

MULTI-TESTS PLATFORMS

AP1000 series



Tunable Laser source



DFB Laser Source



Optical Amplifier (EDFA)



Power Meter



Variable Optical Attenuator



Polarimeter



Optical Tunable Filter



Optical Switch

HIGH PERFORMANCE & COST EFFECTIVE OPTICAL MULTITEST PLATFORM

BUILD YOUR OWN FLEXIBLE MULTI-TEST SYSTEM

AP1000-2
AP1000-5
AP1000-8
AP1000-12

Features

- A variety of measurement modules
- Three USB connectors on the front panel
- Internal memory
- GPIB and Ethernet remote control
- .txt file format
- 5.7 inch touchscreen

Modules

- Tunable Laser Source
- DFB Laser
- Optical Power Meter
- Optical Amplifier (EDFA)
- Optical Variable Attenuator
- Optical Tunable Filter
- Optical Switch
- Polarimeter



AP1000-2 mainframe controller:
- Accepts up to two modules



AP1000-5 mainframe controller:
- Accepts up to five modules



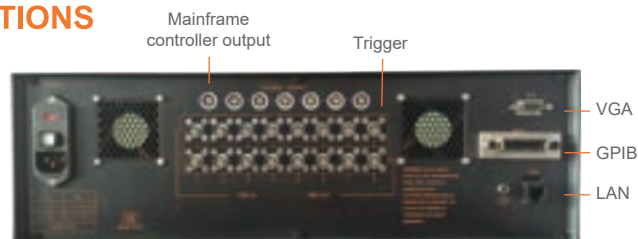
AP1000-8 mainframe controller:
- Accepts up to eight modules
- Can control up to seven AP1000-12 (92 modules in total)



AP1000-12 mainframe controller extension:
- Accepts up to twelve modules
- Can be controlled by an AP1000-8 or work independently by remote control
- Allows the system to integrate up to 92 test modules using a single AP1000-8

MULTIPLE CONNECTIONS

- VGA connector
- USB connectors
- GPIB control
- LAN connector
- Optionnal mainframe controller output
- Optionnal trigger function



AP1000-8 back

SPECIFICATIONS

	AP1000-2	AP1000-5	AP1000-8	AP1000-12
Module slot	2	5	8	12
Internal memory	64 Gbit			
File format	txt, bmp and setup file formats			
GPIB connector	Yes			
Ethernet connector	Yes			
USB connectors	3	3	3	0
Mainframe controller outputs	No	No	7	No
Screen	Yes	Yes	Yes	No
Dimensions (mm)	236x135x477	340x135x477	460x135x477	460x135x477
Mainframe weight (kg)	4.2	4.8	5.7	5.7
Modules weight (kg)	Average: 0.65			
Environmental conditions	Operating temperature: +5 to +35°C Storage temperature: -10 to +50°C Humidity: 20 to 80% RH (no condensation)			
Power requirement	AC 100~200V or 200~250V, 50/60Hz			

EQUIPMENT CONTROL

- Touchscreen
- Mouse and keyboard (three USB ports)

REMOTE CONTROL

- Control and perform data transfer with a computer through GPIB or ethernet
- Remote control of the equipment through Internet

Tunable Laser Source modules

VERY GOOD PERFORMANCE TO PRICE RATIO SOLUTIONS

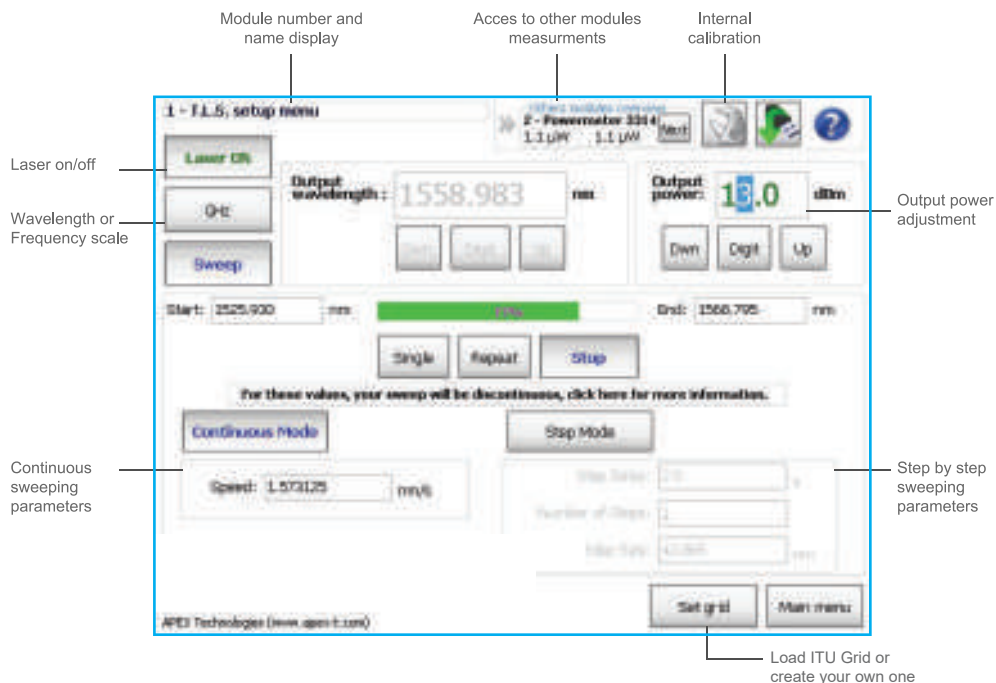


Features:

- Continuous sweeping
- ITU channels selection
- Narrow linewidth: ~ 300 kHz
- High output Power: maximum +13 dBm
- Ultra high wavelength accuracy: +/- 6 pm
- High SMSR: > 47 dB
- Narrow wavelength setting resolution: < 1pm

Software features:

- Output modes
 - Static
 - Continuous sweep
 - Step by step sweep
 - Grid
- Scale modes
 - Wavelength or frequency
 - mW or dBm
- Calibration offset access
- Other modules measurement display



Specifications:

	AP3350A	AP3352A
Wavelength range	1526nm to 1567nm	1567nm to 1608nm
Wavelength setting resolution	1pm	
Spectrum line width @ 3dB	300kHz typical	500kHz typical
Wavelength accuracy	+/- 6pm	
Output power	10dBm typical	
Output power adjustment	> 20dB	
SMSR	47dB (within a 0.1nm resolution)	
Signal to source spontaneous-emission ratio	67dB (within a 140MHz resolution filter at +/- 0.2nm from the signal)	
Optical isolation	25dB	
RIN	-135dB/Hz	
Wavelength stability @ +9dBm	1pm @ 15 minutes, 2pm @ 1 hour	
Power stability @ +9dBm	0.03dB @ 15 minutes, 0.05dB @ 1 hour	
Static Wavelength tuning speed	Max. 3s between any two static wavelength positions	
Continuous Sweeping Speed	Adjustable from 0.11 to 1.5nm/s	
Fiber/connector type	Polarization maintaining fiber FC/APC connector	
Operating temperature	From +5°C to +35°C	
Option TLS01	Typ. +13dBm maximum output power (up to +15dBm under request)	
Option TLS02	External sine modulation (from 10kHz to 20MHz)	
Option TLS03	Low SSE > 85dB	

DFB Laser modules

ITU GRID COVERING C-BAND, L-BAND AND O-BAND



Features:

- Selected wavelength according to ITU-T Grid, C-band, L-band and O-band available
- High optical output power up to 20 mW for C-band & L-band, up to 16 mW for O-band
- High side mode suppression ratio (SMSR)
- 50 GHz spacing available
- Narrow linewidth (down to 1 MHz) available

Specifications:

	AP3390A	AP3392A	AP3395A
Peak emission wavelength	ITU-Grid for C band	ITU-Grid for L band	1310nm
Spectrum linewidth @ 3dB	1MHz		5MHz
Output power	20mW Typ.		16mW Typ.
Wavelength accuracy	± 6pm		
Wavelength tunability	3nm (without mode hopping)		
Side Mode Suppression Ratio	45dB Typ.		
Min. optical isolation	30dB		
RIN	-138dB/Hz		-155dB/Hz
Polarization Extinction Ratio	20dB		
Fiber/connector type	Polarization maintaining fiber Standard FC/PC connector (FC/APC under request)		Corning SMF-28 FC/PC connector
Operating temperature	From +5°C to +35°C		

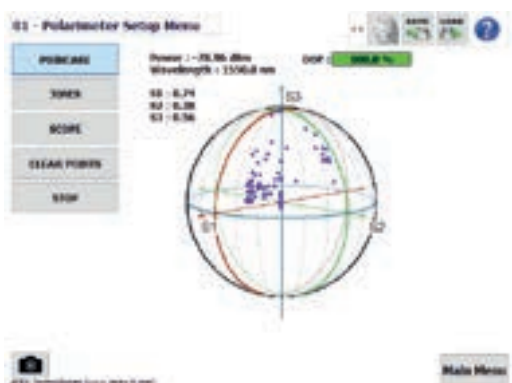
Polarimeter module

POLARIZATION ANALYSIS COVERING C+L BAND



Features:

- Four Stokes parameters measurement
- Instantaneous state of polarization (SOP)
- Degree of polarization of input light (DOP)
- Three different displaying modes: Jones graph, Poincaré sphere and Stokes parameters oscilloscope
- Extinction ratio measurements of polarizers or alignment of PM fiber
- PER measurement



	AP3321A
Optical connector	Standard FC/APC connector
Wavelength range	1520nm to 1610nm
Input power range	-60dBm to +10dBm
Maximum sampling rate	333 S/s
SOP accuracy	± 0.25° (-30 to +2 dBm) < 2° (-35 to +5 dBm)
Measurable SOP states	Full Poincaré sphere
Azimuth accuracy	± 0.25° (-30 to +2 dBm)
Ellipticity accuracy	± 0.25° (-30 to +2 dBm)
DOP accuracy	± 0.5% (-35 to +5 dBm)
Rel. power meas. accu	± 0.2% (-35 to +5 dBm)
Abs. power meas. accu	± 1% (-35 to +5 dBm)
Environmental conditions	Operating temperature: +5 to +35°C Storage temperature: -10 to +50°C Humidity: 20 to 80% RH (no condensation)

Optical Power Meter modules

STANDARD DISPLAY RANGE FROM -80 dBm TO + 10 dBm
HIGH POWER DISPLAY RANGE FROM -60 dBm TO + 33 dBm



Features:

- 1 or 2 inputs
- Wavelength range: 800 to 1700 nm
- Display range: -70 to +10 dBm
- Different style of interchangeable connectors
- InGaAs Photodiode

Software features:

- 2 inputs immediate display
- Scale modes : mW or dBm
- Min/Max percentage function
- Other modules measurement display
- Active Power Control function :
Maintains a constant optical output
(Available with EDFA module and/or
Variable Optical Attenuator module)

Specifications:

	AP3314A-1 (one input +10 dBm max) AP3314A-11 (Two inputs +10 dBm max)
Wavelength range	800 to 1700nm
Calibrated wavelengths	980,1310, 1480,1550,1610nm
Photodiode	InGaAs
Fiber type	9/125 to 50/125μm
Display range	-68 to 10dBm
Max permitted level	10 dBm
Intrinsic uncertainty	± 0.2dB (down to -66dBm)
Overall measurement uncertainty	980nm ±0.5dB ±0.2nW 1310~1610nm ±0.2dB ±0.1nW
Optional optical connectors	FC (female): Different styles of optical connector interchangeable adapter (ST/SC/...) and bare optical fiber adapter can be defined by customer
Fiber type	Single-mode or Multimode 9/125μm or 50/125μm
Operating temperature	+5°C to +35°C

Optical Switch modules

1x2, 2x2, 1x4, 1x8 SWITCHES



Features:

- Wide Operating wavelength range
- Low Insertion loss
- Low Polarization dependence loss
- Fast Switch speed

Software features:

- Easy control
- Other modules measurement display

Specifications:

	AP3344-A			
	1x2	2x2	1x4	1x8
Wavelength	1290~1330nm and 1525~1610nm			
Insertion loss (max)	0.8dB	0.9dB	1.0dB	1.5dB
Return loss (min)	45dB			
Polarization Dependent loss (max)	0.07dB		0.1dB	
Crosstalk (min)	60dB			
Repeatability (max)	+/- 0.02dB		+/- 0.05dB	
WDL (max)	0.2 dB			
Switch time (max)	4ms		10ms	
Durability (min)	10 ⁷ times			
Operating temperature	+5°C to +35°C			

Optical Variable Attenuator modules

ATTENUATION RANGE OF 30 dB, ATTENUATION STEP OF 0.1 dB



Features:

- Simple or Double module
- Attenuation range: 30dB
- Minimum insertion loss: < 1dB
- Attenuation step: 0.1 dB

Software features

- Two channels immediate display
- Attenuation controlled by powermeter
- Other modules measurement display

AP3364-B-2 Wide attenuation range and multifunctional Optical Attenuator

This Optical Attenuator Module is based on a highly integrated combination of dual variable attenuators and optical switch in a one slot module. This multifunctional attenuator works in three modes: Dual Attenuator Mode, Single Attenuator Mode and Switch Mode. In dual Attenuator Mode, the module can work as two independent attenuators. In Single Mode, the module provides a wider attenuation range, including a shutter function. In Switch Mode, this module can work as a 2x2 Switch.



Dual attenuator mode:

- 30 dB attenuation for each channel
- Two channels simultaneous display



Single attenuator mode:

- 60 dB total attenuation
- Shutter function



Switch mode:

- Switch 2 x 2

Specifications:

ations:

	AP3364A (single VOA) AP3364A-2 (double VOA)	AP3364B-2		
		Dual VOA mode	Single VOA mode	Switch mode
Wavelength range	1310nm to 1550nm			
Attenuation range	30dB		60dB	
Attenuation step size	0.1dB			
Insertion loss	< 1dB	< 2dB	< 2.5dB	
Temperature dependent loss	< 0.2dB		< 0.25dB	
Wavelength dependent loss	< 0.3dB			
Polarization dependent loss	< 0.2dB			
Polarization mode dispersion	< 0.1ps			
Return loss	> 45dB			
Response speed	< 100ms/3dB			
Attenuation setting repeatability	< +/- 0.05dB			
Attenuation setting backlash	< 0.2dB			
Maximum optical power	300mW			
Operating temperature	+5°C to +35°C			

EDFA modules

C OR L BAND, HI-GAIN, LOW NOISE FIGURE, SATURATED OUTPUT POWER ACHIEVES UP TO +22 dBm



Features:

- Wavelength range: 1528 to 1563 nm or 1568 to 1612 nm
- Three series of EDFA modules:
Booster / Line / Pre-amplifier
- Gain flattened version available
- Input power down to -40 dBm
- Saturated output power up to 22 dBm
- Large input power range
- Low noise figure

Software features:

- Manual or Automatic control
- Output and Gain control
- Scale modes: mW or dBm
- Easy parameter access
- Other modules measurement display

Specifications:

Specifications:	AP3370A	AP3372A	AP3370B	AP3372B	AP3370C	AP3372C
	Booster Amplifier		Line Amplifier		Pre-Amplifier	
Operating wavelength range	1528-1563nm	1568-1612nm	1528-1563nm	1568-1612nm	1528-1563nm	1568-1612nm
Input power range	-10 to +4dBm	-10 to +6dBm	-20 to 0dBm	-25 to -10dBm	-38 to -6dBm	-35 to -16dBm
Output Power	From +13 to +22dBm ^a				From -10 to +10dBm ^a	
Noise figure	Typ: 4.5dB / Max: 5dB		Typ: 5dB / Max: 6dB		Typ: 5dB / Max: 5.5dB	
Polarization dependent loss	≤ 0.3dB					
Polarization dependent gain	≤ 0.3dB		≤ 0.5dB			
Polarization mode dispersion	≤ 0.3ps		≤ 0.5ps			
Pump power leakage	-30dB Max.					
Output & input isolation	≥ 30dB					
Return loss	≥ 40dB					
Fiber type	SMF-28, 900μm loose tube, FC/APC (FC/PC on demand)					
Operating temperature	+5°C to +35°C					
Control	Manual Automatic fixed Output control		Manual Automatic fixed Output control Automatic fixed gain control		Manual	
Gain Flattened option: Flatness<1.5 dB	Full range	1570-1609nm	Full range	1570-1609nm	Full range	1570-1609nm

a) According to the model

Optical Tunable Filter modules

C-BAND, L-BAND AND C+L-BAND TUNABILITY AND ATTRACTIVE FEATURES



Features:

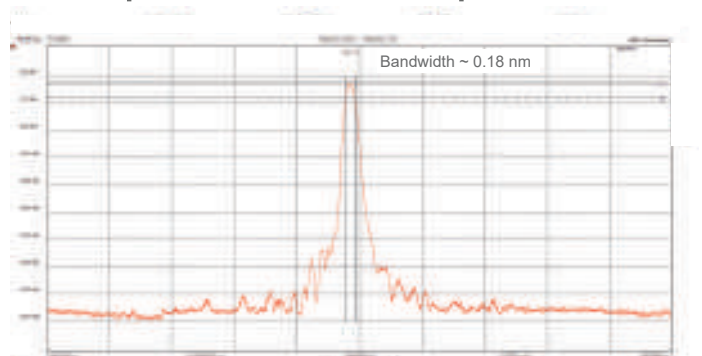
- Excellent MEMS durability, thermal stability and repeatability
- Superior optical performance
- Gaussian-shaped pass band
- Pass band optimized for 50 GHz and 100 GHz channel spacing
- C+L band tunable filter

Specifications:

	AP3380A	AP3381A	AP3382A
Tuning range (nm)	1529-1564	1526-1610	1575-1610
Min IL @ peak ^a	< 4.0dB	< 4.5dB	< 4.0dB
Bandwidth @ 3dB	> 0.15nm	< 0.32nm	> 0.15nm
Bandwidth @ 20dB	< 0.68nm	~1nm	< 0.68nm
PDL	< 0.3dB	< 0.4dB	< 0.3dB
Back reflection	> 40dB		
Setting error	< +/- 50pm		
Tuning resolution	10pm		
Tuning speed	< 30ms		
Optical power	< 500mW		
Durability	> 1 billion cycles		
Operating temperature	+5°C to +35°C		
Fiber type	9/125µm SM, FC/APC (FC/PC on demand)		

a) IL measured at 25°C. IL < 5.0 dB over entire operating temperature range

Optical Transmission Spectrum*:



Optical transmission spectrum of AP3380A C-band Tunable filter

* The spectrum is obtained with an AP208x series OSA in tracking mode (1 MHz resolution)

International distributors

ASIA

China

LUSTER LightTech Co., Ltd.
Building No.7, Yard No.13,
Cuihu Nanhuan Road,
Haidian District, Beijing 100094

Phone: +86-10-52348661
E-mail: ledu@lusterinc.com
www.lusterinc.com

Japan

HIKARI, INC
Yushima Fuji bldg. 301,
3-11-8 Yushima Bunkyo-ku
Tokyo 113-0034

Phone: (03) 3832 3117
E-mail: contact@hikari-trading.com
www.hikari-trading.com

Taiwan

Topical Scientific Corp.
7F-2, No. 421, Sung Shan Rd.
Taipei 11083

Phone: 886-2-2346-1510
E-mail: sales@topical.com.tw
www.topical.com.tw

South Korea

Panoptics Corp.
D-908 Bundang Technopark,
700 Pangyoro, Bundang,
Seongnam, Gyeonggi, 13516

Phone: +82-502-702-9999
E-mail: panoptics@panoptics.net
www.panoptics.net

AMERICA

USA

Advanced Technical Marketing (ATM)
1719 Route 10, Suite 113
Parsippany, NJ 07054

E-mail: sales@atm1.com
Phone: 973-683-1411
www.atm1.com

EUROPE

France

ABSYS s.a.
19 Rue Levacher Cintrat
91460 Marcoussis

E-mail: ventes@absysfrance.com
Phone: 01 69 63 26 36
www.absysfrance.com

Israel

FAST Laser GROUP Ltd.
Shalom Aleichem 1 st,
Hod-Hasharon 4521456

E-mail: nachum@fastlaser.co.il
Phone: 972-(0)9-7444-112
www.fastlaser.co.il

Russia

OES Specpostavka
52/liter D, Fontanka river
embankment
191002 Saint-Petersburg

E-mail: contact@oessp.ru
Phone: +78127777080 ext.316
www.oessp.ru

Russia

Scientific devices and systems, LLC
1 Krasny av.
Office 214
630007 Novosibirsk

E-mail: sales@spegroup.ru
Phone: +7-383-330-82-95
www.spegroup.ru

Russia

Versia
Yablochkova street, 21
Building 3, 3rd floor
191002 Moscow

E-mail: info@versia-it.ru
Phone: +7(495) 616 10 00
www.versia-it.ru

UK

Lambda Photometrics Ltd.
Lambda House, Batford Mill
Harpenden
Hertfordshire, AL5 5BZ

E-mail: contact@lambdaphoto.co.uk
Phone: +44(0)1582 764334
www.lambdaphoto.co.uk

After-sales service

China

LUSTER LightTech Co., Ltd.
Building No.7, Yard No.13,
Cuihu Nanhuan Road,
Haidian District, Beijing 100094
China

Phone: +86-10-52348673
E-mail: zhijunzhang@lusterinc.com
www.lusterinc.com

Other Areas

APEX Technologies
9bis, Rue Angiboust
P.A. de la Fontaine de Jouvence
91460 Marcoussis
France

E-mail: sales@apex-t.com
Phone: +33 (0)1 69 63 26 30
www.apex-t.com

APEX

TECHNOLOGIES

Your local contact



販売元:
光貿易株式会社

〒113-0034東京都文京区湯島3-13-8

TEL: 03-3832-3117 Email: contact@hikari-trading.com

Headquarters

APEX Technologies
9bis, rue ANGIBOUST
91460 MARCOUSSIS
FRANCE

Tel: +33 (0)169632630
Fax: +33 (0)169632637
E-mail: sales@apex-t.com