



Features

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



Application

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

Performance indicators

Typeno.	MEMS-1X16	
Optical fiber type	SM	MM
Working wavelength	1260~1650nm	850±20nm or 1310±20nm or 1400~1700nm
Test the 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
Repetitive	≤±0.05dB	≤±0.05dB
Switch time	≤15ms	
Switching times	≥10 ⁹ 次	
Input optical power	≤500 mW	
Operating voltage/current	DC5V±10% ≤50mA (N≤16)	DC5V±10% ≤50mA (N≤8)

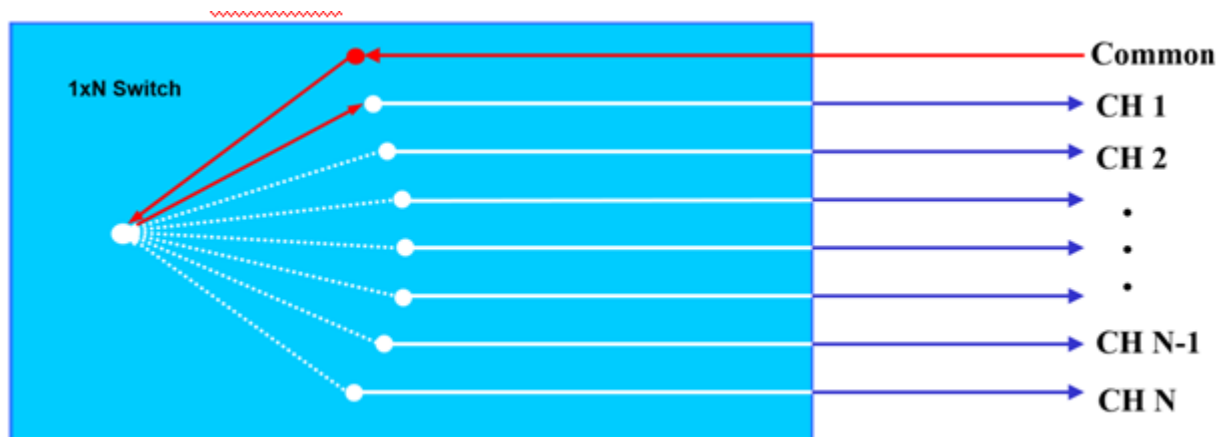


	$\leq 250\text{mA}$ ($16 < N \leq 64$) $\leq 350\text{mA}$ ($64 < N \leq 144$) $\leq 500\text{mA}$ ($144 < N \leq 256$)	$\leq 250\text{mA}$ ($8 < N \leq 32$) $\leq 450\text{mA}$ ($32 < N \leq 96$) $\leq 550\text{mA}$ ($96 < N \leq 128$)
Working temperature	$-5 \sim 70\text{ }^{\circ}\text{C}$	
Storage temperature	$-40 \sim 85\text{ }^{\circ}\text{C}$	
Module size	M1 : $34(\text{L}) \times 24(\text{W}) \times 11(\text{H}) \pm 0.2\text{mm}$ ($N \leq 16$, Bare Fiber) M2 : $60(\text{L}) \times 24(\text{W}) \times 11(\text{H}) \pm 0.2\text{mm}$ ($N \leq 16$, Loose Tube) M3 : $90(\text{L}) \times 55(\text{W}) \times 12(\text{H}) \pm 0.2\text{mm}$ ($16 < N \leq 64$, Loose Tube) M4 : $100(\text{L}) \times 100(\text{W}) \times 12(\text{H}) \pm 0.2\text{nm}$ ($64 < N \leq 144$, Loose Tube) M5 : $110(\text{L}) \times 141(\text{W}) \times 12(\text{H}) \pm 0.2\text{nm}$ ($144 < N \leq 256$, Loose Tube)	M1 : $34(\text{L}) \times 24(\text{W}) \times 11(\text{H}) \pm 0.2\text{mm}$ ($N \leq 8$, Bare Fiber) M2 : $60(\text{L}) \times 24(\text{W}) \times 11(\text{H}) \pm 0.2\text{mm}$ ($N \leq 8$, Loose Tube) M3 : $90(\text{L}) \times 55(\text{W}) \times 12(\text{H}) \pm 0.2\text{mm}$ ($8 < N \leq 32$, Loose Tube) M4 : $100(\text{L}) \times 100(\text{W}) \times 12(\text{H}) \pm 0.2\text{nm}$ ($32 < N \leq 96$, Loose Tube) M5 : $110(\text{L}) \times 141(\text{W}) \times 12(\text{H}) \pm 0.2\text{nm}$ ($96 < N \leq 128$, Loose Tube)

Note :1. All parameters are tested under the working environment of room temperature.

2. All parameters do not include the insertion loss of connectors. A pair of connectors increases the loss by 0.3dB.

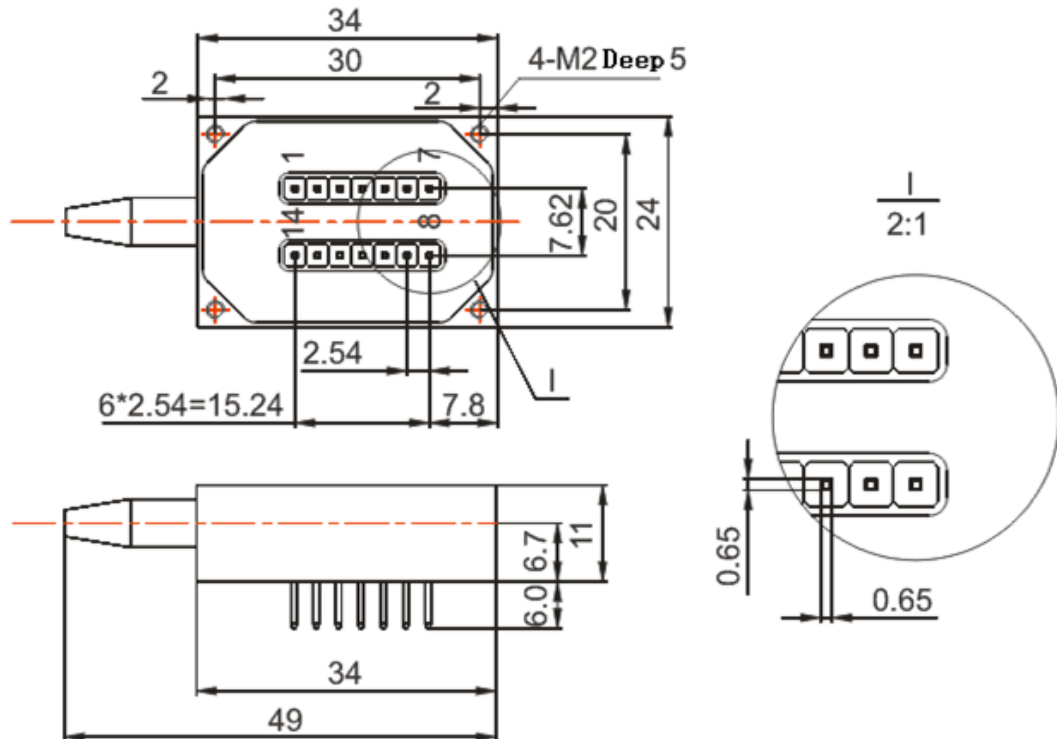
Internal Diagram of Module



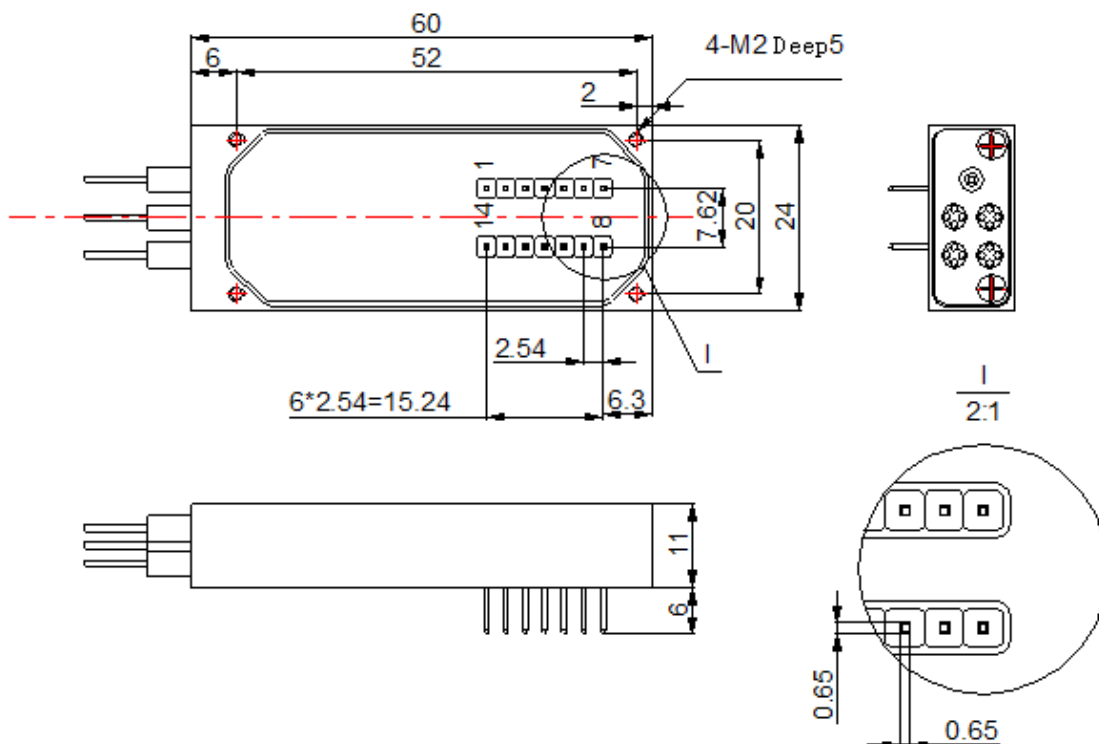


Module size schematic

M1 :

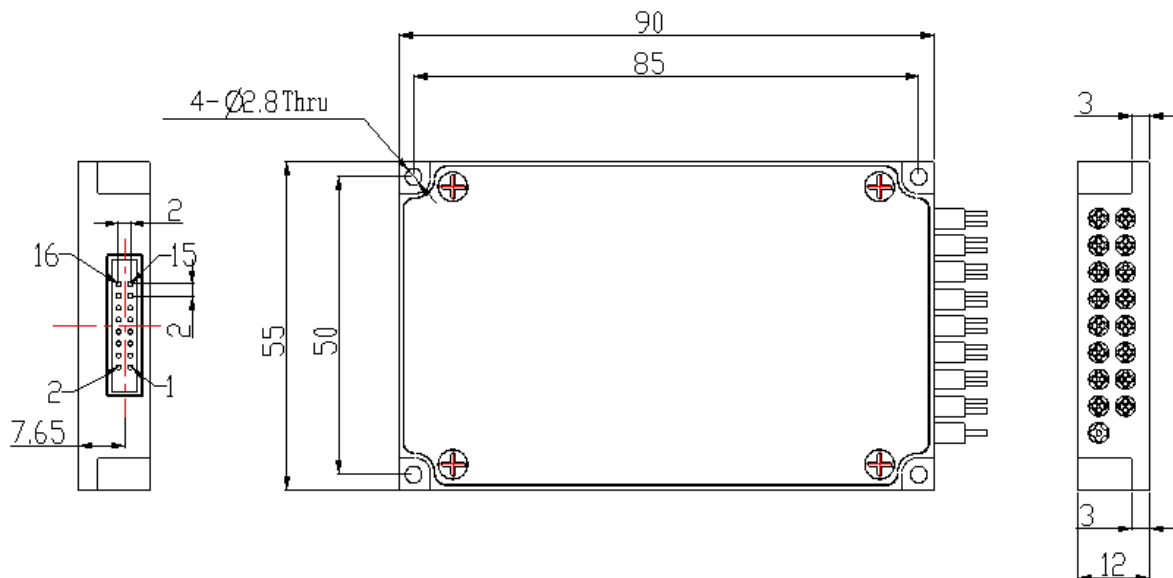


M2 :

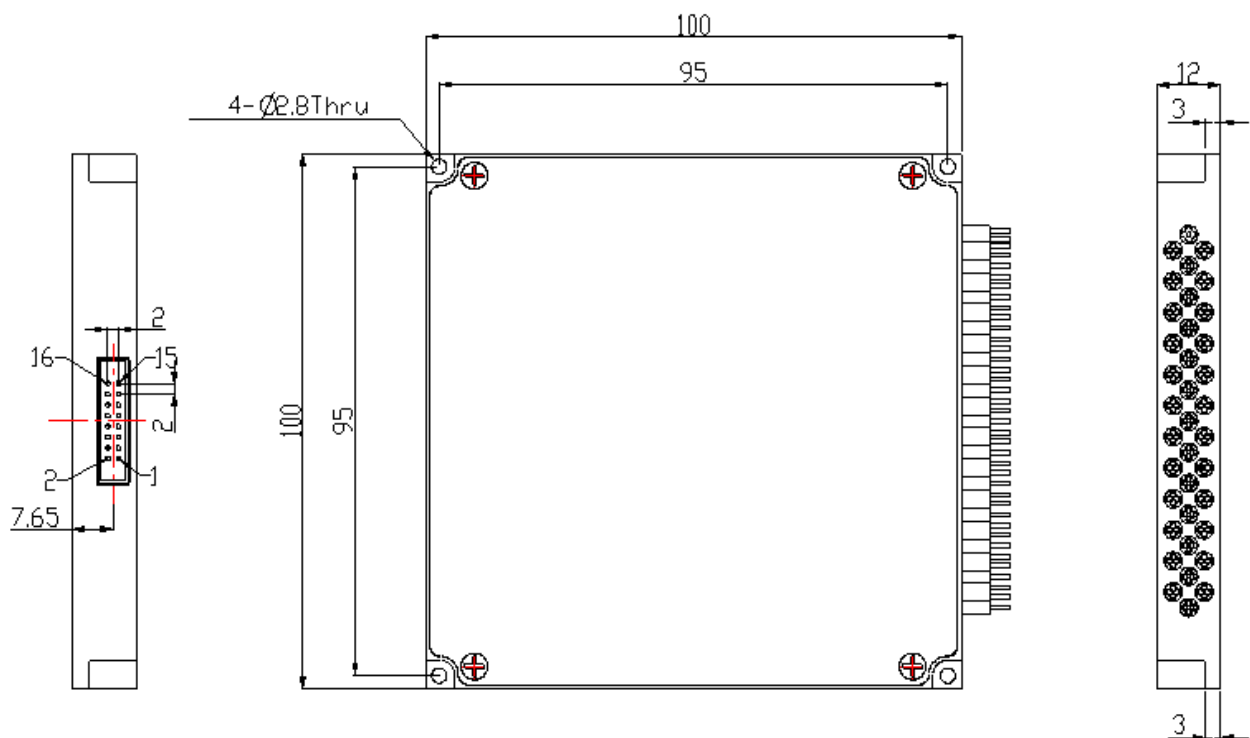




M3 :

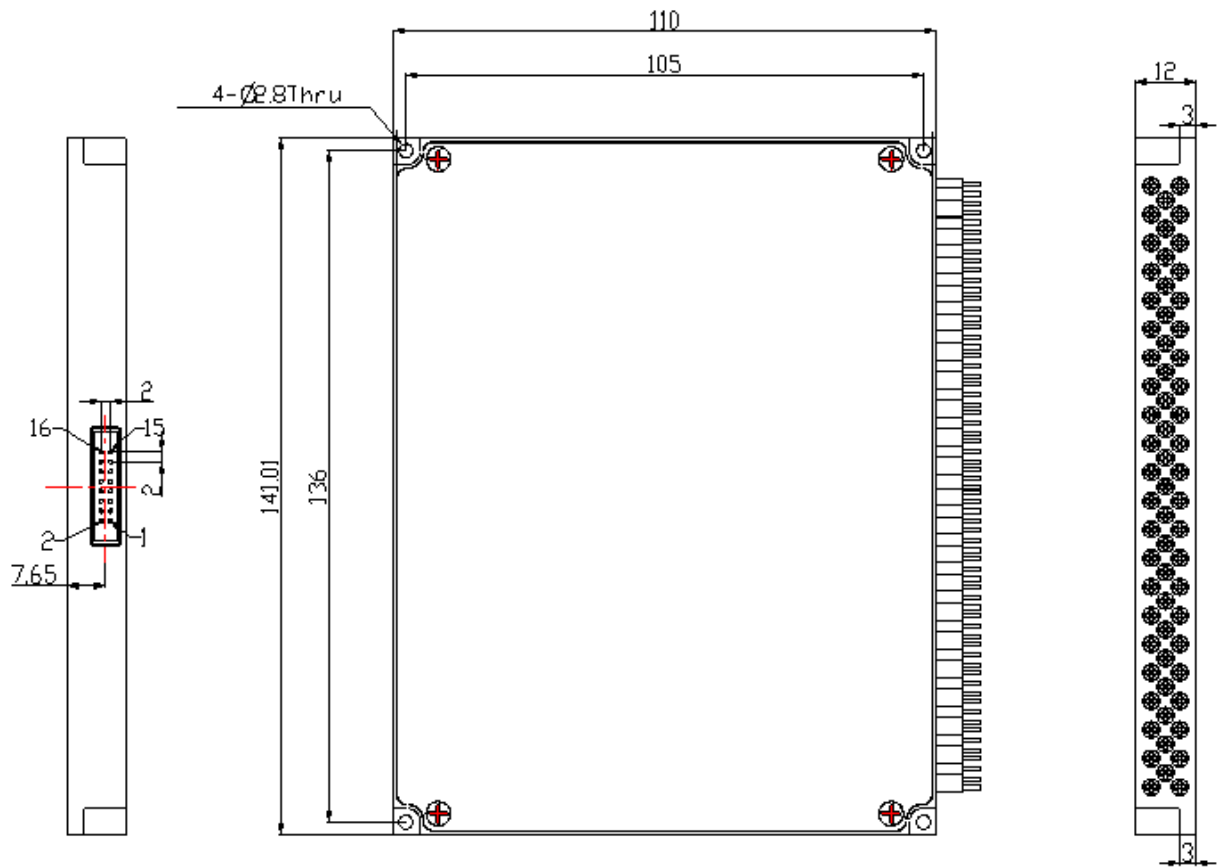


M4 :





M5 :



Pin definition

Pin number		Pin definition	Signal direction and type	Functional specifications
M1/M2	M3/M4/M5			
5	1	D0	Input	Data bit D0 (low bit)
	2	D5	Input	Data bits D5
2	3	VCC	Power	Working power supply , DC 5V , 1.0A
	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 transmitting terminal (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	Low level ready to reset or receive data.
	14	/ALARM	Output	A high level indicates an error in the operation of the optical module.
3	15	/STROBE	Input	The falling edge executes data bits.
14	16	/RESET	Input	Reset low level to channel 0.
11		GND	Power	GND
13		MODE		Low level data bit control switch, high level UART control switch
1		NC		overhang

Note: Molex 87833-1620 is used for the electrical interfaces of modules M3, M4 and M5. Customer connectors are recommended to use Molex 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

UART program control instruction description

This module can realize automatic measurement or real-time monitoring by receiving control signals through TTL UART interface.

- (1) This module can only execute one instruction at a time. Usually wait for the program to return the corresponding value before entering the next instruction.
- (2) Please use capital letters.
- (3) In practice, enter the sharp bracket "<"As a starting character, the brackets ">"As an end.
- (4) Command error returned <ER> .

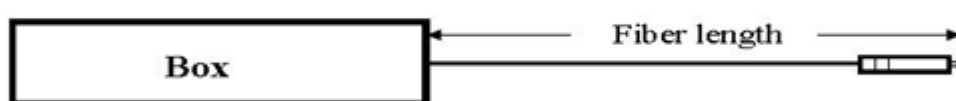


Programmed instruction set

The command	Describe	The sample
<RESET>	重启模块	成功返回：<RESET_OK>
<RESTORE>	恢复出厂设置	成功返回：<RESET_OK>
<INFO_?>	查询模块信息	成功返回： <MEMS-SM-1X256_VER1.00_ SN01234567890_C08.04.00051> 表示 MEMS-SM-1X256 模块 版本 1.00， SN 号 01234567890，产品编号 C08.04.00051；
<OSW_BAUD_x>	设置或查询串口波特率 1.x 为 1~9，分别表示波特率 2400、4800、9600、 14400、19200、38400、56000、57600、115200 成功返回: <OSW_BAUD_x_OK> 2.发送<OSW_BAUD_?>查询波特率	发送：<OSW_BAUD_5> 成功返回: <OSW_BAUD_5_OK> 设置设备串口波特率为 19200 配置保存后重启生效！
<OSW_M_x>	工作模式选择 x :取值0、1、? ,0表示数据位控制切换,1表示UART 控制切换, ?表示查询工作模式； 成功返回：<OSW_M_x_OK>	发送：<OSW_M_1> 成功返回：<OSW_M_1_OK> 表示设置模块为 UART 控制切换； 发送：<OSW_M_?> 成功返回：<OSW_M_1> 表示模块为 UART 控制切换;
<OSW_01_SW_xx x>	设置当前通道 xxx：取值 000~256，000 表示 0 通道，256 表示 256 通道； 成功返回：<OSW_01_SW_yy_OK> 注：数据位控制切换模式下， 发送：<OSW_01_SW_xxx> 返回：<OSW_M_ER>	发送：<OSW_01_SW_01> 成功返回：<OSW_01_SW_02_OK> 表示切换到 2 通道；
<OSW_A_?>	查询通道状态 成功返回：<OSW_A_光开关通道>	返回：<OSW_A_01> 表示光开关为 1 通道；
<SAVE_ALL>	保存配置 成功返回：<SAVE_ALL_OK>	对配置进行保存，如通道状态保存。

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

Fiber length definition



Includes the Boot and the length of the connector

Factory default configuration

Project	Factory default configuration	Note
Serial port baud rate	115200	8 data bits, 1 stop bit, no parity..
Working mode	Data bits control switching	
Work channel	When the data bits control switch, the working channel is determined by the data bits. When UART control is switched, the working channel is channel 1;	When the UART control is switched over, the module keeps the optical path state of the configuration when it is saved after power off and then on

Order information **HC-MEMS-1XN-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	M1 : 34 x 24 x 11 M2 : 60 x 24 x 11 M3 : 90 x 55 x 12 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