

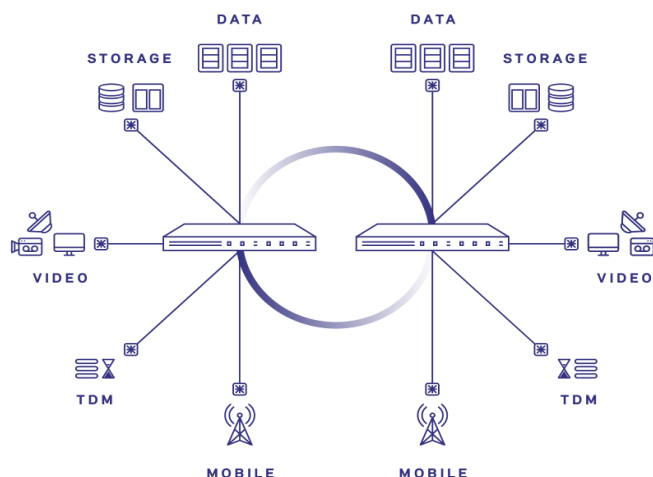
## Optical Infrastructure Solutions

### Overview

The Itectra Optical Infrastructure Solutions builds upon high-density WDM systems, optical transceivers and accessories designed to provide optical network support for high-speed data Ethernet and Fiber Channel communication.

These WDM systems and optical transceivers deliver capacity from 1 Gbps to 800 Gbps per wavelength suitable for datacenter, enterprises, and service provider networks.

In addition to WDM systems and optical transceivers the Itectra portfolio spans across long-haul active DWDM systems, MPO cassettes, inspection and cleaning equipment.



### Product Features

- Active DWDM systems
- Passive CWDM and DWDM systems
- 1/10/25/40/50/100/200/400 GbE transceivers
- 8/16/32Gb FC transceivers
- Direct Attach Cables (DAC)
- Active Optical Cables (AOC)
- MPO cassettes
- Inspection and cleaning equipment

### Applications

- Datacentre
- Enterprise
- Core/Metro/Access
- FTTX
- Mobile Fronthaul

### Supported by leading vendors

The Itectra Optical Infrastructure portfolio includes a variety of today's leading optical network vendors; Infinera, Skylane Optics, EXFO, Corning and Sticklers. Please consult Itectra for further information on specific products and solutions.

### Compatibility

Itectra offers a wide range of compatible solutions allowing full network operational capabilities across the network. All equipment and modules are fully compliant with the relevant standards and recommendations and are manufactured utilizing the highest quality components available.

## 1Gb (SFP)



Standard: 1000Base  
 MSA: INF-8074 / SFF-8472  
 Size: 8.55 × 13.7 × 56.5 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp, Storage: -40 – 85°C  
 Humidity: 5 – 95%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power [dBm]	Rx Sensitivity [dBm]	Rx Overload [dBm]	Conn	Distance/ Power Budget	Effect [Watt]	Product Number
<b>1000Base</b>										
1000Base-TX	<sup>1</sup> -	C/E		-	-		RJ45	100m	1W	SGT00P10DR0A
1000Base-SX	<sup>1</sup> 850	C/I	VCSEL/PIN	-9,5 to 0,3	-17	0	LC	550m/7,5dB	1W	SFP85P55GE0B
1000Base-LXM	<sup>1 2</sup> 1310	C/I	FP/PIN	-9 to -3	-21	0	LC	1km/12dB	1W	SFP13001GE0B
1000Base-LX	1310	C/I	FP/PIN	-10 to -3	-21	0	LC	10km/11dB	1W	SFP13010GE0B
1000Base-LX	1310	C/I	FP/PIN	-8 to -3	-22	0	LC	20km/14dB	1W	SFP13020GE0B
1000Base-EX	1310	C/E/I	DFB/PIN	-2 to 3	-24	0	LC	40km/22dB	1W	SFP13040GE0B
1000Base-EX	1550	C/E/I	DFB/PIN	-5 to 0	-24	0	LC	40km/19dB	1W	SFP15040GE0B
1000Base-ZX	1550	C/E/I	DFB/PIN	0 to +5	-23	0	LC	80km/23dB	1W	SFP15080GE0B
1000Base-ZX	1550	C/E/I	DFB/APD	0 to 5	-32	-10	LC	120km/32dB	1W	SFP15120GE0D
1000Base-ZX	1550	C/I	DFB/APD	3 to 7	-37	-10	LC	160km/40dB	1W	SFP15160GE0B
<b>Bi-directional</b>										
1000Base-BXD	1550/1310	C/I	DFB/PIN	-9 to -3	-21	-3	LC	10km/12dB	1W	SBD53010GE0B
1000Base-BXU	1310/1550	C/I	FP/PIN	-9 to -3	-21	-3	LC	10km/12dB	1W	SBU35010GE0B
1000Base-BXD	1550/1310	C/I	DFB/PIN	-8 to -3	-22	-3	LC	20km/14dB	1W	SBD53020GE0B
1000Base-BXU	1310/1550	C/I	FP/PIN	-8 to -3	-22	-3	LC	20km/14dB	1W	SBU35020GE0B
1000Base-BXD	1550/1310	C/I	DFB/PIN	-5 to 0	-23	-3	LC	40km/18dB	1W	SBD53040GE0B
1000Base-BXU	1310/1550	C/I	DFB/PIN	-3 to 2	-23	-3	LC	40km/20dB	1W	SBU35040GE0B
1000Base-BXD	1550/1310	C/I	DFB/PIN	-2 to 3	-24	-3	LC	60km/22dB	1W	SBD53060GE0B
1000Base-BXU	1310/1550	C/I	DFB/PIN	0 to 5	-26	-3	LC	60km/26dB	1W	SBU35060GE0B
1000Base-BXD	1490/1310	C/I	DFB/PIN	-9.5 to -3	-22	-3	LC	10km/12.5dB	1W	SBD43010GE0B
1000Base-BXU	1310/1490	C/I	FP/PIN	-9.5 to -3	-22	-3	LC	10km/12.5dB	1W	SBU34010GE0B
1000Base-BXD	1490/1310	C/I	DFB/PIN	-8 to -3	-22	-3	LC	20km/14dB	1W	SBD43020GE0B
1000Base-BXU	1310/1490	C/I	FP/PIN	-8 to -3	-22	-3	LC	20km/14dB	1W	SBU34020GE0B
1000Base-BXD	1490/1310	C/I	DFB/PIN	-5 to 0	-24	-3	LC	40km/19dB	1W	SBD43040GE0B
1000Base-BXU	1310/1490	C/I	DFB/PIN	-5 to 0	-24	-3	LC	40km/19dB	1W	SBU34040GE0B
1000Base-BXD	1490/1310	C/I	DFB/PIN	0 to 5	-27	-3	LC	60km/27dB	1W	SBD43060GE0B
1000Base-BXU	1310/1490	C/I	DFB/PIN	0 to 5	-27	-3	LC	60km/27dB	1W	SBU34060GE0B
1000Base-BXD	1550/1490	C/I	DFB/PIN	0 to 5	-26	-3	LC	80km/26dB	1W	SBD54080GE0D
1000Base-BXU	1490/1550	C/I	DFB/PIN	0 to 5	-26	-3	LC	80km/26dB	1W	SBU45080GE0D
<b>CWDM</b>										
1000Base-EX	<sup>3</sup> 1270-1610	C/E	DFB/PIN	-5 to 0	-21	-3	LC	40km/16dB	1W	SFCxx040GE0D
1000Base-ZX	<sup>3</sup> 1270-1610	C/E	DFB/PIN	0 to 5	-24	0	LC	80km/24dB	1W	SFCxx080GE0D
1000Base-ZX	1470-1610	C/E	DFB/APD	0 to 5	-32	-8	LC	120km/32dB	1W	SFCxx120GE0D
1000Base-ZX	1470-1610	C/E	DFB/APD	4 to 7	-36	-10	LC	160km/40dB	1W	SFCxx160GE0D
<b>DWDM</b>										
1000Base-EX	19x.x00THz	C	DFB/PIN	0 to 4	-20	-1	LC	40km/20dB	1W	SFDxx040GE0D
1000Base-ZX	19x.x00THz	C	DFB/PIN	0 to 5	-24	-3	LC	80km/24dB	1W	SFDxx080GE0D
1000Base-ZX	19x.x00THz	C	DFB/APD	0 to 5	-32	-10	LC	120km/32dB	1W	SFDxx120GE0D
1000Base-ZX	19x.x00THz	C	DFB/APD	4 to 7	-36	-10	LC	160km/40dB	1W	SFDxx160GE0D

<sup>1</sup>: 100Base/1000Base, SerDes. SGMII on request

<sup>2</sup>: Utilizing MMF (OM3/OM4: 1 km / OM1/OM2: 550 m)

<sup>3</sup>: Please contact Itectra for recommended distance per channel for the lambdas 1270 – 1450nm

Specifications are subject to change without notice.

## 10G (SFP+)



Standard: 10GBase  
 MSA: SFF-8431 / SFF-8472  
 Size: 8.55 × 13.7 × 56.5 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 95%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power [dBm]	Rx Sensitivity [dBm]	Rx Overload [dBm]	Conn	Distance/ Power Budget	Effect [Watt]	Product Number
<b>1GBase/10GBase</b>										
1/10GBase-TX	<sup>1</sup> -	C	-	-	-	-	RJ45	30m	3W	SPT00M30MR00
1/10GBase-SR	850	C	VCSEL/PIN	-6 to -1	-11.1	-1	LC	300m/5dB	1W	SPP85P301R0D
1/10GBase-LR	1310	C/I	DFB/PIN	-8.2 to 0.5	-14.4	0	LC	10km/6.2dB	1W	SPP130101RxD
<b>10GBase</b>										
10GBase-TX	<sup>1</sup> -	C	-	-	-	-	RJ45	30m	3W	SPT00M301000
10GBase-SR	<sup>2</sup> 850	C/E/I	VCSEL/PIN	-6 to 1	-11	-1	LC	400m/5dB	1W	SPP85P30100B
10GBase-LRM	<sup>3</sup> 1310	C/I	FP/PIN	-6 to -1	-14.4	0.5	LC	500m/8.4dB	1W	SPP13002100B
10GBase-LR	1310	C/E/I	DFB/PIN	-8.2 to 0.5	-14.4	0	LC	10km/6.2dB	1W	SPP13010100B
10GBase-LR	1310	C/E/I	DFB/PIN	-3 to 1	-14.4	0	LC	20km/11.4dB	1W	SPP13020100B
10GBase-ER	1310	C/E/I	DFB/PIN	-1 to 4	-15	0	LC	40km/14dB	1W	SPP13040100B
10GBase-ER	1550	C/E/I	EML/PIN	-4.7 to 4	-15.8	0	LC	40km/11dB	1.5W	SPP15040100B
10GBase-ZR	1550	C/E/I	EML/ADP	0 to 5	-23	-8	LC	80km/23dB	1W	SPP15080100D
10GBase-ZR	1550	C	EML/APD	1 to 5	-25	-8	LC	100km/26dB	1.6W	SPP15100100D
<b>Bi-directional</b>										
10GBase-BXD	1330/1270	C/E/I	DFB/PIN	-5 to 0	-14	0	LC	10km/9dB	1.5W	SPB32010100B
10GBase-BXU	1270/1330	C/E/I	DFB/PIN	-5 to 0	-14	0	LC	10km/9dB	1.5W	SPB23010100B
10GBase-BXD	1330/1270	C/E/I	DFB/PIN	-2 to 2	-14	0	LC	20km/14dB	1.5W	SPB32020100B
10GBase-BXU	1270/1330	C/E/I	DFB/PIN	-2 to 2	-14	0	LC	20km/14dB	1.5W	SPB23020100B
10GBase-BXD	1330/1270	C/E/I	DFB/PIN	1 to 5	-15	0	LC	40km/16dB	1.5W	SPB32040100B
10GBase-BXU	1270/1330	C/E/I	DFB/PIN	1 to 5	-15	0	LC	40km/16dB	1.5W	SPB23040100B
10GBase-BXD	1330/1270	C/E/I	DFB/ADP	1 to 6	-20	-8	LC	60km/21dB	1.5W	SPB32060100B
10GBase-BXU	1270/1330	C/E/I	DFB/ADP	1 to 6	-20	-8	LC	60km/21dB	1.5W	SPB23060100B
10GBase-BXD	1550/1490	C	EML/ADP	-1 to 3	-23	-6	LC	80km/22dB	1.5W	SPB54080100D
10GBase-BXU	1490/1550	C	EML/ADP	-1 to 3	-23	-6	LC	80km/22dB	1.5W	SPB45080100D
<b>CWDM</b>										
10GBase-LR	<sup>4</sup> 1270-1610	C/E/I	DFB/PIN	-4 to 1	-14	0.5	LC	10km/10dB	1.0W	SPCxxB10100D
10GBase-ER	<sup>4</sup> 1270-1450	C/E	DFB/PIN	-2 to 3	-16	0.5	LC	40km/14dB	1.5W	SPCxxB14100D
10GBase-ER	1470-1610	C/E/I	EML/PIN	-1 to 4	-15	0	LC	40km/14dB	1.5W	SPCxx040100D
10GBase-ZR	<sup>4</sup> 1270-1450	C/E	DFB/ APD	+2 to 4	-21	-8	LC	70km/23dB	1.5W	SPCxxB23100D
10GBase-ZR	1470-1610	C/E	EML/APD	0 to 4	-23	-8	LC	70km/23dB	1.5W	SPCxx070100D
<b>DWDM</b>										
10GBase-ER	19x.x00THz	C/I	EML/PIN	-1 to 4	-15	-1	LC	40km/14dB	1.5W	SPDxx040100D
10GBase-ZR	19x.x00THz	C/I	EML/ADP	0 to 4	-23	-7	LC	80km/23dB	1.5W	SPDxx080100D
10GBase-ZR	<sup>5</sup> Tuneable	C/I	ILMZ/ADP	-1 to 3	-24	-7	LC	80km/23dB	1.7W	SPDTU080100D
10GBase-ZR	<sup>6</sup> Tuneable	C/I	ILMZ/ADP	-1 to 3	-24	-7	LC	80km/23dB	1.7W	SPATU080100D

<sup>1</sup>: Cat6a/Cat7 cable

<sup>2</sup>: Utilising MMF (OM4: 400 m / OM3: 300 m / OM2: 82 m / OM1: 33 m)

<sup>3</sup>: Utilising MMF (OM4: 500 m / OM3: 315 m / OM2: 220 m / OM1: 220 m), mode conditioning patch cord and electric dispersion compensation (EDC)

<sup>4</sup>: Please contact Itectra for recommended distance per channel

<sup>5</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Tuneable

<sup>6</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Auto tuneable

<sup>7</sup>: 191.300 THz – 196.050 THz (50 GHz spacing) Tuneable

Specifications are subject to change without notice.

## 8/16/32G Fiber Channel (SFP+)



Standard: 8G / 16G / 32G FC  
 MSA: SFF-8431 / SFF-8472  
 Size: 8.55 × 13.7 × 56.5 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 95%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power [dBm]	Rx Sensitivity [dBm]	Rx Overload [dBm]	Conn	Distance/ Power Budget	Effect [Watt]	Product Number
<b>Fibre Channels</b>										
8G FC	850	C/E/I	VCSEL/PIN	-6 to -1	-10	-1	LC	100m/4dB	1.0W	SPP85P30100B
8G FC	1310	C/E/I	DFB/PIN	-8.2 to 0.5	-14.4	0	LC	10km/6.2dB	1.0W	SPP13010100B
8G/16G FC	850	C	VCSEL/PIN	-6 to -1.2	-7.7	0	LC	100m/1.7dB	1.2W	SPP85P10160C
8G/16G FC	1310	C	DFB/PIN	-5 to 2	-12	2	LC	10km/7dB	1.2W	SPP13010160C
8G/16G/32G FC	850	C	VCSEL/PIN	-6.2 to 2	-5.8	2	LC	70m/1.6dB	1.2W	S2885P10320C
8G/16G/32G FC	1310	C	DFB/PIN	-5 to 2	-11.4	2	LC	10km/6.4dB	1.2W	S2813010320C
<b>CWDM</b>										
8G FC	<sup>1</sup> 1271-1611	C/E/I	DFB/PIN	-4 to 1	-14	0.5	LC	10km/10dB	1.0W	SPCxxB10100D
8G FC	<sup>1</sup> 1271-1451	C/E	DFB/PIN	-2 to 3	-16	0.5	LC	40km/14dB	1.5W	SPCxxB14100D
8G FC	1471-1611	C/E/I	EML/PIN	-1 to 4	-15	0	LC	40km/14dB	1.5W	SPCxx040100D
8G FC	<sup>1</sup> 1271-1451	C/E	DFB/ APD	+2 to 4	-21	-8	LC	70km/23dB	1.5W	SPCxxB23100D
8G FC	1471-1611	C/E	EML/APD	0 to 4	-23	-8	LC	70km/23dB	1.5W	SPCxx070100D
8G/16G FC	1471-1611	C	EML/PIN	-1 to 3	-14	-1	LC	40km/13dB	2.0W	SPCxx020160C
<b>DWDM</b>										
8G FC	19x.x00THz	C/I	EML/PIN	-1 to 4	-15	-1	LC	40km/14dB	1.5W	SPDxx040100D
8G FC	19x.x00THz	C/I	EML/ADP	0 to 4	-23	-7	LC	80km/23dB	1.5W	SPDxx080100D
8G FC	<sup>2</sup> Tuneable	C/I	ILMZ/ADP	-1 to 3	-24	-7	LC	80km/23dB	1.7W	SPDTU080100D
8G FC	<sup>3</sup> Tuneable	C/I	ILMZ/ADP	-1 to 3	-24	-7	LC	80km/23dB	1.7W	SPATU080100D
8G/16G FC	19x.x00THz	C	EML/PIN	-1 to 3	-14	-1	LC	40km/13dB	2.0W	SPDxx020160C

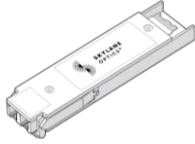
<sup>1</sup>: Please contact Itectra for recommended distance per channel

<sup>2</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Tuneable

<sup>3</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Auto tuneable

Specifications are subject to change without notice.

## 10G (XFP)



Standard: 10GBase  
 MSA: INF-8077 / SFF-8472  
 Size: 8.55 × 18.35 × 78.0 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 95%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power [dBm]	Rx Sensitivity [dBm]	Rx Overload [dBm]	Conn	Distance/ Power Budget	Effect [Watt]	Product Number
<b>10GBase</b>										
10GBase-SR	850	C/E/I	VCSEL/PIN	-7.5 to -1	-11.1	-1	LC	300m/3.5dB	1.5W	XFP85P30100D
10GBase-LR	1310	C/I	DFB/PIN	-6 to -1	-14.4	0	LC	10km/8.4dB	2.5W	XFP13010100D
10GBase-LR	1310	C	DFB/PIN	-3 to 1	-15	0	LC	20km/12dB	2.5W	XFP13020100D
10GBase-ER	1310	C/I	DFB/PIN	0 to 4	-16	0.5	LC	40km/16dB	2.5W	XFP13040100D
10GBase-ER	1550	C/E/I	EML/PIN	-1 to 4	-15.8	0	LC	40km/14.8dB	3.5W	XFP15040100D
10GBase-ZR	1550	C/I	EML/ADP	0 to 4	-23	-7	LC	80km/23dB	3.5W	XFP15080100D
<b>Bi-directional</b>										
10GBase-BXD	1330/1270	C/E/I	DFB/PIN	-5 to 0	-14	0	LC	10km/9dB	2.0W	XFB32010100D
10GBase-BXU	1270/1330	C/E/I	DFB/PIN	-5 to 0	-14	0	LC	10km/9dB	2.0W	XFB23010100D
10GBase-BXD	1330/1270	C/E	DFB/PIN	-3.5 to 3.0	-14.5	0	LC	20km/11dB	2.0W	XFB32020100D
10GBase-BXU	1270/1330	C/E	DFB/PIN	-3.5 to 3.0	-14.5	0	LC	20km/11dB	2.0W	XFB23020100D
10GBase-BXD	1330/1270	C/I	DFB/PIN	1 to 5	-15	0	LC	40km/16dB	2.0W	XFB32040100D
10GBase-BXU	1270/1330	C/I	DFB/PIN	1 to 5	-15	0	LC	40km/16dB	2.0W	XFB23040100D
10GBase-BXD	1330/1270	C	DFB/ADP	1 to 7	-20	-7	LC	60km/21dB	2.0W	XFB13060100D
10GBase-BXU	1270/1330	C	DFB/ADP	1 to 7	-20	-7	LC	60km/21dB	2.0W	XFB23060100D
10GBase-BXD	1550/1490	C	EML/ADP	-1 to 3	-23	-6	LC	80km/22dB	2.5W	XFB54080100D
10GBase-BXU	1490/1550	C	EML/ADP	-1 to 3	-23	-6	LC	80km/22dB	2.5W	XFB45080100D
<b>CWDM</b>										
10GBase-LR	<sup>1</sup> 1270-1610	C	DFB/PIN	-5 to 0	-15	0	LC	10km/10dB	3.5W	XFCxxB10100D
10GBase-ER	<sup>1</sup> 1270-1450	C	DFB/PIN	-1.8 to 0	-15.8	-1	LC	40km/14dB	3.5W	XFCxxB14100D
10GBase-ER	1470-1610	C	EML/PIN	-3 to 4	-15	0	LC	40km/14dB	3.5W	XFCxx040100D
10GBase-ZR	<sup>1</sup> 1270-1450	C	DFB/ APD	2 to 4	-21	-10	LC	70km/23dB	3.5W	XFCxxB23100D
10GBase-ZR	1470-1610	C	EML/APD	0 to 4	-23	3.5	LC	70km/23dB	3.5W	XFCxx070100D
<b>DWDM</b>										
10GBase-ER	19x.x00THz	C	EML/PIN	-3 to 4	-15	0	LC	40km/12dB	3.5W	XFDxx040100D
10GBase-ZR	19x.x00THz	C	EML/ADP	0 to 4	-23	-10	LC	80km/23dB	3.5W	XFDxx080100D
10GBase-ZR	<sup>2</sup> Tuneable	C	ILMZ/ADP	-1 to 3	-24	-7	LC	80km/23dB	3.5W	XFDTU0800H0D

<sup>1</sup>: Please contact Itectra for recommended distance per channel

<sup>2</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Tuneable

Specifications are subject to change without notice.

## 25G (SFP28)



Standard: 25GBase  
 MSA: INF-8074 / SFF-8402  
 Size: 8.55 × 13.7 × 56.5 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 85%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power [dBm]	Rx Sensitivity [dBm]	Rx Overload [dBm]	Conn	Distance/ Power Budget	Effect [Watt]	Product Number
<b>10GBase/25GBase</b>										
10/25GBase-SR	<sup>1 2</sup> 850	C/I	VCSEL/PIN	-8.4 to 2.4	-10.3	2.4	LC	100m/1.9dB	1.0W	S2885P102RxF
10/25GBase-LR	<sup>1</sup> 1310	C	DFB/PIN	-7 to 2	-13.3	2	LC	10km/6.3dB	1.5W	S28130102R0F
10/25GBase-LR	<sup>1</sup> 1310	C	DFB/PIN	1 to 4.5	-14.5	2.5	LC	20km/15.5dB	1.5W	S28130202R0F
<b>Bi-directional</b>										
10/25GBase-BXD	<sup>1</sup> 1330/1270	I	DFB/PIN	-2 to 4	-13	2.5	LC	10km/11dB	1.5W	S2B320102R2F
10/25GBase-BXU	<sup>1</sup> 1270/1330	I	DFB/PIN	-2 to 4	-13	2.5	LC	10km/11dB	1.5W	S2B230102R2F
10/25GBase-BXD	<sup>1</sup> 1310/1270	I	DFB/APD	-1 to 6	-17	-4	LC	40km/16dB	1.8W	S2B170402R2F
10/25GBase-BXU	<sup>1</sup> 1270/1310	I	DFB/APD	-1 to 6	-17	-4	LC	40km/16dB	1.8W	S2B710402R2F
<b>CWDM</b>										
10/25GBase-LR	<sup>1 3 4 5</sup> CWDM	C/I	DFB/PIN	0 to 6	-13	2	LC	10km/13dB	1.5W	S2Cxx0102RxF
<b>DWDM</b>										
10/25GBase-LR	<sup>1 6</sup> Tuneable	C/I	ILMZ/PIN	0 to 6	-16	0	LC	10km/16dB	2.5W	S2DTU0102RxF
<b>25GBase</b>										
25GBase-SR	<sup>1 2</sup> 850	C/I	VCSEL/PIN	-8.4 to 2.4	-10.3	2.4	LC	100m/1.9dB	1.0W	S2885P1025xF
25GBase-LR	<sup>1</sup> 1310	C/I	DFB/PIN	-7 to 2	-13.3	2	LC	10km/8.4dB	1.5W	S2813010250F
25GBase-ER	<sup>1</sup> 1310	C/I	DFB/APD	-3 to 6	-21	-4	LC	40km/18dB	1.8W	S2813040250F
<b>Bi-directional</b>										
25GBase-BXD	<sup>1</sup> 1330/1270	C/I	DFB/PIN	-2 to 4	-13	2.5	LC	10km/11dB	1.5W	S2B3201025xF
25GBase-BXU	<sup>1</sup> 1270/1330	C/I	DFB/PIN	-2 to 4	-13	2.5	LC	10km/11dB	1.5W	S2B2301025xF
25GBase-BXD	<sup>1</sup> 1310/1270	I	DFB/APD	-1 to 6	-19	-4	LC	40km/18dB	1.8W	S2B17040252F
25GBase-BXU	<sup>1</sup> 1270/1310	I	DFB/APD	-1 to 6	-19	-4	LC	40km/18dB	1.8W	S2B71040252F
<b>CWDM</b>										
25GBase-LR	<sup>1 3 4 5</sup> CWDM	C/I	DFB/PIN	0 to 6	-13	2	LC	10km/13dB	1.5W	S2Cxx01025xF
<b>DWDM</b>										
25GBase-LR	<sup>1 6</sup> Tuneable	C/I	ILMZ/PIN	0 to 6	-16	0	LC	10km/16dB	2.5W	S2DTU01025xF

<sup>1</sup>: With Reed-Solomon Forward Error Correction (RS-FEC) for 25 Gbps

<sup>2</sup>: OM4: 100 m / OM3: 70 m

<sup>3</sup>: For break-out from 40G CWDM4 or 100G CWDM4

<sup>4</sup>: 1270 nm / 1290 nm / 1310 nm / 1330 nm / 1350 nm / 1370 nm / 1470 nm / 1490 nm / 1510 nm / 1530 nm / 1550 nm

<sup>5</sup>: Please contact Itectra for recommended channel distance

<sup>6</sup>: Tuneable within the 50 GHz ITU grid, 191.300 THz – 196.000 THz

Specifications are subject to change without notice.

## 40G (QSFP+)



Standard: 40GBase  
 MSA: SFF-8661 / INF-8628 / SFF-8490  
 Size: 8.55 × 18.35 × 72.4 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -20 – 85°C  
 Humidity: 5 – 85%

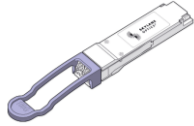
Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power <sup>1</sup> [dBm]	Rx Sensibility <sup>1</sup> [dBm]	Rx Overload <sup>1</sup> [dBm]	Conn	Distance	Effect [Watt]	Product Number
<b>40GBase</b>										
40GBase-SR4	850	C	VCSEL/PIN	-6 to 3	-13	0	MPO-12	100m	1.5W	QFP85P1040PD
40GBase-SR4	850	C	VCEL/PIN	-2.8 to 3	-11.1	2.4	MPO-12	300m	1.5W	QFP85P3040PD
40GBase-IR4	<sup>1</sup> 1310	C	FP/PIN	-6 to 1.5	-12.5	2.3	MPO-12	1.4km	3.5W	QFP13C1440PD
40GBase-IR4	1271-1331	C	DFB/PIN	-2 to 3.5	-11.5	2.3	LC	2km	3.5W	QFPQL002400D
40GBase-PSM4	<sup>1</sup> 1310	C	DFB/PIN	-8.2 to 0.5	-14.4	-0.5	MPO-12	10km	3.5W	QFP1301040PD
40GBase-LR4	1271-1331	C	DFB/PIN	-4 to 3.5	-11.5	2.3	LC	10km	3.5W	QFPQL010400D
40GBase-ER4	1271-1331	C	DFB/APD	3.3 to 10.5	-13.2	-1	LC	40km	3.5W	QFPQL040400D
<b>QSFP+ to SFP+Converter</b>										
40G converter	-	C	-	-	-	-	LC	-	-	QF040CON000C

<sup>1</sup>: Per lane

<sup>2</sup>: Parallel SingleMode (PSM4)

Specifications are subject to change without notice.

## 100G (QSFP28)



Standard: 100GBase  
 MSA: SFF-8636 / SFF-8679 / SFF-8661  
 Size: 8.55 × 18.35 × 72.4 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -20 – 85°C  
 Humidity: 5 – 85%

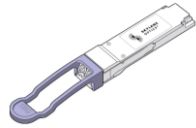
Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power <sup>1</sup> [dBm]	Rx Sensitivity <sup>17</sup> [dBm]	Rx Overload <sup>1</sup> [dBm]	Conn	Distance	Effect [Watt]	Product Number
<b>100GBase BiDi</b>										
100GBase-CWDM4	<sup>5</sup> 1271-1331	C	DFB/PIN	-0.5 to 8.5	-7.3	2.5	LC/APC	2km	3.5W	Q2BQL002C0TF
100GBase-LR1	<sup>8 10</sup> 1270/1330	C	WDM/PIN	-1.4 to 4	-4.1	4.5	LC	10km	4.5W	Q2B23010C00F
100GBase-LR1	1330/1270		WDM/PIN	-1.4 to 4	-4.1	4.5	LC	10km	4.5W	Q2B32010C00F
<b>100GBase</b>										
100GBase-SR1.2	850/900	C	VCSEL/PIN	-6.2 to 4	-8	4	LC	150m <sup>12</sup>	3.5W	Q2B85M70C00F
100GBase-DR1	<sup>8 10</sup> 1311	C	WDM/PIN	-2.9 to 4	-1.9	4	LC	500m	4.5W	Q2C31P50C00F
100GBase-FR1	<sup>8 10</sup> 1311	C	WDM/PIN	2.4 to 4	-2.5	4.5	LC	2km	4.5W	Q2C31002C00F
100GBase-LR1	<sup>8 10</sup> <sup>11</sup>	C	WDM/PIN	-1.4 to 4	-4.1	4.5	LC	10km	4.5W	Q2C31010C00F
100GBase-SR4	<sup>2</sup> 850	C	VCSEL/PIN	-8.4 to 2.4	-10.3	2.4	MPO-12	100m	3.5W	Q2885P10C0PF
100GBase-SR4	<sup>3</sup> 850	C	VCSEL/PIN	-8.4 to 2.4	-10.3	2.4	MPO-12	300m	3.5W	Q2885P30C0PF
100GBase-PSM4	<sup>4</sup> 1310	C	DFB/PIN	-9.4 to 2	-12.66	2	MPO-12	500m	3.5W	Q2813P50C0PD
100GBase-CWDM4	<sup>5</sup> 1271-1331	C	DFB/PIN	-0.5 to 8.5	-11.5	2.5	LC	2km	3.5W	Q28QL002C00F
100GBase-IR4	<sup>4</sup> 1310	C	DFB/PIN	-5.5 to 2	-11.4	2	MPO-12	2km	3.5W	Q2813002C0PD
100GBase-LR4	<sup>8</sup> 1295-1309	C	WDM/PIN	-4.3 to 4.5	-10.6	4.5	LC	10km	4.5W	Q28QD010C00D
100GBase-LR4	<sup>8</sup> 1295-1309	C	WDM/PIN	-2.5 to 4.5	-10.6	4.5	LC	20km	4.5W	Q28QD020C00D
100GBase-ER4L	<sup>6</sup> 1295-1309	C	EML/PIN+SOA	-2.5 to 2.9	-21.4	-3.5	LC	40km	5.0W	Q28QD040C05F
100GBase-ER4	<sup>8</sup> 1295-1309	C	WDM/PIN+SOA	-2.9 to 2.9	-20.9	4.5	LC	40km	5.0W	Q28QD040C05D
100GBase-ZR4	<sup>5 9</sup> 1295-1309	C	EML/PIN+SOA	2 to 6.5	-28	-7	LC	80km	5.0W	Q28QD080C05F
<b>QSFP28 to SFP28 converter</b>										
100G converter	-	C	-	-	-	-	LC	-	-	Q2S000002500

- 1: Per line
- 2: OM4: 100 m / OM3: 70 m
- 3: OM4: 300 m / OM3: 200 m
- 4: Parallel SingleMode (PSM4)
- 5: With Forward Error Correction (FEC)
- 6: 40 km w/FEC / 30 km w/o FEC, values given w/FEC implemented
- 7: Average Rx Sensitivity, each lane (min) is informative and not the principal indicator of signal strength
- 8: WDM laser is either DML, EML or DFB type. Please consult Itectra if special requirements
- 9: Operating temperature range 0°C to 65°C
- 10: Utilizes PAM-4
- 11: Available on 1270nm, 1290nm, 1310nm, or 1330nm
- 12: OM5: 150m, OM4: 100m, OM3: 70m

Specifications are subject to change without notice.



## 100G / 200G / 400G (QSFP-DD)



Standard: 100/200/400GBase  
 MSA: SFF-8636 / SFF-8679  
 Size: 8.55 × 18.35 × 93.3 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3bs-2017 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -20 – 85°C  
 Humidity: 5 – 85%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power <sup>1</sup> [dBm]	Rx Sensitivity <sup>1,2</sup> [dBm]	Rx Overload <sup>1</sup> [dBm]	Conn	Distance	Effect [Watt]	Product Number
<b>4×100GBase</b>										
4×100GBase-LR1	<sup>5 7</sup> 1310	C	WDM/PIN	-2.7 to 5.1	-8.2	4.8	MPO-12	10km	12W	QBP13010E0PF
<b>2×100GBase</b>										
2×100GBase-FR4	1271–1331	C	DFB/PIN	-6.5 to 2.5	-11.5	2.5	CS	2km	8W	QAPQL002D03F
2×100GBase-LR4	1271–1331	C	DFB/PIN	-6.5 to 2.5	-13.0	2.5	CS	10km	8W	QAPQL010D03F
2×100GBase-LR4	<sup>7</sup> 1295–1309	C	WDM/PIN	-4.3 to 4.5	-10.6	4.5	CS	10km	8W	QAPQD010D03D
<b>200GBase</b>										
200GBase-LR4	<sup>7</sup> 1295–1309	C	WDM/PIN	-3.4 to 5.3	-9.7	5.3	LC	10km	10.8W	QBPQD010D00F
200GBase-ER4	<sup>5 7 8</sup> 1295–1309	C	WDM/APD	6.4 to 12.6	-13.3	-3.4	LC	40km	10.8W	QBPQD040D00F
<b>400GBase</b>										
400GBase-SR8	<sup>3 5</sup> 850	C	VCSEL/PIN	-6.5 to 4.0	-8.4	4.0	MPO-16	100m	12W	QBP85P10E0QF
400GBase-DR4	<sup>4 5 7</sup> 1310	C	CWDM/PIN	-2.9 to 4.0	-5.9	4.0	MPO-12	500m	12W	QBP13P50E0PF
400GBase-DR4+	<sup>4 5 7</sup> 1310	C	WDM/PIN	-2.4 to 4.0	-6.4	4.5	MPO-12	2km	12W	QBP13002E0PF
400GBase-FR4	<sup>5 7</sup> 1271–1331	C	CWDM/PIN	-3.3 to 3.5	-7.3	3.5	LC	2km	13W	QBPQL002E00F
400GBase-FR8	<sup>5 7</sup> 1273–1309	C	WDM/PIN	-3.5 to 5.3	-7.5	5.3	LC	2km	13W	QBPOD002E00F
400GBase-LR4	<sup>5 7</sup> 1271–1331	C	CWDM/PIN	-2.8 to 4.0	-9.1	4.0	LC	10km	13W	QBPQL010E00F
400GBase-LR8	<sup>5 7</sup> 1273–1309	C	WDM/PIN	-2.8 to 5.3	-9.1	5.3	LC	10km	14.5W	QBPOD010E00F
400GBase-ER4L	<sup>5 7</sup> 1295–1309	C	WDM/PIN	-2.8 to 4.0	-9.1	4.0	LC	40km	13W	QBPQD040E00F
400GBase-ER8	<sup>5 7</sup> 1273–1309	C	WDM/APD	-0.6 to 5.6	-18.6	-4.4	LC	40km	15.4W	QBPOD040E00F
<b>DWDM</b>										
400G ZR	<sup>10 12</sup> Tuneable	C	MZM/APD	-10 to -6	-20	1	LC	120km	18.3W	QBTDUSES0801
400G OpenZR+	<sup>9 11</sup> Tuneable	C	MZM/APD	-10 to -6	-23	1	LC	1300km	21.3W	QBTDUMES0902

- 1: Per line
- 2: Average Rx Sensitivity, each lane (min) is informative and not the principal indicator of signal strength
- 3: OM4: 100 m / OM3: 70 m
- 4: Parallel SingleMode (PSM4), APC
- 5: Utilizes PAM-4
- 6: QSFP56
- 7: WDM laser is either DML, EML or DFB type. Please consult Itectra if special requirements
- 8: Utilizes 4×26.5625 Gb with PAM4 Serial Electrical Interface (200GAUI-4) or 8×26.5625 Gb with NRZ Serial Electrical Interface (200GAUI-8)
- 9: Supports 400Gbps (OFEC-16QAM, Rx range: -23 – 1 [dBm], OSNR ≤ 22.7 [dB]), 300Gbps (OFEC-8QAM, Rx range: -23 – 1 [dBm], OSNR ≤ 19.3 [dB]), 200Gbps (OFEC-QPSK, Rx range: -30 – 1 [dBm], OSNR ≤ 15 [dB]), 100Gbps (OFEC-QPSK, Rx range: -32 – 1 [dBm], OSNR ≤ 11 [dB])
- 10: Utilizes 8×26.5625 Gb PAM4 Serial Electrical Interface (400GAUI-8, RS (544/514) FEC)
- 11: Optimal OSNR performance at less than 40 km
- 12: Optimal OSNR performance at less than 40 km

Specifications are subject to change without notice.

## 100G / 200G (CFP2)



Standard: 100/200GBase  
 MSA: CFP MSA compliant  
 Size: 41.5 × 12.4 × 107.5 mm  
 All optical modules feature DOM  
 Distances based on IEEE 802.3-2012 fibres

Temp., Operation: C: Commercial: 0 – 70°C  
 E: Extended: -20 – 85°C  
 I: Industrial: -40 – 85°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 85%

Standard	Wavelength [nm]	Temp	Laser/ Receiver	Tx Power <sup>1</sup> [dBm]	Rx Sensitivity <sup>1</sup> [dBm]	Rx Overload <sup>1</sup> [dBm]	Conn	Distance	Effect [Watt]	Product Number
<b>100GBase/200GBase</b>										
100GBase-LR4	1295-1309	C	EML/PIN	-4.3 to 4.5	-10.6	4.5	LC	10km	8.0W	CF2QD010C00D
100GBase-ER4	1295-1309	C	EML/PIN+SOA	-2.9 to 2.9	-20.9	4.5	LC	40km	9.0W	CF2QD040C00D
100G/200G ACO <sup>2 3</sup>	Tuneable	C	MZM/APD	-15 to 1	-25 to -13	0	LC	2000km	12W	C2DTUACOMR01
100G/200G DCO <sup>2 3</sup>	Tuneable	C	MZM/APD	-15 to 1	-25	0	LC	2000km	16W	C2DTUDCOMR02
<b>CPF2 to QSFP28 converter</b>										
100G converter	-	C	-	-	-	-	LC	-	-	C2Q00000C00D

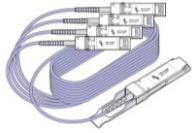
<sup>1</sup>: Per line

<sup>2</sup>: 100 Gb DP-QPSK / 200Gb DP-8QAM/16QAM. Please contact Itectra for distances and further technical details

<sup>3</sup>: 191.100 THz – 196.150 THz (50 GHz spacing) Tuneable

Specifications are subject to change without notice.

## DAC (Direct Attached Cable) / AOC (Active Optical Cable)



Standard: 10/40/100/200GBase  
 MSA: SFF-8431/SFF-8436 (SFP+/SFP28)  
 SFF-8661/SFF-8665 (QSFP+/QSFP28)  
 Size: 8.55 × 13.70 × 56.5 mm (SFP)  
 8.55 × 18.35 × 72.4 mm (QSFP)

Temp., Operation: C: Commercial: 0 – 70°C  
 Temp., Storage: -40 – 85°C  
 Humidity: 5 – 85%

Standard	Medium	Temp	Method	Type	Length [meter] <sup>1</sup>	Effect [Watt]	Product Number
<b>10GBase (SFP+)</b>							
10GBase	Copper	C	Passive DAC	SFP+ to SFP+	1/2/3/5/7	1.0W	DAPSSMxx1000
10GBase	<sup>2</sup> 850nm	C	AOC	SFP+ to SFP+	1/3/5/7/10	0.7W	DOASSMxx100D
<b>25GBase (SFP28)</b>							
25GBase	Copper	C	Passive DAC	SFP28 to SFP28	1/2/3/5/7	1.0W	DAPSSMxx2500
25GBase	<sup>2</sup> 850nm	C	AOC	SFP28 to SFP28	1/3/5/7/10	0.7W	DOASSMxx250D
<b>40G (QSFP+)</b>							
40GBase	Copper	C	Passive DAC	QSFP+ to QSFP+	1/2/3/5/7	0.5W	DAPQQMxx4000
40GBase	Copper	C	Passive DAC	QSFP+ to 4×SFP+	1/2/3/5/7	0.5W	DAPQSMxx4000
40GBase	<sup>2</sup> 850nm	C	AOC	QSFP+ to QSFP+	1/3/5/7/10	1.5W	DAOQQMxx400D
40GBase	<sup>2</sup> 850nm	C	AOC	QSFP+ to 4×SFP+	1/3/5/7/10	1.5W	DAOQSMxx400D
<b>100G (QSFP28)</b>							
100GBase	Copper	C	Passive DAC	QSFP28 to QSFP28	1/2/3/5/7	0.5W	DAPQQMxxC000
100GBase	Copper	C	Passive DAC	QSFP28 to 4×SFP28	1/2/3/5/7	0.5W	DAPQSMxxC000
100GBase	<sup>2</sup> 850nm	C	AOC	QSFP28 to QSFP28	1/3/5/7/10	2.5W	DAOQQMxxC00D
100GBase	<sup>2</sup> 850nm	C	AOC	QSFP28 to 4×SFP28	1/3/5/7/10	2.5W	DAOQSMxxC00D

<sup>1</sup>: Please contact Itectra if other lengths are required

<sup>2</sup>: Features DOM

Specifications are subject to change without notice.

## About Ipectra

Since 2008 Ipectra has designed, delivered, and serviced business-critical IT infrastructure for Danish datacentres, public companies, enterprises, and service provider networks. Ipectra is specialized in the optical domain with focus on delivery of optical components, WDM systems and consultancy based on a solid knowledge of optical networks, physical optical behaviour, and future evolution of the optical market.

Ipectra has gained the Danish Børsen Gazelle Award in three continuous years (2016 – 2018) and has successively been Bisnode Triple-A rated since 2014.

This success is founded in a close cooperation with our customers and a deep professional understanding of their infrastructure challenges and needs. We follow the technology closely and ensure that our customers benefit from the latest technologies with the most suitable solution.

## Quality in all aspects

Ipectra aims for the highest quality in all aspects from optical network design to the selection of vendors and components to each specific project. All Ipectras vendors are carefully selected among the leaders in the optical world and have all the same clear view on “Quality in all aspects” as Ipectra.

## Service and Support

Ipectra offers a selection of service and support options to secure operational efficiency and resolve critical problems smoothly and with minimum impact on the operational infrastructure. To accommodate this Ipectra offers different services from Advanced Hardware Replacement to four hours SLA and Professional Deployment Services from selected vendors.

## Contacts

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