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Agilent 81591B/4B/5B Modular Optical Switches

Technical Specifications
September 2004



Agilent's 8159xB modular optical switches route light in single mode and multimode optical fibers.
They are a family of plug-in modules for Agilent's Lightwave Solution Platform 8163A/B, 8164A/B, 8166A/B.
Their high flexibility within this modular test platform makes them ideal as test and measurement equipment for signal routing in automated test environments.
The available configurations are
81591B: 1 x 2,
81594B: 2 x 2, and
81595B: 1 x 4.

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Key Features

- Wide wavelength range:
  Single mode: 1270 to 1670 nm
  Multimode: 700 to 1400 nm
- Excellent repeatability:
  81591B and 81594B: ±0.020 dB,
  81595B: ±0.030 dB,
  (maximum variation of 10,000 random cycles)
- Low insertion loss:
  Single mode: 1.0 dB (81591B #009)
  1.5 dB (81594B #009)
  2.0 dB (81595B #009)
  Multimode: 1.0 dB (all types)
- Connector types:
  Single mode: FC/APC – R angled
  (narrow keying)
  Multimode: FC/PC straight
- Modular design, which allows up to 17 switches in one mainframe
- Switch positions that can be individually controlled on each module

Applications

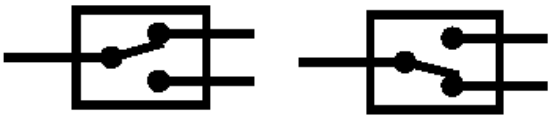
- Optical signal routing
- Bit Error Rate test
- Dispersion penalty test
- Optical line degradation and simulation
- Optical amplifier test and characterization
- Transmission system test
- DWDM components test

Modular Design for Solution Platform

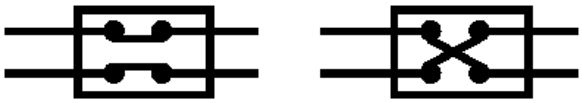
Agilent's 8159xB modular optical switches are a family of plug-in modules for Agilent's Lightwave Solution Platform 8163A/B, 8164A/B and 8166A/B.

These modules enable manufacturers of optical and network components to automate their processes by routing optical signals when testing devices such as line cards, amplifiers, and active and passive components. Adding modular optical switches to this instrument platform allows flexible and cost effective all-in-one solutions to be developed for optical component test in automated test environments.

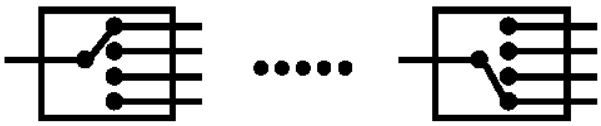
The 1 x 2 optical switch has two positions:



The 2 x 2 non-blocking (crossover) optical switch also has two positions:



The 1 x 4 optical switch has four positions:



Agilent 8159xB optical switch modules are produced to the ISO 9001 international quality system standard, as part of Agilent's commitment to continually increasing customer satisfaction through improved quality control.

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Modular Optical Switch Specifications

	81591B		81594B		81595B	
Switch type	1 x 2		2 x 2		1 x 4	
Fiber interface	# 009 single mode	# 062 multimode	# 009 single mode	# 062 multimode	# 009 single mode	# 062 multimode
Fiber type	9/125 µm SMF	62.5/125 µm MMF	9/125 µm SMF	62.5/125 µm MMF	9/125 µm SMF	62.5/125 µm MMF
Connectivity	FC/APC – R angled	FC/PC straight	FC/APC – R angled	FC/PC straight	FC/APC – R angled	FC/PC straight
Wavelength range	1270 – 1670 nm	700 – 1400 nm	1270 – 1670 nm	700 – 1400 nm	1270 – 1670 nm	700 – 1400 nm
Insertion loss	< 1.0 dB [3]	< 1.0 dB [1]	< 1.5 dB [3]	< 1.0 dB [1]	< 2.0 dB [4]	< 2.0 dB [1]
Polarization dependent loss	typ. 0.05 dBpp	NA	typ. 0.05 dBpp	NA	typ. 0.07 dBpp	NA
Repeatability [2]	±0.02 dB	±0.02 dB [1]	±0.02 dB	±0.02 dB [1]	±0.03 dB	±0.03 dB [1]
Return loss	typ. 55 dB	typ. 20 dB	typ. 50 dB	typ. 20 dB	typ. 55 dB	typ. 20 dB
Crosstalk	typ. –70 dB	typ. –70 dB	typ. –70 dB	typ. –70 dB	typ. –70 dB	typ. –70 dB
Switching time	< 10 ms					
Lifetime	> 10 million cycles					
Maximum input power	+20 dBm					
Dimensions (H x W x D)	75 mm x 32 mm x 335 mm (2.9" x 1.3" x 13.2")					
Weight	0.5 kg					
Operating temperature	10°C to 45°C					
Storage temperature [5]	–40°C to 70°C					
Humidity	Non-condensing					
Warm-up time	30 min.					

[1] Specification is typical with 50/125 µm multimode fiber
[2] Worst case measurement deviation over 10,000 random switching cycles
[3] For λ = 1550 nm; for 1270 nm < λ < 1670 nm add 0.3 dB
[4] For λ = 1550 nm; for 1270 nm < λ < 1670 nm add 0.6 dB
[5] Allow minimum acclimatization of 2 hours if previously stored outside operating temperature range before turning on the module

Ordering Information:

Modules for single mode fiber interface: #009
Modules for multimode fiber interface: #062

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