Product features

Mini Size
Fast Switch Speed
Low Insertion Loss & PDL
Wide Operating Wavelength Range
High Reliability & Stability

Application

Instrumentation
Network Monitor System
Module & System Integration
Remote Fiber Testing System

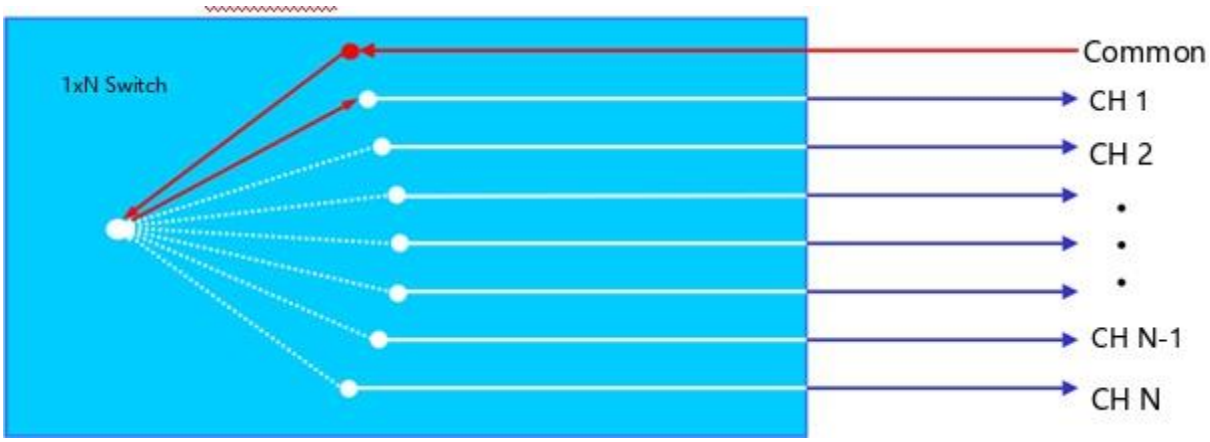
Technical Parameters

Model	MEMS-1X144	
Fiber type	SM	MM
Operating wavelength	1260~1650nm	850±20nm or 1310±20nm or 1400~1700nm
Test wavelength	1310/1550nm	850/1310/1550nm
Insertion loss 1	≤1.0dB（Typical：0.8） （N≤16） ≤1.8dB（Typical：1.6） （16＜N≤64） ≤2.0dB（Typical：1.8） （64＜N≤144） ≤2.2dB（Typical：2.0） （144＜N≤256）	≤1.0dB（Typical：0.8） （N≤8） ≤1.8dB（Typical：1.6） （8＜N≤64） ≤3.2dB（Typical：3.0） （64＜N≤128）
Wavelength dependent loss	≤0.3 dB（N≤16） ≤0.4 dB（16＜N≤144） ≤0.5 dB（144＜N≤256）	≤0.3 dB（N≤8） ≤0.4 dB（8＜N≤64） ≤0.6 dB（64＜N≤128）
Polarization dependent loss	≤0.15dB	≤0.2dB
Return loss	≥45 dB	≥30 dB
Crosstalk	≥50 dB	≥30 dB
Repeatability	≤±0.05dB	≤±0.05dB
Switching time	≤15ms	
Number of switches	≥ 109 times	
Input optical power	≤500 mW	

Operating voltage/current	DC5V±10% ≤50mA（N≤16） ≤250mA（16＜N≤64） ≤350mA（64＜N≤144） ≤500mA（144＜N≤256）	DC5V±10% ≤50mA（N≤8） ≤250mA（8＜N≤32） ≤450mA（32＜N≤96） ≤550mA（96＜N≤128）
Operating temperature	-5 ~ 70 °C	
Storage temperature	-40 ~ 85 °C	
Module size	M4：100(L) x 100(W) x 12(H) ±0.2nm（64＜N≤144，Loose Tube） M5：110(L) x 141(W) x 12(H) ±0.2nm（144＜N≤256，Loose Tube）	

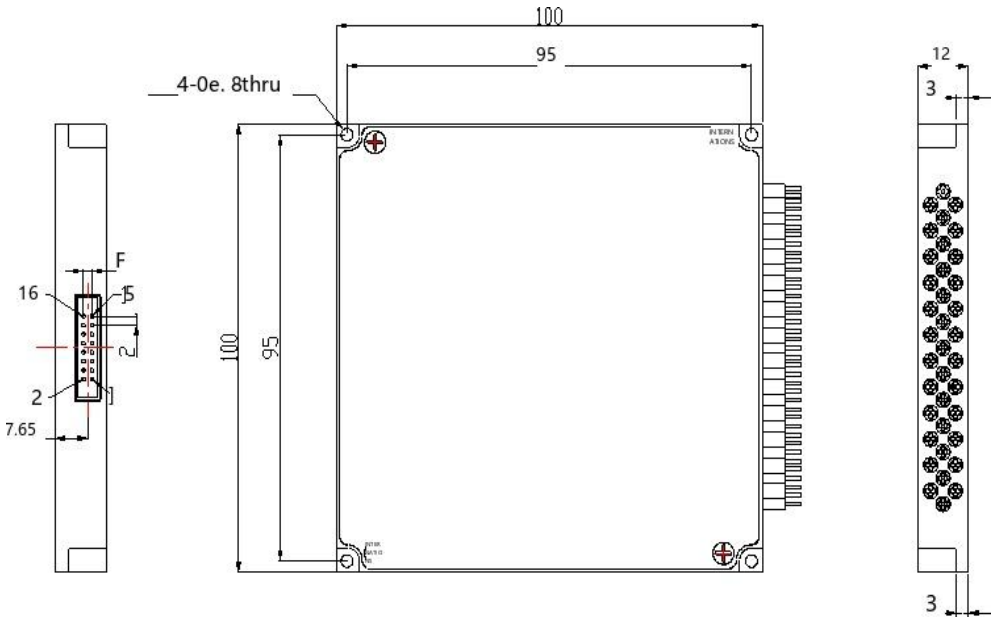
Note: 1. All parameters are tested at room temperature.
2.All parameters do not include the insertion loss of the connector, and a pair of connectors adds 0.3dB loss.

Optical Path Diagram

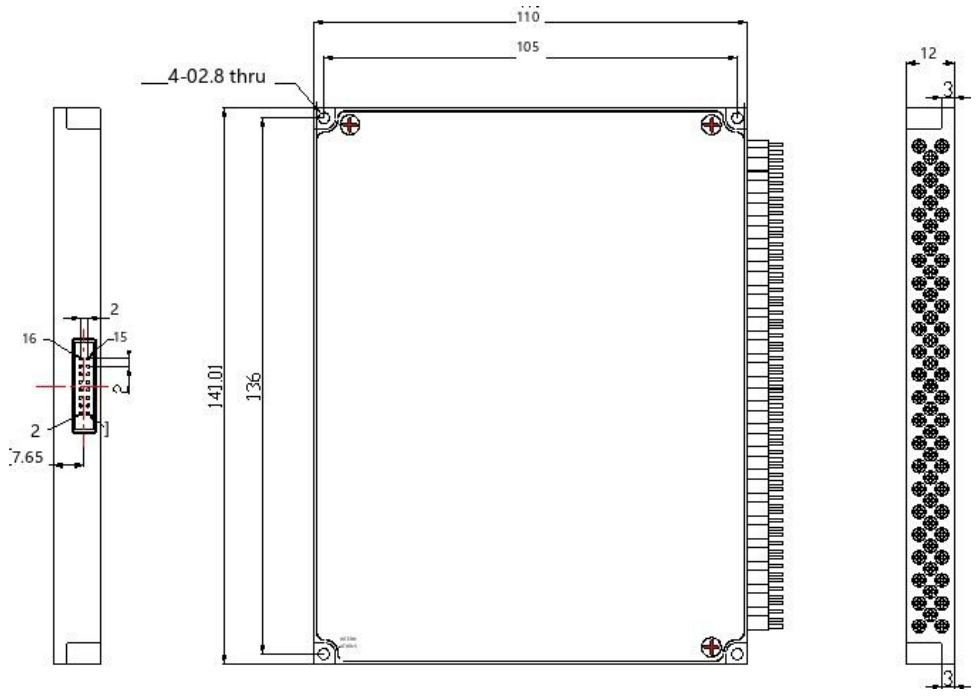


Module dimensions Diagram

M4：



M5：



Pin definition

Pin number		Pin definition	Direction and type of signal	Functional description
M1/M2	M3/M4/M5			
5	1	D0	Input	Data Bit D0 (Low)
	2	D5	Input	Data bit D5
2	3	VCC	Power	Operating power supply, DC 5V, 1.0 A
	4	D7	Input	Data Bit D7 (High)
	5	D6	Input	Data Bit D6
4	6	GND	Power	GND
	7	D4	Input	Data bit D4
6	8	D1	Input	Data bit D1
9	9	TXD	Output	Serial port data sending end (TTL level serial port)
10	10	RXD	Input	Serial port data receiver (TTL level serial port)
7	11	D2	Input	Data bit D2
8	12	D3	Input	Data bit D3
12	13	/BUSY	Output	The low level is ready to reset or receive data.
	14	/ALARM	Output	A high level indicates that the optical module is operating incorrectly.
3	15	/STROBE	Input	The falling edge executes the data bit.
14	16	/RESET	Input	Low reset to Channel 0.
11		GND	Power	GND
13		MODE		Low data bit controls switching, high UART Control switching
1		NC		Hanging in the air

Note: The M3, M4, and M5 module electrical interfaces use MOLEX's 87833-1620. It is recommended that the customer connector use MOLEX's 87568-1694.

Data bit switching logic table

/RESET	D7	D6	D5	D4	D3	D2	D1	D0	Channel
0	X	X	X	X	X	X	X	X	0
1	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	1	2
	0	0	0	0	0	0	1	0	3
	0	0	0	0	0	0	1	1	4
	...	...	...	...	...	...	...	...	...
	1	1	1	1	1	1	1	1	256

ption of UART programmed command

The module can receive control signals through TTL UART interface to realize automatic measurement or real-time monitoring.

This module can only execute one instruction at a time. The next instruction is usually entered after the program returns the corresponding value.

, please use capital letters.

. In actual operation, enter the angle bracket "<" as the start character and the angle bracket ">" as the end character.

Instruction error returns < ER >.

Programmed instruction set

Command	Description	Examples
<RESET>	Restart the module	Success return: < RESET _ OK >
<RESTORE>	Restore factory settings	Success return: < RESET _ OK >
<INFO_?>	Query module information	Successfully returned:
		<MEMS-SM-1X256_VER1.00_ SN01234567890_C08.04.00051> Indicates MEMS-SM-1X256 module, version 1.00, SN number 01234567890, product number C08.04.00051;
<OSW_BAUD_x>	Set or query the serial port baud rate 1. X is from 1 to 9, representing baud rates 2400, 4800, and 9600, 14400, 19200, 38400, 56000, 57600, and 115200, respectively. Success return: < OSW _ BAUD _ X _ OK > 2. Send < OSW _ BAUD _? > Query the baud rate	Send: < OSW _ BAUD _ 5 > Success return: < OSW _ BAUD _ 5 _ OK > Set the device serial port baud rate to the 19200. Restart to take effect after the configuration is saved!

<OSW_M_x>	Working mode selection X: Values 0, 1,?, 0 indicates data bit control switching, 1 indicates UART control switching,? Indicates the query mode of operation; Success return: < OSW _ M _ X _ OK >	Send: < OSW _ M _ 1 > Success return: < OSW _ M _ 1 _ OK > It indicates that the module is set to UART control switching; Send: < OSW _ M _? > Success return: < OSW _ M _ 1 > Indicates that the module is switched by UART control;
<OSW_01_SW_xx x>	Sets the current channel XXX: Value 000 ~ 256,000 means 0 channel, 256 means 256 channels; Success return: < OSW _ 01 _ SW _ YY _ OK > Note: In the data bit control switching mode, send: < OSW _ 01 _ SW _ XXX > return: < OSW _ M _ ER >	Send: < OSW _ 01 _ SW _ 01 > Successful return: < OSW _ 01 _ SW _ 02 _ OK > indicates switching to channel 2;
<OSW_A_?>	Query the channel status Success return: < OSW _ A _ optical switch channel >	Return: < OSW _ A _ 01 > Indicates that the optical switch is 1 channel;
<SAVE_ALL>	Save the configuration Success return: < SAVE _ ALL _ OK >	Save the configuration, such as channel status save.

Note: The M1 and M2 modules do not apply to this instruction set.

Fiber length

Including Boot and connector length

Factory Default Configuration

Project	Factory default configuration	Remark
Serial port baud rate	115200	8 data bits, 1stop bit, no parity.
Working mode	Data bits control switching	
Working Channel	When the data bit control is switched, the working channel is determined by the data bit; When UART control is switched, the working channel is the channel 1;	When the UART control is switched, the optical path state when the configuration is saved is maintained after the module is powered off and then powered on.

Ordering Information MEMS-1X144-A-B-C-D-E-F-G

A	B	C	D	E	F	G
Mode	Wavelength	Dimension Type	Fiber type	Fiber diameter	Fiber Length	Connector
S:SM M:MM	85: 850nm 13: 1310nm 14: 1490nm 15: 1550nm 162: 1625nm 165: 1650nm 13/15:1310/1550nm X:Other	M4: 100 x 100 x 12 M5: 110 x 141 x 12 X: Other	5:50/125 6:62.5/125 9: 9/125 X: Other	25:250um 90:900um X: Other	05:0.5m 10:1.0m X:Other	OO:None FP: FC/PC FA: FC/APC SP: SC/PC SA: SC/APC LP: LC/PC LA: LC/APC MP: MPO X: Other