CWDM for 4G/5G fronthaul System

Products Description:

In 4G/5G fronthaul system, if use optical fiber direct to connect RRU and DDU, it is simple, but it tales up a lot of optical fiber resources, and many times, the optical fiber resources are scare. In this case, if use CWDM system, can save your fiber resources. CCWDM (Compact Coarse Wavelength Division Multiplexer) technology is used and adjacent channels are cascaded in free space using parallel beams instead of optical fibers.

FIBERWDM are mainly producing WDM products, our 6ch /12ch/18ch CWDM are used in 5G fronthaul system.

Key features:

- ✓ 6ch /12ch/18ch CWDM over one (01) SMF
- ✓ Small size, light weight
- ✓ No power required
- ✓ 19” Rackmount/Wall mount/Pole mount
- ✓ Low insertion Loss
- ✓ Easy installation and Maintenance
- ✓ Outdoor box meets IP55 standard
- ✓ Stable working
- ✓ High temperature Operation
- ✓ 4G+5G Application Used
- ✓ LC/UPC Connector or Customer required
- ✓ Full necessary accessories for installation
- ✓ Compatible with 3G, 4G, and 5G equipment from Nokia, Ericsson, Huawei, ZTE, and others

Typical Product

1:12 CCWDM ABS Box

(COD12-LGX01-2757: For outdoor box)

1:12 CCWDM LGX Box

(CCOM12-LGX01-2757: For indoor box)

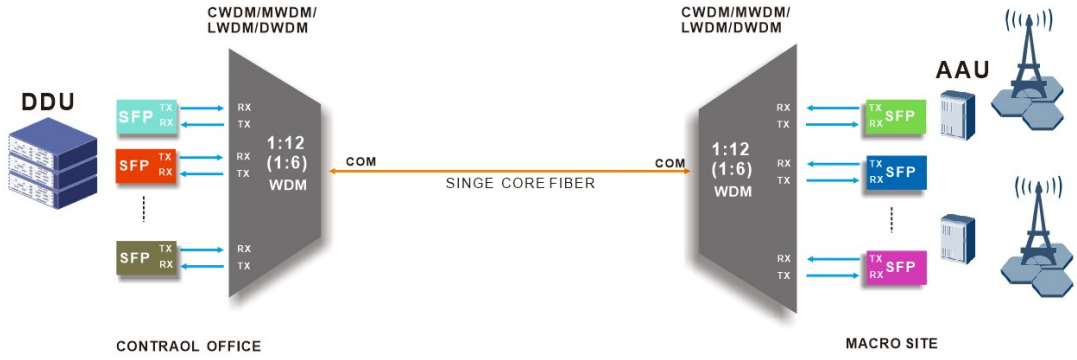
1:18 CCWDM ABS Box

(COD18-LGX01-2761: For outdoor box)

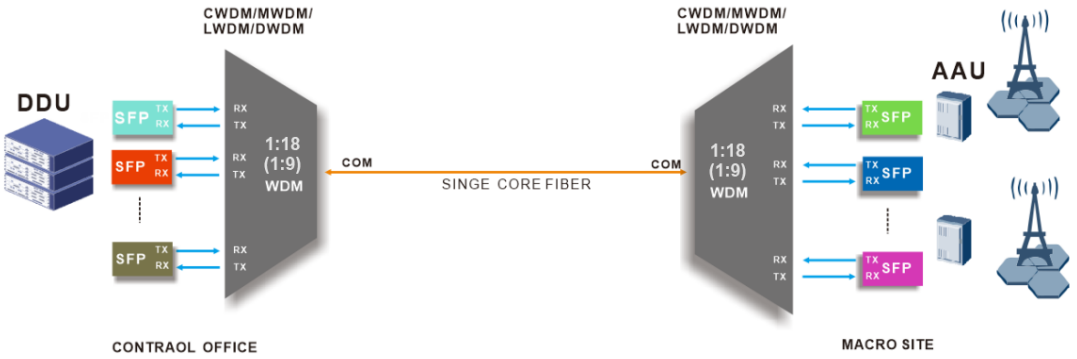
1:18 CCWDM LGX Box

(CCOM18-LGX01-2761: For indoor box)

Application solution as below:



1:12waves for 6CH single fiber application



1:18waves for 9CH single fiber application

I. 12 waves passive WDM Mux&DeMux

Optical performance indicators

parameter	unit	index
Number of channels		12
Center wavelength （Indoor box side ）	nm	1271TX/ 1291RX、 1311TX/1331RX、 1351TX/1371RX、 1471TX/1491RX、 1511TX/1531RX、 1551TX/1571RX
Center wavelength （outdoor box side ）	nm	1271RX/ 1291TX、 1311RX/ 1331TX、 1351RX/1371TX、 1471RX/1491TX、 1511RX/1531TX、 1551RX/ 1571TX
Center wavelength deviation	nm	±1.5
-1dB channel bandwith	nm	>14
Center wavelength Passband (nm)		±6.5
Channel spacing (nm)		20
Channel Passband Ripple	dB	< 0.5
Mux&DeMux Channel insertion loss	dB	⩽1.8
Mux&DeMux Channel insertion loss uniformity	dB	<1.0
Polarization Dependant Los (PDL)	dB	<0.2
Polarization Mode Dispersion (PMD)	ps	<0.2
Adjacent channel isolation	dB	>30
Non-adjacent channel isolation	dB	>45
Wavelength Heat stability	nm/℃	<0.002
Insertion loss heat stability	dB/℃	<0.007
Polarization-related losses	dB	<0.2
Minimum Directivity	dB	>50dB
Return loss	dB	>45
Maximum Power Handling	mW	500
Connectors		LC/UPC or required
Working temperature	℃	-10～+70
Storage temperature	℃	-40～+85
Working humidity		5%～95% RH， no condensation
Protection Class - Water, Dust resistant LGX box (indoor side)		IP25
Standard (indoor side)		ITU-T G.694.2, CE, RoHS, IP25
Protection Class - Water, Dust resistant ABS box(outdoor side)		IP55
Standard (outdoor side)		ITU-T G.694.2, CE, RoHS, IP55
ABS BOX Dimensions	mm	130*100*25mm
LGX BOX Dimensions	mm	214*150*20mm

parameter	unit	index
1U rack Dimensions	mm	440*160*44mm
Outdoor box material		Plastic, equipped with a security lock.
Indoor box material		Metal, powder coated.

II. 18 waves passive WDM Mux&DeMux

Optical performance indicators

parameter	unit	index
Number of channels		18
Center wavelength （Indoor box side）	nm	1271TX/ 1291RX、 1311TX/1331RX、 1351TX/1371RX、1391TX/1411RX、1431TX/1451RX、1471TX/1491RX、1511TX/1531RX、 1551TX/1571RX、1591TX/1611RX
Center wavelength （outdoor box side）	nm	1271RX/ 1291TX、 1311RX/ 1331TX、 1351RX/1371TX、1391RX/1411TX、1431RX/1451TX、1471RX/1491TX、1511RX/1531TX、 1551RX/ 1571TX、1591RX/1611TX
Center wavelength deviation	nm	±1.5
-1dB channel bandwith	nm	> 14
Center wavelength Passband (nm)		±6.5
Channel spacing (nm)		20
Channel Passband Ripple	dB	< 0.5
Mux&DeMux Channel insertion loss	dB	< 3.0
Mux&DeMux Channel insertion loss uniformity	dB	< 1.0
Polarization Dependant Los (PDL)	dB	< 0.2
Polarization Mode Dispersion (PMD)	ps	< 0.2
Adjacent channel isolation	dB	> 30
Non-adjacent channel isolation	dB	> 45
Wavelength Heat stability	nm/℃	< 0.002
Insertion loss heat stability	dB/℃	< 0.007
Polarization-related losses	dB	< 0.2
Minimum Directivity	dB	> 50dB
Return loss	dB	> 45
Maximum Power Handling	mW	500
Connectors		LC/UPC or required
Working temperature	℃	-10～+70
Storage temperature	℃	-40～+85
Working humidity		5%～95% RH， no condensation
Protection Class - Water, Dust resistant LGX box (indoor side)		IP25

parameter	unit	index
Standard (indoor side)		ITU-T G.694.2, CE, RoHS, IP25
Protection Class - Water, Dust resistant ABS box(outdoor side)		IP55
Standard (outdoor side)		ITU-T G.694.2, CE, RoHS, IP55
ABS BOX Dimensions	mm	130*100*50mm
LGX BOX Dimensions	mm	214*150*20mm
1U rack Dimensions	mm	440*160*44mm
Outdoor box material		Plastic, equipped with a security lock.
Indoor box material		Metal, powder coated.

III. Colourful module

1. 10G/10km CWDM colourful module

The 10Gb/s SFP+ CWDM colourful module based on the wireless fronthaul passive wavelength division multiplexing system conforms to the MSA protocol, has the characteristics of low power consumption, small size, multi-rate, etc., is compatible with CPRI 7/8, 10GE, STM-64 and other network applications, with a maximum transmission distance of up to 10 kilometers, RoHS compliant, and supports digital diagnostic functions。

Optical performance indicators

Product model	Tx wavelength (nm)	Rx wavelength (nm)	Distance (km)	Tx optical power range (dBm)	Overload Optical Power (dBm)	Ext (dB)	Receiver Sensitivity (dBm)
10G-CWDM10-27E	1271	1260~1620	10km	0~+5	>+1	>4	⩽-15
10G-CWDM10-29E	1291						
10G-CWDM10-31E	1311						
10G-CWDM10-33E	1331						
10G-CWDM10-35E	1351						
10G-CWDM10-37E	1371						
10G-CWDM10-39E	1391						
10G-CWDM10-41E	1411						
10G-CWDM10-43E	1431						
10G-CWDM10-45E	1451						
10G-CWDM10-47E	1471						
10G-CWDM10-49E	1491						

10G-CWDM10-51E	1511						
10G-CWDM10-53E	1531						
10G-CWDM10-55E	1551						
10G-CWDM10-57E	1571						
10G-CWDM10-59E	1591						
10G-CWDM10-61E	1611						

2. 25G/10km CWDM colourful module

The SFP28 CWDM(1271~1371nm/1471-1611) optical Transceiver integrates receiver and transmitter path on one module. In the transmit side, one of serial data streams are recovered, retimed, and passed to laser driver. In the receive side, the optical data streams is recovered by a PIN and trans-impedance amplifier, retimed. This module features a hot-pluggable electrical interface, low power consumption.

The product is designed with form factor, optical/electrical connection and digital diagnostic interface according to the SFP28 and compliant to IEEE 802.3cc.

Optical performance indicators

Product model	Tx wavelength (nm)	Rx wavelength (nm)	Distance (km)	Tx optical power range (dBm)	Overload Optical Power (dBm)	Ext (dB)	Receiver Sensitivity (dBm)
25G-CWDM10-27E	1271	1260~1620	10km	0~+6	>+1	>3.5	⩽-14.4
25G-CWDM10-29E	1291						
25G-CWDM10-31E	1311						
25G-CWDM10-33E	1331						
25G-CWDM10-35E	1351						
25G-CWDM10-37E	1371						
25G-CWDM10-47E	1471			-1~+4	>+0.5	>8.2	<-16
25G-CWDM10-49E	1491						
25G-CWDM10-51E	1511						
25G-CWDM10-53E	1531						
25G-CWDM10-55E	1551						
25G-CWDM10-57E	1571						
25G-CWDM10-59E	1591						
25G-CWDM10-61E	1611						

IV. Indoor&Outdoor passive WDM

1. Indoor 1U rack

The indoor 1U rack is a 4-slot, 1U-high passive rack, which is suitable for inserting 4 indoor combiner LGX box, which can realize the compact installation of the indoor combiner and save space in the equipment room. The 1U rack can be installed in a 19-inch cabinet.

Figure 1.1 Typical View of a indoor 1U rack

Indoor 1U rack size

2. Remote outdoor boxes

The outdoor dust-proof box is a special box for outdoor wall-mounted or pole-mounted remote WDM system, which supports 1 or 2 built-in remote combination splitters, meets the requirements of IP55 standards, has a lightweight structure and is easy to install。

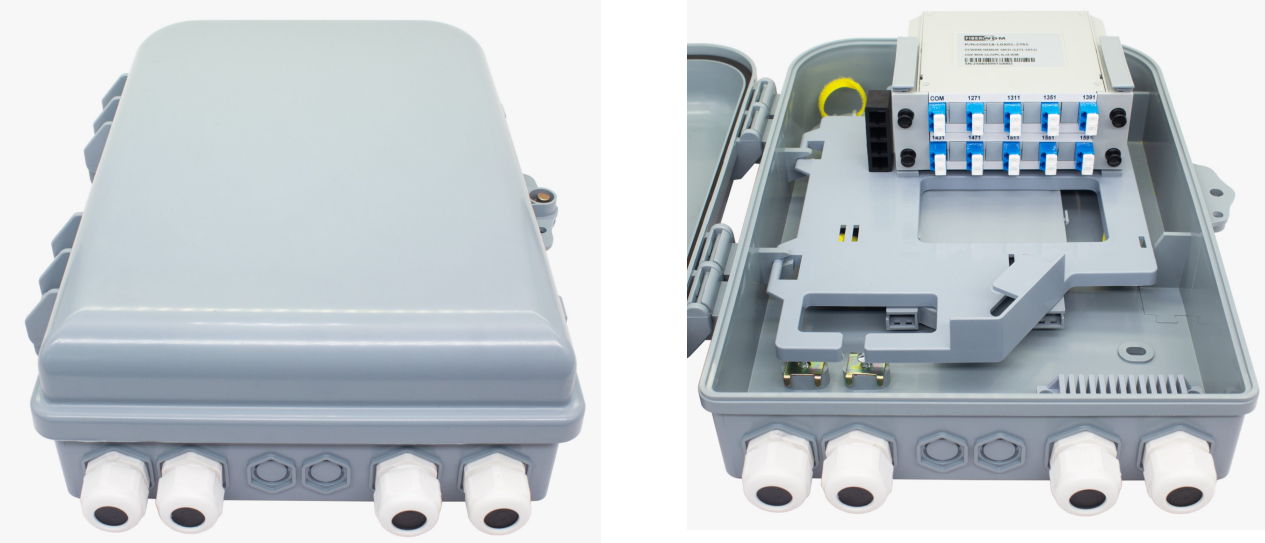


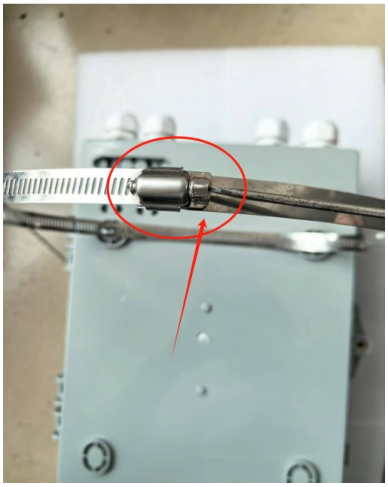
Figure 1.2 Typical View of the remote outdoor dust box

Note:One outdoor dustproof enclosure can accommodate one double-layer 18WAVES ABS LGX box

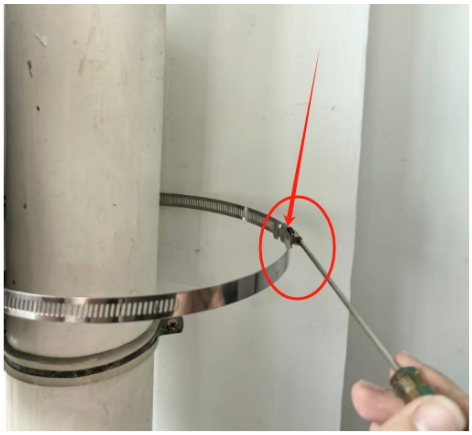
Install the outdoor dust box to wall

Locate the two holes on the top of the outdoor box and the one hole on the bottom. Drive the screws into the wall to secure the box in place.

Install the outdoor dust box to pole



Attach the clamp to the back of the outdoor box. Use a screwdriver to loosen the clamp.



After the clamp has been threaded through the pole, use a screwdriver to tighten the clamp again until it is securely fastened to the pole.