



# FRM220-OPS51 / FRM220-OPS52

## Fiber Optical Protection Switch

The FRM220-OPS Series are able to provide fiber path redundancy on a channel by channel basis. These units are particularly well suited for protection in any type of fiber data transmission, including CWDM & DWDM links. This solution includes monitoring capabilities for both the working and protected path fibers. In case of a fiber cut in the active path, traffic will be switched over to the protected path in less than 50ms (FRM220-OPS51) or 20ms (FRM220-OPS52). Monitoring is available through SNMP Management when both card is placed in FRM220 rack with SNMP management. The management can view the converter card's status, type, version, fiber link status and alarms. The card can be configured to enable or disable the port, reset the port, and configure receive threshold levels for path switching.

### Features

- Latch feature, if power is lost the switch remains in its current state
- Protection transition < 50 ms (FRM220-OPS51)
- Protection transition < 20 ms (FRM220-OPS52)
- Works with any combination of 1 ~16 wavelengths
- Traffic is switched in one of three modes : revertive, non-revertive, manual
- Programmable Rx threshold setting for switch-over
- Optical Interface Type : LC connectors
- Working and protected lines are physically separated fiber

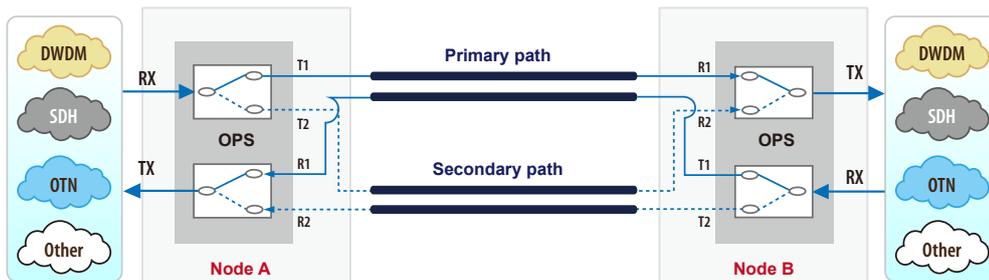
### Specifications

Connector	LC
LEDs	Power System, Working Path, Protection Path, Work mode
Power	DC 12V In
Operating Wavelength	1260 ~ 1620
Switch Type	2x1 / Latching
Input Power (Optical)	-35~5dBm
Accuracy	≤ 2dBm
Insertion Loss	≤ 3dB (Pair) (FRM220-OPS51), ≤ 5.5dB (Pair) (FRM220-OPS52)
Return Loss	≥ 45dB
Cross-talk	≥ 60dB

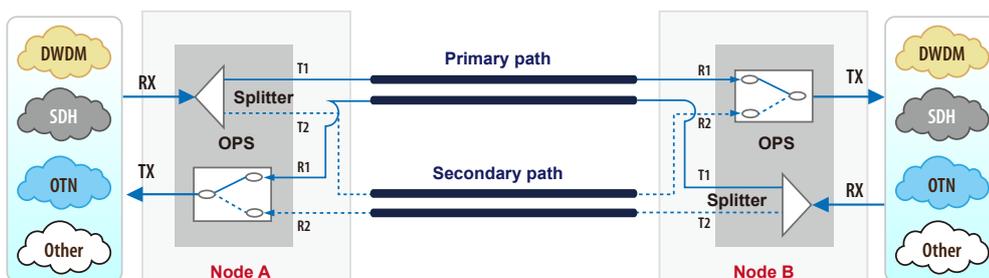
Polarization Dependent Loss (PDL)	≤ 0.1dB
Input Power Sensitivity	-35dBm
Restoration Time	≤20ms
Power Consumption	< 6W
Dimensions	Card: 155 x 20.8 x 88mm (D x W x H)
Weight	130g
Temperature	0 ~ 50°C (Operating), -10 ~ 70°C (Storage)
Humidity	5%RH to 95%RH non-condensing
Certification	CE, FCC
MTBF	65,000 hours

### Application

#### FRM220-OPS51 Working Theory



#### FRM220-OPS52 Working Theory



### Ordering Information

Model Name	Description
FRM220-OPS51	1:1 Optical Line Protection Switch, dual fiber on WAN port, LC/PC connector
FRM220-OPS52	1+1 Optical Line Protection Switch, dual fiber on WAN port, LC/PC connector

**Note:** This card must use CH01M, with serial console, to configure standalone settings. For SNMP management, place this card in CH02/NMC or CH04A Chassis.

#### Naming Rule

FRM220-OPS5

- Optical Switch Mode
- 1 : 1 : 1 OPS
- 2 : 1+1 OPS