|---|----------------|
| Features & Operation Manual.pdf | AQ6376 Optical Spectrum Analyzer User's Manual | IM AQ6376-01EN |
| Communication Interface.pdf | AQ6376 Optical Spectrum Analyzer Remote Control User's Manual | IM AQ6376-17EN |

To view the PDF data, you need Adobe Acrobat Reader or a software application that can open PDF data.

WARNING

Never play this manual CD, which contains the user's manuals, in an audio CD player. Doing so may cause loss of hearing or speaker damage due to the large sounds that may be produced.

French

AVERTISSEMENT

Ce CD contient les manuels d'utilisation. Ne jamais insérer ce CD dans un lecteur de CD audio. Cela pourrait entraîner une perte d'audition ou l'endommagement des enceintes en raison du volume potentiellement élevé des sons produits.

Accessories (Sold Separately)

| Part Name | Model/Part Number | Specifications |
|--------------------------|-------------------|--|
| AQ9447 Connector Adapter | AQ9447-FC | FC connector (for optical input) |
| | AQ9447-SC | SC connector (for optical input) |
| AQ9441 Connector Adapter | AQ9441-FC | FC connector (for calibration light source output) |
| | AQ9441-SC | SC connector (for calibration light source output) |

Safety Precautions

This product is designed to be used by a person with specialized knowledge. This instrument is an IEC safety class I (provided with terminal for protective earth grounding). The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. This manual is an essential part of the product; keep it in a safe place for future reference. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements.

The following symbols are used on this instrument.



Danger, Refer to the user's manual.

This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use. The same symbol appears in the corresponding place in the manual to identify those instructions.



Alternating current



ON(power)



OFF(power)

French



Avertissement : À manipuler délicatement.

Toujours se reporter aux manuels d'utilisation et d'entretien. Ce symbole a été apposé aux endroits dangereux de l'instrument pour lesquels des consignes spéciales d'utilisation ou de manipulation ont été émises. Le même symbole apparaît à l'endroit correspondant du manuel pour identifier les consignes qui s'y rapportent.



Courant alternatif



Marche (alimentation)



Arrêt (alimentation)

Failure to comply with the precautions below could lead to injury or death or damage to the instrument.



WARNING

- **Use the Instrument Only for Its Intended Purpose**
The optical measuring instrument is designed to measure the optical characteristics of light sources and evaluate their performance. Do not use this instrument for anything other than as an optical measuring instrument.
- **Check the Physical Appearance**
Do not use the instrument if there is a problem with its physical appearance.
- **Use the Correct Power Supply**
Make sure that the power supply voltage matches the instrument's rated supply voltage and that it does not exceed the maximum voltage range of the power cord to use.
- **Use the Correct Power Cord and Plug**
To prevent the possibility of electric shock or fire, be sure to use the power cord for the instrument. The main power plug must be plugged into an outlet with a protective earth terminal. Do not disable this protection by using an extension cord without protective earth grounding.
Further, do not use this power cord with other instruments.
- **Connect the Protective Grounding Terminal**
Make sure to connect the protective earth to prevent electric shock before turning ON the power. The power cord that you can use for the instrument is a three-prong cord. Connect the power cord to a properly grounded three-prong outlet.
- **Do not Impair the Protective Grounding**
Never cut off the internal or external protective earth wire or disconnect the wiring of the protective earth terminal. Doing so poses a potential shock hazard.
- **Do not Operate with Defective Protective Grounding or Fuse**
Do not operate the instrument if the protective earth or fuse might be defective. Make sure to check them before operation.
- **Reference light source output light**
The instrument has a built-in reference light source for alignment adjustment, and infrared light is always being output from the optical output connector. Never look into the optical output connector. Infrared light entering the eyes can cause severe injury and loss of vision.
- **Do not Operate in an Explosive Atmosphere**
Do not operate the instrument in the presence of flammable liquids or vapors. Operation in such environments constitutes a safety hazard.
- **Do Not Remove the Covers or Disassemble or Alter the Instrument**
Only qualified YOKOGAWA personnel may remove the covers and disassemble or alter the instrument.
Opening the cover is dangerous, because some areas inside the instrument have high voltages.
- **Install or Use the Instrument in Appropriate Locations**
 - This instrument is designed to be used indoors. Do not install or use it outdoors.
 - Install the instrument so that you can immediately remove the power cord if an abnormal or dangerous condition occurs.

CAUTION

Operating Environment Limitations

This product is a Class A (for industrial environments) product. Operation of this product in a residential area may cause radio interference in which case the user will be required to correct the interference.

French

**AVERTISSEMENT**

- **Utiliser l'instrument aux seules fins prévues**
Cet instrument de mesure optique est prévu pour mesurer les caractéristiques optiques des sources lumineuses et évaluer leur performance. Ne pas utiliser cet instrument à d'autres fins que celles de mesure optique.
- **Inspecter l'apparence physique**
Ne pas utiliser l'instrument si son intégrité physique semble être compromise.
- **Vérifier l'alimentation**
Assurez-vous que la tension d'alimentation correspond à la tension d'alimentation nominale de l'appareil et qu'elle ne dépasse pas la plage de tension maximale du cordon d'alimentation à utiliser.
- **Utiliser le cordon d'alimentation et la fiche adaptés**
Pour éviter tout risque de choc électrique, utiliser exclusivement le cordon d'alimentation prévu pour cet instrument. La fiche doit être branchée sur une prise secteur raccordée à la terre. En cas d'utilisation d'une rallonge, celle-ci doit être impérativement reliée à la terre. Par ailleurs, ne pas utiliser ce cordon d'alimentation avec d'autres instruments.
- **Brancher la prise de terre**
Avant de mettre l'instrument sous tension, penser à brancher la prise de terre pour éviter tout choc électrique. Le cordon d'alimentation que vous utilisez pour l'instrument est un cordon à trois broches.
Brancher le cordon d'alimentation sur une prise de courant à trois plots et mise à la terre.
- **Ne pas entraver la mise à la terre de protection**
Ne jamais neutraliser le fil de terre interne ou externe, ni débrancher la borne de mise à la terre. Cela pourrait entraîner un choc électrique ou endommager l'instrument.
- **Ne pas utiliser avec un conducteur de terre ou un fusible défectueux**
Ne pas utiliser l'instrument si le conducteur de terre ou le fusible est défectueux. Vérifier le conducteur de terre et le fusible avant d'utiliser l'instrument.
- **Source de lumière de référence**
Cet instrument dispose d'une source de lumière de référence intégrée pour les ajustements d'alignement. La lumière infrarouge est toujours émise depuis le connecteur de sortie optique. Ne regardez jamais directement dans le connecteur de sortie optique. La lumière infrarouge risquerait de gravement vous blesser ou de provoquer une perte de vision.

Safety Precautions

- **Ne pas utiliser dans un environnement explosif**
Ne pas utiliser l'instrument en présence de gaz ou de vapeurs inflammables. Cela pourrait être extrêmement dangereux.
- **Ne pas retirer le capot, ni démonter ou modifier l'instrument**
Seul le personnel YOKOGAWA qualifié est habilité à retirer le capot et à démonter ou modifier l'instrument. Certains composants à l'intérieur de l'instrument sont à haute tension et par conséquent, représentent un danger.
- **Installer et utiliser l'instrument aux emplacements appropriés**
 - Ne pas installer, ni utiliser l'instrument à l'extérieur ou dans des lieux exposés à la pluie ou à l'eau.
 - Installer l'instrument de manière à pouvoir immédiatement le débrancher du secteur en cas de fonctionnement anormal ou dangereux.

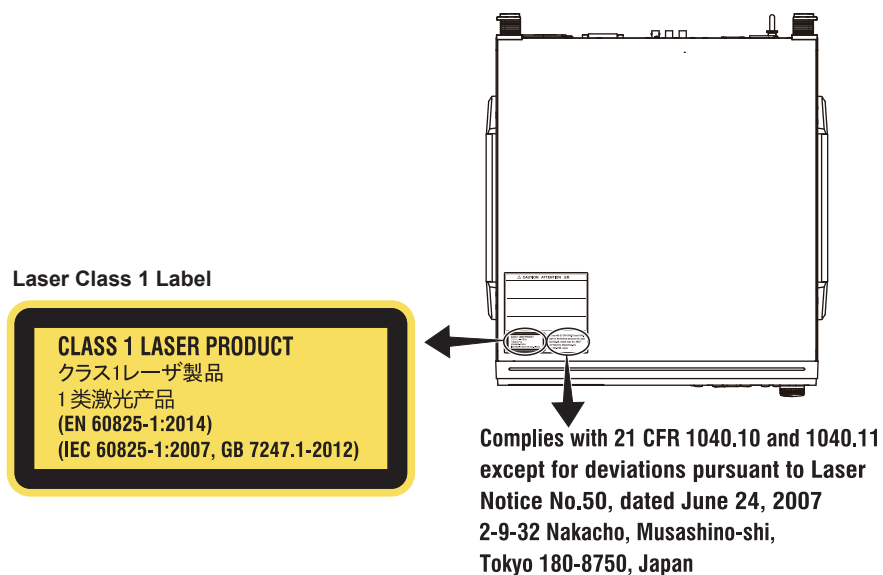
ATTENTION

Limitations relatives à l'environnement opérationnel

Ce produit est un produit de classe A (pour environnements industriels). L'utilisation de ce produit dans un zone résidentielle peut entraîner une interférence radio que l'utilisateur sera tenu de rectifier.

Safety Precautions for Laser Products

This instrument uses a laser light source. This instrument is a Class 1 laser product as defined by EN 60825-1:2014/IEC 60825-1:2007 Safety of Laser Products-Part 1: Equipment Classification, Requirements and User's Guide. In addition, this instrument complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.



Information about the Laser Light Source Used

| Class | Laser Type | Wavelength | Maximum Output Power | Diameter of Mode Field | Repetition Rate | Numerical Aperture |
|-------|------------|--------------|----------------------|------------------------|-----------------|--------------------|
| 1 | EE-LED | 1.53 μ m | 0.04mW | 9 μ m | CW | 0.1 |

Regulations and Sales in Each Country or Region

Waste Electrical and Electronic Equipment



Waste Electrical and Electronic Equipment (WEEE), Directive

(This directive is valid only in the EU.)

■ This product complies with the WEEE Directive marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category

With reference to the equipment types in the WEEE directive, this product is classified as a “Monitoring and Control instrumentation” product.

When disposing of products in the EU, contact your local Yokogawa Europe B. V. office. Do not dispose in domestic household waste.

EU Battery Directive



EU Battery Directive

(This directive is valid only in the EU.)

Batteries are included in this product. This marking indicates they shall be sorted out and collected as ordained in the EU battery directive.

Battery type

Lithium battery

You cannot replace batteries by yourself. When you need to replace batteries, contact your local Yokogawa Europe B.V.office.

Authorized Representative in the EEA

Yokogawa Europe B. V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B. V., see the separate list of worldwide contacts, PIM 113-01Z2.

關於在台灣銷售

This section is valid only in Taiwan.

關於在台灣所販賣的符合其相關規定的電源線 A1100WD 的限用物質含量信息，請至下麵的網址進行查詢

<https://tmi.yokogawa.com/support/service-warranty-quality/product-compliance/>

Symbols and Notation Used in This Manual

Safety Markings

The following markings are used in this manual.



Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION

Calls attentions to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

French

AVERTISSEMENT

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

ATTENTION

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

Note

Calls attention to information that is important for proper operation of the instrument.

Notations Used on Pages Describing Operating Procedures

On pages that describe the operating procedures, the following notations are used to distinguish the procedures from their explanations.

Procedure

This subsection contains the operating procedure used to carry out the function described in the current chapter. All procedures are written with inexperienced users in mind; experienced users may not need to carry out all the steps.

Explanation

This subsection describes the setup parameters and the limitations on the procedures.

Notations Used in the Procedures

Panel Keys and Soft keys

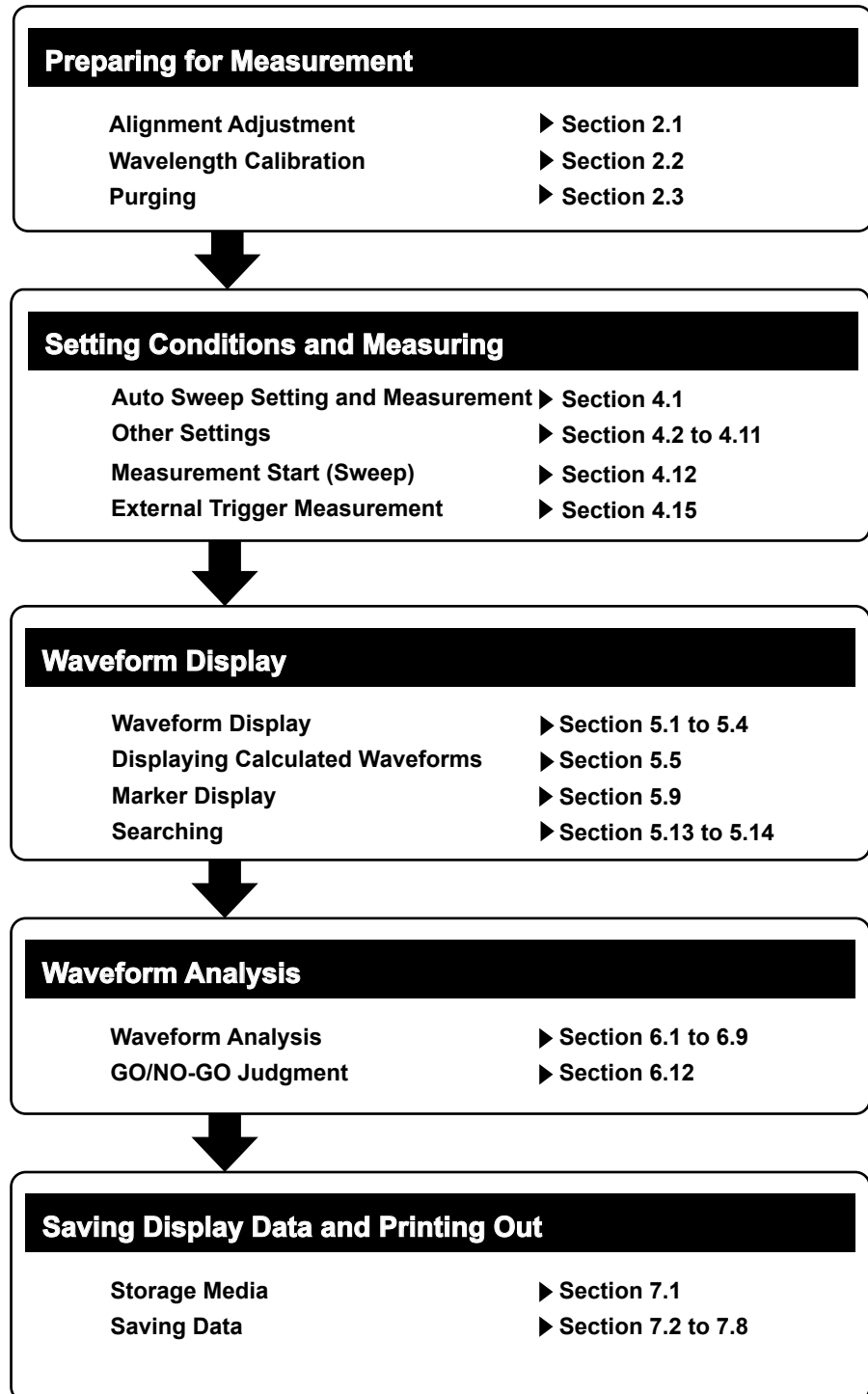
Bold characters used in the procedural explanations indicate characters that are marked on the panel keys or the characters of the soft keys displayed on the screen menu.

Unit

| | |
|--------------------|---------------------------------|
| k: Denotes "1000." | Example: 100kS/s |
| K: Denotes "1024." | Example: 459KB (file data size) |

Flow of Operation

The figure below is provided to familiarize the first-time user with the general flow of this instrument operation. For a description of each item, see the relevant section or chapter of IM AQ6376-01EN.

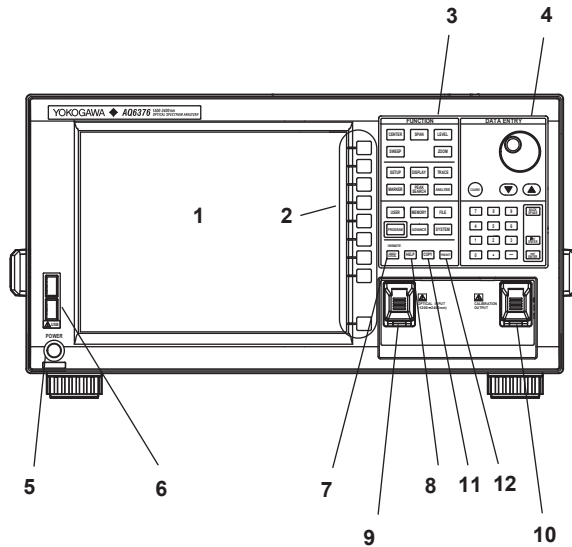


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1 Front Panel

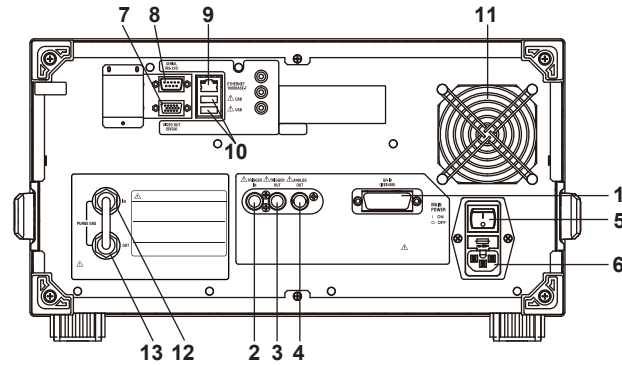
Front Panel



| No. | Name | Function |
|-----|--------------------|---|
| 1 | LCD display | Displays measured waveform, measurement conditions, measurement values, etc. |
| 2 | Soft key section | Used to execute the functions assigned to the soft keys on the right side of the LCD display |
| 3 | FUNCTION section | Used to enter settings pertaining to all measurements (sweep, measurement conditions, data analysis, and various functions) |
| 4 | DATA ENTRY section | Used for measurement condition parameter input, label input, etc. |
| 5 | POWER | Used to start and shut down the instrument. |
| 6 | USB interface | Used to connect USB storage media |
| 7 | UNDO/LOCAL | See the following table(3 Panel keys and Knobs) |
| 8 | HELP | Used to check the contents of the soft key menu displayed on the screen. |
| 9 | OPTICAL INPUT | Optical input connector |
| 10 | CALIBRATION OUTPUT | Reference light source optical output connector used for alignment adjustments and wavelength calibration. |
| 11 | COPY | Save the screen as an image file. |
| 12 | PRESET | Clears all internal settings of the AQ6376 except for the remote interface (ETHERNET, GP-IB, and RS232) settings. |

2 Rear Panel

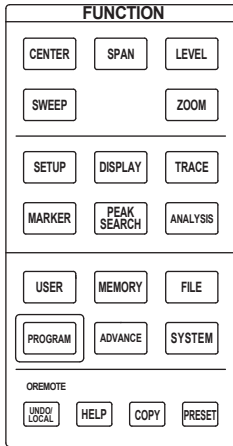
Rear Panel



| No. | Name | Function |
|-----|----------------------|---|
| 1 | GP-IB | GP-IB port for controlling this unit through an external computer |
| 2 | TRIGGER IN | Input connector for synchronous signals for the synchronous measurement function with the Tunable Laser Source |
| 3 | TRIGGER OUT | Output connector for synchronous signals for the synchronous measurement function with the Tunable Laser Source |
| 4 | ANALOG OUT | Analog output |
| 5 | MAIN POWER | Used to turn the main power ON/OFF |
| 6 | Power cord connector | Connect the power cord to this connector |
| 7 | VIDEO OUT (SVGA) | Analog RGB video signal (SVGA-compliant) interface |
| 8 | SERIAL | RS-232 interface |
| 9 | ETHERNET | Ethernet Interface |
| 10 | USB interface | Used to connect USB storage media or USB mouse |
| 11 | Exhaust holes | |
| 12 | GAS IN | Purge gas filling port |
| 13 | GAS OUT | Purge gas outlet port |

3 Panel Keys and Knobs

FUNCTION Section



The FUNCTION section contains 17 function keys and 4 auxiliary keys. When you press a function key, information about the function is displayed on the soft key menu located on the right side of the LCD display.

SWEEP

The SWEEP key contains functions related to sweeping. When you press the SWEEP key, the soft key menu for sweeping appears.

CENTER

The CENTER key contains functions related to setting the center wavelength and center frequency for measurements. The soft key functions change depending on whether the screen display mode is wavelength display mode or frequency display mode.

SPAN

The SPAN key contains functions pertaining to settings for the wavelength span or frequency span being measured. The soft key functions change according to whether the screen display mode is wavelength display mode or frequency display mode.

LEVEL

The LEVEL key contains functions related to level axis settings. When you press the LEVEL key, the soft key menu for setting reference level appears.

SETUP

The SETUP key contains functions related to measurement condition settings.

ZOOM

The ZOOM key contains the zoom function, which allows the user to freely enlarge or reduce a measured waveform in order to check a small area of the measured waveform, or to check the overall waveform.

This key is used to set the waveform enlarged/reduced display conditions.

DISPLAY

The DISPLAY key contains functions related to screen display. This key is used to set the screen to upper/lower 2-split display mode (split mode).

TRACE

The TRACE key contains functions related to trace mode settings.

MARKER

The MARKER key contains functions related to markers.

PEAK SEARCH

The PEAK SEARCH key contains functions for searching for peaks and bottoms in measured waveforms.

ANALYSIS

The ANALYSIS key contains functions related to measured waveform analysis.

MEMORY

The MEMORY key contains functions for writing the contents of the active trace to the unit's internal memory. When you press the MEMORY key, the traces and memory list screen (soft key menu) are displayed. A memory number may be entered in the DATA ENTRY section, or selected using the rotary knob or arrow keys.

FILE

The FILE key contains functions for saving and loading waveform data, program data, and the like to and from USB storage media (USB memory/HDD).

PROGRAM

The PROGRAM key contains the soft keys related to program functions for controlling measurements through a program.

SYSTEM

The SYSTEM key contains system-related functions such as monochromator adjusting optical alignment, wavelength adjustment, hardware setup, and setting initialization.

ADVANCE

The ADVANCE key contains functions for setting reference data used to make comparison judgments on measured data and for logging analysis data.

USER

Frequently used soft keys can be registered on the soft key menu in the USER key. Registering frequently used soft keys in the USER key allows you to execute frequently used functions in a small number of steps.

COPY

The COPY key is used to output the measurement screen to a file. When you press the COPY key, the measured waveforms and lists displayed on the screen are output to a file.

PRESET

The PRESET key clears all internal settings of the AQ6376 except for the remote interface (ETHERNET, GP-IB, and RS232) settings.

UNDO/LOCAL

The key's function changes depending on the status of the instrument when the UNDO/LOCAL key is pressed. The following table shows the key's functions.

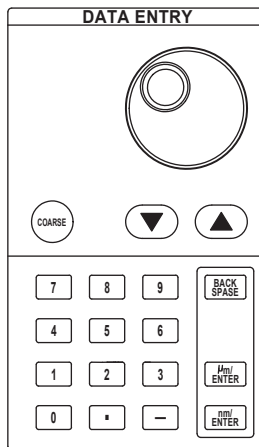
| Status of Instrument | Function |
|---|--|
| UNDO action is allowed | If the UNDO key is pressed after changing parameter settings, changing or deleting data, etc., the previous action (change, deletion, etc.) is canceled and the state preceding that action is restored. |
| During user key registration | If the UNDO key is pressed during user key registration, registration mode is canceled and the soft key menu which appeared when the SYSTEM key was pressed is displayed again. |
| During remote control by external PC (Remote light is on) | Changes the state from the remote state back to the local state. The remote light turns off. |

HELP

When you press the HELP key, a soft key menu of the currently displayed screen is displayed explanations.

Soft keys for selecting the "MORE INFO" which indicate additional information are displayed by some soft keys in HELP screen.

DATA ENTRY Section



This unit allows you to enter measurement conditions and various other parameters through the DATA ENTRY section. Three different entry methods can be used in the DATA ENTRY section, the rotary knob, the arrow keys, and the numeric keypad.

Rotary knob

When you press a soft key which has a parameter, the current setting is displayed in the parameter entry window. Turning the rotary knob raises or lowers the numeric value shown in the parameter entry window (turn clockwise to increase and counterclockwise to decrease), and the internal setting changes at the same time.

Note that if the COARSE key is on (lamp on), the numeric value increase/decrease step will be larger.

Arrow keys (▲, ▼)

Pressing the ▲ key has the same effect as turning the rotary knob clockwise. Likewise, pressing the ▼ key has the same effect as turning the rotary knob counterclockwise.

Holding an arrow key down for 0.5 second or longer activates auto-repeat.

If the multi-marker function has been selected, the arrow keys can be used to scroll the marker value display in the data area.

COARSE Key

You can raise the digit of settings being entered or the increase/decrease step for numerical values.

Each time you press this key the setting toggles between ON and OFF. When ON, the lamp lights.

Numeric keypad

You can enter numerical values directly into the parameter input window by pressing keys of the numeric keypad.

After you have pressed a parameter soft key to display the current setting in the parameter display area, you can press a numeric keypad key to display the numeric keypad input area including the entered numeric value.

If the value entered with the numeric keypad is not in the allowed value range, the nearest allowed value will be set.

µm/ENTER Key and nm/ENTER Key

Enters values input using the numeric keypad or the parameter input window.

Use one or the other key if entering a parameter value with a particular unit.

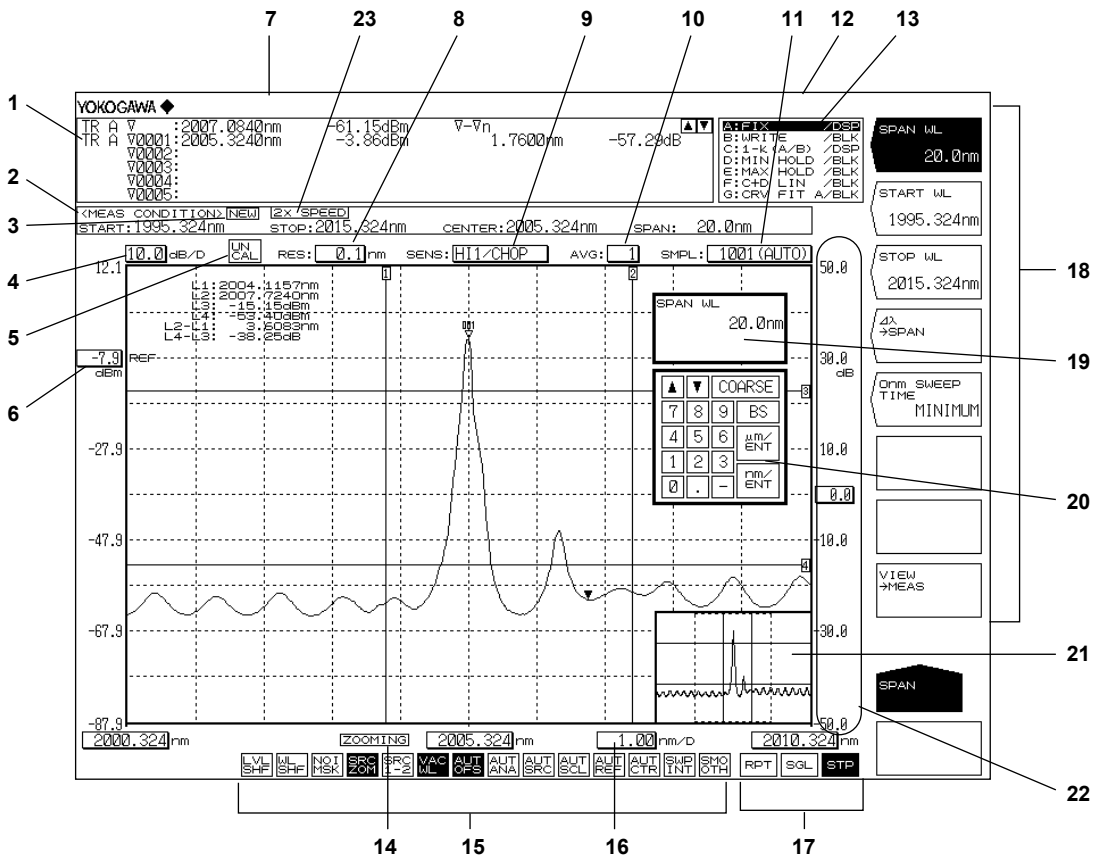
If a parameter does not have a unit associated with it, you can use either the µm/ENTER key or the nm/ENTER key.

BACK SPACE Key

Use this key if you make an error when inputting values with the numeric keypad. The last entered (right-most) character is removed, allowing entry of the correct character. By holding the BACK SPACE key down, you can erase the entire entry in the numeric keypad input area and make the numeric keypad input area disappear, returning it to the condition preceding numeric keypad input.

4

LCD Screen



- | No. | Function |
|-----|--|
| 1 | Data area |
| 2 | Measurement conditions area |
| 3 | NEW (Displayed when any of the measurement conditions are changed.) |
| 4 | Displays level axis scale per DIV |
| 5 | UN CAL (Displayed when measurement is not correctly carried out.) |
| 6 | Displays reference level |
| 7 | Label area (56 characters) |
| 8 | Displays wavelength resolution |
| 9 | Displays measurement sensitivity |
| 10 | Displays averaging times |
| 11 | Displays the number of measurement samples |
| 12 | Displays date and time |
| 13 | Displays each trace status |
| 14 | ZOOMING (Only displayed when ZOOM function is used) |
| 15 | Displays the statuses of main settings (When a setting is ON, its display is depressed, or is displayed with white on black background if the display colors are black and white.) |
| 16 | Displays wavelength axis scale per DIV |
| 17 | Displays sweep status (RPT=Repeat; SGL=Single; STP=Stop) |
| 18 | Displays soft key menu (Displays markers and data analysis results.) |

- 19 Parameter display area
- 20 Parameter input area
- 21 OVERVIEW display screen
(Only displayed when ZOOM function is used.)
- 22 Displays sub-scale
- 23 Displayed when SWEEP SPEED is 2x

5 Installing the Instrument



WARNING

- This instrument is designed to be used indoors. Do not install or use it outdoors.
 - Install the instrument so that you can immediately remove the power cord if an abnormal or dangerous condition occurs.
 - The instrument has a built-in reference light source for wavelength calibration, and infrared light is always being output from the optical output connector. Never look into the optical output connector. Infrared light entering the eyes can cause severe injury and loss of vision.
-

CAUTION

Do Not Apply Shock to the Instrument

non-horizontal orientation, and do not drop the instrument from a height of 2 cm or more. This can adversely affect the accuracy of the internal monochromator and inhibit performance. Take great care when transporting the instrument, and use packaging with a shock absorbing capacity that is greater than or equal to the packaging used upon shipment from the factory.

Never use inferior packaging materials that are unable to sufficiently absorb vibrations and shocks occurring during transport. This can adversely affect the accuracy of the internal monochromator and inhibit performance.

When unpacking

When the instrument is packaged in a box and moved, prevent condensation by allowing sufficient time for the instrument to acclimatize before removing it from the box.

French



AVERTISSEMENT

- L'instrument est prévu pour une utilisation en intérieur. Ne pas l'installer, ni l'utiliser à l'extérieur.
 - Installer l'instrument de manière à pouvoir immédiatement le débrancher du secteur en cas de fonctionnement anormal ou dangereux.
 - Il dispose d'une source de lumière de référence intégrée pour les ajustements d'alignement. La lumière infrarouge est toujours émise depuis le connecteur de sortie optique. Ne regardez jamais directement dans le connecteur de sortie optique. La lumière infrarouge risquerait de gravement vous blesser ou de provoquer une perte de vision.
-

ATTENTION

- **Ne pas heurter l'instrument**

en position non horizontale et ne faites pas chuter l'instrument d'une hauteur de 2 cm ou plus. Cela risquerait d'endommager la précision du monochromateur interne et les performances de l'instrument.

Transportez l'instrument avec maintes précautions et utilisez un emballage d'une capacité d'absorption supérieure ou égale à celle de l'emballage utilisé pour la livraison depuis l'usine.

N'utilisez jamais de matériaux d'emballage de qualité inférieure, incapables d'absorber correctement les vibrations et les chocs survenant au cours du transport.

Cela risquerait d'endommager la précision du monochromateur interne et les performances de l'instrument.

- **Déballage**

Lorsque l'instrument est emballé dans un carton et transporté, évitez toute condensation en le laissant s'adapter aux conditions environnementales suffisamment longtemps avant de le retirer du carton.

Installation Conditions

Desktop

Install the instrument so that the following conditions are met.

Flat Horizontal Location

Place the instrument in a stable location that is flat in all directions. If the instrument is used in an unstable or angled surface, the accuracy of the internal monochromator can be compromised.

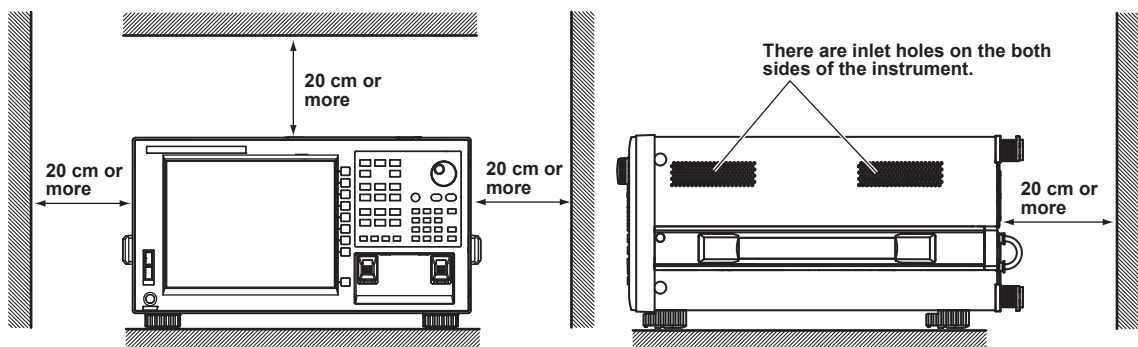
Location without Vibration

Do not install the instrument in a location subject to vibration. Use in a location that experiences large vibrations can lead to instability of operation, measurement stopping before completion, or notable decreases in accuracy of the wavelength and level axes.

Well Ventilated Location

Ventilation holes are present at the sides and rear of the instrument. To keep the internal temperature from rising, always maintain a gap of 200 mm or more between the ventilation holes and the installation surfaces.

Also be sure to maintain sufficient clearance for connecting measurement cables.



5 Installing the Instrument

Ambient Temperature and Humidity

Ambient temperature: 5–35°C

Ambient humidity: 80% RH or lower (no condensation present)

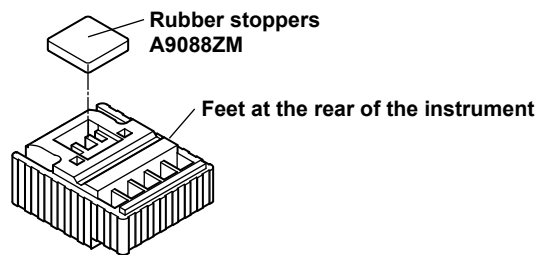
Note

Condensation may occur if the instrument is moved to another place where the ambient temperature is higher, or if the temperature changes rapidly. In this case, let the instrument adjust to the ambient temperature for at least one hour before use.

When the instrument is packaged in a box and moved, prevent condensation by allowing sufficient time for the instrument to acclimatize before removing it from the box.

Flat, Even Surface

Install the instrument with the correct orientation on a stable, horizontal surface. If the instrument is installed in a horizontal position, rubber stoppers can be attached to the feet at the rear of the instrument to prevent the instrument from sliding. One set of rubber stoppers (two stoppers) are included with the instrument.



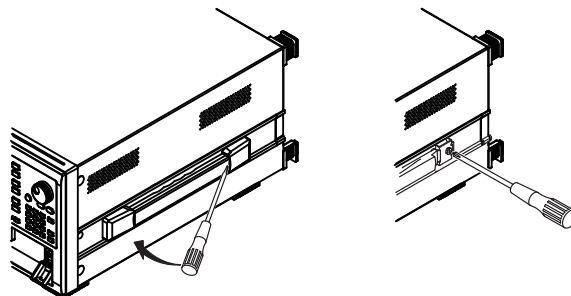
Rack Mounting

To rack-mount the instrument, use the separately sold rack mount kit.

| Product Name | Model |
|----------------------------------|-----------|
| Rack Mounting Kit for EIA Single | 751535-E5 |
| Rack Mounting Kit for JIS Single | 751535-E5 |

An outline of the mounting procedure is given below. For detailed instructions, see the manual that is included with the rack mount kit.

1. Remove the handles from both sides of the instrument.
2. Remove the four feet from the bottom of the instrument.
3. Remove the four seals the rack mount attachment holes on each side of the instrument near the front.
4. Place seals over the feet and handle attachment holes.
5. Attach the rack mount kit to the instrument.
6. Mount the instrument on a rack.



Note

- When rack-mounting the instrument, allow at least 10 cm of space around the inlet and exhaust holes to prevent internal heating.
 - Make sure to provide adequate support from the bottom of the instrument. The support should not block the inlet and exhaust holes.
-

Do Not Install the Instrument in the Following Places

- Outdoors.
- Dangerous locations where flammable or explosive gasses, vapors, or dust is present, or where the possibility of explosions or fires exists.
- In direct sunlight or near heat sources.
- Where an excessive amount of soot, steam, dust, or corrosive gas is present.
- Location where mechanical vibration is high.
- In an unstable place.
- Where the instrument is exposed to water or other liquids.

General Handling Precautions

- **Do Not Place Anything on Top of the Instrument**
Never stack instruments or place any other objects on top of the instrument, especially those containing water. Doing so can lead to malfunction.
- **Take Proper Care When Carrying the Instrument**
The instrument should always be carried by two people. Hold the instrument by the handles on the sides of the case. The instrument weighs approximately 23 kg. Take precautions against injuries when carrying it. Also, always turn the power switch OFF, remove the power cable, and confirm that no other cables are connected before carrying the instrument.
- **Clean the Instrument Properly**
When removing dirt from the case or operation panel, disconnect the power to the circuits under test and the instrument, remove the instrument's power cord from the power outlet, then wipe gently with a clean, dry cloth. Do not use volatile chemicals since this might cause discoloring and deformation.

6

Attaching the Connector Adapter

Attach the optional connector adapter before using the instrument.



WARNING

Always turn the power OFF before replacing the connector adapter. The instrument has a built-in reference light source for wavelength calibration, and infrared light is always being output from the optical output connector. Never look into the optical output connector. Infrared light entering the eyes can cause severe injury and loss of vision.



CAUTION

- As there may be dust adhering to calibration output, be sure to clean it before attaching the connector adapter.
- Do not exhale or blow compressed air into the monochromator from the optical input. Doing so may allow dust or other materials to enter the monochromator, adversely affecting its optical performance. Also, if debris is adhering to the optical components inside the monochromator when a strong light source is input, the monochromator may be damaged.
- When attaching or removing the connector adapter, carefully insert it perpendicularly to the ferrule so as not to damage the ferrule end.
- Moving the connector adapter to the right or left or inserting it forcefully can damage the ferrule or the connector adapter.

French



AVERTISSEMENT

Toujours éteindre l'avant de remplacer l'adaptateur de connecteur. Cet instrument dispose d'une source de lumière de référence intégrée pour les ajustements d'alignement. La lumière infrarouge est toujours émise depuis le connecteur de sortie optique. Ne regardez jamais directement dans le connecteur de sortie optique. La lumière infrarouge risquerait de gravement vous blesser ou de provoquer une perte de vision.



ATTENTION

- Comme il peut y avoir de la poussière adhérant à la sortie d'étalonnage, assurez-vous de le nettoyer avant de fixer l'adaptateur de connecteur.
- Ne pas expirer ou souffler de l'air comprimé dans le monochromateur de l'entrée optique. Cela pourrait permettre à la poussière ou d'autres matériaux pour entrer dans le monochromateur, nuire à ses performances optiques. En outre, si des débris adhère aux composants optiques à l'intérieur du monochromateur quand une forte source de lumière est entrée, le monochromateur peut être endommagé.
- Lors de la fixation ou du retrait de l'adaptateur de connecteur, insérer soigneusement perpendiculairement à la virole de manière à ne pas endommager l'extrémité virole.
- Déplacement de l'adaptateur de connecteur vers la droite ou vers la gauche ou en l'insérant de force peut endommager la virole ou de l'adaptateur de connecteur.

A connector adapter is required for connecting the optical connector to the AQ6376. On products with the /FC, /SC, /RFC, or /RSC option, connector adapters come attached to the optical input and calibration light source output on the AQ6376 front panel. On products without these options, attach a connector adapter appropriate for the optical connector.

Note

A different connector adapter is used for OPTICAL INPUT and CALIBRATION OUTPUT. Make sure not to use the wrong connector adapter.

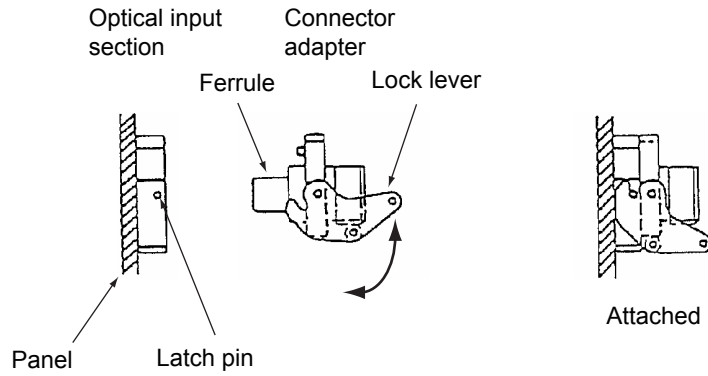
Attachment Procedure

1. Confirm that the power is OFF.
2. Open the optical connector cover at the front of the instrument.
3. Clean the ferrule edge of the optical I/O section using a swab soaked with a small amount of pure alcohol.
4. Insert the connector adapter all the way in.
5. Push the connector adapter's lock lever down.

The adapter has been attached correctly if the groove in the lock lever interlocks with the latch pin of the optical input/output section.

Removal Procedure

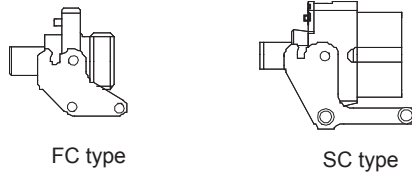
1. Confirm that the power is OFF.
2. Turn the connector adapter's lock lever up. The lock lever's lock is released.
3. Pull the connector adapter all the way out.
4. Close the optical connector cover at the front of the instrument.



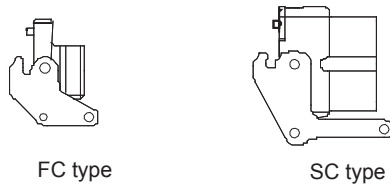
Explanation

Types of Connector Adapter

The connector adapter for internal reference light output (AQ9441) comes in the following three types.

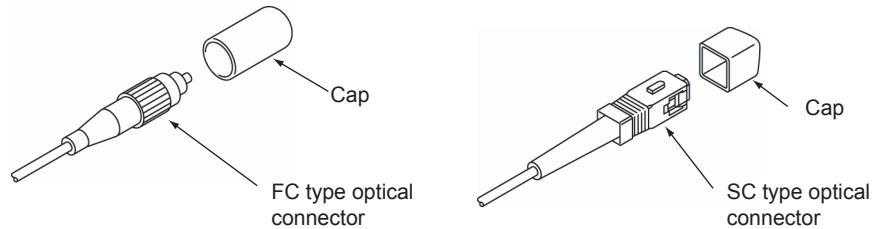


The optical input connector adapter (AQ9447) comes in the following three types.



Optical Connectors Types

The instrument can use FC or SC type optical connectors.



7

Connecting a Communication Interface

Connecting the Mouse

You can use a USB mouse.

Supported USB Mouse

The instrument can support a USB HID Class Ver. 1.1 compliant mouse (with wheel).

Connections

The USB mouse is connected to the USB interface on the front panel of the instrument.

1. Confirm that **MAIN POWER** switch on the rear panel is OFF.
2. Orient the USB mouse connector in the proper direction so that it is perpendicular to the USB port on the front panel, and insert it into the port.

Note

- There are two USB ports, but do not connect a mouse to each port at the same time.
- In addition to a mouse, you can connect a USB storage device.

For instructions on using the mouse, see section 3.2 of the *User's Manual*, IM AQ6376-01EN.

Connecting a Keyboard

You can connect a keyboard for entering file names, comments, and other items. Also, the functions and settings of the instrument are assigned to keyboard keys, allowing you to manipulate them with a keyboard just as you would by using the instrument's panel keys.

Supported Keyboards

The instrument supports any 101 English keyboard.

Connecting

Connect a USB keyboard to one of the USB interfaces on the front or rear panel of the instrument.

1. Confirm that the **MAIN POWER** switch on the rear panel is OFF.
2. Orient the mouse connector so that it matches the orientation of the interface, then insert the connector.

Note

- There are 2 USB interfaces each on front and rear panels, but do not connect more than one keyboard at a time.
- In addition to a USB keyboard, the USB interfaces can be used to connect USB storage and a USB mouse.

For information on operations using the keyboard, see section 3.2 of the *User's Manual*, IM AQ6376-01EN.

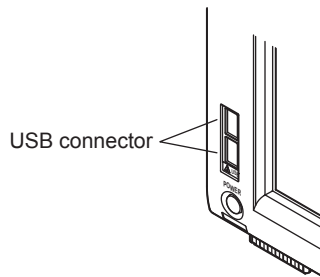
Connecting a USB Storage Device

Supported USB Storage Devices

The instrument supports USB memory (USB card adapters).
You cannot use a USB storage device not recognized by the instrument. If the USB storage device's drive is partitioned, only the primary partition (F:) is recognized. If there are two or more USB storage devices, only the first connected device is recognized. If you restart the instrument, it the USB storage devices that were connected will still be recognized.

Connections

Connect the USB storage device to the USB connector on the front panel of the instrument.



Removing

See section 7.1 of the *User's Manual*, IM AQ6376-01EN. (Using the **REMOVE USB STORAGE** soft key.)



CAUTION

Do not remove the USB storage device or turn the power OFF while the USB storage device access indicator is blinking. This can damage the data on the device or the device itself.

French



ATTENTION

Ne retirez pas le dispositif de stockage USB et ne coupez pas l'alimentation lorsque le voyant d'accès au dispositif de stockage USB clignote. Cela risquerait d'endommager le dispositif ou les données se trouvant sur ce dernier.

Connecting with Other Devices

You can use the GP-IB, RS-232C, or Ethernet interface to connect other external instruments to the AQ6376. For details, see the *Remote Control User's Manual*, IM AQ6376-17EN.

Note

Before connecting a GP-IB instrument, such as an external computer, or a LCD monitor or other display to the instrument, check the wiring, and be sure to turn OFF the power to the instrument and the instruments to be connected first.

Leaving the power ON while making connections can damage the equipment.

Before Connecting the Power

Take the following precautions before turning on the power supply. Failure to do so can result in electric shock or damage to instruments.



WARNING

- Make sure that the power supply voltage matches the instrument's rated supply voltage and that it does not exceed the maximum voltage range of the power cord to use.
- Check that the instrument's power switch is OFF before connecting the power cord.
- To prevent electric shock or fire, use the power cord for the instrument.
- To prevent electric shock, make sure to ground the instrument. Connect the power cord to a three-prong power outlet with a protective earth terminal.
- Do not use an extension cord without protective earth ground. Otherwise, the protection function will be compromised.
- If there is no AC outlet that is compatible with the power cord that you will be using and you cannot ground the instrument, do not use the instrument.

French



AVERTISSEMENT

- Assurez-vous que la tension d'alimentation correspond à la tension d'alimentation nominale de l'appareil et qu'elle ne dépasse pas la plage de tension maximale du cordon d'alimentation à utiliser.
- Vérifiez que l'interrupteur d'alimentation de l'instrument est sur OFF avant de brancher le cordon d'alimentation.
- Pour éviter tout risque de choc électrique, utiliser exclusivement le cordon d'alimentation prévu pour cet instrument.
- Pour éviter tout risque de choc électrique, l'instrument doit impérativement être relié à la terre. Brancher le cordon d'alimentation sur une prise de courant à trois plots reliée à la terre.
- N'utilisez pas de rallonge si celle-ci n'est pas reliée à la terre, car la fonction de protection serait compromise.
- Si une sortie CA conforme au câble d'alimentation fourni n'est pas disponible et que vous ne pouvez pas relier l'instrument à la terre, ne l'utilisez pas.

Preparing to Turn ON the Power

The AQ6376 has a **MAIN POWER** switch for turning the main power ON/OFF, and a **POWER** switch for starting and shutting down the instrument. **The POWER** switch is a push-button switch; press once to turn it ON and press again to turn it OFF.

- Confirm that the **MAIN POWER** switch on the rear panel of the instrument is OFF.
- Connect the power cord plug to the power connector on the rear panel.
- Connect the other end of the cord to an outlet that meets the following conditions. Use a grounded three-prong outlet.

| Item | |
|----------------------------------|--------------------|
| Rated supply voltage* | 100 VAC to 240 VAC |
| Permitted supply voltage range | 90 VAC to 264 VAC |
| Rated power supply frequency | 50/60 Hz |
| Permitted supply frequency range | 48 Hz to 63 Hz |
| Maximum power consumption | Approx. 100 VA |

- * This instrument can use a 100 V or a 200 V power supply. The maximum rated voltage differs according to the type of power cord. Check that the voltage supplied to the instrument is less than or equal to the maximum rated voltage of the power cord that you will be using before use.
- Before replacing a fuse, always turn the **MAIN POWER** switch OFF and remove the power cord from the power outlet.

Power On and Screen Display



CAUTION

Do not input a strong light source to the instrument when turning the power ON. If a strong light source is input, the optical section can be damaged.

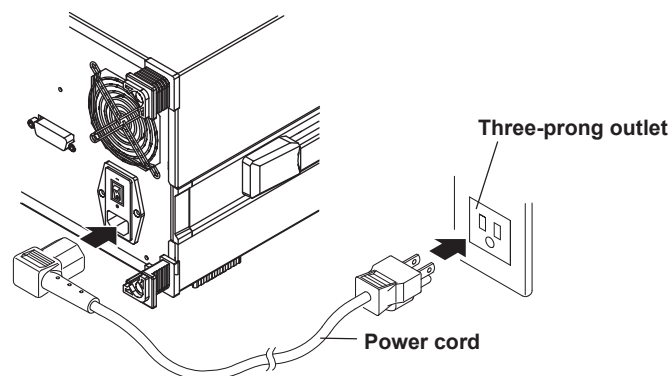
French



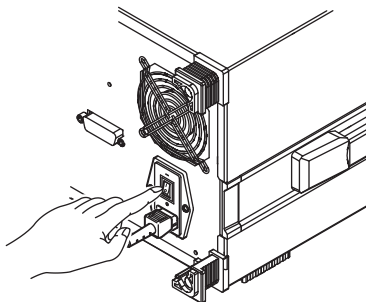
ATTENTION

Ne connectez pas une source de lumière puissante à l'instrument lorsque vous mettez l'alimentation sous tension, cela risquerait d'endommager la section optique.

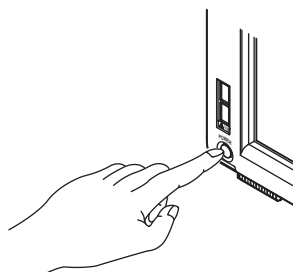
1. Connect the power cord to the power cord connector on the back side of the instrument.



2. Turn ON the **MAIN POWER** switch on the rear panel of the instrument. The **POWER** switch on the front panel of the instrument lights orange.



3. Press the **POWER** switch on the front panel of the instrument. The color of the switch turns from orange to green. The operating system starts up, and initialization of the instrument begins.



The initialization screen appears, and the internal initialization process starts. STEP 1/9 through STEP 9/9 are displayed in the lower right part of the screen to indicate the progress of initialization.

Operations Performed When the Power Is Turned On



CAUTION

Do not press the POWER or MAIN POWER switches while initialization is in progress.
Doing so can cause malfunction.

French

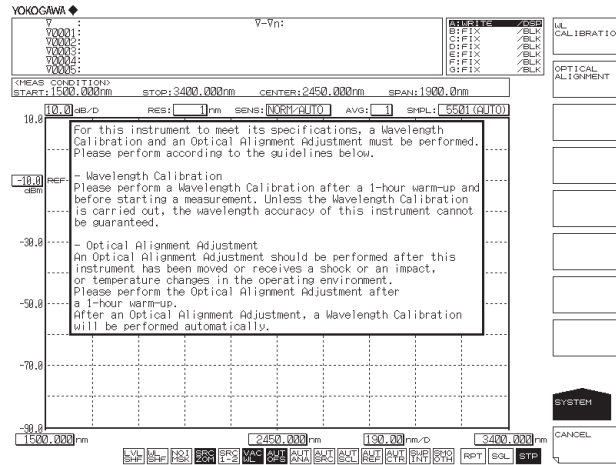


ATTENTION

N'appuyez pas sur les interrupteurs POWER ou MAIN POWER pendant l'initialisation.
Cela pourrait provoquer des dysfonctionnements.

8 Turning the Power ON/OFF

If initialization finishes successfully, a message appears prompting you to execute wavelength calibration and alignment adjustment.



The contents of the message are as follows.

For this instrument to meet its specification, a Wavelength Calibration and an Optical Alignment Adjustment must be performed. Please perform these operations according to the guidelines below.

Wavelength Calibration

Perform wavelength calibration before starting measurement (a warm-up of one hour is also required prior to measurement). Unless the Wavelength Calibration is carried out, the wavelength accuracy of the instrument cannot be guaranteed.

Alignment Adjustment

Always perform alignment adjustment the first time you use the instrument, if the instrument was vibrated when being moved, or if the temperature in the operating environment has changed. Perform the alignment adjustment after a one-hour warm-up.

See section 2.1 of the *User's Manual*, IM AQ6376-01EN for details on the alignment adjustment operation, and 2.2 for wavelength calibration.

When the Power-on Operation Does Not Finish Normally

Turn off the power switch, and check that :

- The instrument is installed properly. See section 5, "installing the instrument."
- The power cord is connected properly. See the previous page.

If the instrument still does not work properly, contact your nearest YOKOGAWA dealer for repairs.

If an error occurs in the memory or some other part of the instrument during initialization, the AQ6376 will stop running with "STEP @ / 9" showing on the screen (where @ is a number between 1 and 9).

If this occurs, repairs are necessary. Contact your nearest YOKOGAWA dealer immediately.

Note

The instrument "remembers" measurement conditions, selected soft keys, waveforms being displayed, and other information. When the power is turned ON, the state of the instrument prior to the last shut down is restored. When the power is turned ON for the first time, the instrument starts up in the factory default state.

Turning the Power OFF



CAUTION

Do not cut the power to the instrument with the **MAIN POWER** switch on the rear panel when an operation is in progress. The operating system configuration file will not be backed up, possibly resulting in malfunctions upon start up the next time the instrument is turned ON. Furthermore, since the monochromator will not be retracted, transporting or moving the instrument repeatedly in this condition may damage the monochromator. Be sure to follow the above procedure to shut down the instrument. Always use the above procedure to shut down.

French



ATTENTION

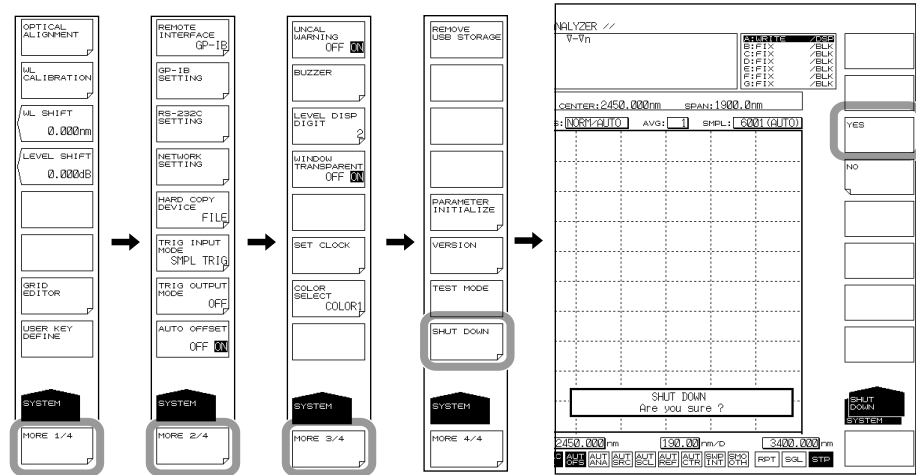
Lorsque l'instrument est en cours de fonctionnement, ne coupez pas son alimentation à l'aide de l'interrupteur MAIN POWER situé sur le panneau arrière. Le fichier de configuration du système d'exploitation ne serait pas sauvegardé, ce qui entraînerait probablement des dysfonctionnements à la prochaine mise sous tension de l'instrument. Suivez toujours la procédure ci-dessous. En outre, le monochromateur ne se rétractant pas, le transport ou le déplacement répété de l'instrument dans cet état risque de provoquer l'endommagement du monochromateur. Veillez à suivre la procédure ci-avant pour arrêter l'instrument.

1. Press the **POWER** switch on the front panel of the instrument. A shut down confirmation message is displayed along with the **YES** and **NO** soft keys.
2. Press the **YES** soft key. The message, "AQ6376 is shutting down. Please wait..." appears, and shut-down begins. If you do not wish to shut down, press the **NO** soft key. The screen returns to the original soft key menu.
3. After the **POWER** switch changes from green to orange, turn OFF the **MAIN POWER** switch on the rear panel of the instrument.

8 Turning the Power ON/OFF

You can also shut down the instrument using panel keys and soft keys.

1. Press **SYSTEM**.
2. Press the **MORE** soft key three times. The **SYSTEM 4/4** screen is displayed.
3. Press the **SHUT DOWN** soft key.
4. Press the **YES** soft key. Shut down begins.
5. After the **POWER** switch changes from green to orange, turn OFF the **MAIN POWER** switch on the rear panel of the instrument.



Note

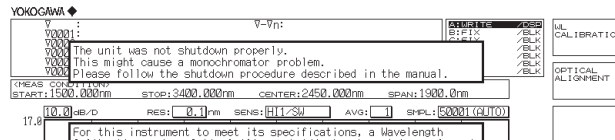
If for some reason the instrument fails to shut down normally, hold down the **POWER** switch for approximately four seconds or longer to force standby mode. Note that the operating system configuration file will not be backed up, possibly resulting in malfunctions upon start up the next time the instrument is turned on.

Explanation

Screen when the instrument was not shut down

If the shutdown procedure was not performed after the previous session, the following message appears after start up.

Failure to properly shut down the instrument can result in damage to the monochromator. When turning OFF the power, always perform the shut down procedure. Press any key to clear this message.



9 Connecting the DUT

Procedure



WARNING

Do not look at the optical fiber laser light that you are measuring or point the laser at another person's eye. Doing so may cause eye damage or impair one's health. The instrument has a built-in reference light source for alignment, and infrared light is always being output from the optical output connector. Never look into the optical output connector. Infrared light entering the eyes can cause severe injury and loss of vision.



CAUTION

- Before connecting an optical fiber to the instrument, make sure that the start-up initialization process has finished. If a strong light source is input during start-up, the optical section can be damaged.
- Be sure to clean the tip of the optical fiber's optical connector before connecting.
- As there may be dust adhering to calibration output, be sure to clean it before connecting optical fiber.
- Do not try to forcefully attach the optical fiber's optical connector with the plug inserted at a slanted angle. Doing so may damage the instrument's optical connector's components or the connector itself.
- Before connecting the input light, make sure that it does not exceed the AQ6376's maximum rated level. If input light exceeding the maximum rated level is introduced, the optical section may be damaged.
- Do not exhale or blow compressed air into the monochromator from the optical input. Doing so may allow dust or other materials to enter the monochromator, adversely affecting its optical performance. Also, if debris is adhering to the optical components inside the monochromator when a strong light source is input, the monochromator may be damaged.
- Press the optical connector hard against the cleaning surface of the special cleaner to clean it. If it is not pressed hard against the cleaning surface, it may not be possible to properly clean the optical connector.

French



AVERTISSEMENT

Ne regardez pas directement la lumière du laser à fibre optique et ne pointez pas le laser vers le yeux d'une tierce personne, pour ne pas provoquer de blessures ou de dommages oculaires.

Cet instrument dispose d'une source de lumière de référence intégrée pour les ajustements d'alignement. La lumière infrarouge est toujours émise depuis le connecteur de sortie optique. Ne regardez jamais directement dans le connecteur de sortie optique. La lumière infrarouge risquerait de gravement vous blesser ou de provoquer une perte de vision.

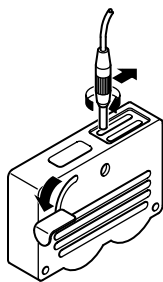


ATTENTION

- Avant de connecter l'instrument à une fibre optique, vérifiez que la procédure d'initialisation de démarrage est terminée. Si vous connectez une source de lumière puissante au démarrage, la section optique risque d'être endommagée.
- Veillez à nettoyer l'extrémité du connecteur de la fibre optique avant le raccordement.
- Comme il peut y avoir de la poussière adhérant à la sortie d'étalonnage, assurez-vous de le nettoyer avant de fixer l'adaptateur de connecteur.
- Ne forcez pas le connecteur de la fibre optique dans la fiche en l'insérant de manière inclinée. Vous risqueriez de l'endommager ou d'endommager ses composants.
- Avant de connecter la lumière d'entrée, vérifiez qu'elle ne dépasse la valeur nominale maximale de l'analyseur AQ6376, car si tel était le cas, la section optique pourrait être endommagée.
- Ne pas expirer ou souffler de l'air comprimé dans le monochromateur de l'entrée optique. Cela pourrait permettre à la poussière ou d'autres matériaux pour entrer dans le monochromateur, nuire à ses performances optiques. En outre, si des débris adhère aux composants optiques à l'intérieur du monochromateur quand une forte source de lumière est entrée, le monochromateur peut être endommagé.
- Appuyez fermement le connecteur optique sur la surface nettoyante du nettoyeur. Si vous n'appuyez pas fermement, le connecteur optique risque de ne pas être correctement nettoyé.

Cleaning the Optical Fiber End Face

1. Firmly press the connector end face of the optical fiber against the cleaning surface of the cleaner.
2. While pressing the end face against the cleaner, turn it once.
3. While pressing the end face against the cleaner, move it.
4. Repeat steps 1 to 3.



Note

- If you do not firmly press the connector end face of the optical fiber against the cleaner, the end face may not be cleaned completely.
- You can purchase an optical fiber connector cleaner from NTT-AT Corporation.

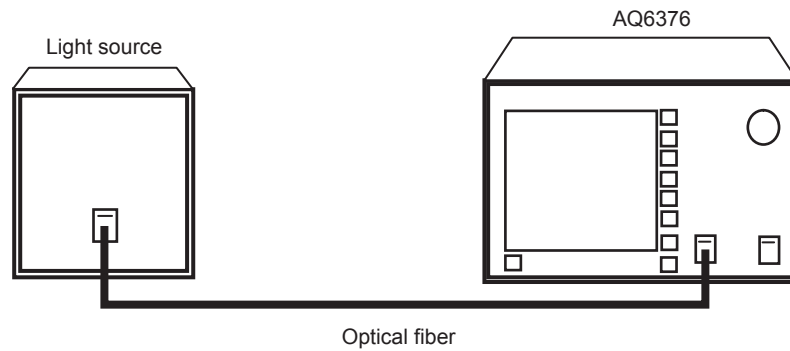
Connecting Optical Fibers

5. Open the instrument's optical input connector cover.
6. Connect the optical fiber's optical connector to the optical input connector on the instrument.

Connecting the DUT (Light Source)

7. Clean the top of the optical connector on the other end of the optical fiber with a fiber cleaner.
8. Connect the optical connector on the other end of the optical fiber to the optical connector on the DUT.

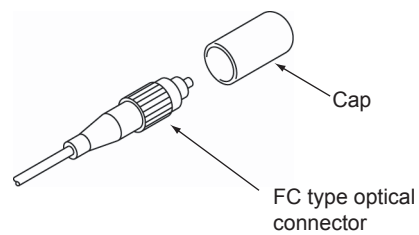
Measuring System



Explanation

Optical Connectors Types

The instrument can use FC or SC type optical connectors.



10 Specifications

| Item | Specifications |
|---|--|
| Measurement wavelength range ¹ | 1500 to 3400 nm |
| Span ¹ | 0.5 nm to 1900 nm (entire wavelength range), 0 nm |
| Wavelength accuracy ^{1, 2, 5} | ±0.5 nm (entire wavelength range) |
| Wavelength repeatability ^{1, 2} | ±0.015 nm (1 minute) |
| Wavelength resolution setting ^{1, 2} | 0.1, 0.2, 0.5, 1 and 2 nm |
| Wavelength sampling resolution ¹ | 0.003 nm minimum |
| Wavelength sampling points | 101 to 50001, AUTO |
| Level sensitivity setting | NORM_HOLD, NORM_AUTO, NORMAL, MID, HIGH1, HIGH2 and HIGH3 (It is set to High dynamic range mode (chop) when the sensitivity is set to HIGH1–HIGH3.) |
| Level sensitivity ^{2, 3, 6} | -65 dBm (1500 to 2200 nm) -55 dBm (2200 to 3200 nm) -50 dBm (3200 to 3400 nm) (measurement sensitivity: HIGH3) |
| Maximum input power ^{2, 3} | +13 dBm (per channel, full span) |
| Safe max. input power ^{2, 3} | +20 dBm (total light input power) |
| Level accuracy ^{2, 3, 4} | ±1.0 dB (1550 nm, input level: -20 dBm, measurement sensitivity: HIGH1–HIGH3) |
| Level linearity ^{2, 3} | ±0.2 dB (input level: -30 to +10 dBm, measurement sensitivity: HIGH1–HIGH3) |
| Dynamic range ^{1, 2} | 40 dB (±1 nm of peak wavelength) 55 dB (±2 nm of peak wavelength) (resolution: 0.1 nm, measurement sensitivity: HIGH1–HIGH3) |
| Applicable fiber | SM (9.5/125 μm), GI (50/125 μm, 62.5/125 μm) |
| Optical connectors | For optional I/O, AQ9447(*) connector adapter (option) required. For wavelength reference light source output, AQ9441(*) universal adapter (option) required. (*): Connector types: FC or SC |
| Built-in calibration light source | For alignment and wavelength calibration |
| Sweep time ^{1, 6, 7} | 0.5 s (NORM_AUTO), 1 s (NORMAL), 2 s (MID), 20 s (HIGH1) |
| Electrical interfaces | GP-IB RS-232, Ethernet, USB, SVGA output, analog output port, trigger input port, trigger output port |
| Remote control ⁸ | GP-IB, RS-232, Ethernet (TCP/IP) AQ6317 series compliant commands (IEEE488.1) and IEEE488.2 |
| Purge gas I/O port | 1/4" outer diameter nylon tube |
| Data storage | |
| Internal storage | 512 MB or more |
| Internal memory | 64 traces, 64 programs, 3 templates |
| External storage | USB storage media (USB memory/HDD), format: FAT32 |
| File types | CSV (text), binary, bitmap, TIFF |
| Display ⁹ | 10.4" color LCD (resolution: 800 x 600 pixels) |
| Environment conditions | Optimal temperature: +18 to +28°C Operating temperature range: +5 to +35°C Storage temperature range: -10 to +50°C Ambient humidity: 20 to 80% RH (no condensation) |
| Warm-up | Warm-up time: 1 hour After warm-up ends, alignment adjustment with the internal reference light source required. |
| Power requirement | 100 to 240 VAC, 50/60 Hz, approximately 100 VA |
| External dimensions | Approximately 426 (W) x 221 (H) x 459 (D) mm (Note that this excludes the protector and handle) |
| Mass | Approximately 23 kg |
| Recommended calibration period | 1 year |

| | |
|---------------------------------|--|
| Function | |
| Measurement | |
| Setting of measuring conditions | Center wavelength, span, wavelength sampling points, wavelength resolution, measurement sensitivity, high dynamic mode, average count (1 to 999), double-speed measurement mode, smoothing |
| Sweep settings | Single sweep, repeat sweep, AUTO (automatically sets measuring conditions), sweep between marker, data logging |
| Measurement function | CW measurement, pulse light measurement, external trigger measurement, gate measurement, air/vacuum wavelength measurement |
| Other | Sweep status output, analog output |
| Display | |
| Vertical scale | Level scale (0.1 to 10 dB/div, linear), level subscale (0.1 to 10 dB/div, linear), reference level display, DIV display (8, 10, 12), percentage display, dB/km display, power spectral density (dB/nm) display, noise mask |
| Horizontal scale | Horizontal wavelength (nm) display, frequency (THz) display, wave number (cm ⁻¹) display, zoom in/zoom out display |
| Display mode and items | Single waveform display, split screen display, data table display, label display, template display, measurement condition display |
| Trace | |
| Display function | Simultaneous display of 7 independent traces, max/min value detection display, calculation between traces display, normalized display, roll averaging (sweep average) display (2 to 100 times), curve fit display, peak curve fit display, marker curve fit display |
| Other | Trace copy, trace clear, write mode fixed mode setting, show/hide setting |
| Marker and search | |
| Marker | Delta marker (1024 points max.), vertical/horizontal line markers, advanced marker |
| Search | Peak search, bottom search, auto search (ON/OFF), search between vertical axis line markers, search within zoom area |
| Data analysis | |
| Analysis feature | Spectral width analysis (threshold, envelope, RMS, Peak-RMS, notch), WDM (OSNR) analysis, EDFA-NF analysis, filter peak/bottom analysis, WDM filter peak/bottom analysis, DFB-LD analysis, FP-LD analysis, LED analysis, SMSR analysis, power analysis, PMD analysis, Pass/Fail judgment from template |
| Other | Auto analysis execution setting, analysis between vertical axis line markers, analysis within the zoom area |
| Auto measurement | |
| Programming | 64 programs, 200 steps/program |
| Other | |
| Alignment | Auto alignment using built-in calibration light source |
| Wavelength Calibration | Auto wavelength calibration using built-in calibration light source or an external light source |
| Safety standards | |
| Conforming standards | EN61010-1 EN60825-1 Class 1 |
| | Pollution degree 2 ¹⁰ |
| Environmental standard | |
| Compliant standards | EN50581 Monitoring and control instruments including industrial monitoring and control instruments. |

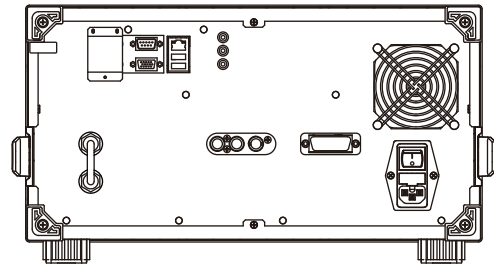
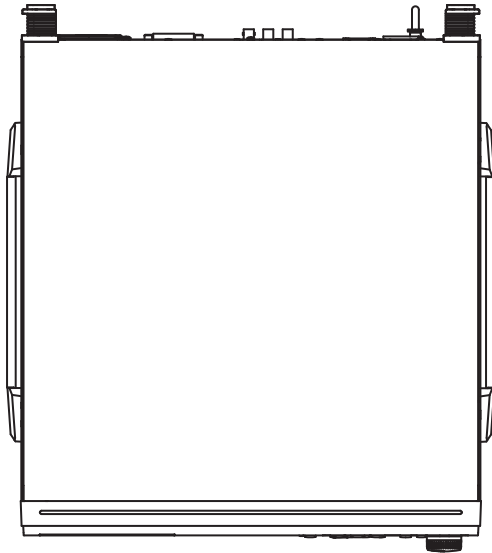
10 Specifications

| | | |
|-----------|--------------------------------|---|
| Emissions | Conforming standards | EN61326-1 Class A EN55011 Class A, Group 1 EN61000-3-2 EN61000-3-3 EMC standards of Australia and New Zealand EN55011 Class A, Group 1 Korea Electromagnetic Conformity Standard (한국 전자파적합성기준) This is a class A instrument (industrial use). Wireless interference may occur in home environments. If so, the user must take appropriate countermeasures. |
| | Cable conditions | <ul style="list-style-type: none"> • TRIGGER IN, TRIGGER OUT, ANALOG OUT terminal. Use a BNC cable¹¹ • Use a serial (RS-232) interface connector and RS-232 shielded cable.¹¹ • Use an Ethernet connector and a category 5 or higher Ethernet cable.¹² • Use a VIDEO OUT connector and a D-sub 15pin VGA shielded cable¹¹ • Use a USB peripheral (such as a mouse) that uses a USB port and shielded cable¹¹ • Use the GP-IB interface connector and a GP-IB shielded cable¹¹ |
| Immunity | Conforming standards | EN61326-1 Table 2 (For use in industrial locations) |
| | Effect in immunity environment | Wavelength measurement sensitivity: Within ±0.1 nm |
| | Cable conditions | Same as above emission cable conditions. |

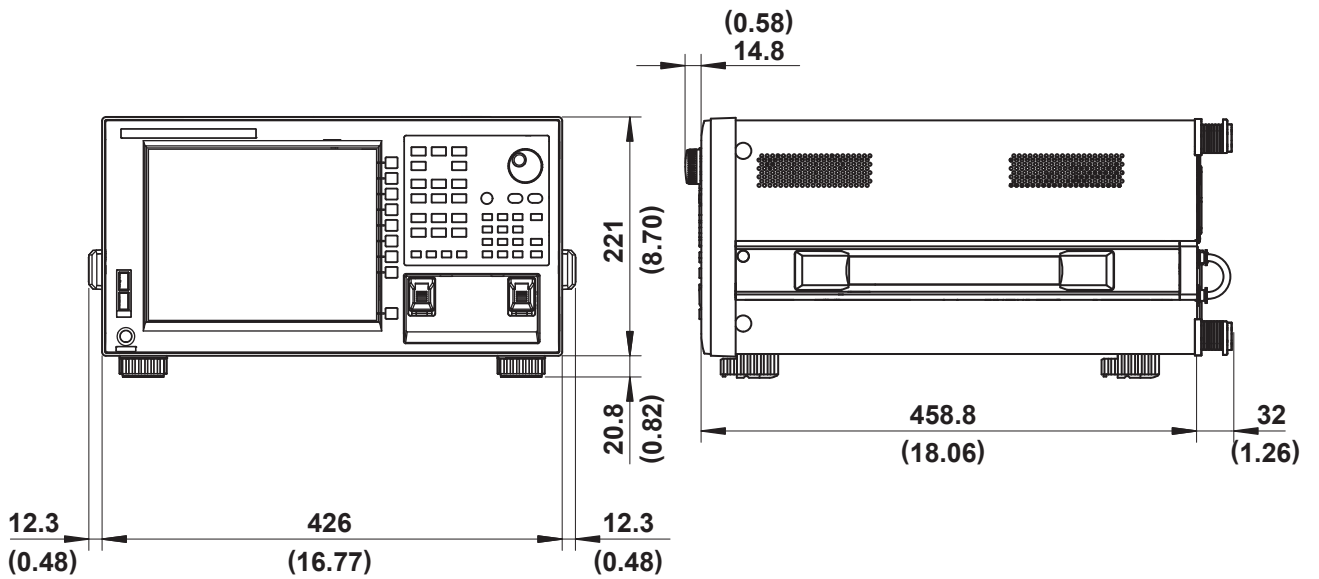
- 1: Horizontal axis scale: In wavelength display mode
- 2: 9.5/125 μm single mode fiber, after warm-up of 2 hours, built-in wavelength reference light source
After alignment adjustment, at ambient temperature of 23 ±5°C, when the purge gas is not used.
- 3: Vertical scale: absolute value level display mode, resolution setting: 0.2 nm or more.
- 4: When using 9.5/125 μm single mode fiber (SSMA type in JIS C6835, PC polishing, mode field diameter: 9.5 μm, NA: 0.104 to 0.107)
- 5: After wavelength calibration with built-in reference light source, sampling interval: (AUTO), sensitivity: MID, HIGH1 to HIGH3
- 6: Pulse light measurement mode: OFF
- 7: Excluding measurement wavelength range 2200 nm to 2220 nm, span: 100 nm or less, wavelength sampling points: 1001, averaging times: 1
- 8: Certain commands may not support the AQ6317 depending on the relationship between the target model specifications and functions.
- 9: The LDC display may contain defective pixels (always ON or always OFF).
(0.002% or fewer of all pixels including RGB). Does not indicate a general malfunction.
- 10: Pollution degree refers to the degree of adherence by a solid, liquid, or vapor that reduces the withstand voltage or surface resistance factor. Pollution degree 1 applies to closed atmospheres (no pollution, or only dry, non-conductive pollution).
Pollution degree 2 applies to normal indoor atmospheres (with only non-conductive pollution).
- 11: Use a cable of 3 m in length or less.
- 12: Use a cable of 30 m in length or less.

11 External Dimensions

Unit : mm
(approx. inch)



REAR VIEW



If not specified, the tolerance is $\pm 3\%$. However, in cases of less than 10 mm, the tolerance is ± 0.3 mm.