RSN-4GIR-33S
Description

R-tron Inc.

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

Note : This unit was tested with shielded cables on the peripheral devices.
Shielded cables must be used with the unit to insure compliance.

" RF Exposure Statement: This system has been evaluated for RF exposure for Humans based on ANSI C95.1 and OET Bulletin 65C. When 10dBi donor antenna/downlink and 8 dBi server antenna/uplink are used, the antenna installation and operating configurations of this system, including antenna gain and cable loss must satisfy MPE categorical Exclusion Requirements of §2.1091 by providing 40 cm separation distance to general bystanders. This system must not be co-located or operating in conjunction with any other antenna or transmitter. "

⚠ CAUTION

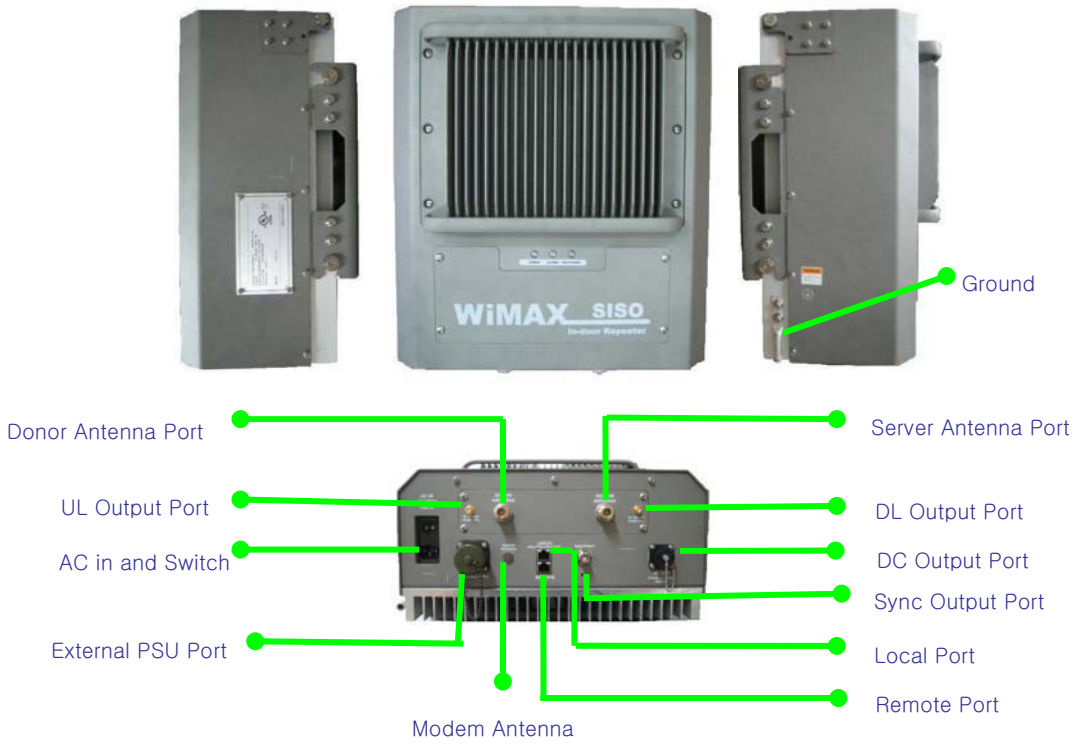
This equipment is indoor use and all the communication

Abbreviations

Abbreviations used in this manual, in RSN-4GIR-33S.

AC	Alternating Current
ANT	Antenna
WiMAX	Worldwide Interoperability for Microwave Access
SISO	Single Input Single Output
DC	Direct Current
GND	Ground
GUI	Graphic User Interface
LED	Light Emitting Diode
PSU	Power Supply Unit
MCU	Main Control Unit
NCU	Network Control Unit
UDC	Up Down Converter
DFM	Digital Filter Module
HPA	High Power Amplifier
RF	Radio Frequency
TEMP	Temperature
VSWR	Voltage Standing Wave Ratio

1. Introduction



RSN-4GIR-33S repeater is used to fill out areas in Mobile WiMAX systems, such as base station fringe areas, business and industrial buildings, etc.

RSN-4GIR-33S 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:

- 188MHz bandwidth service
  Band Selection (Continuous 33MHz) service
- Roll Offs: 40 dBc at 1 MHz /80 dBc at 3.5 MHz outside pass-band

The RSN-4GIR-33S Repeaters are controlled by powerful microprocessors. Operational status LEDs are visible on the front of the repeater.

The repeater works with convection cooling without fan because it has a radiator behind the body of RSN-4GIR-33S.
Operational parameters, such as gain, power levels, alarm condition, Automatic Gain Control

condition, etc. are set using a desktop or notebook and the Local GUI or WEB GUI, which communicate, either locally or remotely via the UTP(Unshielded Twisted Pair Wire) cable, with the repeater.

2. Description

2.1 System Specifications

2.1.1 Electrical Specifications

Parameter	Down Link	Up Link
Operating Frequency	2502MHz~2690MHz	2502MHz~2690MHz
Freq. plan	AB/BC/CD/EF/FH/HG (*reference)	
Gain	50dB to 80dB	
Max output power	33dBm	
Roll off	≤40dBc @Fedge+/-1MHz ≤80dBc @Fedge+/-3.5MHz	
Gain ripple	±1.5dB	
Delay	5.0uS Max	
VSWR	1.5Max	
Input Range	-17dBm ~ -47dBm	
Power supply	110V~240V, 50/60Hz typ.	
Operating temperature	-10℃~50℃	
Consumption power	≤130W	
Band Selection	Continuous 33MHz	
ACP	-13dBm @ ± 16.5MHz from 3FA Center -13dBm @ ± 18.5MHz from 3FA Center -37dBm @ ± 20MHz from 3FA Center -37dBm @ ± 23MHz from 3FA Center	

*reference : Freq. Plan

AB : 2502~2535MHz

BC : 2518.5~2551.5MHz

CD : 2535~2568MHz

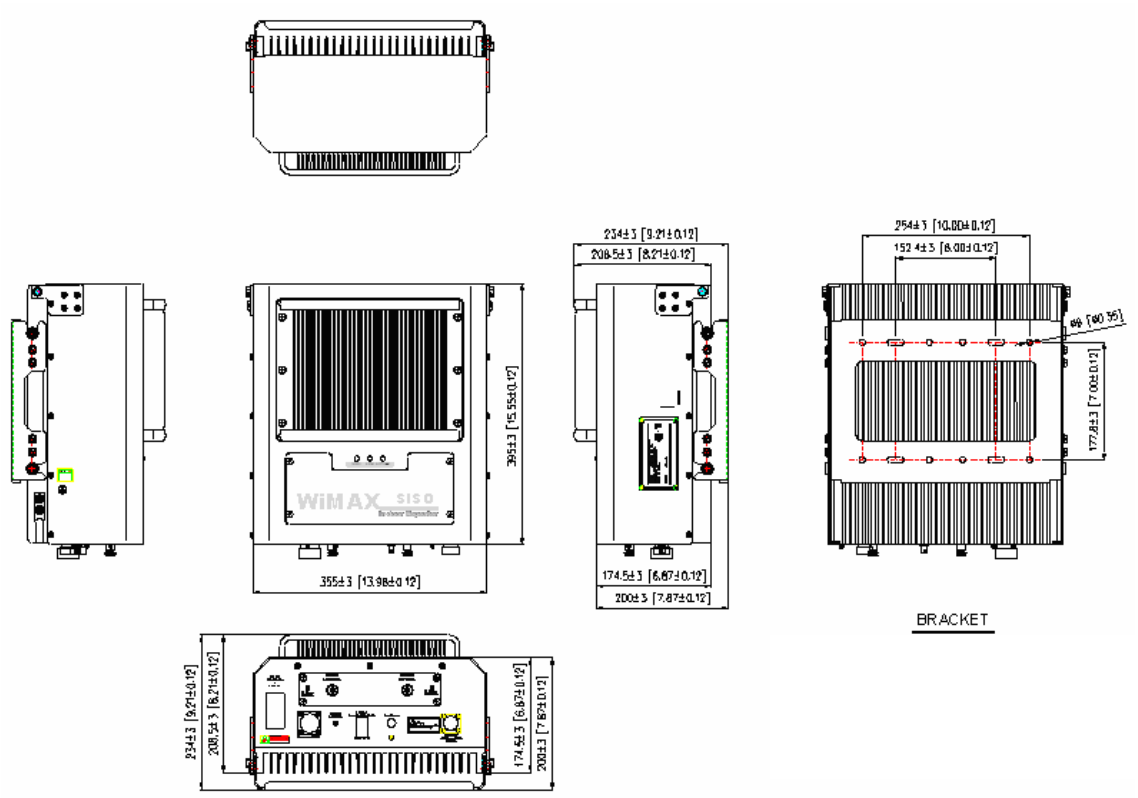
EF : 2624~2657MHz

FH : 2640.5~2673.5MHz

HG : 2673.5~2690MHz

2.1.2 Mechanical Specifications

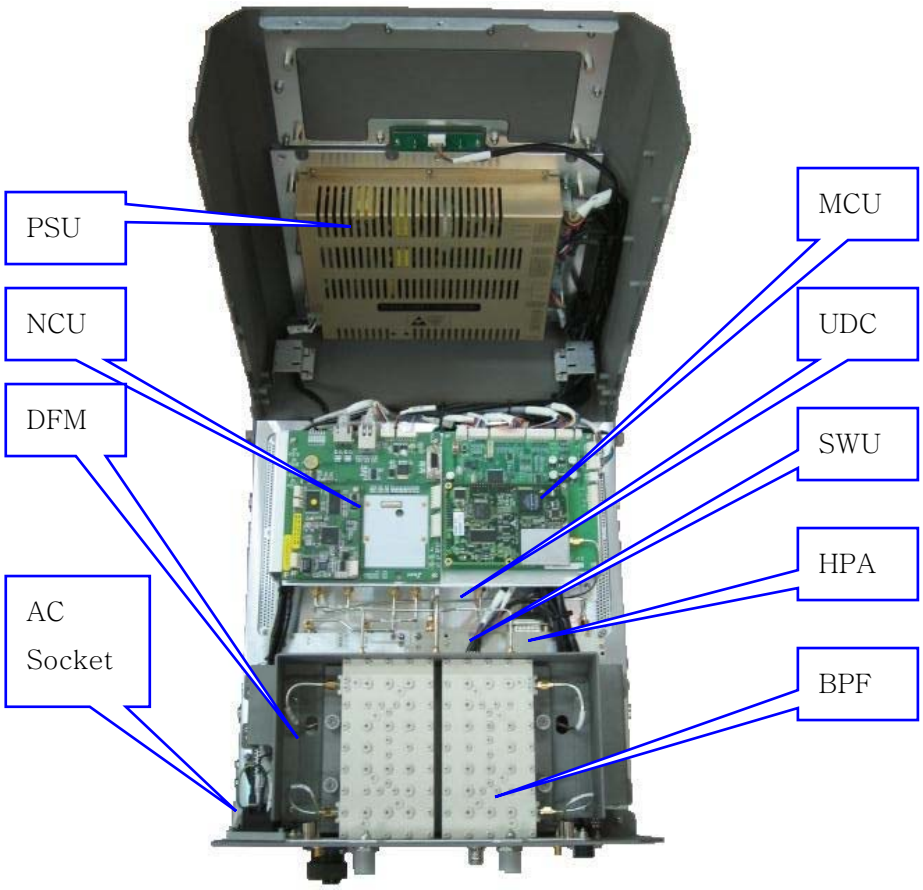
Parameter	Specification
RF connectors	N-female x 2, SMA-female x 3
Size	14 X15.55 X 8.21(Inch), 355 X 395 X 208.5(mm)
Weight	44.24(lbs), 20.04(kg)



2.2 Sub Unit Overview

RSN-4GIR-33S is composed of the following sub units:

- UDC(Up Down Converter)
- HPA(High Power Amplifier)
- BPF(Band Pass Filter)
- MCU (Main Control Unit)
- NCU (Network Control Unit)
- PSU (Power Supply Unit)
- DFM (Digital Filter Module)
- SWU (Switch Unit)
- EMI Filter



2.2.2 UDC Module

The UDC Module is basically a bi-directional amplifier that sharply filters out unwanted noise.

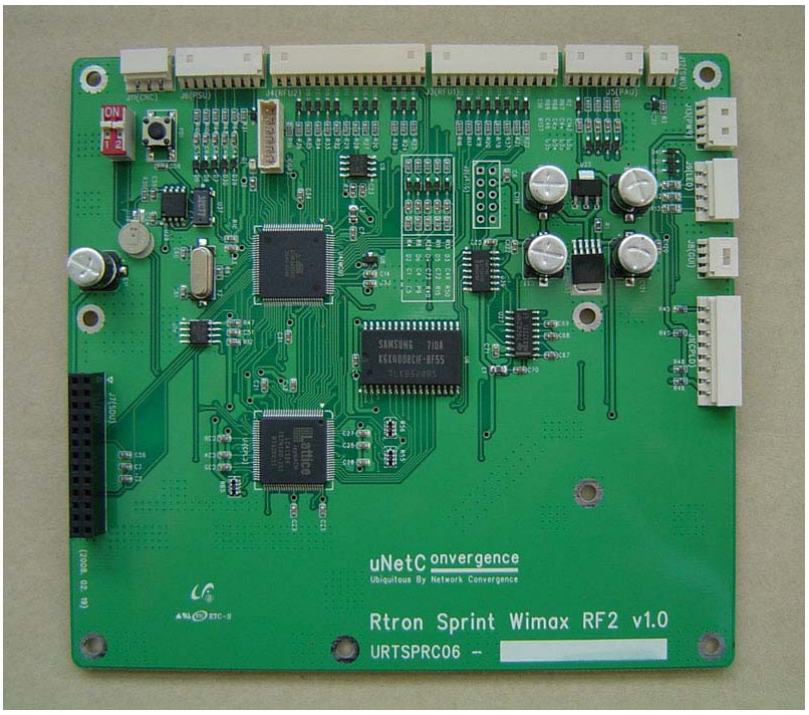
<UDC Module>

2.2.3 BPF

BPF is the module which passes the frequency in BRS BAND. One BPF performs simultaneously DL INPUT, UP OUPUT functions.

2.2.4 Main Control Unit (MCU)

MCU is the control unit of RSN-4GIR-33S. It controls and monitors operational parameters. It also generates alarms, an event log and many other functions of the RSN-4GIR-33S.

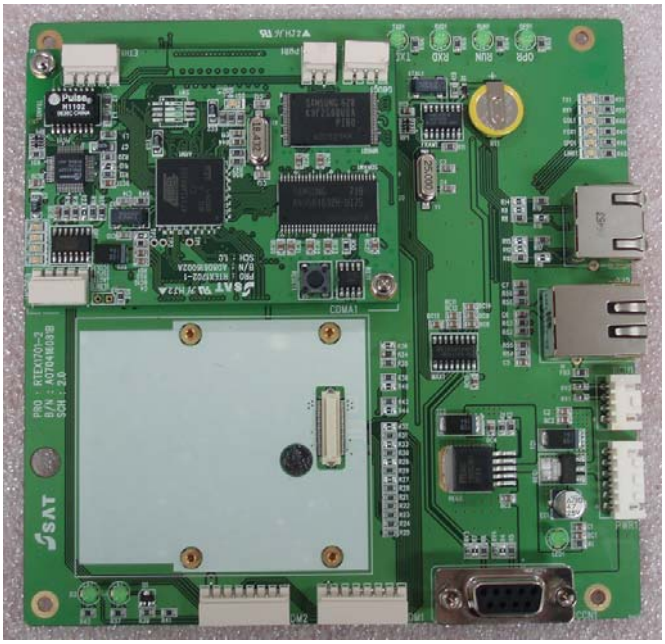


Pin Map

Port	Connected to
J3	RFU1 Control pin 1
J4	RFU1 Control pin 2
J5	HPA Control pin
J6	PSU Control pin
J7	Sync Unit Control pin
J8	Local GUI
J9	LED
J11	NCU
J12	SWU
J13	Main Power(5.5V)

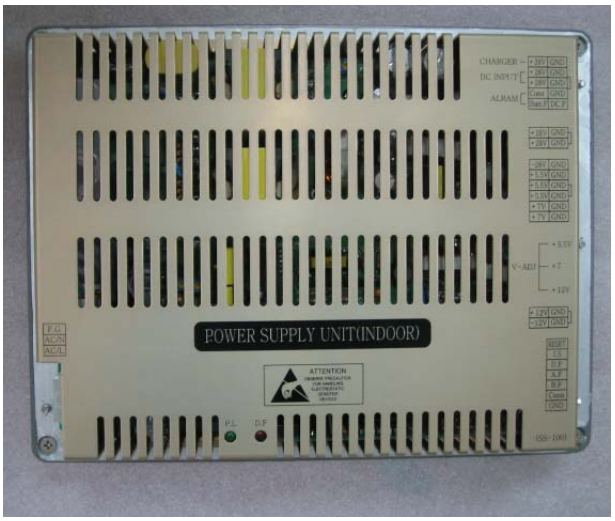
2.2.5 Network Control Unit (NCU)

NCU is the unit that controls the device using Ethernet based WEB GUI Connection



2.2.6 Power Supply

The Power Supply Unit (PSU) supplies a steady DC power to RSN-4GIR-33S by drawing power from the general in-wall AC outlets



Specification

Item		Specifications
Environmental	Operating Temp	-10℃~50℃
	Humidity	20%~90%RH
	Cooling method	Natural air
Voltage		AC110~240V
Rated Output(DC)		3A /7VDC, 5.5A,-28VDC 5.5A/ 28VDC, 5.5A /12VDC, 5.5A /-12VDC
Frequency		50~60Hz typ
Leakage Current		0.5mA max.@110V AC

2.2.7 High Power Amplifier (HPA)

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

<HPA>

2.2.8 Digital Filter Module (DFM)

<DFM>

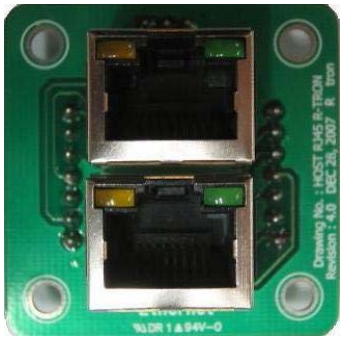
2.2.9 Switch Unit

2.2.10 AC SOCKET

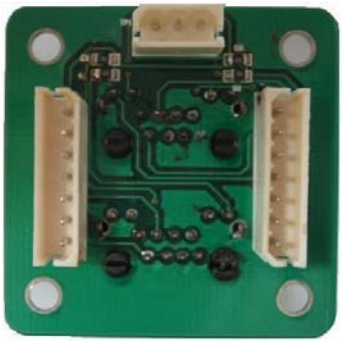
2.2.11 LED Board

<Front Side> **<Rear Side>**

2.2.12. Communication Board



<Front Side>



<Rear Side>