1+1 NET-Ready Optical Protection Switch

Introduction

In today's network, protection switching at optical layer is a subject of great importance to the carriers. As a member of Oplink's NET-Ready product family, Oplink's NET-Ready series protection switches offer various protection schemes against fiber cuts and network failures.

(1+1) Protection

With (1+1) optical protection, service is protected from link failures, using an optical splitter to bridge the optical signal and dual feed it on diversely routed working and protection fibers. In the event of a single link failure, an optical switch at the receiving end switches to the protection fiber. The NET-Ready protection switch in 1x2 switch configuration provides this type of protection. The same switch fits both point-to-point and dedicated protection switching ring architectures.

Multiple Control Modes

NET-Ready (1+1) protection switch provides both Manual and Automatic switching mode. In Manual mode, the system switches optical path only based on the commands from user. In the Automatic mode, the system switches based on the power level detected and the preset threshold. Under automatic mode, the system can be set to be Revertive or Non-revertive modes. Under Revertive mode, the system switches back to the working path automatically after the fault condition is cleared. Under Non-revertive mode, the system does not switch back.

Programmable Threshold and Hysteresis

Alarm and switching threshold and hysteresis are programmable remotely or locally.

Remote Management and Alarm

NET-Ready (1+1) protection switch provides remote system configuration and management through SNMP. Web GUI and CLI is also provided for user to manage the system locally via Ethernet or craft RS-232 interface respectively.

Features

◈ Independent of data rate, format and wavelength

◈ Highly configurable to fit network applications

◈ Simple, Plug-and-play Installation

◈ User-definable thresholds and hysteresis

◈ User-selectable revertive and non-revertive modes

◈ Latching optical switch

◈ Remote configuration through SNMP management interface

◈ Front panel LED and remote alarm

Applications

◈ Optical fiber protection for point-to-point transmission in any data format

◈ Optical dedicated protection for fiber ring

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Performance Specification

Optical Performance

Parameter		Value	Unit
Operation Wavelength range (λ_{Op})		O-, C- or L-band	
1x2 Selector (switch)			
Insertion loss	@ 23 ℃, λ_{Op} (include 5% tap)	< 1.2	dB
Wavelength dependent (WDL)		< 0.2	dB
Temperature dependent loss (TDL, 0~70℃)		< 0.2	dB
Polarization dependent loss (PDL)		< 0.1	dB
Return loss (with connector)		> 45	dB
Channel cross talk		> 55	dB
Repeatability		<±0.05	dB
Optical switching time (from electrical trigger to 90% stable optical output)		< 10 (typical = 3)	ms
Durability		> 10 million	cycles
1x2 Bridge (splitter)			
Insertion Loss (over all λ_{Op}, T_{Op}, and SOP)		< 3.6	dB
Wavelength dependent loss at a given temperature (WDL)		< 0.15	dB
Polarization dependent loss		< 0.1	dB
Directivity		> 50	dB
Return loss (with connectors)		> 45	dB
Optical input power monitoring range		- 30~10 typical	dBm
Optical power reading accuracy		<±1.0	dB

[1] IL excludes connectors.
[2] All band (1260~1620nm) Ultra-flat 1x2 Switch and 50/50% Splitter are also available.

Environmental

Operating temperature range	0 to 60	℃
Operating relative humidity	< 95%RH, non-condensing	
Storage temperature range	-20 to 70	℃
Storage relative humidity	< 95%RH, non-condensing	

Physical

1RU 19" and 23" rack mountable chassis	438 x 291 x 43.4	mm
Weight	approx. 3.5	kg

Interface and Power

One RJ-11 RS232 craft interface
One RJ-45 (100M) Ethernet ports
48V DC power supply, dual A/B power for feed redundancy
100-240V AC power supply. Fan used for AC.
Power consumption < 4 W
SC/PC adaptor as optical interface or customer defined, single mode fiber SMF-28

Management

SNMP v1, v2c management interface, compliant to standard MIB browser

TL1, compliant with GR-831-CORE

Task-oriented Web GUI

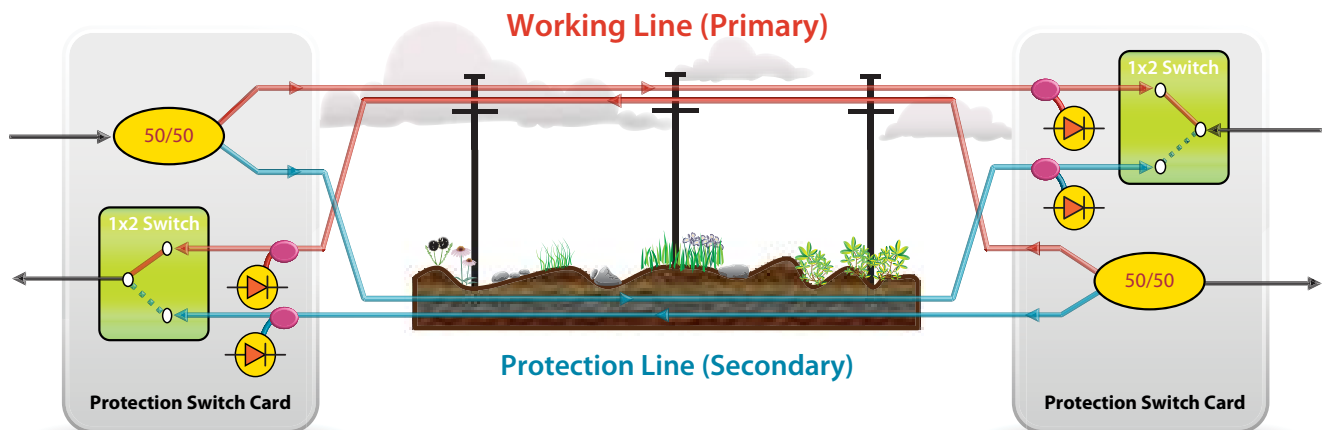Command-line interface (CLI) based management console

FTP, Telnet/RLOGIN

Physical

GR-1221-CORE, GR-1073-CORE, UL, FCC

Designed to meet NEBS, ETSI

Application Example

Working Line (Primary)

50/50

1x2 Switch

Protection Switch Card

Protection Line (Secondary)

1x2 Switch

50/50

Protection Switch Card

- ◉ (1+1) point-to-point dedicated protection or ring O-UPSR protection
- ◉ 50/50% splitter is used as the bridge to split signal to primary and secondary path
- ◉ 1x2 optical latching switch is used as the selector to choose the optical path
- ◉ Photodiodes monitor the signals from both path

Ordering Information

Oplink can provide a remarkable range of customized optical solutions. For detail, please contact Oplink's OEM design team or account manager for your requirements and ordering information (510) 933-7200.

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Product Lines: ❖ Mux/Demux ❖ Switching/Routing ❖ Coupling/Splitting ❖ Monitoring/Conditioning ❖ Amplification ❖ Transmission ❖ Interconnect ❖ RGB Laser Modules