

# Optical Line Protection Switch

(OLP, 10ms, 100 μs, 100ns, 50ns, 10ns)

## Product Description

Optical Line Protection Switching System (OLP) uses a redundant optical fiber route as a backup path. By real-time monitoring the power status in the working fiber, it can automatically switch to the backup fiber when the power value is lower than a user-defined threshold. Our system has a built-in laser and detector to monitor the spare fiber line ensuring its integrity at all times. Our net-ready OLPs offer various reliable protection schemes against fiber cuts and network failures. They are used for protecting the backbone and important business lines. We uniquely provide fast optical switching to reduce data loss with three choices of optical switching speed: ms to a few ns. Management of the OPS is performed using a Web GUI, reachable through the local Ethernet ports on the OPS system control card.



## Performance Specifications

Optical Line Protection Switch	Min	Typical	Max	Unit
Operating Wavelength		1310/1550 ± 50		nm
Insertion Loss <sup>[1], [2]</sup>	1 : 1 Tx	1.2	1.3	dB
	1 : 1 Rx	1.2	1.3	
	1 + 1 Tx	3.5	3.8	
	1 + 1 Rx	1.2	1.3	
Monitoring Power Range		-50	23	dBm
Return Loss		45		dB
Cross Talk		55		dB
PDL			0.05	dB
Optical Switching Time <sup>4</sup>	100 ns	10 ms		
Repeatability			±0.05	dB
Noise Figure			30	dB
Signal Detection Range	-40		30	dBm
Durability <sup>5</sup>	10 <sup>7</sup>		10 <sup>13</sup>	Cycle
Operating Temperature	0		70	°C
Storage Temperature	-40		85	°C
Monitor Port/Interface	RJ45, Console, SFP, CLI, SSH, Telnet, SNMP			
Power Supply	DC: 12-48V; AC: 100-240V (50/60 Hz), 50W, Dual and Hot Swappable			
Alarms	Signal Degradation, Switching Event, Fan Failure, CPU at high work load			
Fiber Type	SMF-28 or equivalent			
Chassis Type	19" Rack, 1U Supports 4 Channels with Dimension 44.5x482.6x300mm			
Internal Cooling Fan	Included			
Relative Humidity	5-95%			

[1]. Excluding connectors.

[2]. Multimode IL measure @ Light Source CPR<14 dB.

[3]. Dual band, and Dual 1x2, Full 2x2, Dual Full 2x2

[4]. Optical switch speed, there are electrical signal delay in the system

[5]. Higher reliability switches are available

## Features

- Reduce interrupt time
- Increase reliability
- Improve service quality
- Fault tolerance
- Automatic switching

## Applications

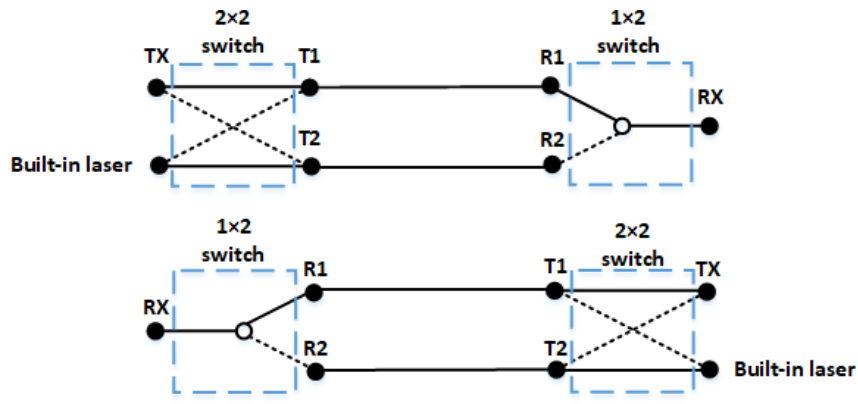
- Fiber Line Protection
- FTTx Networks

## Dimensions (Unit: mm)

1RU 19" mount rack typically. The input and output connectors and the control interface are on the front panel, while and power inputs are on the rear panel.

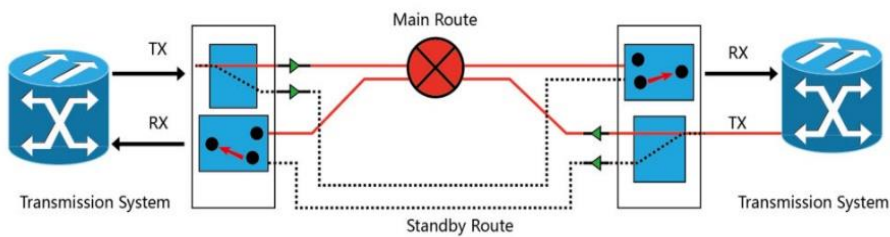
## OLP 1:1 Configuration

OLP configuration 1:1, as shown in the diagram below, consisting of the main fiber route and a standby fiber route between the two sites and associated fiber optical switches. In normal operation, the data are transmitted and received through the main route. Inside the OLP pair, detectors are incorporated at Rx ports to detect the decreasing of the optical power. When a fault is detected on the main route, the system will switch both the transmitting and receiving from the main route to the standby route. This is accomplished by first turn off the build-in test laser so that both ends detect fault. The advantages of 1:1 OLP system are low optical insertion loss with direct signal passthrough, and the optical fiber for the backup path can also be used for other business. The disadvantage is conventional systems require CPU processing the information at both ends, resulting in typically delays of about 80ms in response.



## OLP 1+1 Configuration

OLP 1+1 configuration is shown in the following diagram, in which the Tx optical signals are split into two with a ratio of 50:50 and transmit through both main and standby routes. While for Rx, the optical signal with better quality will be selected when a fault is detected. The advantage of OLP 1+1 system is the elimination of the need to communication from one end to another in the event of a failure, thus faster recovery is possible. However, this is achieved with 50% signal loss. For the need of faster recovery, OPLP 1+1 should be selected.



\*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

## Ordering Information

OLP-	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type	Channel*	Wavelength	Package	Fiber Type	Switch Type	Fiber Length	Connector	
1:1 =1	1= 01	1310=3	1RU =1	SMF28e=1	10ms=1	0.25m=1	None=1	
1+1 =2	2= 02	1550=5	2RU= 2	MM50/125=5	100 μs=2	0.5m=2	FC/PC=2	
	N =N	1310/1550=	3RU= 3	MM62.5/125=	100ns =3	1.0 m=3	FC/APC=3	
	Special=0	Special=0	4RU=4	Special=0	50ns=5	Special=0	SC/PC=4	
			Special=0		10ns=9		SC/APC=5	
							ST/PC=6	
							LC/PC=7	
							Duple LC=8	
							Special=0	