

FOL-OSA Optical Spectrum Analyser

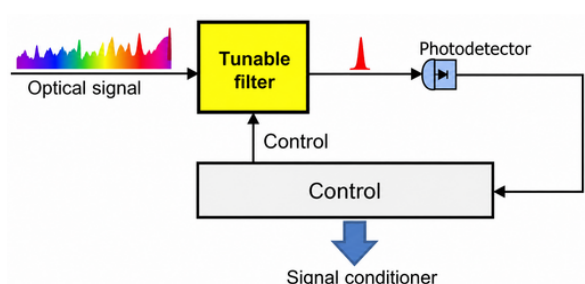


FEATURES

- Designed to study the input frequency spectrum
- Provides wide wavelength scan range from 1260nm to 1650nm
- Results are displayed graphically and also displayed in tabular form
- Zoom In, Zoom Out facility is available for better analysis
- Trace data can be stored and retrieved

BLOCK DIAGRAM OF OSA

- OSA module consists of a narrow bandpass tunable optical filter, a photodetector and low noise, high-dynamic range electronics, as schematically shown in Figure
- When a wide band spectrum is incident on the tunable filter, it allows only narrow band out of it centred at a given wavelength to pass through the filter



Schematic diagram of working process of OSA device

- By altering the central wavelength of pass band of the tunable filter, the whole input spectrum can be scanned at high-speed and spectrum information of incident signal is detected sequentially
- The photodetector converts the light passing through the filter into electrical current that is then digitized. The data processing unit analyses the data and generates the result

SPECIFICATIONS

PARAMETER	UNIT	SPECIFICATION
• Operating Wavelength Range	nm	1250~1650
• Input Power Range	dBm	-45 ~ 5
• Maximum Input Power	dBm	30
• Wavelength Resolution (FWHM)	nm	0.6
• Absolute Wavelength Accuracy	pm	±300
• Wavelength Repeatability	pm	±50
• Absolute Power Accuracy	dB	± 0.8
• Relative Power Accuracy	dB	± 0.5
• Power Repeatability	dB	± 0.15
• PDL	dB	≤0.5
• Noise Floor	dBm	-55
• Optical Rejection Ratio (at 100 GHz offset)	dB	>30
• Optical Rejection Ratio (at 200 GHz offset)	dB	>35
• Optical Return Loss	dB	>30
• Response Time Data points ≤5000	s	<0.5
• Response Time Data points =20000	s	<2.5
• Power Consumption	W	<2.0
• Warmup Time	min.	10

Environmental specifications

• Operating Temperature	°C	+10 ~ +50
• Storage Temperature	°C	-40 ~ +85
• Operating Relative Humidity	%	5 ~ 85 (non-condensing)
• Storage Relative Humidity	%	5 ~ 95

Fiber Specifications

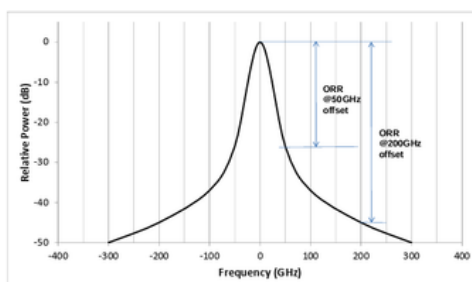
• Fiber Type		SMF-28
		900 μm
• Fiber Length	cm	100 ± 10
• Optical Connector Type		LC/UPC or customer specify

Electrical Specifications

• Voltage Supply	V DC	+5.0
• Voltage Tolerance	%	±10
• Typical Current	A	0.3
• Maximum Current	A	0.4

Parameter Definitions

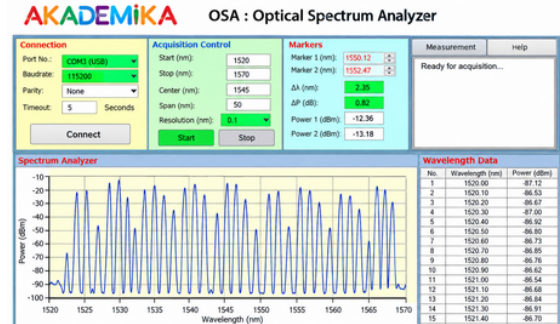
- **Operating Wavelength Range** specifies the spectral region between the minimum and maximum wavelengths over which the OSA device can operate and measure spectrum.
- **Input Power Range** specifies the power range of narrow-band signals over which the OSA device can operate and measure spectrum. When measuring DWDM signals, it is the channel input power range.
- **Maximum Input Power** is the maximally allowed value of total optical input power to the OSA device.
- **Wavelength Resolution** is specified by the Full Width at Half Maximum (FWHM) of the tunable filter. It is also called the 3-dB bandwidth.
- **Absolute Wavelength Accuracy** is the maximum wavelength error when measuring laser signals over operating wavelength range. The wavelength error is calculated as the difference of the measured wavelength values between the OSA device and the calibrated wavelength meter.
- **Wavelength Repeatability** is the maximum variation of wavelength measurements over operating wavelength range within 24 hours at any fixed measurement condition.
- **Absolute Power Accuracy** is the maximum power error when measuring laser signals over operating wavelength range and input power range. The power error is calculated as the difference of the measured powers between OSA device and the calibrated power meter.
- **Relative Power Accuracy** is calculated as the maximum difference between the maximum and the minimum power errors over operating wavelength range from any single scans.
- **Power Repeatability** is the maximum variation of power measurements over operating wavelength range within 24 hours at any fixed measurement condition.
- **Polarization Dependent Loss (PDL)** is the maximum power difference of power measurements between any two polarization states.



Definition of optical rejection ratio

- **Optical Rejection Ratio (ORR)** is defined as the isolation of the filter at a given location offset away from the center of the filter profile, as schematically shown in image Definition of optical rejection ratio

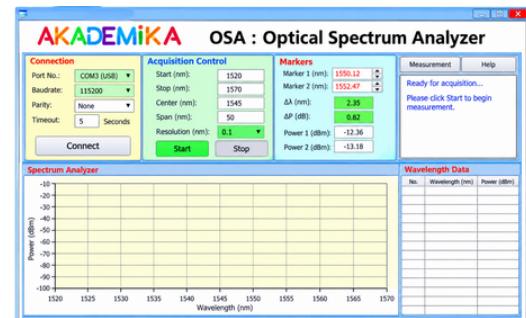
FOL-OSA INTERFACE



Above figure shows software interface of OSA Module.

- **Notes:**
 - 1) Specifications guarantee for input power range only from -40 ~ 0 dBm and spectral spacing is ≥ 200 GHz. For the input power between -45 ~ -40 dBm, absolute wavelength accuracy is ± 400 pm and absolute power accuracy is ± 1.0 dB. For the input power between 0 ~ 5 dBm, absolute power accuracy is ± 1.0 dB.
 - 2) Typical FWHM is 0.55 nm.
 - 3) Do not include PDL.

MEASUREMENTS



- Displayed graph shows the peaks observed in the scanned range
- All the detected peaks and corresponding powers are displayed in the table
- Peak search function is provided which allows to characterise the peaks which are displayed on the screen

APPLICATIONS

- Can be used for experimentation and analysis fiber optic training setup
- Research lab and institutions
- Sensing applications