



# Micro-Optics

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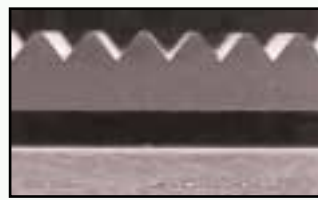
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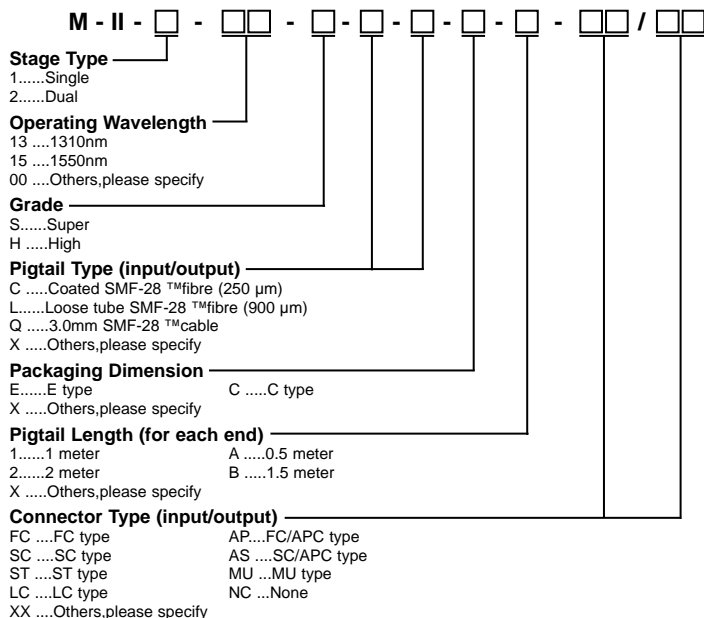


## Polarisation Independent Isolators

### M-II

- Ultra high isolation
  - Minimum polarisation dependent loss (PDL)
  - Polarisation mode dispersion (PMD) free
  - Optical path epoxy free
  - Low insertion loss
  - Environmentally stable
- Applications:**
- Optical amplification
  - Optical transmission
  - CATV
  - High-bit rate optical communications
  - High speed analogue optical systems

#### Ordering Information

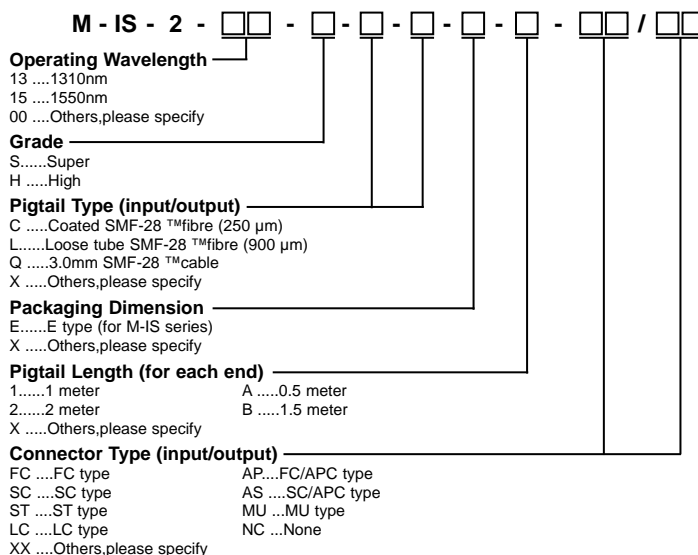


## Supreme Polarisation Independent Isolators

### M-IS

- Ultra high isolation
  - Minimum polarisation dependent loss (PMD)
  - Polarisation mode dispersion (PMD) free
  - Optical path epoxy free
  - Low insertion loss
  - Environmentally stable
- Applications:**
- Optical amplification
  - Optical transmission
  - CATV
  - Fibre laser
  - Testing equipment

#### Ordering Information



#### Specifications Polarisation Independent Isolators

Operating wavelength	nm	1310,1550			
		Single		Dual	
Grade		S	H	S	H
Peak Isolation (typical)	dB	>42	>40	>58	>53
Minimum Isolation (over the centre wavelength ±15nm), (at 25 °C, all SOP)	dB	>31	>29	>45	>43
Typical Insertion Loss, (at 25 °C, all SOP)	dB	0.4	0.5	0.5	0.7
Maximum Insertion Loss, (over the operating range ±20nm), (-20 ~60 °C, all SOP)	dB	0.5	0.7	0.7	0.9
Polarisation dependent Loss, Return Loss, (input/output)	dB	<0.1	<0.15	<0.1	<0.15
Polarisation Mode Dispersion,	ps	<0.25	<0.25	<0.05	<0.07
Operating Temperature,	°C	0 ~+60			
Storage Temperature,	°C	-40 ~+85			
Maximum Output Power,	mW	300			
Package Size,	mm	E-type			
		Ø5.5 x 34 mm for coated fibre (250 µm)			
		Ø5.5 x 39 mm for loose tube cable (900 µm)			
		C-type			
		Ø6.8 x 39 mm for coated fibre (250 µm)			

Note :SOP =States of Polarisation

#### Specifications Supreme Polarisation Independent Isolators

Operating wavelength	nm	1310,1550
Stage		Dual
Grade		High ( H )
Peak Isolation (typical)	dB	>65
Minimum Isolation (over the centre wavelength ±20nm), (at 25 °C, all SOP)	dB	>55
Typical Insertion Loss (over the centre wavelength ±20nm), (at 25 °C, all SOP)	dB	0.9
Maximum Insertion Loss, (over the operating range ±20nm), (-20 ~60 °C, all SOP)	dB	1.3
Polarisation dependent Loss	dB	<0.15
Return Loss (input/output)	dB	>60/55
Polarisation Mode Dispersion	ps	<0.10
Operating Temperature	°C	0 ~+60
Storage Temperature	°C	-45 ~+85
Maximum Output Power	mW	300
Package Size	mm	E-type
		Ø5.5 x 34 mm for coated fibre (250 µm)
		Ø5.5 x 39 mm for loose tube cable (900 µm)

Note :SOP =States of Polarisation



## Polarisation Dependent Mini Free Space Optical Isolators

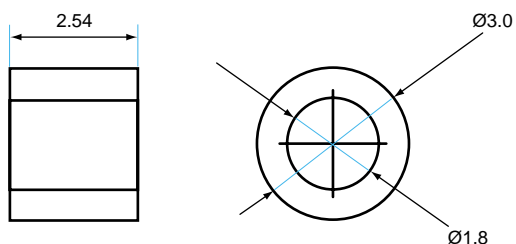
### M-FD

- Ultra high isolation
- High extinction ratio
- Metal bonded
- Low insertion loss
- Large aperture
- Small size

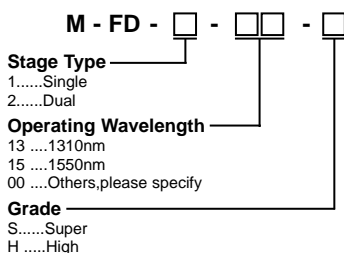
#### Applications:

- Coherent communications
- Optical transmissions
- CATV
- Laser diode packaging
- Optical sensor

Dimensions for both Single and Dual Stage (mm)



#### Ordering Information



Specifications		Polarisation Dependent Mini Free Space Isolator		
Operating wavelength	nm	1310 ,1550		
Stage		Single	Dual	
Grade		S	S	H
Minimum Isolation, (at 25°C)	dB	>30	>45	>40
Typical Insertion Loss, (Over the centre wavelength ±20nm,at 25 °C)	dB	0.1	0.15	0.2
Maximum Insertion Loss, (Over the enter wavelength ±20nm,-20 ~60 °C)	dB	0.2	0.3	0.4
Operating Temperature	°C	0 ~+60		
Aperture Size	mm	1.0		
Storage Temperature	°C	-45 ~+85		
Maximum Output Power	W/cm <sup>2</sup>	50		

Note: SOP =States of Polarisation



## Wideband Circulators

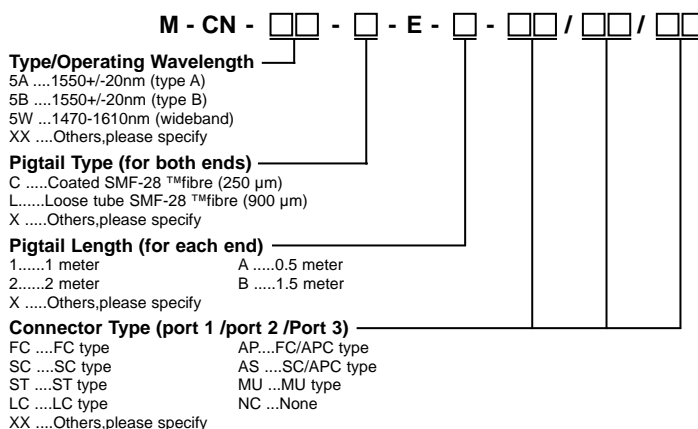
### M-CN

- Extra high isolation
- Low PDL
- PMD free
- Low cross-talk
- Low insertion loss
- Environmentally stable
- Epoxy-free optical path

#### Applications:

- Optical amplifier
- Optical transmitter
- CATV
- Testing instruments
- Bi-directional transmission system
- Dense WDM
- Add/Drop Multiplexer (ADM) Dispersion Compensation

#### Ordering Information



Specifications		Polarisation Independent Circulators		
Type		Type A (5A)	Type B (5B)	Wideband (5W)
Operating wavelength	nm	1550+/-20nm		1470 ~1610 nm
Configurations		Port 1 ⇨ 2 ⇨ 3		
Minimum Isolation (at 25°C,all SOP)	dB	>=40 (1530~1570nm)	>=35 (1530~1570nm)	>=35 (1470~1490 nm) >=40 (1490~1610nm)
Maximum Insertion Loss (at 0 ~60°C,all SOP)	dB	<=0.8 (1530~1570nm)	<=1.0 (1530~1570nm)	<=1.4 (1470~1490 nm) <=1.3 (1490~1500 nm) <=1.1 (1500~1600nm),0.7 (typical) <=1.4 (1600~1610)
Polarisation dependent Loss	dB	<0.1		<0.15
Maximum Optical Power	mW	>500		
Return Loss (input/output)	dB	>=50		
Polarisation Mode Dispersion	ps	<0.1		
Operating Temperature	°C	0 ~+60		
Storage Temperature	°C	-40 ~+85		
Dimension	mm	Ø5.5 x60		Ø5.5 x58

Note :SOP =States of Polarisation



## Fibre Collimators

### M-MN

- Low insertion loss
- Low back reflection
- Small beam divergence
- Miniature in size
- Light weight
- Singlemode or multimode application
- Environmentally stable

- Applications:**
- Optical devices
  - Optical switching
  - Fibre sensing
  - Testing equipment

### Ordering Information

M - MN - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

**Fibre Type**

- A .....Corning standard SMF-28™ singlemode fibre
- C .....Corning 50/125 µm fibre
- D .....Corning 62.5/125 µm fibre
- X .....Others,please specify

**Cable Type**

- C .....Coated fibre (250 µm)
- L.....Loose tube
- Q .....3.0mm cable
- G .....Gold-plated encapsulated tube,w/coated fibre (250 µm)
- X .....Others,please specify

**Grade**

- S.....Super (Type A)      R .....Super (Type B)
- H .....High (Type A)      G.....High (Type B)

**Pigtail Length**

- 05 ....0.5 meter
- 10 ....1.0 meter
- 15 ....1.5 meter
- 20 ....2.0 meter
- XX ....Others,please specify

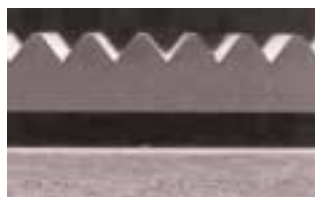
**Operating Wavelength**

- 85 ....850nm (Multimode only)
- 13 ....1310nm
- 15 ....1550nm
- 00 ....Others,please specify

**Connector Type**

- FC ....FC type      AP.....FC/APC type
- SC ....SC type      AS .....SC/APC type
- ST ....ST type      MU ...MU type
- LC ....LC type      NC ...None
- XX ....Others,please specify

Specifications		Fibre Collimators			
		Singlemode		Multimode	
Wavelength	nm	1310 or 1550		850	1310
Grade		Super (S )	High (H )	High (H )	
Typical Insertion Loss	dB	0.15	0.2	0.6	0.8
Maximal Insertion Loss	dB	0.25	0.3	0.8	1.0
Return Loss	dB	<-65	<-55	---	
Beam Divergence	deg.	<0.25		<1	
Acceptance Angle	deg.	<0.15		<1	
Beam offset angle	deg.	<1			
Beam Diameter	mm	<0.5		<1	
Spectral Width	nm	>±30			
Operating Temperature	°C	-20 ~+60			



## V-Grooves

### O-VG

- Silicon Wet Etching
- High Precision
- High Accuracy
- Customised Specifications
- Up to 48 channel
- Environmentally stable

**Applications:**

- Pigtailing of integrated optical devices
- Construction of DWDM and multi-channel devices

### Ordering Information

O - VG - A - [ ] - [ ] - [ ] - [ ]

**Channel Spacing**

- 1.....127 µm
- 2.....250 µm
- X .....Others,please specify

**V-groove Channel Number**

- 01 1 fibre      04 4 fibres
- 08 8 fibres      16 16 fibres
- 32 32 fibres      40 40 fibres
- 48 48 fibres      XX others,please specify

**V-groove thickness**

- 10 1.0 mm
- 04 0.5 mm
- XX others,please specify

Specifications		V-Grooves	
Channel No.		1 / 4 / 8 / 16 / 32 / 40 / 48 or Customer specify	
Fibre to Fibre Spacing	µm	127 ±1 ,250 ±1	
Si Groove Substrate Thickness	mm	0.5 /1.0	
Dimension Length	mm	11	
Dimension Width	mm	N x 0.25 +1.8, for 250 µm pitch N x 0.127 +1.8,for 127 µm pitch	



## Fibre Arrays

### O-FA

- High Precision
- High Accuracy
- Customised Specifications
- Low Insertion Loss
- Low Return Loss
- Low PDL
- Environmentally stable

- Applications:**
- 1 x NPLC Splitter
  - AWG DWDM/CWDM
  - PLC Devices



### Ordering Information

O - FA - A -  -  -  -  -  -  -

**Channel Spacing**

- 1.....127 µm
- 2.....250 µm
- X .....Others,please specify

**Fibre Channel Number**

- 01 ....1 fibre      04 ....4 fibres
- 08 ....8 fibres    16 ....16 fibres
- 32 ....32 fibres    40 ....40 fibres
- 48 ....48 fibres    XX .....Others,please specify

**Pigtail Ribbon Fibre Type**

- A .....Standard Singlemode fibre (250 µm)
- C .....Multi-mode 50/125 µm fibre
- D .....Multi-mode 62.5/125 µm fibre
- X .....Others,please specify

**Endface Polish**

- 0.....0 deg.Polish
- 8.....8 deg.Polish
- X .....Others,please specify

**Pigtail Length**

- 1.....1 meter A 0.5 meter
- 2.....2 meter B 1.5 meter
- X .....Others,please specify

**Connector Type**

- FC ....FC type      AP...FC/APC type
- SC ....SC type      AS ....SC/APC type
- MT ...MT type      LC...LC type
- NC....None          XX .....Others,please specify

### Specifications

### Fibre Array

Channel No.		1 / 4 / 8 / 16 / 32 / 40 or Customer specify
Fibre to Fibre Spacing	µm	250 ±1, 127 ±1
Pyrex Lid Substrate Thickness	mm	1.0
Si Groove Substrate Thickness	mm	0.5 or Customer specify
Pyrex Substrate Thickness	mm	0.5 or Customer specify
Adhesive Thickness	µm	20
Fibre Position Offset	mm	≤±1
Dimension Thickness	mm	2
Dimension Length	mm	11
Dimension Width	mm	N x 0.25 +1.8, for 250 µm pitch N x 0.127 +1.8, for 127 µm pitch
Polish Angle	deg	0 °/8 °(±0.5 °)
Optical Polishing Flatness		≤λ / 4
Fibre Type		9 / 125 Single mode or Customer specify
Storage Temperature	°C	-40 ~85
Operating Temperature	°C	-40 ~85