Thank you for purchasing the AQ7280 series units and modules. To ensure correct use, please read this manual thoroughly before beginning operation. For details on the functions and performance, see the AQ7280 OTDR User’s Manual (IM AQ7280-01EN/-02EN).

In addition to this manual, the following nine kinds of manuals are provided for the AQ7280 series units and modules. Please read all manuals.

<table>
<thead>
<tr>
<th>Manual Title</th>
<th>Manual No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7280 OTDR User’s Manual (included in CD)</td>
<td>IM AQ7280-01EN</td>
<td>Explains all AQ7280 features, except for the communication features, and how to use them.</td>
</tr>
<tr>
<td>AQ7280 OTDR Getting Started Guide</td>
<td>IM AQ7280-02EN</td>
<td>This guide focuses on the handling precautions, basic operations, and specifications of the AQ7280.</td>
</tr>
<tr>
<td>AQ7280 OTDR Communication Interface User’s Manual (included in CD)</td>
<td>IM AQ7280-17EN</td>
<td>Explains the features related to using communication commands to control the AQ7280.</td>
</tr>
<tr>
<td>Model 739883 Battery Pack Handling Precautions</td>
<td>IM 739883-01EN</td>
<td>Explains the handling precautions for the battery pack.</td>
</tr>
<tr>
<td>Precautions Concerning the AQ7280 Series Units and Modules</td>
<td>IM AQ7280-71EN</td>
<td>This manual. This is included with AQ7280 series units and modules. It explains the handling precautions of the units, modules and lists the package contents.</td>
</tr>
</tbody>
</table>

The “EN” and “Z1” in the manual numbers are the language codes.

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

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIM 113-01Z2</td>
<td>List of worldwide contacts</td>
</tr>
</tbody>
</table>
Checking the Package Contents

After receiving the product and opening the package, check the items described below. If the wrong items have been delivered, if items are missing, or if there is a problem with the appearance of the items, contact your nearest YOKOGAWA dealer.

Check that the product that you have received is the same product that you ordered. For reference, the model name, suffix code, and specifications of the products are listed below.

### OTDR unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix 2</th>
<th>Description</th>
<th>AQ7280 Mainframe’s Compatible Firmware version</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7282A</td>
<td>2WL</td>
<td>1310/1550 nm 38/36 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283A</td>
<td>2WL</td>
<td>1310/1550 nm 42/40 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7284A</td>
<td>2WL</td>
<td>1310/1550 nm 46/45 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7285A</td>
<td>2WL</td>
<td>1310/1550 nm 50/50 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283E</td>
<td>3WL</td>
<td>1310/1550, 1625 nm 42/40, 40 dB (1625 nm port is equipped with a built-in filter)</td>
<td>2.01 and later</td>
</tr>
<tr>
<td>AQ7283F</td>
<td>3WL</td>
<td>1310/1550, 1650 nm 42/40, 40 dB (1650 nm port is equipped with a built-in filter)</td>
<td>1.01 and later</td>
</tr>
<tr>
<td>AQ7282G</td>
<td>3WL</td>
<td>1310/1490/1550 nm 38/36/36 dB</td>
<td>2.01 and later</td>
</tr>
<tr>
<td>AQ7283H</td>
<td>3WL</td>
<td>1310/1550/1625 nm 40/40/39 dB</td>
<td>1.01 and later</td>
</tr>
<tr>
<td>AQ7284H</td>
<td>3WL</td>
<td>1310/1550/1625 nm 46/44/44 dB</td>
<td>1.01 and later</td>
</tr>
<tr>
<td>AQ7283J</td>
<td>4WL</td>
<td>1310/1383/1550/1625 nm 42/39/40/40 dB</td>
<td>2.01 and later</td>
</tr>
<tr>
<td>AQ7283K</td>
<td>4WL</td>
<td>1310/1490/1550/1625 nm 42/38/40/40 dB</td>
<td>1.01 and later</td>
</tr>
<tr>
<td>AQ7282M</td>
<td>2WL</td>
<td>850/1300 nm (MM) 25/27 dB</td>
<td></td>
</tr>
</tbody>
</table>

**Connector Adapter**
- USC Universal adapter (SC)
- UFC Universal adapter (FC)
- ULC Universal adapter (LC)
- ASC Universal adapter (Angled-PC SC)³
- NUA No universal adapter

**Options**
- PC Power Checker³ ⁴ 1.01 and later
- SLS Stabilized Light Source⁶ 1.01 and later⁶

1. The connectors that you select are attached to the OTDR ports prior to shipping.
2. For products whose suffix code contains “Z,” an exclusive manual may be included. Please read it along with the standard manual.
3. Not applicable to AQ7282M.
4. Not applicable to the port 2 of AQ7283E and AQ7283F.
5. Not applicable for 1383 nm of AQ7283J.
6. AQ7282M is supported on firmware version 2.01 and later.

### Accessories

<table>
<thead>
<tr>
<th>Name</th>
<th>Q’ty</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuals</td>
<td>–</td>
<td>IM AQ7280-71EN (This manual.) PIM113-01Z2 (List of worldwide contacts) IM AQ7282A-92Z1</td>
</tr>
</tbody>
</table>
Optical power meter module (OPM module)

Model    Suffix² Description
AQ2780    OPM module Power range: –70 dBm to +10 dBm (CW)
AQ2781    High Power OPM module Power range: –50 dBm to +27 dBm (CW)
AQ2780V   OPM & VLS module Power range: –70 dB to +10 dBm (CW) with Visible Light Source (Connector: ɸ2.5 Ferrule)
AQ2781V   High Power OPM & VLS module Power range: –50 dBm to +27 dBm (CW) with Visible Light Source (Connector: ɸ2.5 Ferrule)

Connector Adapter¹ -SCC Universal adapter (SC)
-FCSC Universal adapter (FC)
-LMC Ferrule adapter (ɸ1.25)

¹ The connectors that you select are attached to the OPM ports prior to shipping.
² For products whose suffix code contains “Z,” an exclusive manual may be included. Please read it along with the standard manual.

• Accessories

Name   Q’ty Notes
Manuals – IM AQ7280-71EN (This manual.)
          PIM113-01Z2 (List of worldwide contacts)
          IM AQ7280-92Z1

Visible light source module (VLS module)

Model    Suffix¹ Description
AQ4780    VLS module Visible Light Source (Connector: ɸ2.5 Ferrule)

¹ For products whose suffix code contains “Z,” an exclusive manual may be included. Please read it along with the standard manual.

• Accessories

Name   Q’ty Notes
Manuals – IM AQ7280-71EN (This manual.)
          PIM113-01Z2 (List of worldwide contacts)
          IM AQ7280-92Z1

No. (Instrument number)

When contacting the dealer from which you purchased the instrument, please tell them the instrument number.
Safety Precautions
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. YOKOGAWA assumes no liability for the customer’s failure to comply with these requirements.

The following symbols are used on this instrument.

Handle with care. To protect the instrument and its users, refer to the explanation in the User’s Manual or Service Manual.

Laser radiation hazard

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.

Danger : Appareil laser à rayonnement.

Safety Precautions of the Units and Modules
The following precautions must be observed when handling the modules. YOKOGAWA assumes no liability for the customer’s failure to comply with these requirements. For details on the installation/removal procedure and the specifications of the units and modules, see the AQ7280 OTDR Getting Started Guide (IM AQ7280-02EN).

WARNING

Use the Instrument Only for Its Intended Purpose
This 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.

Laser Beam
Do not look directly or indirectly into the laser beam or at a specular reflection of the beam without protective equipment. Do not aim the laser beam at the eye. The laser beam may cause blindness or damage to your eyes. Attach the cover to the optical connector when it is not in use. Turn the power OFF when you are cleaning the AQ7280.

Connecting Optical Fiber Cables
Use optical fiber cable connectors that conform to the included universal adapter and connector adapter (the universal adapter specified by the suffix code).

Apply Correct Signals to the Optical Connectors
Do not apply light that is −5 dBm or greater to the OTDR unit optical connectors (PORT1 and PORT2). Doing so may damage the OTDR unit.

Do not apply light that is +10 dBm or greater to the OPM module (AQ2780, AQ2780V). Do not apply light that is +27 dBm or greater to the OPM module (AQ2781, AQ2781V). Doing so may damage the OPM module.

Do Not Operate in an Explosive Atmosphere
Do not use the instruments in the presence of flammable gasses or vapors. Doing so is extremely dangerous.

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.
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.

Faisceau laser

Connexion des câbles à fibre optique
Utiliser des connecteurs de câbles à fibre optique conformes à l’adaptateur universel fourni (adaptateur universel indiqué par le suffixe).

Envoyer les signaux corrects aux connecteurs optiques
Ne pas appliquer de signal de –5 dBm ou plus aux connecteurs optiques de l’unité OTDR (série AQ7282) (PORT1 et PORT2). Ce faisceau laser peut entraîner la cécité ou causer des lésions oculaires. Recouvrir le connecteur optique à l’aide du cache pendant les périodes de nonutilisation. Mettre l’AQ7280 hors tension pendant son nettoyage.

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.
Safety Precautions for Laser Products

This instrument uses a laser light source. This instrument is a Class 1M laser product as defined by IEC60825-1 Safety of Laser Products—Part 1: Equipment Classification and Requirements. In addition, this instrument complies with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.

OTDR unit (AQ7284A, AQ7285A, AQ7284H, AQ7283J, AQ7283K)

Laser Class 1M Label
Using an optical instrument, such as a loupe, magnifying glass, or microscope, when observing the laser beam from a distance of less than 100 mm may cause eye injury.

Laser Class 3R Label
Avoid direct eye exposure.

OTDR unit (AQ7282A, AQ7283A, AQ7283E, AQ7283F, AQ7282G, AQ7283H)

Laser Class 1M Label
Using an optical instrument, such as a loupe, magnifying glass, or microscope, when observing the laser beam from a distance of less than 100 mm may cause eye injury.
OTDR unit (AQ7282M)

Laser Class 1M Label
Using an optical instrument, such as a loupe, magnifying glass, or microscope, when observing the laser beam from a distance of less than 100 mm may cause eye injury.

Laser Class 3R Label
Avoid direct eye exposure.

OPM module (AQ2780V, AQ2781V)

VLS module (AQ4780)
### OTDR unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Class</th>
<th>Center Wavelength</th>
<th>Maximum Output Power[^1]</th>
<th>Mode Field Diameter</th>
<th>Beam Divergence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7282A</td>
<td>1M</td>
<td>1310nm/1550nm</td>
<td>CW: 50mW@1310nm/1550nm, PULSE: 200mW@1310nm/1550nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7283A</td>
<td>1M</td>
<td>1310nm/1550nm</td>
<td>CW: 50mW@1310nm/1550nm, PULSE: 200mW@1310nm/1550nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7284A</td>
<td>3R</td>
<td>1310nm/1550nm</td>
<td>CW: 140mW@1310nm/1550nm, PULSE: 500mW@1310nm/1550nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7285A</td>
<td>3R</td>
<td>1310nm/1550nm</td>
<td>CW: 140mW@1310nm/1550nm, PULSE: 500mW@1310nm/1550nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7286A</td>
<td>1M</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 50mW@1310nm/1550nm/1625nm, PULSE: 200mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7287A</td>
<td>1M</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 50mW@1310nm/1550nm/1625nm, PULSE: 200mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7288A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7289A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7290A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7291A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7292A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7293A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ7294A</td>
<td>3R</td>
<td>1310nm/1550nm/1625nm</td>
<td>CW: 140mW@1310nm/1550nm/1625nm, PULSE: 500mW@1310nm/1550nm/1625nm, Duty: ≤ 3.0%</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
</tbody>
</table>

[^1]: Under single fault conditions.

### OPM/VLS module

<table>
<thead>
<tr>
<th>Model</th>
<th>Class</th>
<th>Center Wavelength</th>
<th>Maximum Output Power[^1]</th>
<th>Mode Field Diameter</th>
<th>Beam Divergence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ2780V</td>
<td>3R</td>
<td>650nm</td>
<td>CW: 5mW</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ2781V</td>
<td>3R</td>
<td>650nm</td>
<td>CW: 5mW</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
<tr>
<td>AQ4780</td>
<td>3R</td>
<td>650nm</td>
<td>CW: 5mW</td>
<td>9µm</td>
<td>11.5°</td>
</tr>
</tbody>
</table>

[^1]: Under single fault conditions.

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**Waste Electrical and Electronic Equipment (WEEE), Directive**

(\(\text{This directive is valid only in the EU.}\))

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 instruments" product.

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

**Authorized Representative in the EEA**

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