

QSFP to 4SFP Extender

33-5180 (active)

QSFP to 4SFP+ OEO Converter with CDR

33-5181 (passive)

QSFP to 4SFP+ OEO Converter without CDR



FEATURES

- QSFP+ End Compliant QSFP MSA specifications
- SFP+ End Compliant SFP MSA specifications
- QSFP+ End Compatible with IEEE802.3ba and SFF-8436
- SFP+ End Compliant with SFF-8431 and SFF-8432
- Low Near-End Crosstalk(NEXT)
- Precision process control for minimization of pair-to-pair skew
- AC coupling of PECL signals
- All-metal housing for superior EMI performance
- Transceiver optional 300m to 80km
- Operating Temp: 0~70 °C
- RoHS compliant

APPLICATIONS

- QSFP+ long distance link
- InfiniBand 4X SDR, DDR, QDR and FDR
- Ethernet 10G, 40G
- FiberChannel 10G, 40G, SAN, 4X16G
- Rack-to-Rack, Shelf-to-Shelf Interconnect Top of Rack (TOR) and Core Switch

DESCRIPTION

Direktronik's QSFP+ Extender is used for long-distance transmission under 40G QSFP+. The QSFP+ Port could be transferred/converted into 4x SFP+ port by Direct Attach Copper (DAC) technology under very low insert lose.

Direktronik's QSFP+ Extender are provided in 1U rack and movable version with 3.3V power supply. Transmission distance could be extended longer by connecting with Standard SFP+ Transceivers.

Direktronik's QSFP+ Extender is applied to longer distance transmission. The advantages of Direktronik's QSFP+ Extender reflected in 2 points: a. It can reach up to 80km while most similar products reach 10km; b. It can save fiber without CWDM system and let the 2 host' s 4x SFP+ ports be linked by being converted into one QSFP+ port.

These QSFP+ Extenders provides for 1U Chassis box application, has an AC 110V –240V power interface and CDR option is available.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Storage Temperature	T _s	°C	-40	-	+85	
Case Operating Temperature	T _c	°C	0	-	70	
Relative Humidity	RH	%	5	-	95	

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Data Rate Per Lane		Gbps	5		10	
Power Supply	V _{cc}	V	110		220	AC
Power Consumption	P	W			6	80km
Differential Impedance	Z _d	Ω	90		110	For 33-5181
Differentail pair-pair Delay	InterSkew	Ps	3		5	For 33-5181
Output Amplitude	V _{OSPP}	mV	300		1200	For 33-5180
Output De-emphasis		dB	0		18	For CVT-OEO-Q/4S-1C
Total Jitter	T _J	UI	0.16		0.23	@10Gbps(BER 10 - 12)

Bit Error Rate Performance	BR				10-12	
Laser Output Power	Class 1					EN 60825-1 2007 EN 60825-2 A2 2010
Electrical Interface	Pin			38 20		QSFP+ Standard SFP+ Standard

SFP+ PORT PIN DESCRIPTIONS

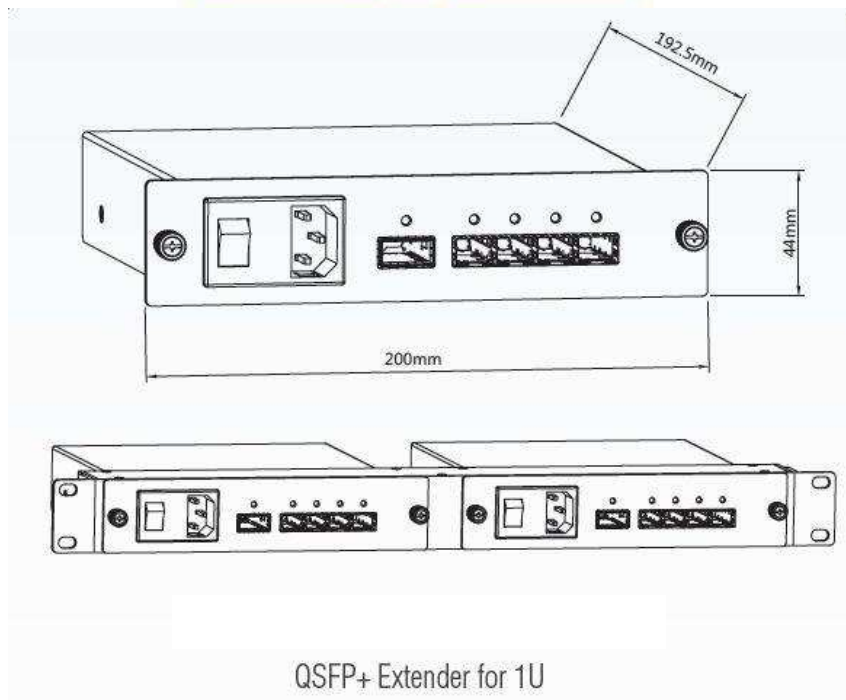
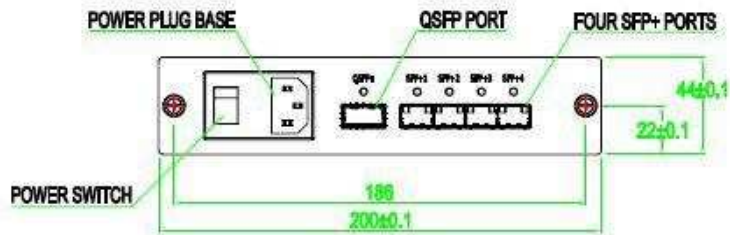
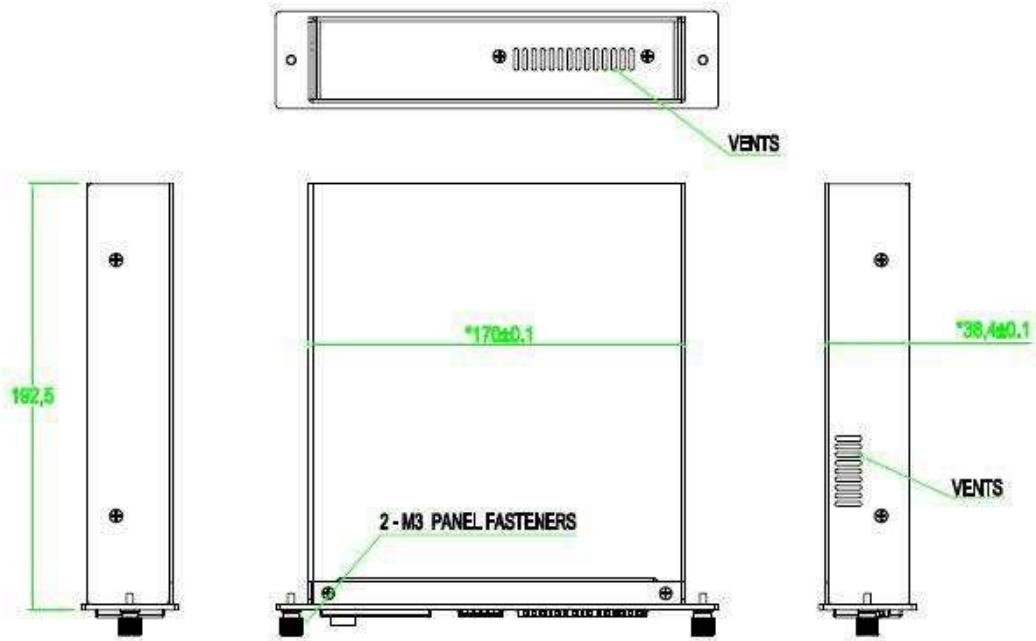
Pin	Symbol	Logic	Name/Description
1	VeeT	-	Module Transmitter Ground
2	TX_Fault	LVTTL_O	Module Transmitter Fault
3	TX_Disable	LVTTL_I	Transmitter Disable; Turns off Transmitter Laser Output
4	SDA	LVTTL_I/O	2-Wire Serial Interface Data Line
5	SCL	LVTTL_I/O	2-Wire Serial Interface Clock
6	MOD_ABS	-	Module Absent, Connected to VeeT or VeeR in the Module
7	RS0	LVTTL-I	Rate Select 0, Optionally Controls SFP+ Module Receiver
8	RX_LOS	LVTTL-O	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet Designated as Signal Detect)
9	RS1	LVTTL_I	Rate Select 1, Optionally Controls SFP+ Module Transmitter
10	VeeR	-	Module Receiver Ground
11	VeeR	-	Module Receiver Ground
12	RD-	CML-O	Receiver Inverted Data Output
13	RD+	CML-O	Receiver Non-Inverted Data Output
14	VeeR	-	Module Receiver Ground
15	VccR	-	Module Receiver 3.3V Supply
16	VccT	-	Module Transmitter 3.3V Supply
17	VeeT	-	Module Transmitter Ground
18	TD+	CML-I	Transmitter Non-Inverted Data Input
19	TD-	CML-I	Transmitter Inverted Data Input
20	VeeT	-	Module Transmitter Ground

QSFP+ PORT PIN DESCRIPTIONS

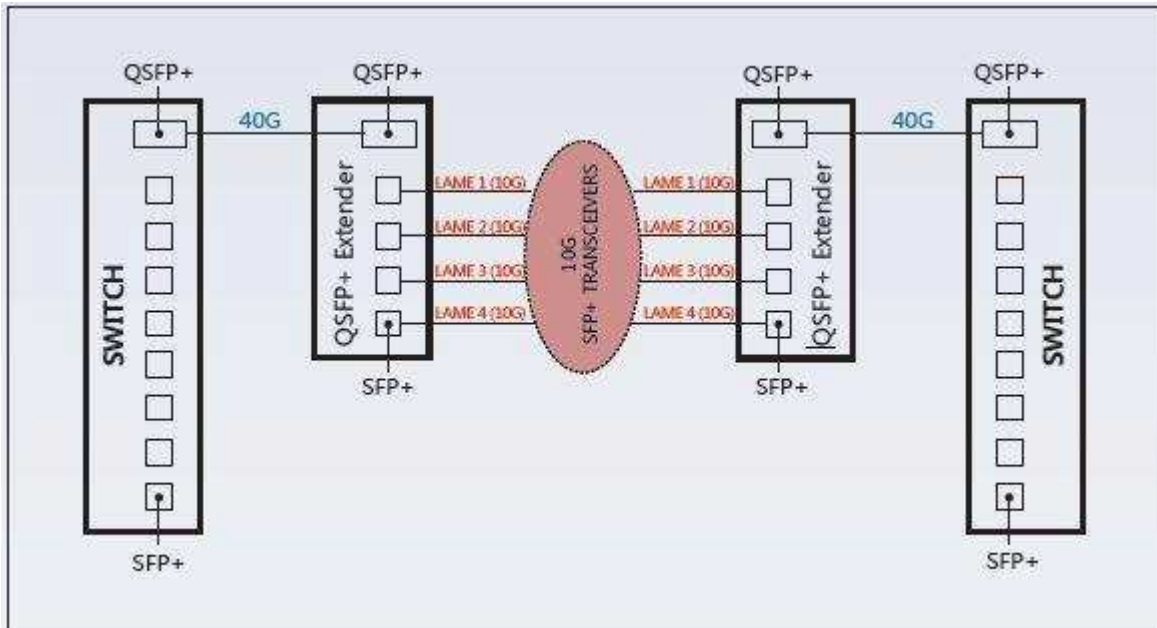
Pin	Logic	Symbol	Name/Description
1		GND	Module Transmitter Ground

2	CML-I	Tx2n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input
4		GND	Module Transmitter Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input
7		GND	Module Transmitter Ground
8	LVTLL-I	ModSelL	Module Select
9	LVTLL-I	ResetL	Module Reset
10		VccRx	+ 3.3V Power Supply Receiver
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data
13		GND	Module Receiver Ground
14	CML-O	Rx3p	Receiver Non-Inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output
16		GND	Module Receiver Ground
17	CML-O	Rx1p	Receiver Non-Inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output
19		GND	Module Receiver Ground
20		GND	Module Receiver Ground
21	CML-O	Rx2n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-Inverted Data Output
23		GND	Module Receiver Ground
24	CML-O	Rx4n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-Inverted Data Output
26		GND	Module Receiver Ground
27	LVTTL-O	ModPrsL	Module Present
28	LVTTL-O	IntL	Interrupt
29		VccTx	+3.3 V Power Supply transmitter
30		Vcc1	+3.3 V Power Supply
31	LVTTL-I	LPMODE	Low Power Mode
32		GND	Module Transmitter Ground
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input
35		GND	Module Transmitter Ground
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input
38		GND	Module Transmitter Ground

MECHANICAL DIAGRAM

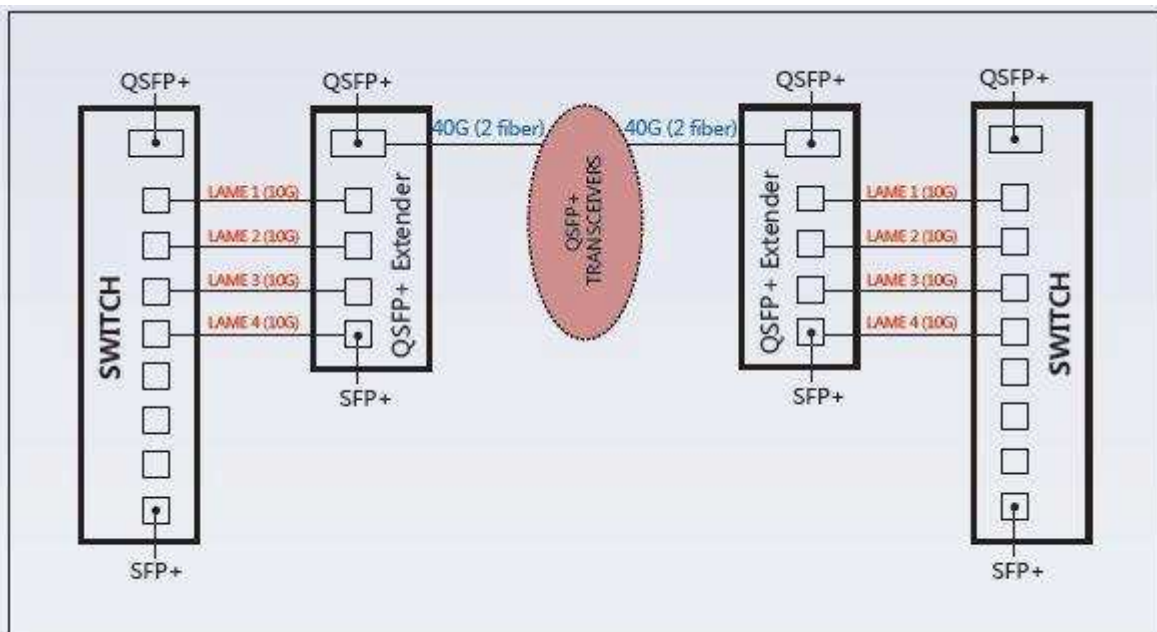


TYPICAL CONNECTION



To transmit up to 80km distance using the QSFP+ extender.

- From switch to QSFP+ extender, connect the QSFP+ ports with either QSFP+ DAC or QSFP+ AOC or QSFP+ transceiver.
- Between two extenders, connect the 4x SFP+ ports with SFP+ transceivers.
- Use SFP+ ZR transceivers to achieve 80km transmission.



To save fiber using QSFP+ extender.

- From switch to QSFP+ extender, connect the SFP+ ports with either SFP+ DAC or SFP+ AOC or SFP+ transceiver.
- Between two extenders, connect the QSFP+ ports with QSFP+ transceivers.
- Use QSFP+ LR4 to achieve 10km transmission with only one LC fiber.

A list of Direktronik SFP+ transceiver modules that can be plugged into the Extender is provided in Table 1.

Product Name	Product Description
	10GBASE-SR SFP+ Module for MMF 300m
	10GBASE-LR SFP+ Module for SMF 10km
	10GBASE-ER SFP+ Module for SMF 40km
	10GBASE-ZR SFP+ Module for SMF 80km
	SFP+ Copper Cables (1-m to 10-m lengths)
	SFP+ Copper Cables active (1-m to 15-m lengths)
	SFP+ Active Optical Cables (1-m to 10-m lengths)

Table 1. Direktronik SFP+ transceiver modules

A list of Direktronik QSFP+ transceiver modules that can be plugged into the Extender is provided in Table 2

Product Name	Product Description
	40GBASE-SR4 QSFP+ Transceiver for MMF, 100m
	40GBASE- IR4 QSFP+ Transceiver for SMF 2km
	40GBASE-LR4 QSFP+ Transceiver for SMF, 10km
	40GBASE-ER4 QSFP+ Transceiver for CWDM, 40km
	40GBASE-CR4 QSFP+ direct-attach copper cable, passive (1-m to 5-m lengths)
	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable , passive (1-m to 5-m lengths)
	40GBASE-CR4 QSFP+ direct-attach copper cable, active (1-m to 10-m lengths)
	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable , active (1-m to 10-m lengths)
	40G QSFP direct-attach Active Optical cable (1-m to 15-m lengths)
	40GQSFP to four 10G SFP+ direct attach breakout Active Optical cable(1-m to 10-m lengths)

ORDER INFORMATION

Part No.	Description
33-5181	QSFP+ to 4x SFP+ Extender, for 1U Chassis, passive
33-5180	QSFP+ to 4x SFP+ Extender, for 1U Chassis, active, with cdr

REVISION HISTORY

Date	Revision	Changes
17/05/2016	1	Initial Version