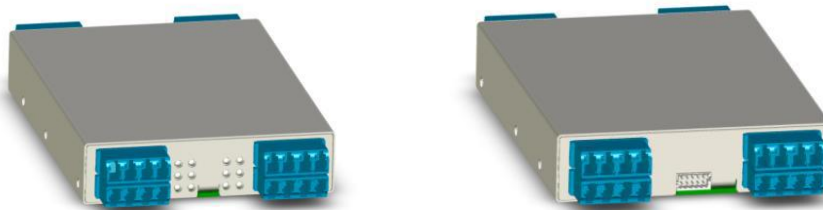


LightBend™ Quad Optical Line Protection Tap Module



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The Quad OLPT (Optical Line Protection Tap) Module consists of four dual 1x2 non-latched optical switches and eight 1x2 optical splitters. In addition, the module consists of the complementary electrical circuitries for driving the optical switch, with an I2C interface.

Features

- No Signal Distortion
- Ultra Low Insertion Loss
- Broad Band
- All Fiber Types

Applications

- Quantum System
- Sensor System
- Instrument
- Spectroscopy

Specifications

Parameter		Min	Typical	Max	Unit
Optical					
Operation Wavelength		1240	1550	1640	nm
Insertion Loss ^[1]	Switch	0.5	1	3	dB
	Splitter		3.0	3.5	dB
	Switch & Splitter		3.5	4.4	dB
Coupling Ratio	Splitter		50/50		
Crosstalk		55	75		dB
Return Loss		45	55		dB
Switching Time, power saving off			2	5	ms
Repeatability			0.05	0.1	dB
Polarization Dependent Loss			0.07	0.25	dB
Switch type		Non-Latching			
Durability		3x10 ⁷			cycle
Optical Power Handling			300	500	mW
Operation Temperature		-10		70	°C
Storage Temperature		-40		85	°C
Electrical					
Suppler Voltage (Vdd)		4.75		15	V
Power Consumption			45	1500	mW
SMBus/I2C bus speed				400	kbps
Logic level low		-0.5	0	0.6	V
Logic level high		3	3.3	5.5	V
Physical					
Connector		LC/UPC			
Fiber Type		SMF-28			
Fiber Cover		900 um loose tube			
Package Dimensions		140x101.6x25.4			
Weight		TBD			

Notes:

[1]. It is related to the light path configuration. Measured without connectors for 1xN. For multimode fiber, use a laser source with CPR<15

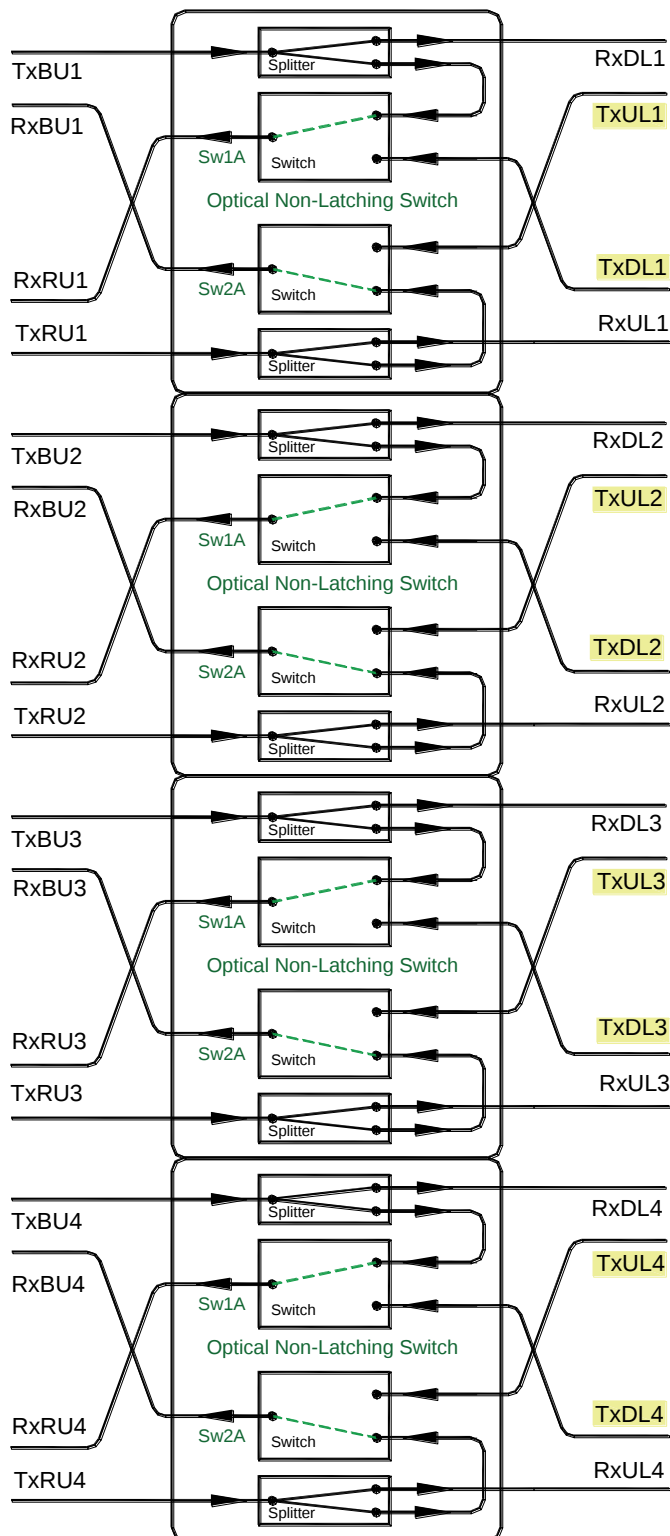
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LightBend™ Quad Optical Line Protection Tap Module



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Functional Block Diagram



- Power off will reset the switches to default green path **~10 second after power off.**

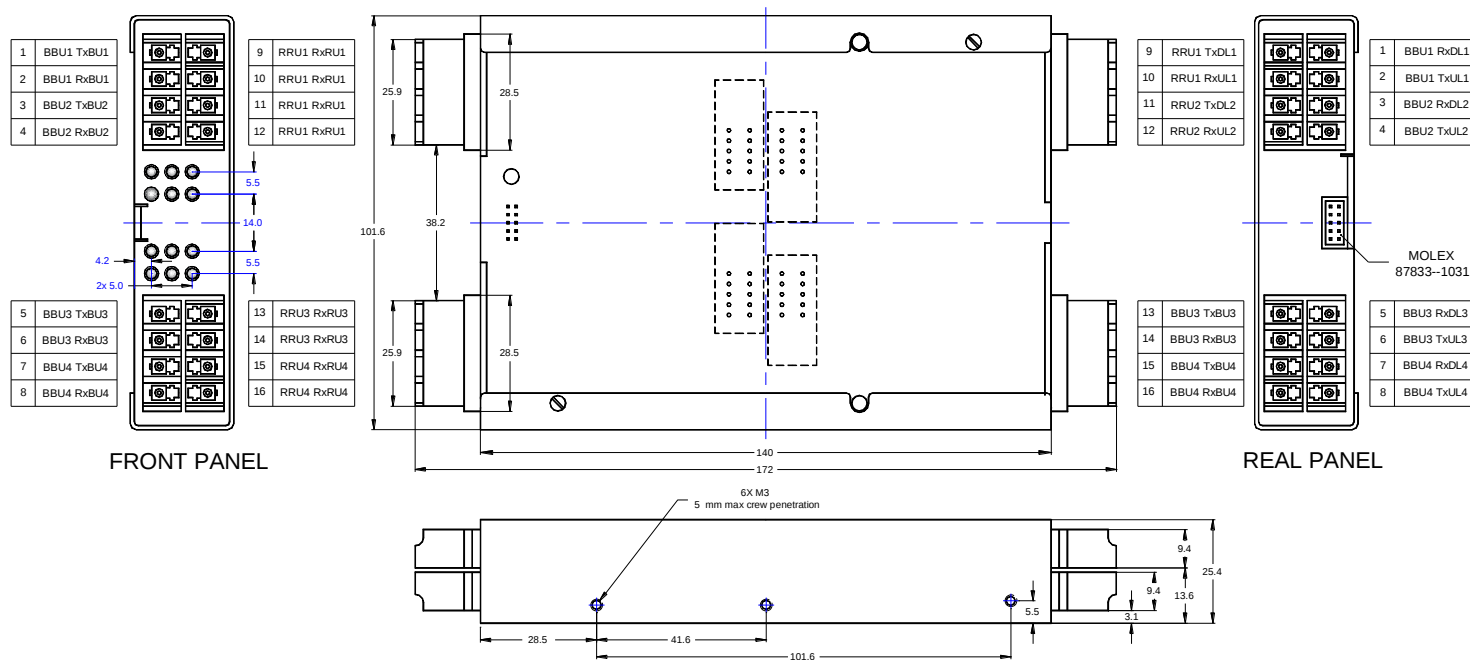
- Startup will reset optic SW I2C controller less than **~1 second after startup to default green path.**

LightBend™ Quad Optical Line Protection Tap Module



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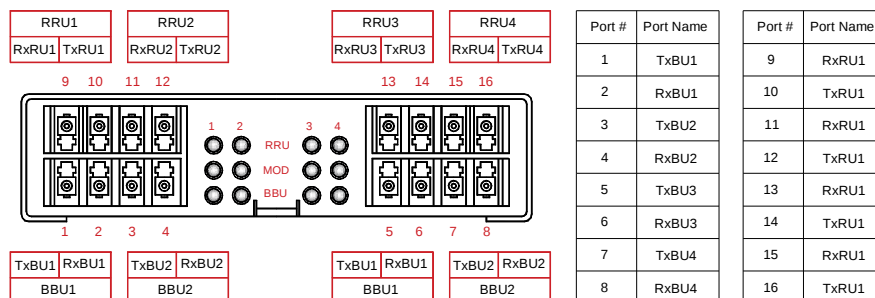
Mechanical Dimensions (mm)



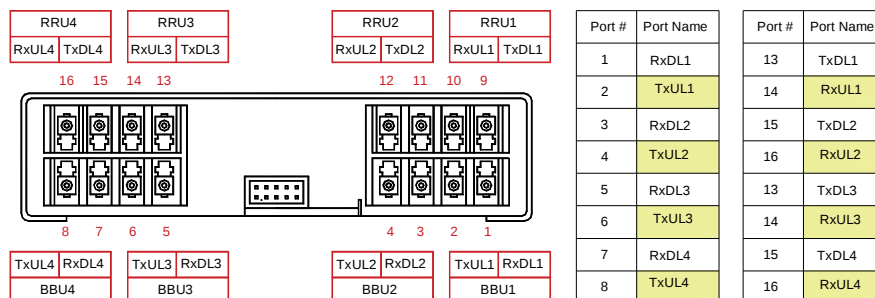
*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Fiber Connectors Configuration

FRONT PANEL



REAL PANEL



Electrical Pin Configuration

Connector type: **MOLEX 87833-1031**

Pin Number	Description		
1	SMBus/I2C SD		400kbps
2	SMBus/I2C SCL		
3	SMBus/I2C Addr0 ¹	"1" when not connected	"0" if connected to ground
4	SMBus/I2C Addr1 ¹	"1" when not connected	"0" if connected to ground
5	SMBus/I2C Addr2 ¹	"1" when not connected	"0" if connected to ground
6	Ground (GND)		
7	3.3V		
8	SMBus/I2C Reset		
9	Ground (GND)		
10	Supply voltage (VDD)		

1. Signal connected to internal pull-up resistor.

LED's SW I2C

16-bit I2C-bus LED driver with programmable blink rates

Refer to NXP **PCA9552** for additional details on timing and transmission protocol

LED	
0	RRU1 Green
1	MOD1 Green
2	MOD1 Yellow
3	BBU1 Green
4	RRU2 Green
5	MOD2 Green
6	MOD2 Yellow
7	BBU2 Green

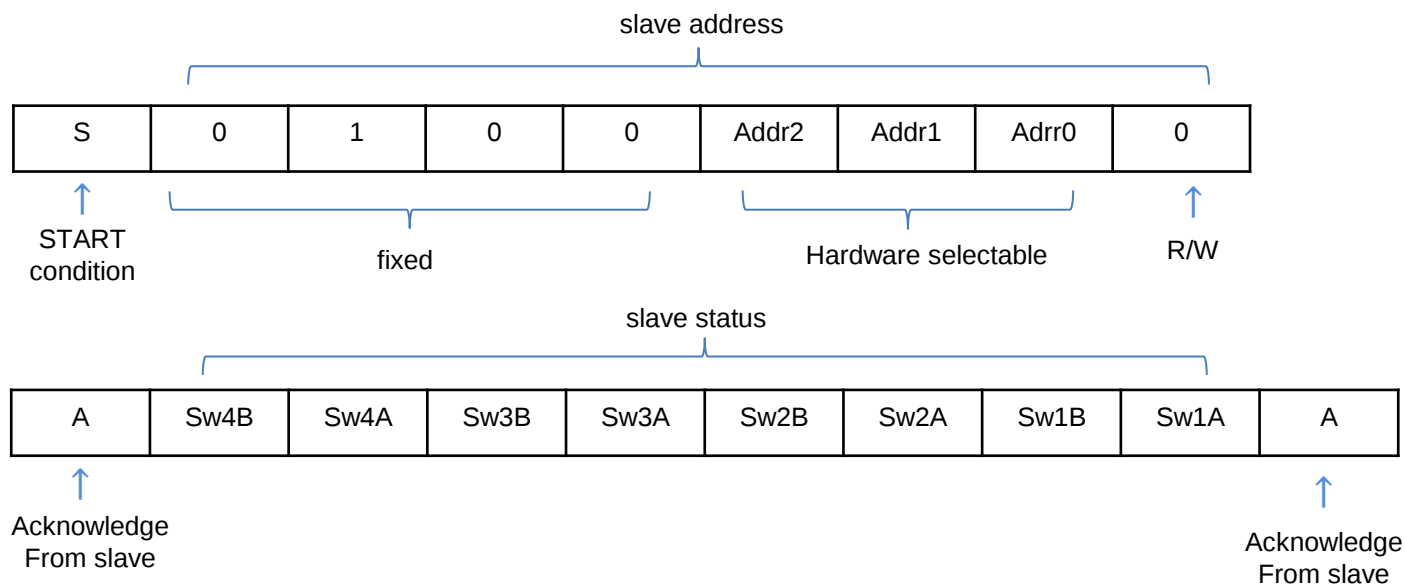
LED	
8	RRU3 Green
9	MOD3 Green
10	MOD3 Yellow
11	BBU3 Green
12	RRU4 Green
13	MOD4 Green
14	MOD4 Yellow
15	BBU4 Green

Optical SW I2C

12C/SMBUS ADDRESS MAP

<i>Addr2</i>	<i>Addr1</i>	<i>Addr0</i>	<i>Address (hex)</i>
0	0	0	20h
0	0	1	21h
0	1	0	22h
0	1	1	23h
1	0	0	24h
1	0	1	25h
1	1	0	26h
1	1	1	27h

CONFIGURING OPTICAL SWITCHES



- Switch status bit 0: CROSS
- Switch status bit 1: BAR (default at startup and power off, green path on function block diagram)
- Refer to NXP PCA8574 for additional details on timing and transmission protocol

LightBend™ Quad Optical Line Protection Tap Module



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Ordering Information

	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	Type	Wavelength	Switch Type	Package	Fiber Type	Connector	Interface	Control Voltage
LOPM ¹ -	Dual Line = 02 Three Line = 03 Quad Line = 04 Special = 00	1240-1640 = B 1060 = 1 C+L = 2 1310 = 3 1410 = 4 1550 = 5 650 = 6 780 = 7 850 = 8 1310/1550 = 9 Special = 0	Non-latching = 2 Special = 0	Standard = 1 Special = 0	SMF-28 = 1 MM 50/125 = 5 MM 62.5/125 = 6 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 Duplex LC/PC = 8 Quad LC/PC = 9 LC/UPC = U Special = 0	USB = 1 RS232 = 2 Ethernet = 3 GPIB = 4 Special = 0	4.75~15 V = 1 Special = 0

1. **LOPM**: LightBend™ Quad Optical Line Protection Tap Module.