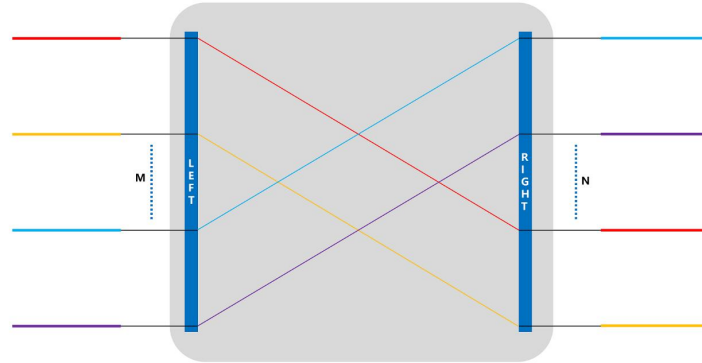


M x N MEMS Optical switch is used in optical cross-connect, OXC application. It's also called Matrix Optical Switch. It allows channel selections between M input fibers and N output fibers.

FIBERWDM's MEMS Modular Single-Mode OXC is based on industry proven, long-life, reliable MEMS 1xN optical switch components. Each MxN OXC consists of M 1xn OSW and N 1xm OSW.



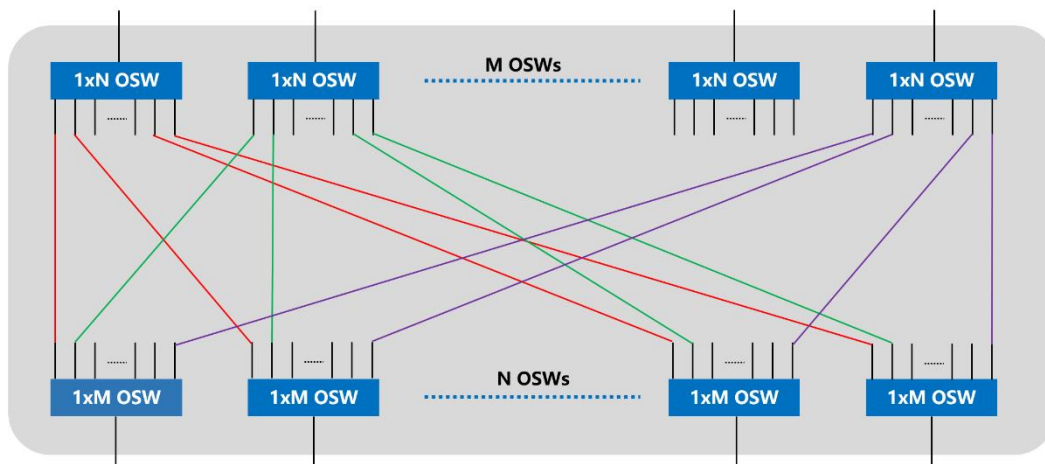
Features

- ◆ Proven MEMS durability and reliability
- ◆ Compact Form Factor
- ◆ TTL UART interface
- ◆ Qualified to Telcordia GR-1073-CORE and RoHS

Applications

- ◆ Optical path selection
- ◆ As Automatic optical distribution rack

Product Configurations



Note: M*N requires less than 1024.

Optical Specifications

PARAMETER	VALUE	UNIT	NOTE
Wavelength	1290~1330 1525~1568 1600-1650	nm	Or customer specify

Test Wavelength	1310/1550/1625 or 1650	nm	
MxN	8x8/8x16/16x16/16x32		M*N≤1024
Insertion Loss	4x4	≤1.4 @S	dB
	4x8	≤1.6 @S	
	8x8	≤1.8 @S	
	8x16	≤1.9 @S	
	12x12	≤2.0 @S	
	16x16	≤2.0 @S	
	16x32	≤2.3 @S	
	24x24	≤2.5 @S	
Return Loss	≥45	dB	Or customer specify
Repeatability	≤0.1	dB	
Crosstalk	≥50	dB	Or customer specify
Polarization Dependence Loss	≤0.4	dB	
Wavelength Dependence Loss	≤0.6	dB	@CWL±20nm, 23°C
Temperature Dependence Loss	≤0.8	dB	
Switch Time	≤15 @16x16 ≤25 @24x24	ms	A set of configuration link Eg: M1-N12
Durability	≥1x10 ⁹	cycle	
Maximum optical Power	≤500	mW	

Electrical and Mechanical Specifications

PARAMETER	VALUE	UNIT	NOTE
Switch Mode	Non-latching		
Control Voltage	12	V	Module
Dimension	150×150×20 @8x8 200×180×18 @16x16 200×180×18 @8x24 312×180×30 @24x24	mm	Module

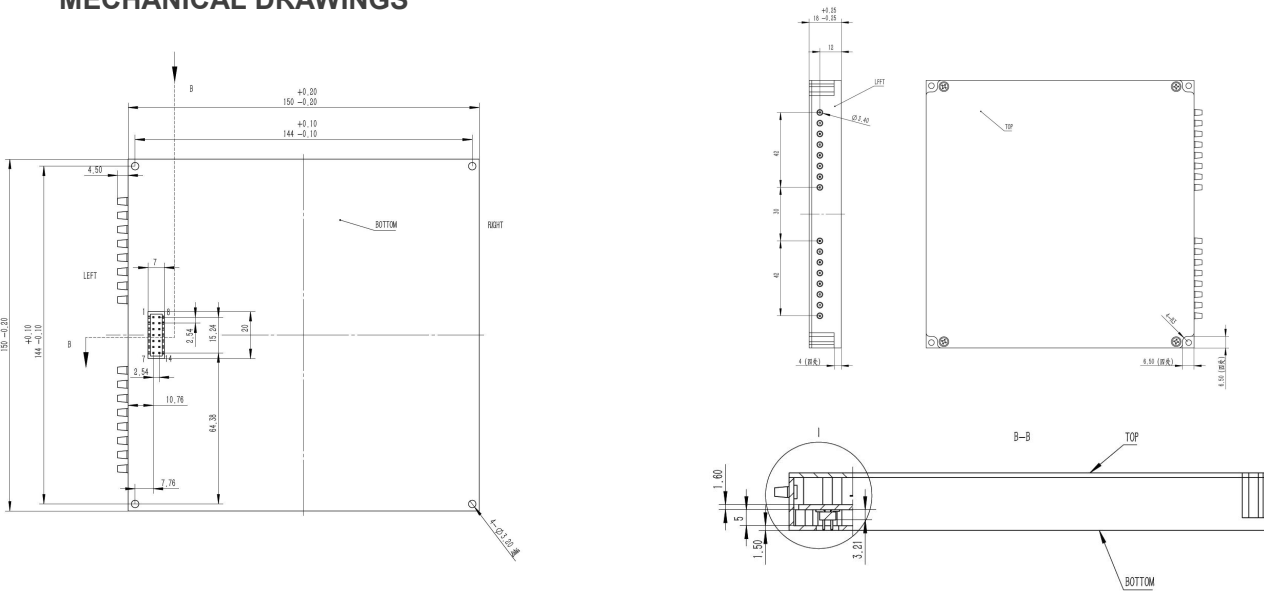
Environmental conditions

PARAMETER	VALUE	UNIT	NOTE
Operation Temperature	-5~65	°C	
Storage Temperature	-40~85	°C	
Operation Humidity	5~95	%RH	
Storage Humidity	5~95	%RH	

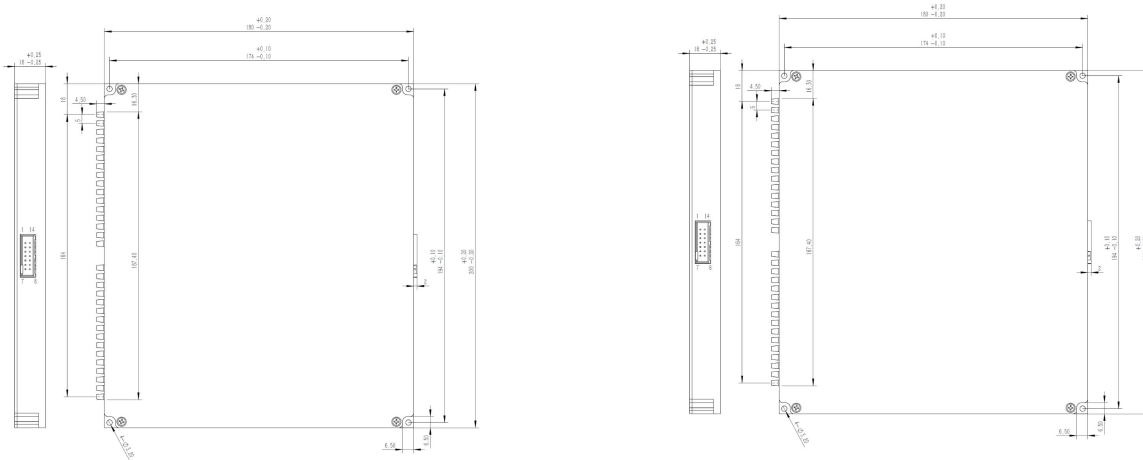
Pigtail and connector type/length

PARAMETER	VALUE	UNIT	NOTE
Fiber Type	G657A2 or G657B3 250um bare fiber		
Fiber Pigtail (All Ports)	250um fiber or 900um loose tube		
Fiber Length (All Ports)	1.00±0.05	m	Or customer specify
Optical Connector (All port)	None		Or customer specify

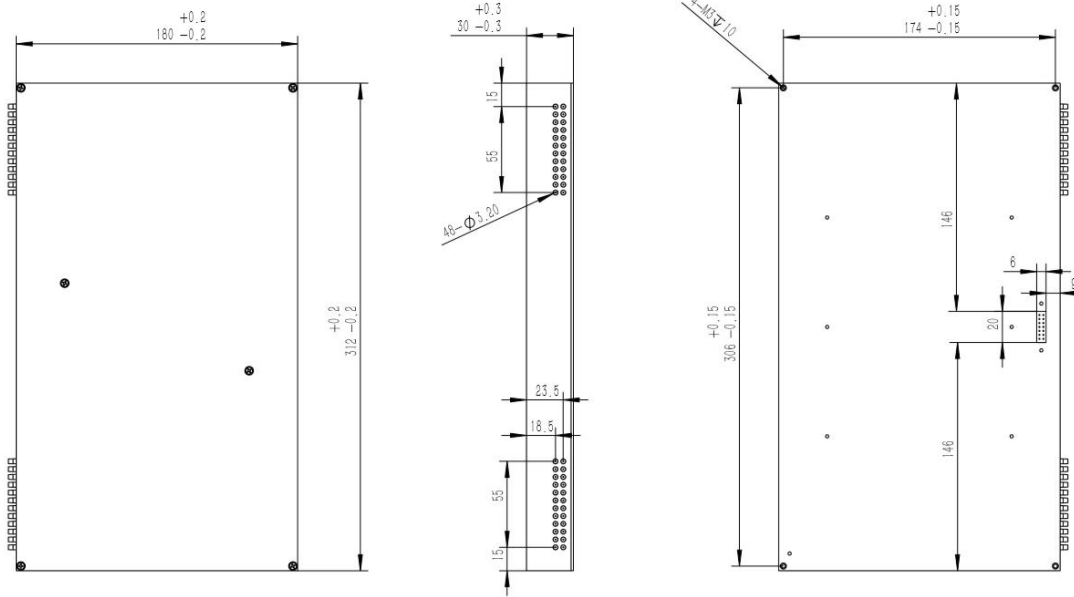
MECHANICAL DRAWINGS



8x8 OXC



16x16 OXC



24 x 24 OXC

Electronic PIN Definition

Pin Number	Name	Input/Output	Level	Function
1	I/O	NC		
2	VCC	Power supply		+ (5.0 ± 5%) V Power Supply Max 100mA
3	I/O		LVTTL	Reserved
4	GND			Power supply ground
5	I/O		LVTTL	Reserved
6	TXD	Output	LVTTL	TTL UART data output
7	RXD	Input	LVTTL	TTL UART data input
8	I/O		LVTTL	Reserved
9	I/O		LVTTL	Reserved
10	I/O		LVTTL	Reserved
11	Case GND			Case ground
12	I/O		LVTTL	Reserved
13	I/O		LVTTL	Reserved
14	Reset	Input	LVTTL	Reset, low active, the pulse width needs 4ms

RS232 Port Control Setting

Baud Rate: 115200

Start Bits: 1

Data Bits: 8
 Parity: None
 Stop Bits: 1
 Flow Control: None

Port Control Grammar

Command

FLAG	LEN	RES	COMMA	DATA	SUM
2 Byte	1 Byte	1 Byte	1 Byte		1 Byte

FLAG: 0xEFEF or 0xAAAA
 LEN: Total number of command bytes from RES to SUM
 RES: 0xFF
 SUM: Checksum, SUM=FLAG+LEN+RES+COMMA+DATA

Response

FLAG	LEN	RES	RESP	DATA	SUM
2 Byte	1 Byte	1 Byte	1 Byte		1 Byte

FLAG: 0xEDFA
 LEN: Total number of command bytes from RES to SUM
 RES: 0xFF
 SUM: Checksum, SUM=FLAG+LEN+RES+COMMA+DATA

Port Controls Command

Setting OXC Configuration						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x84	0xFF	0x40	Config Flex length Max 129byte	SUM
Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDFA	0x04	RES	0x40	Success: 0xEE Fail: 0xEF	SUM

DATA 格式: 配置组数(1 byte)+配置内容(配置组数*2 byte), 整个长度是可变的, 当 DATA 长度改变时, 会影响协议的 LEN 字节内容以及 SUM 字节的位置

LEN	1_M	1_N	2_M	2_N	64_M	64_N
1byte	1byte	1byte	1byte	1byte		1byte	1byte
配置组数	第 1 组配置		第 2 组配置			第 64 组配置	

设置规则:

1、重置 OXC

LEN	1
M	N
0	0

2、配置 OXC，前后命令不相关不覆盖原则

Step1: 第一步配置命令为

LEN	3
M	N
1	1
2	8
5	4

Step2: 第二步配置命令为

LEN	2
M	N
3	3
6	7

Step3: OXC 的最终状态

M	N
1	1
2	8
5	4
3	3
6	7

3、配置 OXC，前后命令相关覆盖原则

Step1: 第一步配置命令为

LEN	3
M	N
1	1
2	8
5	4

Step2: 第二步配置命令为

LEN	2
M	N
3	3
2	7

Step3: OXC 的最终状态

M	N
1	1
5	4
3	3
2	7

4、配置 OXC，同一命令内前后相关覆盖原则

Step1: 第一步配置命令为

LEN	4
M	N
1	1
2	8
5	4
2	7

Step2: OXC 的最终状态

M	N
1	1
5	4
2	7

5、清除某一条配置

Step1: 第一步配置命令为

LEN	3
M	N
1	1
2	8
5	4

Step2: 清除 M2-N8

LEN	1
M	N
2	0

或者

LEN	1
M	N
0	8

Step3: OXC 的最终状态

M	N
1	1
5	4

6、清除某几条配置

Step1: 第一步配置命令为

LEN	5
M	N
1	1
2	8

5	4
3	3
6	7

Step2: 清除 M2-N8 和 M3-N3

LEN	2
M	N
2	0
3	0

Step3: OXC 的最终状态

M	N
1	1
5	4
6	7

7、清除和配置混用

Step1: 第一步配置命令为

LEN	5
M	N
1	1
2	8
5	4

Step2: 清除 M2-N8 同时配置 M3-N3 和 M6-N7

LEN	3
M	N
2	0
3	3
6	7

Step3: OXC 的最终状态

M	N
1	1
3	3
5	4
6	7

Getting OXC Configuration						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x03	RES	0x41		SUM

Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDFA	0x84	RES	0x41	Config (129byte)	SUM

ORDERING INFORMATION

OXC	MxN -	Wavelength-	Fiber Type	Fiber Dia. -	Fiber length-	Connector-	Package
	MxN : MxN<1024	13: 1310nm	S: SM	025: 250um bare fiber	01: 1m	00: no connector	M : Module, double stage
	4X4	15: 1550nm	M:MM	09: 0.9mm	other	01U: LC/UPC	
	8X8	16: 1625nm				01A: LC/APC	
	16X16	1315: 1310/1550nm				02U: SC/UPC	
	24X24	1516: 1550/1625nm				02A: SC/APC	
	32X32	other				03U: FC/UPC	
	other					03A: FC/APC	
						other	