

# MEMS OSW Specification

## Document History

VER. & STATUS	Date	DESCRIPTION OF CHANGE	APPROVER
V1.0	2024.7.18	First draft	Li Xu

Product Name	1X16 MEMS Optical Switch Series
Product Model	
Description	1X16 MEMS Optical Switch, Device with PCB
File NO.	
Customer	

	Drafter	Reviewer	Approver	Customer Confirm
Signature				
Date				

## DESCRIPTION

### Product Function

MEMS OSW is based on micro-electro-mechanical system (MEMS) technology, which achieved low insertion loss and highly repeatability by rotating the mirror of MEMS chip.

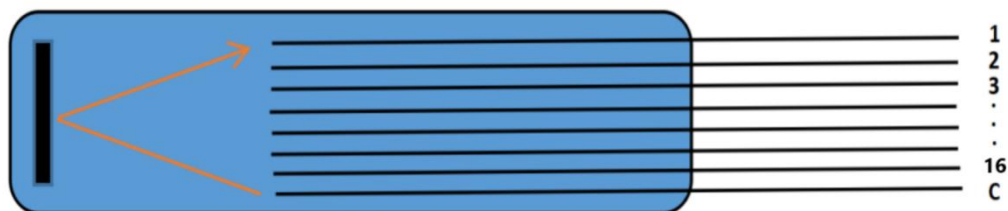
MEMS OSW is mainly used in optical cross and connection (OXC) system, optical add/drop system, measure instrument system and optical signal monitoring system.

The products are Telcordia GR-1073-CORE qualified, and RoHS compliant.

### Product Features

- Low insertion loss
- Low polarization dependent
- Compact size
- Excellent reliability

### Product Configurations



Note: "C": common port

"1、2、3...16":possible selected output ports=1~16;

## OPTIC AND ELECTRIC SPECIFICATION

Parameters		Unit	Value	Notes
Wavelength		nm	1528~1625	or customer specify
Test Wavelength		nm	1550	
OSW Channels			2, 4,6,8,12,16	≤16
Insertion Loss	1*2	dB	≤0.8	@CWL,23°C
	1*4			
	1*6		≤1.0	
	1*8			
	1*12		≤1.2	
	1*16			
Return Loss		dB	≥40	
Repeatability		dB	≤0.1	
Crosstalk		dB	≥40	
Polarization Dependence Loss		dB	≤0.3	
Wavelength Dependence Loss		dB	≤0.4	@CWL±20nm, 23°C
Temperature Dependence Loss		dB	≤0.4	
Operation Temperature		°C	-5~65	
Storage Temperature		°C	-40~85	
Switch Time		ms	≤30	
Durability		cycle	≥1×10 <sup>9</sup>	
Maximum optical Power		mW	≤500	
Switch Mode			Non-latching	
Control Voltage		V	≤60	

## OPERATING AND STORAGE CONDITIONS

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

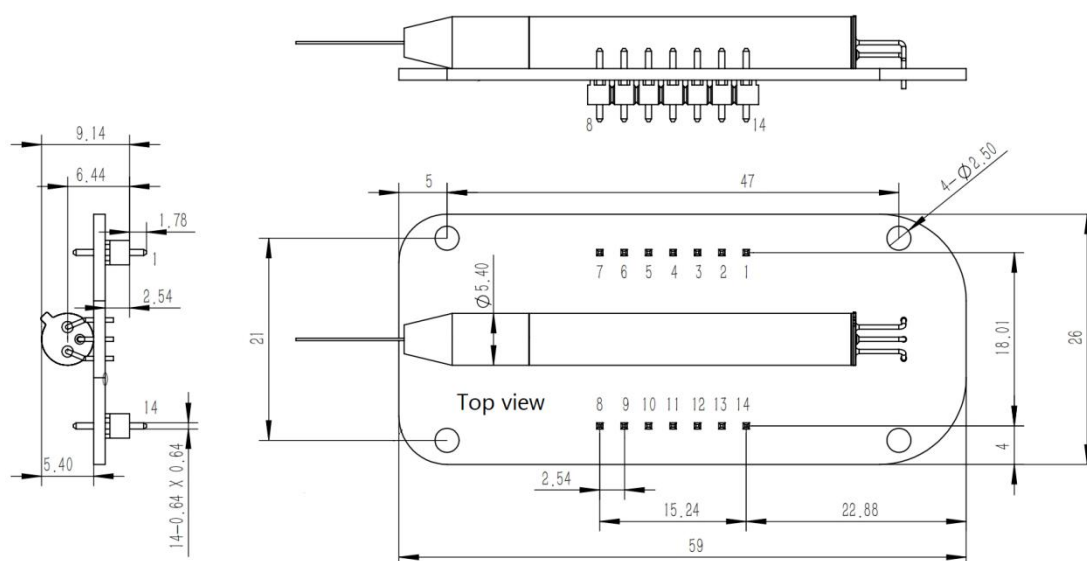
## PIGTAIL AND CONNECTOR

Pigtail and connector type/length

PARAMETER	SPECIFICATION	UNITS	NOTE
Fiber Type	G657A2 o250um bare fiber		
Fiber Pigtail(All Ports)	250um bare fiber		
Fiber Length(All Ports) (customer specify)	1.00±0.1 (customer specify)	m	with connector length
Optical Connector (All port)	None (customer specify)		

## MECHANICAL DRAWINGS

Cylindric Device with PCB



## OPTIC PORTS AND ELECTRONIC PINS DEFINITION

### Electronic Pins Definition

#### Electronic Pins Definition for Type A

Pin Number	Name	Input/Output	Level	Function
1	NC	No connect		
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 Controls 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

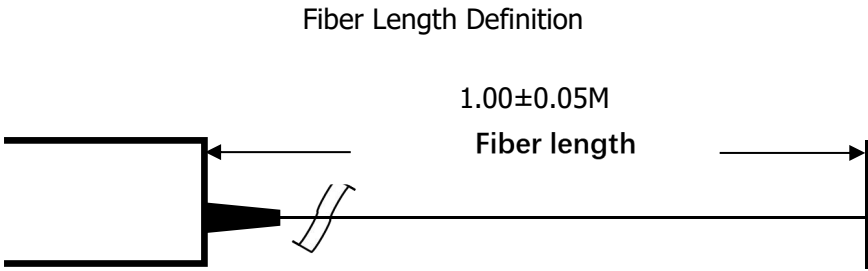
Setting channel info						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x04	0xFF	0x04	CHANNEL (1byte)	SUM
	eg: EF EF 04 FF 04 07 EC					
Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDF A	0x04	RES	0x04	Success: 0xEE Fail: 0xEF	SUM
	eg: ED FA 04 FF 04 EE DC					

Getting channel info						
Command	FLAG1	LEN	RES	COMMA	DATA	SUM
	0xEFEF	0x03	RES	0x02		SUM
	eg: EF EF 03 FF 02 E2					
Response	FLAG2	LEN	RES	RESP	DATA	SUM
	0xEDF	0x04	RES	0x02	CHANNEL	SUM

					(1byte)	
Eg: ED FA 04 FF 02 07 F3						

Note:When channel 0 is set, the voltage is 0, that is block state

FIBER LENGTH



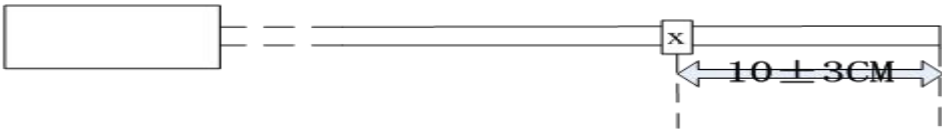
LABEL DEFINITION

On the module

P/N: xxxxxxxxxx

S/N: xxxxxxxx

Label Definition



X=com,CH1,CH2,CH3.....CHN

ORDERING INFORMATION

MSOSW-①-②-③-④-⑤-⑥-⑦-⑧																								
①通道结构			②工作波长		③光纤规格		④光纤长度		⑤产品类型		⑥光纤类型		⑦连接器		⑧封装									
Channel Configuration			Wavelength		Fiber Dia		Fiber Length		Product Type		Fiber Type		Connector		Package									
1N	1xN	Switch	1550	1550nm	025	Φ 0.25mm	1	1M	N	NO latching	S	Single Mode	00	NO Connector	C	Cylindric Device								
12	1x2		...		09	Φ 0.9mm	or Customer Specify					G657 A2	or Customer Specify		CP	Cylindric Device								
14	1x4														M	TLT/RS232 Module interface								
16	1x6																							
18	1x8																							
112	1x12																							
116	1x16																							
...																								

**Note:**The MEMS OSW are ESD-Sensitive devices.Please insure that proper ESD handing procedures are followed.