

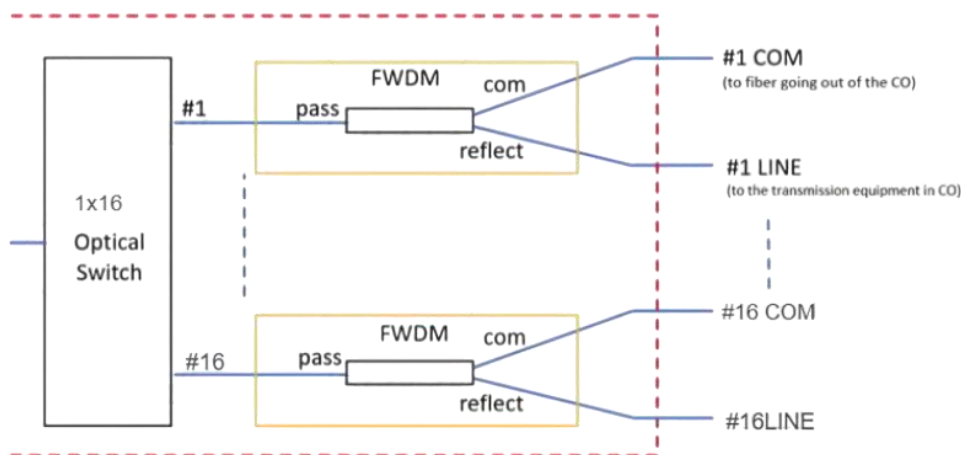
MEMS 1X16 Optical Switch

Functional specification

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1. Schematic diagram of module interior

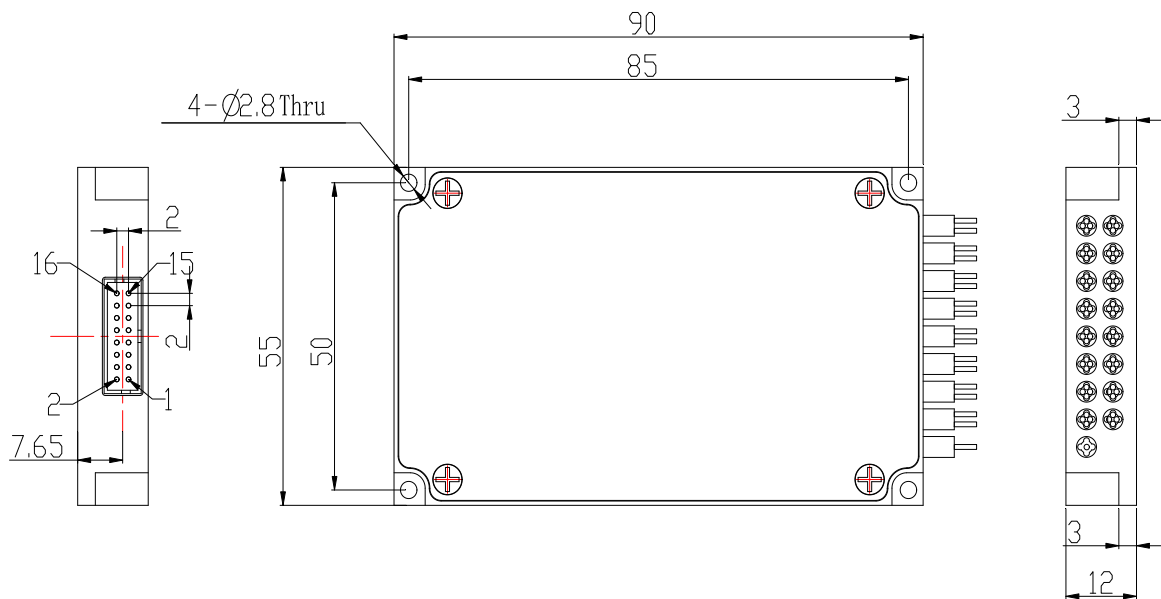


2. Performance

Parameters	HC-MEMS-1X16-S-162-M3-9-90-10-FA
Working wavelength	1260~1650nm
Testing wavelength	1625nm
Insertion loss	≤1.0dB
WDL	≤0.30dB
PDL	≤0.15dB
Return loss	≥45dB
Crosstalk	≥50dB
Repeatability	≤±0.05dB
Response time	≤15ms
Durability	≥10 ⁹ times
Input Optical Power	≤500mW
Operating Voltage	DC 5V±10%V
Operating Current	≤50mA
Operating Temp.	-20 ~ +85℃
Storage Temp.	-40 ~ +85℃
Dimension (L×W×H)	90×55×12 ±0.2mm
Fiber Type	Singlemode, 9/125
Tube Type	0.9mm white loose tube
Fiber Length	1.0±0.05 meter
Connector	FC/APC

- Note: 1.Excluding connector.
2.Within operating temperature and all SOP.
3.WDL is measured in a $\pm 20\text{nm}$ range at 23°C .

3. Module size diagram (Size M3)



4. Pin definition

Pin number	Pin Assignment	Signal Type	Description
1	D0	Input	Data bit (D0) (low-order)
2	D5	Input	Data bit (D5)
3	VCC	Power	Power Supply (DC 5V,1.0A)
4	D7	Input	Data bit (D7) (high-order)
5	D6	Input	Data bit (D6)
6	GND	Power	GND
7	D4	Input	Data bit (D4)
8	D1	Input	Data bit (D1)
9	TxD	Output	Data Transmit (TTL Level)
10	RXD	Input	Data Receive (TTL Level)
11	D2	Input	Data bit (D2)

12	D3	Input	Data bit (D3)
13	/BUSY	Output	Low level means ready to reset or receiving data
14	/ALARM	Output	High level means running error
15	/STROBE	Input	Falling edge execution data bit
16	/RESET	Input	Low level reset to channel 0

Note: Molex 87833-1620 is used for the electrical interfaces of this modules and it is recommended to use Molex 87568-1694 for customer connectors.

5. UART program control instruction description

This module can receive control signals through the UART interface to enable automated measurements or real-time monitoring.

- (1). This module can only execute one instruction at a time. Typically, the next instruction can be entered only after the program returns the corresponding value.
- (2) Please use capital letters.
- (3) In practical operation, the angle brackets "<" and ">" are used as the start and end delimiters respectively.
- (4). Instruction error returns <ER>.

Program Control Instruction Set

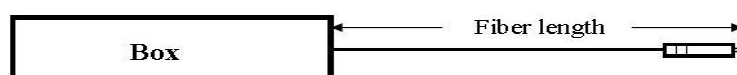
Order	Describe	Example
<RESET>	Restart module	Successful return: <RESET_OK>
<RESTORE>	Reset	Successful return: <RESET_OK>
<INFO_?>	Query module information	Return successfully: <MEMS-SM-1X24_VER1.00_ SN01234567890_C08.04.00051> Indicates MEMS-SM-1X24 module, version 1.00, SN number 01234567890, product number C08.04.00051;
<BAUD_x>	Set or query the serial port baud rate 1.x is 1~9, indicating baud rate 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200 respectively Successful return: <BAUD_x_OK> 2. Send <BAUD_?> to query the baud rate	Send: <BAUD_5> Successful return: <BAUD_5_OK> Set the device serial port baud rate to 19200 The configuration will take effect after saving and rebooting!
<OSW_M_x>	Working mode selection x: Values 0, 1, ?, 0 indicates data bit control switching, 1 indicates UART control switching, ? indicates query working mode; Successful return: <OSW_M_x_OK>	Send: <OSW_M_1> Successful return: <OSW_M_1_OK> Indicates that the module is set to UART control switching; Send: <OSW_M_?> Successful return: <OSW_M_1> Indicates that the module is UART

		controlled switching;
<OSW_01_SW_xxx>	Set current channel xxx: The value is 000~256, 000 means 0 channel, 256 means 256 channel; Successful return: <OSW_01_SW_xxx_OK> Note: In data bit control switching mode, Send: <OSW_01_SW_xxx> Return: <OSW_M_ER>	Send: <OSW_01_SW_002> Successful return: <OSW_01_SW_002_OK> Indicates switching to channel 2;
<OSW_A_?>	Query channel status Successful return: <OSW_A_Optical switch channel>	Return: <OSW_A_001> Indicates that the optical switch is 1 channel;
<SAVE_ALL>	Save configuration Successful return: <SAVE_ALL_OK>	Save the configuration, such as saving the channel status.

6. 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	1	0	1	1	1	24

7. Fiber length definition



The length including Boot and connector

8. Factory default configuration

Project	Factory Default Configuration	Remark
Serial port baud rate	115200	8 data bits, 1 stop bit, no parity.
Operating mode	UART control switching	
Working channel	When UART control is switched, the working channel is channel 1; When data bit control switches, the working channel is determined by the data bit;	When switching the UART control, the module preserves the optical path state that was saved during configuration even after power is disconnected and reconnected.

9. Ordering Information: HC-MEMS-1×16-A-B-C-D-E-F-G

A	B	C	D	E	F	G
Mode	Wavelength	Dimension	Fiber Type	Fiber Dimension	Fiber Length	Connector
S: SingleMode	85: 850nm	M2: 60×24×11	5:50/125	25:Φ0.25mm	05:0.5m	00:None
	13:1310nm		6:62.5/125	90:Φ0.9mm	10:1.0m	FP:FCU/PC
M: Multi-Mode	14:1490 nm	M3: 90×55×12	9:9/125	X:other	15:1.5m	FA:FC/APC
	15:1550 nm	X:other	X:other	X:other	X:other	SP:SC/UPC
	162:1625 nm					SA:SC/APC
	165:1650 nm					LP:LC/UPC
	13/15: 1310/1550 nm					LA:LC/APC
	X:other					MP:MPO
		X: other				