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Agilent 8163A/B Lightwave Multimeter
Agilent 8164A/B Lightwave Measurement System
Agilent 8166A/B Lightwave Multichannel System

Configuration Guide

June 2002



This guide provides configuration details for the Agilent 816x family of mainframes and modules, including options and accessories.

Agilent Technologies

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8164A/B Lightwave Measurement System



Any 816x and 8156x compact modules, also 8153A modules

Agilent high performance tunable laser module- 1 per 8164A/B
Use 81645A filler module if no tunable laser is installed

Figure 1

Tunable Lasers: All-band Module
81600B 1440-1640nm
page 3

Tunable Lasers: Low SSE Modules
81480B - 1400nm page 3
81680B - 1550nm page 3
81640B - 1600nm page 3
81480A - 1400nm page 3
81680A - 1550nm page 3
81640A - 1600nm page 3

Tunable Lasers: High Power Modules
81672B - 1300nm, + 9dBm page 3
81482B - 1400nm, + 8.5dBm page 3
81682B - 1550nm, + 8dBm page 3
81642B - 1600nm, + 8.5dBm page 3
81682A - 1550nm, +8dBm page 3
81642A - 1600nm, +7dBm page 3

Lightwave Multimeter Modules

816xx A
816xx B
8156xA
see Figure 2

Compact tunable Laser Modules

81689A page 4
81689B
81649A

8163A/B Lightwave Multimeter

Any 816x and 8156x compact modules, also 8153A modules

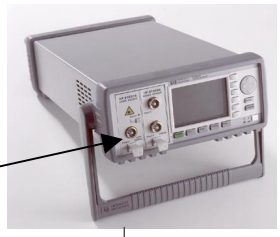


Figure 2

Light Source Modules

FP Standard Modules page 6
81650A - 1310nm
81651A - 1550nm
81652A - 1550/1625nm
81654A - 1310/1550nm

FP High Power Modules page 6
81655A -1310nm
81656A - 1550nm
81657A - 1310/1550nm

DFB Laser Sources page 5
81662A
81663A

Compact Tunable Laser Sources
81689A page 4
81689B
81649A

Return Loss Modules
page 10

81610A - no laser
81611A - 1310nm
81612A - 1550nm
81613A - 1310/1550nm
81614A - 1550/1625nm

Power Sensors Modules
page 7

81630B
81634 B
81635 A

Fast Power Sensor Modules
Page 7

81636B
81637B

Interface Modules page 8-9
81618A – single interface
81619A – dual interface

High Power Optical Heads
81622B page 8
81626B page 8
81628B page 8
Standard Optical Heads
81623B page 8
81624B page 8
81627B page 9

Attenuator Modules
page 11
81560A
81561A
81566A
81567A
81570A
81571A
81573A
81576A
81577A

Optical Switch Modules
page 12
81591A
81591S
81592A
81952S
81594A
81594S
81595A
81595S

8166 Lightwave Multichannel System



Any 816x and 8156x compact modules
(8153 modules not allowed)

Figure 3

Lightwave Multimeter Modules

816xx A
816xx B
8156xA
see Figure 2

Information about Agilent connectors and connector interfaces can be found at http://www.agilent.com/comms/oct-accessories

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High-Performance Tunable Laser Modules



OPTIONAL

MANDATORY AND MUTUALLY EXCLUSIVE

For Laser Safety see page 13

Tunable Laser Source All-band

81600B 1440nm – 1640nm

Tunable Laser Sources Low SSE Modules

81480B - 1400nm
81680B - 1550nm
81640B - 1600nm
81480A - 1400nm
81680A - 1550nm
81640A - 1600nm

Tunable Laser Sources All-band

Tunable Laser Sources Low SSE

Tunable Laser Sources High Power

Tunable Laser Sources High power Modules

81672B - 1300nm, + 9dBm
81482B - 1400nm, + 8.5dBm
81682B - 1550nm, + 8dBm
81642B - 1600nm, + 8.5dBm
81682A - 1550nm, +8dBm
81642A - 1600nm, +7dBm

Filler Module

Specifiy 81645A Filler Module if no high performance tunable laser is installed

81xxxB-OC-INTATT

81xxxB-071 PMF Straight contact interface 81xx2B-371 with Attenuator (built in) (except 81672B)

81xxxB-072 PMF Angled contact interface 81xx2B-372 with Attenuator (built in) (except 81672B)

816xxxB-OC-ACCS

8163B-OC-STRGHT Connector Interfaces for straight connectors

8163B-OC-ANGLED Connector Interfaces for angled connectors

Connector Interfaces for straight connectors

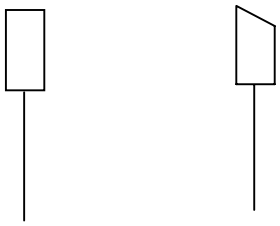
2 ea required for 81600B, 81480B, 81680B, 81640B, 81480A, 81680A, 81640A
1 ea required for 81672B, 81482B, 81682B, 81642B, 81682A, 81642A

81000AI Diamond HMS-10
81000FI FC/PC/SPC
81000GI D4
81000HI E-2000
81000KI SC/PC/SPC
81000SI DIN 47256
81000VI ST
81000WI Biconic

Connector Interface for angled connectors

2 ea required for 81600B, 81480B, 81680B, 81640B, 81480A, 81680A, 81640A
1 ea required for 81672B, 81482B, 81682B, 81642B, 81682A, 81642A

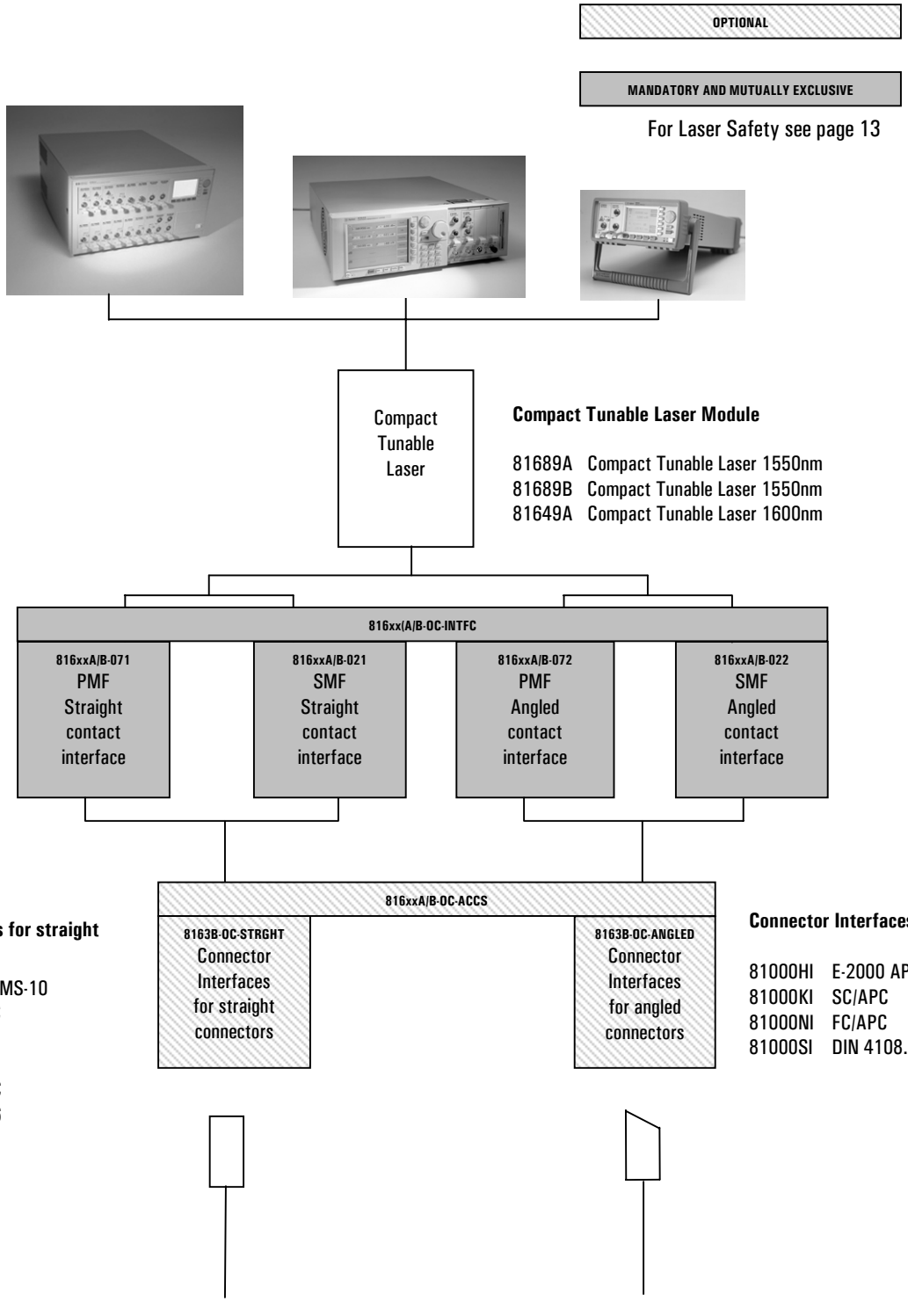
81000HI E-2000 APC
81000KI SC/APC
81000NI FC/APC
81000SI DIN 47256/4108.6



Note: 81xxxB-072 is highly recommended over 81xxxB-071 to reduce front-panel connector reflections which will greatly reduce interference noise and spectral ripple in the test setup.

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Compact Tunable Laser Modules



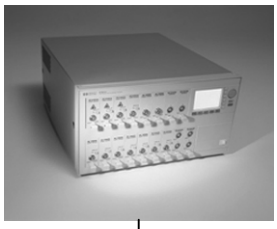
Note: 816xxA/B-022 or 816xxA/B-072 are highly recommended over 816xxA/B-021 and 816xxA/B-071 to reduce front-panel reflections which will greatly reduce interference noise and spectral ripple in the test setup.

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DFB Source Modules

OPTIONAL

MANDATORY AND MUTUALLY EXCLUSIVE







For Laser Safety see page 13

8166xA-OC-WAVEL

8166xA-OC-309
through to
8166xA-OC-505

DFB Source

81662A DFB Source + 10 dBm C- and L- band
81663A DFB source + 13 dBm C-and L-band
(wavelength determined by option number)

8166xA-OC-ACCS

8163B-OC-ANGLED
Connector Interfaces for angled contact connectors

Connector Interfaces for angled connectors

81000HI E-2000 APC
81000KI SC/APC
81000NI FC/APC
81000SI DIN 47256/4108.6

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Fabry-Perot Laser Modules

OPTIONAL

For Laser Safety see page 13







FP Standard Source Modules 0 dBm

81650A 1310nm
81651A 1550 nm
81652A 1550/1625 nm
81654A 1310/1550 nm

Source Modules 0 dBm

SMF, Straight contact interface

Source Modules 13 dBm

SMF, Straight contact interface

FP High Power Source Modules 13 dBm

81655A 1310nm
81656A 1550 nm
81657A 1310/1550 nm

8165xA-OC-ACCS

8163B-OC-STRGHT
Connector Interfaces for straight connectors

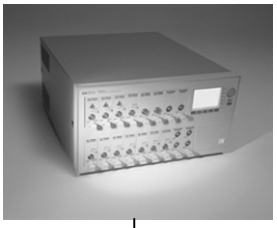
Connector Interfaces for straight connectors

81000AI HMS-10
81000FI FC/PC/SPC
81000GI D4
81000HI E-2000
81000KI SC/PC/SPC
81000SI DIN 47256
81000VI ST
81000WI Biconic

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Power Sensor Modules

OPTIONAL







Power Sensors
High Performance Modules
81633A/B +10 dBm to –90 dBm
81634A/B +10 dBm to –110 dBm
81637B + 10 dBm to 80 dBm (Fast Power Sensor)
81630B +28 dBm to –70 dBm

Sensor Module Interface for both angled and straight connectors

Power Sensors
Economy Modules
81632A/B +10 dBm to –80 dBm (single channel)
81635A +10 dBm to –110 dBm (dual channel)
81636B + 10 dBm to –80 dBm (Fast Power Sensor)

8163xA/B-OC-ACCS

8163xA/B-OC-PWRSEN
Connector Interfaces

8163xA/B-OC-PWRSEN
Connector Interfaces which fit 81000BB/FB

Connector Interfaces
81000AI Diamond HMS-10
81000FI FC/PC/SPC
81000GI D4
81000JI SMA
81000KI SC/PC/APC
81000PI E-2000
81000SI DIN 47256 / 4108.6
81000VI ST
81002LI LC

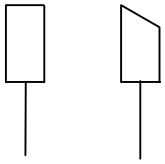
81000AI Diamond HMS-10
81000FI FC/PC/SPC
81000KI SC
81000SI DIN 47256/4108.6
81000VI ST
81000PI E-2000

8163xA/B-OC-BARE

Bare Fiber Adapter

Following single Combination is available

81000BB Bare Fiber Kit
81000FI FC
81000FB Bare Fiber Adapter





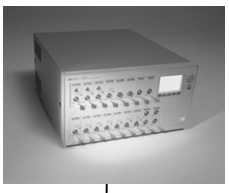
(bare fiber)

Note: All sensor inputs are non-contact and accept both straight and angled connectors.

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Optical Heads (5mm Sensor)

Connectorized Fiber, Bare Fiber and Open beam NA ≤ 0.3







OPTIONAL

8162xB-OC-INTMOD

Interface Module

Interface Modules
81618A Single Interface Module
81619A Dual Interface Module

Optical Heads

Optical Heads
81622B Ge +27dBm to – 55dBm
81623B Ge +10dBm to – 80 dBm
81624B InGaAs + 10dBm to – 90 dBm
81626B In GaAs + 27dBm to – 70 dBm
81628B In GaAs + 40dBm to – 60 dBm (only with threaded Connector Adapters)

Accessories
81624CE 4m extension cable
81624DD additional D-shape quick change adapter
81624RM Half-rack Mount Kit for 2 Heads [1]
81625RM Rack Mount Kit for 4 Heads [1]

D-Shaped Adapter 81624DD – 1ea supplied with head [1]

Integrating Sphere
81002FF

Depolarizing Filter
8100DF

Filter Holder [2]

Filter / Holder
81000AF Filter Holder
81001FF 10 dB Filter and Holder
81000DF Depolarizing Filter and Holder

Connector Adapters (threaded)
81000AA Diamond HMS-10
81000BA Bare Fiber (125um)
81000FA FC/PC/SPC/APC
81000GA D4
81000KA SC/PC/APC
81000MA MU
81000PA E2000
81000SA DIN 47256/4108
81000VA ST

81000ZA Blank Adapter (to be customized by user)
810003LA LC

Connector Adapters (with intergral D-Shape)

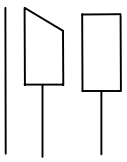
81624DD D-Shaped adapter not required

81001BA Bare Fiber 125μm
81001FA FC/PC/SPC/APC
81001KA SC/PC/APC
81001LA LC
81001MA MU
81001PA E-2000
81001SA DIN 47256 / 4108.6
81001ZA BLANK Adapter

81003JD MT - RJ
81003PD MPX
81003TD MTP

8163B-OC-D5MM

Integral D-Shaped Adapters



High Return Loss Adapter
(for use with straight connectors)
81000RA High Return Loss Adapter

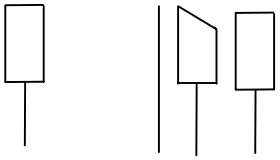
High Return Loss Adapter

Connector Interfaces
81000AI Diamond HMS-10
81000FI FC/PC/SPC
81000GI D4
81000HI E2000
81000KI SC/PC/SPC
81000SI DIN 47256
81000VI ST
81002LI LC

8163B-OC-5MM

Connector Interfaces

Connector Adapters Threaded



[1] Not applicable to 81628B

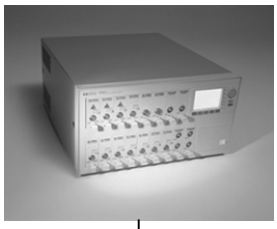
[2] For use with 81622B or 81626B and straight connectors
If input power > +10dBm the use of the filter holder will result in better accuracy (refer to specs)

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Optical Heads (3mm Sensor)

OPTIONAL

Configuration for connectorized fibers and bare fiber







81622B-OC-INTMOD
Interface Module

Interface Modules

81618A
81619A

Optical Head

Optical Heads

81627B

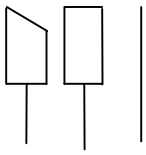
81627B-OC-ACCS

81624RM Half-rack Mount Kit for 2 Heads

81625RM Rack Mount Kit for 4 Heads

81624CE 4m extension cable

8163B-OC-D3MM
Connector Adapters with integral D-Adapter



NA ≤ 0.11 (Single mode fiber)
NA ≤ 0.22 (Multi mode fiber)

Connector Adapters (with intergral D-Shape)

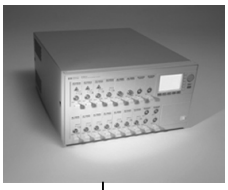
81001BA Bare Fiber 125μm
81001FA FC/PC/SPC/APC
81001KA SC/PC/APC
81001LA LC
81001MA MU
81001PA E-2000,APC
81001SA DIN 47256 / 4108.6
81001ZA BLANK Adapter

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Return Loss Modules

OPTIONAL

For Laser Safety see page 13





Return Loss Module

Input

Angled contact interfaces

Output

81610A Return Loss Module without internal source
81611A Return Loss Module (1310nm)
81612A " " " (1550nm)
81613A " " " (1310/1550nm)
81614A " " " (1550/1625nm)

8161xA-OC-ANGLED

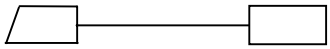
8161xA-OC-ANGLED Connector Interfaces for angled contacts

8161xA-OC-ANGLED Connector Interfaces for angled contacts

Connector Interfaces
81000HI E-2000 APC
81000KI SC/APC
81000NI FC/APC
81000SI DIN 4108.6

Reference Cable

81610CC Reference Cable – for calibration of all 8161xA Return Loss Modules
Connectors - DIN 4108.6 (connectors to modules) and FC/PC supplied (w/calibrated return loss values)
An 81000SI connector interface is required to connect this cable to the module.
This cable is used for calibration only, not for measurements.



DIN 4108.6 FC/PC

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Optical Attenuator Modules

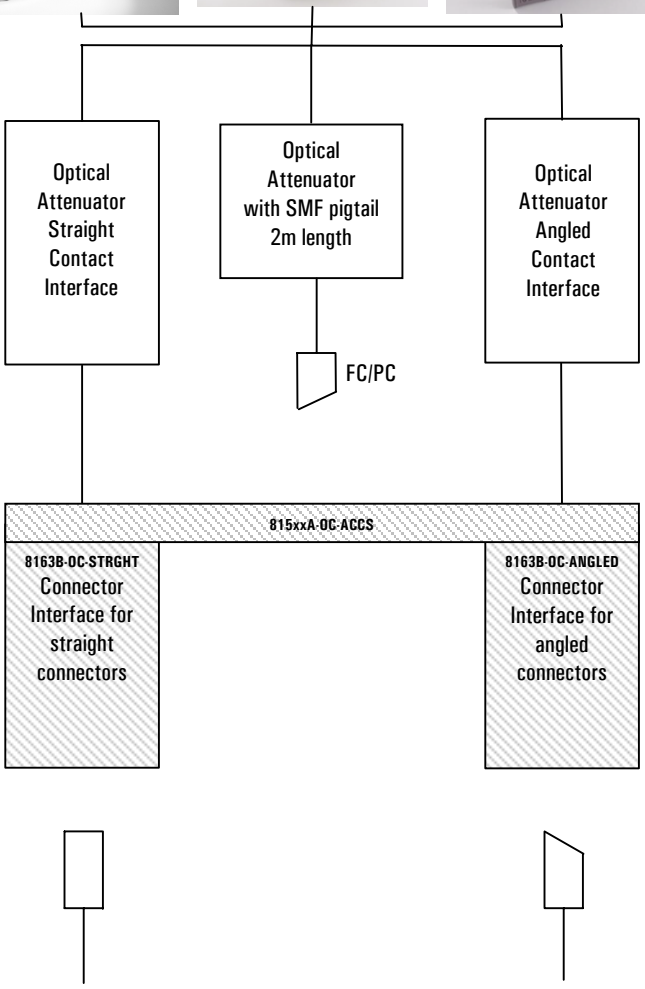
OPTIONAL



Optical Attenuators for Straight Contact Interface
81560A (single slot)
Optical Attenuator
81570A (single slot)
Optical Attenuator for high power
81566A (dual slot)
Optical Attenuator with Power Control
81576A (dual slot)
Optical Attenuator with Power Control for high power

Connector Interfaces

81000 AI	HMS-10
81000 FI	FC/PC/SPC
81000 GI	D4
81000 HI	E-2000
81000 KI	SC/PC/SPC
81000 SI	DIN 47256
81000 VI	ST



Optical Attenuator with SMF pigtail
81573A (single slot)
Optical Attenuator for high power

Optical Attenuators for Angled Contact Interface
81561A (single slot)
Optical Attenuator
81571A (single slot)
Optical Attenuator for high power
81567A (dual slot)
Optical Attenuator with Power Control
81577A (dual slot)
Optical Attenuator with Power Control for high power

Connector Interfaces

81000 HI	E-2000 APC
81000 KI	SC/APC
81000 NI	FC/APC
81000 SI	DIN 4108.6

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Optical Switch Modules

MANDATORY AND MUTUALLY EXCLUSIVE



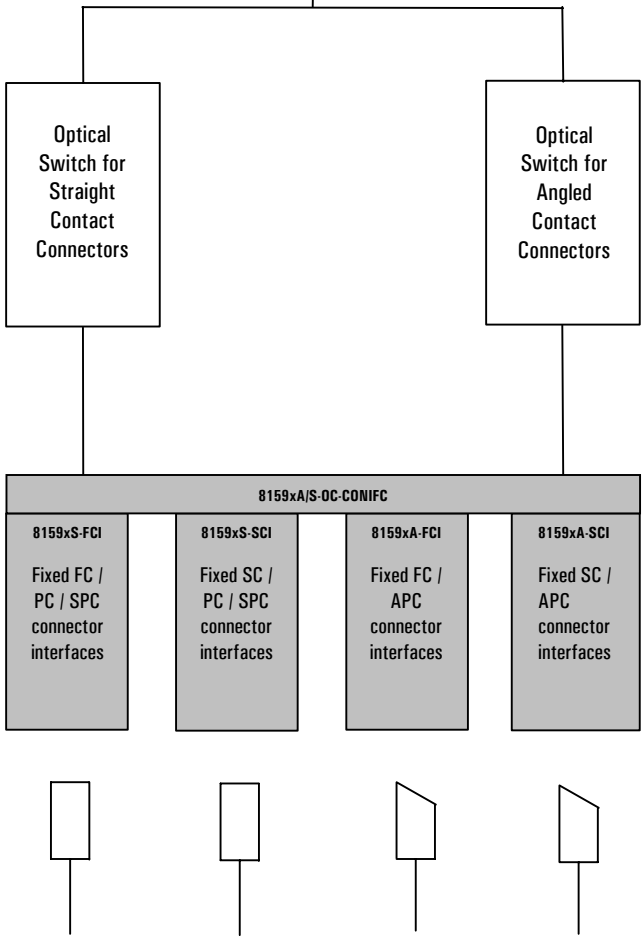
Optical Switches for Straight Contact Connectors

81591S Optical switch 1x2

81592S Optical switches
2 independent 1x2 in one module

81594S Optical switch, 2x2 non-blocking (crossover)

81595S Optical switch, 1x4



Optical Switches for Angled Contact Connectors

81591A Optical switch 1x2

81592A Optical switches
2 independent 1x2 in one module

81594A Optical switch, 2x2 non-blocking (crossover)

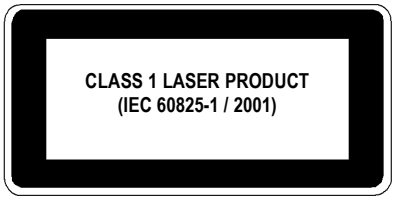
81595A Optical switch, 1x4

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Laser Safety Information

81611A 1310nm RL
81612A 1550nm RL
81613A 1310/1550nm FP
81614A 1550/1625nm RL
81650A 1310 nm FP
81651A 1550 nm FP
81652A 1550/1625 nm FP
81654A 1310/1550 nm

The laser sources listed directly above are classified as Class 1 according to IEC 60825-1 (2001).
All laser sources comply with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated 2001-July-26.



81655A 1310nm FP
81656A 1550 nm FP
81657A 1310/1550 nm FP
81662A C- and L-Band DFB
81663A C-band DFB
81600B All-band TLS
81480B 1400nm TLS
81680B 1550nm TLS
81640B 1600nm TLS
81672B 1300nm TLS
81482B 1400nm TLS
81682B 1550nm TLS
81642B 1600nm TLS
81480A 1400nm TLS
81640A 1600nm TLS
81642A 1600nm TLS
81680A 1550nm TLS
81682A 1550nm TLS
81689A 1550nm TLS
81689B 1550nm TLS
81649A 1595nm TLS

All laser sources specified by this data sheet are classified as Class 1M according to IEC 60825-1 (2001).
All laser sources comply with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated 2001-July-26



Further Information about Agilent connectors and connector interfaces can be found at http://www.agilent.com/comms/oct-accessories

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Agilent Technologies'
Test and Measurement
Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

By internet, phone, or fax, get assistance with all your test & measurement needs

Online assistance:
www.agilent.com/comms/lightwave

Phone or Fax
United States:
(tel) 1 800 452 4844

Canada:
(tel) 1 877 894 4414
(fax) (905) 206 4120

Europe:
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(fax) (31 20) 547 2390

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
(tel) (305) 269 7500
(fax) (305) 269 7599

Australia:
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Agilent 8164B Lightwave Measurement System
Agilent 8166B Lightwave Multichannel System
Technical Specifications
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Agilent 8163A Lightwave Multimeter
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Agilent 81480/680/640A Tunable Lasers
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