

CAT-5 DAS TRI BAND

(CDMA1900 / iDEN800 / iDEN900)

User's Manual



Please read this manual before operating this product.
After you finish reading this manual, store it in a safe place for future reference.

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Notice

This document describes the specifications, installation, and operation of the CAT-5 DAS.

Hardware and software mentioned in this document are subject to continuous development and improvement. Consequently, there may be minor discrepancies between the information in the document, performance, and design of the product.

Specifications, dimensions, and other statements mentioned in this document are subject to change without notice.

Questions or Comments

Address: R-tron Inc. 6402 College Boulevard, Overland Park, KS 66211

Phone: +1-913-344-9977, 1-888-31R-TRON

Fax: +1-913-344-9988

e-mail: info@r-tronamerica.com

Website: www.rtronamerica.com

Safety Precautions

Warning

Opening the CAT-5 DAS equipment could result in electric shock and may cause severe injury.

Warning

Connect the equipment frame ground to the building ground.

Warning

Operating the CAT-5 DAS with antennas in very close proximity facing each other can lead to severe damage to the repeater.

Caution

RF EXPOSURE INFORMATION

A minimum separation distance of 7.9 inches (20cm) must be maintained between the user and the external antenna of the repeater to satisfy FCC RF exposure requirements. For more information about RF exposure, please visit the FCC website at www.fcc.gov

Caution

This equipment is for indoor use only and enables the communication wiring to communicate inside the building.

Contents

1. Introduction.....	5
2. Description.....	8
2.1 MHU Unit Overview.....	8
2.1.1 MHU Internal Configuration.....	9
2.1.2 MHU CDMA1900 and iDEN800/900 UDC Module.....	10
2.1.3 MHU MCU (Main Control Unit).....	11
2.1.4 MHU Interface Board.....	12
2.1.5 MHU C&C (Common & Control Unit).....	12
2.1.6 MHU PSU (Power Supply Unit).....	13
2.2 Remote Unit Overview.....	14
2.2.1 Remote Internal Configuration.....	15
2.2.2 Remote CDMA1900 UDC Module.....	15
2.2.3 Remote iDEN800/900 UDC Module.....	16
2.2.4 TRI BAND MUX Filter.....	16
2.2.5 Remote MCU (Main Control Unit).....	17
2.2.6 Remote Interface Board.....	18
2.2.7 Remote PSU (Power Supply unit).....	18
2.3 EHU Unit Overview.....	19
2.3.1 EHU Internal Configuration.....	19
2.3.2 EHU Interface Board.....	20
2.3.3 EHU RFU.....	21
2.3.4 EHU MCU (Main Control Unit).....	21
2.3.5 EHU PSU (Power Supply Unit).....	22
3. Hardware Installation	23
3.1 Check List of Items.....	23
3.1.1 MHU of Items.....	23
3.1.2 Remote of Items.....	24
3.1.3 EHU of Items.....	24
3.2 Mounting.....	25
3.2.1 Remote Mounting.....	25
3.2.2 MHU & EHU Mounting.....	27
3.3 Grounding.....	28
3.4 Power On.....	29

4. Operation	30
4.1 System Requirements.....	30
4.2 Network Setup.....	30
4.2.1 Windows XP.....	30
4.2.2 Windows 2000.....	32
4.2.3 Windows Vista.....	34
4.2.4 Windows 7.....	37
4.3 System Log in.....	41
4.4 System Setup.....	43
4.4.1 Security.....	43
4.4.2 Clock.....	43
4.4.3 Network.....	44
4.4.4 Control.....	47
4.4.5 Firmware Upload.....	55
4.4.6 Reboot.....	56
4.4.7 Log Out.....	56
5. Troubleshooting.....	57
6. Specifications.....	62
7. Appendix.....	67

Glossary

The following is a list of abbreviations and terms used in this manual.

Abbreviation	Definition
AC	Alternating Current
ANT	Antenna
ATT	Attenuator / Attenuation
MHU	Main Hub Unit
RU	Remote Unit
EHU	Extension Hub Unit
C.W	Continuous Wave
GUI	Graphic User Interface
LED	Light Emitting Diode
PLL	Phase-locked loop
PSU	Power Supply Unit
MCU	Main Control Unit
UDC	Up-Down Converter
DL	Downlink
GND	Grounding
RF	Radio Frequency
RSSI	Received Signal Strength Indication
TEMP	Temperature
DC	Direct Current
UL	Uplink
VSWR	Voltage Standing Wave Ratio
CLC	Cable Loss Compensation

ALC (Automatic Level Control)

ALC feature prevents the repeater from exceeding its maximum output power by reducing the gain automatically. ALC is used to adjust the gain to an appropriate level for a range of input signal levels.

ASD (Automatic Shutdown)

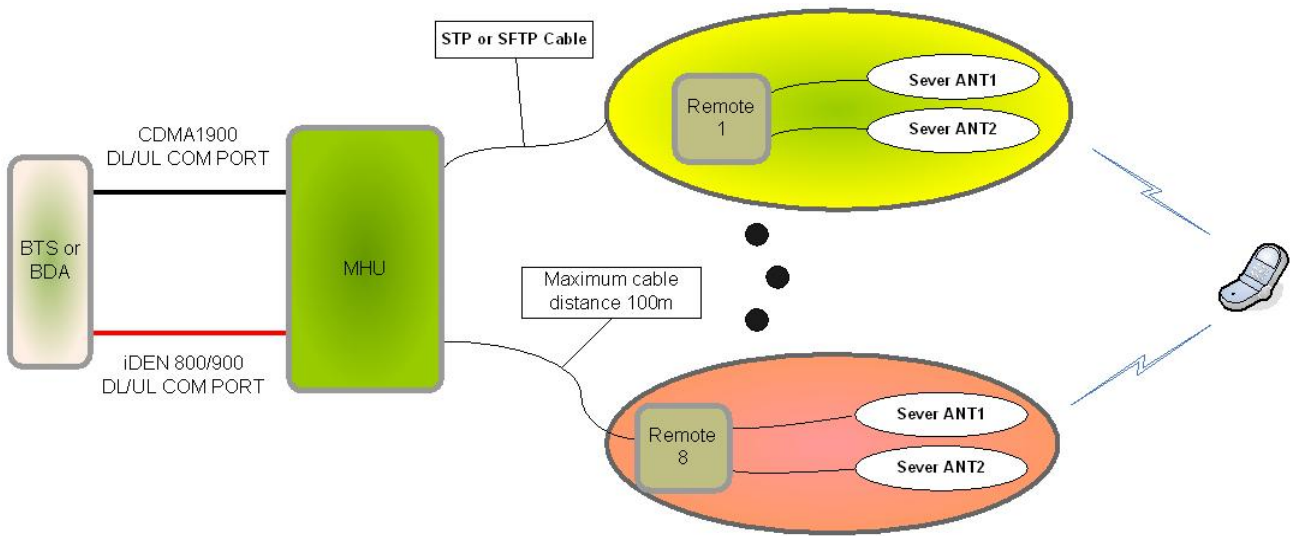
Automatic shut down protects the repeater from oscillation or excessive input signal and eliminates any degradation to the network.

There are three parameters: **ASD Level**, **ASD Time**, and **ASD Iteration**.

If the output power exceeds higher than the “**ASD LEVEL**”, the repeater will shut down for “**ASD TIME**” seconds and it will turn the amp back on to measure the output power again. If this repeats at “Iteration” times, the repeater will shut down completely.

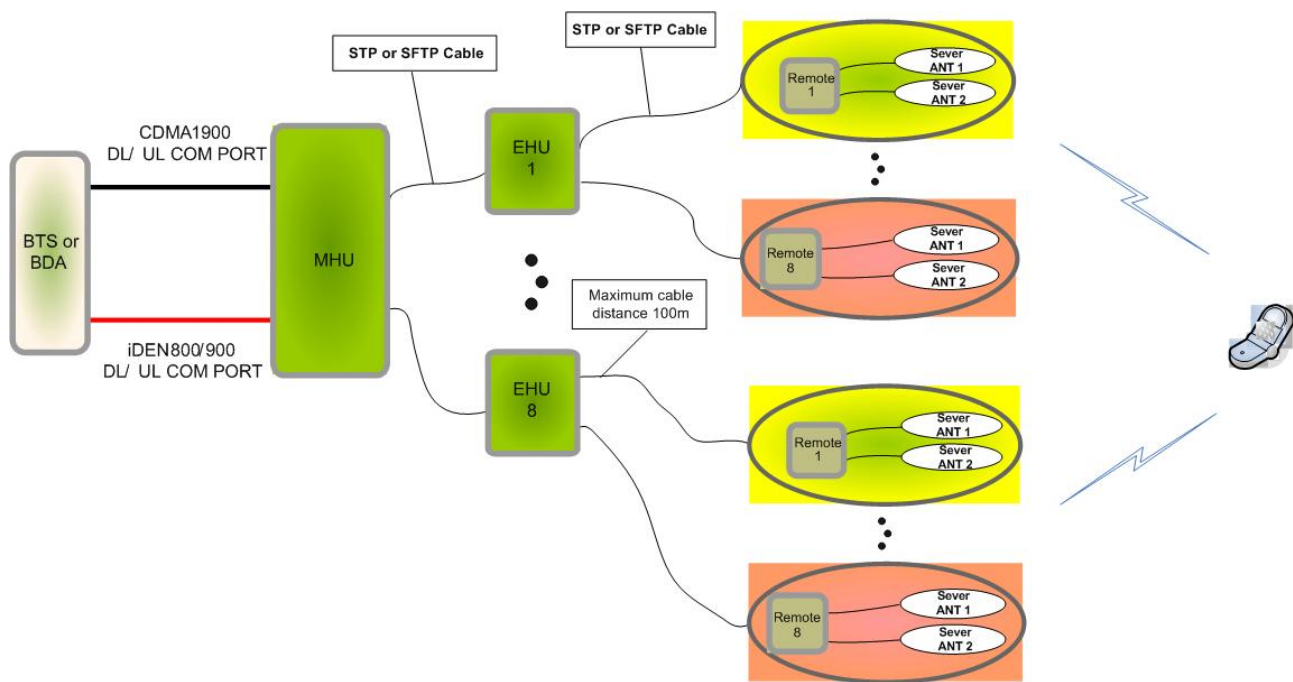
1. Introduction

- The CAT-5 In-building DAS consist of a MHU unit and a maximum of 8 remote units. Each remote unit can have up to 2 server antenna ports so that one MHU has the ability to provide up to 16 server antennas. The MHU and the remote unit are interconnected using the analog CAT5e method so that the system can simultaneously provide TRI Band. (CDMA1900 / iDEN800 / iDEN900) service to multiple floors in the building.



< Basic Organization >

- If EHU unit is added between MHU and Remote at the CAT-5 In-building DAS composition, it will be a composition like below. MHU is able to connect EHU 8EA and every EHU unit connects Remote 8EA. Thus, Remote can be connected maximum 64EA.



< Organization with EHU >

1-1. MHU

MCU & Interface Unit components

- Power Supply Unit (PSU)
- Main Control Unit (MCU)
- MHU Interface Unit
- Command & Control Unit(C&C)

RF UDC Unit components

- CDMA 1900 DL/UL UDC Unit
- iDEN 800/900 DL/UL UDC Unit

PoE Unit components (Option)

- PSU
- PSE

The MHU Unit can detect input signals from the TRI Band (CDMA1900/iDEN800/iDEN900).

The input signals are changed into IF analog signals by UDC for the transmission using the STP or SFTP cable and then the IF analog signals are transmitted to 8 remotes through the interface board.

1-2. Remote

Remote Unit components

- Power Supply Unit (PSU)
- Power Supply Unit (PD)-PoE Option
- iDEN 800/900 UL/DL UDC Unit
- CDMA 1900 UL/DL UDC Unit
- TRI Band MUX Filter
- Main Control Unit (MCU)
- RU Interface Unit

The Remote UDC Module converts the RF signal into an IF signal and compensates it for the STP or SFTP Cable loss. After the RF signal is amplified from the UDC module, it goes to all antenna ports from the remote until.

1-3. EHU(External Hub Unit)

EHU components

- Power Supply Unit (PSU)
- RFU
- EHU Interface Unit
- Main Control Unit (MCU)

PoE Unit components (Option)

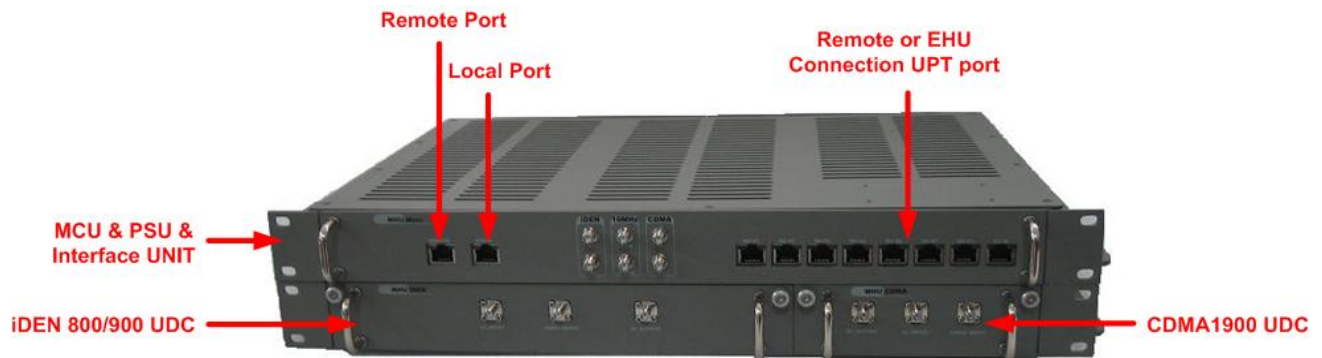
- PSU
- PSE

EHU gets converting IF signal at MHU through STP or SFTP cable. Inputting IF signal transmits IF signal to Remote after compensating STP or SFTP cable loss through RFU of EHU.

2. Description

2.1 MHU(Main Hub Unit) Overview

MHU unit is made up of MCU&Interface Unit 1U and RF UDC Unit 1U

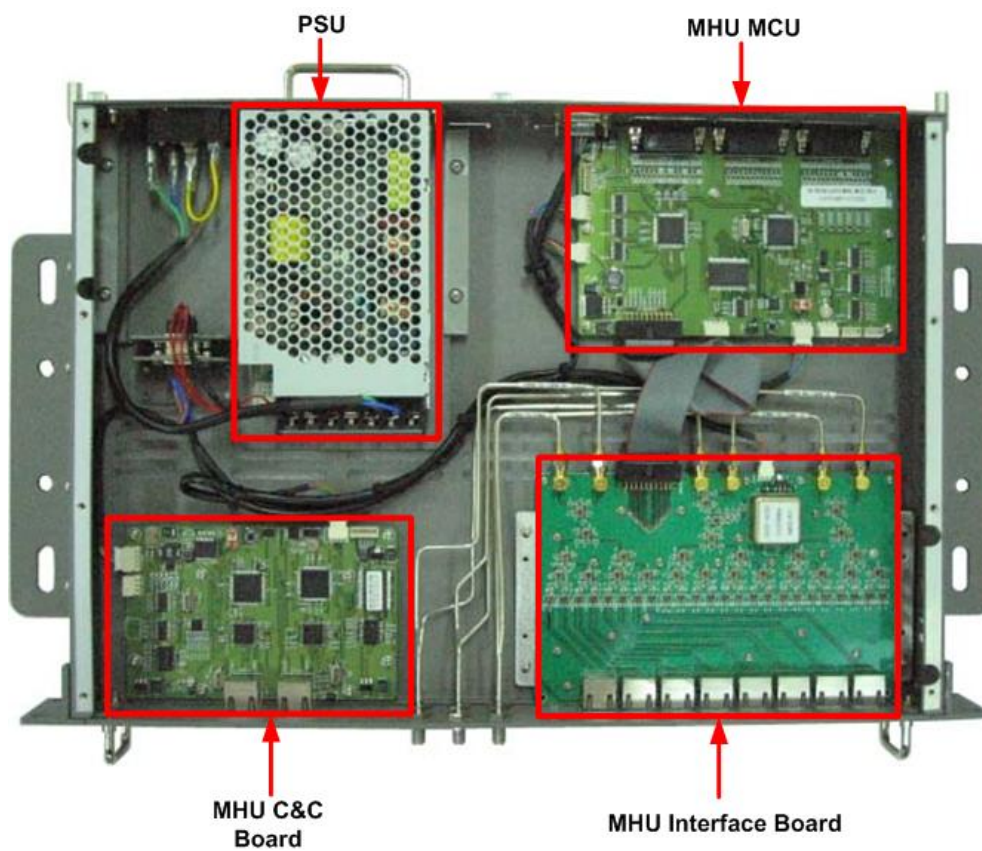


< Front View >

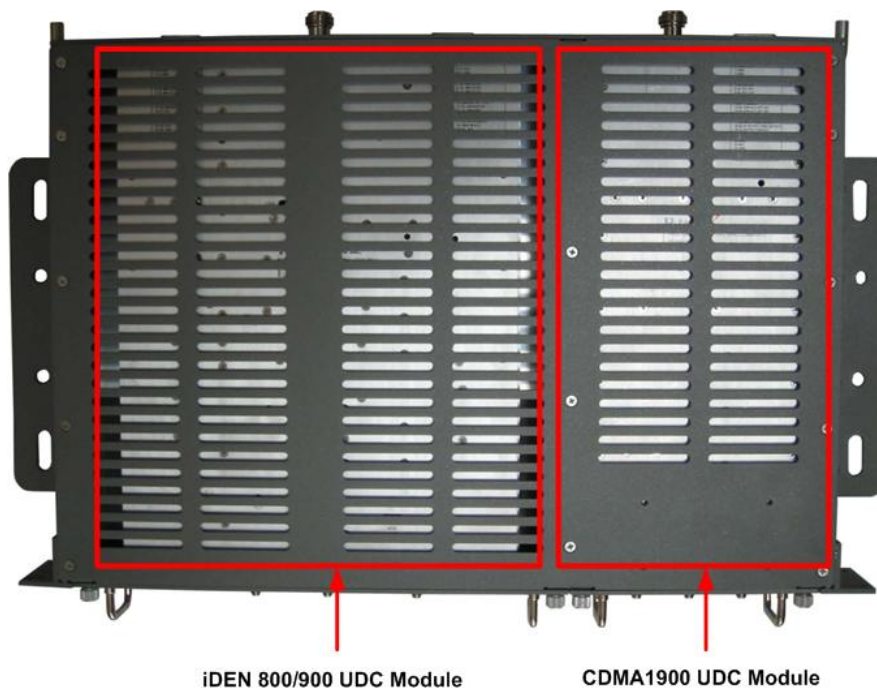


< Rear View >

2.1.1 MHU Internal Configuration



<MCU & PSU & Interface UNIT



<UDC Module UNIT>

2.1.2 MHU CDMA1900 and iDEN800/900 UDC MODULE



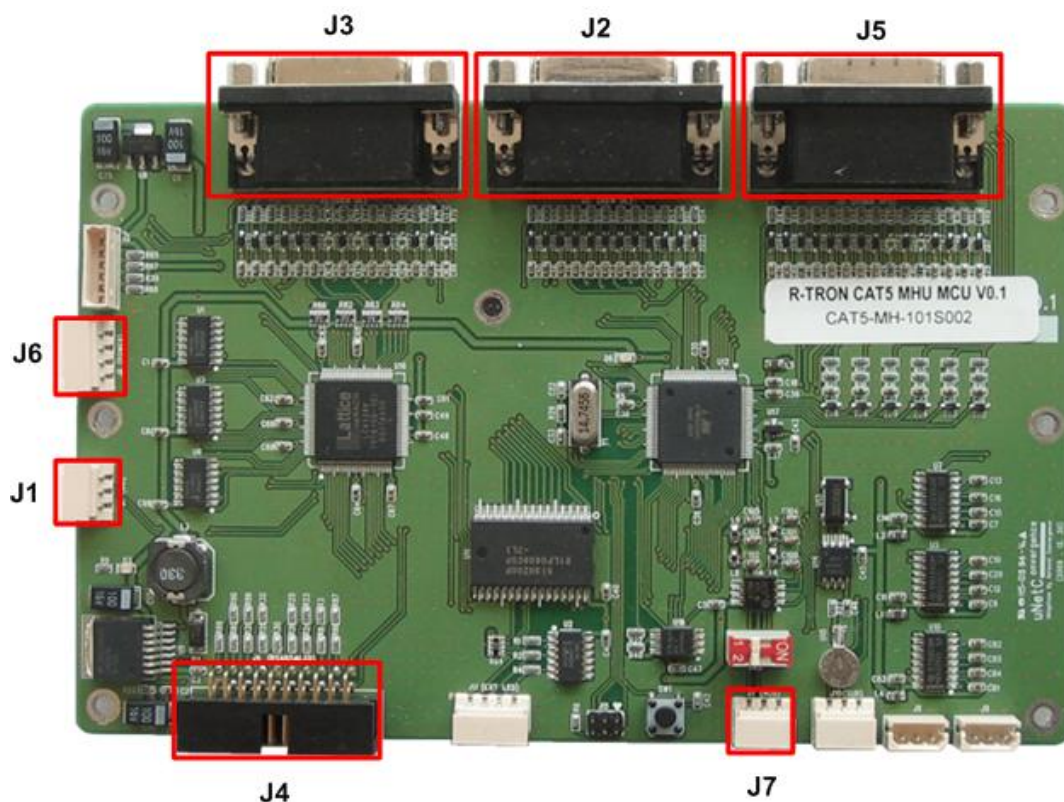
< CDMA1900 UDC Module >



< iDEN 800/900 UDC Module >

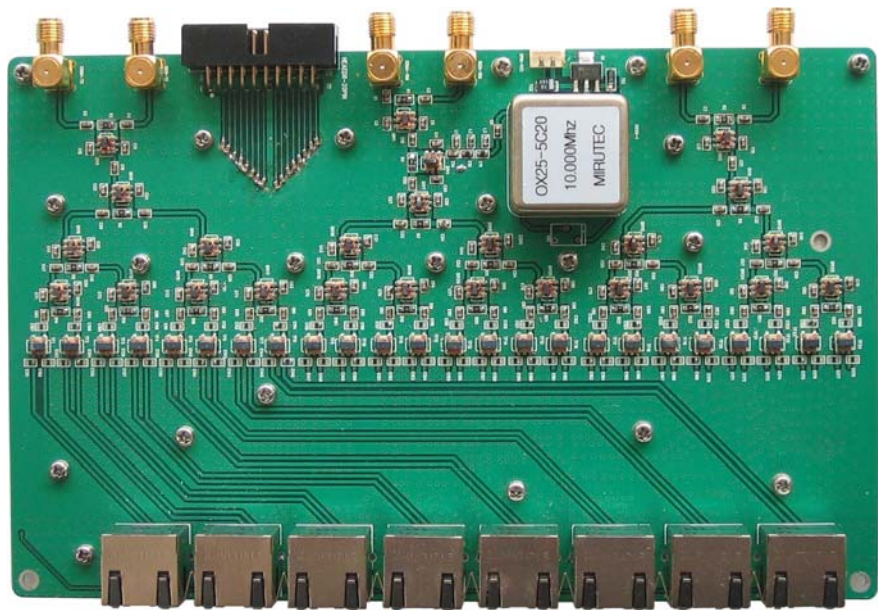
2.1.3 MHU MCU(Main Control Unit)

The MCU (Main Control Unit) is the control unit of the CAT5 DAS MHU. It controls and monitors operational parameters. It is also responsible for generating alarms, keeping event logs and performing many other functions.



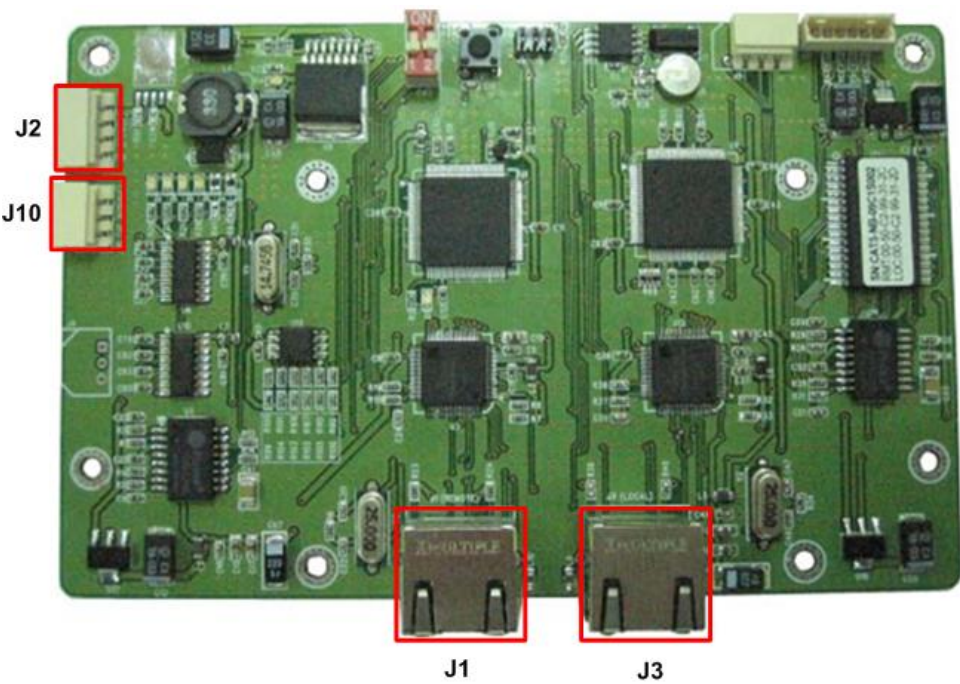
J1	GUI Link
J2	iDEN RFU DL Control
J3	iDEN RFU UL Control
J4	RS485 & LED
J5	CDMA RFU Control
J6	Power
J7	CNC Link

2.1.4 MHU INTERFACE BOARD



2.1.5 MHU C&C (Command & Control Unit)

C&C Board is communicating board for WEB GUI.



J1	Remote
J2	Power
J3	Local
J10	MCU Link

2.1.6 MHU PSU (Power Supply Unit)

The Power Supply Unit (PSU) supplies a steady DC Power to CAT5 DAS MHU by drawing power from the general in-wall AC outlets.

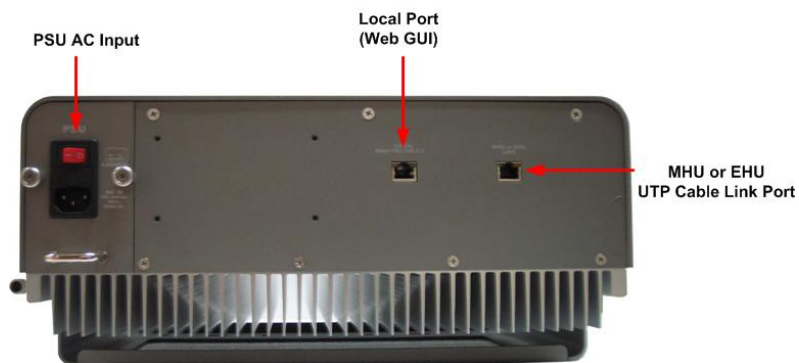


2.2 Remote Overview

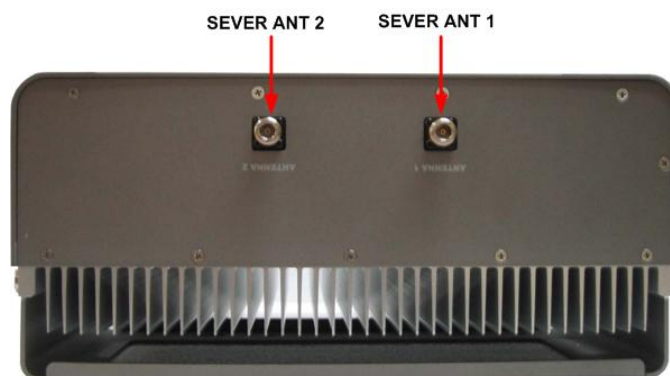
The Remote UDC module converts the RF signal into an IF signal and compensates it for the CAT5e STP or SFTP cable loss. After the RF signal is amplified from the UDC module, it goes to all antenna ports from the remote unit.



<Front View>

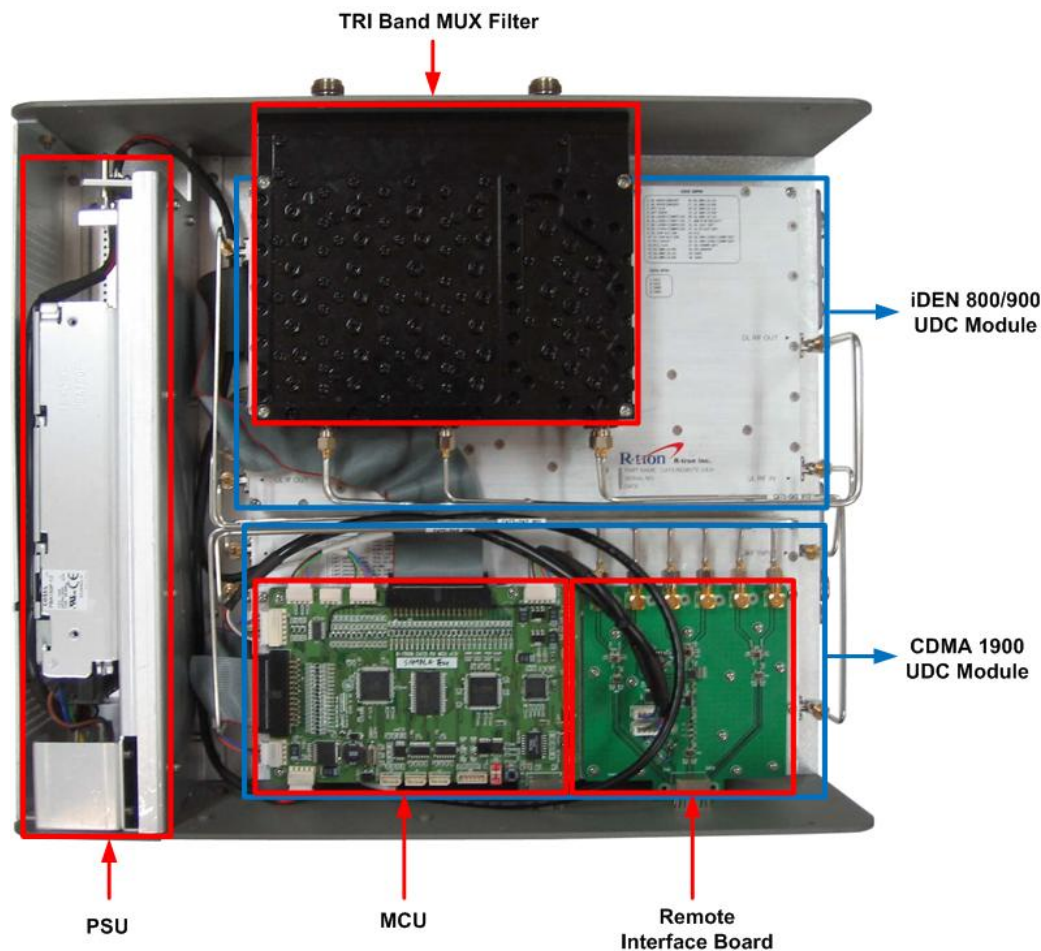


<Bottom View>

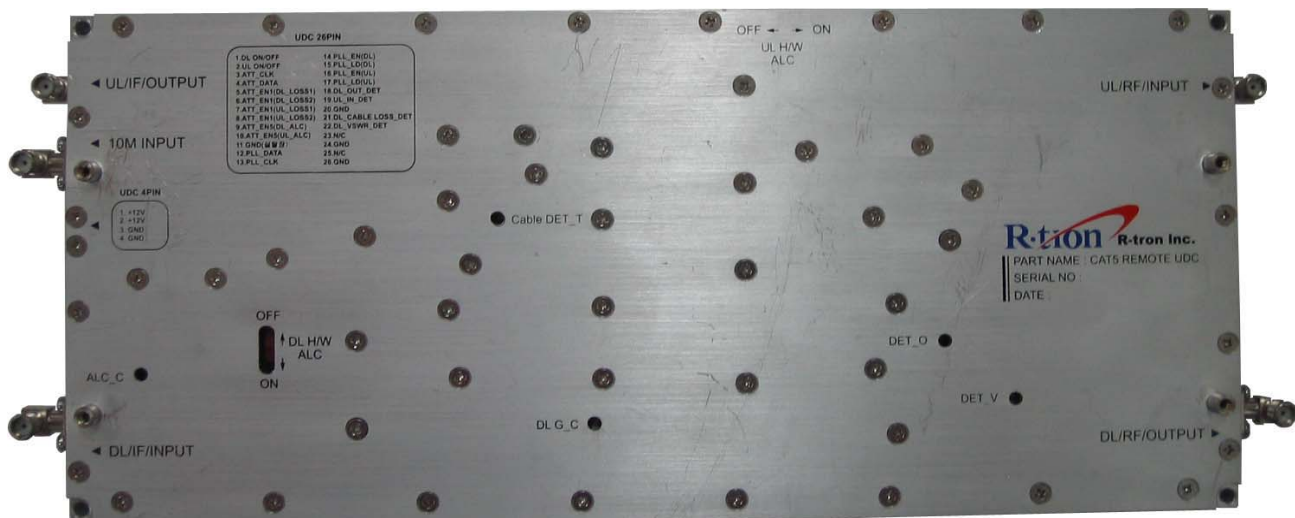


<Top View>

2.2.1 Remote Internal Configuration



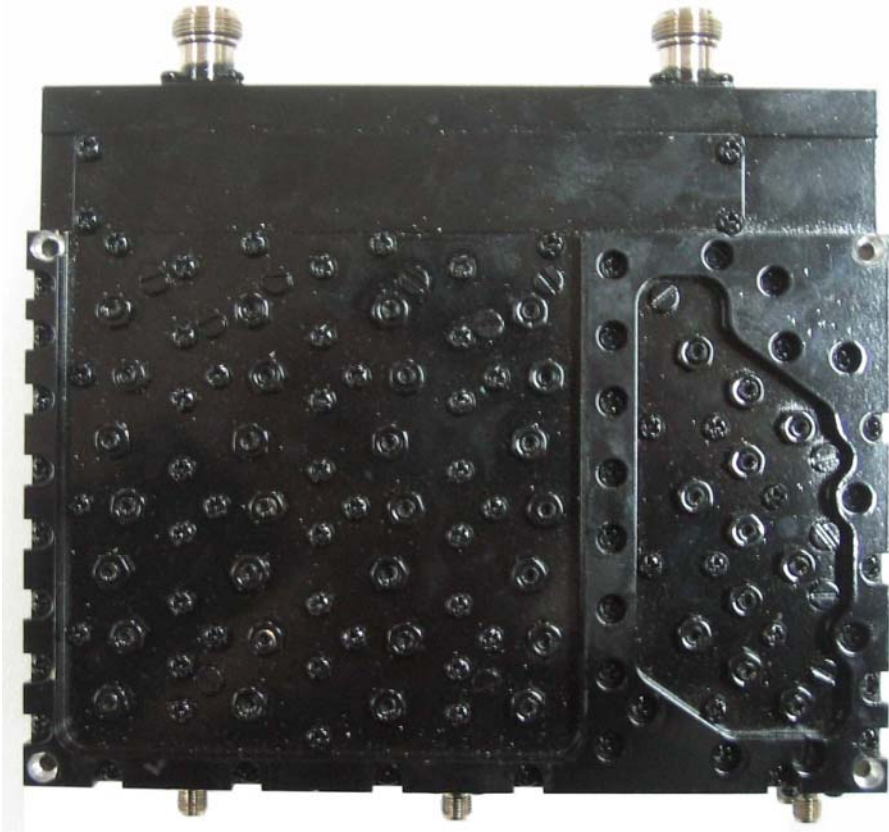
2.2.2 Remote CDMA1900 UDC Module



2.2.3 Remote iDEN 800/900 UDC Module

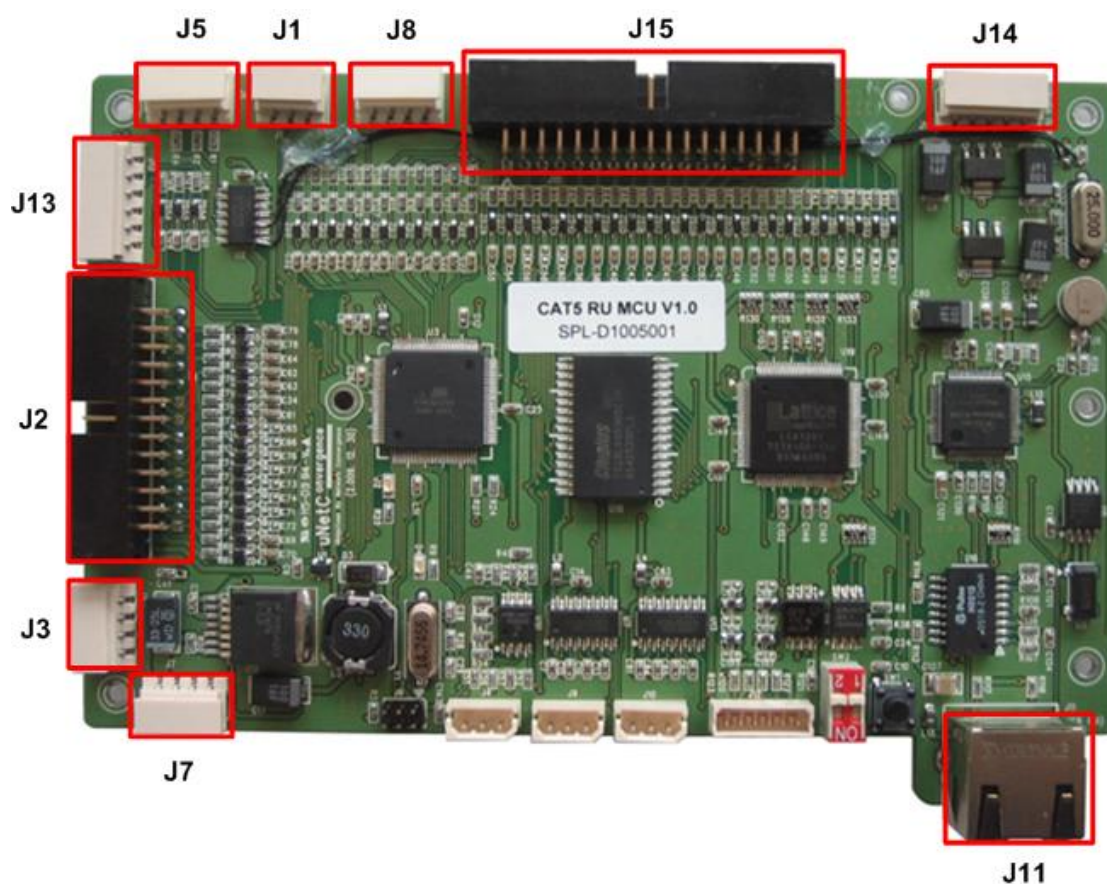


2.2.4 TRI BAND MUX Filter



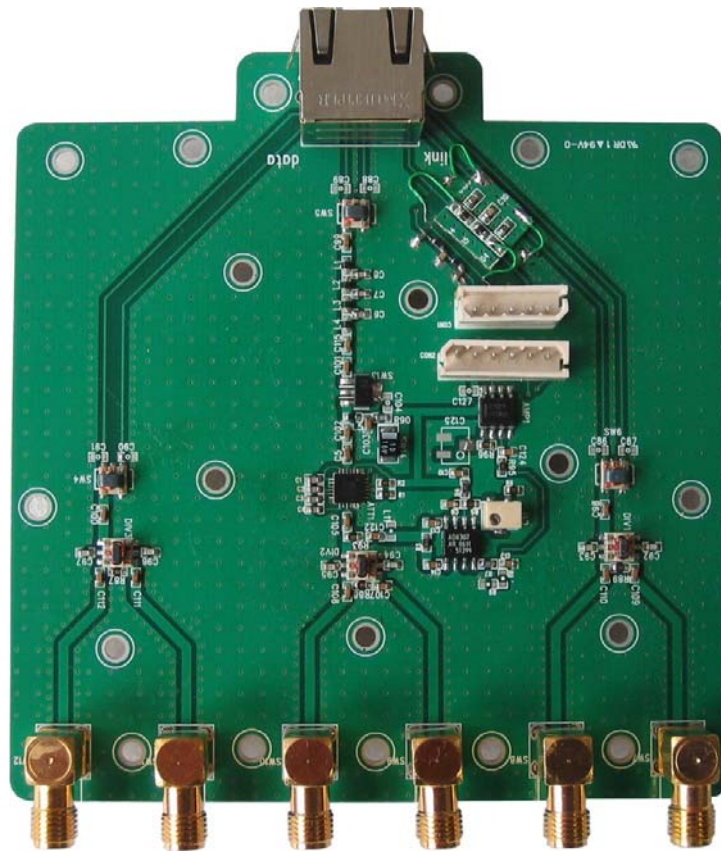
2.2.5 Remote MCU(Main Control Unit)

The MCU (Main Control Unit) is the control unit of the CAT5 DAS Remote. It controls and monitors operational parameters. It is also responsible for generating alarms, keeping event logs and performing many other functions.



J1	Factory GUI Link
J2	CDMA Control
J3	CDMA VCC(9V)
J5	LED
J7	Main VCC(9V)
J8	IDEN VCC(9V)
J11	WEB GUI Link
J13	Interface B'D Control
J14	MHU RS485
J15	IDEN Control

2.2.6 Remote Interface Board



2.2.7 Remote PSU (Power Supply Unit)

The Power Supply Unit (PSU) supplies a steady DC Power to CAT5 DAS Remote by drawing power from the general in-wall AC outlets.



2.3 EHU(Extension Hub Unit)

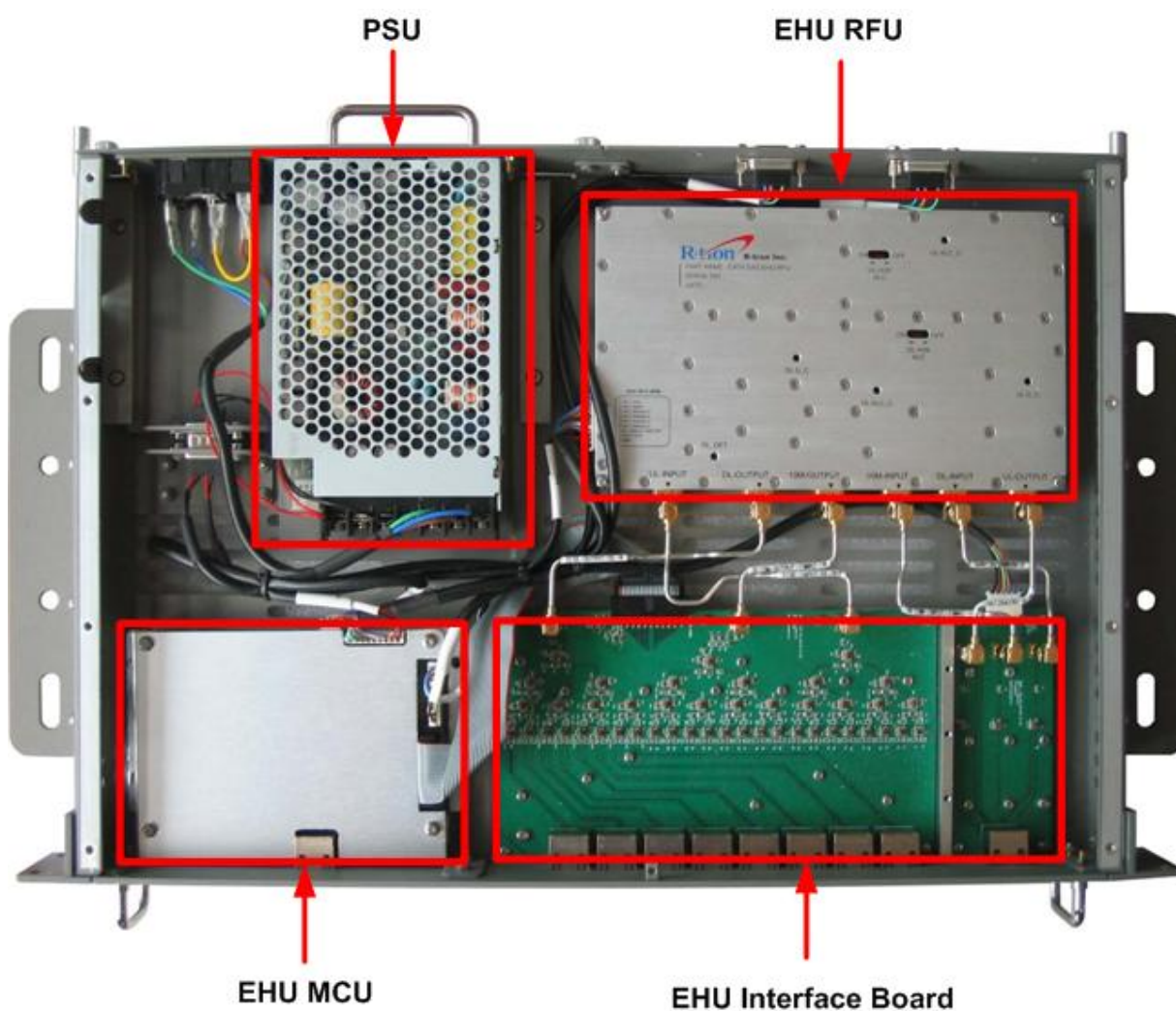


<Front View>

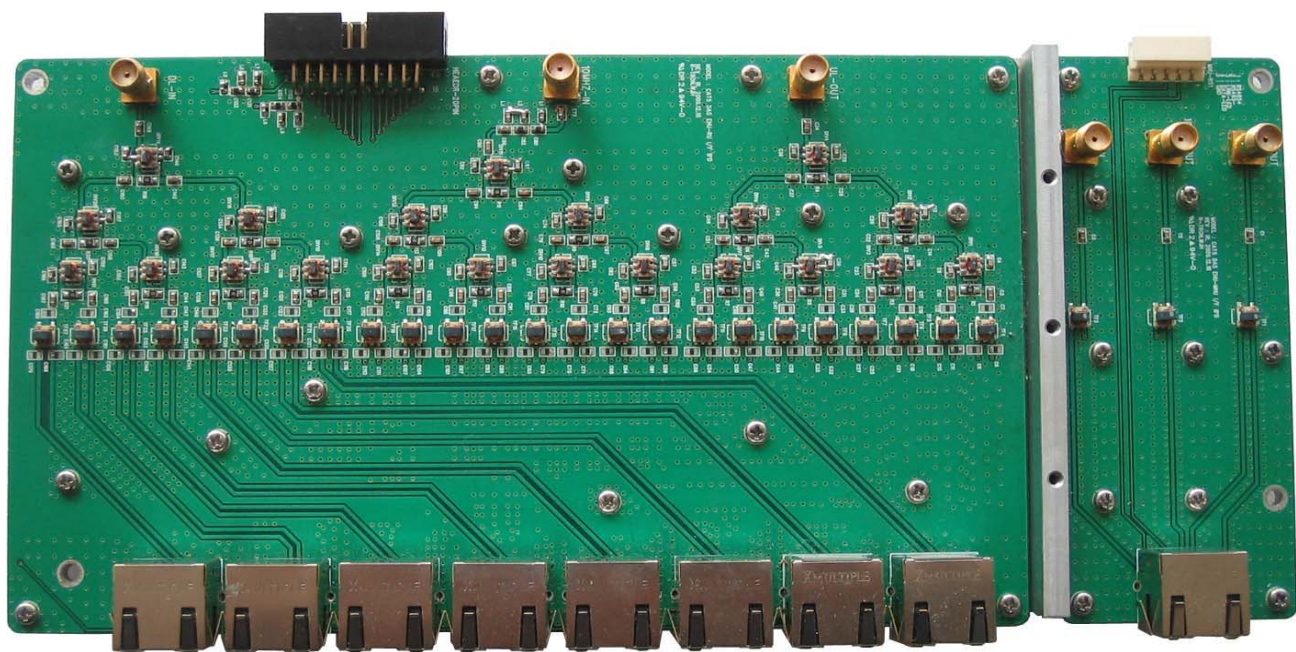


<Rear View>

2.3.1 EHU Internal Configuration



2.3.2 EHU Interface Board



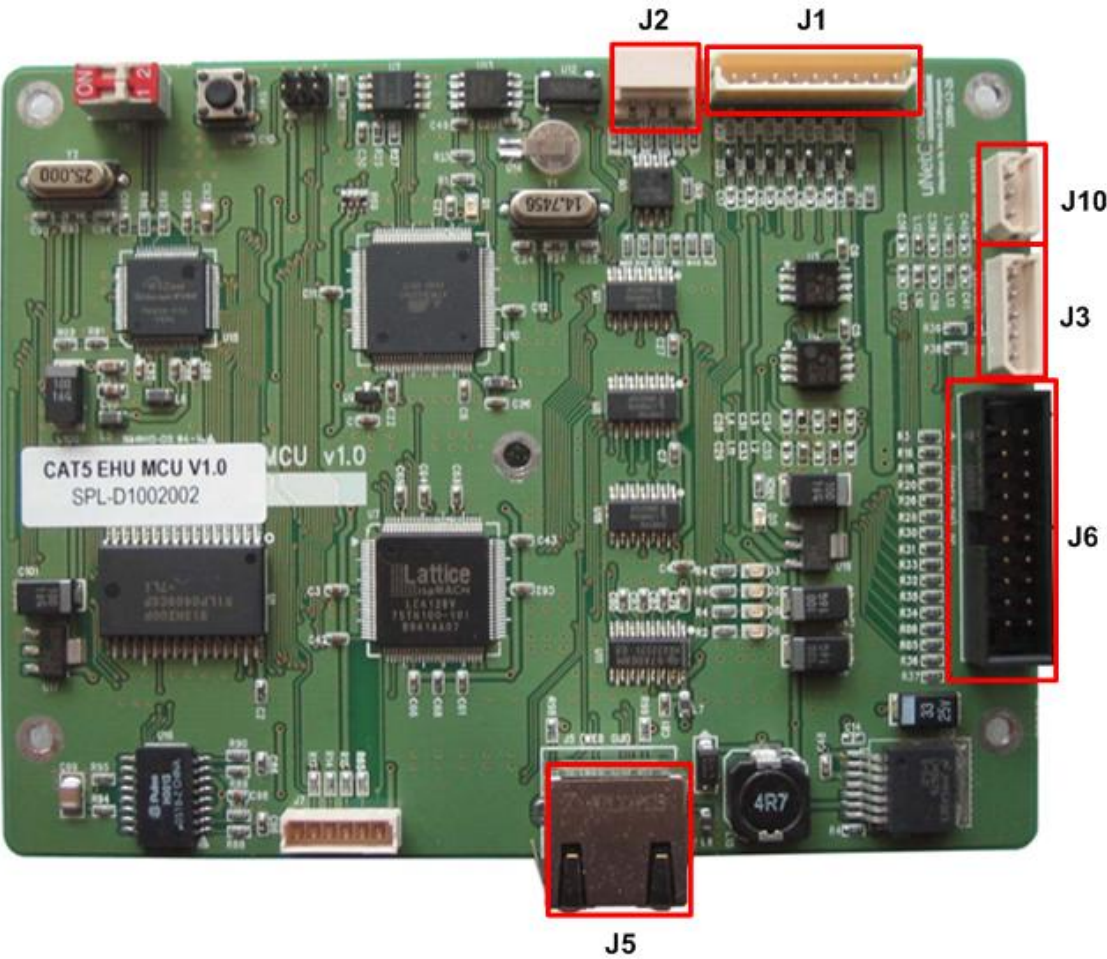
2.3.3 EHU RFU

RFU transmits IF signal to Remote after compensating the STP or SFTP Cable loss.



2.3.4 EHU MCU(Main Control Unit)

The MCU (Main Control Unit) is the control unit of the CAT5 DAS EHU.



J1	RFU
J2	GUI
J3	MHU RS485
J5	WEB GUI
J6	RU RS485
J10	PSU RS-232

2.3.5 EHU PSU (Power Supply Unit)

The Power Supply Unit (PSU) supplies a steady DC Power to CAT5 DAS EHU by drawing power from the general in-wall AC outlets.



3. Hardware Installation

The installation procedure is as follows:

- Check List of Items
- Mounting
- Grounding

3.1 Check List of Items

3.1.1 MHU of Items

Index	Items	Quantity
1	MHU Set	1
2	UTP Cross LAN Cable	1
3	AC Cord	1
4	Anchor Bolts	8
5	RF Cable	6
6	RS-232 Cable	3
7	CD of the User's Manual	1
8	Quick Guide	1

Item Figure



MHU



UTP Cross LAN Cable



RF Cable



AC Cord



Anchor Bolts



RS-232 Cable



CD of the
User's Manual

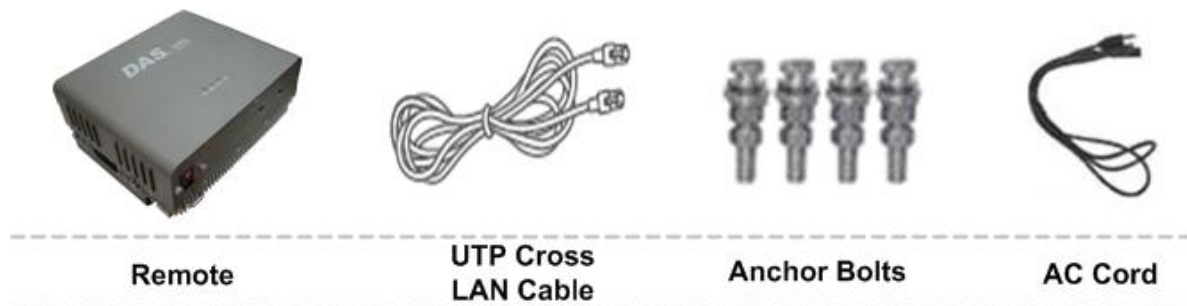


Quick Guide

3.1.2 Remote of Items

Index	Items	Quantity
1	Remote Repeater	1
2	UTP Cross LAN Cable	1
3	AC Cord	1
4	Anchor Bolts	4

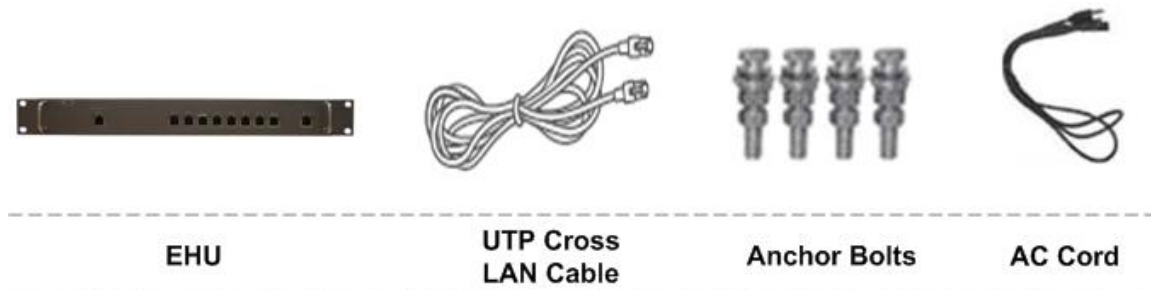
Item Figure



3.1.3 EHU of Items

Index	Items	Quantity
1	EHU	1
2	UTP Cross LAN Cable	1
3	AC Cord	1
4	Anchor Bolts	4

Item Figure

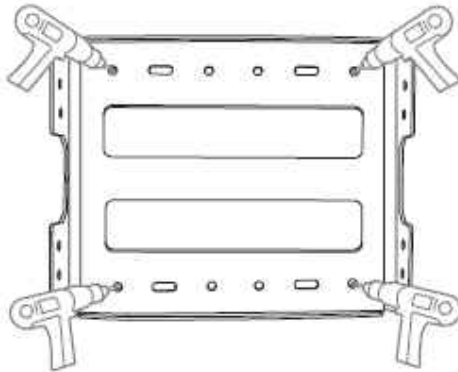


3.2 Mounting

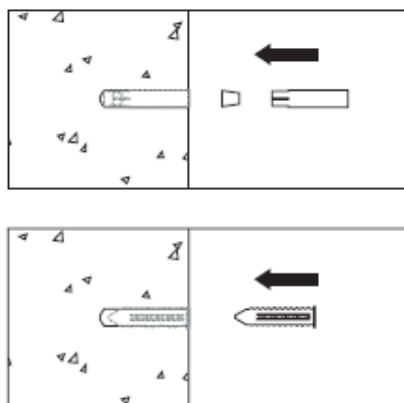
3.2.1 Remote Mounting

CAT-5 DAS are easy to mount using the assembled mounting bracket, which has 4 holes for the provided 5/16" fixing screws.

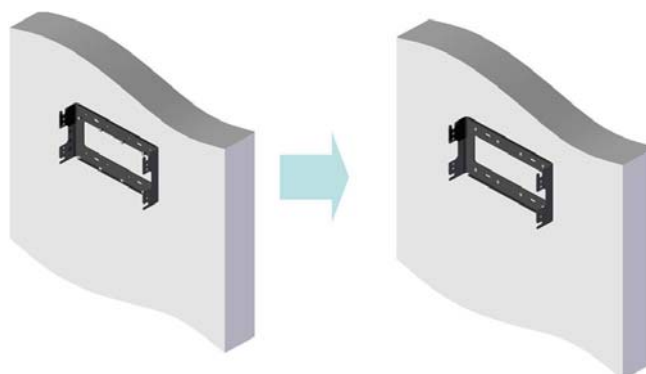
Step 1: Drill holes directly through the template.



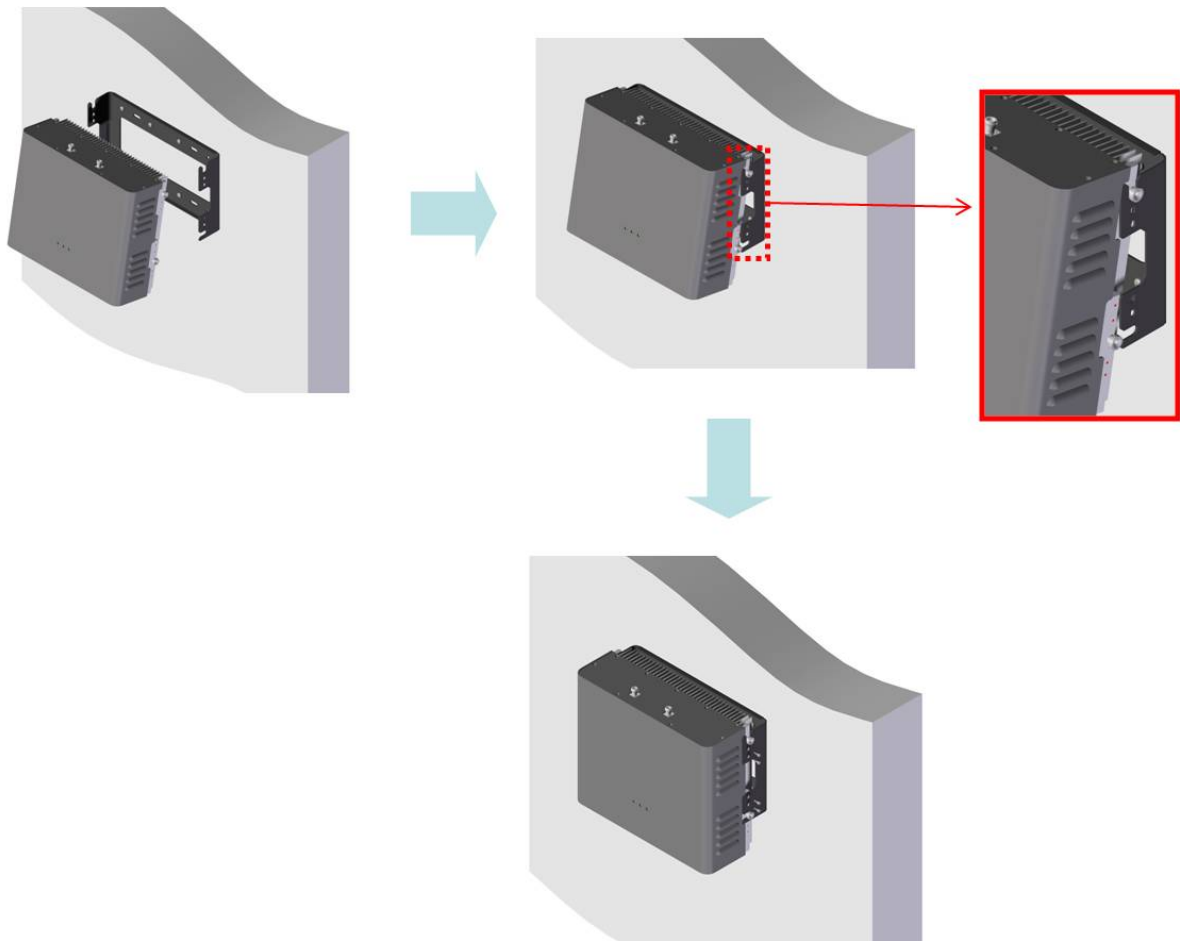
Step 2: Install the set anchor bolts or the plastic anchor bolts in the holes.



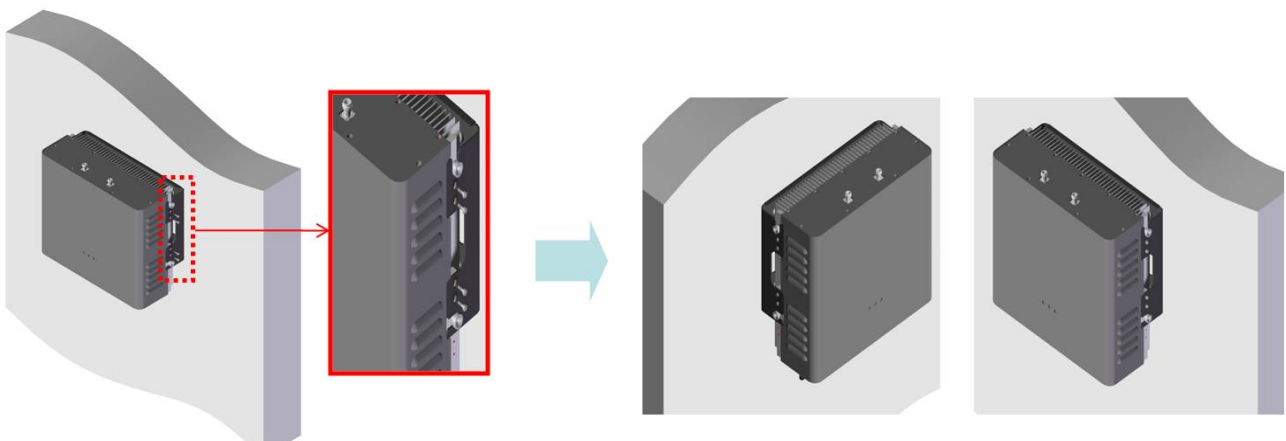
Step 3: Attach the mounting bracket to the wall using provided bolts or extra screws.



Step 4: Lean the CAT-5 DAS RU to hang topside of the Guide Ring on the mounting bracket, and push toward the wall to mount.



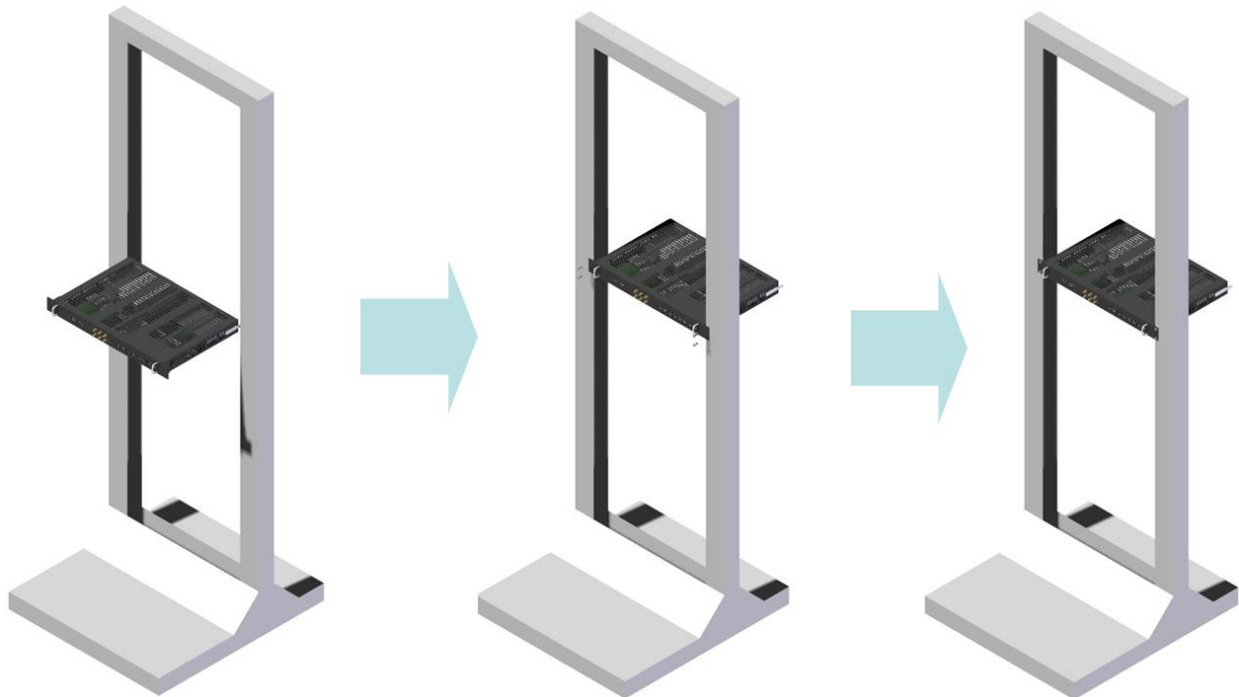
Step 5: Fix the CAT-5 DAS RU using the 6 screws provided.



3.2.2 MHU & EHU Unit Mounting

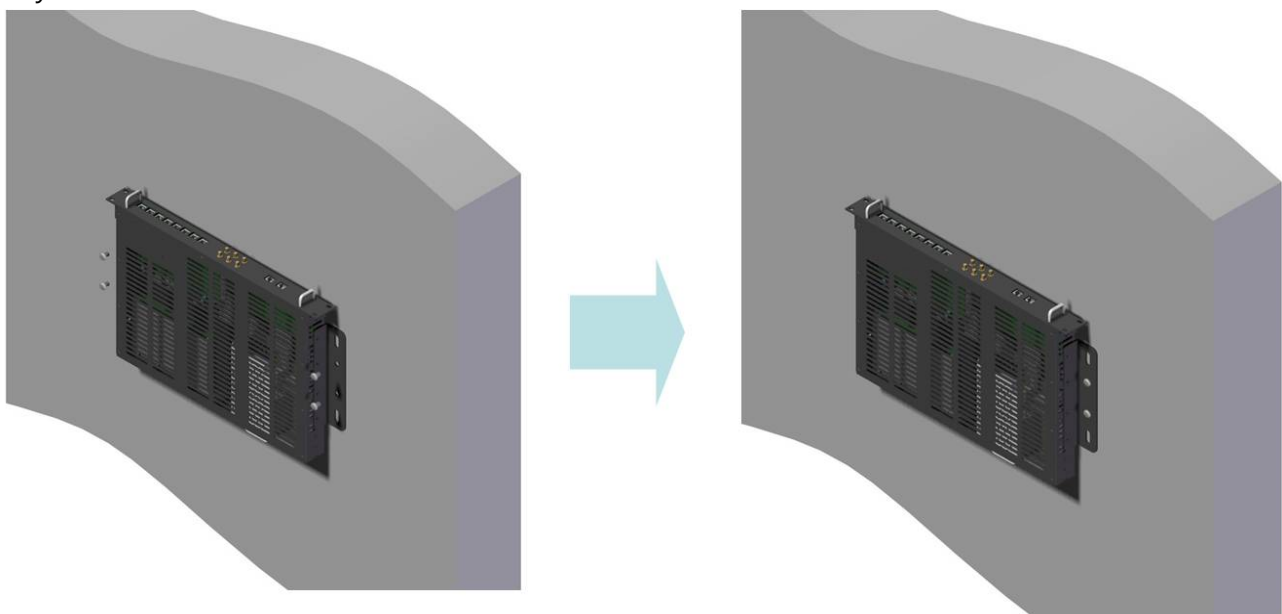
MHU & EHU Unit of CAT-5 DAS is able to install at the Wall or Rack

CAT-5 DAS MHU & EHU Unit의 Rack Installation



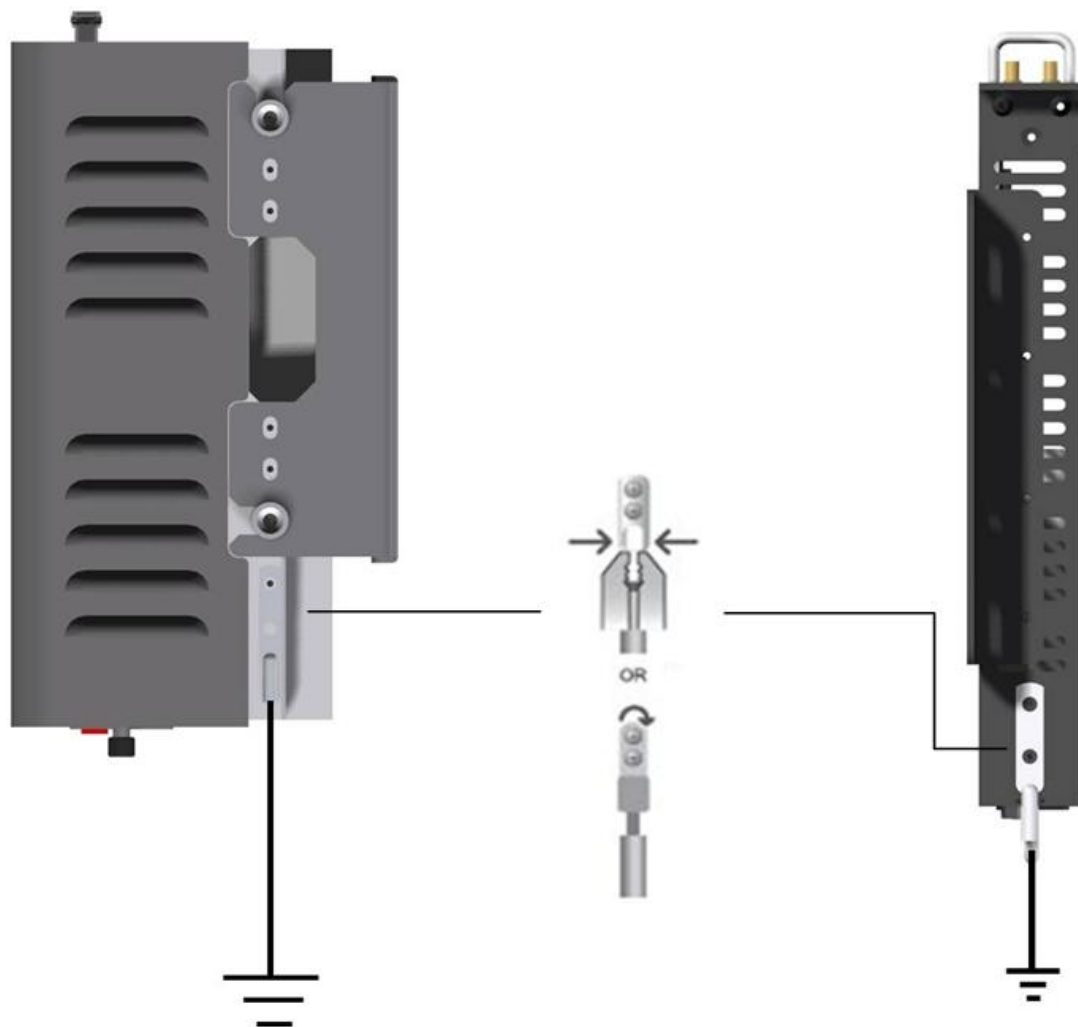
CAT-5 DAS MHU & EHU unit의 Wall installation

MHU and EHU Unit size is same. Repeat the step 1 to step 3 of 3.2.1 then install it as the same way.



3.3 Grounding

A rod on the left side is intended for a building ground. Connect the ground cable to the rod.



Warning

Dangerously high voltages may occur and damage the equipment if the equipment is not grounded properly.

3.4 Power On

Step 1: Connect the power cord.

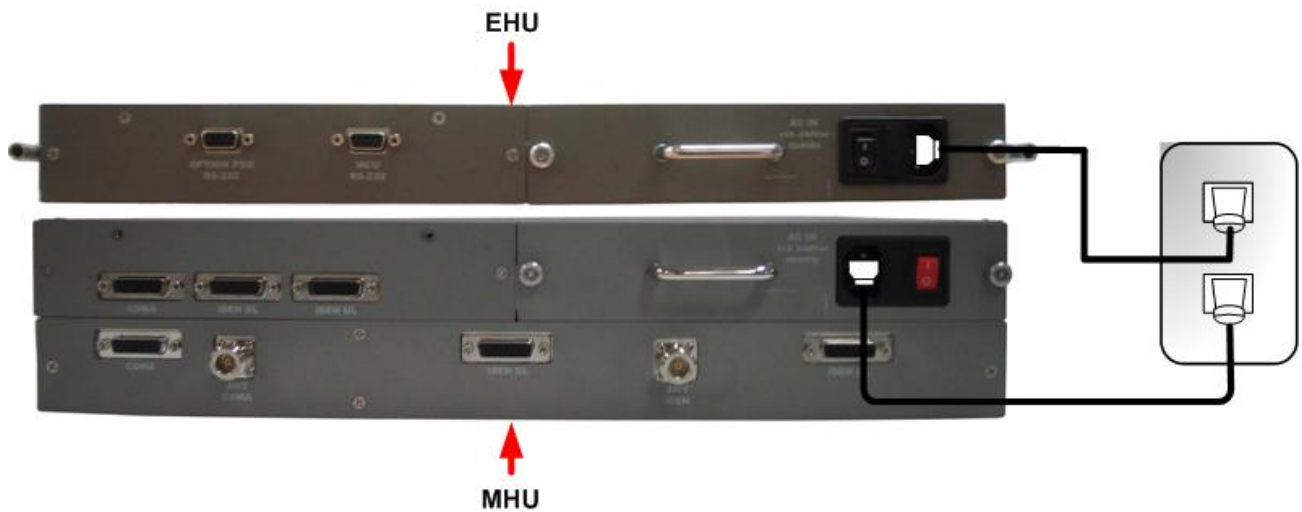
Step 2: Plug the power cord into a wall outlet.

Step 3: Power Switch turns on.

Note

It will take approximately 1 minute to boot after turning it on.

Step 4: Check if the green LED at the top turns on.



<MHU and EHU Power ON>



<Remote Power ON>

4. Operation

4.1 System Requirements

CAT-5 DAS operates on a customer provided PC based platform with the following system requirements:

- Windows® 2000, Windows® XP or Windows® Vista, Windows 7
- Internet Explorer 6.0(Recommended) or higher
- 128 MB RAM or higher
- Pentium III processor or higher
- RJ-45 jack required

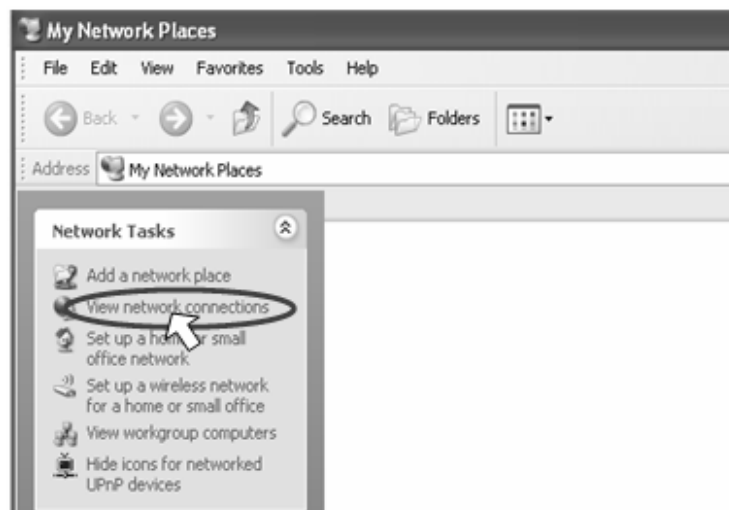
4.2 Network Setup

4.2.1 Windows XP

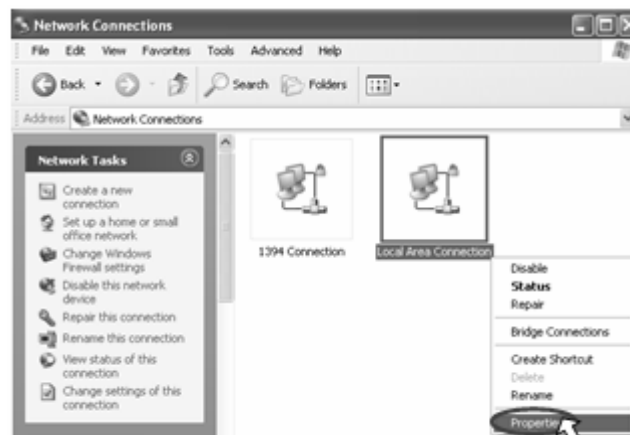
Step 1: Click the **Start** button and select **My Network Places**.



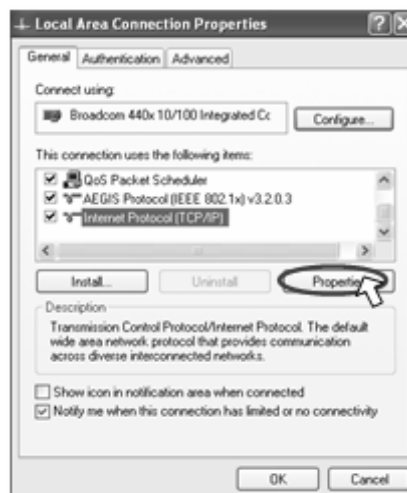
Step 2: Click **View network connections**.



Step 3: Right-click on the **Local Area Connection** and select **Properties** to view the shortcut menu.



Step 4: Select **Internet Protocol (TCP/IP)** and click **Properties**.



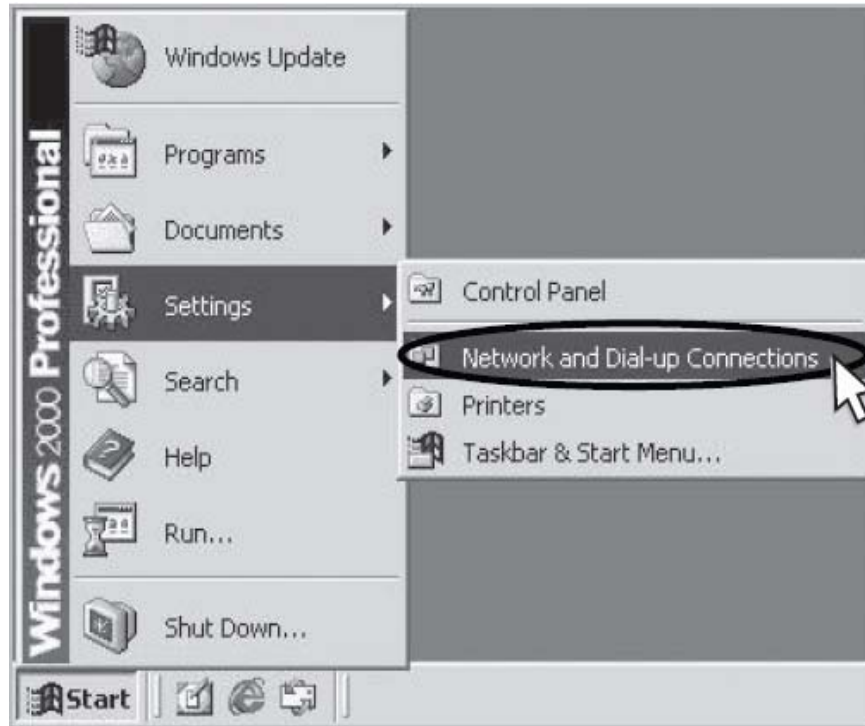
Step 5: Check **Obtain an IP address automatically** and click **OK**.



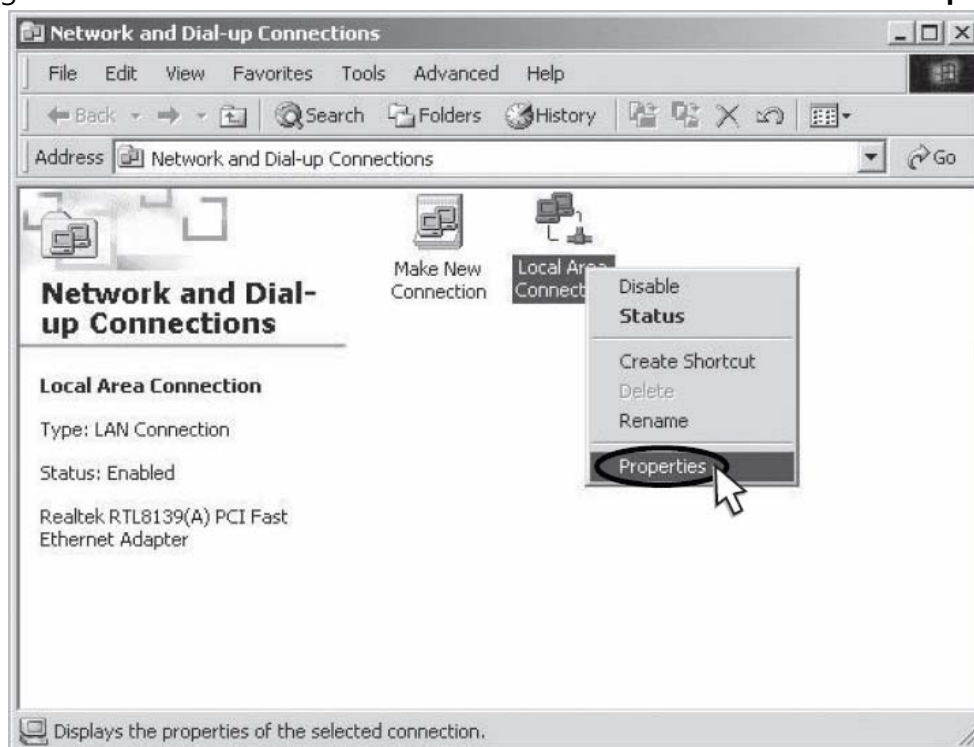
Step 6: Close all windows.

4.2.2 Windows 2000

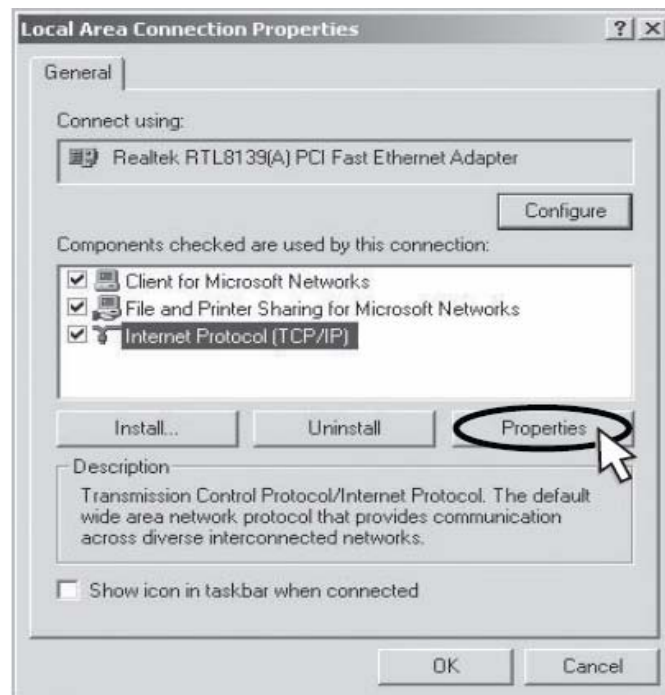
Step 1: Click the **Start** button, point to Settings, and then click **Network and Dial-up Connections**.



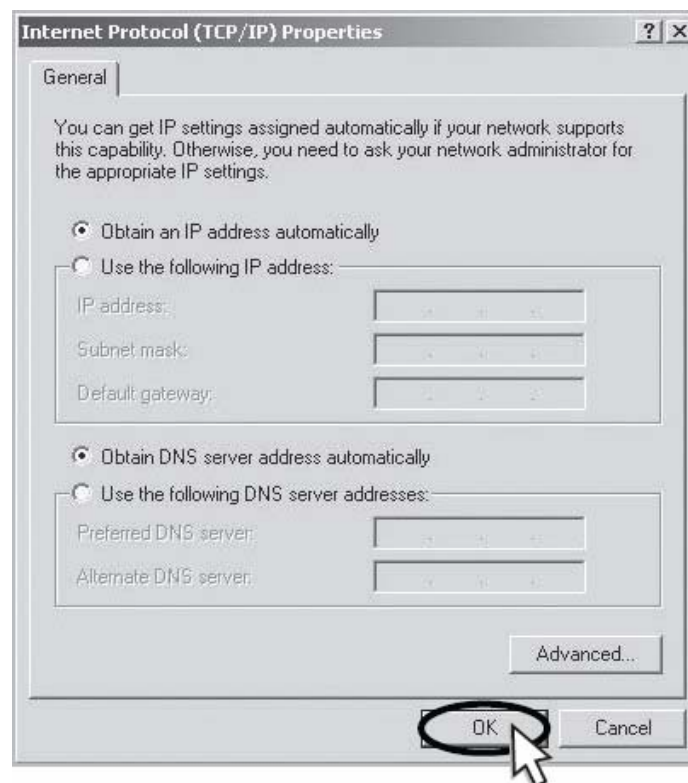
Step 2: Right-click **Local Area Connection** to see a shortcut menu and click **Properties**.



Step 3: Select **Internet Protocol (TCP/IP)** and click **Properties**.



Step 4: Check **Obtain an IP address automatically** and click **OK**.



Step 5: Close all windows.