



## MEMS M×N Optical Switch Moudle

### Features

- Modular Design
- Non-Blocking Switching
- “any-to-any” switch
- High Reliability and stability

### Application

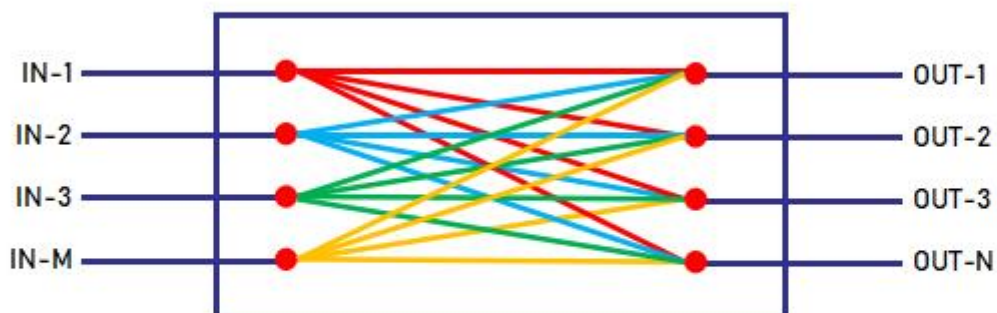
- OADM
- OXC
- Data Center
- Instrumentation

### Compliance

- Telcordia GR-1221
- Telcordia GR-1073



### Optical Route





## Specifications

### Single Mode

| Parameters                                                                                                           | Unit  | MEMS M×N-SM                                                                                                      |                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Working Wavelength                                                                                                   | nm    | 1260-1650                                                                                                        |                                                                                                  |
| Testing Wavelength                                                                                                   | nm    | 1310/1550/1625/1650                                                                                              |                                                                                                  |
| Insertion Loss                                                                                                       | dB    | @CWL Single-band<br>≤1.6 (M≤8, N≤8)<br>≤2.0 (M≤16, N≤16)<br>≤2.6 (M≤32, N≤32)<br>≤3.0 (M≤64, N≤64)               | @CWL Dual-band<br>≤2.0 (M≤8, N≤8)<br>≤2.4 (M≤16, N≤16)<br>≤3.0 (M≤32, N≤32)<br>≤3.4 (M≤64, N≤64) |
| WDL                                                                                                                  | dB    | ≤0.6                                                                                                             |                                                                                                  |
| PDL                                                                                                                  | dB    | ≤0.3                                                                                                             |                                                                                                  |
| Return Loss                                                                                                          | dB    | ≥45                                                                                                              |                                                                                                  |
| Crosstalk                                                                                                            | dB    | ≥50                                                                                                              |                                                                                                  |
| Repeatability                                                                                                        | dB    | ≤±0.1                                                                                                            |                                                                                                  |
| Switching Time                                                                                                       | ms    | ≤15 (M≤16, N≤16)<br>≤50(M≤64, N≤64)                                                                              |                                                                                                  |
| Durability                                                                                                           | times | ≥10 <sup>9</sup>                                                                                                 |                                                                                                  |
| Input Optical Power                                                                                                  | mW    | ≤500                                                                                                             |                                                                                                  |
| Operating Voltage                                                                                                    | V     | DC 5V±10%                                                                                                        |                                                                                                  |
| Operating Current                                                                                                    | A     | ≤0.8 (M+N≤16)<br>≤1.0 (M+N≤32)<br>≤2.0 (M+N≤64)<br>≤4.0 (M+N≤128)                                                |                                                                                                  |
| Operating Temp.                                                                                                      | °C    | -5 ~ +75                                                                                                         |                                                                                                  |
| Storage Temp.                                                                                                        | °C    | -40 ~ +85                                                                                                        |                                                                                                  |
| Dimension                                                                                                            | mm    | M5: 110×141×12mm (M+N≤16)<br>M6: 200×180×18mm (M+N≤32)<br>M7: 280×240×32mm (M+N≤64)<br>customization: 64<M+N≤128 |                                                                                                  |
| 1.Within operating temperature and all SOP.<br>2.Excluding connector.<br>3.WDL is measured in a ±20nm range at 23°C. |       |                                                                                                                  |                                                                                                  |

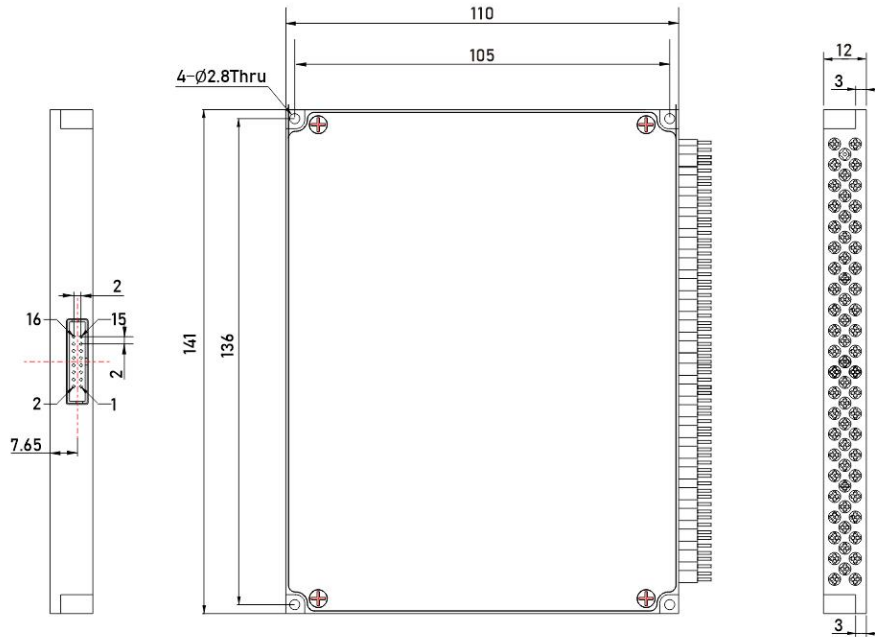
**Multi-Mode**

| Parameters                                                                                                           | Unit  | MEMS M×N-MM                                                                                                      |                                                          |
|----------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Working Wavelength                                                                                                   | nm    | 850±30, 1310±30                                                                                                  |                                                          |
| Testing Wavelength                                                                                                   | nm    | 850/1310                                                                                                         |                                                          |
| Insertion Loss                                                                                                       | dB    | @CWL Single-band<br>≤1.6 (M≤12, N≤12)<br>≤2.0 (M≤16, N≤16)                                                       | @CWL Dual-band<br>≤2.0 (M≤12, N≤12)<br>≤2.4 (M≤16, N≤16) |
| WDL                                                                                                                  | dB    | ≤0.6                                                                                                             |                                                          |
| PDL                                                                                                                  | dB    | ≤0.4                                                                                                             |                                                          |
| Return Loss                                                                                                          | dB    | ≥30                                                                                                              |                                                          |
| Crosstalk                                                                                                            | dB    | ≥30                                                                                                              |                                                          |
| Repeatability                                                                                                        | dB    | ≤±0.1                                                                                                            |                                                          |
| Switching Time                                                                                                       | ms    | ≤15 (M≤8, N≤8)<br>≤30(M≤16, N≤16)                                                                                |                                                          |
| Durability                                                                                                           | times | ≥10 <sup>9</sup>                                                                                                 |                                                          |
| Input Optical Power                                                                                                  | mW    | ≤500                                                                                                             |                                                          |
| Operating Voltage                                                                                                    | V     | DC 5V±10%                                                                                                        |                                                          |
| Operating Current                                                                                                    | A     | ≤0.8 (M+N≤16)<br>≤1.5 (M+N≤32)                                                                                   |                                                          |
| Operating Temp.                                                                                                      | °C    | -5 ~ +70                                                                                                         |                                                          |
| Storage Temp.                                                                                                        | °C    | -40 ~ +85                                                                                                        |                                                          |
| Dimension                                                                                                            | mm    | M5: 110×141×12mm (M+N≤16)<br>M6: 200×180×18mm (M+N≤24)<br>M7: 280×240×32mm (M+N≤32)<br>customization: 32<M+N≤128 |                                                          |
| 1.Within operating temperature and all SOP.<br>2.Excluding connector.<br>3.WDL is measured in a ±20nm range at 23°C. |       |                                                                                                                  |                                                          |

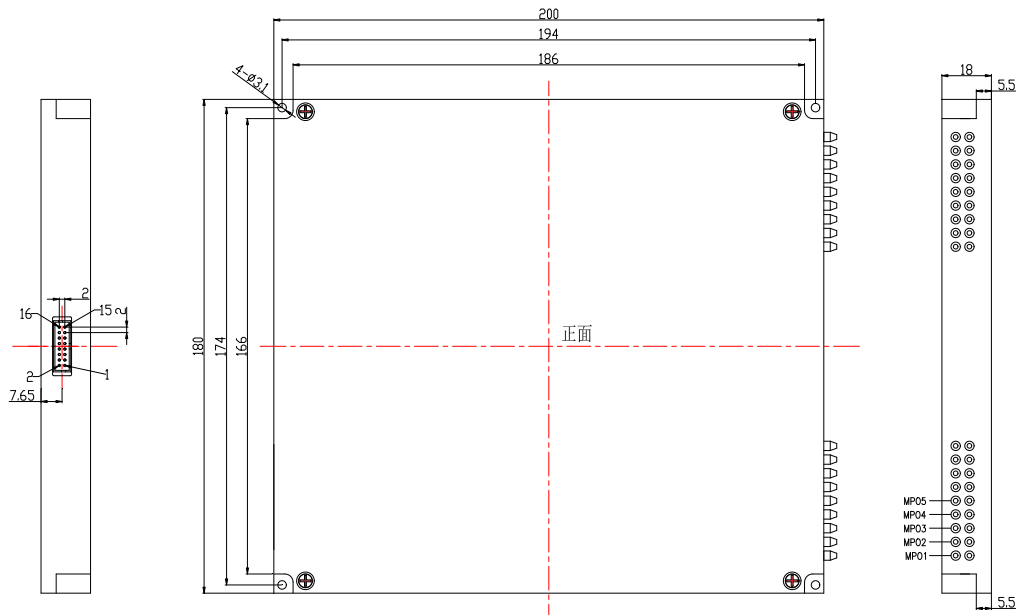


## Dimension

M5:110×141×12mm

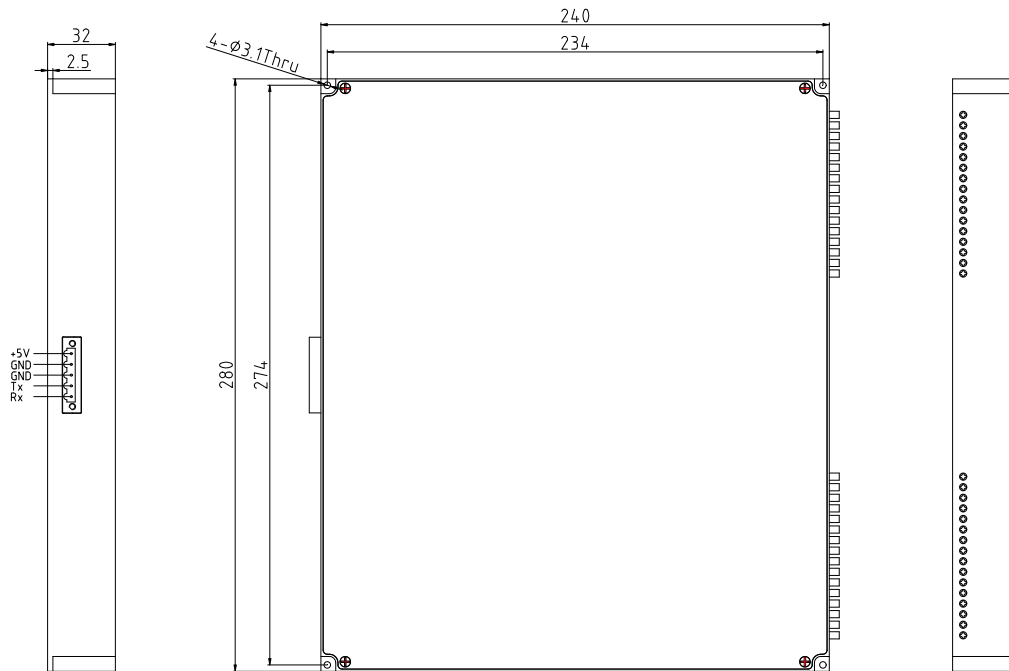


M6:200×180×18mm





M7:280×240×32mm



## Pin Configurations

| Pin# | Signal name | Type   | Description               |
|------|-------------|--------|---------------------------|
| 1    | NC          |        |                           |
| 2    | NC          |        |                           |
| 3    | VCC         | Power  | Power supply, DC 5V, 1.0A |
| 4    | VCC         | Power  | Power supply, DC 5V, 1.0A |
| 5    | GND         | Power  | GND                       |
| 6    | GND         | Power  | GND                       |
| 7    | NC          |        |                           |
| 8    | NC          |        |                           |
| 9    | TXD         | Output | RS232 TX (3.3V TTL)       |
| 10   | RXD         | Input  | RS232 RX (3.3V TTL)       |
| 11   | NC          |        |                           |
| 12   | NC          |        |                           |
| 13   | NC          |        |                           |
| 14   | NC          |        |                           |
| 15   | NC          |        |                           |
| 16   | NC          |        |                           |

Note: The electrical interfaces of M5, M6 and M7 modules should use MOLEX's 87833-1620, and the customer connectors should use MOLEX's 87568-1694.



 Ordering Information: HC-MEMS M×N-A-B-C-D-E-F-G

| A              | B                     | C         | D          | E               | F            | G          |
|----------------|-----------------------|-----------|------------|-----------------|--------------|------------|
| Mode           | Wavelength            | Dimension | Fiber Type | Fiber Dimension | Fiber Length | Connector  |
| SM:Single Mode | 85:850nm              | 1:M5      | 5:50/125   | 025:Φ0.25mm     | 05:0.5m      | 00: None   |
| MM:Multi-Mode  | 13:1310nm             | 2:M6      | 6:62.5/125 | 09:Φ0.9mm       | 10:1.0m      | FP: FC/UPC |
|                | 14:1490nm             | 3: M7     | 9:9/125    | X:other         | 15:1.5m      | FA: FC/APC |
|                | 15:1550nm             | X:other   | X:other    |                 | X:other      | SP: SC/UPC |
|                | 162:1625nm            |           |            |                 |              | SA: SC/APC |
|                | 165:1650nm            |           |            |                 |              | LP: LC/UPC |
|                | 13/15:<br>1310/1550nm |           |            |                 |              | MP:MPO     |
|                | X:other               |           |            |                 |              | X:other    |