

# Product Selection Guide

## Accessories

### Fast Ethernet SFP modules



#### Specifications

Characteristics	Model name				
	SFP100-MM/-I	SFP100-SS30/-I	SFP100-SS60/-I	SFP100-SS100/-I	*SFP100-SS120/-I
Fiber mode	multi-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	2 km	30 km	60 km	100 km	120 km
Operating Temperature	0~70°C -40~85°C (-I model)				
Wavelength	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-	-8 dBm	0 dBm	0 dBm	5 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-	-15 dBm	-5 dBm	-5 dBm	0 dBm
Optical Output Power 62.5/125 µm fiber (Max. TX)	-14 dBm	-	-	-	-
Optical Output Power 62.5/125 µm fiber (Min. TX)	-20 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Max. TX)	-14 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Min. TX)	-23.5 dBm	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-31 dBm	-34 dBm	-35 dBm	-35 dBm	-35 dBm
Optical Input Power-maximum (Saturation)	-8 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Link Budget	7.5 dB	19 dB	30 dB	30 dB	35 dB

\* If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator (Please refer to FAT-LC series accessories) to avoid any possible damages.

#### Ordering Information

Model Name	Description
SFP100-MM	100Mbps SFP optical transceiver, multi-mode / 2km, 1310nm, 0 ~ 70°C
SFP100-MM-I	100Mbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85°C
SFP100-SS30	100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70°C
SFP100-SS30-I	100Mbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85°C
SFP100-SS60	100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, 0 ~ 70°C
SFP100-SS60-I	100Mbps SFP optical transceiver, single-mode / 60km, 1310nm, industrial grade, -40 ~ 85°C
SFP100-SS100	100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, 0 ~ 70°C
SFP100-SS100-I	100Mbps SFP optical transceiver, single-mode / 100km, 1550nm, industrial grade, -40 ~ 85°C
SFP100-SS120	100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70°C
SFP100-SS120-I	100Mbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85°C

# Product Selection Guide

## Accessories

### Fast Ethernet BIDI-SFP modules



## Specifications

	Model Name							
Characteristics	SFP100B3-MM/-I	SFP100B5-MM/-I	SFP100B3-SS20/-I	SFP100B5-SS20/-I	SFP100B3-SS40/-I	SFP100B5-SS40/-I	SFP100B3-SS60/-I	SFP100B5-SS60/-I
Fiber mode	Multi-mode	Multi-mode	single-mode	single-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	2 km	2 km	20 km	20 km	40 km	40 km	60 km	60 km
Operating Temperature	0~70°C -40~85°C (-I model)							
Wavelength	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm
Optical Output Power 9/125 μm fiber (Max. TX)	0 dBm	0 dBm	-8 dBm	-8 dBm	0 dBm	0 dBm	0 dBm	0 dBm
Optical Output Power 9/125 μm fiber (Min. TX)	-10 dBm	-10 dBm	-14 dBm	-14 dBm	-8 dBm	-8 dBm	-5 dBm	-5 dBm
Optical Input Power-minimum (Sensitivity)	-28 dBm	-28 dBm	-32 dBm	-32 dBm	-34 dBm	-34 dBm	-34 dBm	-34 dBm
Optical Input Power-maximum (Saturation)	0 dBm							
Link Budget	18 dB		18 dB		26 dB		29 dB	

## Ordering Information

Model Name	Description
SFP100B3-MM	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1310nm / RX1550nm, 0 ~ 70°C
SFP100B3-MM-I	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1310nm / RX1550nm, industrial grade, -40 ~ 85°C
SFP100B5-MM	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, 0 ~ 70°C
SFP100B5-MM-I	100Mbps SFP optical Transceiver, Multi-mode BIDI / 2KM, TX1550nm / RX1310nm, industrial grade, -40 ~ 85°C
SFP100B3-SS20	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP100B3-SS20-I	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP100B5-SS20	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP100B5-SS20-I	100Mbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP100B3-SS40	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP100B3-SS40-I	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP100B5-SS40	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP100B5-SS40-I	100Mbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP100B3-SS60	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP100B3-SS60-I	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP100B5-SS60	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP100B5-SS60-I	100Mbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C

# Product Selection Guide

## Accessories

### Gigabit Ethernet SFP modules



#### Specifications

Characteristics	Model Name									
	SFP1G-SX/-I	SFP1G-MLX/-I	SFP1G-LX10/-I	*SFP1G-LX20/-I	*SFP1G-LHX30/-I	*SFP1G-LHX40/-I	*SFP1G-XD50/-I	*SFP1G-ZX70/-I	*SFP1G-ZX80/-I	*SFP1G-EZX120/-I
Fiber mode	multi-mode	multi-mode	single-mode							
Typical Distance	550 m	62.5/125 : 2km 50/125 : 1km	10 km	20 km	30 km	40 km	50 km	70 km	80 km	120 km
Operating Temperature	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)
Wavelength	850 nm	1310 nm	1310 nm	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm	1550 nm	1550 nm
Optical Output Power 9/125 μm fiber (Max. TX)	-	-	-3 dBm	-2 dBm	1 dBm	1 dBm	1 dBm	5 dBm	5 dBm	5 dBm
Optical Output Power 9/125 μm fiber (Min. TX)	-	-	-9.5 dBm	-8 dBm	-4 dBm	-4 dBm	-4 dBm	0 dBm	0 dBm	0 dBm
Optical Output Power 62.5/125 μm fiber (Max. TX)	-4 dBm	-1 dBm	-	-	-	-	-	-	-	-
Optical Output Power 62.5/125 μm fiber (Min. TX)	-9.5 dBm	-9 dBm	-	-	-	-	-	-	-	-
Optical Output Power 50/125 μm fiber (Max. TX)	-4 dBm	-1 dBm	-	-	-	-	-	-	-	-
Optical Output Power 50/125 μm fiber (Min. TX)	-9.5 dBm	-9 dBm	-	-	-	-	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-32 dBm				
Optical Input Power-maximum(Saturation)	0 dBm	-1 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-8 dBm
Link Budget	8.5 dB	10 dB	10.5 dB	15 dB	20 dB	20 dB	20 dB	24 dB	24 dB	32 dB

✳ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

#### Ordering Information

Model Name	Description
SFP1G-SX	1Gbps SFP optical transceiver, multi-mode / 550m, 850nm, 0 ~ 70°C
SFP1G-SX-I	1Gbps SFP optical transceiver, multi-mode / 550m, 850nm, industrial grade, -40 ~ 85°C
SFP1G-MLX	1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, 0 ~ 70°C
SFP1G-MLX-I	1Gbps SFP optical transceiver, multi-mode / 2km, 1310nm, industrial grade, -40 ~ 85°C
SFP1G-LX10	1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70°C
SFP1G-LX10-I	1Gbps SFP optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85°C
SFP1G-LX20	1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70°C
SFP1G-LX20-I	1Gbps SFP optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85°C
SFP1G-LHX30	1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, 0 ~ 70°C
SFP1G-LHX30-I	1Gbps SFP optical transceiver, single-mode / 30km, 1310nm, industrial grade, -40 ~ 85°C
SFP1G-LHX40	1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, 0 ~ 70°C
SFP1G-LHX40-I	1Gbps SFP optical transceiver, single-mode / 40km, 1310nm, industrial grade, -40 ~ 85°C
SFP1G-XD50	1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, 0 ~ 70°C
SFP1G-XD50-I	1Gbps SFP optical transceiver, single-mode / 50km, 1550nm, industrial grade, -40 ~ 85°C
SFP1G-ZX70	1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, 0 ~ 70°C
SFP1G-ZX70-I	1Gbps SFP optical transceiver, single-mode / 70km, 1550nm, industrial grade, -40 ~ 85°C
SFP1G-ZX80	1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70°C
SFP1G-ZX80-I	1Gbps SFP optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85°C
SFP1G-EZX120	1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, 0 ~ 70°C
SFP1G-EZX120-I	1Gbps SFP optical transceiver, single-mode / 120km, 1550nm, industrial grade, -40 ~ 85°C

# Product Selection Guide

## Accessories

### Gigabit Ethernet BIDI-SFP modules



#### Specifications

	Model Name										
Characteristics	SFP1GB3-LX10/-I	SFP1GB5-LX10/-I	SFP1GB3-LX20/-I	SFP1GB5-LX20/-I	* SFP1GB3-LX40/-I	* SFP1GB5-LX40/-I	* SFP1GB3-LX60/-I	* SFP1GB5-LX60/-I	* SFP1GB4-LX80/-I	* SFP1GB5-LX80/-I	
Fiber mode	single-mode										
Typical Distance	10 km	10 km	20 km	20 km	40 km	40 km	60 km	60 km	80 km	80 km	
Operating Temperature	0~70°C -40~85°C (-I model)										
Wavelength	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1310 nm RX : 1550 nm	TX : 1550 nm RX : 1310 nm	TX : 1490 nm RX : 1550 nm	TX : 1550 nm RX : 1490 nm	
Optical Output Power 9/125 μm fiber (Max. TX)	-3 dBm	-3 dBm	-2 dBm	-2 dBm	2 dBm	2 dBm	5 dBm	4 dBm	4 dBm	4 dBm	
Optical Output Power 9/125 μm fiber (Min. TX)	-9 dBm	-9 dBm	-8 dBm	-8 dBm	-3 dBm	-3 dBm	0 dBm	-2 dBm	-2 dBm	-2 dBm	
Optical Input Power-minimum (Sensitivity)	-21 dBm	-21 dBm	-23 dBm	-23 dBm	-23 dBm	-23 dBm	-24 dBm	-25 dBm	-25 dBm	-25 dBm	
Optical Input Power-maximum (Saturation)	-1 dBm	-3 dBm	-3 dBm								
Link Budget	12 dB		15 dB		20 dB		22 dB		23 dB		

※ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

#### Ordering Information

Model Name	Description
SFP1GB3-LX10	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP1GB3-LX10-I	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP1GB5-LX10	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP1GB5-LX10-I	1Gbps SFP optical transceiver, single-mode BIDI / 10km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP1GB3-LX20	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP1GB3-LX20-I	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP1GB5-LX20	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP1GB5-LX20-I	1Gbps SFP optical transceiver, single-mode BIDI / 20km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP1GB3-LX40	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP1GB3-LX40-I	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP1GB5-LX40	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP1GB5-LX40-I	1Gbps SFP optical transceiver, single-mode BIDI / 40km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP1GB3-LX60	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, 0 ~ 70°C
SFP1GB3-LX60-I	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1310nm, RX1550nm, industrial grade, -40 ~ 85°C
SFP1GB5-LX60	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, 0 ~ 70°C
SFP1GB5-LX60-I	1Gbps SFP optical transceiver, single-mode BIDI / 60km, TX1550nm, RX1310nm, industrial grade, -40 ~ 85°C
SFP1GB4-LX80	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, 0 ~ 70°C
SFP1GB4-LX80-I	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1490nm, 1550nm, industrial grade, -40 ~ 85°C
SFP1GB5-LX80	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, 0 ~ 70°C
SFP1GB5-LX80-I	1Gbps SFP optical transceiver, single-mode BIDI / 80km, 1550nm, 1490nm, industrial grade, -40 ~ 85°C

# Product Selection Guide

## Accessories

### 10G Ethernet SFP+ modules with Diagnostic Monitoring



#### Specifications

Characteristics	Model Name				
	SFP10G-MM/-I	SFP10G-LR10/-I	SFP10G-LR20/-I	*SFP10G-ER40/-I	*SFP10G-ZR80/-I
Fiber mode	multi-mode	single-mode	single-mode	single-mode	single-mode
Typical Distance	62.5/125µm : 33m 50/125µm(OM2) : 82m 50/125µm(OM3) : 300m	10 km	20 km	40 km	80 km
Operating Temperature	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)	0~70°C -40~85°C (-I model)
Wavelength	850 nm	1310 nm	1310 nm	1550 nm	1550 nm
Optical Output Power 9/125 µm fiber (Max. TX)	-	0.5 dBm	0.5 dBm	4 dBm	4 dBm
Optical Output Power 9/125 µm fiber (Min. TX)	-	-6 dBm	-4 dBm	-4.7 dBm	0 dBm
Optical Output Power 62.5/125 µm fiber (Max. TX)	-1 dBm	-	-	-	-
Optical Output Power 62.5/125 µm fiber (Min. TX)	-6.5 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Max. TX)	-1 dBm	-	-	-	-
Optical Output Power 50/125 µm fiber (Min. TX)	-6.5 dBm	-	-	-	-
Optical Input Power-minimum (Sensitivity)	-9.9 dBm	-14.4 dBm	-15 dBm	-15.8 dBm	-23 dBm
Optical Input Power-maximum (Saturation)	-1 dBm	0.5 dBm	0.5 dBm	-1 dBm	-7 dBm
Link Budget	3.4 dB	8.4 dB	11 dB	11.1 dB	23 dB

☞ If two SFP transceivers are connected to each other in a short distance and the received optical power is greater than the listed specification of the received SFP transceiver, please add an optical attenuator(Please refer to FAT-LC series accessories) to avoid any possible damages.

#### Ordering Information

Model Name	Description
SFP10G-MM	10Gbps SFP+ optical transceiver, multi-mode / 300m, 850nm, 0 ~ 70°C
SFP10G-MM-I	10Gbps SFP+ optical transceiver, multi-mode / 300m, 850nm, industrial grade, -40 ~ 85°C
SFP10G-LR10	10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, 0 ~ 70°C
SFP10G-LR10-I	10Gbps SFP+ optical transceiver, single-mode / 10km, 1310nm, industrial grade, -40 ~ 85°C
SFP10G-LR20	10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, 0 ~ 70°C
SFP10G-LR20-I	10Gbps SFP+ optical transceiver, single-mode / 20km, 1310nm, industrial grade, -40 ~ 85°C
SFP10G-ER40	10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, 0 ~ 70°C
SFP10G-ER40-I	10Gbps SFP+ optical transceiver, multi-mode / 40km, 1550nm, industrial grade, -40 ~ 85°C
SFP10G-ZR80	10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, 0 ~ 70°C
SFP10G-ZR80-I	10Gbps SFP+ optical transceiver, single-mode / 80km, 1550nm, industrial grade, -40 ~ 85°C

# Product Selection Guide

## Accessories

### Gigabit Ethernet SFP-RJ45 modules



#### Specifications

	Model Name		
Characteristics	SFP1GRJ	SFP1GRJ-I	SFP10GRJ
Operating Temperature	0~70°C	-40~85°C	0~70°C
RJ45 Operation mode	1000Base-T*	1000Base-T*	10GBase-T★
SFP Interface	SERDES, 1000Base-X	SERDES, 1000Base-X	SERDES, 10GBase-X

- \* 1. Please notice 10/100Base-T(X) modes are not supported.  
 2. Link length up to 100m with Cat5 UTP cable or better.  
 ★ 1. Please notice 10/100/1000Base-T modes are not supported.  
 2. Link length up to 30m with Cat6a/7 cable.

#### Ordering Information

Model Name	Description
SFP1GRJ	1Gbps SFP to 1000 Base-T transceiver, 0 ~ 70°C
SFP1GRJ-I	1Gbps SFP to 1000 Base-T transceiver, industrial grade, -40 ~ 85°C
SFP10GRJ	10Gbps SFP+ to 10G - Base-T transceiver, 0 ~ 70°C

### 10G Ethernet SFP+ Copper Cable



#### Specifications

	Model Name			
Characteristics	SFPC10G-50	SFPC10G-100	SFPC10G-300	SFPC10G-500
Max.Speed	10 Gbps	10 Gbps	10 Gbps	10 Gbps
Wire Guage	30 AWG	30 AWG	30 AWG	24 AWG
Low Smoke Zero Halogen	•	•	•	•
Cable length	0.5 m	1 m	3 m	5 m
Operating temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C

#### Ordering Information

Model Name	Description	Cable length
SFPC10G-50	10Gbps SFP+ copper cable 30AWG, 0.5 m, -40 ~ 85°C	0.5 m
SFPC10G-100	10Gbps SFP+ copper cable 30AWG, 1 m, -40 ~ 85°C	1 m
SFPC10G-300	10Gbps SFP+ copper cable 30AWG, 3 m, -40 ~ 85°C	3 m
SFPC10G-500	10Gbps SFP+ copper cable 24AWG, 5 m, -40 ~ 85°C	5 m