

**1.25 Gb/s, 60 - 80 km  
CWDM 1470 nm – 1610 nm  
2x5 Dual LC Package**

**Description**

OptixCom's CWDM transceivers are designed with high performance DFB laser and cover the wavelength spectrum from 1470 nm to 1610 nm, with industry standard 20 nm spacing. The transceiver modules use industry standard 2x5 pluggable package. This product can be used at 1.0625 Gb/s for Fiber Channel or 1.25 Gb/s for Gigabit Ethernet applications.

Two transceiver designs reach up to 60 km and 80 km of distances with 20 dB and 24 dB of power budget, respectively, for standard single mode fibers. The products are RoHS compliant.



**SFF-1250CEX-AT60K-XX**  
**SFF-1250CEX-AT80K-XX**



**Key Features**

- 1470 - 1610 nm single mode, 1.0625/1.25 Gb/s
- Duplex LC connector optical interface
- Industry standard 2x5 pluggable package
- AC coupling LVPECL differential I/O logics
- 60 km with 20 dB power budget
- 80 km with 24 dB power budget
- Compliant with IEEE 802.3z, 1000BASE-EX
- Compliant with Fiber Channel Standard
- TTL Signal detect to monitor optical signals
- Single 3.3 V power supply
- RoHS compliant

**Applications**

- ✓ 1X Fiber Channel
- ✓ Gigabit Ethernet
- ✓ High speed I/O for file server
- ✓ Video over fiber links
- ✓ Media converter
- ✓ Data Communication for SAN and LAN
- ✓ Bus extension
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

**Ordering Information**

**Part Number:** SFF-1250CEX-AT60K-XX  
**Description**  
CWDM 1470 - 1610 nm 1.0625/1.25 Gb/s 2x5 SFF Transceiver, 60 km reach, 1XX0 nm wavelength, 0-70°C.

**Part Number:** SFF-1250CEX-AT80K-XX  
**Description:**  
CWDM 1470 – 1610 nm 1.0625/1.25 Gb/s 2x5 SFF Transceiver, 80 km reach, 1XX0 nm wavelength, 0-70°C.

XX specifies the wavelength as below. For example, SFF-1250CEX-AT60K-47 is the 1470 nm module.

<u>XX</u>	Wavelength	<u>XX</u>	Wavelength
47	1470 nm	55	1550 nm
49	1490 nm	57	1570 nm
51	1510 nm	59	1590 nm
53	1530 nm	61	1610 nm

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate	---	1.25	1.3	Gb/s
Supply Voltage	3.1	3.3	3.5	V
Supply Current	---	250	400	mA

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage	$V_{CC}$	-0.5	6.0	V
Input Voltage	$V_{IN}$	-0.5	$V_{CC}$	V
Operating Current	$I_{op}$	---	400	mA
Output Current	$I_o$	---	50	mA

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.65	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$		100		ohm
Optical Output Power <sup>3</sup> (SFF-1250CEX-AT60K-XX)	$P_o$	-4	---	+1	dBm
Optical Output Power <sup>3</sup> (SFF-1250CEX-AT80K-XX)	$P_o$	0	+2	+5	dBm
Center Wavelength – 1470 nm	$\lambda_c$	1464.5	1470	1477.5	nm
Center Wavelength – 1490 nm	$\lambda_c$	1484.5	1490	1497.5	nm
Center Wavelength – 1510 nm	$\lambda_c$	1504.5	1510	1517.5	nm
Center Wavelength – 1530 nm	$\lambda_c$	1524.5	1530	1537.5	nm
Center Wavelength – 1550 nm	$\lambda_c$	1544.5	1550	1557.5	nm
Center Wavelength – 1570 nm	$\lambda_c$	1564.5	1570	1577.5	nm
Center Wavelength – 1590 nm	$\lambda_c$	1584.5	1590	1597.5	nm
Center Wavelength – 1610 nm	$\lambda_c$	1604.5	1610	1617.5	nm
Spectral Width (-20 dB)	$\Delta\lambda$	---	---	1	nm
Extinction Ratio	$ET$	9	---	---	dB
Side Mode Suppression Ratio	$SMSR$	30	---	---	dB
Relative Intensity Noise	$RIN$	---	---	-120	dB/Hz
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	260	ps
Total Jitter	$T_j$	---	---	227	ps

Notes:

1. Module is designed for AC coupling. DC voltage will be filtered by internal capacitor.
2. Single ended will be 50 ohm for each signal line.
3. Output of average coupling optical power into 9/125  $\mu$ m SMF.
4. Optical eye diagram is compliant with IEEE 802.3z

### Receiver Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	1260	---	1610	nm
Receiver Overload	$P_{max}$	-3	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	-26	-24	dBm
Differential Output Voltage	$\Delta V_o$	0.4	---	2.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	OL	12	---	---	dB
Rise/Fall Time	$T_r/T_f$	---	---	350	ps
Signal Detect Hysteresis	$P_{SD+} - P_{SD}$	1	---	---	dB
Signal Detect Output - Low	$V_{SD-}$	0	---	0.5	V
Signal Detect Output - High	$V_{SD+}$	2.4	---	$V_{CC}$	V

Notes:

1. Test at 1.25 Gb/s, 2<sup>7</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).
2. Single ended will be 50 ohm for each signal line.

Class 1 Laser Product  
Complies with  
21 CFR 1040.10 and 1040.11

