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Agilent
Lightwave Solution Platform

Configuration Guide
May 2005



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

Agilent Technologies

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8163B Lightwave Multimeter



Main features:

- Ideal for laboratory and portable usage
- 2 compact module slots
- Built in applications:
  Return Loss, Passive Component Test, Stability, Logging
- GPIB Interface for remote control
- Full backward compatibility for 815xx and 816xx series modules.

8164B Lightwave Measurement System



Main features:

- Ideal for laboratory or rack mount usage for state-of-the-art applications
- 1 extended module slot for back-loadable tunable laser sources
- 4 compact module slots
- Built in applications:
  Passive Component Test, Stability, Logging
- Integrated floppy disk for direct setup and data access
- GPIB Interface for remote control
- Full backward compatibility for 815xx and 816xx series modules.

8166B Lightwave Multichannel System



Main features:

- Ideal for laboratory or rack mount usage for applications that require high port counts
- 17 compact module slots
- GPIB Interface for remote control
- Backward compatibility for 8156x, 8157x, 8159x and 816xx series modules.

Mainframe and Module Firmware:

→ For Firmware upgrades and download tools see http://www.agilent.com/comms/octfirmware

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Module compatibility

		8163B Slots 1 – 2	8164B Slot 0	8164B Slots 1 – 4	8166B Slots 1 – 17
81600B TLS family					
#200, #160, #150, #140, #130 low SSE	page 4		X		
#142, #132 high power	page 4		X		
81980A compact TLS	page 5	X		X	X
81940A compact TLS	page 5	X		X	X
81989A compact TLS	page 5	X		X	X
81949A compact TLS	page 5	X		X	X
81944A compact TLS	page 5	X		X	X
81662A DFB source module	page 6	X		X	X
81663A DFB source module	page 6	X		X	X
81650A FP source module	page 7	X		X	X
81651A FP source module	page 7	X		X	X
81654A FP source module	page 7	X		X	X
81655A FP source module	page 7	X		X	X
81656A FP source module	page 7	X		X	X
81657A FP source module	page 7	X		X	X
81630B power measurement module	page 8	X		X	X
81634B power measurement module	page 8	X		X	X
81635A power measurement module	page 8	X		X	X
81636B power measurement module	page 8	X		X	X
81618A interface module	page 9/10	X		X	X
81619A dual interface module	page 9/10	X		X	X
81623B optical head	page 9	X		X	X
81624B optical head	page 9	X		X	X
81626B high power optical head	page 9	X		X	X
81628B high power optical head with integrating sphere	page 10	X		X	X
81610A return loss module	page 11	X		X	X
81613A return loss module	page 11	X		X	X
81570A attenuator module (SM)	page 12	X		X	X
81571A attenuator module (SM)	page 12	X		X	X
81576A attenuator module with p/c	page 12	X (dual)		X (dual)	X (dual)
81577A attenuator module with p/c	page 12	X (dual)		X (dual)	X (dual)
81578A attenuator module (MM)	page 12	X		X	X
81591B optical switch module 1x2	page 13	X		X	X
81594B optical switch module 2x2	page 13	X		X	X
81595B optical switch module 1x4	page 13	X		X	X

Legacy Module compatibility

The discontinued 8163A, 8164A and 8166A mainframes are functionally compatible with the B versions.

		8163B Slots 1 – 2	8164B Slot 0	8164B Slots 1 – 4	8166B Slots 1 – 17
814xxA/B backloadable TLS modules			X		
816xxA/B backloadable TLS modules			X		
816xxA/B compact TLS modules		X		X	X
Other 816xx series modules		X		X	X
8156xA, 8157xA attenuator modules		X		X	X
8159xA/S switch modules		X		X	X
All other 815xx series modules		X		X	

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81600B Tunable Laser Source family

OPTIONAL

MANDATORY AND MUTUALLY EXCLUSIVE

For Laser Safety information see page 14



Tunable Laser Sources
Low SSE modules

81600B #200:
1440 nm – 1640 nm

81600B #160:
1495 nm – 1640 nm

81600B #150:
1450 nm – 1590 nm

81600B #140:
1370 nm – 1495 nm

81600B #130:
1260 nm – 1375 nm

Tunable Laser Sources

Outputs:
Low SSE and
High Power

Tunable Laser Sources

Outputs:
High Power
only

Tunable Laser Sources
High Power modules

81600B #142:
1370 nm – 1495 nm, +8.5 dBm

81600B #132:
1260 nm – 1375 nm, +9 dBm

81600B-003
with built-in
attenuator
(81600B #142 only)

81600B-071
PMF Straight
contact connector

81600B-072
PMF Angled
contact connector

Connector Interfaces
for straight connectors

2 ea required for 81600B
#200, 160, 150, 140, 130.

1 ea required for 81600B
#142, 132.

Connector Interfaces
for straight
connectors

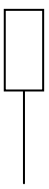
Connector Interfaces
for angled connectors

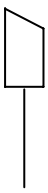
Connector Interface
for angled connectors

2 ea required for 81600B
#200, 160, 150, 140, 130.

1 ea required for 81600B
#142, 132.

81000FI FC/PC key width 2.2 mm
81000HI E-2000/PC
81000KI SC/PC
81000LI LC/PC
81000MI MU/PC
81000SI DIN 47256/PC
81000VI ST/PC





81000FI FC/APC key width 2.2 mm
81000NI FC/APC key width 2.0 mm
81000HI E-2000/APC
81000KI SC/APC
81000LI LC/APC
81000MI MU/APC
81000SI DIN 47256/APC,
81000VI ST/APC

Note: 81600B - 072 is highly recommended over 81600B - 071 to reduce front-panel reflections, which will greatly reduce interference noise and spectral ripple in the test setup.

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High Power Compact Tunable Laser Source modules

OPTIONAL

MANDATORY AND MUTUALLY EXCLUSIVE

For Laser Safety information see page 14





High Power Compact Tunable Laser Source module

High Power Compact Tunable Laser module

81980A Compact Tunable Laser 1465 nm – 1575 nm
81940A Compact Tunable Laser 1520 nm – 1630 nm
81989A Compact Tunable Laser 1465 nm – 1575 nm
81949A Compact Tunable Laser 1520 nm – 1630 nm

81944A Compact Tunable Laser 1525 nm – 1625 nm for PMD tester system N3909A

819xxA-071 PMF Straight contact connector

819xxA-072 PMF Angled contact connector

Connector Interfaces for straight connectors

1 ea required

81000FI FC/PC key width 2.2 mm
81000HI E-2000/PC
81000KI SC/PC
81000LI LC/PC
81000MI MU/PC
81000SI DIN 47256/PC
81000VI ST/PC

Connector Interfaces for straight connectors

Connector Interfaces for angled connectors

Connector Interfaces for angled connectors

1 ea required

81000FI FC/APC key width 2.2 mm
81000NI FC/APC key width 2.0 mm
81000HI E-2000/APC
81000KI SC/APC
81000LI LC/APC
81000MI MU/APC
81000SI DIN 47256/APC
81000VI ST/APC

Note: 819xxA - 072 is highly recommended over 819xxA - 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 information see page 14







DFB Source

81662A DFB Source, +10 dBm C- and L- band
81663A DFB Source, +13 dBm C-and L-band

Wavelength option

Wavelength determined by option number
For special wavelengths, contact Agilent.

Connector Interfaces for angled contact connectors

Connector Interfaces for angled connectors

1 ea required

81000FI FC/APC key width 2.2 mm
81000NI FC/APC key width 2.0 mm
81000HI E-2000/APC
81000KI SC/APC
81000LI LC/APC
81000MI MU/APC
81000SI DIN 47256/APC
81000VI ST/APC

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Fabry-Perot Laser modules

OPTIONAL

For Laser Safety information see page 14





Source Modules

SMF,
Straight contact
interface

FP High Power Source Modules 13 dBm

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

FP Standard Source Modules 3 dBm

81655A #E01 850 nm

FP Standard Source Modules 0 dBm

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

Connector
Interfaces for
straight
connectors

Connector Interfaces for straight connectors

1 ea required

81000FI FC/PC key width 2.2mm
81000HI E-2000/PC
81000KI SC/PC
81000LI LC/PC
81000MI MU/PC
81000SI DIN 47256/PC
81000VI ST/PC

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Optical Power Measurement modules

OPTIONAL



Sensor Module Interface (for both angled & straight connectors).

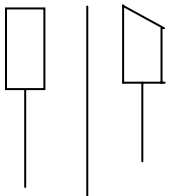
Optical Power measurement modules

81630B +28 dBm to –70 dBm
81634B +10 dBm to –110 dBm
81635A +10 dBm to –80 dBm (dual channel)
81636B +10 dBm to –80 dBm (Fast Power Sensor)

Connector Interfaces

Connector Interfaces

1 ea required for 81630B, 81634B, and 81636B
2 ea required for 81635A



81000FI FC/PC key width 2.2mm
81000NI FC/APC key width 2.0mm
81000KI SC/PC/APC
81000PI E-2000 PC/APC
81000SI DIN 47256 PC/APC
81000VI ST/PC/APC
81002LI LC/PC/APC
81002MI MU/PC/APC

Bare Fiber Connectivity (for 81630, 81634 series) 81000BI

81000BI Bare Fiber Connectivity Set for 81630B, 81634B Sensors (not to be used for 81635A and 81636B)

81004BH 10 Bare Fiber Holder for fibers <400µm diameter
81009BH 10 Bare Fiber Holder for fibers 400 - 900µm diameter



(bare fiber)

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

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Optical Heads (5 mm sensor)

OPTIONAL





For advanced accuracy see „Special Calibration" options C01/02 and C85/86

Interface Module

Interface Modules

81618A Single Head Interface Module

81619A Dual Head Interface Module

Accessories

81624CE 4 m extension cable

81624DD additional D-shape quick change adapter

81624RM Half-rack Mount Kit for 2 Heads

81625RM Rack Mount Kit for 4 Heads

Optical Heads for: Connectorized Fiber, Bare Fiber and Open beam NA ≤ 0.3

Optical Heads

81623B Ge +10dBm to –80 dBm (spec for **750** – 1800nm)

81624B InGaAs +10dBm to –90 dBm

81626B InGaAs +27dBm to –70 dBm

D-Shaped Adapter 81624DD (supplied with head)

Filter Holder [1]

Filter / Holder

81010BL Lens for 1300/1550 nm, single mode

81050BL Lens for 1300/1550 nm, multi mode

Connector Adapters (threaded)

81000BT Bare Fiber Connectivity Set (Threaded)

81000FA FC/PC/APC

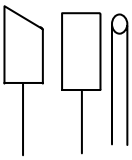
81000KA SC/PC/APC

81000VA ST

81003LA LC

81000PA E-2000

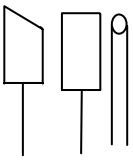
Connector Adapters (threaded).



Connector Adapters (with integral D-Shape)

81624DD D-Shaped adapter not required

Integral D-Shaped Adapters



81000BC Bare Fiber Connectivity Set (D-shaped)

81001FA FC

81001KA SC

81001LA LC

81001MA MU

81001PA E-2000

81001ZA BLANK Adapter

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High Power Optical Head (with integrating sphere)

OPTIONAL



Interface Module

Interface Modules

81618A Single Head Interface Module

81619A Dual Head Interface Module

High Power Optical Head for: Connectorized Fiber, Bare Fiber and Open beam NA ≤ 0.3

81628B InGaAs +40 dBm to –60 dBm

Accessories

81624CE 4 m extension cable

Connector Adapters (threaded).

Connector Adapters (threaded)

81000BT Bare Fiber Connectivity Set (Threaded)

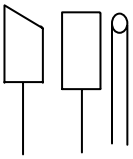
81000FA FC/PC/APC

81000KA SC/PC/APC

81000VA ST

81003LA LC

81000PA E-2000



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Return Loss modules

OPTIONAL

For Laser Safety information see page 14





Return Loss Module

Angled contact interfaces

81610A Return Loss Module (without internal source)

81613A Return Loss Module (1310/1550 nm internal source)

Connector Interface for angled contacts

Connector Interfaces for angled connectors

2 ea required for 81610A.

1 ea required for 81613A,
(2 ea required if using external source input).

81000FI FC/APC key width 2.2 mm
81000NI FC/APC key width 2.0 mm
81000HI E-2000/APC
81000KI SC/APC
81000SI DIN 47256/APC
81000VI ST/APC
81000LI LC/APC
81000MI MU/APC

Reference Cable

81610CC Reference Cable – for calibration of all 8161xA Return Loss Modules

Connectors - DIN 47256/APC (connects to module) and FC/PC (supplied with calibrated return loss values to open air)

An 81000SI connector interface is required to connect this cable to the module.

This cable is used for calibration only, not for measurements.

Caution: Do not make physical contact to the FC/PC connector and do not attach another connector to it. This could change the calibrated (open) return loss values.

81610CC

DIN 47256/APC — FC/PC

or

Standard patch cord

81000UM — 81000BR

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Optical Attenuator modules

OPTIONAL



Optical Attenuators with Straight Contact Connectors

81570A (single slot)
Optical Attenuator single-mode applications

81578A (single slot)
Optical Attenuator multi-mode applications
#050: 50µm fiber interface
#062: 62.5µm fiber interface

81576A (dual slot)
Optical Attenuator with Power Control for high power

Optical Attenuator Straight Contact Connectors

Optical Attenuator Angled Contact Connectors

Optical Attenuators with Angled Contact Connectors

81571A (single slot)
Optical Attenuator for high power

81577A (dual slot)
Optical Attenuator with Power Control for high power

Connector Interfaces (input and output):

2 ea required

81000FI FC/PC key width 2.2 mm
81000HI E-2000 PC
81000KI SC/PC
81000LI LC/PC
81000MI MU/PC
81000SI DIN 47256/PC
81000VI ST/PC

Connector Interface for straight connectors

Connector Interface for angled connectors

Connector Interfaces (input and output):

2 ea required

81000FI FC/APC key width 2.2 mm
81000NI FC/APC key width 2.0 mm
81000HI E-2000 APC
81000KI SC/APC
81000LI LC/APC
81000MI MU/APC
81000SI DIN 47256/APC
81000VI ST/APC



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Optical Switch modules

OPTIONAL



Optical Switches (multi-mode) with Straight Contact Connectors

81591B #062 (single slot)
Optical switch 1x2 for multi-mode applications

81594B #062 (single slot)
Optical switch 2x2 for multi-mode applications

81595B #062 (single slot)
Optical switch 1x4 for multi-mode applications

Multi-mode Optical Switch with Straight Contact FC/PC Connectors

Single-mode Optical Switch with Angled Contact FC/APC – R Connectors (key width 2.0mm)

Optical Switches (single-mode) with Angled Contact Connectors

81591B #009 (single slot)
Optical switch 1x2 for single-mode applications

81594B #009 (single slot)
Optical switch 2x2 for single-mode applications

81595B #009 (single slot)
Optical switch 1x4 for single-mode applications

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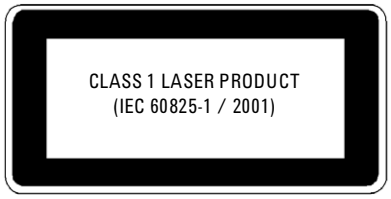
Laser Safety Information

81613A 1310/1550nm RL

81650A 1310 nm FP
81651A 1550 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 #E01 850 nm FP
81655A 1310 nm FP
81656A 1550 nm FP
81657A 1310/1550 nm FP

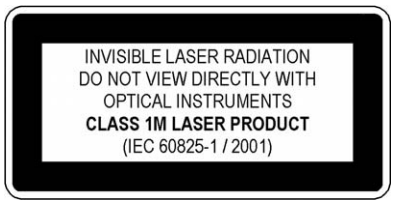
81662A C- and L-Band DFB
81663A C-band DFB

81600B #200 1440 nm – 1640 nm All-band TLS
81600B #140 1370 nm – 1495 nm low SSE TLS
81600B #150 1450 nm – 1590 nm low SSE TLS
81600B #160 1495 nm – 1640 nm low SSE TLS
81600B #130 1260 nm – 1375 nm low SSE TLS
81600B #132 1260 nm – 1375 nm high power TLS
81600B #142 1370 nm – 1495 nm high power TLS

81940A 1520 nm – 1630 nm compact TLS
81944A 1525 nm – 1625 nm compact TLS
81949A 1520 nm – 1630 nm compact TLS
81980A 1465 nm – 1575 nm compact TLS
81989A 1465 nm – 1575 nm compact TLS

All laser sources specified directly above 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.



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Online assistance:

www.agilent.com/comms/lightwave

For related literature, please visit:

www.agilent.com/comms/octmainframes

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