Multi One OTDR

AQ7280 Series
Optical Time Domain Reflectometer
In 2002, Yokogawa became a leading supplier of optical test and measurement solutions following the acquisition of Ando Electric. Today, with over 30 years of experience in optoelectronic technology and real world lab and field testing, Yokogawa is justifiably qualified to deliver field test equipment solutions with the world renowned quality and exceptional performance expected from an industry pioneer.

Responding to the growing needs for reliable and ease-of-use field test instruments for installation and maintenance of fiber optic networks, Yokogawa AQ7280 Optical Time Domain Reflectometer (OTDR) is designed to empower field technicians to make fast and precise measurements with confidence.

The AQ7280 satisfies a broad range of test and measurement needs in analyzing optical networks from access to core.

The AQ7280 OTDR delivers:

**RELIABILITY** – Robust design for operating under harsh field conditions. Proven operating system assuring stability, prompt response, and superior protection against software virus attacks.

**EASE-OF-USE** – Dual operation mode by multi-touch touchscreen and hard-key buttons. Fully automatic measurement and easy-to-read analysis reports through new software applications.

**SPEED** – Lightning startup time. Multi-tasking operation to enhance productivity. Immediate reporting via wireless connectivity.
30+ years of OTDR expertise

- **1915**: YOKOGAWA founded
- **1933**: ANDO founded
- **1981**: First OTDR AQ-1702
- **2002**: Yokogawa acquired ANDO
- **2010**: Compact OTDR AQ1200
- **2014**: Latest OTDR AQ7280
Fast, Friendly Functionality... all at your Fingertips!

**Multi-tasking**
Enhancing productivity

Managed by a highly efficient operating system, multiple functions can work simultaneously. Now, users can perform OTDR measurements on a particular fiber core while simultaneously checking the power level and connector surface quality on others.

**Smart Mapper**
Single button measurement. Comprehensive network characterization. Easy to read report

Measurement acquisitions with multiple pulse widths and smart-algorithm enable users to detect and comprehensively characterize network events by pressing one single button. Simple, icon-based map view for easy interpretation of network events. Immediate PASS/FAIL judgment based on user-defined thresholds. Easily toggled trace view for manual supplementary analysis.

(Available when /SMP option is selected.)

**Dual-operation Mode**
Touch screen and hard-key buttons

Tap, swipe, pinch or press. Choose between the high resolution 8.4-inch multi-touch capacitive touchscreen or the robust hard-key buttons in any combination desired. OTDR operations have never been easier!

**Lightning Startup Time**
Under 10 seconds!

Thanks to the latest high speed hardware and a highly efficient operating system, the AQ7280 starts up from completely OFF to measurement ready in seconds. It’s always ready when you are!

**Multi-Fiber Measurement**
Database view. Organized. Quick preview of network characteristics

OTDR-based application in a database view. Guiding users in tracking multi fibers measurements in sequence. OTDR trace, power level and connector surface image of a particular fiber core are organized as one group. With PASS/FAIL judgment, fiber core performance is easily characterized.
Wireless Connectivity
Remote control. Remote data transfer

Control the OTDR remotely using Windows™ operating system devices via wireless router connection technology. Transfer measurements results from the OTDR to Windows™ operating system devices via FlashAir™ technology. Send the results/reports by email/file transfer software for immediate reporting.

15 Hours Battery Operation
Just keeps on going

Imagine working an entire work shift at your remote work site without worrying about running out of battery power. The AQ7280’s powerful Li-Ion battery will last for an amazing 15 hours under the Telcordia standard conditions and 10 hours even with the laser continuously turned on!

Modularity
Full range of selections

9 OTDR units ranging from single mode to multi mode, from low dynamic range to ultra-high dynamic range, and 2 wavelengths to 4 wavelengths. Selection of power sensor, light source, visible light source and fiber inspection probe for instrument’s customization based on users’ needs.

Eagle Eye
Hunt down your breakpoint precisely and promptly

Enabling highest possible sampling resolution in a long distance measurement range, distance offset error is reduced. With a relatively small distance offset error, users are able to pinpoint the actual break location in high distance accuracy. Faster location identification, faster repair time.

Connector Quality Assurance
Zoomed in, checked out, all fixed up

Using high-performance Lightel™ fiber inspection probe, fiber connector surface is visualized for inspection of scratches and dirt. Reducing 90% of fiber cable problem.
Valuable functions for easily troubleshooting network issues

PDF Reporting
Built-in post-processing software for generating OTDR reports in PDF format. Flexible configuration of report template to meet users’ report requirements. Using AQ7280 Wireless Connectivity, the PDF reports can be transferred through internet for immediate reporting.

Macro Bending Detector
Thanks to the OTDR advanced analysis function and macro bend characteristic, users can immediately identify and locate macro bend events along fiber network. Multi-wavelengths traces are acquired on same fiber, compared and analyzed automatically in a single-button operation. When loss difference of a same location event at different wavelengths is more than user’s defined threshold, the macro bend is detected!

Intermittent Connection Monitoring
Under cold weather conditions, fiber network connectivity can be interrupted intermittently due to bending/loose connections events. Identifying such intermittent interruption requires periodic monitoring and advanced analysis algorithm. The OTDR Schedule Measurement function is useful to monitor a particular fiber core based on user-defined measurement period and interval. Measurement results are compared with a reference trace and analyzed for any discrepancies. Based on user-defined loss threshold, discrepancy at a particular distance is identified and the occurrence time is recorded. (Available when /MNT option is selected.)

Fault Locator
OTDR-based application for simply identifying fiber break location. Adaptive, smart-algorithm based on selected network architectures, such as point-to-point or PON network topology. Simple view of distance information for easy interpretation. Easily toggled trace view for additional detail analysis.
PON Optimized

Excellent hardware performance and advanced analysis algorithm, enables the AQ7280* to accurately characterize Passive Optical Network (PON) through high-port-count splitters (up to 1 x 128). PON mode assists beginner/expert users in simply configuring OTDR measurement settings based on PON topology information for optimal results. Short event dead zone and high sampling resolution enable users to detect near-end location of connectors that are as close as 0.5 meters (<20 inches).

With the built-in optical cut filter and dedicated measurement port, the AQ7283F module is capable to measure live PON for maintenance purpose.

*Available in selected AQ7280 modules.

Multi-language Support

Wide selection of display languages to assist users in operating the AQ7280 in their native language. Available languages including but not limited to Chinese, Czech, Dutch, English, Finnish, French, German, Italian, Norwegian, Polish, Portuguese, Spanish, Swedish, and Turkish.
Invaluable options supporting installation and maintenance works

Optical Power Meter & Checker

- Measures and displays optical power of a light source as an absolute/relative value for testing transmitter/network performance. Measurement results can be saved for reference purpose.
- Invaluable test instrument during installation and maintenance.
- Calibrated and selectable wavelength setting. Single-mode and Multi-mode measurement ready. Continuous wave and modulated wave detection capability.
- Two selections of optical power sensor are available, which are optical power meter and optical power checker*, different on the specs and functions.

*Available in selected OTDR units as an option.

Optical Light Source

- Outputs a stable, continuous wave of light for measuring end-to-end attenuation accurately when paired with Optical Power Sensor. Modulated light function at 270 Hz/1 kHz/2 kHz is also available for fiber identification or continuity check purpose on a live fiber network.

*Available in selected OTDR units as an option.

Visible Light Source

- Visible, continuous/modulated red light laser. Invaluable test instrument for checking continuity of patchcords, launch fibers, or short fiber trunks. Breaks and bendings in fiber can be identified visually as the visible light exits the fiber on such fault events.

AQ7932 Emulation Software

Design and Selection Guide

1. Multi-touch touchscreen
2. Hard-key buttons
3. OPM, VLS module
4. OTDR unit
5. Battery (inside)
6. SD card slot (inside)
7. DC power input
8. OTDR, OLS port
9. USB 2.0 mini port
10. USB 2.0 port
11. Ethernet port
12. VLS port
13. OPM port

NOTE: Certain functions and ports may be optional. Please refer to the specifications section for details.

<table>
<thead>
<tr>
<th>OTDR unit</th>
<th>Number of wavelengths</th>
<th>Dynamic range (dB)</th>
<th>Test application</th>
<th>Fiber network</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7282A</td>
<td>2</td>
<td>SM 1310 (nm)</td>
<td>Installation</td>
<td>Core</td>
</tr>
<tr>
<td>AQ7283A</td>
<td>2</td>
<td>SM 1490 (nm)</td>
<td>Maintenance</td>
<td>Metro</td>
</tr>
<tr>
<td>AQ7284A</td>
<td>2</td>
<td>SM 1550 (nm)</td>
<td>Dark</td>
<td>Access</td>
</tr>
<tr>
<td>AQ7285A</td>
<td>2</td>
<td>SM 1625 (nm)</td>
<td>Live</td>
<td>PON</td>
</tr>
<tr>
<td>AQ7283F</td>
<td>3</td>
<td>SM 1650 (nm)</td>
<td></td>
<td>MM fiber</td>
</tr>
<tr>
<td>AQ7283H</td>
<td>3</td>
<td>MM 850 (nm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ7284H</td>
<td>3</td>
<td>MM 1300 (nm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ7283K</td>
<td>4</td>
<td>MM 1300 (nm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ7282M</td>
<td>2</td>
<td>MM 1300 (nm)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1 Port2, Built-in filter
*2 Using an external filter
## Specifications

### AQ7280 OTDR Mainframe

<table>
<thead>
<tr>
<th>Display*</th>
<th>8.4-inch color TFT LCD (Resolution: 800 x 600, Multi-touch capacitive touchscreen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical interface</td>
<td>Unit interface × 1, Module interface × 1, USB 2.0 × 3 (TYPE A × 2, TYPE B × 1), Ethernet (10/100BASE-T, Option) × 1, SD card slot × 1</td>
</tr>
<tr>
<td>Remote control</td>
<td>USB TYPE B (mini), Ethernet (TCP/IP)</td>
</tr>
<tr>
<td>Data storage</td>
<td>Storage: 16GB, Internal storage: 1GB, External storage: USB memory, SD card</td>
</tr>
<tr>
<td>File format</td>
<td>Write: SOR, CSV, SET, BMP, JPG, CFG, PDF, Read: SOR, SET</td>
</tr>
<tr>
<td>Dimensions</td>
<td>287 mm (W) × 210 mm (H) × 80 mm (D) (excluding projections)</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 2.2 kg (including internal battery and protectors, excluding OTDR unit and options)</td>
</tr>
<tr>
<td>OTDR functions</td>
<td>Minimum readout resolution: Horizontal axis: 1 cm, Vertical axis: 0.001 dB</td>
</tr>
<tr>
<td></td>
<td>Group refractive index: 1.30000 to 1.79999 (in 0.00001 steps)</td>
</tr>
<tr>
<td></td>
<td>Distance: Loss, Return loss, and Return loss between two arbitrary points</td>
</tr>
<tr>
<td></td>
<td>Analysis: Multi Trace Analysis, Two-Way Trace Analysis, Difference Trace Analysis, Section Analysis, Macro Bending Analysis</td>
</tr>
<tr>
<td>Other functions</td>
<td>Multi Fiber Project, Fault Locator, Work Completion Notice, File report, Auto event search, Pass/Fail judgment, Schedule Measurement (Option), Smart Mapper (Option)</td>
</tr>
</tbody>
</table>

*1 The LCD may contain some pixels that are always ON or OFF (0.002% or fewer of all displayed pixels including RGB), but this is not indicative of a general malfunction.

*2 USB TYPE A is for external memory, external printer, and fiber inspection probe. USB TYPE B (mini) is for remote control and internal storage access with a PC.

### OTDR units

#### Model AQ7282A

| Wavelength (nm) | 1310 ±25/1550 ±25 |
| Number of optical port | 1 |
| Applicable fiber | SM (ITU-T G.652) |
| Distance range (km) | 0.2, 0.5, 1, 2, 5, 10, 20, 30, 50, 100, 200, 300, 400, 512 |
| Pulse width (ns) | 3, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000, 10000, 20000 |
| Sampling resolution | Min. 2 cm |
| Number of sampling points | Max. 256000 |
| Distance measurement accuracy | ±0.75 m + Measurement distance × 2 × 10⁻⁶ + Sampling resolution |
| Event dead zone (m) | 0.6 |
| Attenuation dead zone (m) | 3.5/4 |
| Dynamic range (dB) | 38/36 |
| Loss measurement accuracy | ±0.03 dB/dB |
| Return loss measurement accuracy | ±2 dB |
| Optical connector | Universal Adapter SC, FC, LC, and SC Angled-PC |
| Dimensions | Approx. 211 mm (W) × 110 mm (H) × 32 mm (D) (excluding projections) |
| Weight | Approx. 420 g |

#### Model AQ7283A

| Wavelength (nm) | 1310 ±25/1550 ±25 |
| Number of optical port | 2 (Port 2: 1650 nm with filter) |
| Applicable fiber | SM (ITU-T G.652) |
| Distance range (km) | 0.2, 0.5, 1, 2, 5, 10, 20, 30, 50, 100, 200, 300, 400, 512 |
| Pulse width (ns) | 3, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000, 10000, 20000, 30000 |
| Sampling resolution | Min. 2 cm |
| Number of sampling points | Max. 256000 |
| Distance measurement accuracy | ±0.75 m + Measurement distance × 2 × 10⁻⁶ + Sampling resolution |
| Event dead zone (m) | 0.6 |
| Attenuation dead zone (m) | 3.5/4 |
| Dynamic range (dB) | 38/36 |
| Loss measurement accuracy | ±0.03 dB/dB |
| Optical connector | Universal Adapter SC, FC, LC, and SC Angled-PC |
| Dimensions | Approx. 211 mm (W) × 110 mm (H) × 32 mm (D) (excluding projections) |
| Weight | Approx. 420 g |

#### Model AQ7284A

| Wavelength (nm) | 1310 ±25/1550 ±25/1625 ±25 |
| Number of optical port | 1 |
| Applicable fiber | GI50, GI62.5 |
| Distance range (km) | 0.2, 0.5, 1, 2, 5, 10, 20, 30, 50, 100, 200, 300, 400, 512 |
| Pulse width (ns) | 3, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000, 10000, 20000 |
| Sampling resolution | Min. 2 cm |
| Number of sampling points | Max. 256000 |
| Distance measurement accuracy | ±0.75 m + Measurement distance × 2 × 10⁻⁶ + Sampling resolution |
| Event dead zone (m) | 0.6 |
| Attenuation dead zone (m) | 3.5/4 |
| Dynamic range (dB) | 38/36 |
| Loss measurement accuracy | ±0.03 dB/dB |
| Optical connector | Universal Adapter SC, FC, LC, and SC Angled-PC |
| Dimensions | Approx. 211 mm (W) × 110 mm (H) × 32 mm (D) (excluding projections) |
| Weight | Approx. 420 g |

#### Model AQ7285A

| Wavelength (nm) | 1310 ±25/1550 ±25/1625 ±25 |
| Number of optical port | 1 |
| Applicable fiber | GI50, GI62.5 |
| Distance range (km) | 0.2, 0.5, 1, 2, 5, 10, 20, 30, 50, 100, 200, 300, 400, 512 |
| Pulse width (ns) | 3, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000, 10000, 20000 |
| Sampling resolution | Min. 2 cm |
| Number of sampling points | Max. 256000 |
| Distance measurement accuracy | ±0.75 m + Measurement distance × 2 × 10⁻⁶ + Sampling resolution |
| Event dead zone (m) | 0.6 |
| Attenuation dead zone (m) | 3.5/4 |
| Dynamic range (dB) | 38/36 |
| Loss measurement accuracy | ±0.03 dB/dB |
| Optical connector | Universal Adapter SC, FC, LC, and SC Angled-PC |
| Dimensions | Approx. 211 mm (W) × 110 mm (H) × 32 mm (D) (excluding projections) |
| Weight | Approx. 420 g |

*3 Pulse width: 3 ns, Return loss: ±55 dB, Group refractive index: 1.5, at 0 dB below the unsaturated peak level, Typical
*4 Pulse width: 10 ns, Return loss: ±55 dB, Group refractive index: 1.5, at the point where the backscatter level is within ±5.5 dB of the normal level, Typical
*5 Pulse width: 2000 ns, Measurement time: 3 minutes, SNR=1, Typical, Decrease by 0.5 dB with an angled-PC connector, Decrease by 0.5 dB with SLS option for AQ7284A, AQ7284A and AQ7284H.

*6 At 25 dB below the spectral peak of pulsed optical output, at 25°C, after warm-up of 30 minutes
*7 At 65 dB below the spectral peak of pulsed optical output, at 25°C, after warm-up of 30 minutes
*8 For a loss 1 dB or less, the accuracy is ±0.05 dB.
*9 1300 nm only
*10 Return loss condition changes to ≥40 dB.
*11 Pulse width: 500 ns (950 nm)/1000 ns (1300 nm), Measurement time: 3 minutes, SNR=1, GI50, Typical
### Optional functions for OTDR units

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Checker (PC)</strong></td>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Wavelength setting</td>
<td>1310/1490/1550/1625/1650 nm</td>
</tr>
<tr>
<td>Power range (dBm)</td>
<td>−50 to −10</td>
</tr>
<tr>
<td>Measurement accuracy</td>
<td>±0.5</td>
</tr>
<tr>
<td>Optical input port</td>
<td>OTDR port</td>
</tr>
<tr>
<td><strong>Stabilized Light Source (SLS)</strong></td>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Wavelength (nm)</td>
<td>1310 ±25/1550 ±25</td>
</tr>
<tr>
<td>Optical input port</td>
<td>OTDR port</td>
</tr>
<tr>
<td>Optical output power</td>
<td>−3 dBm ±1 dB</td>
</tr>
<tr>
<td>Optical output stability (dB)</td>
<td>±0.05</td>
</tr>
<tr>
<td>Modulation mode</td>
<td>CW, 270 Hz, 1 kHz, 2 kHz</td>
</tr>
<tr>
<td><strong>Laser class</strong></td>
<td>Class 1M</td>
</tr>
</tbody>
</table>

**Items** | **Specifications** | **Model** | AQ7283F | AQ7283H | AQ7284H | AQ7283K |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Checker (PC)</strong></td>
<td><strong>Model</strong></td>
<td>AQ7283F</td>
<td>AQ7283H</td>
<td>AQ7284H</td>
<td>AQ7283K</td>
<td></td>
</tr>
<tr>
<td>Wavelength setting</td>
<td>1310/1490/1550/1625/1650 nm</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Power range (dBm)</td>
<td>−50 to −10 dBm</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Measurement accuracy</td>
<td>±0.5</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Optical input port</td>
<td>OTDR port</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td><strong>Stabilized Light Source (SLS)</strong></td>
<td><strong>Model</strong></td>
<td>AQ7283F</td>
<td>AQ7283H</td>
<td>AQ7284H</td>
<td>AQ7283K</td>
<td></td>
</tr>
<tr>
<td>Wavelength (nm)</td>
<td>1310 ±25/1550 ±25, 1650 ±0 ±10, 1310 ±25/1550 ±25/1625 ±25</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Optical input port</td>
<td>OTDR port</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Optical output power</td>
<td>−3 dBm ±1 dB</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Optical output stability (dB)</td>
<td>±0.05 ±0.05 ±0.15</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Modulation mode</td>
<td>CW, 270 Hz, 1 kHz, 2 kHz</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td><strong>Laser class</strong></td>
<td>Class 1M</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

*Power Checker (PC) and Stabilized Light Source (SLS) are not available for AQ7283M.

### OPM/VLS modules

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optical Power Meter (OPM)</strong></td>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Wavelength setting</td>
<td>Simple mode: 850/1300/1310/1490/1550/1625/1650 nm, Detail mode: 800 to 1700 nm (1 nm steps), CWDM mode: 1270 to 1610 nm (20 nm steps)</td>
</tr>
<tr>
<td>Power range (dBm)</td>
<td>CW: +10 to −70 dBm</td>
</tr>
<tr>
<td>Noise level</td>
<td>±0.5</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>±5%</td>
</tr>
<tr>
<td>Readout resolution</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Level unit</td>
<td>Absolute: dBm, mW, µW, nW, Relative: dB</td>
</tr>
<tr>
<td>Modulation mode</td>
<td>CW, 270 Hz, 1 kHz, 2 kHz</td>
</tr>
<tr>
<td>Averaging</td>
<td>1, 10, 50, 100 times</td>
</tr>
<tr>
<td>Data save</td>
<td>100 data per file (up to 1000 files)</td>
</tr>
<tr>
<td>Data logging</td>
<td>Logging intervals: 0.5, 1, 2, 5, 10 sec., Number of data: 10 to 1000 data</td>
</tr>
<tr>
<td>Optical connector</td>
<td>Universal Adapter: FC, FC, Female Adapter: FC, SC</td>
</tr>
<tr>
<td><strong>Visible Light Source (VLS)</strong></td>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>Wavelength</td>
<td>−</td>
</tr>
<tr>
<td>Optical output power</td>
<td>−</td>
</tr>
<tr>
<td>Modulation mode</td>
<td>−</td>
</tr>
<tr>
<td>Optical connector</td>
<td>−</td>
</tr>
<tr>
<td>Laser class</td>
<td>−</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Approx. 47 mm (W) x 87 mm (H) x 29 mm (D) (excluding projections)</td>
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<tr>
<td>Weight</td>
<td>Approx. 140 g</td>
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</table>

### General specifications

<table>
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<tr>
<th>Items</th>
<th>Specifications</th>
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</thead>
<tbody>
<tr>
<td><strong>Environmental conditions</strong></td>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>−10 to 50°C, 0 to 40°C when AC adapter is being used, 0 to 30°C when the battery is be charged</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>−20 to 60°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 90% RH (20 to 90% with 739871 AC adapter, non-condensing)</td>
</tr>
<tr>
<td>Altitude</td>
<td>4000 m</td>
</tr>
<tr>
<td><strong>Power requirements</strong></td>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td>Voltage</td>
<td>100 to 240VAC, 50/60Hz (AC adapter)</td>
</tr>
<tr>
<td><strong>Battery</strong></td>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td>Type</td>
<td>Lithium-ion</td>
</tr>
<tr>
<td>Operating time</td>
<td>15 hours (Telcordia GR-196-CORE Issue2 2013), 10 hours <strong>20</strong> (Continuous measurement)</td>
</tr>
<tr>
<td><strong>EOM (23)</strong></td>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td>Emissions</td>
<td>EN 61000-1: Class A, EN 55011 Class A Group1</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-6-2</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td><strong>Specifications</strong></td>
</tr>
<tr>
<td>Laser</td>
<td>IEC 60825-1 Class 1M <strong>26</strong>, Class 3R <strong>25</strong>, FDA 21CFR1040.10 <strong>27</strong></td>
</tr>
<tr>
<td>Environmental regulation standard</td>
<td>EN50581</td>
</tr>
</tbody>
</table>

**Note:** All specifications are valid at 23°C±2°C, unless otherwise specified.

---

*20 Power input: 100 µW (-10 dBm), CW, 1310 ±20 nm, Spectral width: ±10 nm, SM (ITU-T G.652), FC/PC, Wavelength setting: Measured wavelength ±0.5 nm, excluding a secular change of equipment (add 1% one year after calibration)
*21 Typical
*22 Power save mode, without an option module
*23 Note: Compatible with 22 CFR 121, regulations of the American Customs, and the 21 CFR 1040.10 **27** of the FDA on Laser Safety.

---

Visit www.incom.mx for more information.

---

*25 CLASS 1M (IEC 60825-1) *26 CLASS 3R (IEC 60825-1) *27 21CFR1040.10

---

*Note:* All specifications are valid at 23°C±2°C, unless otherwise specified.
**Ordering Information**

### OTDR Mainframe

<table>
<thead>
<tr>
<th>Models</th>
<th>Suffix codes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7280</td>
<td></td>
<td>AQ7280 OTDR Mainframe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-HJ</td>
<td>Japanese/English</td>
</tr>
<tr>
<td>-HE</td>
<td>English (Multi language)</td>
</tr>
<tr>
<td>-HM</td>
<td>Chinese</td>
</tr>
<tr>
<td>-HC</td>
<td>Chinese/English</td>
</tr>
<tr>
<td>-HK</td>
<td>Korean/English</td>
</tr>
<tr>
<td>-HR</td>
<td>Russian/English</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Options</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>/MNT</td>
<td>Monitoring</td>
</tr>
<tr>
<td>/SMP</td>
<td>Smart Mapper</td>
</tr>
<tr>
<td>/LAN</td>
<td>Ethernet</td>
</tr>
<tr>
<td>/SB</td>
<td>Shoulder Belt</td>
</tr>
</tbody>
</table>

**Standard accessories:** Battery pack, hand belt, user’s manual (CD-ROM), operation guide

**AC adapter** (Not included in AQ7280. Please order separately.)

<table>
<thead>
<tr>
<th>Models</th>
<th>Suffix codes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>739871</td>
<td></td>
<td>AC Adapter (for outside the US and EU)*</td>
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</table>

<table>
<thead>
<tr>
<th>Power cord</th>
<th>Description</th>
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<tbody>
<tr>
<td>-D</td>
<td>UL/CSCA standard</td>
</tr>
<tr>
<td>-F</td>
<td>VDE standard</td>
</tr>
<tr>
<td>-R</td>
<td>AS standard</td>
</tr>
<tr>
<td>-Q</td>
<td>BS standard</td>
</tr>
<tr>
<td>-H</td>
<td>GB standard</td>
</tr>
<tr>
<td>-P</td>
<td>KC standard</td>
</tr>
<tr>
<td>-T</td>
<td>BSMI standard</td>
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<tr>
<td>-N</td>
<td>NBR standard</td>
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</table>

* For the US and EU, please consult with our sales representatives.

### OTDR units

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<tr>
<th>Models</th>
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<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ7282A</td>
<td>2WL 1310/1550 nm 38/36 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283A</td>
<td>2WL 1310/1550 nm 42/40 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7284A</td>
<td>2WL 1310/1550 nm 46/45 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7285A</td>
<td>2WL 1310/1550 nm 50/50 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283F</td>
<td>3WL 1310/1550/1650 nm 42/40/40 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283H</td>
<td>3WL 1310/1550/1625 nm 42/40/39 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7284H</td>
<td>3WL 1310/1550/1625 nm 46/45/44 dB</td>
<td></td>
</tr>
<tr>
<td>AQ7283K</td>
<td>4WL 1310/1490/1550/1625 nm 42/38/40/40 dB</td>
<td></td>
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<tr>
<td>AQ7282M</td>
<td>2WL 850/1300 nm (MM) 25/27 dB</td>
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</table>

<table>
<thead>
<tr>
<th>Optical connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-USC</td>
<td>Universal Adapter (SC)</td>
</tr>
<tr>
<td>- UPC</td>
<td>Universal Adapter (FC)</td>
</tr>
<tr>
<td>-ULC</td>
<td>Universal Adapter (LC)</td>
</tr>
<tr>
<td>-ASC</td>
<td>Universal Adapter (SC Angled-PC)*</td>
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<tr>
<td>-NUA</td>
<td>No universal adapter</td>
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<table>
<thead>
<tr>
<th>Options</th>
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<tbody>
<tr>
<td>/PC</td>
<td>Power Checker</td>
</tr>
<tr>
<td>/SLS</td>
<td>Stabilized Light Source</td>
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</tbody>
</table>

*1 Not applicable to AQ7282M
*2 Not applicable to AQ7282M and the Port2 of AQ7282F

### OPM/VLS modules

<table>
<thead>
<tr>
<th>Models</th>
<th>Suffix codes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ2780</td>
<td></td>
<td>OPM Module</td>
</tr>
<tr>
<td>AQ2781</td>
<td></td>
<td>High Power OPM Module</td>
</tr>
<tr>
<td>AQ2780V</td>
<td></td>
<td>OPM &amp; VLS Module</td>
</tr>
<tr>
<td>AQ2781V</td>
<td></td>
<td>High Power OPM &amp; VLS Module</td>
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</table>

<table>
<thead>
<tr>
<th>Optical connector</th>
<th>Description</th>
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<tbody>
<tr>
<td>-SCC</td>
<td>Universal Adapter (SC)</td>
</tr>
<tr>
<td>-FCC</td>
<td>Universal Adapter (FC)</td>
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<tr>
<td>-LMC</td>
<td>Ferrule Adapter (φ1.25)</td>
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</table>

<table>
<thead>
<tr>
<th>Models</th>
<th>Suffix codes</th>
<th>Descriptions</th>
</tr>
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<tbody>
<tr>
<td>AQ2780</td>
<td></td>
<td>VLS Module</td>
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</table>

### Accessories (Sold separately)

<table>
<thead>
<tr>
<th>Names</th>
<th>Models</th>
<th>Descriptions</th>
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</thead>
<tbody>
<tr>
<td>Soft Carrying Case</td>
<td>739860</td>
<td></td>
</tr>
<tr>
<td>Battery Pack</td>
<td>739883</td>
<td></td>
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<tr>
<td>Universal Adapter (SC)</td>
<td>SU2005A-SCC</td>
<td>for OTDR unit</td>
</tr>
<tr>
<td>Universal Adapter (FC)</td>
<td>SU2005A-FCC</td>
<td>for OTDR unit</td>
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<tr>
<td>Universal Adapter (LC)</td>
<td>SU2005A-LCC</td>
<td>for OTDR unit</td>
</tr>
<tr>
<td>Universal Adapter (SC)</td>
<td>SU2005A-SCC</td>
<td>for OPM module</td>
</tr>
<tr>
<td>Universal Adapter (FC)</td>
<td>SU2005A-FCC</td>
<td>for OPM module</td>
</tr>
<tr>
<td>Ferrule Adapter (φ1.25)</td>
<td>SU2005A-LMC</td>
<td>for OPM module</td>
</tr>
<tr>
<td>Shoulder Belt</td>
<td>B8070C</td>
<td></td>
</tr>
</tbody>
</table>

**Notice**

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### Application software

<table>
<thead>
<tr>
<th>Models</th>
<th>Suffix codes</th>
<th>Descriptions</th>
</tr>
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<tbody>
<tr>
<td>735070</td>
<td></td>
<td>AG7932 Emulation Software (Ver. 5.01 or later)</td>
</tr>
<tr>
<td>735071</td>
<td></td>
<td>AG7940 Optical Fiber Monitoring Software (Ver. 2.01 or later)</td>
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<table>
<thead>
<tr>
<th>Options</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>-EN</td>
<td>English</td>
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<tr>
<td>-JA</td>
<td>Japanese</td>
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<tr>
<td>-CH</td>
<td>Chinese</td>
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<tr>
<td>-KD</td>
<td>Korean</td>
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