# 915/1120nm WDM/Isolator/Tap PM Hybrid for Pulse Power

## **FEATURES**

#### **APPLICATIONS**

- Low Insertion Loss
- Epoxy-Free Optical Path
- High Reliability and Stability
- **Broadband Systems**
- **Optical Amplifying Systems**
- Telecommunication Networks

## **SPECIFICATIONS**

Signal Wavelength Range λ1         nm         1120+/-10           Pump Wavelength Range λ2         nm         915+/-10           Excess Loss@23°C         Signal Channel@λ1         dB         ≤2.0         ≤4.2           Insertion Loss@23°C         Pump Channel@λ2         dB         ≤2.0         11/0.5%, 2+/-0.7%, 5+/-1.0%, 10%, 20%, 30%, 50%           Signal I Solation (23°C.         All SOP)         dB         ≥2.0         ≥40           Wavelength I Solation (23°C.         All SOP)         dB         ≥2.0         ≥40           Wavelength I Solation (23°C.         All SOP)         dB         ≥2.0         ≥40 <th>Parameters</th> <th></th> <th>Unit</th> <th>Single Stage</th> <th>Dual Stage</th>	Parameters		Unit	Single Stage	Dual Stage			
Excess Loss@23°C         Signal Channel@λ1         dB         ≤2.7         ≤4.2           Insertion Loss@23°C         Pump Channel@λ2         dB         ≤1.0           Signal Tap Ratio         %         1+/-0.5%, 2+/-0.7%, 5+/-1.0%, 10%, 20%, 30%, 50%           Signal Isolation (23°C.         All SOP)         dB         ≥20         ≥40           Wavelength Isolation         Signal Channel@λ2         dB         ≥25           Pump Channel@λ1         dB         ≥12           Optical Return Loss         dB         ≥45           Extinction Ratio         dB         ≥18           Fump Direction         F Type         -         Forward Pump, Only Slow Axis Working           Pump Portection         F Type         -         Forward Pump, Only Slow Axis Working           B Type         -         Backward Pump, Only Slow Axis Working         PM850 Fiber, PM980 Fiber (PM980 Fiber (E)           Pump Port (915mm)         -         PM850 Fiber, PM980 Fiber (O), 15/130um PMDC Fiber (W)           20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (W)         20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (R)           Fiber Tensile Load         N         5           Max. Pauh Average Power         mW         300           Max. Pump Average Power         W         <	Signal Wavelength Rang	ge λ1	nm	1120+/-10				
Insertion Loss@23°C	Pump Wavelength Range λ2			915+/-10				
Signal Tap Ratio         %         1+/-0.5%, 2+/-0.7%, 5+/-1.0%, 10%, 20%, 30%, 50%           Signal Isolation (23°C, All SOP)         dB         ≥20         ≥40           Wavelength Isolation (23°C, All SOP)         dB         ≥25           Wavelength Isolation (23°C, All SOP)         dB         ≥25           Optical Return Loss         dB         ≥45           Extinction Ratio         dB         ≥45           Extinction Ratio         S Type         -         Forward Pump, Only Slow Axis Working           Pump Direction         F Type         -         Forward Pump, Only Slow Axis Working           B Type         -         Backward Pump, Only Slow Axis Working           PM850 Fiber, PM980 Fiber or PM1060L Fiber (E)         10/125um PMDC Fiber (O), 15/130um PMDC Fiber (E)           10/125um PMDC Fiber (Q) or 25/250um PMDC Fiber (W)         20/130um PMDC Fiber (O), 15/130um PMDC Fiber (W)           20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (N)         Same Fiber, Corr. SM Fiber, PM850 Fiber, H1780 Fiber, PM850 Fiber, H1780 Fiber, PM850 Fiber (M) or H11060 Fiber (X)           Tap Port         -         Same Fiber or Corr. SM Fiber           Fiber Tensile Load         N         5           Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3,	Excess Loss@23°C	Signal Channel@λ1	dB	≤2.7	≤4.2			
Signal Isolation (23°C, Wavelength Isolation         All SOP)         dB         ≥20         ≥40           Wavelength Isolation         Signal Channel@λ2         dB         ≥25           Optical Return Loss         dB         ≥45           Extinction Ratio         dB         ≥45           Pump Direction         S Type         -         Forward Pump, Only Slow Axis Working           B Type         -         Forward Pump, Only Slow Axis Working           Fiber Type         -         Backward Pump, Only Slow Axis Working           PM850 Fiber, PM850 Fiber, PM850 Fiber or PM1060L Fiber (E)           10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)           20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (W)           Pump Port (915nm)         -         Same Fiber, Corr. SM Fiber, PM850 Fiber, Hl780 Fiber, PM980 Fiber (M) or Hl1060 Fiber (X)           Tap Port         -         Same Fiber or Corr. SM Fiber           Fiber Tensile Load         N         5           Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         -40~85           Stai	Insertion Loss@23°C	Pump Channel@λ2	dB	≤1	.0			
Wavelength Isolation         Signal Channel@λ2         dB         ≥25           Pump Channel@λ1         dB         ≥12           Optical Return Loss         dB         ≥45           Extinction Ratio         dB         ≥18           Pump Direction         S Type         -         Forward Pump, Only Slow Axis Working           Fiber Type         B Type         -         Backward Pump, Both Axis Working           Fiber Type         Common and Signal Port         -         Backward Pump, Only Slow Axis Working           PM850 Fiber, PM980 Fiber or PM1060L Fiber (E)         10/125um PMDC Fiber (O), 15/130um PMDC Fiber (E)           20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (W)         20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)           Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)         PM980 Fiber (M) or HI1060 Fiber (X)           Tap Port         -         Same Fiber or Corr. SM Fiber           Fiber Tensile Load         N         5           Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         -40~85	Signal Tap Ratio		%	1+/-0.5%, 2+/-0.7%, 5+/-1.0%, 10%, 20%, 30%, 50%				
Wavelength Isolation         Pump Channel@λ1       dB       ≥12         Optical Return Loss       dB       ≥45         Extinction Ratio       dB       ≥18         S Type       - Forward Pump, Only Slow Axis Working         F Type       - Forward Pump, Both Axis Working         B Type       - Backward Pump, Only Slow Axis Working         PM850 Fiber, PM980 Fiber or PM1060L Fiber (E)         10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)         20/130um PMDC Fiber (O), 15/130um PMDC Fiber (W)         20/130um PMDC Fiber, PM850 Fiber, PM850 Fiber, HI780 Fiber,         Pump Port (915nm)       - Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber,         PM980 Fiber (M) or HI1060 Fiber (X)         Tap Port       - Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber,         PM980 Fiber, PM850 Fiber, PM850 Fiber, HI780 Fiber,         PM980 Fiber (M) or HI1060 Fiber (X)         Same Fiber Corr. SM Fiber, PM850 Fiber,	Signal Isolation (23°C,	All SOP)	dB	≥20	≥40			
Pump Channel@λ1 dB ≥12  Optical Return Loss  Extinction Ratio dB ≥45  Extinction Ratio dB ≥18  Pump Direction F Type - Forward Pump, Only Slow Axis Working  B Type - Forward Pump, Both Axis Working  B Type - Backward Pump, Only Slow Axis Working  PM850 Fiber, PM980 Fiber or PM1060L Fiber (€)  10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W) 20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (R)  Pump Port (915nm) PM980 Fiber, Orr. SM Fiber, PM850 Fiber, HI780 Fiber,  Pm980 Fiber Corr. SM Fiber, PM850 Fiber, HI780 Fiber,  PM980 Fiber (M) or HI1060 Fiber (X)  Same Fiber Corr. SM Fiber or Corr. SM Fiber  Fiber Tensile Load N 5  Max. Signal Average Power mW 300  Max. Pump Average Power W 0.3, 0.5, 1, 2, 3, 5, 10  Max. Peak Power for pulse kW 0.1, 1, 2, 3, 5, 10, 15, 20  Operating Temperature °C 0~50  Storage Temperature Stainless Steel Tube (SST) mm (∅)5.5x40	Wayolongth Isolation	Signal Channel@λ2	dB	≥25				
Extinction RatiodB≥18Pump DirectionS Type-Forward Pump, Only Slow Axis WorkingF Type-Forward Pump, Both Axis WorkingB Type-Backward Pump, Only Slow Axis WorkingPM850 Fiber, PM980 Fiber or PM1060L Fiber (E)10/125um PMDC Fiber (O), 15/130um PMDC Fiber (E)20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (W)20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)Pump Port (915nm)-Same Fiber, Corr. SM Fiber, PM850 Fiber, H1780 Fiber,PM980 Fiber (M) or H11060 Fiber (X)Tap Port-Same Fiber or Corr. SM FiberFiber Tensile LoadN5Max. Signal Average PowermW300Max. Pump Average PowerW0.3, 0.5, 1, 2, 3, 5, 10Max. Peak Power for pulsekW0.1, 1, 2, 3, 5, 10, 15, 20Operating Temperature°C0~50Stainless Steel Tube (SST)mm(Ø)5.5x40	wavelength Isolation	Pump Channel@λ1	dB	≥12				
Pump Direction         S Type         -         Forward Pump, Only Slow Axis Working           B Type         -         Forward Pump, Both Axis Working           B Type         -         Backward Pump, Only Slow Axis Working           PM850 Fiber, PM980 Fiber or PM1060L Fiber (E)         10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)           10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)         20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (W)           20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (W)         20/130um PMDC Fiber (O) or 25/250um PMDC Fiber (W)           Pump Port (915nm)         -         Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)           Fiber Tensile Load         N         5           Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         0~50           Storage Temperature         °C         -40~85           Package Dimension         Stainless Steel Tube (SST)         mm         (Ø)5.5x40	Optical Return Loss		dB	≥45				
Pump Direction         F Type         -         Forward Pump, Both Axis Working           B Type         -         Backward Pump, Only Slow Axis Working           Fiber Type         Common and Signal Port         -         10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)           Fiber Type         Pump Port (915nm)         -         Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)           Tap Port         -         Same Fiber or Corr. SM Fiber           Fiber Tensile Load         N         5           Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         0~50           Storage Temperature         Stainless Steel Tube (SST)         mm         (Ø)5.5x40	Extinction Ratio		dB	≥18				
B Type		S Type	-	Forward Pump, Only Slow Axis Working				
Common and Signal Port   -   10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)   20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)   20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)   -   Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)   Tap Port   -   Same Fiber or Corr. SM Fiber   Fiber Tensile Load   N   5	Pump Direction	F Type	-	Forward Pump, Both Axis Working				
Fiber Type   Common and Signal Port   -   10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)   20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)		В Туре	-	Backward Pump, Only Slow Axis Working				
Pump Port (915nm)   -   Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)		Common and Signal Port	-	PM850 Fiber, PM980 Fiber or PM1060L Fiber (E)				
Pump Port (915nm)   -   Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)				10/125um PMDC Fiber (O), 15/130um PMDC Fiber (W)				
Pump Port (915nm)  - Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)  Tap Port  - Same Fiber or Corr. SM Fiber  Fiber Tensile Load  N  5  Max. Signal Average Power  Max. Pump Average Power  W  0.3, 0.5, 1, 2, 3, 5, 10  Max. Peak Power for pulse  W  0.1, 1, 2, 3, 5, 10, 15, 20  Operating Temperature  C  Storage Temperature  Stainless Steel Tube (SST)  Package Dimension  - Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber, PM980 Fiber, PM980 Fiber, HI780 Fiber, PM980 Fiber (M) or HI1060 Fiber (X)  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. SM Fiber  Fiber Tensile Load  N  5  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. SM Fiber  Fiber Tensile Load  N  5  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. SM Fiber  N  5  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. SM Fiber  Fiber Tensile Load  N  5  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. SM Fiber  N  5  Same Fiber or Corr. SM Fiber  Over Same Fiber or Corr. Same Fiber or Co	Fiber Type			20/130um PMDC Fiber (Q) or 25/250um PMDC Fiber (R)				
Tap Port  Tap Port  Tap Port  Fiber Tensile Load  N  Same Fiber or Corr. SM Fiber  N  Max. Signal Average Power  Max. Pump Average Power  Max. Peak Power for pulse  Operating Temperature  Stainless Steel Tube (SST)  Package Dimension  Page Fiber (M) or HI1060 Fiber (X)  Same Fiber or Corr. SM Fiber  N  5  MX  90  0.3, 0.5, 1, 2, 3, 5, 10  0.1, 1, 2, 3, 5, 10  0~50  1—40~85  (Ø)5.5x40	i ibei Type	Pump Port (015pm)	-	Same Fiber, Corr. SM Fiber, PM850 Fiber, HI780 Fiber,				
Fiber Tensile Load  Max. Signal Average Power  Max. Pump Average Power  Max. Peak Power for pulse  Operating Temperature  Storage Temperature  Storage Temperature  Stainless Steel Tube (SST)  Package Dimension  N  5  N  5  N  0.1, 1, 2, 3, 5, 10  0.1, 1, 2, 3, 5, 10  0.1, 1, 2, 3, 5, 10, 15, 20  0~50  -40~85  (Ø)5.5x40		Pump Port (915mm)		PM980 Fiber (M) or HI1060 Fiber (X)				
Max. Signal Average Power         mW         300           Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         0~50           Storage Temperature         °C         -40~85           Package Dimension         Stainless Steel Tube (SST)         mm         (Ø)5.5x40		Tap Port	-	Same Fiber or Corr. SM Fiber				
Max. Pump Average Power         W         0.3, 0.5, 1, 2, 3, 5, 10           Max. Peak Power for pulse         kW         0.1, 1, 2, 3, 5, 10, 15, 20           Operating Temperature         °C         0~50           Storage Temperature         °C         -40~85           Package Dimension         Stainless Steel Tube (SST)         mm         (Ø)5.5x40	Fiber Tensile Load		N	5				
Max. Peak Power for pulsekW0.1, 1, 2, 3, 5, 10, 15, 20Operating Temperature°C0~50Storage Temperature°C-40~85Package DimensionStainless Steel Tube (SST)mm(Ø)5.5x40	Max. Signal Average Power			300				
Operating Temperature  °C  0~50  Storage Temperature  °C  -40~85  Package Dimension  Stainless Steel Tube (SST)  mm  (Ø)5.5x40	Max. Pump Average Power			0.3, 0.5, 1, 2, 3, 5, 10				
Storage Temperature  °C  -40~85  Stainless Steel Tube (SST) mm  (Ø)5.5x40	Max. Peak Power for pulse			0.1, 1, 2, 3, 5, 10, 15, 20				
Package Dimension  Stainless Steel Tube (SST) mm (Ø)5.5x40	Operating Temperature			0~50				
Package Dimension ————————————————————————————————————	Storage Temperature			-40~85				
Metal Box mm (L)120x(W)12x(H)10	Packago Dimonsion	Stainless Steel Tube (SST)	mm	(Ø)5.5x40				
	гаскаде Бішеньюп	Metal Box	mm	(L)120x(W)12x(H)10				

Note: 1. Specifications are for device without connectors; Specifications may change without notice.

- 2. To add connectors, IL is 0.7dB higher, RL is 5dB lower, ER is 2dB Lower, Connector key is aligned to slow axis.
- 3. Only guarantee 1W continuous wave (CW) power thru testing for connectors added.
- 4. Devices for higher optical power or with other type fiber or consigned fiber are also available; Devices can only work in the core of Double Cladding (DC) Fiber, Cladding Power must be stripped before connecting the device.

# **ORDERING INFORMATION (PN)**

	FPH	Г-9112	C C N	IN - C	C -	H NN	P NN	- (NN)	-( <mark>C</mark> )	С	C	NN	-CC/CCC
	Stage I	Pump Type	Tap Ratio	Pump Fiber	Tap Port Fiber	Average Power	Peak Power	Pump Power	r Package	Fiber Type	Fiber Sleeve	Fiber Length	Connector Type
	S= Single	S= S Type	01-1%	P=PM850 Fiber	P=Same Fiber	<mark>03=</mark> 300mW	<mark>01</mark> =100W	<mark>05=</mark> 500mW	M=Metal Box	2=PM850Fiber	B= Bare fiber	05=0.5m	N-Without Connector
	D=Dual	F= F Type	<b>05=</b> 5%	Y=Same Fiber	S=Corr. SM Fiber		1= 1kW	1-W	<i>Blank</i> for SST	H=PM980 Fiber	L= Loose Tube	10-1.0m	FC/APC=FC/APC Connector
		B= B Type	<mark>10</mark> =10%	S=Corr. SM Fiber			10= 10kW	10-W		E=PM1060L Fiber	2= 2mm Cable	15=1.5m	LC/PC=LC/PC Connector
			<del>50=</del> 50%	H=HI780 Fiber			20=20kW	<i>Blank</i> for 300m	W	R=25/250 PMDC Fiber	3= 3mm Cable	20=2.0m	SC/UPC=SC/UPC Connector



