RuggedMAX™ WiN7000

High Power WiMAX Base Station

RuggedMAX™ WiN7000 is a long range, secure, IEEE 802.16e-2005 mobile WiMAX broadband wireless platform delivered in a compact form factor. The WiN7200 is a single sector high power base station that can be easily installed by a single person on poles, street lamps or walls, and provides connectivity to fixed or mobile end points.

Connected via a single Power over Ethernet (PoE) connection and easily provisioned, the WiN7000 reduces operational cost and complexity. The WiN 7000 system is powered by OFDMA radio technology, which is robust in adverse channel conditions and enables Non-Line-Of-Sight (NLOS) operation. Leveraging link adaptation algorithms, modulation and coding are continuously adapted to prevailing link conditions, ensuring an optimal balance between robustness and efficiency.

The use of MIMO radio technology enables peak link performance by maintaining maximum bandwidth and service coverage.

Key Features and Benefits:

Long Range: Transmit and receive diversity combined with high power for improved reach and NLOS performance.

High Bandwidth: RuggedMAX has two built-in radios operating on the same frequency simultaneously (MIMO) to increase bandwidth (up to 40Mbps) and spectral efficiency.

Lowest Frequency Use: Leverages OFDMA and built in GPS to enable users to deploy an entire network on a single frequency channel.

Usage models: Designed to support long range connections to fixed, portable and mobile end points, supporting vehicular speed seamless mobility, and backhaul mode.

Quality of Service: RuggedMAX gives the user the ability to separate traffic types over the air, and guarantee latency, minimum bandwidth and jitter according to application needs.

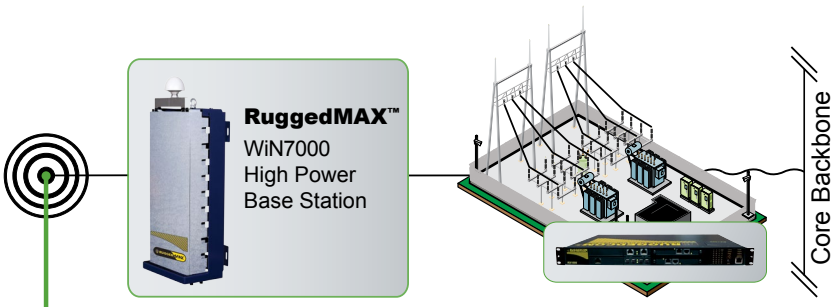
Rugged Form factor: RuggedMAX is an all outdoor ruggedized form factor enabling flexible deployment options. RuggedCom products are designed for use in harsh environments such as those found in electrical power substations, oil refineries, military applications, roadside traffic control cabinets and metals and minerals processing.

Lightweight Architecture: Commercial WiMAX equipment requires an entire network infrastructure to be in place including a specialized mobile router called an ASN gateway, which acts as a central point for all network traffic. This infrastructure can be very costly and complex to implement. RuggedCom has developed a mode which does require this heavy infrastructure but maintains the interoperability and technology advances of WiMAX.

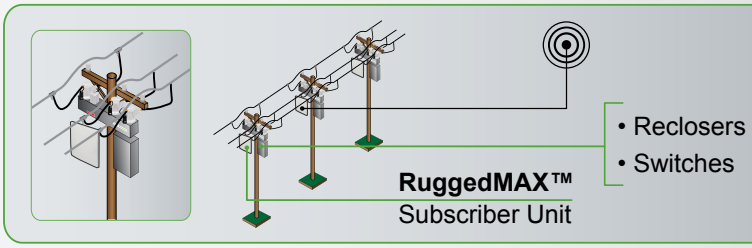
Secure: RuggedMAX has many built-in features to ensure NERC CIP compliance such as two factor mutual authentication, AES encryption and message integrity protection using CMAC.

RUGGEDCOM ISO 9001 REGISTERED

Applications

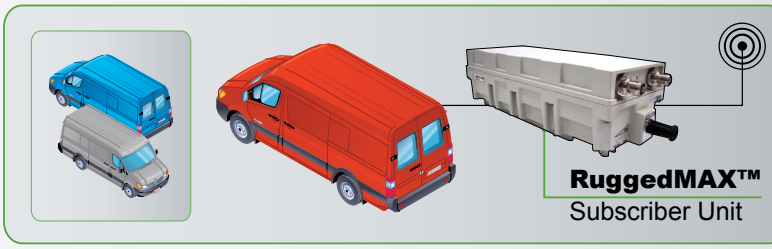


1 Distribution Automation

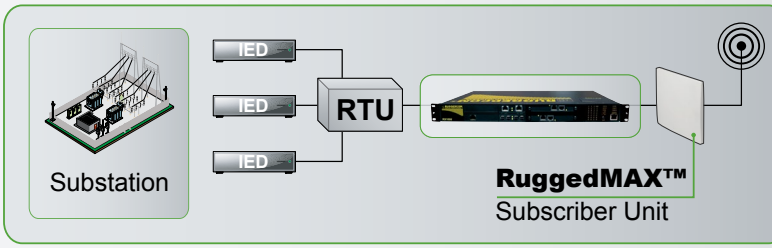


2 AMI Backhaul

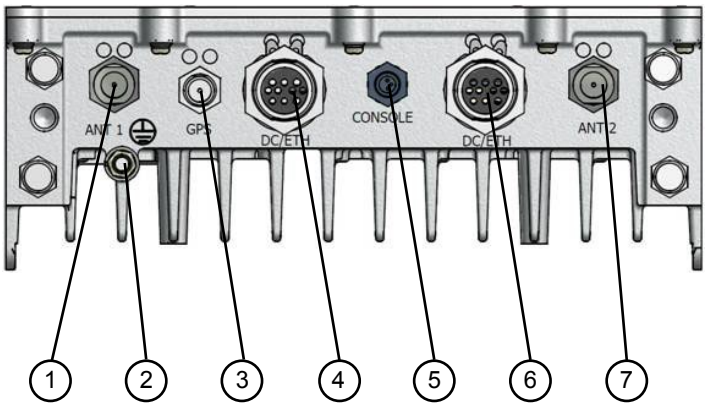
3 Mobile Workforce

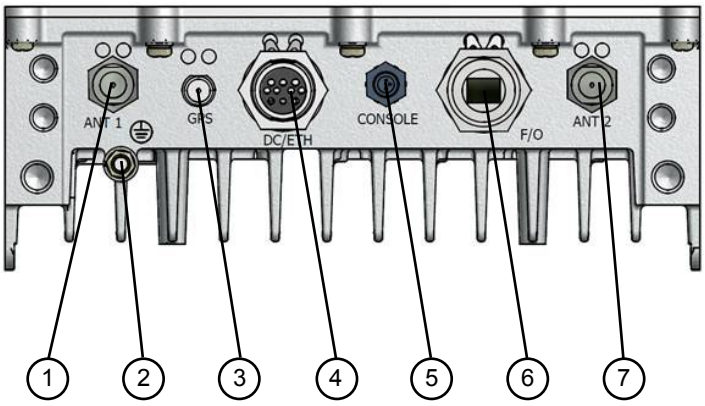


4 SCADA



Interfaces

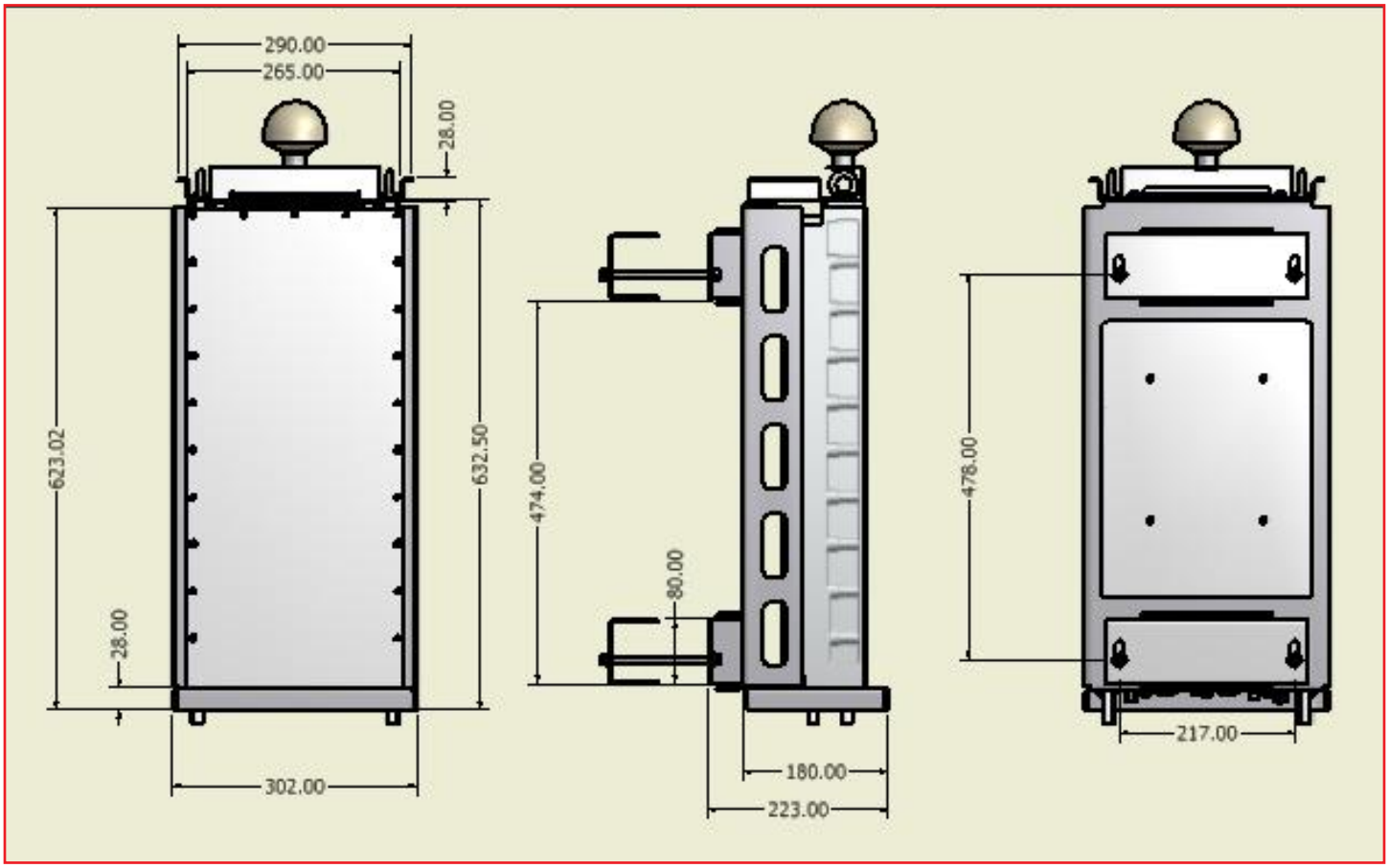




The following table provides a description of the base station bottom panel connectors and ports.

No.	Connector Name	Connector Type	Cable Type	Description	Connected to
1	ANT1	N type Female	RG 6 or 9	Connected to external antenna or omni-directional antenna	Antenna
2	GND	Adjustable Nut	#10 AWG Bare Copper Wire	Grounding	Central Earth Ground, Tower or Pole Chassis
3	GPS	TNC Female		GPS Signal	GPS Antenna
4	DC/ETH or DC	DC/ETH or DC	Proprietary WiN Cable	48 VDC/Return/5A + Ethernet Cat5 or 48 VDC / Return / 5A	Power Supply + Network/ Router/Switch or Power Supply
5	Console	3-pin	UART 3P to DB9F”	Low level CLI for technicians	PC
6	DC + ETH	DC + ETH	Proprietary WiN Cable	48 VDC/Return/5A +Ethernet Cat5	Power supply + Network/ Router/Switch
	F/O	Optic SM Mini LC	Fiber Optic SM OFNR I/O with Industrial Plug, ODVA Cable	Optic 100M/1GMbit	Network/Router/Switch
7	ANT2	N type Female	RG 6 or 9	Connected to external antenna or omni-directional antenna	Antenna

Dimensions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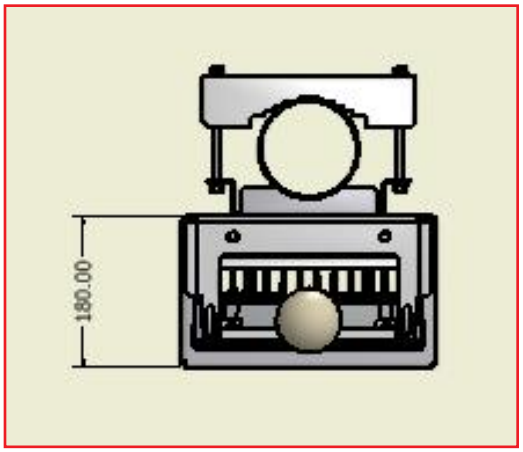
180.00

EMI and Environmental Type Tests

IEC 61850-3 EMI TYPE TESTS				
Climatic Environmental Conditions				
TEST	Description	Criteria	Test Levels	Result
IEC 60068-2-1 IEC 61850-3 (5.2)	Low Temperature (Operational)	A	-40°C 16 hour dwell	Pass
IEC 60068-2-2 IEC 61850-3 (5.2)	High Temperature (Operational)	A	65°C 16 hour dwell	Pass
IEC 60068-2-1 IEC 61850-3 (5.2)	Low Temperature (Storage)	A	-40°C 16 hour dwell	Pass
IEC 60068-2-2 IEC 61850-3 (5.2)	High Temperature (Storage)	A	85°C 16 hour dwell	Pass
IEC 60068-2-30 IEC 61850-3 (5.2)	Humidity (Operational)	A	95% at 55°C for 96 hours	Pass
IEC 60068-2-30 IEC 61850-3 (5.2)	Humidity (Storage)	A	95% at 55°C for 96 hours	Pass
Mechanical Environmental Conditions				
IEC 60068-2-27 IEC 61850-3 (5.5)	Shock	A	30g	Pass
IEC 60068-2-6 IEC 61850-3 (5.5)	Vibration	A	2g, 10-150Hz per axis	Pass
EMC				
IEC 61000-4-6 IEC 61850-3 (5.7.1.1)	Conducted Immunity	B	10Vrms	Pass
IEC 61000-4-5 IEC 61850-3 (5.7.1.2)	Surges Immunity	B	4kV L-G	Pass
IEC 61000-4-12 IEC 61850-3 (5.7.1.3)	Oscillatory Surge	A	2.5kV	Pass
IEC 61000-4-4 IEC 61850-3 (5.7.1.4)	Electrical Fast Transients Immunity	A	4kV	Pass
IEC 61000-4-3 IEC 61850-3 (5.7.2)	Radiated Susceptibility Immunity	A	20V/m	Pass
IEC 61000-4-16 IEC 61850-3 (5.7.3)	Low Frequency Conducted Susceptibility	B	30V, 300V Continues 3V, 30V 15Hz-150Khz	Pass
IEC 61000-4-8 IEC 61850-3 (5.7.3)	Magnetic Immunity	B	100A/m 1000A/m (1 sec)	Pass
CISPR 22 IEC 61850-3 (5.8)	Radiated Emission	Class A	30MHz to 8GHz	Pass
EN55022 IEC 61850-3 (5.8)	Conducted Emission	Class B	150kHz-30MHz	Pass

EMI and Environmental Type Tests (Continued)

IEEE 1613 (C37.90.x) EMI IMMUNITY TYPE TESTS				
Climatic Environmental Conditions				
Standard/Method	Description	Criteria	Level	Result
IEC 60068-2-1 IEEE 1613 (4.1.1)	Low Temperature (Operational)	A	-40°C 16 hour dwell	Pass
IEC 60068-2-2 IEEE 1613 (4.1.1)	High Temperature (Operational)	A	65°C 16 hour dwell	Pass
IEC 60068-2-1 IEEE 1613 (4.1.2)	Low Temperature (Storage)	A	-40°C 16 hour dwell	Pass
IEC 60068-2-2 IEEE 1613 (4.1.2)	High Temperature (Storage)	A	85°C 16 hour dwell	Pass
IEC 60068-2-30 IEEE 1613 (4.1.3)	Humidity (Storage)	A	95% at 55°C for 96 hours	Pass
Mechanical Environmental Conditions				
IEEE 1613 (10)	Shock (Drop)	A	1m, 1 falls per axis	Pass
IEC 60068-2-6 IEEE 1613 (10)	Vibration	A	2g, 10-150Hz per axis	Pass
Power Input				
IEC 61000-4-11 IEEE 1613 (5.1)	Voltage Variations	B	38.4-56V	Pass
EMC				
IEC 61000-4-12 IEEE 1613 (7.3.1) IEEE C37.90.1	Oscillatory SWC	A	2.5kV	Pass
IEC 61000-4-4 IEEE 1613 (7.3.2) IEEE C37.90.1	Fast Transient SWC	A	4kV	Pass
IEC 61000-4-3 IEEE 1613 (8) IEEE C37.90.2	Radiated Susceptibility Immunity	A	80MHz-1GHz 20V/m (un modulated) 35V/m (modulated)	Pass
IEC 61000-4-2 IEEE 1613 (9) IEEE C37.90.3	ESD	A	8kV Contact 15kV Air	Pass
Insulation				
IEC 60255-5 (6.1.3) IEEE 1613 (6.3)	HV Impulse	C	5kV	Pass
IEC 60255-5 (6.1.4) IEEE 1613 (6.2)	Dielectric	C		Pass

Specifications

Radio and Modem:

- Frequency:
  - WiN7023 2300 MHz to 2400 MHz
  - WiN7025 2496 MHz to 2690 MHz
  - WiN7035 3400 MHz to 3600 MHz
  - WiN7015 1400 MHz to 1520 MHz
  - WiN7018 1800 MHz to 1830 MHz
- IEEE802.16-2005 (16e OFDMA)
- WiMAX Forum Wave 2 Profile
- Time Division Duplex (TDD)
- Channel Bandwidth (MHz) 3.5, 5, 7, 10
- Frequency Resolution 0.25 MHz
- Diversity Support 2x2, STC/MIMO-SM
- FEC Convolution Code and Turbo Code
- Transmit Power Control
- Output Power (average) 2 X 36 dBm
- Modulation 512/1024 FFT points; QPSK, 16QAM, 64QAM

Radio Interfaces:

- Number of Antennas 2
- Antennas Connectors 2x N-Type, 50 ohm
- Integrated or External Sector or Omni Antenna
- Built-in GPS included

Network Interfaces:

- 10/100BaseT Half / full Duplex IEEE 802.3 CSMA/CD
- ASN GW Compatibility WiMAX Forum R6, Profile C
- Compatible with Cisco and Wichorus ASN-GW
- Fiber Optic (Optional)

Configuration and Management:

- Web GUI
- Management SNMP
- SNMP Agent SNMP ver 2 client/v3
- Software Upgrade FTP, SFTP
- Remote Configuration FTP, SFTP

Mechanical:

- Dimensions [HxWxD] 756mm x 290mm x 195mm
- Weight <15Kg

Power Interface:

- Power supply Input 85 -265 VAC
  37-60 VDC
  (customer supplied for SFD version)
- Power Consumption 120 Watt max

Standards Compliance

EMC:

- FCC part 15, subpart B, class A
- ETSI EN 301 489-1 V1.8.1
- ETSI EN 301 489-4 V1.3.1
- 1613 section 6.3, 7, 8, 9 Class 1
- IEC 61850-3 section 5.7, 5.8
- EN55022

Safety:

- EN60950-22
- TUV 60950-1
- IEC 60950-1
- 1613 Section 5, 6.2
- IEC 60255-5 section 6.14

Environmental:

- Operating Temperature: -40°C to +65°C
- Operating Humidity 5%-95% non condensing
- Weather protected IP67
- IEC 61850-3 section 5.2, 5.3, 5.5
- IEC 870-2-2 section 3
- Corrosion: MIL-STD-810F 509.4 - salt fog

Radio

- FCC: 47CFR Part 15, Part 27, Part 90 Subpart B
- IC: SRSP 301.7 Issue 24

Ordering Information:

Part Number: WiN70XX-Y-ZZZ

- XX:
  - Frequency range (See frequency table for details)
- Y:
  - 5 – Standard 5 year warranty
  - 1 – 1 year warranty
- ZZZ:
  - SFA – Single mode fiber optic interface - AC option (AC power supply included)
  - SFD – Single mode fiber DC option
  - PEC – Power Ethernet Copper (AC power supply included)
- Comes equipped with:
  - GPS antenna
  - 2X RF cables 1.6 m for connection to antenna
  - Pole / wall mount kit

Antenna Options:

- ANTN0018 - ANT Omni 1350-1500MHz 5dBi
- ANTN0027 - 65° X-Pol Sector 3.3-3.8GHz 17dBi
- ANTN0029 - 90° X-Pol Sector 3.3-3.8GHz 17dBi
- ANTN0054 - 90° X-Pol Sector Antenna 1350-1500MHz 12dBi
- ANTN0040 - Omni 3.4-3.7GHz 360° 8.5dBi
- ANTN0048 - 90° X-Pol Sector 2300-2700MHz 16dBi
- ANTN0050 - Omni BST 2.3-2.7GHz 9dBi
- ANTN0061- Omni Antenna 1.7-1.9 GHz - 10 dBi
- ANTN0070 - 90° Sector Dual Slant 1750-1850 MHz
- ANTN0071- 90° Dual Slant 1390-1525MHz Sector 16.0 dBi

RuggedCom Inc.
300 Applewood Crescent,
Concord, Ontario, Canada L4K 5C7

Tel: +1 (905) 856-5288 **Fax:** +1 (905) 856-1995
Toll Free: 1 (888) 264-0006

Technical Support Center
Toll Free (USA & Canada): 1 (866) 922-7975
International: +1 (905) 856-5288
E-mail: Support@RuggedCom.com

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