PRODUCT SPECIFICATION

Product Name	MxN OXC
Product Model	
Description	
File NO.	
Customer	

	Drafter	**Reviewer**	**Approver**	**Customer Confirm**
Signature				
Date				

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Document History

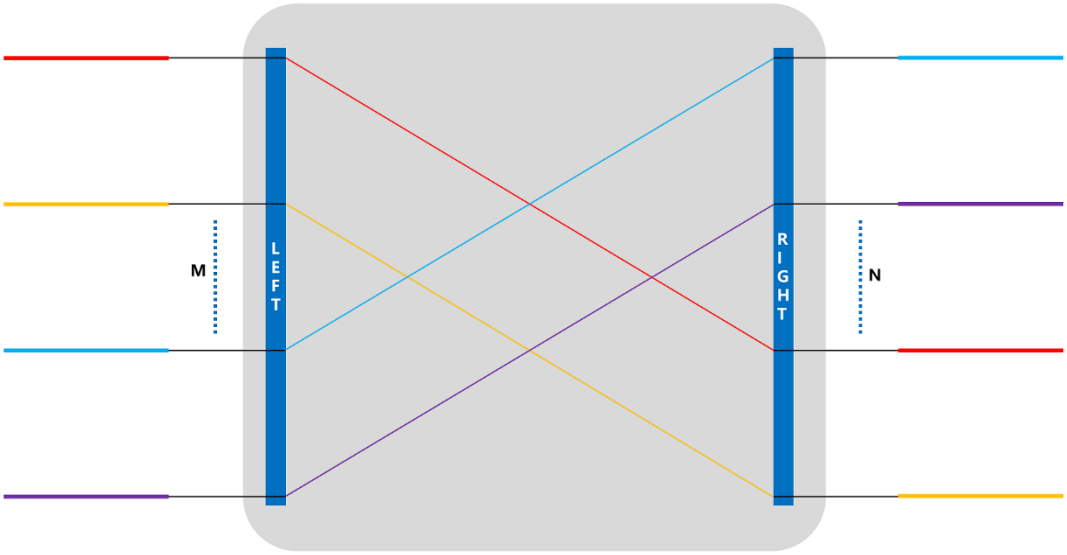
Version	DATE	DESCRIPTION OF CHANGE	Modifier
V1.0	2019.12.25	First release	SH
V1.1 - V1.3	2020.3.6 - 2020.11.24	Edit	SH
V1.4	2021.5.7	Modify the size	SH

1 DESCRIPTION

1.1 Product Function

OXC is Optical Cross-Connect. It's also called Matric Optical Switch. It allows channel selections between M input fibers and N output fibers.

Amazelink'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.



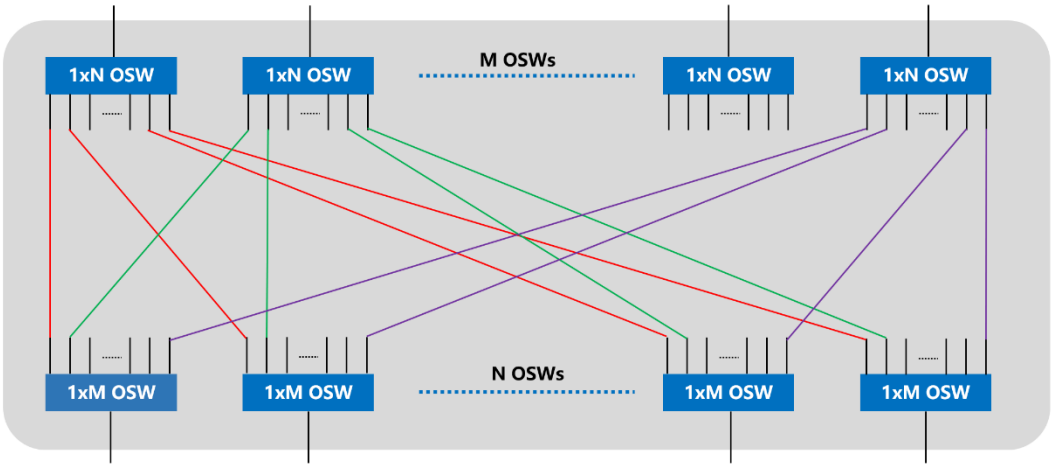
1.2 Features

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

1.3 Applications

- Optical path selection
- As Automatic optical distribution rack

1.4 Product Configurations



Note: M*N requires less than 1024.

1.5 Related Product List

Customer Code	Customer P/N	Code	P/N
			AZ-OXC-4X4-C-S-09-1-LC/UPC-M
			AZ-OXC-4X8-C-S-09-1-LC/UPC-M
			AZ-OXC-8X8-C-S-09-1-LC/UPC-M
			AZ-OXC-8X16-C-S-09-1-LC/UPC-M
			AZ-OXC-8X24-C-S-09-1-LC/UPC-M
			AZ-OXC-16X16-C-S-09-1-LC/UPC-M
			AZ-OXC-24X24-C-S-09-1-LC/UPC-M
			AZ-OXC-32X32-C-S-09-1-LC/UPC-M

2 MAIN SPECIFICATIONS

Table 1 Optical Specifications

PARAMETER	VALUE	UNIT	NOTE
Wavelength	1290~1330	nm	Or customer specify

		1525~1568 1600-1650		
Test Wavelength		1310/1550/1625 or 1650	nm	
MxN		8x8/8x16/16x16/16x32		M*N≤1024
Insertion Loss	4x4	≤1.4 @S	dB	@CWL,23°C Without Connectors @S: 13 or 15 or 16 @D: 13&15 or 15&16 (if with connectors or support @D, IL increased by 0.4dB)
	4x8	≤1.6 @S		
	8x8	≤1.8 @S		
	8x16	≤1.9 @S		
	8x24	≤2.0 @S		
	16x16	≤2.0 @S		
	24x24	≤2.5 @S		
	32x32	≤2.8 @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		≤10 @16x16 ≤20 @24x24	ms	One set of configuration link Eg: M1-N12
Durability		≥$1x10^9$	cycle	
Maximum optical Power		≤500	mW	

Table 2 Electrical and Mechanical Specifications

PARAMETER		VALUE	UNIT	NOTE
Switch Mode		Non-latching		
Control Voltage		5~12	V	Module
Dimension	4x4	150×150×20	mm	The size of 4x4/4x8 can be recustomized
	4x8			
	8x8			
	16x16	200x200x20(TBD)		
	8x24			

	24x24	320x200x30(TBD)		
	32x32	TBD		

3 OPERATION/STORAGE TEMPERATURE/HUMIDITY

Table 3 Environmental conditions

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

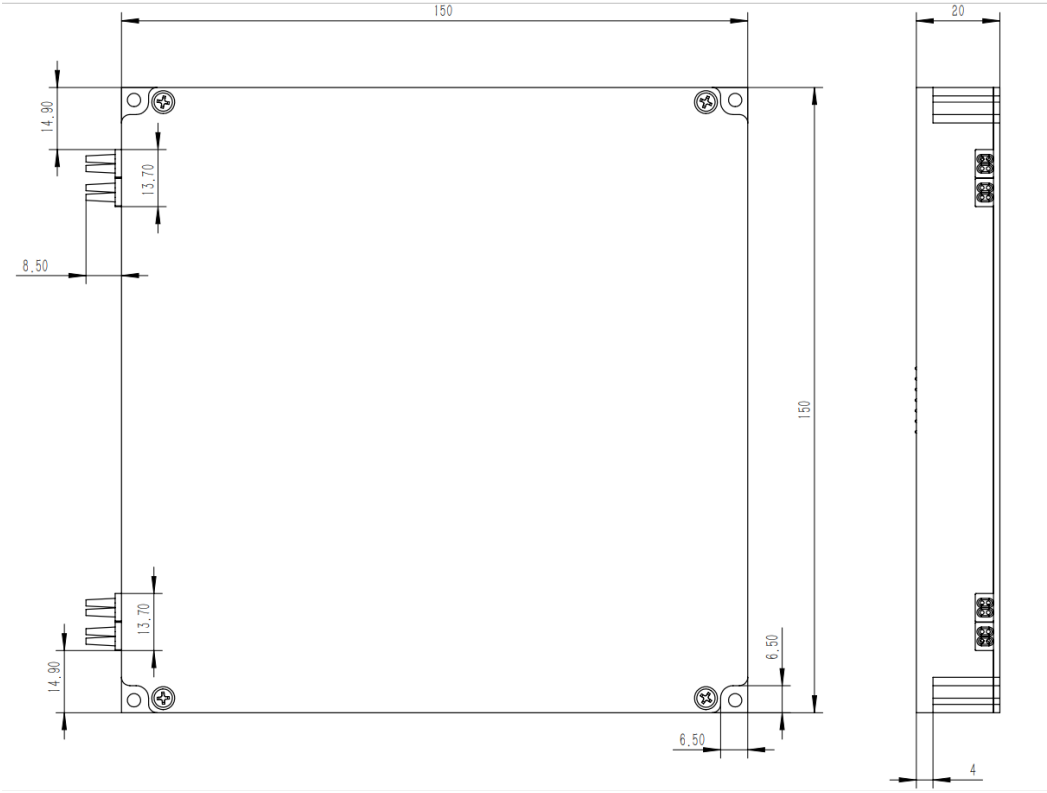
4 PIGTAIL AND CONNECTOR

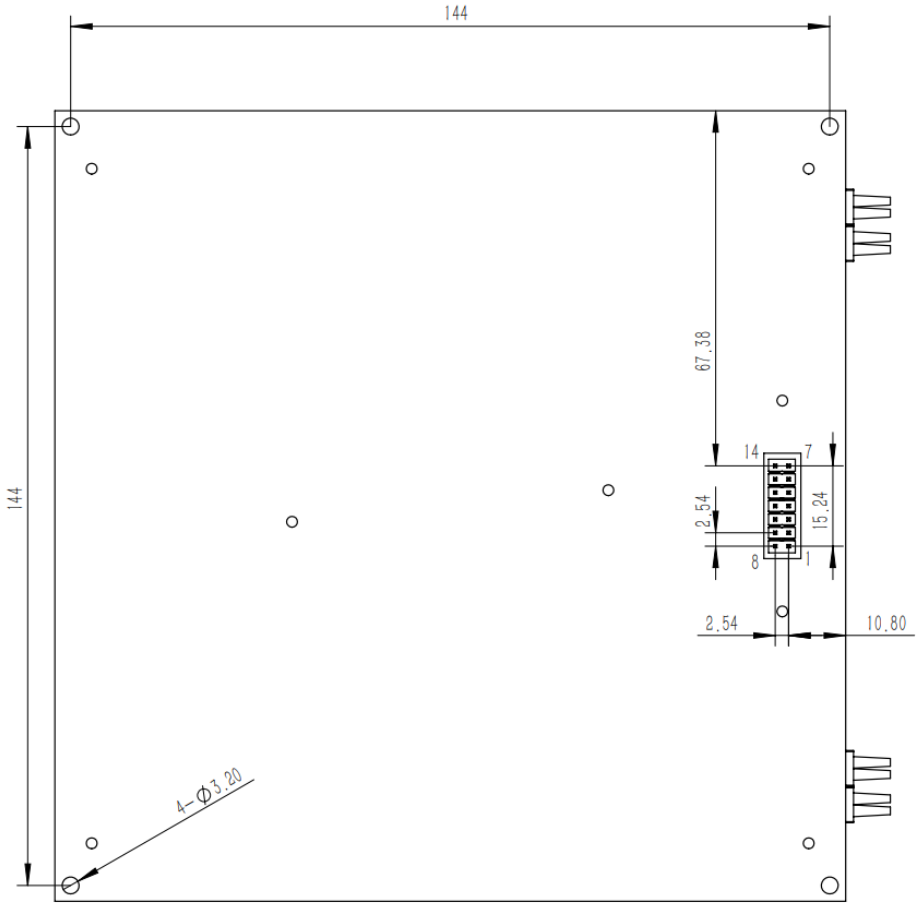
Table 4 Pigtail and connector type/length

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

5 MECHANICAL DRAWINGS

Figure 1 8x8 OXC


150
20
14.90
13.70
8.50
150
13.70
14.90
6.50
6.50
4


144
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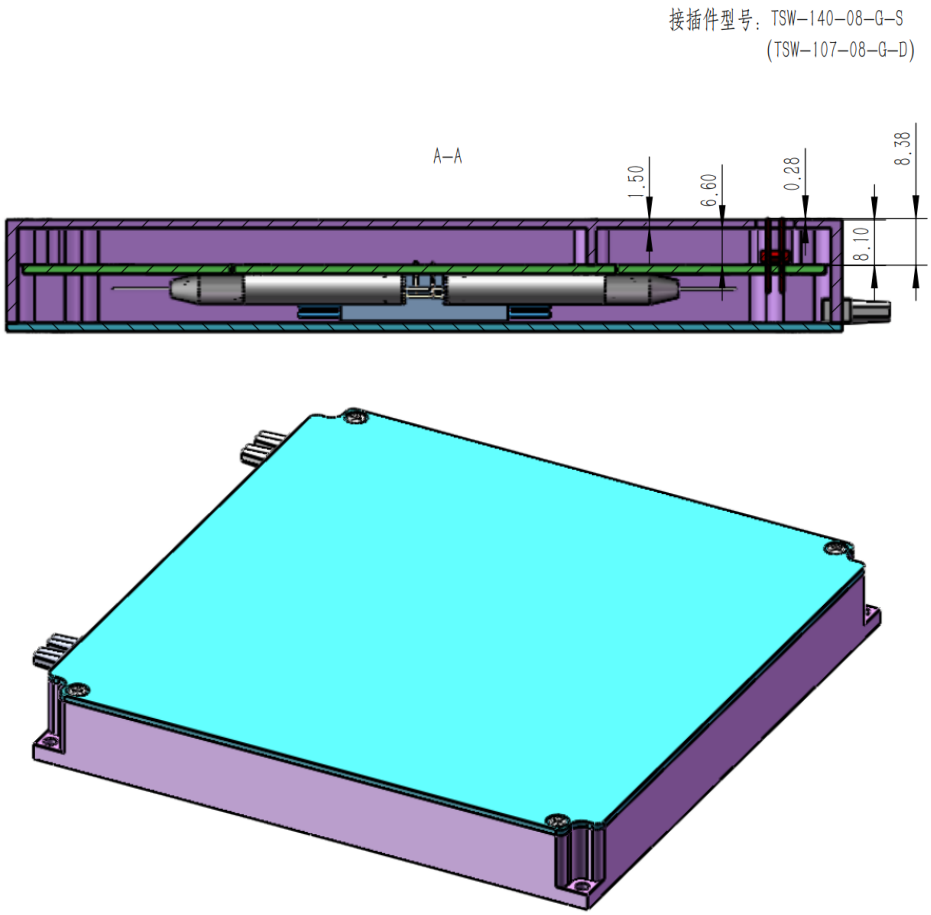
144
14
7
2.54
15.24
8
1
2.54
10.80
4-Φ3.20



6 OPTIC PORTS AND ELECTRONIC PINS DEFINITION

6.1 Electronic Pins Definition

Table 5 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	UART TTL data output
7	RXD	Input	LVTTL	UART TTL data input
8	I/O		LVTTL	Reserved

Pin Number	Name	Input/Output	Level	Function
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

6.2 RS232 Port Control Setting

Baud Rate: 115200

Start Bits: 1

Data Bits: 8

Parity: None

Stop Bits: 1

Flow Control: None

6.3 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

6.4 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

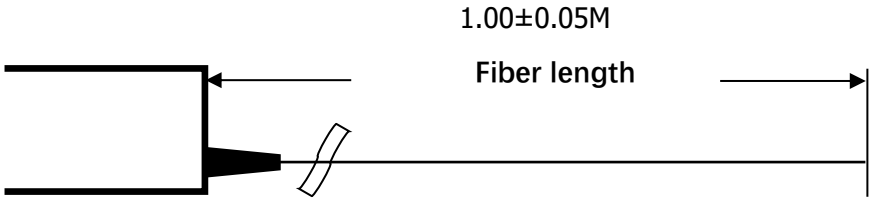
Step3：OXC 的最终状态

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

7 FIBER LENGTH

Figure 2 Fiber Length Definition



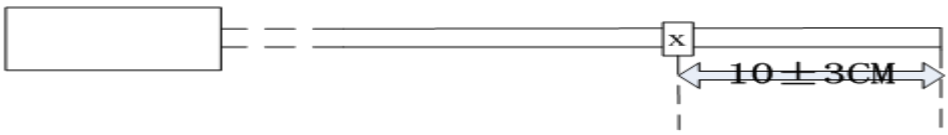
8 LABEL DEFINITION

8.1 On the module

P/N: xxxxxxxxxxx
S/N: xxxxxxxx

8.2 Label Definition

Figure 3 Label Definition



X=M1,M2,……MN, N1,N2,……NM

8.3 Others

ESD Packing

RoHS and GR-1073 compliance

9 ORDERING INFORMATION

AZ - OXC - □ - □ - □ - □ - □ - □ - □

Channel Configuration

MXN	MxN < 1024
4x4	
8X8	
16X16	

Wavelength Configuration

13	1290 – 1330 nm
15	1525 – 1568 nm
16	1600 – 1650 nm
13&15	1290 – 1330 & 1525 – 1568 nm
15&16	1525 – 1568 & 1600 – 1650 nm
Or customer specify	

Fiber Type

S	Single Mode, G657A2

Fiber Dia.

09	Φ 0.9 mm

Fiber Length

1	1 m
Or customer specify	

Connector

LC/UPC
FC/APC
Or customer specify

Package

M	Module, double stage