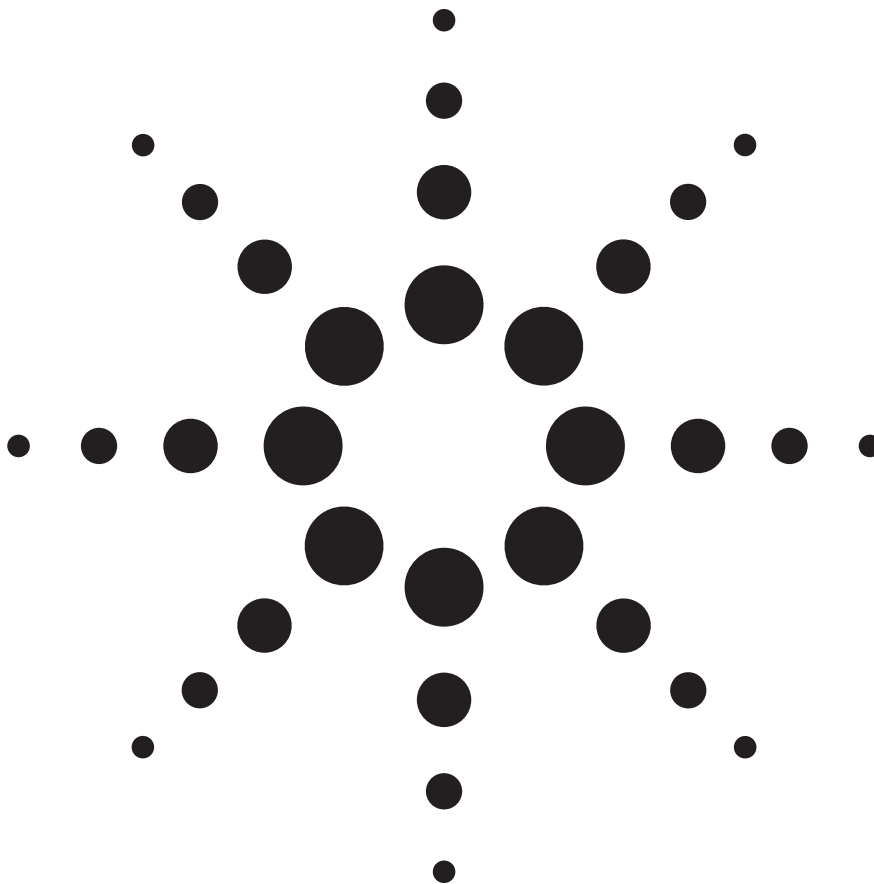


# Agilent 8159xA/S Modular Optical Switches Technical Specifications



Agilent's 8159xA/S modular optical switches route light in single mode optical fibers from the input to several output ports. 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 1x2, 2x2 and 1x4.

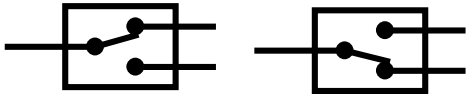


**Agilent Technologies**

## Modular Design for Solution Platform

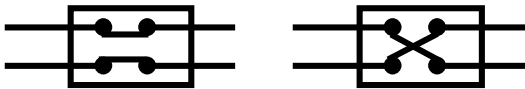
Agilent's 8159xA modular optical switches are a family of plug-in modules for Agilent's Lightwave Solution Platform 8163A/B, 8164A/B and 8166A/B. They enable manufacturers of optical and network components to automate their processes by routing optical signals when testing devices such as line cards, 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:

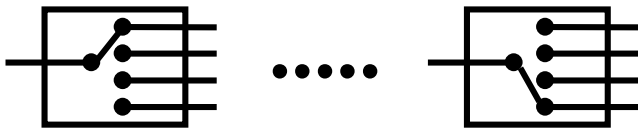


The dual 1x2 optical switch has two independent 1x2 switches in one module to reduce rack space and cost.

The 2x2 non-blocking (crossover) optical switch also has two positions:



The 1x4 optical switch has four positions:



### Key Features

- Wide wavelength range: 1270–1650 nm
- Excellent repeatability: +/- 0.005 dB
- Low insertion loss: 0.8 dB
- Modular design, which allows up to 34 switches (1x2) in one mainframe
- Switch positions that can be individually controlled on each module
- Connector types: FC/PC, FC/APC, SC/PC, SC/APC

### Applications

- Signal routing
- Bit Error Rate test
- Optical amplifier test and characterization
- Transmission system test
- DWDM components test

Agilent 8159xA/S 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.

## Modular Optical Switch Specifications

	81591A	81591S	81592A	81592S	81594A	81594S	81595A	81595S
Switch type	1x2		1x2 dual		2x2		1x4	
Connectivity	angled	straight	angled	straight	angled	straight	angled	straight
Fiber type	9/125 $\mu$ m SMF28							
Wavelength range	1270-1650 nm							
Insertion loss <sup>1,2</sup>	< 0.8 dB excluding connectors <sup>3</sup> < 1.2 dB (typ. 0.8 dB) including connectors <sup>4</sup>				< 1.0 dB excluding connectors <sup>3</sup> < 1.4 dB (typ. 1.0 dB) including connectors <sup>4</sup>			
Polarization dependent loss <sup>1</sup>	< 0.07 dB <sup>5</sup>		< 0.07 dB <sup>5</sup>		< 0.20 dB <sup>2</sup>		< 0.14 dB <sup>5</sup>	
Return loss <sup>2</sup>	typ. 60 dB	typ. 45 dB	typ. 60 dB	typ. 45 dB	typ. 60 dB	typ. 45 dB	typ. 60 dB	typ. 45 dB
Repeatability <sup>6</sup>	< +/- 0.005 dB		< +/- 0.005 dB		< +/- 0.005 dB		< +/- 0.01 dB	
Crosstalk <sup>2</sup>	typ. -70 dB							
Switching time <sup>1</sup>	typ. 10 ms		typ. 10 ms		typ. 15 ms		typ. 15 ms	
Lifetime	> 10 Mio cycles							
Spectral flatness <sup>1,7</sup>	typ. 0.10 dB							
Maximum input power	300 mW							
Dimensions (H x W x D)	75 mm x 32 mm x 335 mm (2.8" x 1.3" x 13.2")							
Weight	0.5 kg							
Operating temperature	10 °C – 45 °C							
Humidity	95%, non-condensing							
Warm-up time	30 min.							

<sup>1</sup> At temperature = 23°C +/- 3°C

<sup>2</sup> For  $\lambda$  = 1310 nm +/- 15 nm and 1550 nm +/- 15 nm

<sup>3</sup> Not measured for connectorized versions

<sup>4</sup> Measured with reference connector

<sup>5</sup> For  $\lambda$  = 1550 nm +/- 15 nm, add 0.06 dB for  $\lambda$  = 1310 nm +/- 15 nm

<sup>6</sup> Consecutive measurement

<sup>7</sup> For 1525 nm <  $\lambda$  < 1575 nm, over all channels

### Ordering Information

#### Modules 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

Option SCI:	Optical switch comes with fixed SC/APC connector interfaces
Option FCI:	Optical switch comes with fixed FC/APC connector interfaces for R key (narrow key width only)

#### Modules 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

Option SCI:	Optical switch comes with fixed SC/PC connector interfaces
Option FCI:	Optical switch comes with fixed FC/PC connector interfaces

## 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](http://www.agilent.com/comms/lightwave)

#### Phone or Fax

United States:  
(tel) 1 800 452 4844

Canada:  
(tel) 1 877 894 4414  
(fax) (905) 282-6495

Europe:  
(tel) (31 20) 547 2323  
(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:  
(tel) 1 800 629 485  
(fax) (61 3) 9210 5947

New Zealand:  
(tel) 0 800 738 378  
(fax) 64 4 495 8950

Asia Pacific:  
(tel) (852) 3197 7777  
(fax) (852) 2506 9284

Product specifications and descriptions in this document subject to change without notice.

Copyright © 2002 Agilent Technologies  
April, 12 2002  
**5988-5071EN**

### Related Agilent Literature

Agilent 8163B Lightwave Multimeter  
Agilent 8164B Lightwave Measurement System  
Agilent 8166B Lightwave Multichannel System  
Technical Specifications  
p/n 5988-3924EN

Agilent 81480/680/640B  
Agilent 81672/482/682/642B  
Technical Specifications  
p/n 5988-5508EN

Agilent 81689A/81689B/81649A  
Compact Tunable Laser Modules  
Technical Specifications  
p/n 5988-3675EN

Agilent Power Sensor Modules  
Agilent Optical Heads  
Agilent Return Loss Modules  
Technical Specifications  
p/n 5988-1569EN

Agilent 81662A DFB Laser  
Agilent 81663A DFB Laser  
Agilent Fabry perot Laser  
Technical Specifications  
p/n 5988-1570EN

Agilent 8156xA and 8157xA Optical Attenuators,  
Technical Specifications  
p/n 5988-2696EN



**Agilent Technologies**