

VIAVI

High-Performance Full-Band OSAs

OSA-500/500M/501M/500R/500RS

Test xDWM networks and optical components with fullband, high-performance optical spectrum analyzers.

Targeted for advanced test solutions, OSA-500x modules represent high-performance VIAVI Solutions™ solutions use for full-band spectral testing. Their industry-leading 0.038 nm optical resolution bandwidth makes these optical spectrum analyzers ideal for unmatched performance testing in ultradense wavelength-division multiplexing (DWDM) networks with channel spacing down to 25 GHz

All instruments include an internal wavelength calibrator that guarantees 0.010 nm unsurpassed wavelength accuracy without external recalibration. Here is the list of VIAVI OSA modules and their core capabilities:

- OSA-500M — General-purpose high-performance OSA for use in installing and maintaining DWDM networks.
- OSA-501M — Provides a unique channel-drop function to isolate single DWDM channels from the spectrum during maintenance and troubleshooting.
- OSA-500 — Improves the optical-filter dynamic range for testing the highest DWDM system OSNR values.
- OSA-500R and OSA-500RS — Include a new technique to measure true in-band OSNR in ROADM-based and in 40 G systems with overlapping spectra.
 - The OSA-500R — The standard instrument for measuring in-band OSNR.
 - The OSA-500RS — The high-speed version that can complete measurements in less than 30 seconds.

Combining very high optical resolution using innovative free-space optics with full-band measurement capability make VIAVI OSAs ideal portable solutions for testing wavelength division multiplexing (xWDM) systems during provisioning, maintenance, and upgrades.



Key Benefits

- Simple automated testing with pass/fail analysis at the push of a button
- Get true OSNR results in seconds with the fastest in-band OSA (by 40%)
- Optimize service quality with accurate, reliable OSNR measurements
- Eliminate wavelength calibration with a self-calibrating OSA that cuts maintenance costs in half

Key Features

- Portable lab technology for field use
- Full-band 1250–1650 nm for CWDM and DWDM networks
- Ultra-high 0.038 nm optical resolution bandwidth
- Industry-leading 0.01 nm wavelength accuracy
- Future-proof signal analysis for 40/100 G data rates, and 100G polarization multiplexing channels OSNR on line measurement (without channel overlap).
- Channel drop function for single-channel isolation and tunable filter applications
- In-band option to measure true OSNR in ROADM and 40 G networks

Applications

- Provisioning and troubleshooting ROADM networks
- Deploying and maintaining DWDM Metro and Core networks
- Testing 40 G and 100 G interfaces and networks
- Installing and maintaining CWDM systems in CATV, Access, and Mobile Backhaul

Specifications

| Spectral Measurement | |
|---|---|
| Wavelength range | 1250 to 1650 nm |
| Resolution bandwidth(FWHM) ² | 0.038 nm |
| Abs. wavelength accuracy ² | ± 0.01 nm |
| Wavelength reference | internal, physical constant |
| Wavelength recalibration period | internal recalibration (no factory recalibration required) |
| Readout resolution | 0.001 nm |
| Measurement samples | 120,000 |
| Power Measurement | |
| Dynamic range ³ | -70 to +23 dBm |
| Absolute accuracy ^{2,4} | ±0.5 dB |
| Total safe power ⁵ | +23 dBm |
| Readout resolution | 0.01 dB |
| Linearity ⁶ | ±0.1 dB |
| Flatness ² | ±0.25 dB |
| WDM Measurement | |
| Optical rejection ratio2 (OSA-500 only) | |
| At ±0.2 nm (for 50 GHz ch-spacing) | 45 dBc |
| At ±0.4 nm (for 100 GHz ch-spacing) | 50 dBc |
| Optical rejection ratio2 (OSA-500M/501M/500R/500RS only) | |
| At ±0.2 nm (for 50 GHz ch-spacing) | 40 dBc |
| At ±0.4 nm (for 100 GHz ch-spacing) | 47 dBc |
| Channel spacing | 25 to >200 GHz, CWDM |
| Number of optical channels | 256 |
| Data signals | up to 1 TBps |
| Modulation formats (Such as NRZ/RZOOK, DB, PSBT, CSRZ, DPSK, BPSK, QPSK, and PM QPSK) | All formats supported |
| Scanning time (including WDM analysis) | |
| Full band | <5 s |
| C-band | 1 s |
| Measurement Modes | |
| Analysis | WDM, Drift, DFB, LED, FPL, EDFA in-band OSNR, ST, ch-drop (OSA-501M only) |
| Display | Graph, WDM table, graph and table |
| Channel Drop Option (OSA-501M only) | |
| Wavelength range | 1300 to 1650 nm |
| Data rates | up to 12.5 Gbps |
| Spectral filter bandwidth | >20 GHz |
| Insertion loss ⁷ | <12 dB |
| Tracking mode | auto wavelength control |
| In-band OSNR (OSA-500R, OSA-500RS only) | |
| I-OSNR dynamic range | up to >30 dB |
| PMD tolerance ⁸ | up to 25 ps |
| Measurement accuracy ⁹ | ±0.5 dB |
| Data signals ¹⁰ | up to 100 Gbps |
| Measurement time ¹¹ | < 30 s |

| Optical Interfaces | |
|--------------------|--------------------------------------|
| Optical port | universal SM-PC, universal SM-APC |
| Connectors | FC, SC, ST, LC, DIN |
| ORL ¹² | >35 dB |
| Dimensions | |
| Weight (module) | 2.2 kg (4.6 lb) |
| Size (module) | 50 x 250 x 305 mm (20 x 98 x 120 in) |
| Temperature | |
| Operating | +0 to +45°C (32 to 113°F) |
| Storage | -20 to +60°C (-4 to 140°F) |
| Relative humidity | 0 to 95% noncondensing |

Notes:

- Unless otherwise specified, all specifications are based on a temperature of 23°C ±2°C with an FC/PC connector after warm-up
- Typical for 1520 to 1565 nm at 18 to 28°C
- Max. power per channel +15 dBm
- At -10 dBm, including PDL
- +20 dBm for OSA-500R
- Signal power from -40 dBm to +10 dBm
- Typical for 1520 to 1620 nm at 23°C
- For data rates up to 10 Gbps
- Typ ±0.5 dB for OSNR <25 dB, signal power >-25 dBm, PMD <25 ps
Typ. ±1 dB for data rates ≥40 Gbps with ch-spacing ≥100 GHz
- Except for dual pol-mux and fast polarization scrambled signals
- For OSA-500RS 20 nm scan and 40 channels
- At 1550 nm

Ordering Information

| Description | Part Number |
|---|-------------|
| Standard OSA-500M | |
| OSA-500M, PC-version | 2281/91.20 |
| OSA-500M, APC-version | 2281/91.30 |
| Standard OSA-501M | |
| OSA-501M, PC-version | 2281/91.23 |
| High Dynamic Range OSA-500 | |
| OSA-500, PC-version | 2281/91.51 |
| ROADM, In-Band OSNR OSA-500R | |
| OSA-500R, PC-version | 2281/91.55 |
| OSA-500R, APC-version | 2281/91.65 |
| ROADM, High-Speed In-Band OSNR OSA-500RS | |
| OSA-500RS, PC-version | 2281/91.57 |
| OSA-500RS, APC-version | 2281/91.67 |
| Application Software for Report Generation | |
| Optical fiber trace software | EOFS100 |
| Optical fiber cable software | EOFS200 |

VIAVI Care Support Plans




Increase your productivity for up to 5 years with optional VIAVI Care Support Plans:

- Maximize your time with on-demand training, priority technical application support and rapid service.
- Maintain your equipment for peak performance at a low, predictable cost.

Plan availability depends on product and region. Not all plans are available for each product or in every region. To find out which VIAVI Care Support Plan options are available for this product in your region, contact your local representative or visit: viavisolutions.com/viavicareplan

Features

*5-year plans only

| Plan | Objective | Technical Assistance | Factory Repair | Priority Service | Self-paced Training | 5 Year Battery and Bag Coverage | Factory Calibration | Accessory Coverage | Express Loaner |
|---|------------------------------------|----------------------|----------------|------------------|---------------------|---------------------------------|---------------------|--------------------|----------------|
|  BronzeCare | Technician Efficiency | Premium | ✓ | ✓ | ✓ | | | | |
|  SilverCare | Maintenance & Measurement Accuracy | Premium | ✓ | ✓ | ✓ | ✓* | ✓ | | |
|  MaxCare | High Availability | Premium | ✓ | ✓ | ✓ | ✓* | ✓ | ✓ | ✓ |



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