Distributed Antenna System

sDAS⁺ IFDSP19U21U
User Manual
(For BC25 / BC66)

Revision 1.4
05/08/2019

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normal

Un-Wire Your Digital World

WARNING. This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have an **FCC LICENSE** or express consent of an FCC License to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING!
Use only authorized and approved antennas, cables and/or coupling devices! The use of unapproved antennas, cables or coupling devices could cause damage and may be of violation of FCC regulations. The use of unapproved antennas, cables and/or coupling devices is illegal under FCC regulations and may subject the user to fines.

RF Exposure Warning: This equipment complies with FCC radiation exposure limits set forth for a controlled environment. The Remote Unit should be operated with a minimum distance of 28cm (11 in) between antenna and your body.

Use only authorized and approved antennas, cables and/or coupling devices! The use of unapproved antennas, cables or coupling devices could cause damage and may be of violation of FCC regulations.

Note to the professional installer: the output power must be adjusted such that it does not exceed the certified level as indicated in the certification filing to ensure that the booster is operating in its linear range. Furthermore, the external antenna model come with a 9dBi pane type antenna which has been evaluated and full comply with the relevant FCC rules. The use of any other antenna is subject to a separate evaluation to ensure that the resulting EIRP does not exceed the allowed EIRP limit as specified in 47 CFR Part 24.238(a) for LTE Band 25 and Part 27.53(h) for LTE Band 66 and that it complies with the uncontrolled RF exposure limit.

Table of Content

1 HARDWARE OVERVIEW

RF1 Frequency Range Uplink / Downlink	Extended PCS (Band 25) 1850 ~ 1915MHz / 1930 ~ 1995MHz
RF2 Frequency Range Uplink / Downlink	Extended AWS (Band 66) 1710 ~ 1780MHz / 2110 ~ 2180MHz
(HEU) Downlink Input Power	+5 ~ +25dBm
(RAU) Downlink Output Power	+14 ~ +19dBm

1.1 HEU Hardware

1.1.1 Port

Front Panel View
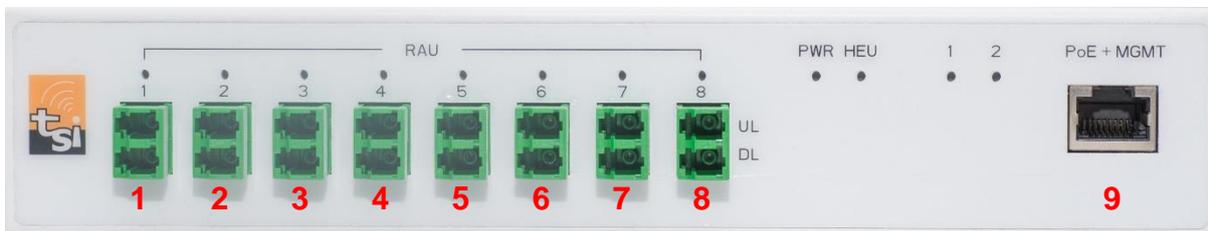
Rear Panel View
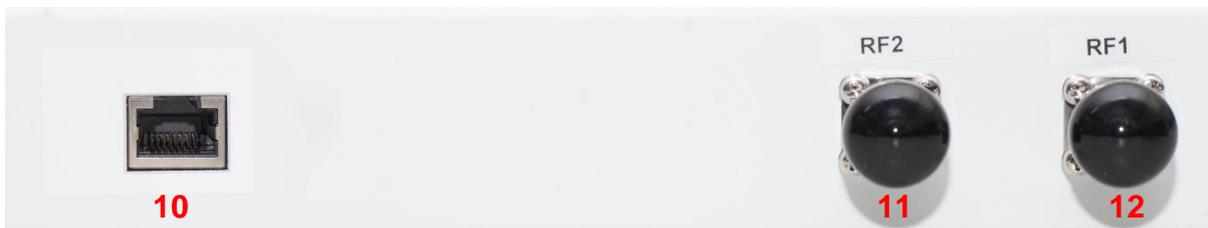
| No.	Item	Interface	Description
1	RAU 1	LC/APC	Connect to 1st RAU UL/DL by fiber
2	RAU 2	LC/APC	Connect to 2nd RAU UL/DL by fiber
3	RAU 3	LC/APC	Connect to 3rd RAU UL/DL by fiber
4	RAU 4	LC/APC	Connect to 4th RAU UL/DL by fiber
5	RAU 5	LC/APC	Connect to 5th RAU UL/DL by fiber
6	RAU 6	LC/APC	Connect to 6th RAU UL/DL by fiber

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7	RAU 7	LC/APC	Connect to 7th RAU UL/DL by fiber
8	RAU 8	LC/APC	Connect to 8th RAU UL/DL by fiber
9	PoE+MGMT	RJ45	Connect with PoE injector for Power & Control
10	Reserved	RJ45	No function
11	RF 2	N-Female	Connect with BTS RF Signal 1
12	RF 1	N-Female	Connect with BTS RF Signal 1

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1.1.2 LED
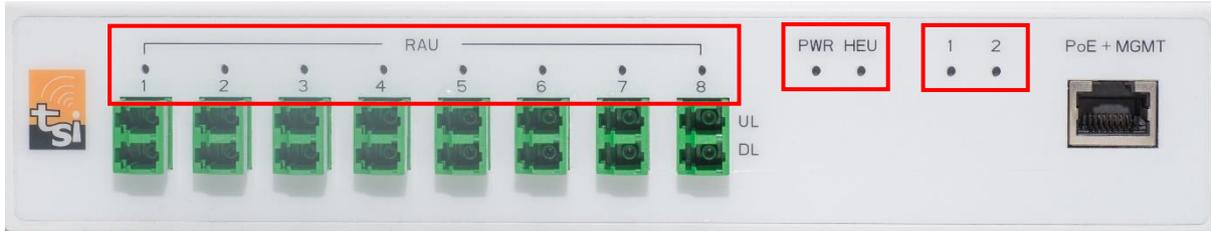
	Green	RAU has been provisioned & calibrated
RAU 1-8	Flash Green	1. RAU has been provisioned, and waiting for calibration, or 2. Firmware upgrade
	Red	1. RAU alarm, or 2. RAU link failed
	Dark	RAU has not been provisioned yet
PWR	Green	Power on
HEU	Green	Normal mode
	Flash Green	Firmware upgrade
	Red	HEU Alarm
(RF) 1 & 2	Green	RF signal detected
	Dark	No RF signal

1.2   RAU Hardware

1.2.1   Port

No.	Item	Interface	Description
1	DL	LC/APC	Connect to HEU DL port by fiber
2	UL	LC/APC	Connect to HEU DL port by fiber
3	PoE	RJ45	Connect with PoE injector for power
4	Reserved	RJ45	No function
5	RF2	N-Female*	Connect an external antenna**
6	RF1	N-Female*	Connect an external antenna

* only for RAU_NC model

** There are two types of indoor antenna to choose from: Omni-directional dome antennas 、
Panel antennas. Antenna gain should not exceed 14 dBi.

1.2.2   LED

PWR	Green	Power on
Fiber	Green	Provisioned & calibrated
	Flash Green	1. Optical power detected & ready for provisioning & calibration, or 2. Firmware upgrade
	Dark	No optical power

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2   sDAS+ CONNECTION

2.1   Topology Overview

There are 8 sets of fiber port on HEU, each including UL & DL port. Using these ports,

HEU can connect with up to 8 RAUs in STAR topology.
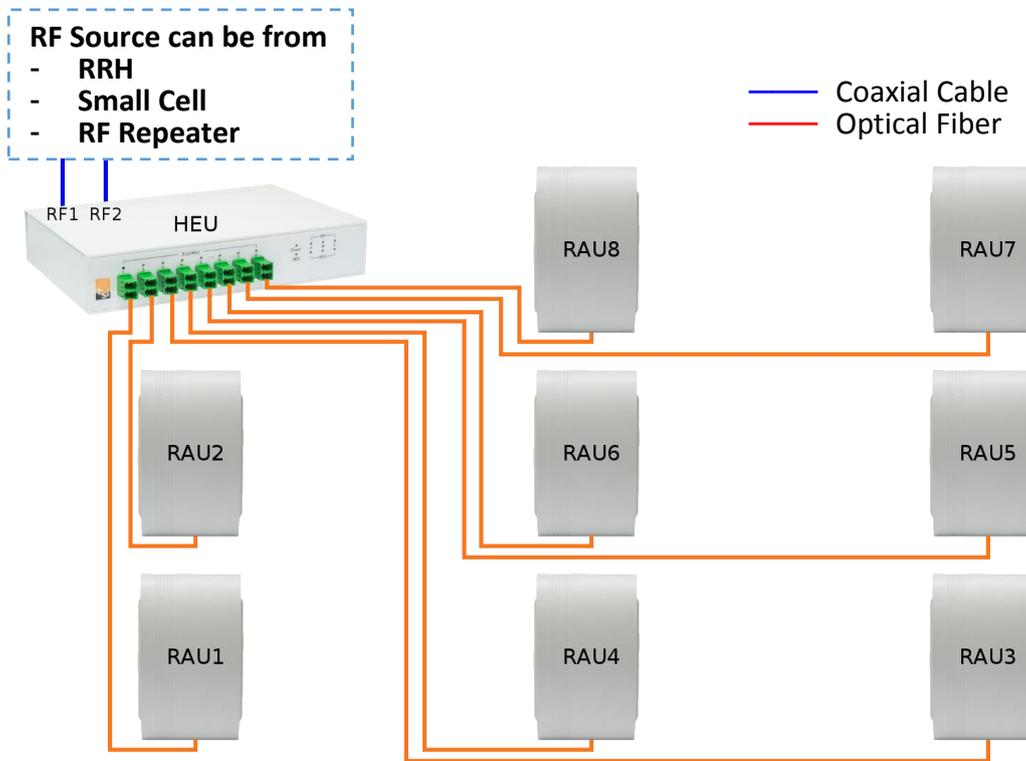
2.2   Connecting HEU & RAU

1. Connect HEU "PoE+MGMT" RJ45 interface to PoE "Data & Power Out" port

2. Connect PC's Ethernet RJ45 interface to PoE "Data In" port

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3. Plug the single mode fiber with LC/APC connector into HEU "RAU 1 UL" and RAU "UL" fiber port.

4. Plug the single mode fiber with LC/APC connector into HEU "RAU 1 DL" and RAU "DL" fiber port.

5. Connect RAU RJ45 port to PoE "Data & Power Out" port

6. RAU "Fiber" LED should start flashing green if HEU turned on, fiber properly connected, and the optical loss is within acceptable range.
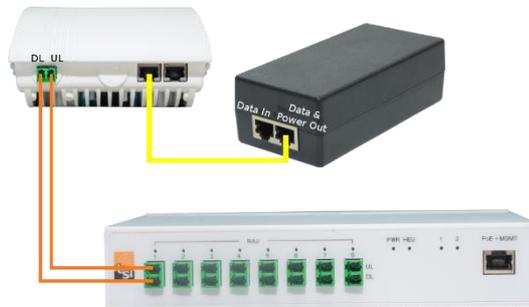
7. Now, sDAS+ is ready for system provisioning

3 SYSTEM PROVISIONING

The following sections describe the basic system provisioning procedure including

- Topology Setting
- DAS Setting
- Calibration

that can be done on sDAS Web GUI.

The default information to access Web is listed as below.

IP Address	192.168.100.20
Username	Admin
Password	Wireless

3.1 Topology Setting
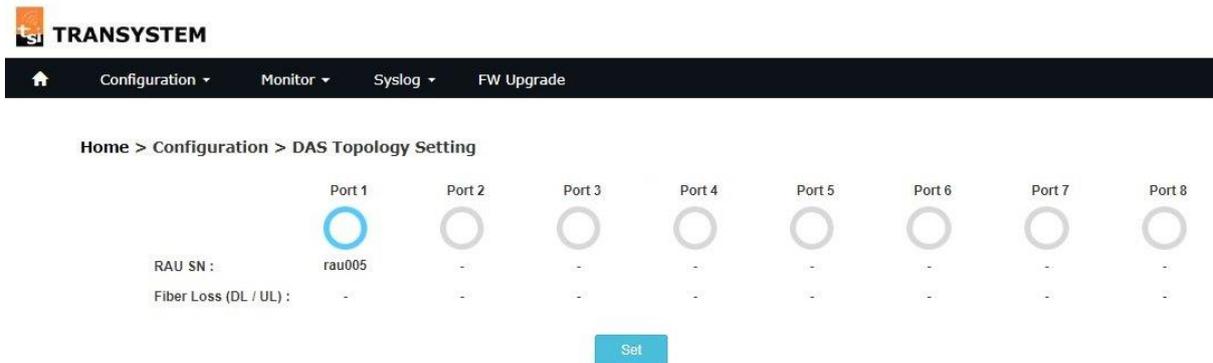
Go to Web page: **Configuration > DAS Topology Setting**, and follow the steps below to setup sDAS+ topology

1. When loading Topology Setting web page, system scans on all fiber ports. And, shows the light blue circle on corresponding ports for RAUs detected.
2. Click "Set" button, and system will show the fiber loss in dBm.

3.2 DAS Setting & Calibration

Go to Web page: **Configuration > DAS Setting**, and follow the steps below to setup sDAS+ parameters setup.

1. Select the maximum power of input RF signal on RF1 and RF2 port respectively.

   RF Input Power (dBm) Range: +5 ~ +25dBm

2. Select the desired RAU output power.

   RF Output Power (dBm) Range: +14 ~ + 19dBm

3. Click "Save" button. System might need some time to perform diagnostic test after save completed.

4. Click "Calibrate" button

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4 SYSTEM MONITORING

The following sections describe the system monitoring function including

- System Info
- Power Info

that sDAS+ web provided.

4.1 System Info.

The Web page: **Monitor > System Info** displays the information as below.

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No.	Category	Item	Description
1	Fiber Loss	DL/UL	Indicate the power loss of individual downlink and uplink fiber. If the loss is greater than 2dB, please re-check the fiber connector and installation.
2	HEU	ID / Address / Location / Remark	These are the free text fields that installer can input from DAS Setting page.
3	HEU	SN / HW Ver.	The device Serial Number & Hardware Version information provided by manufacturing.
4	HEU	RF Input Power	The max. input RF power level (in dBm) defined at DAS Setting page. It is shown as RF1 / RF2.
5	HEU	BTS DL Input Power	The downlink power measured (in dBm) by HEU. It is shown as RF1 / RF2.
6	RAU	ID / Address / Location / Remark	These are the free text fields that installer can input from DAS Setting page.
7	RAU	SN / HW Ver.	The device Serial Number & Hardware Version information provided by manufacturing.
8	RAU	RF Output Power	The max. output RF power level (in dBm) defined at DAS Setting page. It is shown as RF1 / RF2.

4.2 Power Info.

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The Web page: ***Monitor > Power Info*** displays the peak RF power of HEU and RAU over the past

- 5 minutes
- 12 hours
- 24 hours.

It also provides the live chart of real-time power measurement. Click [Chart] button to display live update page as below.

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