

Internal

WCDMA DBS3900 Structure

DBS3900V200R010

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DBS3900 Abbreviations

WMPT	WCDMA Main Processing and Transmission Unit
WBBPa	WCDMA Baseband Process unit Type A
WRFU	WCDMA Radio Filter Unit
UBFA	Universal BBU Fan Unit Type A (2U)
UEIU	Universal Environment Interface unit
UELP	Universal E1/T1 Lighting Protection unit
UFLP	Universal FE/GE Lighting Protection unit
UPEU	Universal Power and Environment Interface Unit
UTRP	Universal Transmission Processing Unit
RCU	Remote Control Unit
CPRI	Common Protocol Radio Interface
AISG	Antenna Interface Standard Group
TMA	Tower Mounted Amplifier
SRXU	Slim Receive Unit
APM	Advanced Power Module

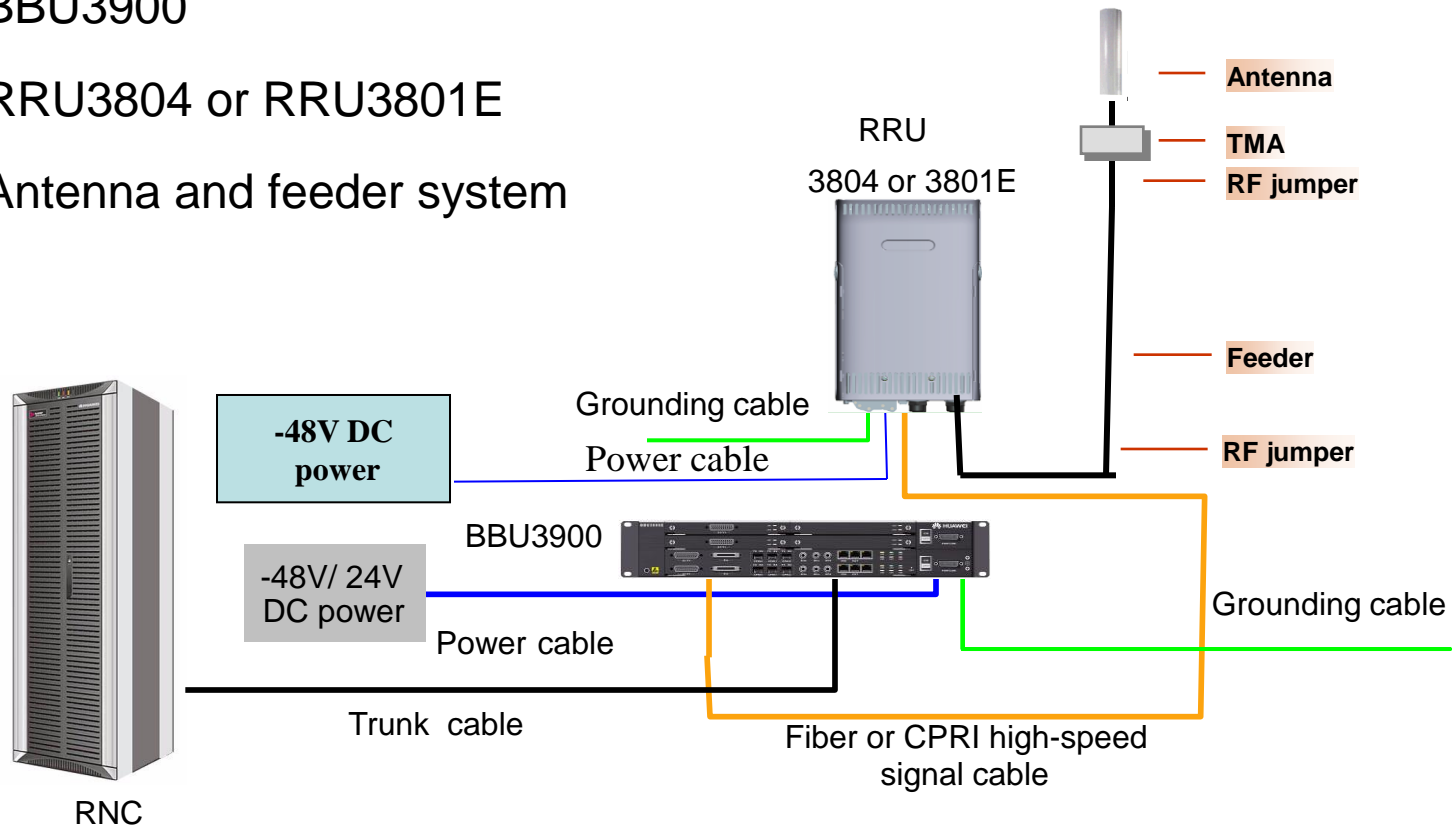
DBS3900 Overview

- DBS3900 is a distributed NodeB of forth generation NodeB.
- DBS3900 system consists of:

⇒ BBU3900

⇒ RRU3804 or RRU3801E

⇒ Antenna and feeder system



DBS3900 Product Family

Distribute NodeB DBS3900



DBS3900 Capacity and Characteristics

Specification of the DBS3900

- High capacity;
 - ⇒ BBU3900 supports 24 cells, with 1,536 UL CEs and 1,536 DL CEs.
 - ⇒ One RRU3804 supports the 4-carrier configuration.
 - ⇒ When the NodeB expands from 1x1 to 1x4 or from 3x1 to 3x4, no extra RRU is required.

Characteristics of the DBS3900

- Supports RRU cascading
 - ⇒ When using the 1.25 G optical module, cascading levels ≤ 4
 - ⇒ When using the 2.5 G optical module, cascading levels ≤ 8

DBS3900 Capacity and Characteristics

Characteristics of the DBS3900

- Supports ATM 、 IP and ATM/IP dual stack networking;
- Supports multiple clock and synchronization modes;
 - ⇒ Iub interface clock、
 - ⇒ GPS clock and
 - ⇒ Internal clock
- Supports high-speed packet access (HSPA) technology
 - ⇒ HSDPA allows the traffic at up to 14.4 Mbps for a single cell
 - ⇒ The peak uplink data rate of an HSUPA subscriber is up to 5.76 Mbit/s.
- Supports the Multimedia broadcast and multicast service (MBMS)

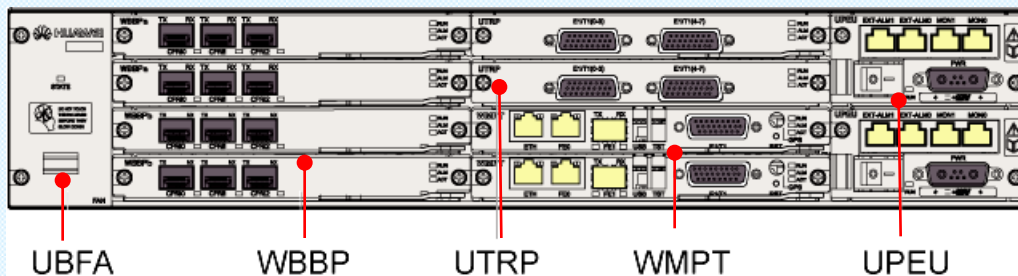
BBU3900 Module Introduction

Baseband unit

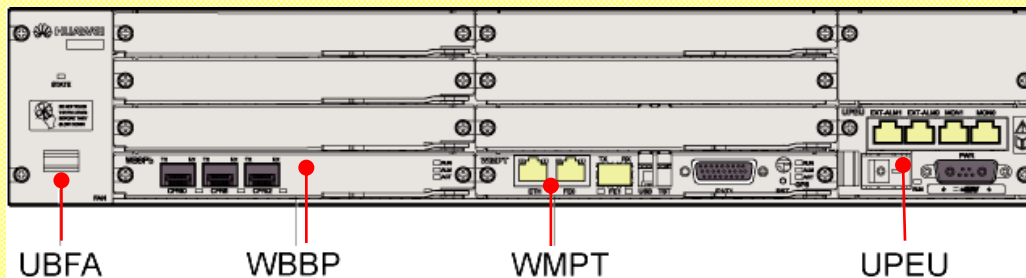


BBU3900 Module

• Full configuration



• Typical configuration



- Mandatory boards and modules : WMPT, WBBP, UBFA, and UPEU
- The optional boards are the UELP, UFLP, UTRP, and UEIU.

BBU3900 Module Introduction

Slot 16	SLOT0	•	•	SLOT4	Slot 18
	SLOT1	•	•	SLOT5	
	SLOT2	•	•	SLOT6	Slot 19
	SLOT3	•	•	SLOT7	

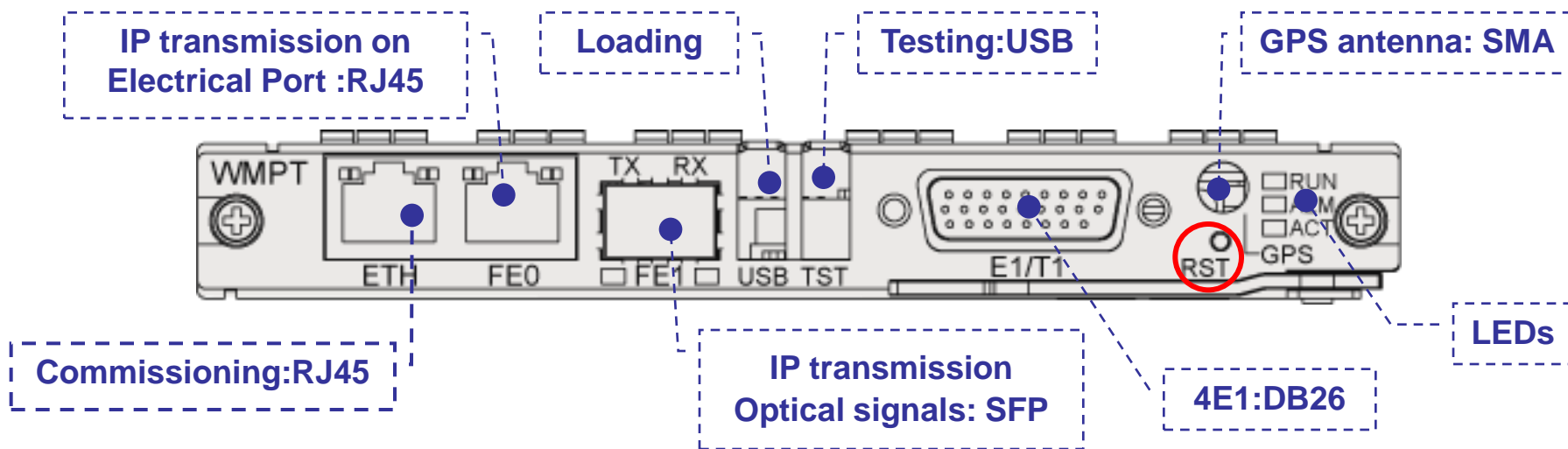
Active and standby slot definition only for UTRP board

B F A	WBBP	UTRP	PEU/ EIU
	WBBP	UTRP	
	WBBP	WMPT	PEU/ EIU
	WBBP	WMPT	

Slot boards definition

Board	Slot 0	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7
WMPT							available	available
UTRP	available	available	available	available	available	available		
WBBP	available	available	available	available	available	available		
UELP					available	available		
UFLP					available	available		

BBU Module --- WMPT Board



- Board number :

- ⇒ maximum is 2 for one BBU
- ⇒ mandatory board
- ⇒ working in active and standby mode

- Main Functions:

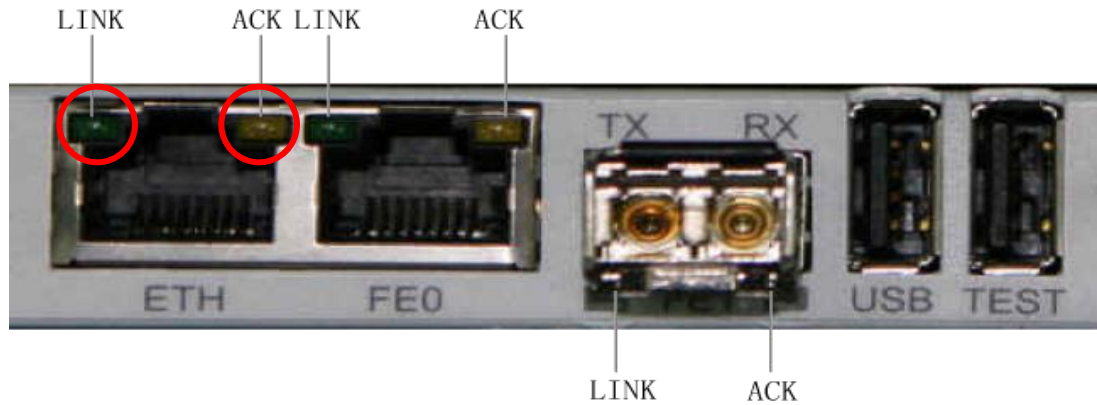
- ⇒ Providing OM functions
- ⇒ Controlling other boards in the system and providing the reference clock
- ⇒ Providing USB ports for automatic NodeB upgraded
- ⇒ Providing transmission port for lub interface
- ⇒ Providing OM channels

BBU Module --- WMPT Board

- LEDs of running status of WMPT:

Label	Color	Status	Description
RUN	Green	ON	The board has power input, yet the board is faulty.
		OFF	The board has no power input.
		1s ON, 1s OFF	The board is running as configured.
		0.125s ON, 0.125s OFF	The software is being loaded to the board, or the board is not in use.
ALM	Red	ON	The board is reporting hardware alarms.
		OFF	The board is running properly.
ACT	Green	ON	The board is in active mode.
		OFF	The board is in standby mode.

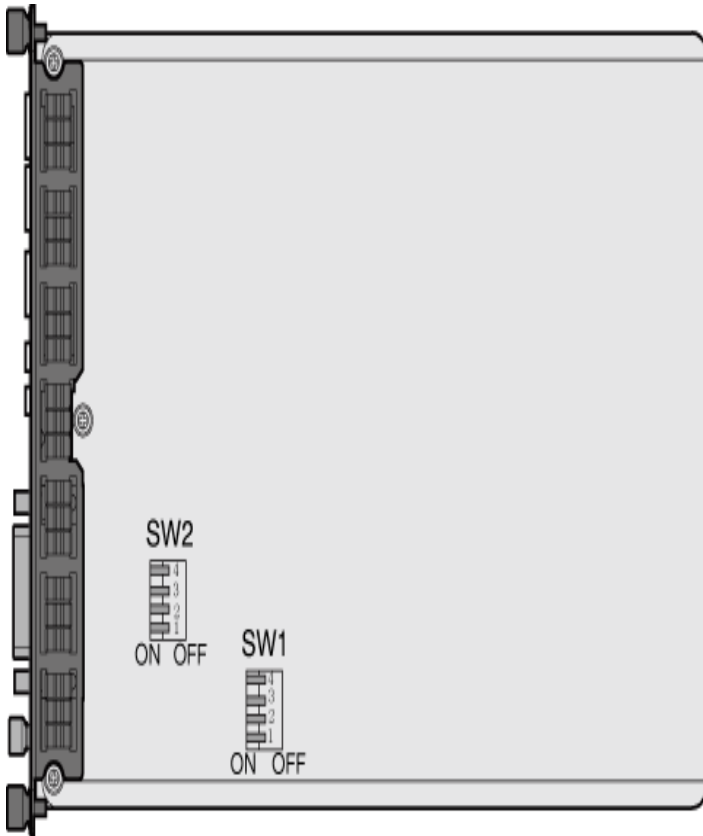
BBU Module --- WMPT Board



LED	Color	Status	Description
LEDs beside the FE1 and FE0 optical port	Green	ON	The connections are functional.
		OFF	The connections are faulty.
	Yellow	Blinking	There is ongoing data transmission.
		OFF	There is no data transmission.
LEDs beside the ETH port	Green	ON	The connections are functional.
		OFF	The connections are faulty.
	Yellow	Blinking	There is ongoing data transmission.
		OFF	There is no data transmission.

BBU Module --- WMPT Board

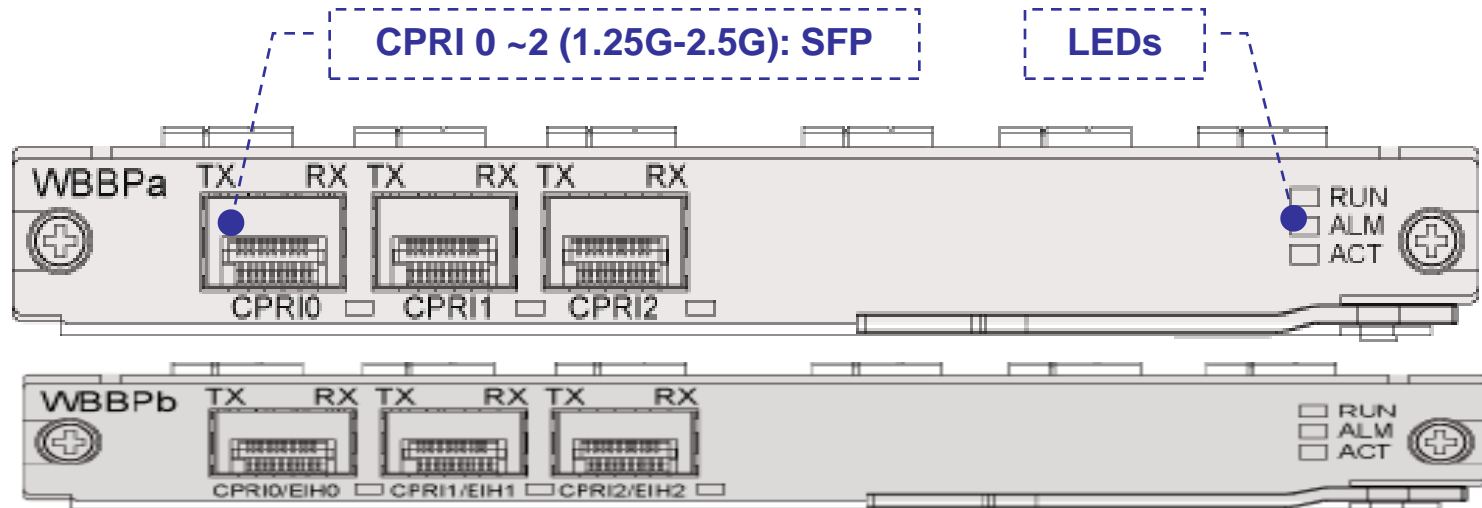
● Two DIP Switches :



Settings of SW1			
Bit	T1 Mode	120-ohm E1 Balanced Mode	75-ohm E1 Unbalanced Mode
1	ON	OFF	ON
2	ON	OFF	ON
3	OFF	ON	ON
4	OFF	ON	ON

Settings of SW2			
Bit	120-ohm E1 Balanced Mode	75-ohm E1 Unbalanced Mode	Description
1	OFF	ON	The RRING is for connected to the protection ground
2	OFF	ON	
3	OFF	ON	
4	OFF	ON	

BBU Module --- WBBPa Board



- Board number : mandatory, maximum is 6
- Main Functions :
 - ⇒ Providing the CPRI interface for communication between the BBU and the WRRU or WRFU
 - ⇒ Processing uplink and downlink baseband signals and support HSUPA and HSDPA function
 - ⇒ Supporting 1+1 backup of the CPRI interface
 - ⇒ According to the board chip processing capability, WBBP module include seven specifications. Current WBBP is the A version, called WBBPa.

BBU Module --- WBBPa Board

- LED of running status of board :

Label	Color	Status	Description
RUN	Green	ON	The board has power input, yet the board is faulty.
		OFF	The board has no power input or is faulty.
		1s ON, 1s OFF	The board is running properly.
		0.125s ON/OFF	Software is being loaded to the board.
ACT	Green	ON	The board is running properly.
		OFF	The board is not in use.
ALM	Red	OFF	The board is running properly.
		ON	The board has alarms on hardware and it should be replaced with a new one.
CPRI0 CPRI1 CPRI2	Red Green	OFF	normal
		ON	The CPRI links over the optical cable are faulty.
		Blinking at 2 Hz	The RRU on the CPRI link is faulty in hardware.
		Blinking at 0.5 Hz	The RRU on the CPRI link is faulty in the antenna system connection.

BBU Module --- WBBP Board

- There are 2 kinds of Baseband card, WBBPa and WBBPb.

⇒ The WBBPa can Process uplink and downlink baseband signals:

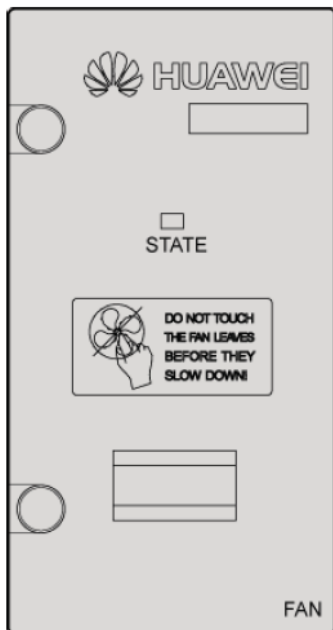
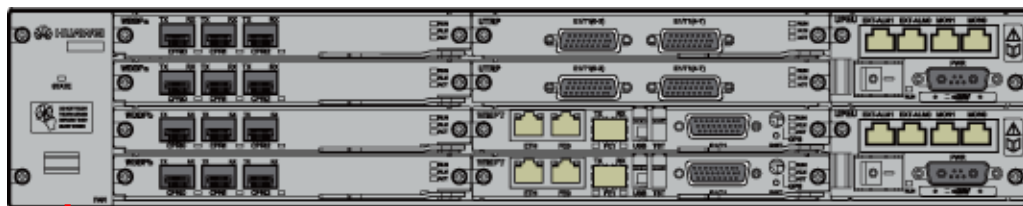
Support HSDPA (2 ms TTI) and support for HSUPA phase1 (10 ms TTI).

⇒ The WBBPb can Process uplink and downlink baseband signals.

Support HSDPA (2 ms TTI), and support for HSUPA phase2 (2 ms TTI).

Board Type	Cell	Uplink R99 /HSUPA CE	Downlink R99 CE	HSDPA Capacity	HSDPA throughput	HSUPA throughput
WBBPa	3 cells	128	256	45 HS-PDSCH codes	15Mbps	6Mbps
WBBPb1	3 cells	64	64	45 HS-PDSCH codes	15Mbps	6Mbps
WBBPb2	3 cells	128	128	45 HS-PDSCH codes	15Mbps	6Mbps
WBBPb3	6 cells	256	256	90 HS-PDSCH codes	30Mbps	12Mbps
WBBPb4	6 cells	384	384	90 HS-PDSCH codes	30Mbps	12Mbps

BBU Module --- UBFA Board

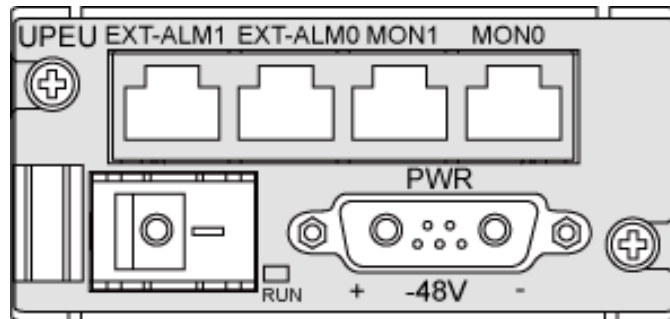


- Board number : mandatory, maximum is 1
- Main Functions :
 - ⇒ Controlling the fan speed
 - ⇒ Reporting the fan status to the WMPT
 - ⇒ Detecting the temperature of the fan board

Label	Color	Status	Description
STATE	Green	0.125s ON, 0.125s OFF	The module is not registered, and no alarm is reported.
		1s ON, 1s OFF	The board is running properly.
	Red	ON	The module is reporting alarms.

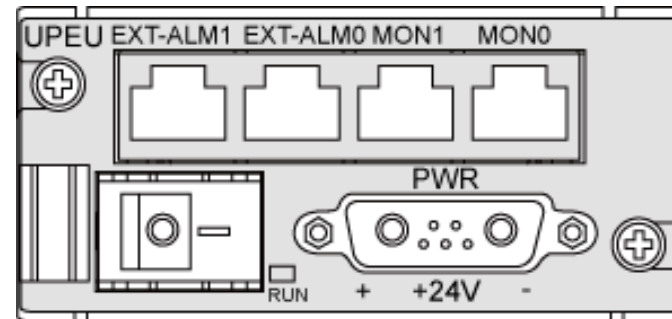
BBU Module --- UPEU Board

- Panel of the UPEA



-48V to +12V

- Panel of the UPEB



+24V to +12V

- Board number : mandatory, maximum is 2, 1+1 backup
- Main Functions :
 - ⇒ Converting -48 V or +24 V DC power input to +12 V DC power that is supported by boards
 - ⇒ Reporting alarms related to input and output under voltage
 - ⇒ Providing transmission ports for RS485 signals and 8 dry contact alarm signals

BBU Module --- UPEU Board

- **LED:** The UPEU has one LED, indicating the running status of the board.

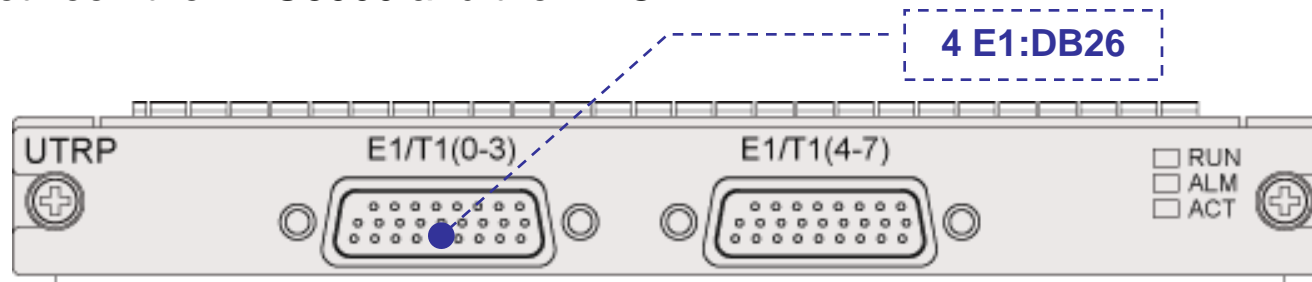
Label	Color	Status	Description
RUN	Green	ON	The board is running properly.
		OFF	The board has no power input, or the board is faulty.

- **Socket and Port:** The UPEU has one socket and four ports.

Label	Quantity	Connector Type	Function
PWR	1	3V3	DC power input
EXT-ALM1	1	RJ45	Transmitting dry contact alarm signals
EXT-ALM0	1	RJ45	
MON1	1	RJ45	Transmitting RS485 environment monitoring signals
MON0	1	RJ45	

BBU Module --- UTRP Board

- The UTRP provides ports for eight E1s/T1s and implements transport such as IP and ATM between the BBU3900 and the RNC.



Label	Color	Status	Description
RUN	Green	ON	The board has power input, yet the board is faulty.
		OFF	The board has no power input or is faulty.
		1s ON, 1s OFF	The board is running properly.
		0.125s ON, 0.125s OFF	Software is being loaded to the board.
		2s ON, 2s OFF	The board is under test.
ACT	Green	ON	The board is in active mode.
		OFF	The board is in standby mode.
ALM	Red	OFF	The board is running properly.
		ON	The board is reporting alarms and is faulty.

BBU Module --- UTRP Board Type

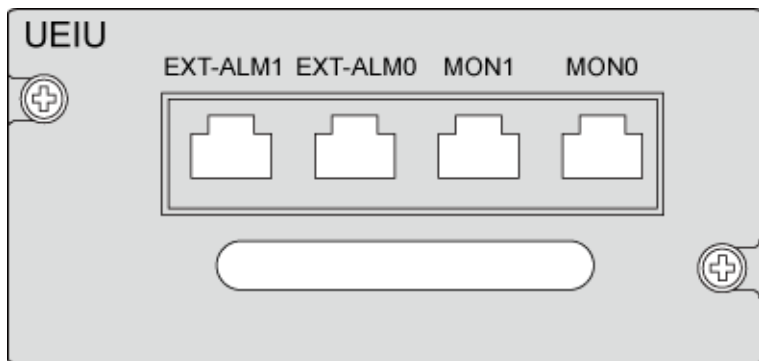
● WCDMA UTRP extend transmission board

- ⇒ UTRP board should add sub board to provide the different interface type
- ⇒ WD22UTRP is the main board name. The UTRP has three sub-boards in current version
 - UAEU: Eight ATM over E1s/T1s
 - UIEU: Eight IP over E1s/T1s
 - UUAS: One unchannelized ATM over SDH/SONET(STM-1/OC-3) interface

Transmission Board name	Sub board name	Interface type	Interface specification
WD22UEEU	WD22UEEC	FE/GE electrical board	2*FE/GE (10/100/1000M adaptive)
WD22UEOU	WD22UEOC	FE/GE optical board	2*FE/GE (10/100/1000M configured)
WD22UAEU	WD22UAEC	E1/T1 ATM interface sub board	8* E1/T1
WD22UIEU	WD22UPEC	E1/T1 IP interface sub board	8*E1/T1
WD22UCPU	WD22UCPS	Channelization IP optical sub board	1*STM-1
WD22UUPU	WD22UUPS	Unchanneliazation IP optical sub board	1*STM-1
WD22UCAU	WD22UCAS	Channelization ATM optical sub board	1*STM-1
WD22UUAU	WD22UUAS	Unchanneliazation ATM optical sub board	1*STM-1

BBU Module --- UEIU Board

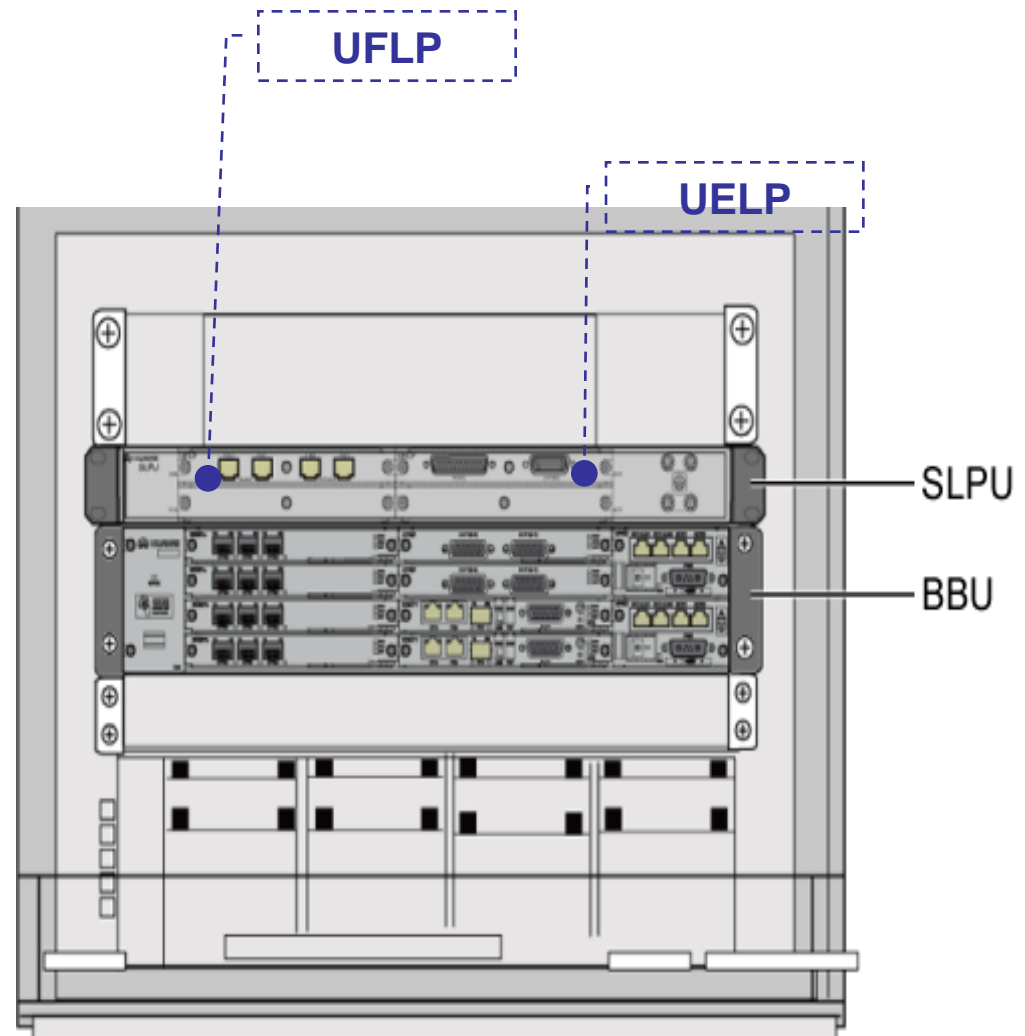
- Board number: maximum is 1
- The UEIU Functions:
 - ⇒ Connecting to an external monitoring device and transmitting RS485 signals to the WMPT
 - ⇒ Connecting to an external alarm device and transmitting dry contact alarm signals to the WMPT
- **Port** : The UEIU has four ports.



Label	Connector Type
MON0	RJ45
MON1	RJ45
EXT-ALM0	RJ45
EXT-ALM1	RJ45

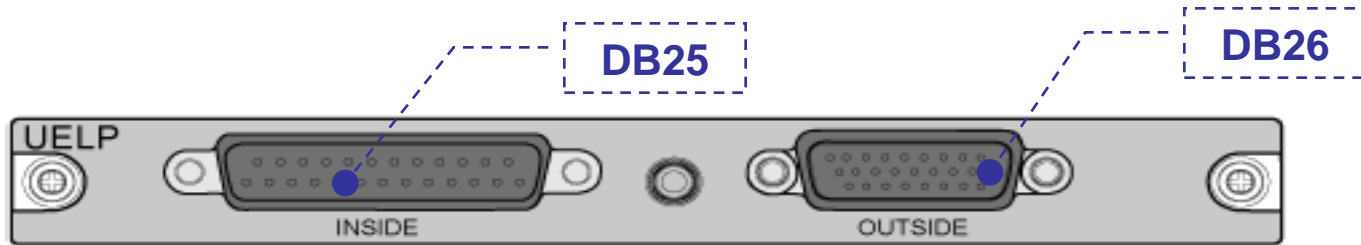
BBU Module --- SLPU Board

- The auxiliary devices of the BBU3900. The devices are the SLPU, UELP, and UFLP
- SLPU: The signal lightning protection unit is an optional module of the BTS3900 cabinet (-48 V) or the power distribution cabinet.
- The UFLP and the UELP are optional units that are installed in the SLPU.

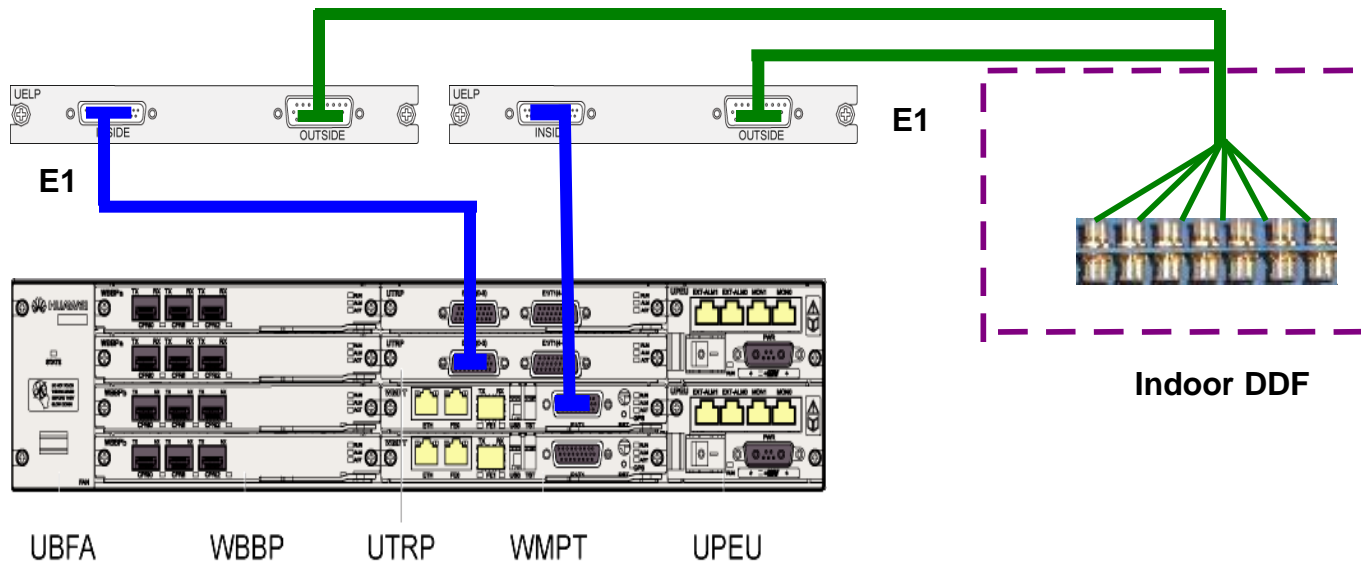


BBU Module --- UELP Board

- **UEL P:** The universal E1/T1 lightning protection (UEL P) unit is a universal E1/T1. The UEL P can be optionally installed in the SLPU or the BBU. Each UEL P supports the surge protection of 4-way E1/T1 signals.

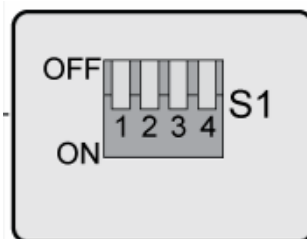
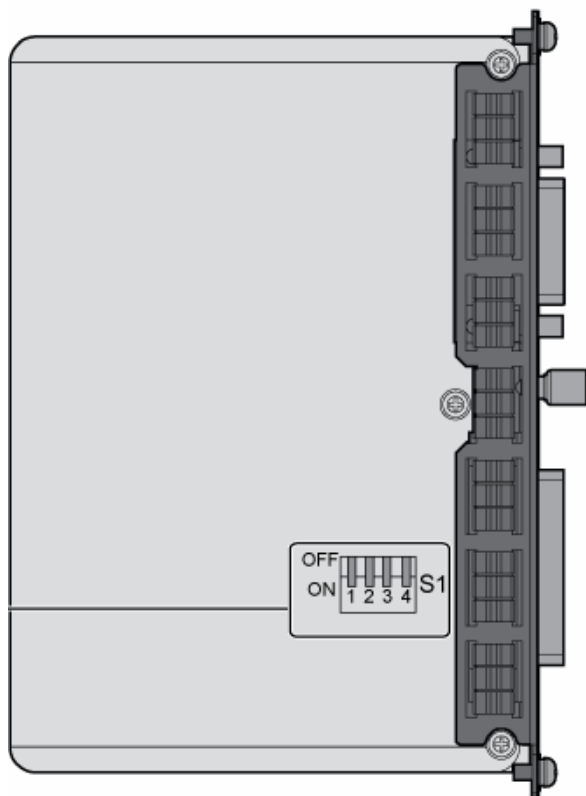


- **E1 Connection:**



BBU Module --- UELP Board

- **DIP Switch:** The UELP has one DIP switch, which is used to select whether the receive terminal is grounded. The DIP switch has four bits.



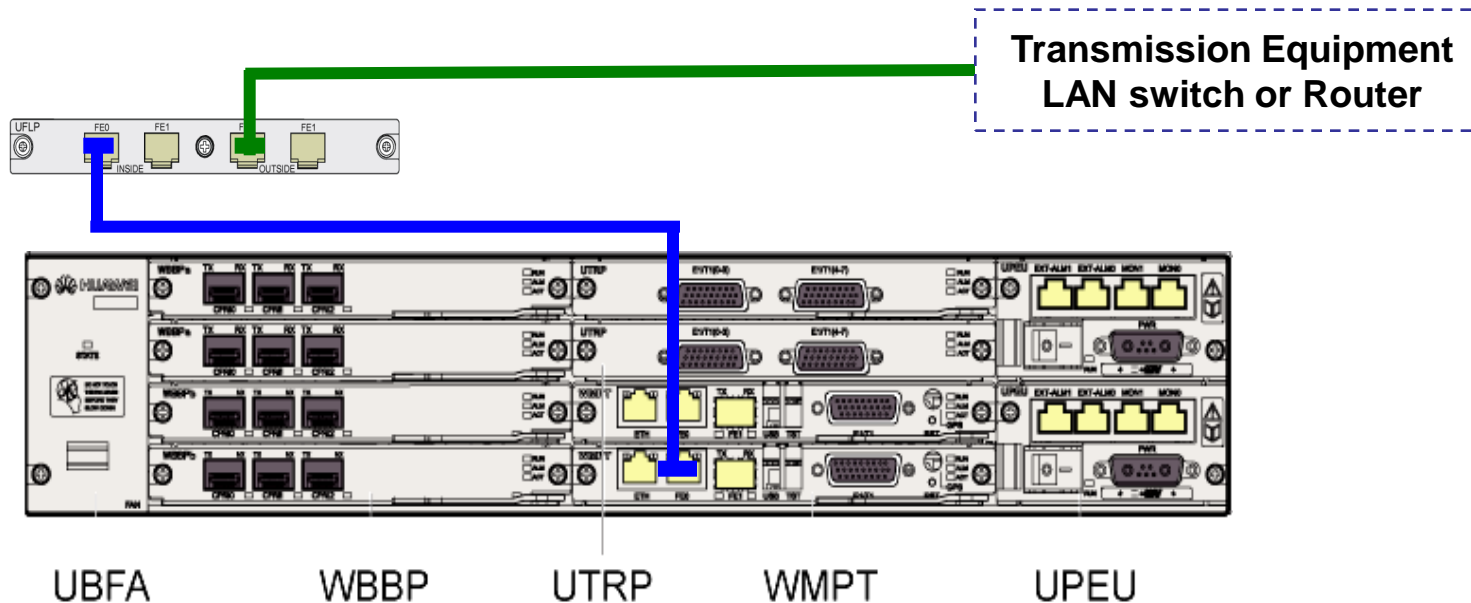
DIP Switch	DIP Status				Description
	1	2	3	4	
S1	ON	ON	ON	ON	Used for the 75 Ω unbalanced mode
	OFF	OFF	OFF	OFF	Used for other modes except the 75 Ω unbalanced mode

BBU Module --- UFLP Board

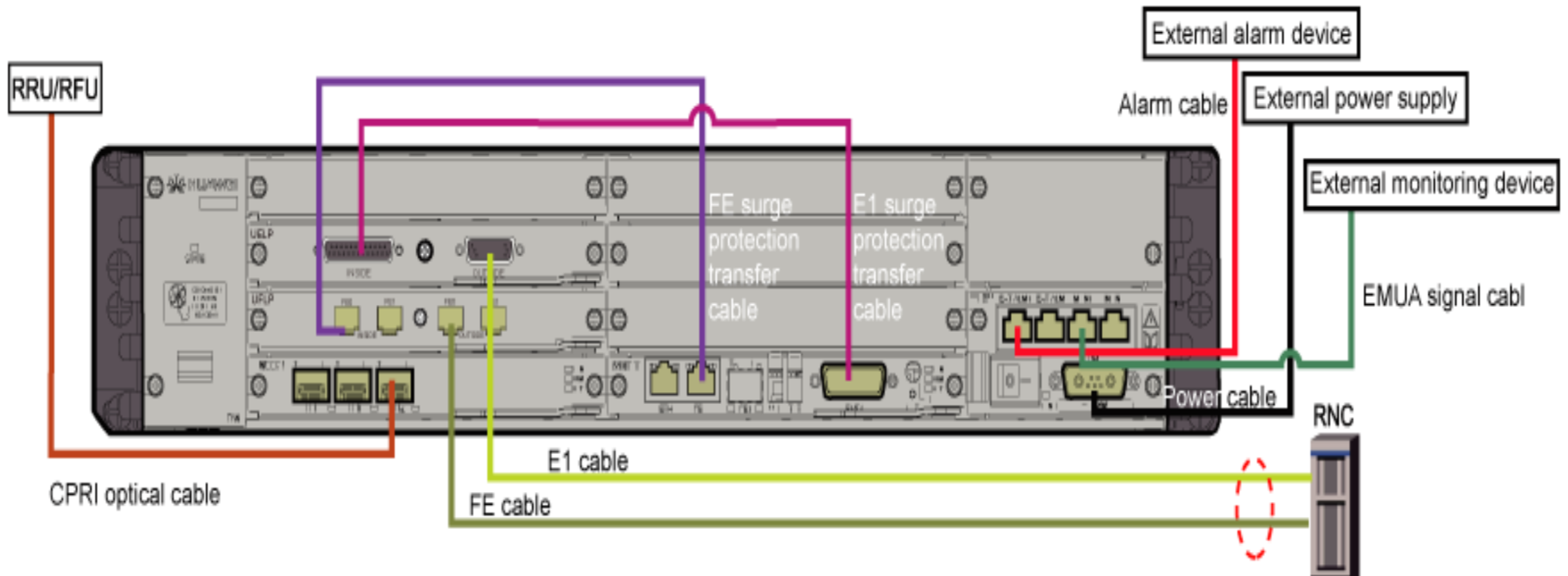
- **UFLP:** The universal FE lightning protection (UFLP) board is optionally installed in the SLPU or BBU. Each UFLP supports 2-way FE surge protection.



- **IP Cable Connection.**



Connections of the BBU3900 Cables



Thank You

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