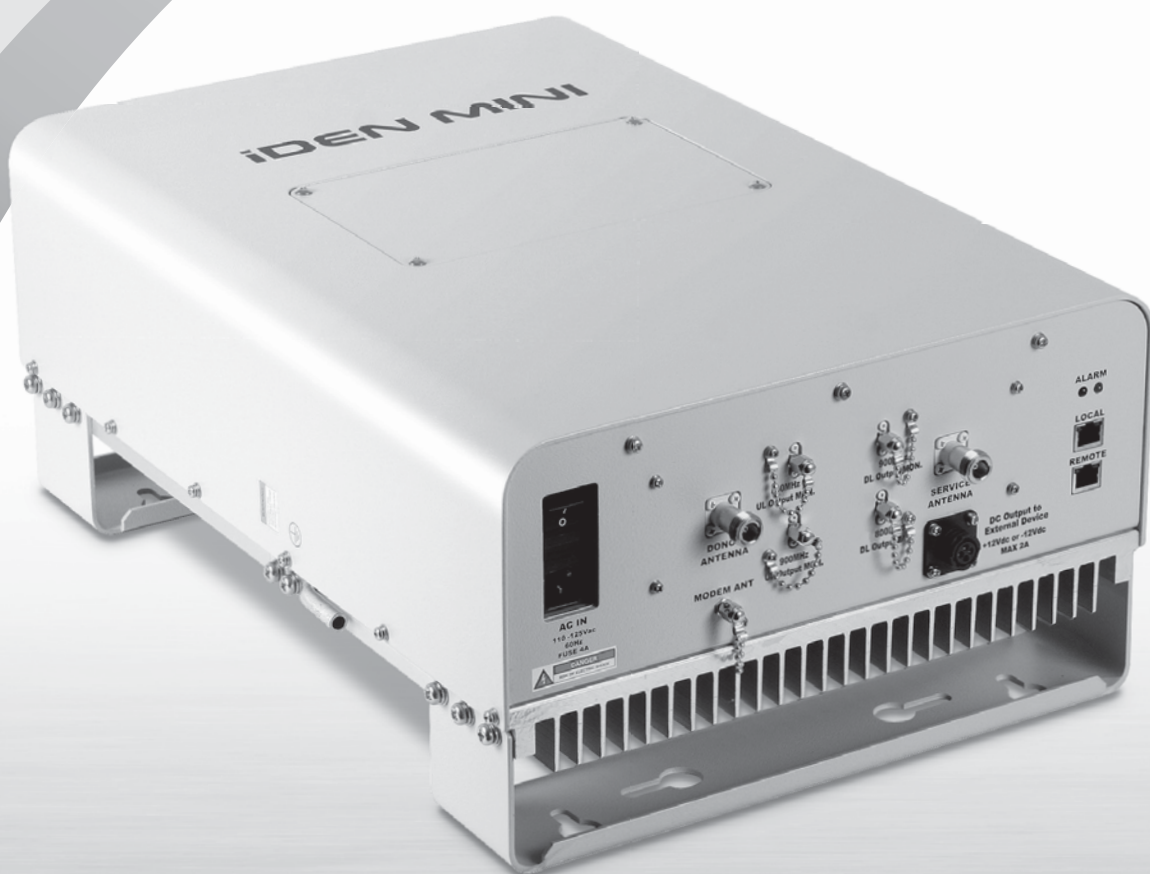


iDEN MINI

RSN-iDEN-30-C

User's Manual



R-tion

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



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
Internet: **www.r-tron.com**

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Notice

This document describes the specifications, installation and operation of iDEN MINI.

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 and the performance and design of the product.

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

Questions or Comments

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Fax: +1-913-344-9988

Internet: **www.r-tron.com**

Safety Precautions

iDEN MINI

Warning

Opening the iDEN MINI could result in electric shock and may cause severe injury.

Warning

Connect the equipment frame ground to building ground.

Warning

Operating the iDEN MINI with antennas in very close proximity facing each other could 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 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 and enables the communication wiring to communicate only inside the building.

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

Abbreviation	Definition
AC	Alternating Current
ALC	Automatic Level Control
ANT	Antenna
ASD	Automatic Shutdown
DC	Direct Current
GND	Grounding
GUI	Graphic User Interface
iDEN	Integrated Digital Enhanced Network
LED	Light Emitting Diode
PSU	Power Supply Unit
RF	Radio Frequency
TEMP	Temperature
VSWR	Voltage Standing Wave Ratio

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 itself from the oscillation or excessive input signal and eliminates any degradation to the network.

There are three parameters, ASD LEVEL, ASD TIME and ASD COUNT.

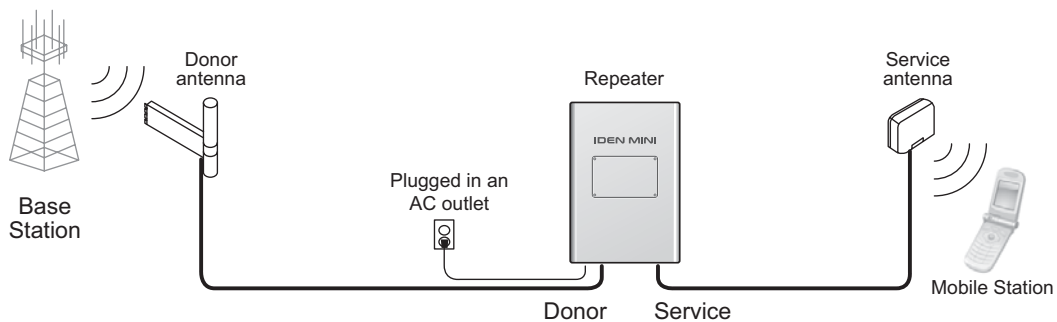
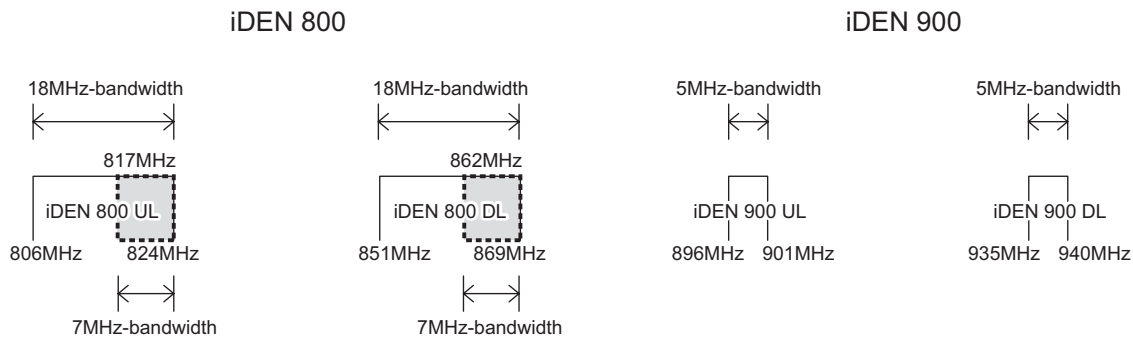
If the output power gets higher than “ASD LEVEL”, the repeater will shut down for “ASD TIME” time and then turn the amp back on and measure the output power again. If this repeats “ASD COUNT” times, the repeater will shut down completely.

1. Introduction

iDEN MINI repeater is used to fill out areas in iDEN mobile systems, such as base station fringe areas, business and industrial buildings, etc.

iDEN MINI receives signals from a base station, amplifies and retransmits the signals to mobile stations. Also it receives, amplifies and retransmits signals in the opposite direction. Both directions are served simultaneously with the following features:

- 7MHz or 18MHz-bandwidth service @ 800MHz's
- 5MHz-bandwidth service @ 900MHz's
- Adjustable Band Edge @ 800MHz's and 900MHz's
- Roll Offs: 65dBc at 0.5MHz outside pass-band

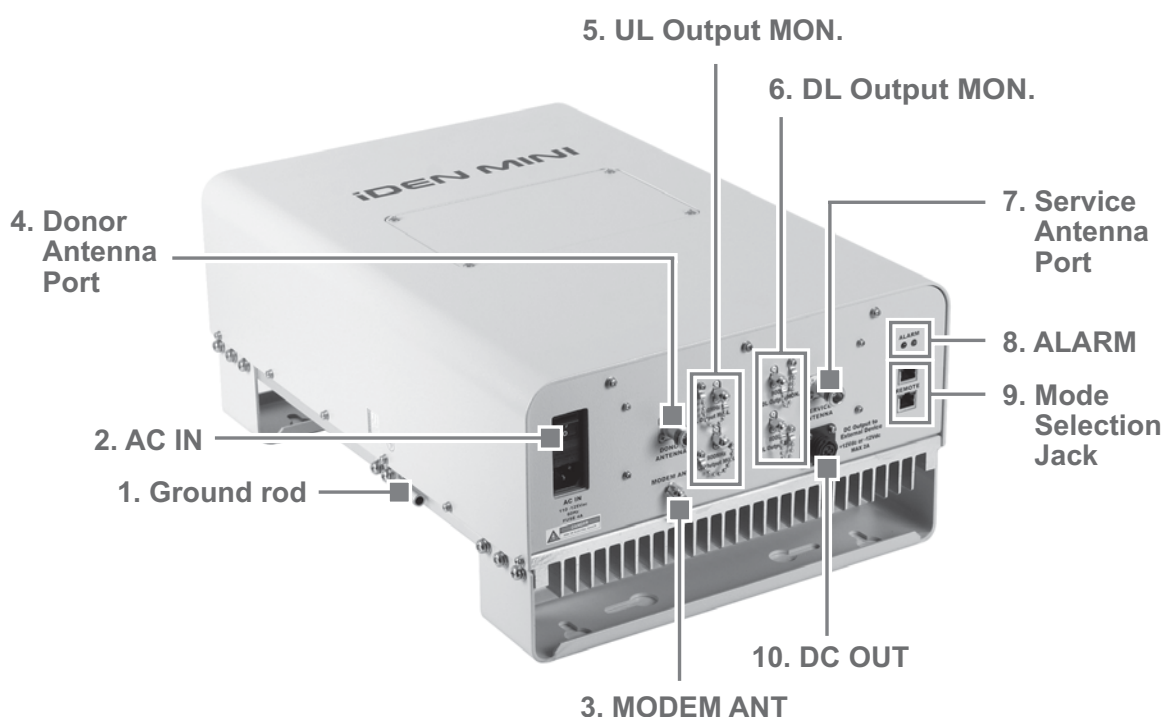


Overview: Service

2. Description

iDEN MINI

2.1 Main Unit Overview



1. **Ground rod** : Connects repeater frame ground to building ground.
2. **AC IN** : AC Power socket and AC Power switch.
3. **MODEM ANT** : Connects the Modem antenna.
4. **Donor Antenna Port** : Connects the Donor antenna.
5. **UL Output MON.** : Displays the output of Up Link RF connected with a measuring instrument and outputs 20dB lower than the actual output of RF. (30dB lower for iDEN MINI)
6. **DL Output MON.** : Displays the output of Down Link RF connected with a measuring instrument and outputs 20dB lower than the actual output of RF. (30dB lower for iDEN MINI)
7. **Service Antenna Port** : Connects the Service antenna.
8. **ALARM** : When an alarm of the **On Site Alarm** occurs, the red LED blinks and when it operates without any problem, the green LED blinks.

2. Description >>

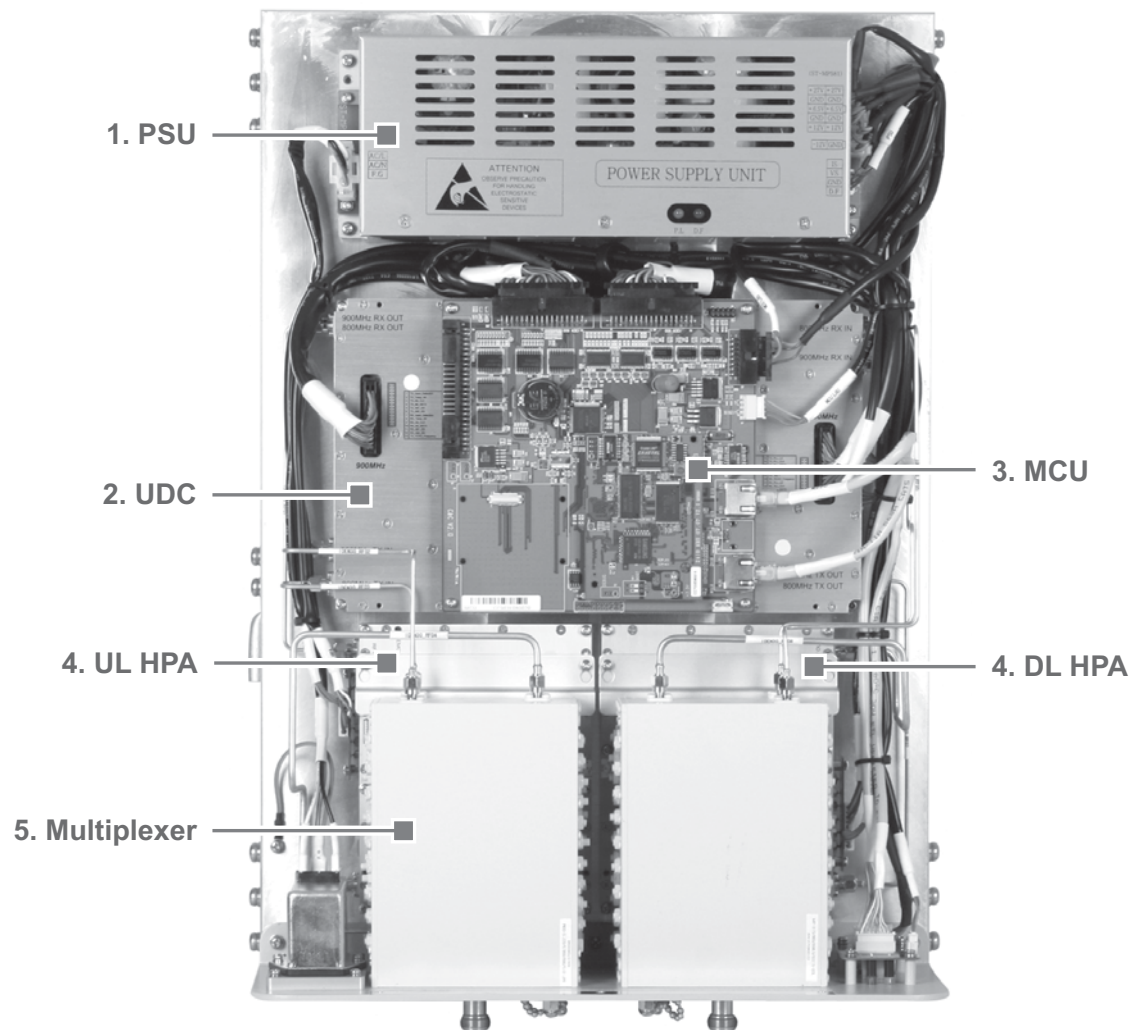
9. Mode Selection Jack : The mode selection jack has two modes: Local Mode & Remote Mode.

LOCAL Mode : This mode should be selected only if the iDEN MINI is used alone without being connected to a collocated repeater functioning as a local.
(Use this mode for the Operation)

REMOTE Mode : This mode should be selected if a repeater is being installed along with the iDEN MINI and the Ethernet port is being used for communicating with the repeater.

10. DC OUT : Power outlet for compatible external devices only.

2.2 Sub Unit Overview

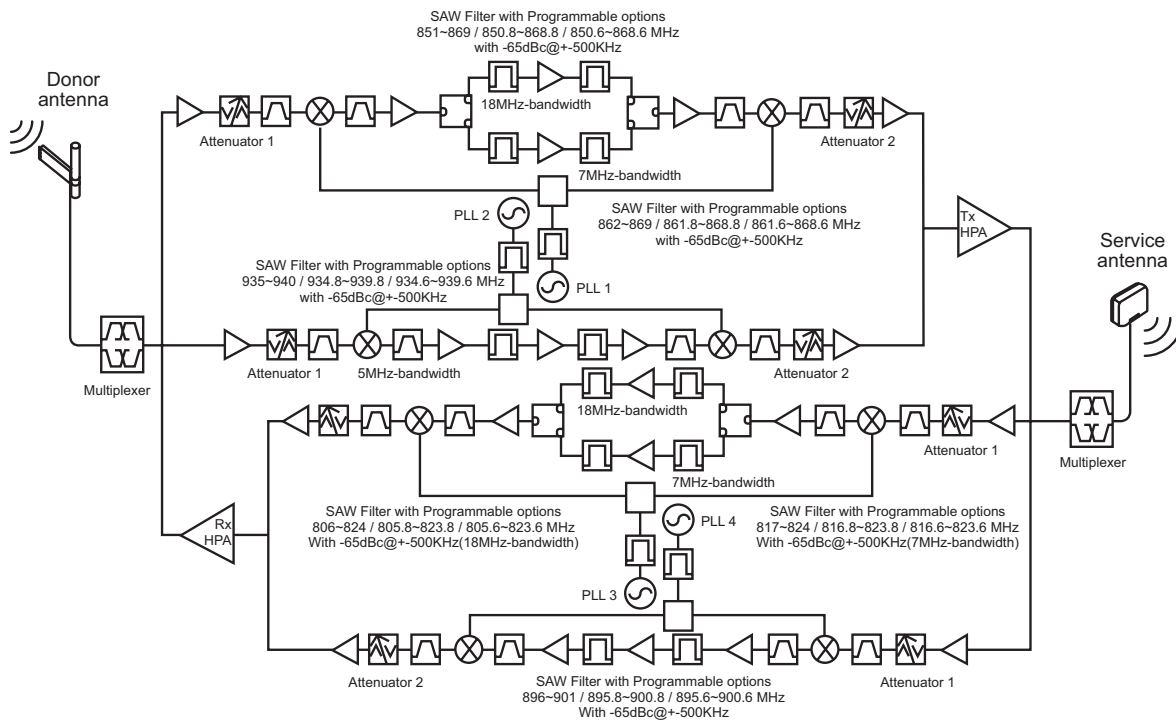


- 1. PSU (Power Supply Unit) : See page 8.
- 2. UDC (Up Down Converter) : See page 9.
- 3. MCU (Main Control Unit) : See page 10.
- 4. UL / DL HPA (High Power Amplifiers) : See Page 11.
- 5. Multiplexer : See page 11.

2. Description

2.2.1 Block Diagram

The following diagram explains how the iDEN MINI serves signals.



2.2.2 PSU (Power Supply Unit)

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



Specifications

Item		Specifications
Environmental	Operating Temp	-10°C~50°C (14°F~122°F)
	Humidity	20%~90%RH
	Cooling method	Convection
Voltage		AC110~125V
Current		6A Max / 6V, 12V, 27VDC
Frequency		50~60Hz typical
Leakage Current		0.5mA max.@110V AC

2.2.3 UDC (Up Down Converter)

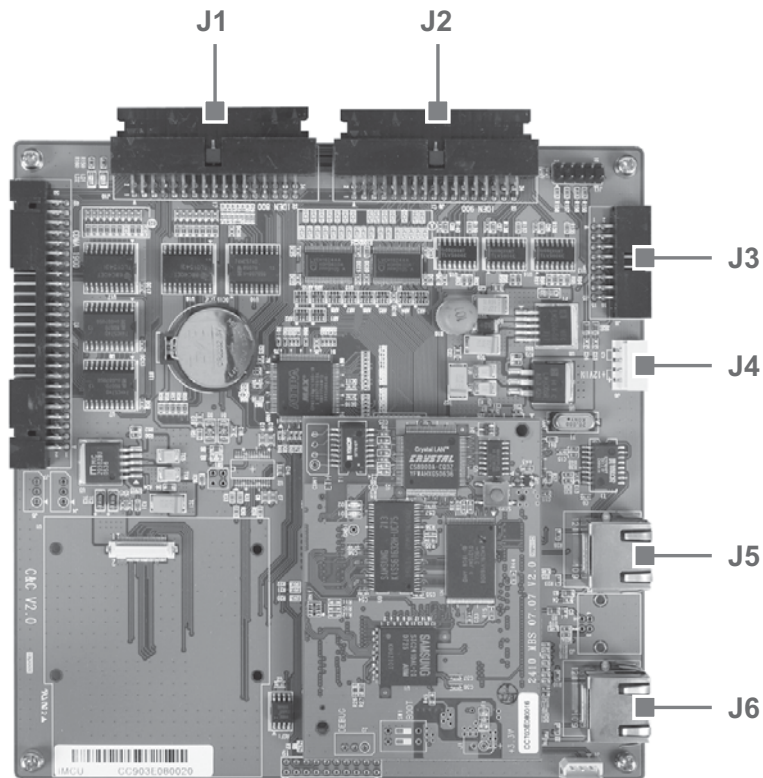
The UDC (Up Down Converter) is basically a bi-directional amplifier that sharply filters out unwanted noise.



2. Description

2.2.4 MCU (Main Control Unit)

The MCU (Main Control Unit) is the control unit of iDEN MINI. It controls and monitors operational parameters. It is also responsible for generating an alarm, an event log and many other functions of the iDEN MINI.

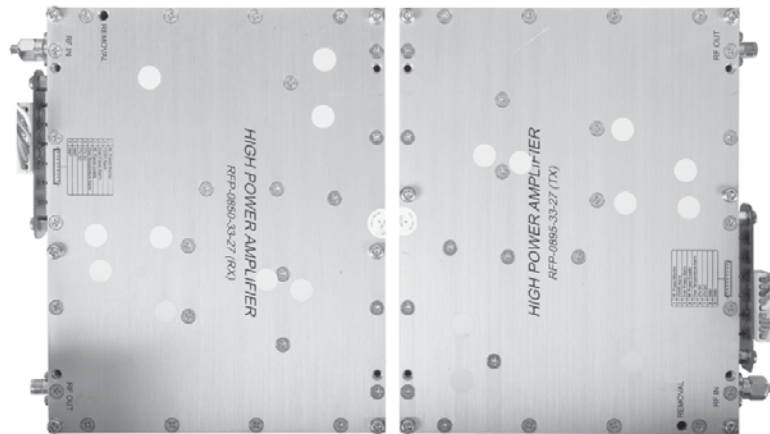


Pin Map

Port	Connected to
J1	iDEN 800 PLL, B/S, OUT DET, DL(Tx)/UL(Rx) HPA
J2	iDEN 900 PLL, B/S, OUT DET
J3	Alarms, LEDs
J4	MCU Vcc (+12V)
J5	Local Port
J6	Remote Port

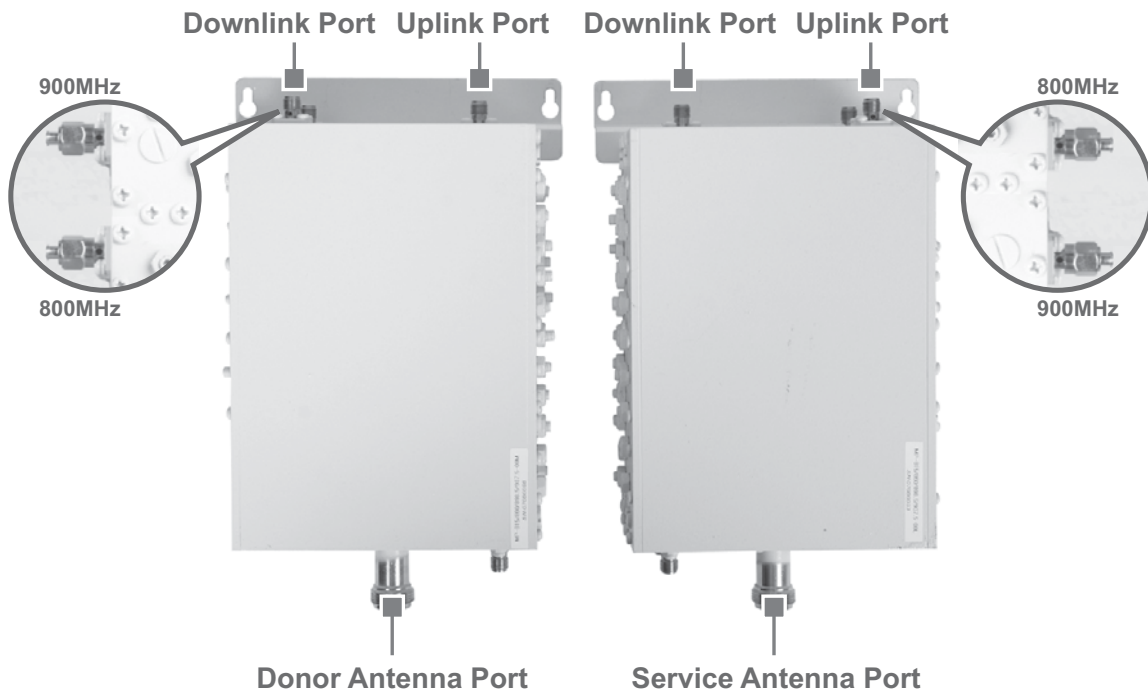
2.2.5 HPAs (High Power Amplifiers)

The HPAs (High Power Amplifiers) amplifies the transmitted signal from a base station at the final stage of the repeater and vice versa.



2.2.6 Multiplexer

A multiplexer is a device that combines two or more signals onto a common channel or medium to increase its transmission efficiency.



3. Hardware Installation

The installation procedure is as follows:

- Check List of Items
- Mounting
- Grounding
- RF Cable Connection
- Power On

3.1 Check List of Items

Index	Items	Quantity
1	Repeater	1
2	AC Cord	1
3	Anchor Bolts	4
4	Wall Mounting Template	1
5	UTP Cross LAN Cable	1
6	Quick Guide	1
7	User's Manual	1

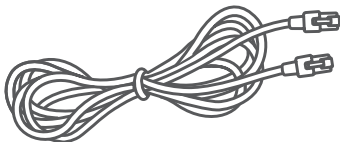
3.1.1 Items



Repeater



Wall Mounting Template



UTP Cross LAN Cable



AC Cord



Anchor Bolts



User's Manual



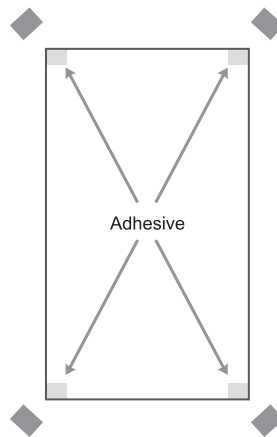
Quick Guide

3.2 Mounting

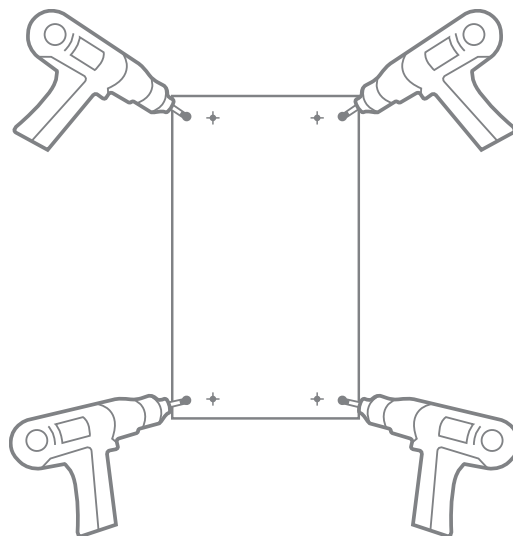
iDEN MINI is easy to mount using the assembled mounting bracket, which has 9 holes for the provided 5/16" fixing screws.

Step 1 Remove the cover of double-coated foam tape squares at each corner on the back side of the template.

Step 2 Stick the provided template to the wall using the tape squares while adjusting the horizon.

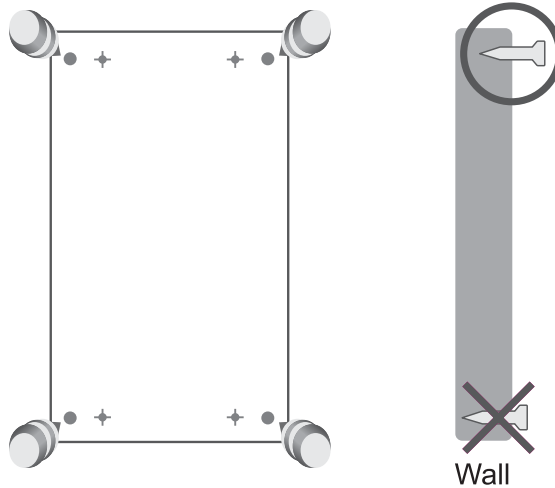


Step 3 Mark with a pen for the holes and drill the marks or drill holes directly on the mark in the template.

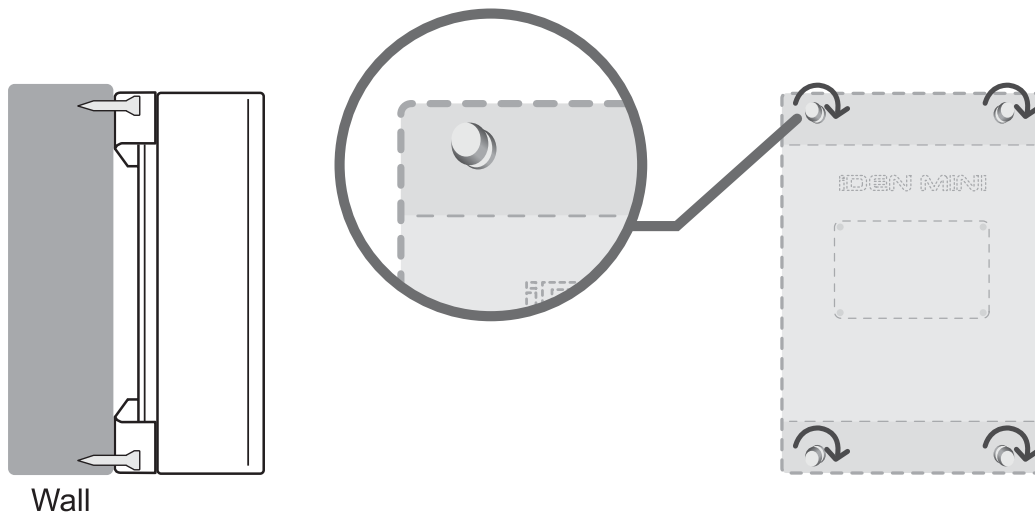


3. Hardware Installation

- Step 4** Put the screws or bolts into the holes.
Leave some space in order to hang the iDEN MINI on the 4 bolts.



- Step 5** Mount the iDEN MINI and tighten the bolts.

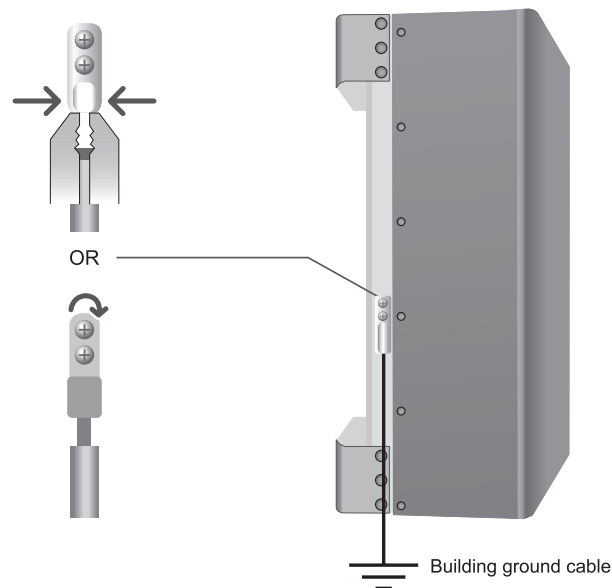


Caution

Once equipment is mounted to the wall of the building, be sure to check that it is firmly secured.

3.3 Grounding

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



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

3.4 RF Cable Connection

Step 1 Connect a cable from a donor antenna to the DONOR ANTENNA Port.

Step 2 Connect a cable from a repeater's service antenna to the SERVICE ANTENNA Port.

Note

Enough isolation?

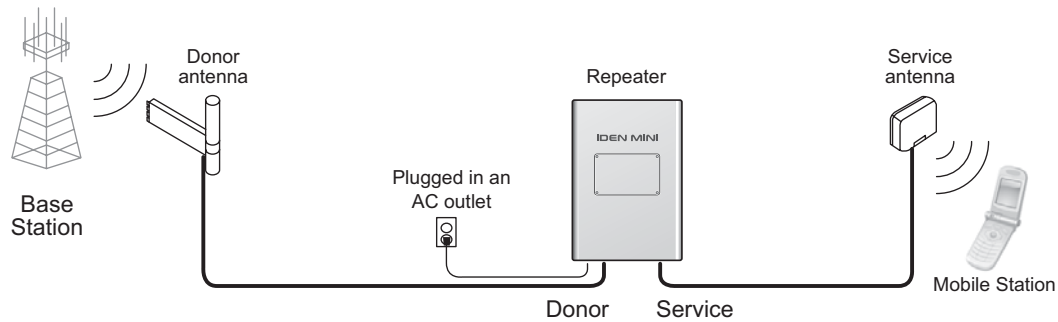
Antenna isolation = Service antenna gain + Path Loss + Donor antenna gain

Antenna isolation \geq Repeater max. gain + 15dB

If antenna isolation < Repeater max. gain + 15dB → System oscillation or Low gain

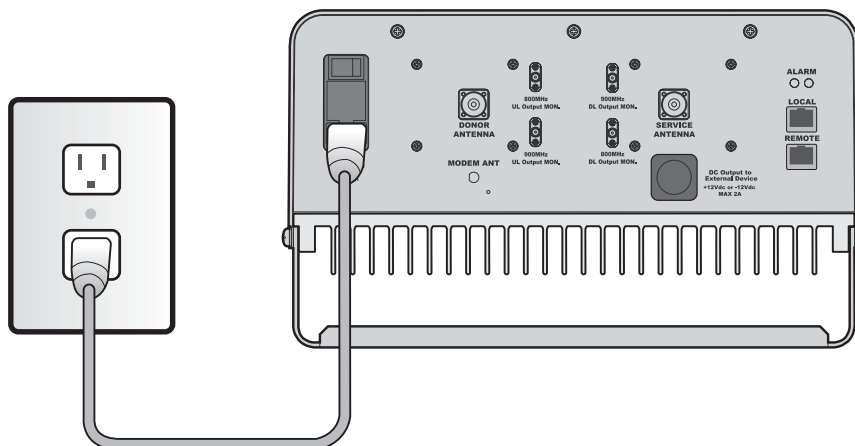
3. Hardware Installation

Model	Max Gain	Minimum required isolation
iDEN 30	80dB	$\geq 95 (= 80+15)$



3.5 Power On

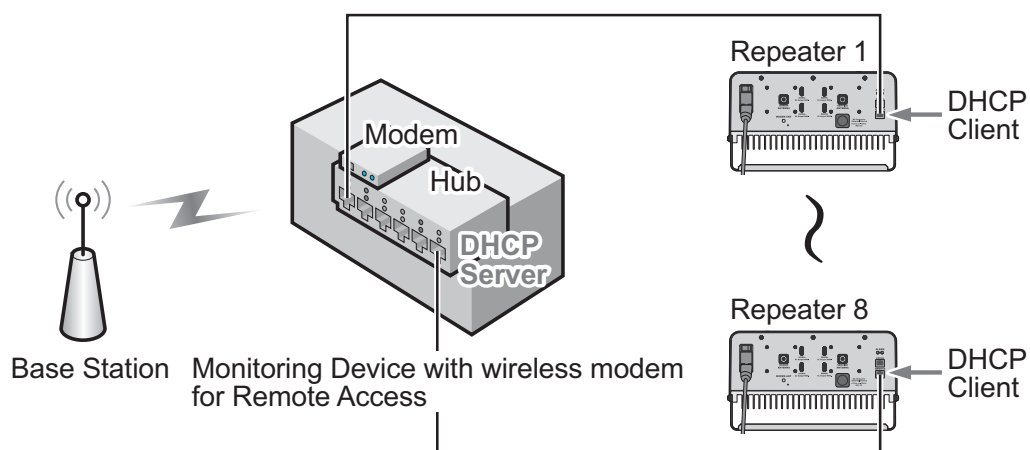
- Step 1** Connect the power cord.
- Step 2** Plug the power cord into a wall outlet.
- Step 3** Power Switch turns on.
- Step 4** Check if the green LED at the bottom turns on.



4. Operation

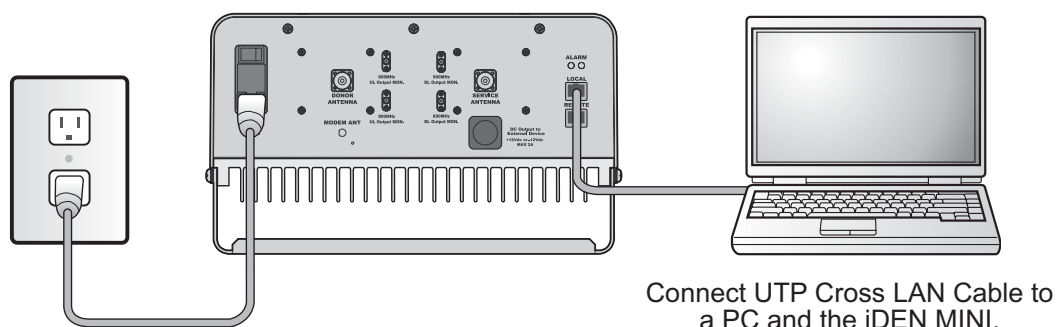
iDEN MINI

4.1 Connections



When REMOTE port is in use, the repeater runs as a remote DHCP client.

Power on the switch to "1"
The switch is located on the
bottom of the main body.



Connect UTP Cross LAN Cable to
a PC and the iDEN MINI.

When LOCAL port is in use, the repeater runs as a local DHCP server.

Note

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

4. Operation

4.2 System Requirements

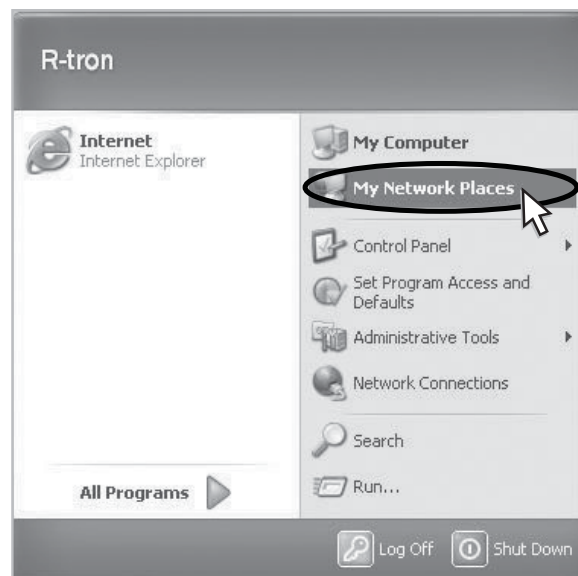
iDEN MINI operates on a customer provided PC based platform with the following system requirements :

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

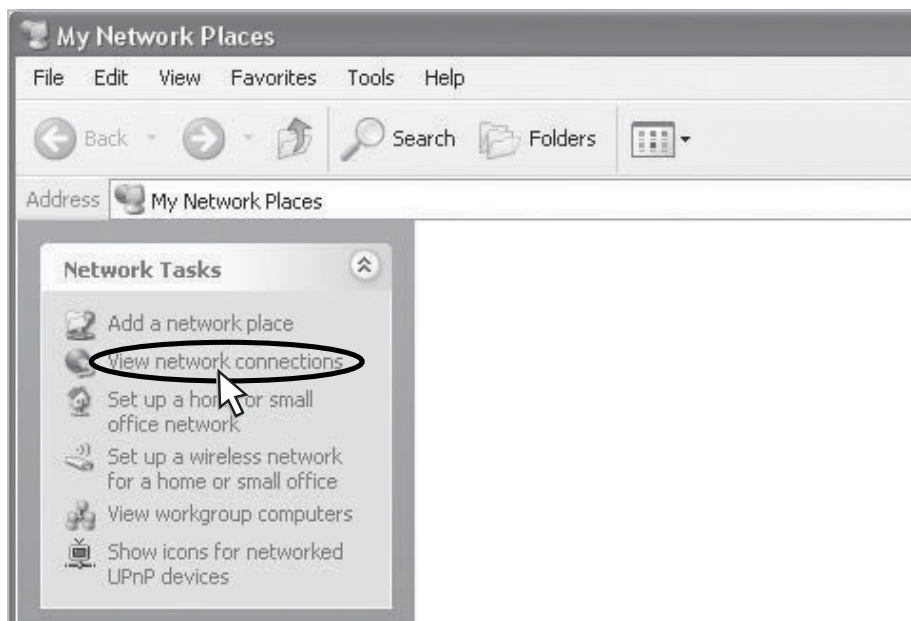
4.3 Network Setup

4.3.1 Windows XP

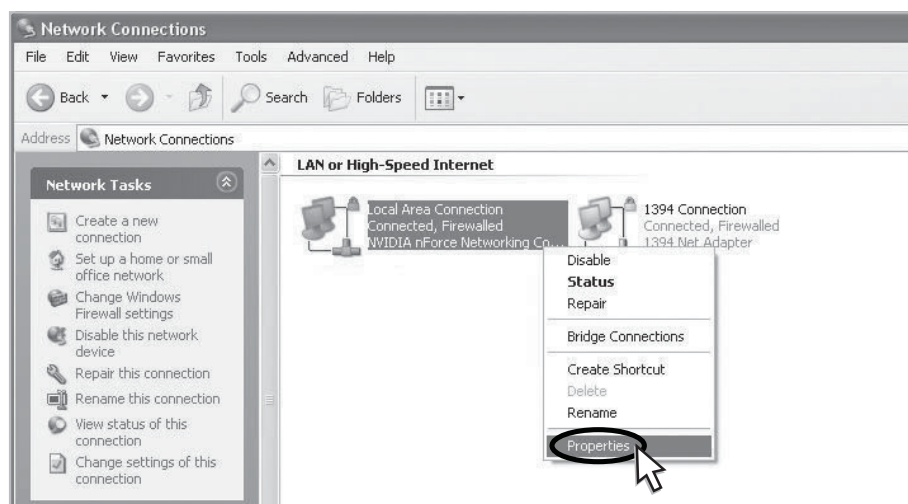
Step 1 Click the **Start** button and **My Network Places**.



Step 2 Click **View network connections**.

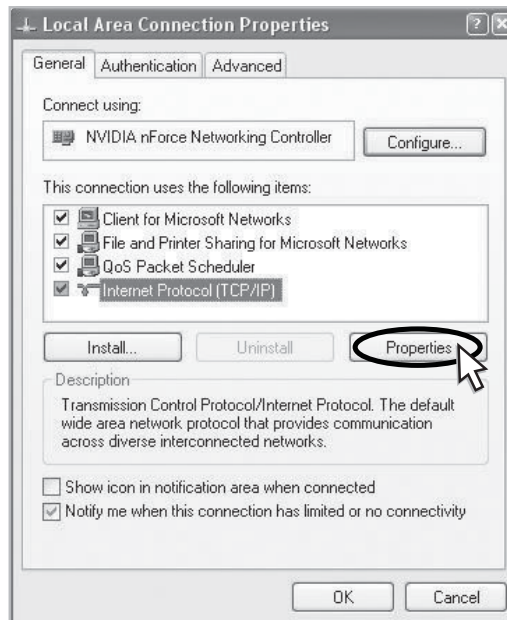


Step 3 Right-click **Local Area Connection** to see a shortcut menu and click **Properties**.

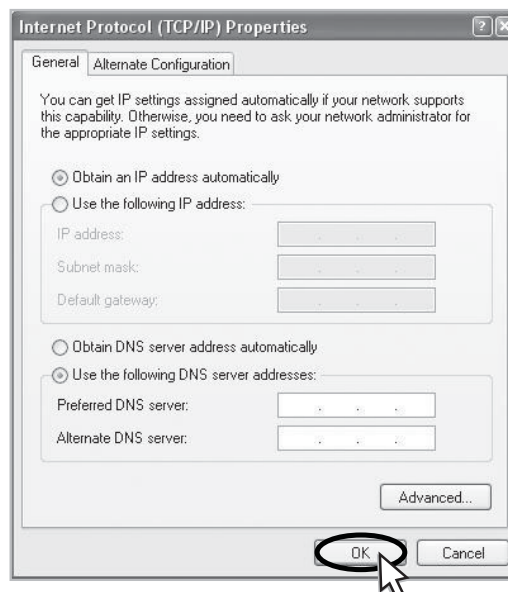


4. Operation

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



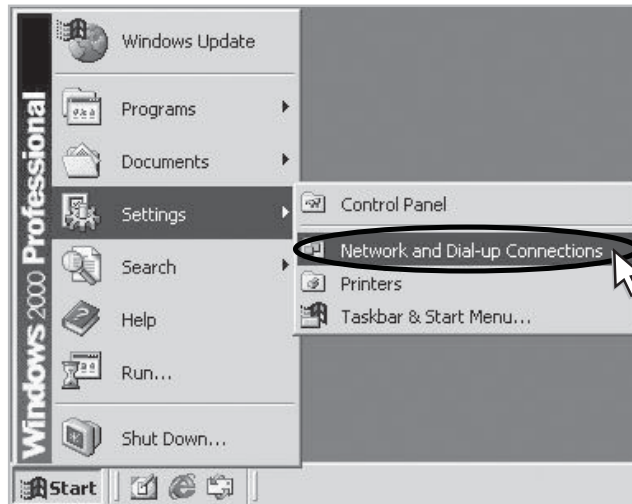
Step 5 Check **Obtain an IP address automatically** and click **OK**.



Step 6 Close all windows.

4.3.2 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**.

