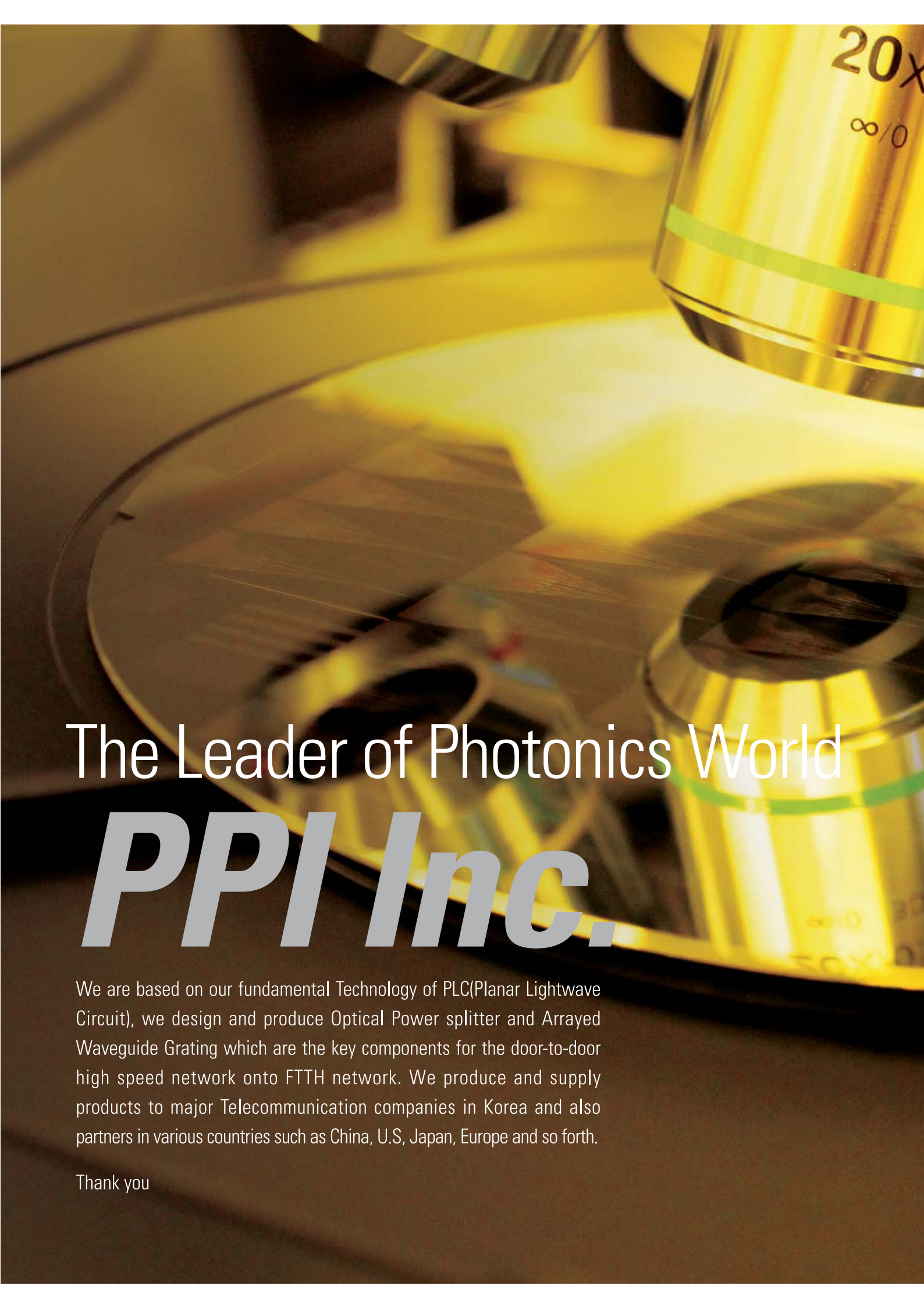




# *PPI*

[www.ppitek.com](http://www.ppitek.com)

**PPI**  
PHOTONICS PLANAR INTEGRATION

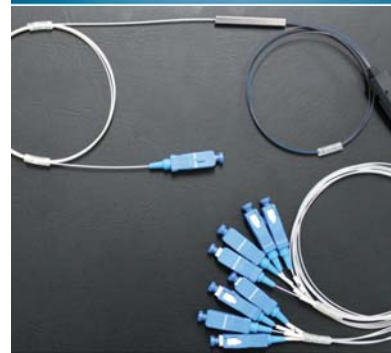
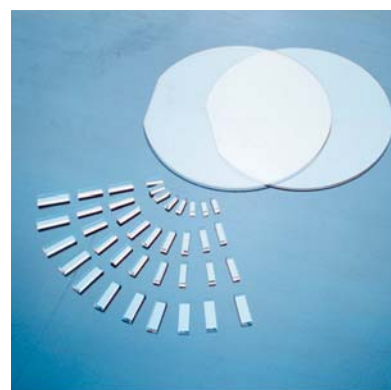


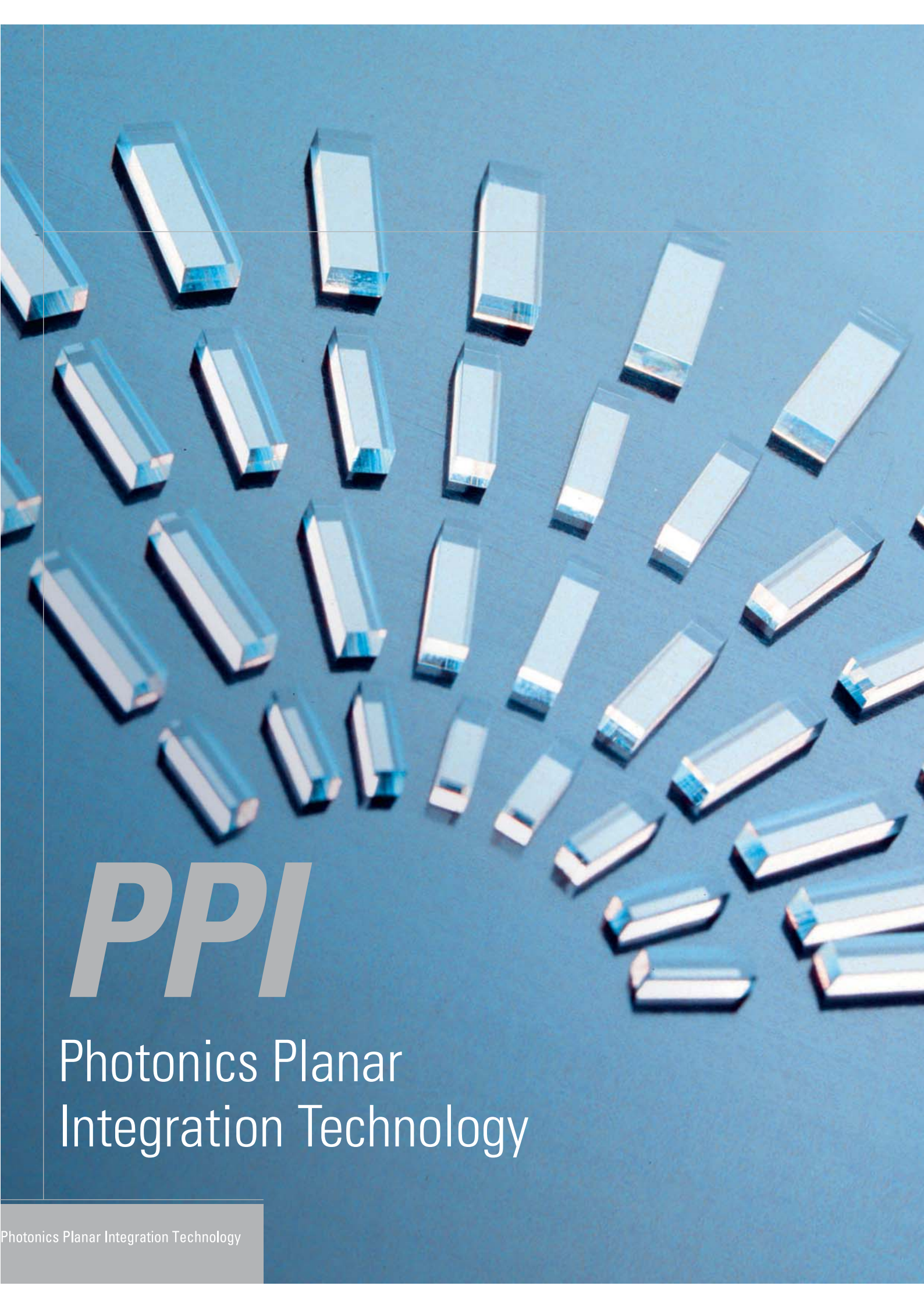
# The Leader of Photonics World

# *PPI Inc.*

We are based on our fundamental Technology of PLC(Planar Lightwave Circuit), we design and produce Optical Power splitter and Arrayed Waveguide Grating which are the key components for the door-to-door high speed network onto FTTH network. We produce and supply products to major Telecommunication companies in Korea and also partners in various countries such as China, U.S, Japan, Europe and so forth.

Thank you





*PPI*

Photonics Planar  
Integration Technology

# The Leader of Photonics World

PPI Inc. was established at Gwangju city of Korea in 1999. It has two factories including headquarters and laboratory and also agents in specific market areas.

PPI Inc. has superior and strong manpower working at all parts of Sales, R&D, Production, Inspection, Quality Control etc.

PPI Inc. is no.1 enterprise based on advanced technology in Korea and located in Gwangju Optical Electronics Complex where is a central place of the Korean Optical electronics Industry.

PPI Inc. has its own technology of PLC(Planar Lightwave Circuit) and produces Optical Power splitter Arrayed Waveguide Grating that those are key components of FTTH network construction which needs for a high speed transmission network to each subscribers.

PPI Inc. has various customers throughout this world in U.S, Japan, China, India, Europe markets etc. and KT, SKB, LGU + of Domestic Telecommunication companies.

PPI Inc. produces PLC Splitter Chip (Quartz Wafer & Single Chip) and PLC Splitter Module with its own technology and we guarantee the best quality in this industry.

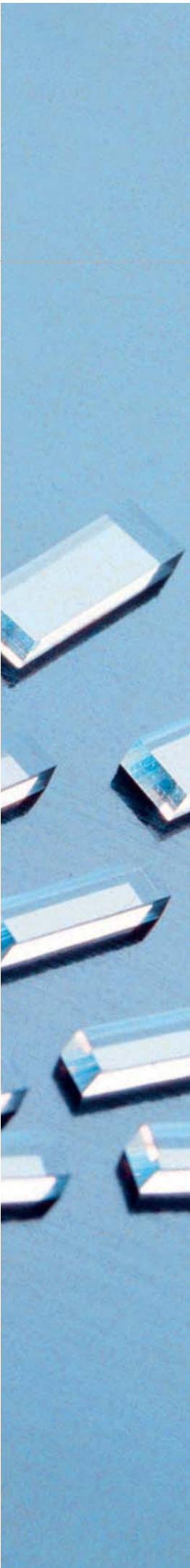
PPI Inc. awarded a Superior quality certificate(NEP:PLC Power Splitter) by the Ministry of Commerce Industry and Energy.

And also, the New Technology certification(NET:AWG) in 2003, Received by Minister of Commerce Industry and Energy in 2005, Received the Prime Minister Award in 2006, Designated as New enterprise with PLC Splitter products in 2006, TL 9000 Certification in 2011 and designated as the 1st Cheomdan(Cutting edge) technology company by the Ministry of Knowledge Economy

PPI Inc. makes unlimited development of Photonics Industry in this field with the highest qualified products and advanced technology power.

PPI Inc. looks for business partners who want to establish win-win business partnership in the future.

Thank you



# PLC Splitter Chip

## PPI PLC Splitter Chip

PLC Splitter Chip is a main part of PON system to cover many subscribers for receiving light signals at the same time by distributing delivered light signals into number. In addition to Splitter Chip can be operated in reverse direction with combination of one or two optical fiber(s).

## Applications

Applications are FTTH, FTTB, FTTC, CATV Networks System, PON(Passive Optical Network)System, Fiber Optic Equipment and Systems, etc.

## Feature

Low Loss and PDL, Good Uniformity, Small size.

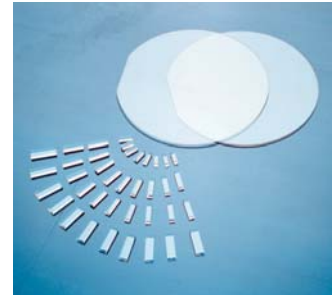
## Material

Quartz.

## Ordering Information

1FXXL1 1HXXL1 2 FXXL1 2HXXL1	SW SS SC	1 2 3 ... X	0 1 2 ... X	X
<b>Mask Type</b>  1/2 : Input Channel Qty F/H : Channel Spacing XX : Output Channel Qty X1 : Pattern Type(design)	<b>Product Type</b>  SW : Splitter Wafer SS : Splitter Strip SC : Splitter Chip	<b>Channel No.</b>  1 : 4Channel 2 : 8Channel 3 : 16Channel 4 : 32Channel 5 : 64Channel 6 : 3Channel 7 : 6Channel 8 : 12Channel 9 : 2Channel 10 : 128Channel	<b>Product No.2.</b>  0 : Bare 1 : With Lid Glass 2 : Polishing	<b>Identification No.</b>  0 : Bare 1 : 82° Angle based on Substrate(08) (Top/Lid short) 2 : 98° Angle based on Substrate(R8) (Top/Lid long) 3 : Flat

\* All products available Customized Specifications.



# PLC Splitter Chip

## 1 x N type

Type	Wavelength Range (nm)	IL max (dB)	IL Uni (dB)	PDL (dB)	Dimensions (mm)			Polishing Angle	Output Port Pitch (um)
					Width	Height	Length		
1x2	1260 - 1650	3.5	0.3	0.12	2.3	2.575	9.6	08	250
								R8	
1x3		5.8	0.5	0.12	2.3	2.575	9.6	08	250
								R8	
1x4		6.7	0.5	0.12	2.3	2.575	9.6	08	250
								R8	
1x6		8.8	0.6	0.12	2.5	2.575	13.2	08	250
								R8	
1x8(f)		9.8	0.6	0.15	2.5	2.575	11.7	08	250
								R8	
1x8(h)		9.8	0.6	0.15	2.3	2.575	9.9	08	127
								R8	
1x12		11.8	0.8	0.15	2.3	2.575	14.7	08	127
								R8	
1x16		12.9	0.8	0.15	2.65	2.575	13.3	08	127
								R8	
1x32	16.2	1.0	0.2	4.7	2.575	16.9	08	127	
							R8		
1x64	19.6	1.2	0.2	8.85	2.575	22.0	08	127	
							R8		
1x128	22.5	1.5	0.3	17.0	2.575	27.6	08	127	
							R8		

\* All products available at Customized Specification.

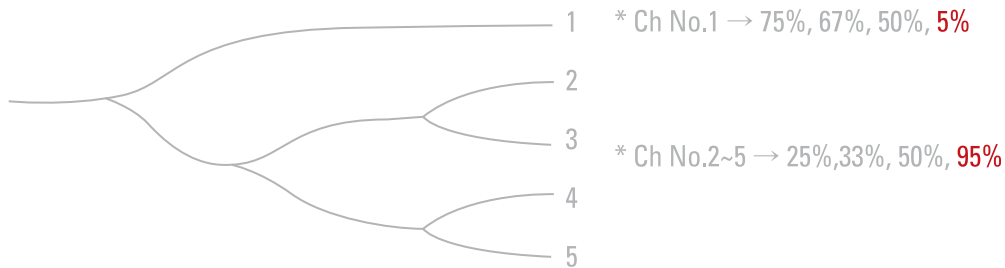
# PLC Splitter Chip

## 2 x N type

Type	Wavelength Range (nm)	IL max (dB)	IL Uni (dB)	PDL (dB)	Dimensions (mm)			Angle	OutputPort Pitch (um)
					Width	Height	Length		
2x2	1260 - 1650	3.7	0.8	0.2	2.3	2.575	10.9	08 R8	250
2x4		7.0	1.0	0.2	2.3	2.575	14.0	08 R8	250
2x8		10.2	1.0	0.2	2.3	2.575	15.0	08 R8	127
2x16		13.5	1.2	0.25	2.7	2.575	18.3	08 R8	127
2x32		16.7	1.5	0.25	4.7	2.575	21.8	08 R8	127
2x64		20.0	1.8	0.3	8.85	2.575	26.8	08 R8	127
2x128		22.8	2.0	0.3	17.0	2.575	32.8	08	127
								R8	

## Special type · 1x5ch

Type	Wavelength Range (nm)	IL max(dB) (Channel1)	IL max(dB) (Channel2-5)	IL Uni(dB) (Channel2-5)	PDL(dB)	Return Loss(dB)	Directivity (dB)	Dimensions (mm)		
								Width	Height	Length
1x5 (25%:75%)	1260 - 1650	1.6	14.5	0.6	0.2	55	55	2.3	2.575	13.2
1x5 (33%:67%)		2.2	12.8	0.6	0.2					
1x5 (50%:50%)		3.6	10.2	0.6	0.2					
1x5 (95%:5%)		16.0	7.2	0.6	0.2					



\* All products available at Customized Specification.



# PLC Splitter Module

## PPI PLC Splitter Module

The Optical Power Splitter, one of the main products of our company, is a component used in FTTH to separately transmit the signals that are sent from the telephone office or the cable stations through a single optical cable to multiple membership locations (apartments and houses), thereby constituting a key component of the optical membership network. The capability of PPI to manufacture such products, ranging from the chip to the module in production scale quantities is recognized in Korea and abroad as being on the top rank worldwide.

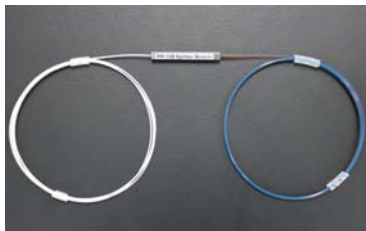
## Applications

- CATV, FTTH, ROADM, LAN, WAN systems.
- Signal, Network monitoring, Live line monitoring system.

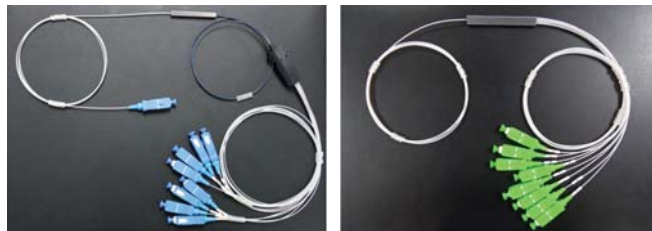
## Feature

- Telecordia GR-1209 & GR-1221 qualified
- Compact Package
- Low Insertion Loss, PDL
- High Uniformity

Splitter Module (Ribbon type)



Splitter Module (Connector type)



Fan-out type

900um Blockless

## Ordering information

1	X	XX	XX	X	XX	X
<b>Input Channel</b>	<b>Input Fiber Type</b>	<b>Input Fiber Length</b>	<b>Output Channel</b>	<b>Output Fiber Length</b>	<b>Output Fiber Length</b>	<b>Connector Type</b>
1 : 1Channel 2 : 2Channel	B : Bare Fiber T : 900 $\mu$ m	XX : Customized ex)12:1.2m	XX : Customized ex)02-64ch	R : Ribbon Fiber L : 900 $\mu$ m Loose Tube	XX : Customized ex)12:1.2m	0 : None 1 : SC/APC 2 : SC/PC 3 : FC/APC 4 : FC/PC 5 : Customized

\* All products available at Customized Specification.

# PLC Splitter Module

## 1xN type

Type	Wavelength Range (nm)	IL max (dB)	IL Uni (dB)	PDL (dB)	Dimensions (mm)		
					Width	Height	Length
1x2	1260 - 1650	3.8	0.6	0.2	4	4	40
1x2BL					7	4	55
1x3		6.6	0.6	0.2	4	4	40
1x4		7.4	0.6	0.2	4	4	40
1x4BL					7	4	55
1x6		9.6	0.8	0.2	4	4	40
1x8		10.5	0.8	0.2	4	4	40
1x8BL					7	4	55
1x9		11.4	1.0	0.3	7	4	55
1x12		12.5	1.0	0.3	7	4	55
1x16		13.6	1.0	0.3	7	4	55
1x16BL					12	4	60
1x24		16.2	1.3	0.3	7	4	55
1x32		17.0	1.3	0.3	7	4	55
1x64		20.5	2.0	0.3	12	4	60

ITEM	Unit	Specification
Directivity	dB	≥55
Return Loss	dB	≥55
Fiber Type	-	SMF-28e(or equivalent)
Storage Temperature	°C	-40~+85
Operating Temperature	°C	-40~+85

## 2xN type

Type	Wavelength Range (nm)	IL max (dB)	IL Uni (dB)	PDL (dB)	Dimensions (mm)		
					Width	Height	Length
2x2	1260 - 1650	4.4	0.8	0.3	7	4	55
2x4		7.6	1.0	0.3	7	4	55
2x8		11.0	1.0	0.3	7	4	55
2x16		14.3	1.5	0.3	7	4	60
2x32		17.5	1.8	0.3	7	4	60
2x64		21.2	3.0	0.4	12	4	65

ITEM	Unit	Specification
Directivity	dB	≥55
Return Loss	dB	≥55
Fiber Type	-	SMF-28e(or equivalent)
Storage Temperature	°C	-40~+85
Operating Temperature	°C	-40~+85

\* All products available at Customized Specification.

# PLC Splitter Module

## Special type : Nx(1x2)ch. Array Tap Splitter ( $1 \leq N \leq 8$ )

Type	Ratio (%)	Wavelength Range (nm)	Mainport IL max. (dB)	Tap port IL max. (dB)	IL Uni. (dB)	PDL (dB)
1x2	50:50	1260 - 1650	<3.8	<3.8	<1.0	<0.2
	70:30		<3.0	5~7	<1.0	<0.2
	80:20		<2.6	7~9	<1.0	<0.2
	90:10		<1.8	9~12	<1.0	<0.2
	95:05		<1.2	12~15	<1.0	<0.2
	98:02		<1.0	15~18	<1.0	<0.2

Type	Wavelength Range (nm)	IL max. (dB)	WDL (dB)	IL Uni. (dB)	PDL (dB)	Dimensions (mm)		
						Width	Height	Length
1x2	1260 - 1650	≤3.8	<1.0	<0.6	≤0.2	4	4	40
4x(1x2)		≤4.1	<1.0	<0.8	≤0.3	7	4	55
8x(1x2)		≤4.3	<1.0	<1.0	≤0.3	7	4	55
16x(1x2)		≤4.5	<1.0	<1.0	≤0.3	7	4	55

ITEM	Unit	Specification
Directivity	dB	≥55
Return Loss	dB	≥55
Fiber Type	-	SMF-28e(or equivalent)
Storage Temperature	°C	-40~+85
Operating Temperature	°C	-40~+85

# Fiber Distribution Frame (FDF)

Fiber Distribution Frame (FDF) type: Rack type, Round Rack type

## Feature



Model	Dimensions (W x L x H)(mm)	Specification
FDF-1U (12C, 24C)	480x300x44.4	Rack Mount
FDF-2U (48C)	480x300x88.8	Rack Mount
FDF-3U (72C)	480x300x133.2	Rack Mount
FDF-1U (24C)	480x310x44.4	Round Rack Mount
FDF-2U (48C)	480x310x88.5	Round Rack Mount High Power Splitter Module
FDF A-1 (24C)	480x310x44.4	Swing Door
FDF A-2 (12C, 24C)	480x310x44.4	Drawer Door

\* All products available at Customized Specification.

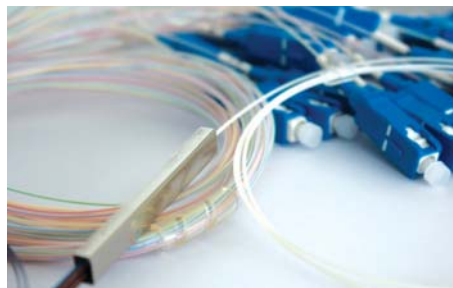
# High Power Splitter Module

## Feature

- Compact Package
- Low Insertion loss, PDL
- High Uniformity
- Can be used with High Input power (~1W).

## Applications

- FTTH, FTTB, FTTC
- PON (Passive Optical Network)System.



## Specification

Type	Wavelength Range (nm)	IL max (dB)	IL Uni (dB)	PDL (dB)	Dimensions (mm)		
					Width	Height	Length
1x2	1260 - 1650	≤4.3	≤0.6	≤0.2	4	4	40
1x2BL					7	4	55
1x3		≤6.7	≤0.6	≤0.2	4	4	40
1x4		≤8.0	≤0.6	≤0.2	4	4	40
1x4BL					7	4	55
1x6		≤9.8	≤0.8	≤0.2	4	4	40
1x8		≤11.0	≤0.8	≤0.2	4	4	40
1x8BL					7	4	55
1x9		≤11.9	≤1.0	≤0.3	7	4	55
1x12		≤12.8	≤1.0	≤0.3	7	4	55
1x16		≤14.1	≤1.0	≤0.3	7	4	55
1x16BL					12	4	60
1x24		≤16.5	≤1.3	≤0.3	7	4	55
1x32		≤17.5	≤1.3	≤0.3	7	4	55
1x64		≤20.9	≤2.0	≤0.3	15	4	60
2x2		≤4.7	≤1.2	≤0.3	7	4	55
2x4		≤8.1	≤1.4	≤0.3	7	4	55
2x8		≤11.5	≤1.5	≤0.3	7	4	55
2x16		≤15.0	≤2.0	≤0.3	7	4	60
2x16BL					12	4	60
2x32		≤18.0	≤2.5	≤0.3	7	4	60
2x64		≤21.5	≤3.0	≤0.4	15	4	70

ITEM	Unit	Specification
Directivity	dB	≥55
Return Loss	dB	≥55
Fiber Type	-	SMF-28e(or equivalent)
Storage Temperature	°C	-40~+85
Operating Temperature	°C	-40~+85
Max Input Power	W	1
	dBm	30

\* All products available at Customized Specification.

# 1XN PM Splitters

## Polarization Maintaining Planar Optical Splitter Module

### Feature

- Compact package
- High Channel Counts and Extinction Ratio
- Wide Band and Operating Temperature
- Splitting or Combining Output Power of Transmitters Using Polarization Maintaining Fiber



### Specification

Parameter	Unit	Specification		
Ports	-	1x2	1x4	1x8
Operational Wavelength	nm	1310 or 1550		
Max. Insertion Loss (IL)	dB	4	8	11
Polarization Extinction Ratio	dB	≥20		
Return Loss / Directivity	dB	≥55		
Operation Temperature	°C	-10 ~ 70		
Storage Temperature	°C	-40 ~ 85		
Fiber Type	-	PM Panda Fiber		
Axis	-	Slow or Fast		

\* Insertion loss & Return loss don't include connectors

Parameter	Unit	Specification						
Ports	-	2x2	1x3					
Operational Wavelength	nm	1310 or 1550						
Power Ratio. 1	dB	50:50	40:20:40		30:40:30		25:50:25	
Power Ratio. 2	dB	50	40	20	30	40	25	50
Max. Insertion Loss (IL)	dB	≤4.0	≤4.9	≤7.9	≤6.4	≤4.9	≤7.3	≤3.9
Polarization Extinction Ratio	°C	≥20						
Return Loss / Directivity	°C	≥55						
Operation Temperature	-	-10 ~ 70						
Storage Temperature	-	-40 ~ 85						
Fiber Type	-	PM Panda Fiber						
Axis	-	Slow or Fast						

\* Insertion loss & Return loss don't include connectors

# Optical Mode Conversion Adapter (MCA)

## PPI Optical Mode Conversion Adapter (MCA)

The Mode Converter is a device of transferring the light (incident from single mode optical fiber) to multi mode optical fiber or transferring the light (incident from multi mode optical fiber) to single mode optical fiber. And also, it is mainly used to the area installed with multi mode optical fiber at existing apartment.

## Feature

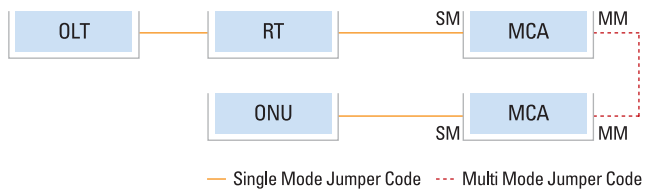
- Easy to use and carry
- Easy to connect with PLC Splitter
- MCA converts Multi mode into Single mode
- Bidirectional Communication (Multi mode ↔ Single mode)



## Specification

	Multi Mode → Single Mode	Single Mode → Multi Mode
IL	<2.0dB	<0.5dB
PDL	<1.0dB	<0.2dB
RL	>40dB	

## Block Diagram



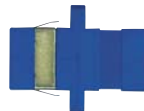
## Feature



Multi mode jumper code



MCA



SC/PC adaptor



Single mode jumper code

1. Connect SC/PC adaptor with single mode's SC/PC connector.

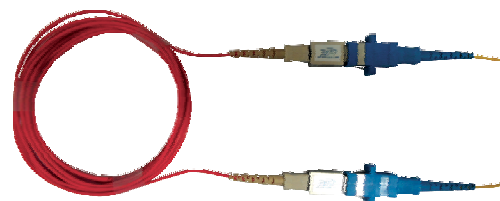


2. Connect MCA's single mode part with SC/PC adaptor.



3. Connect MCA's multi mode part with multi mode jumper code.

4. Completion



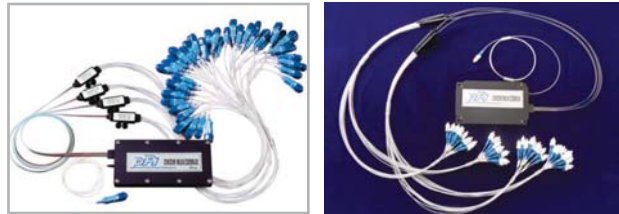
# Wavelength MUX/DEMUX (AWG)

## PPI Wavelength MUX/DEMUX (AWG)

The Arrayed Waveguide Grating's another name is AWG. Used in WDM-PON. This is one-to-one method of manual optical transmission product by high-speed transmission. The method is transmitting mass storage signal of image, telephone and data etc. used just a one line of optical by divided 16, 32 members at same time. And also, it used in the China and India where don't have enough optical communication facilities. And also, where requires long distance transmission etc.

## Feature

- **Athermal Type**
  - Temperature Controller
  - Electrical Interface Free
  - Customized design available
- **Thermal Type**
  - Low Insertion loss & PDL



### 1. Athermal Type

100GHz 1xN Gaussian/Flat-top( $8 \leq N \leq 48$ )  
200GHz 1xN Gaussian/Flat-top( $8 \leq N \leq 24$ )

### 2. Thermal Type

100GHz 1xN Gaussian/Flat-top( $8 \leq N \leq 48$ )  
200GHz 1xN Gaussian/Flat-top( $8 \leq N \leq 24$ )

## AWG type : 100GHz 1xN AWG( $8 \leq N \leq 48$ ), 200GHz 1xN AWG( $8 < N < 24$ )

Parameter	Unit	100GHz Spacing		200GHz Spacing	
		Gaussian	Flat-Top	Gaussian	Flat-Top
Wavelength Accuracy	nm	$\pm 0.05$	$\pm 0.05$	$\pm 0.07$	$\pm 0.07$
1dB Bandwidth	nm	$>0.20$	$>0.4$	$>0.4$	$>0.7$
3dB Bandwidth	nm	$>0.40$	$>0.6$	$>0.7$	$>1.0$
Optical Insertion Loss	dB	4.5	5.5	4.5	5.5
Loss Uniformity	dB	1.0	1.0	0.8	0.8
Adjacent Channel Crosstalk	dB	27	27	28	28
Non-Adjacent Channel Crosstalk	dB	30	30	30	30
Optical Return Loss	dB	$>40$	$>40$	$>40$	$>40$
PDL	dB	$<0.5$	$<0.5$	$<0.5$	$<0.5$
Dimension (LxWx H)	mm	120x70x12.3 / 85x58x11.3			
Operating Temperature	$^{\circ}\text{C}$	-20 ~ 70			

# Wavelength MUX/DEMUX (AWG 50GHz)

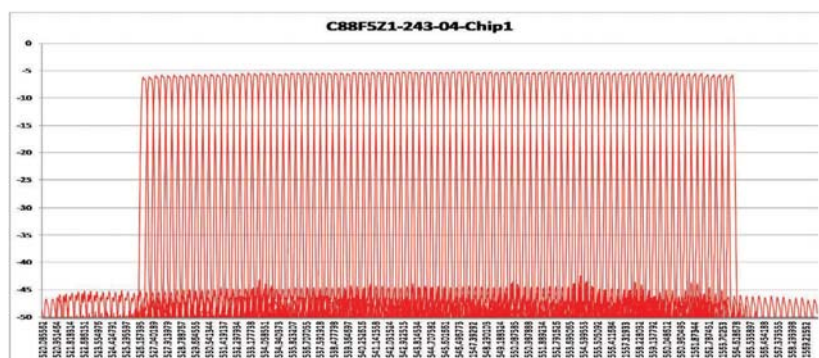
## 50GHz - AWG type : $1 \times 40/80 \leq N \leq 96$ Multi/Demultiplexer

### Feature

- Compact package
- DWDM systems
- Low cost, Mass production
- Dual band for the upstream and downstream using a single chip
- Thermal, Athermal type available

### Specification

Parameter	Unit	50GHz Blue / Red band AWG		50GHz AWG	
		Flat-Top	Gaussian	Flat-Top	Gaussian
Number of Channels	-	16 / 32 / 40 / 48		80 / 88 / 96	
Channel Spacing	GHz	50		50	
Channel Frequencies	Thz	BLUE band = 1528.773 ~ 1547.316 RED band = 1545.720 ~ 1564.679		C band = 1526.827 ~ 1564.679	
Wavelength Accuracy	nm	± 0.05	± 0.05	± 0.05	± 0.05
1dB bandwidth	nm	>0.18	>0.12	>0.18	>0.12
3dB bandwidth	nm	>0.28	>0.20	>0.28	>0.20
Insertion Loss(Passband)	dB	<5.8	<4.8	<6.7	<5.7
Adjacent Channel Crosstalk	dB	>27		>27	
Non-Adjacent Channel Crosstalk	dB	>30		>30	
Total Crosstalk	dB	>24		>24	
Insertion Loss Uniformity	dB	<1.2		<1.5	
Polarization Dependent Loss	dB	<0.5	<0.5	<0.5	<0.5
Return Loss	dB	>40			
Chromatic Dispersion	ps/nm	± 10			
Operating Temperature	°C	-20 ~ 70			
Dimension(L x W x H)	mm	120 x 70 x 12.3		130 x 90 x 11.3	



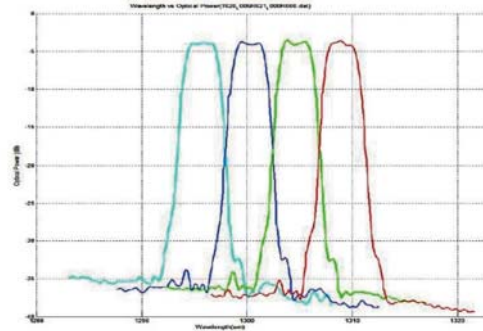


# 4ch PLC AWG chip for TOSA / ROSA

## 4ch PLC AWG MUX & DEMUX chip for TOSA / ROSA

### Feature

- 4 x 10 Gbps CWDM TOSA & ROSA for QSFP+
- 4 x 25 Gbps LAN-WDM TOSA & ROSA for QSFP+
- Very small size & Package cost reduction
- Custom design & manufacturing available
- Low Insertion loss & Good Uniformity
- High Reliability



### Specification

Parameter	Unit	4ch CWDM for 40Gbps			4ch LAN-WDM for 100Gbps			
		Min	Typical	Max	Min	Typical	Max	
Channel Count	-	4			4			
Channel Spacing	-	ITU-T 694.2 (CWDM / 20nm)			800GHz (4.5nm)			
CWL Ch0	nm	1270	1271	1272	1295.36	1295.56	1295.76	
CWL Ch1	nm	1290	1291	1292	1299.85	1300.05	1300.25	
CWL Ch2	nm	1310	1311	1312	1304.38	1304.58	1304.78	
CWL Ch3	nm	1330	1331	1332	1308.94	1309.14	1309.34	
CWL Accuracy @ fixed Temperature	nm	-1.5	CWL	+1.5	-0.2	CWL	+0.2	
CWL Shift @ Temperature Change	nm/°C	+0.011			+0.011			
1dB Bandwidth	MUX	nm	8	9	-	2.2	2.5	-
	DEMUX	nm	12	13	-	2.7	3.0	-
3dB Bandwidth	MUX	nm	-	13	-	-	3.0	-
	DEMUX	nm	-	14	-	-	3.3	-
Insertion Loss Without Fiber Coupling	dB	-	2	3	-	2	3	
Isolation	MUX	dB	N/A	-	-	N/A	-	
	DEMUX	dB	25	-	-	25	-	-
PDL	dB	-	-	0.5	-	-	0.5	
Return Loss	dB	40	-	-	40	-	-	
Chip Size	mm	4 x 10 or custom design			4 x 10 or custom design			
Operation Temperature	°C	-10	-	70	-10	-	70	
Storage Temperature	°C	-40	-	85	-40	-	85	

# Wavelength MUX/DEMUX (AWG)

## AWG Chip type : 100GHz 1x48channel AWG Chip

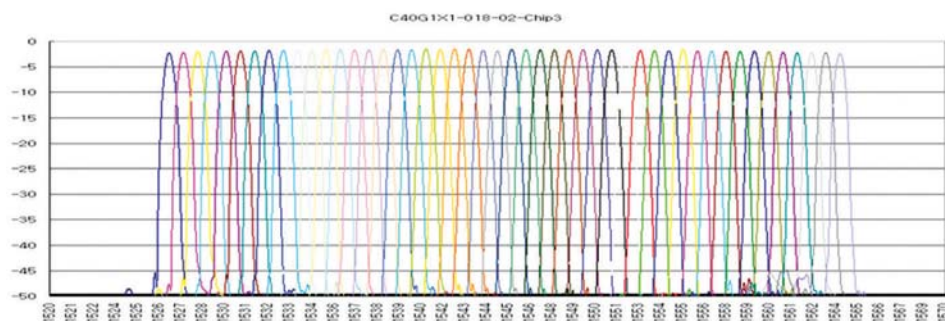
### Feature

- Low Insertion Loss & Low PDL
- High Uniformity
- Compact Size



### Specification

Parameter	Unit	C-band 100GHz Spacing	
		Gaussian	Flat-Top
Wavelength Accuracy	nm	±0.04	±0.04
Full-1dB Bandwidth	nm	>0.2	>0.4
Full-3dB Bandwidth	nm	>0.4	>0.6
Optical Insertion Loss	dB	3.5	4.5
Loss Uniformity	dB	1.2	1.2
Adjacent Channel Crosstalk	dB	27.0	27.0
Non-Adjacent Channel Crosstalk	dB	30.0	30.0
Optical Return Loss	dB	>40	>40
PDL	dB	<0.5	<0.5
Dimension	mm	<37.8 x <32.5 (Square, Curve type)	
Operating Temperature	°C	-40 ~ 85	



# Optical CWDM Mux/Demux(TFF Type)

## Optical Mux. Type : DU Mux, RU Mux

### Feature

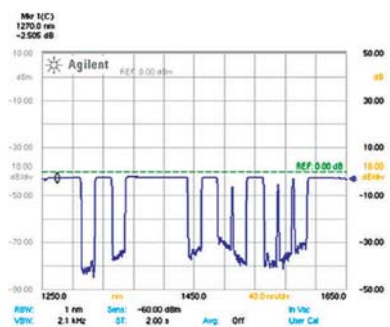
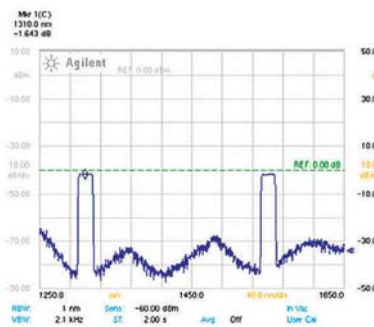
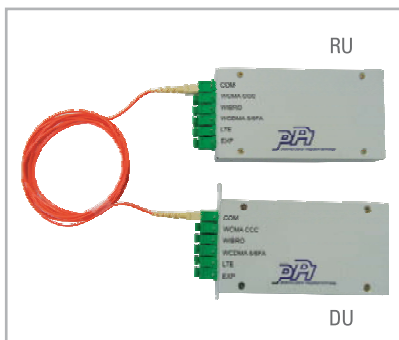
- Low Insertion Loss & Low PDL
- Full CWDM Range
- WCDMA, Wibro, LTE systems



### Specification

Parameter	Unit	C-band 100GHz Spacing	
		Gaussian	Flat-Top
Insertion Loss	dB	≤2.0	≤2.0
Isolation	dB	≥25	≥25
Return Loss	dB	<50	<50
Directivity	dB	<55	<55
PDL	dB	>0.3	>0.3
Connector Type	-	Selectable	
Passband	nm	±7.5	±7.5
Fiber Type	-	Single Mode Fiber	
Operating Wavelength	nm	1290~1620	
Dimension	mm	150x80x20	
Operating Temperature	°C	-30 ~ 85	
Storage Temperature	°C	-40 ~ 85	

### Link Setup/Spectrum



# Variable Optical Attenuator

## Hybrid Silica PLC type - 8, 10, 12 port VOA module

### Feature

- Low Insertion Loss / PDL
- Low driving power consumption
- Based on Planar Light-wave Circuit
- Compact Packaging size
- Simple Electronic Design
- Polymer & Silica Hybrid Waveguide Design
- High Reliability
- Wide dynamic range
- Custom design available

### Applications

- ROADM (Optical Add/Drop Multiplexer)
- Mux / Demux Module
- Optical channel on/off switching
- Power equalization in optical network system



### Specification

Parameter	Unit	8 / 10 / 12 port		
		Min.	Typical	Max.
Operating Wavelength	nm	C&L band, Specific WL		
Insertion Loss	dB	-	1.5	2.0
Attenuation Range	dB	-	25	-
PDL(0dB Attenuation)	dB	-	0.1	0.2
PDL(20dB Attenuation)	dB	-	-	0.5
Optical Return Loss	dB	50	-	-
Optical Crosstalk	dB	55	-	-
Driving Voltage	V	-	-	5.0
Power Consumption (20dB Attenuation)	mW / ch	-	-	80
Response Time	ms	-	15	-
Operating Temperature	°C	-5	-	70

# Optical Switch

## Hybrid Silica PLC type - 1x2, 2x2 Switch module & Arrayed module

### Feature

- Low Insertion Loss / PDL
- Low driving power consumption
- Based on Planar Light-wave Circuit
- Compact Packaging size
- Simple Electronic Design
- High Reliability
- High Crosstalk
- Custom design available

### Applications

- Redundancy switching
- Optical Cross Connector (OXC)
- Optical monitoring systems
- Optical Add-Drop multiplexer



### Specification

Parameter	Unit	1x2	2x2
Operating Wavelength	nm	C&L band, Specific WL	
Insertion Loss	dB	<1.5	<2.0
Extinction Ratio	dB	>35	>35
Polarization Dependent Loss	dB	<0.2	<0.2
Driving Voltage	V	<5.0	<5.0
Power Consumption	mW	<150	<250
Response Time	ms	<15	<15
Operating Temperature	°C	-5 ~ 70	
Optical Return Loss	dB	>55	

# Optical CWDM Power Meter

## Model : PPI - OCPM - 18

### Feature

- PLC Device
- Multi-wavelength & Power measurement for LTE, CWDM, PON system
- Automatic CWDM-18channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- CWDM Scan with Color Graph
- Save and Recall about 1,000 data
- Software Provided for the self - management data
- Auto Power-Off



### Specification

Parameter	Unit	OCPM-18(Standard)	OCPM-18(Wideband)
Channel Bandwidth	nm	8	12
Measurement Accuracy	dB	$\pm 0.5@-40\text{dBm}$	$\pm 1.0@-40\text{dBm}$
Number of Channels	-	18	
Operation Wavelength	nm	1270 ~ 1610	
Channel Spacing	nm	20	
Measurement Speed	Sec.	< 0.8	
Measurement Range	dBm	+10 ~ -40	
Display Resolution	dB	0.01	
Optical Connector	-	SC/PC (FC, ST, SC, LC adapter)	
Battery	-	Li-Polymer, 1800mAh/3.7V	
Battery Life	Min.	420 (Fully charged)	
Display	-	2.8" TFT-LCD, 16bit Color, 240x320	
Operating Temperature	°C	-20 ~ +55	
Weight	g	330	
Dimension	mm	154.9 x 77.9 x 33.5	

# Optical DWDM Power Meter

**Model : PPI - ODPM - 48**

## Feature

- PLC Device
- DWDM (48channel) Measurement Solution
- Automatic DWDM-48channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- DWDM Scan with Color Graph
- Save and Recall about 300 data
- Software Provided for the self - management data
- Auto Power-Off



## Specification

Parameter	Unit	Typical
Number of Channels	-	48
Channel Frequency	THz	196.4 ~ 191.7
	nm	1526.44 ~ 1563.86
Channel Spacing	GHz	100
Measurement Speed	Sec.	3 (all 48ch.)
Measurement Range	dBm	+10 ~ -40
Measurement Accuracy	dB	±1.0@-30dBm
Display Resolution	dB	0.01
Optical Connector	-	SC/PC (FC, ST, SC, LC adapter)
Battery	-	Li-Polymer, 1800mAh/3.7V
Battery Life	Min.	420 (Fully charged)
Display	-	2.8" TFT-LCD, 16bit Color, 240x320
Operating Temperature	°C	-20 ~ +55
Weight	g	330
Dimension	mm	154.9 x 77.9 x 33.5

# Optical DWDM Power Meter

**Model : PPI - ODPM - 96**

## Feature

- PLC Device
- DWDM (96channel) Measurement Solution
- Automatic DWDM- 96channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- DWDM Scan with Color Graph
- Save and Recall about 300 data
- Software Provided for the self - management data
- Auto Power-Off



## Specification

Parameter	Unit	Typical
Number of Channels	-	96
Channel Frequency	THz	196.45 ~ 191.70
	nm	1526.05 ~ 1563.86
Channel Spacing	GHz	50, 100
Measurement Speed	Sec.	4(all 96ch.)
Measurement Range	dBm	+10 ~ -40
Measurement Accuracy	dB	±1.0@-40dBm
Display Resolution	dB	0.01
Display Unit	-	dB, dBm, nm, THz
Maximum Total Input Power	mW	500
	dBm	27
Optical Connector	-	SC/PC Standard
Battery	-	Li-Polymer, 4800mAh/3.7V
Battery Life	Min.	620 (Fully charged)
Current Consumption	A	Max. 0.25
Electricity Consumption	W	0.925
Display	-	3.5" TFT-LCD, 16bit Color, 320x240
Operating Temperature	°C	-20 ~ +55
Weight	g	610
Dimension	mm	195.5 x 95.0 x 40.0



# Optical LAN WDM Power Meter

**Model : PPI - OLWPM-8**

## Feature

- PLC Device
- LAN WDM Grid for 100Gbps Application
- Automatic 8 Channel (Wavelength & Power) measurement at a time
- Quick and Easy to operate
- Less power consumption
- Scan with Color Graph
- Save and Recall about 1,000 data
- Software Provided for the self-management data
- Auto Power-Off



## Specification

Parameter	Unit	Typical
Number of Channels	-	8
Channel Frequency	THz	233.0 ~ 227.4
	nm	1286.66 ~ 1318.35
Channel Spacing	GHz	800
Measurement Speed	Sec.	<0.8
Measurement Range	dBm	10 ~ -40
Measurement Accuracy	dB	±1.0 @-20dBm
Display Resolution	dB	0.01
Optical Connector	-	SC/PC (FC, ST, SC, LC adapter)
Battery	-	Li-Polymer, 1800mAh/3.7V
Battery Life	Min.	420 (Fully charged)
Display	-	2.8" TFT-LCD, 16bit Color, 240x320
Operating Temperature	°C	-20 ~ +55
Weight	g	330
Dimension	mm	154.9x77.9x33.5

# Optical MPO Power Meter

**Model : PPI-MPO-12**

## Feature

- Quick and Easy to operate
- Less power consumption
- Scan Color Graph
- Save and Recall about 1,000 data
- Software provided for Data management
- Auto Power-Off
- Using MPO connector



## Specification

Parameter	Unit	Typical
Number of Channels	-	12
Display Units	-	dB, dBm
Operating Wavelength	nm	1310, 1550 (SM) / 850, 1310, 1550(MM)
Measurement Speed	sec.	<0.8
Measurement Range	dBm	10 ~ -40
Measurement Accuracy	dB	±0.5 @-20dBm
Display Resolution	dB	0.01
Optical Connector	-	MPO connector
Battery	-	Li-Polymer, 1800mAh/3.7V
Battery life	min.	420 (Fully charged)
Display	-	2.8" TFT-LCD, 16bit Color, 240x320
Operating Temperature	°C	-20 ~ +55
Weight	g	260
Dimension	mm	154.9x77.9x33.5

# Optical Power Monitor

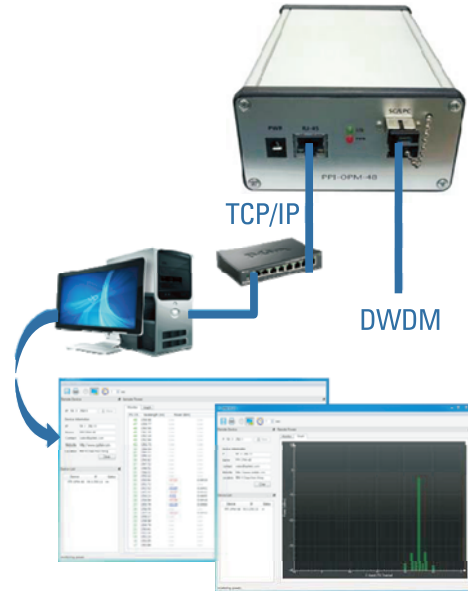
**Model : PPI-OPM-48**

## Feature

- Automatic Detection of Power & Wavelength
- Support SNMP v1.0
- LOS detection & Alarm
- Real time power monitoring

## Applications

- Remote management of DWDM
- Real-time remote monitoring optical facilities
- Fault isolation of optical lines
- Remote monitoring of system turn-up



## Specification

Parameter	Unit	Typical
Number of Channels	-	48
Channel Spacing	GHz	100
Channel Frequencies	THz	fc 196.4 ~ 191.7
	nm	1526.44 ~ 1563.86
Optical Power Display	dBm	+ 0.01 ~ -40
Optical Power Accuracy	dB	± 0.5 @-40dBm
Optical Power Resolution	dB	0.01
Optical Connector	-	SC/PC
Power Supply	V	DC 5V
Power Consumption	W	Max. 1.75
Communication Interface	-	Mini-USB, RJ-45(Ethernet 10/100Mbps)
Operating Temperature	°C	-5 ~ 55
Dimensions	mm	105 x 166 x 55

# Remote Monitoring MUX/DEMUX

**Model : PPI-RMUX/DEMUX**

## Feature

- Remote monitoring in real-time
- Support SNMP v1.0
- LOS detection & alarm
- Mux & Demux C-band 40 channel signal



## Applications

- Automated trouble reporting over the WAN
- Long haul, Metro DWDM networks

## Specification

Parameter	Unit	Typical
Number of Channels	-	40
Channel Spacing	GHz	100
Channel Frequencies	THz	fc 195.90 ~ 192.00 (1530.33 ~ 1561.42nm) - Other bands available -
Optical Power Display	dBm	+23 ~ -27
Optical Power Accuracy	dBm	±1.0@-27dBm
Optical Power Resolution	dB	0.01
Optical Connector	-	LU/UPC
Power Supply	V	DC 5V
Power Consumption	W	Max. 1.75
Communication Interface	-	Mini-USB, FJ-45(Ethernet 10/100Mbps)
Dimensions	mm	434 x 250 x 44.5

# Remote V-MUX

## Model : PPI-RVMUX

### Feature

- Remote Auto Power Balancing
- Support SNMP v1.0
- LOS(Loss Of Singal) detection & alarm
- Real time power monitoring
- Mux & Demux C-band 40 channel signal



### Applications

- Mux and Demux in DWDM system
- ROADM Add/Drop nodes
- Real time power monitoring

### Specification

Parameter	Unit	Typical
Number of Channels	-	40
Channel Spacing	GHz	100
Channel Frequencies	THz	fc 192.10 ~ 196.00 - Other bands available -
Attenuation Range	dB	Max. 20
Attenuation Accuracy	dB	0.75@0~10dB Attenuation ± 1.5@10~20 Attenuation
Attenuation Resolution	dB	0.1
Optical Connector	-	LC/UPC
Power Supply	V	DC 5V
Power Consumption	W	Max. 6.25
Communication Interface	-	Mini-USB, RJ-45(Ethernet 10/100Mbps)
Dimensions	mm	430 x 250 x 44.5

# Automatic Wavelength Power Meter (WPM)

## Model : PPI - WPM - 16

### Feature

- Automatic Wavelength & Power Detection
- Rugged, Shock & Water proof for field use
- Compact, Light & Cost-effective
- Quick and easy to operate



### Specification

Parameter	Unit	Typical	Note
Operation Wavelength	nm	1270 ~1610 (excluding 1370, 1390)	16ch Wavelength for CWDM
Measurement Range	dBm	-50 ~ +4	-
Resolution	dB	0.01	-
Accuracy	-	±0.5dB @-20dBm	-
Display Unit	-	nm, dB, dBm	-
Fiber Type	-	9/125 $\mu$ m	-
Optical Interface	-	SC/PC, FC/APC	Selectable
Battery	Type	Li-ion Polymer Rechargeable	
	Power	V	3.7
	Life	hrs	25
	Charging Time	hrs	4
Accessories	5V AC adapter Operation Manual		-
Operating Temperature	°C	-10 ~ 50	-
Storage Temperature Unit	°C	-30 ~ 60	-
Data Storage	-	300records	-
Dimensions	mm	138x73x30	-
Weight	g	205	-

## Model : PPI - IL - OPM

### Specification

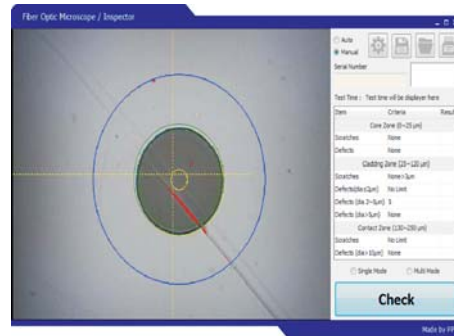


Parameter	Unit	Typical	Note
Operation Wavelength	nm	1270 ~ 1610	All 18ch Wavelength for CWDM
Measurement Range	dBm	-45 ~ +4	-
Resolution	dB	0.01	-
Accuracy	-	±0.5dB @-20dBm	-
Display Unit	-	nm, dB, dBm	-
Fiber Type	-	9/125 $\mu$ m	-
Optical Interface	-	SC/PC, FC/APC	Selectable
Battery	Type	Alkaline Battery	
	Power	V	9
	Life	hrs	-
Operating Temperature	°C	-10 ~ 50	-
Storage Temperature Unit	°C	-30 ~ 60	-
Dimensions	mm	139,7x82,55x26,19	-
Weight	g	172	-

# Fiber Optic Inspection Microscope

## Feature

- Auto Pass/Fail analysis according to IEC61300-3-35
- Power Supply & Data Transmit through USB
- Save Analyzed Image on PC



## Applications

- Confirm Fiber Physical Connectivity status of Fiber Optic System & Components



## Specification

Parameter	Typical
Image Sensor	1/4 inch CMOS
Magnification	260 ~ 400X
Filed of Vision	400 $\mu$ m x 300 $\mu$ m
Support OS	Windows 7,8 and XP
Power Supply	USB
Weight	150g
Dimension	185mm(L) x 25mm(T)

# V-MUX Module

## VOA-Integrated AWG module : 40channel 100GHz V-MUX

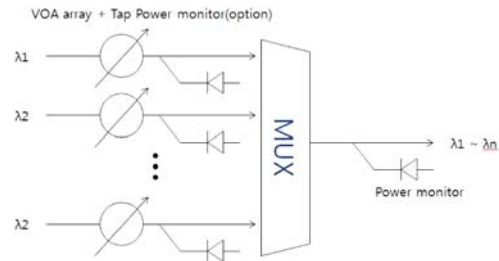
### Feature

- Low Insertion Loss & PDL
- Low driving power consumption
- Compact packaging size
- High reliability
- High crosstalk
- Wide dynamic range
- Custom design available



### Applications

- Channel balancing at MUX
- Channel balancing at optical add/drop
- Wavelength routed WDM network design



### Specification

Parameter	Unit	Specification		
		Min.	Typical	Max.
Channels	-	-	40	-
Channel Spacing	GHz	-	100	-
Center Wavelength Accuracy	nm	-0.05	-	0.05
Channel 1 dB Bandwidth	nm	0.4	-	-
Channel 3 dB Bandwidth	nm	0.6	-	-
Insertion Loss	dB	-	-	7.0
Insertion Loss Uniformity	dB	-	-	1.5
Polarization Dependent Loss @ 0dB Atten.	dB	-	-	0.5
Adjacent Channel Crosstalk	dB	-	-	27
Non-Adjacent Channel Crosstalk	dB	-	-	30
Optical Return Loss	dB	40	-	-
Attenuation Range	dB	20	-	-
Attenuation Resolution	dB	-	0.1	-
Power Requirements	W	-	10	15
Operating Temperature	°C	0	-	70



# Optical Switch System

## Feature

- Low Insertion Loss & PDL
- Compact packing size
- Simple operating control design
- High reliability, High crosstalk
- Custom design available
- Support of PC control program



## Applications

- Optical cross connector (OXC)
- Optical monitoring systems
- Optical communication systems
- Optical component test systems

## Specification

Parameter	Unit	Typical	Note
Structure*	-	19" 5U Rack type	-
Operating Wavelength	nm	1270 ~ 1610	-
Switch Type	Ch.	n x m (m=64, 128, 144)	n=1, 2, 4, 6, 8, 10, 16
Insertion Loss	dB	< 2.5	@ 1310, 1550 nm
Return Loss	dB	> 50	@ 1310, 1550 nm
Polarization Dependent Loss	dB	< 0.2	@ 1310, 1550 nm
Repeatability	dB	± 0.2	@ 1310, 1550 nm
Crosstalk	dB	> 60	@ 1310, 1550 nm
Power Supply	V	220	-
Fiber Type	Min.	SMF - 28	-
Interface	-	RS-232, USB	-
Switching Time	ms	30	-
Adaptor Type	-	SC, FC, LC	-

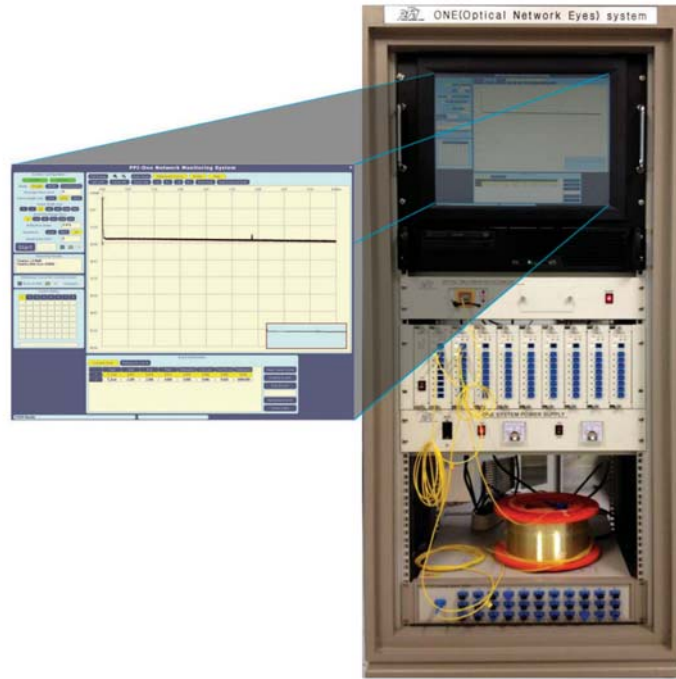
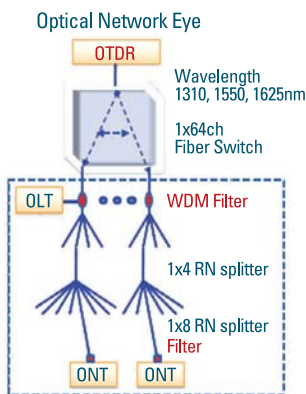
\* There is a difference of size by the adaptor type

# Optical Network Smart Monitoring System

## Feature

- Monitoring system for Optical network lines
- In-line service monitoring
- Display of events on fiber lines

## Configuration



## Specification

Display & Control panel	
Structure	19" 8U type
Display	17" TFT LCD(1280x1024)
Mount Type	VESA Standard Mount
CPU	Intel core 2Quad-Q9500(2.83GHz)
Board	Mainboard 5PCI, 31SA
RAM	DDR3-4GB
Hard Disk	SATAHDD250GB
ODD	DVD-ROM
Power Supply	ATX500W
Network & Port	2GigaLAN, 6USB, D-sub(VGA), 8COM
Etc.	Mouse(USBtype), Keyboard(USB-type)
Operating System	WindowsXP Professional

Optical Switching System	
Structure	19" 5U type
Insertion Loss	< 2.5dB
Return Loss	> 50dB
Crosstalk	< -60dB
Switching Time	≤ 20ms
Reliability	≥ 10million
Fiber Connector Port	SC/PC
Temperature Range	-40 ~ 80°C
Number of Port(Max.)	128
Operating State	LCD Display

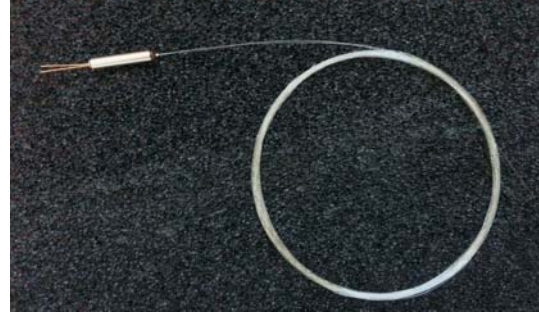
OTDR	
Structure	19" 2U type
Wavelength	1310nm, 1550nm, 1625nm
Dynamic Range	42dB/1310nm, 40dB/1550nm, 39dB/1625nm
Light Source	Pulsed FP LD, >40mW(@25°C)
Dead Zone	3m/Event, 10m/Attenuation
Sampling Resolution	0.25, 0.5 meter
Distance Accuracy	± 5m/100km
Averaging Time	5-600sec
Distance Range(Max)	240km
Pulse Width	10ns, 30ns, 100ns, 300ns, 1us, 3us, 10us, 20us, Auto
Operating System	WindowsXP Professional

Power supply	
Structure	19" 2U type
Power	± 48V, AC240VAC, 50/60Hz
Temperature Range	-40 ~ 80°C
Output	Dual output
Etc.	2 Volt panel meter

# Tap PD

## Feature

- Low Insertion Loss & PDL
- Low dark current
- High reliability



## Applications

- Optical network monitoring
- V-MUX

## Specification

Parameter	Unit	Specification	
Wavelength	nm	1550 (C-band)	
Tap Ratio	%	2	5
Insertion Loss	dB	≤0.5	≤0.6
Polarization Dependent Loss	dB	≤0.05	
Return Loss	dB	≥45	
Responsivity (-5V bias @1550nm)	mA/W	14-30	35-65
Polarization Dependent Responsivity (-5V bias @1550nm)	dB	≤0.1	
Temperature Dependent Responsivity (-5V bias @1550nm)	dB	≤0.4	
PD Dark Current (-5V bias @1550nm)	nA	<10	
Input Power	dBm	<30	
Fiber Type	-	SMF-28	

# Plug in cut-off Filter

## 1650nm (1625nm) Cut-off

### Feature

- Easy to use and Carry
- The Design enables two-way communication
- Easy to connect with Splitter
- Real time Network Monitoring

### Applications

- Optical Network Observation



### Specification

Parameter	Unit	Pass	Cut-off
Operation Wavelength	nm	1310/1490/1550	1625, 1650
Insertion Loss	dB	< 0.7	-
Reflection Loss	dB	-	-
PDL	dB	< 0.2	-
Operating Temperature	°C	-50 ~ 70	

# Plug in Reflection Filter

## 1650nm(1625nm)Reflection

### Feature

- Easy to use and Carry
- The Design enables two-way communication
- Easy to connect with Splitter
- Real time Network Monitoring

### Applications

- Optical Network Observation



### Specification

Parameter	Unit	Pass	Reflection
Operation Wavelength	nm	1310/1490/1550	1625, 1650
Insertion Loss	dB	< 0.7	-
Reflection Loss	dB	-	< 1.5
PDL	dB	< 0.2	-
Isolation	dB	-	> 15
Operating Temperature	°C	-50 ~ 70	



All information contained herein is believed to be accurate and is subject to change without notice. No responsibility is assumed.

©PPI Inc, All rights reserved. [REV.12.08]

# PHOTONICS PLANAR INTEGRATION TECHNOLOGY

## Contact Information

### PPI Inc.

345 Cheomdangwagi-ro, Buk-gu, Gwangju, 500-470,  
Republic of Korea

### Sales Division

Tel : +82-62-972-0116 Fax : +82-62-972-0117

E-mail : sales@ppitek.com Website : www.ppitek.com

### Sales General Manager

Sang Yeol Choi sales@ppitek.com

### Overseas Sales Team

Byoung Ho Kim bhkim@ppitek.com ext. 153

Ji Hee Kim jhkim@ppitek.com ext. 152

Je Won Yang jwyang@ppitek.com ext. 151

### Domestic Sales Team

Kui Seop Song kssong@ppitek.com ext. 150

Ja Ju Jung jjjung@ppitek.com ext. 157

Bo Hun Kim bohkim@ppitek.com ext. 156





345 Cheomdangwagi-ro, Buk-gu, Gwangju, 500-470, Republic of Korea  
Tel. +82-62-972-0116 Fax. +82-62-972-0117 E-mail. sales@ppitek.com  
[www.ppitek.com](http://www.ppitek.com)