



# Remote Unit for Wireless Fiber Distribution System

## User Manual

Rel.11-3.1

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# 1. System Description

## 1.1. Topology of Distribution System Solution based on WFDS

The typical topology of distribution system solution based on WFDS is as shown in 0

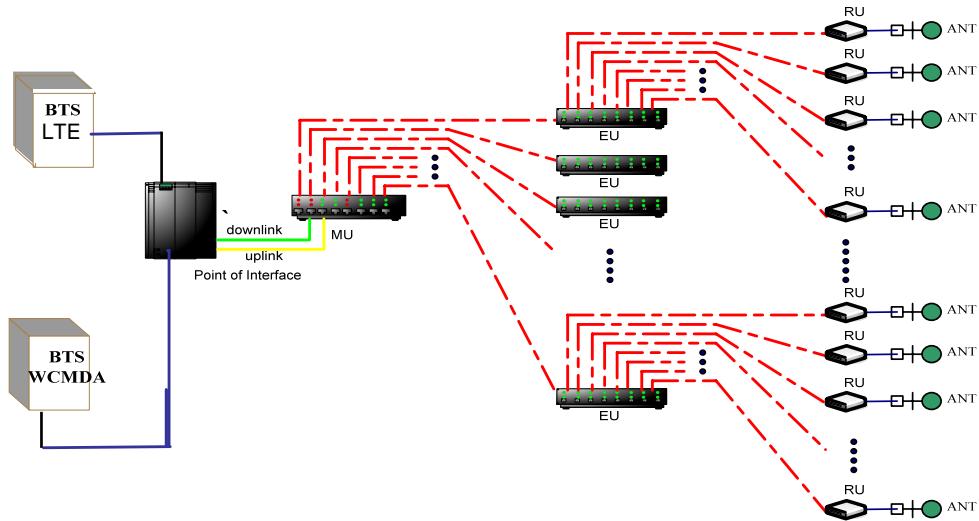


Figure 1 Topology of WFDS

The solution can divided into several parts, signal source, point of interface and WFDS as the distribution system. For downlink signal the point of interface gets the signal from several BTSs, then combines them into one signal and feeds Main Unit. Main Unit converts it into optical signal and distributes the signal to Expansion Unit and Remote Unit. The Remote Unit transfers the signal into radio frequency and outputs to the antenna. At each Remote Unit, the operator can set the gain for each system which optimizes the coverage for each system and makes future adjustment convenient.

# 2. WFDS Remote Units

## 2.1. About This Chapter

This chapter consists of the following sections:

The compendium of function

Principle of Work and Specifications

Application of RU

RU Installation and Power Supply

## 2.2. The compendium of function

The remote unit is an active transceiver which connects the expansion unit or the main unit. RU is the last step in the entire system, and it takes a very important part in the whole system, that is amplifying.

RU receives UL fiber optical signal, then it transmitted into the optical module and transform the optical signal into electric signal, after enlargement, it send by the external connection antenna; in a similar way, equipment receives uplink RF signal by the external connection antenna, and amplified in uplink then input to the optical module. Then output the fiber optical signal to the EU (or MU) after the optical module transform the electrical signal to the optical signal.

## 2.3. Principle of Work and Specifications

### 2.3.1. Principle of Work

The equipment includes the optical module, UL amplifier, DL amplifier, duplexer, monitoring unit and power supplier.

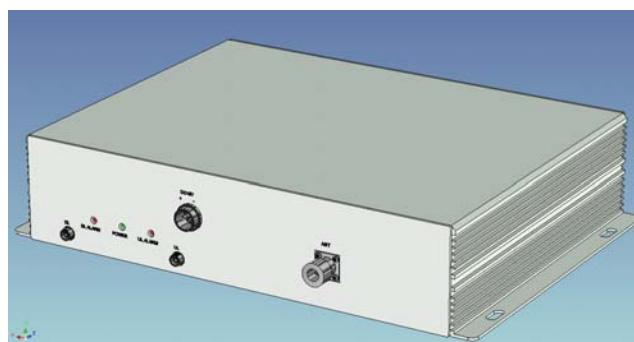
DL: RU receives the DL fiber optical signal from the expansion unit or the main unit, then the optical module transmits the optical signal into RF signal. After amplifying, the signal is sent through coaxial cable by the RF antenna.

UL: RU receives RF signal from antenna UL transmitted from coaxial cable. Signal is enlarged by low noise amplifier then transmitted by optical modules. And at last optical signal is sent to expansion unit or main unit.

The power of the RU is supplied by upper unit.

Meanwhile, RU can receive setting and inquiring information from Expansion and Main Unit.

### 2.3.2. RU Specifications



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Figure 2      Remote Unit

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Specification		Description
Working frequency (MHz)	850MHz:	UL824-849, DL869-894
	1900MHz:	UL1850-1910, DL1930-1960
	2100MHz	UL 1710-1755, DL2110-2155
DL output RF power (dBm)	21+/-2	
Max Gain (dB)	43	
Gain Adjusting (dB)	≥30, 1dB step	
RF Port Input VSWR	≤2.0	
delaying Time (μs)	≤1μs	
MTBF (h)	100,000 hour	
Fiber Connector	1 pair FC/APC Connector	
RF Connectors	1 N-type, female	
Power consumption (W)	25	
Dimensions	326*250*75mm	
Weight (Kg)	5	
Operating Temperature (°C)	-10～+50°C	
Operating Humidity, non-condensing	5% to 95%	

### 2.3.3. RU Panel

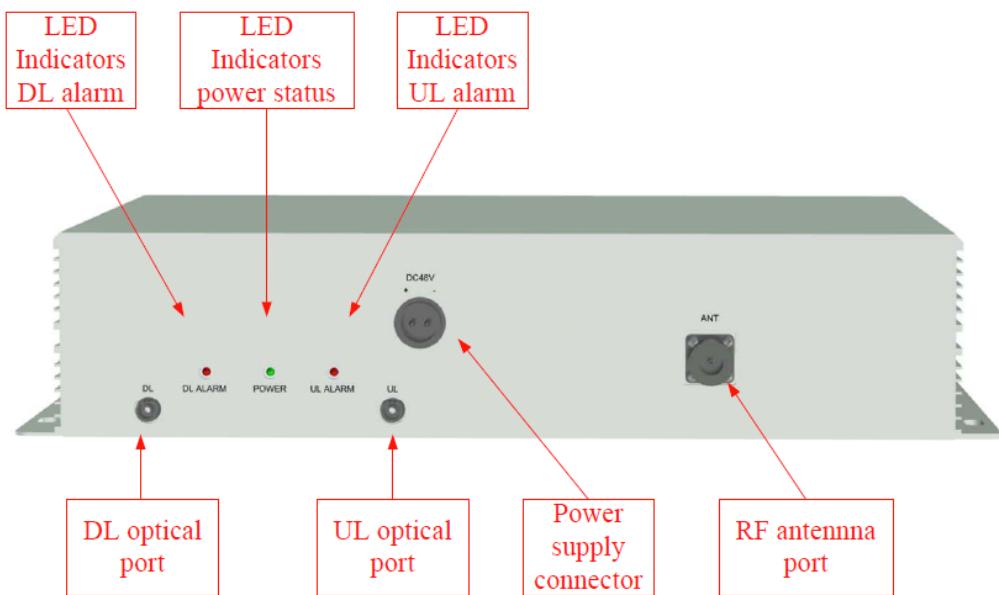


Figure 3 RU panel

## RF port

1 RF antenna port, transmitting/receiving signals to/from distributed antenna. This RF antenna port is a duplexed N-F connectors. The port can be connected to the antenna or through RF jumper cables and splitters to more antennas.

## Optical port

DL optical port: receiving DL optical signal from EU/MU.

UL optical port: transmitting UL optical signal to EU/MU.

## LED indicators

Power status: The green LED describes the power supply status. If the indicator is off, RU is not power off.

DL alarm: The red LED describes the status of RU receive optical power .If the indicator is on, RU is not receive optical power or the receive power is too low.

UL alarm: The red LED describes the status of RU transmit optical power. If the indicator is on, RU is not transmitting optical power. (Hardware failure)

Table 1 RU LED status

	LED Status	Indication
UL Alarm	off	• UL transmit optical power is normal
DL Alarm	off	• DL receive optical power is normal
Power	Green	• Remote power supply to RU is normal
UL Alarm	off	•
DL Alarm	off	•
Power	off	• Remote power supply to RU is abnormal
UL Alarm	off	• UL transmit optical power is normal
DL Alarm	red	• DL receive optical power is abnormal/receive optical power is too low
Power	Green	• Remote power supply to RU is normal
UL Alarm	red	• UL transmit optical power is abnormal/Hardware failure
DL Alarm	off	• DL receive optical power is normal
Power	Green	• Remote power supply to RU is normal

## Power supply connector

This port is used to power RU. Voltage range is 40~70 V DC. Type voltage is 48V DC.

RU can get DC power from EU thought power supply fiber cables.

Remote power supply distance can reach to 300 m, using 1 mm<sup>2</sup> power cable.

## 2.4. RU Installation

### Installation Mode:

Wall /Ceiling mounted.。

### RU Installation

1. Drill the wall to install the four M6 screw anchors according to the layout show in figure 4.  
You can choose to install the terminal box conveniently close to the RU.
2. Insert the four M6 screw anchors in the holes.
3. Fix RU to the wall and tighten the four screw anchors
4. Connect the RF cables, the optical connectors, and the power supply connectors to RU

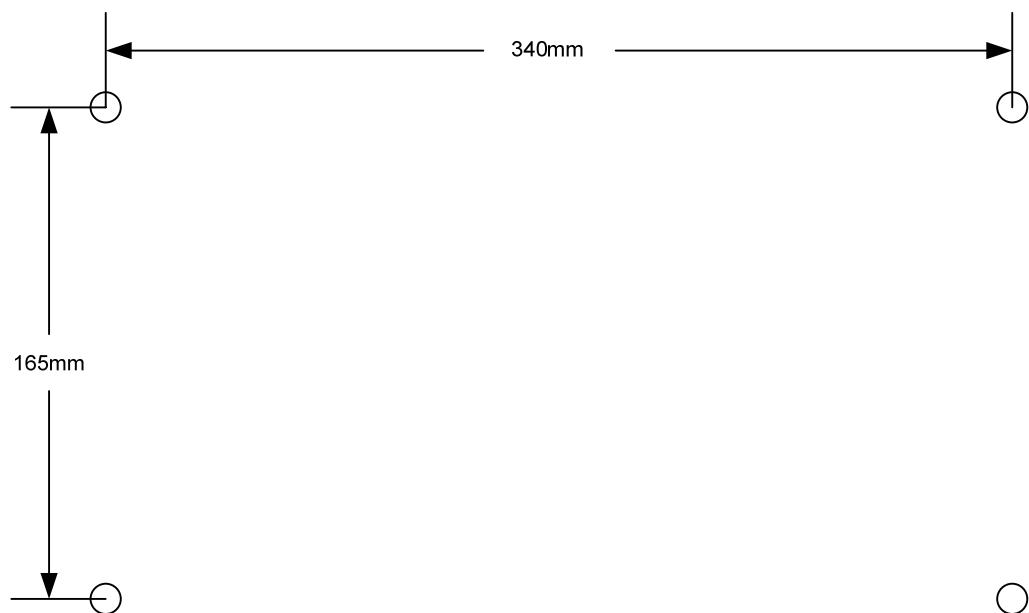


Figure 4      Drilling holes layout

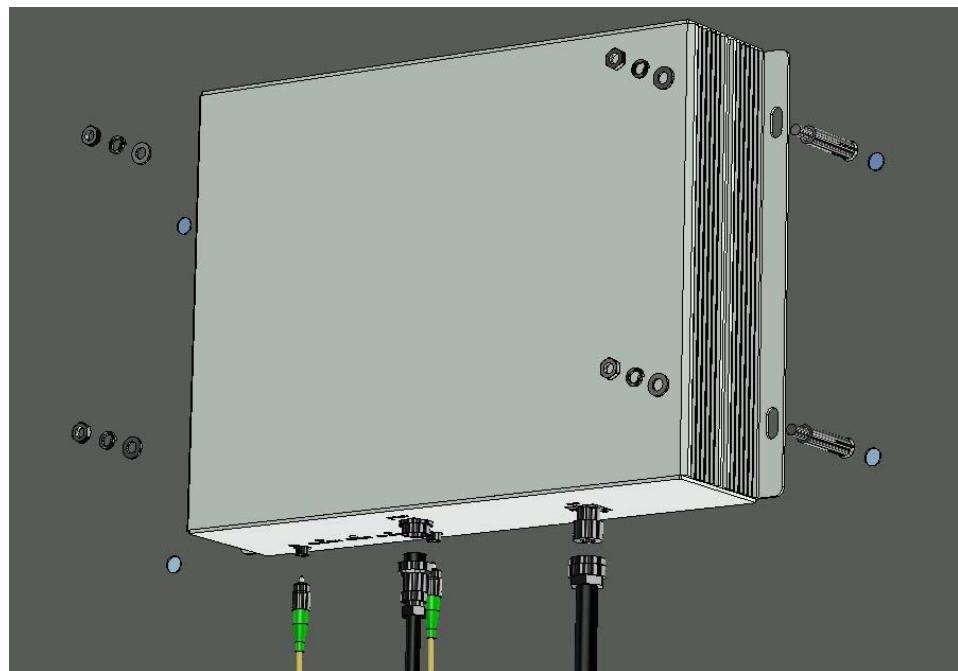


Figure 5      RU Installation

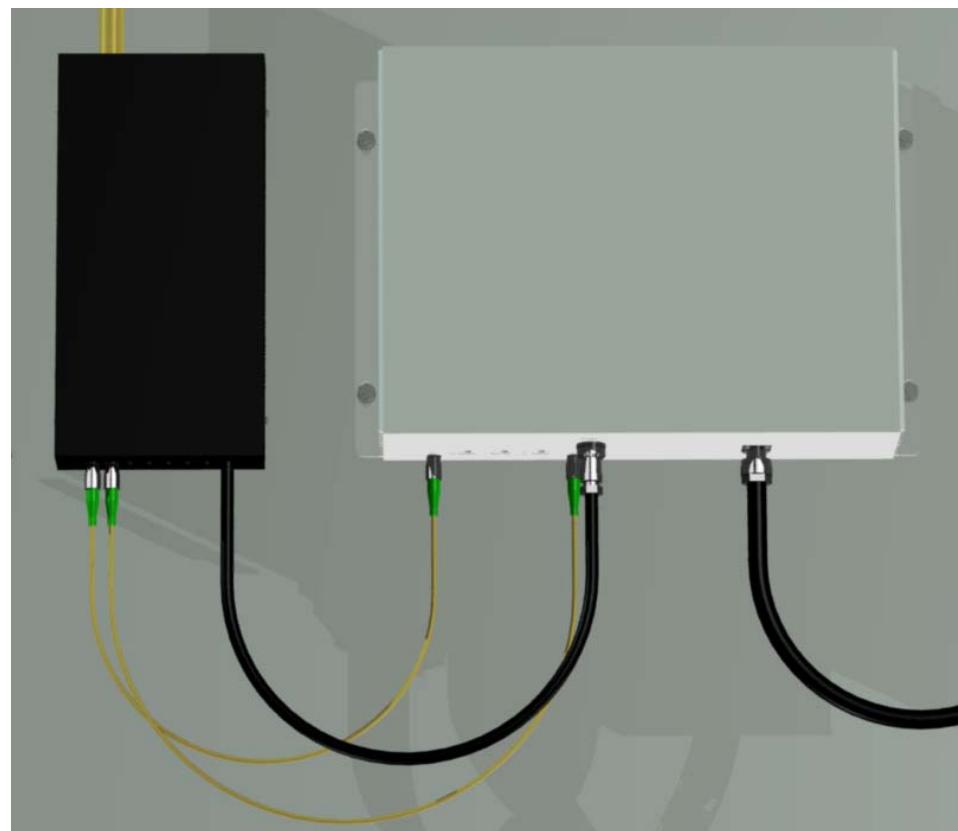


Figure 6      Cable connection

### 3. FCC Caution

**CAUTION:**

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

**FCC RF Radiation Exposure:**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20cm between the radiation and your body.

The transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.