

# RAM<sup>®</sup> 6000 Cellular RTUs

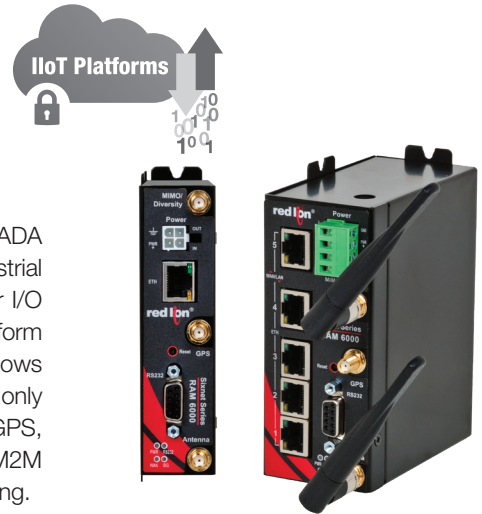
Sixnet<sup>®</sup> Networking Series



## ▶▶▶ Multi-Carrier RTUs with GPS and Local Control

Red Lion's Sixnet series RAM 6000 cellular RTUs with multi-carrier 4G LTE support, provide advanced control and communication in IIoT applications for remote assets and processes in extreme conditions.

RAM 6000 industrial cellular RTUs seamlessly connect Modbus and DNP3 enabled SCADA equipment via software selectable multi-carrier 4G LTE to remote networks or select Industrial Internet of Things (IIoT) Cloud platforms. Featuring a web-based event engine that can trigger I/O or send SMS text messages based on real-time operational data, RAM cellular RTUs can perform advanced local edge control and alert personnel of critical events. A built-in I/O concentrator allows the RAM to collect sensor data and optimize cellular data consumption by optionally reporting only on an exception or only transmitting relevant data points. With built-in Ethernet, serial, I/O and GPS, RAM RTUs easily integrate with existing equipment enabling remote monitoring and control for M2M applications in industries including oil and gas, water/wastewater, utility, transportation and mining.



### APPLICATIONS

- > Mining
- > Oil & Gas
- > Transportation
- > Utility
- > Water/Wastewater

### PRODUCT HIGHLIGHTS

- > Multi-Carrier 4G LTE Connectivity
- > Natively Supports Modbus & DNP3 Protocols
- > Cloud Connectivity to IIoT Cloud Platforms
- > Routing Capabilities Provide Secure, Reliable Communication
- > Active GPS Receiver Tracks Device Location
- > Event Engine can Trigger I/O or Send SMS Messages
- > Optional PoE (Powered Device) Support

### SUPPORTED IIOT PLATFORMS\*

- Amazon<sup>®</sup> — AWS<sup>™</sup> IoT
- AT&T<sup>®</sup> — M2X
- Autodesk<sup>®</sup> — Fusion Connect
- Cumulocity
- Inductive Automation's Ignition SCADA
- LEC — IQ Web SCADA
- Microsoft — Azure<sup>®</sup>
- Nokia — IMPACT
- Set-Point Control — IPwebcontrol
- SkkyNet<sup>®</sup> — SkkyHub<sup>™</sup>
- Telenor — Connexion Cloud Connect
- Telit<sup>®</sup> — deviceWISE<sup>®</sup>

### FEATURES & BENEFITS

- > Multi-Carrier 4G LTE Connectivity
  - Select the best carrier during or post deployment via software configuration
- > Multiple Communication Ports
  - One RS-232 serial port, and up to five Ethernet ports provide seamless connectivity to remote devices
- > Rugged, Industrial Design
  - Reliable operation in extreme environments
  - -40° to 70°C operating temperature\*\*
- > Modbus and DNP3 Support
  - Easily communicates with SCADA equipment with native protocols
- > Cloud Connectivity to IIoT Cloud Platforms
  - Allows for seamless communication with leading IIoT cloud platforms using MQTT messaging protocol
- > Out-Of Band Management (OOBM)
  - Secure remote CLI access via serial port
  - Pre-loaded with many console port configurations
- > Secure Ethernet Connectivity
  - Routing capabilities for reliable communication
  - Stateful firewall, SSL, GRE and VPN services reduce the risk of unwanted access
- > Advanced Event Engine Functionality
  - Easily configure control engine via drop-down menus
  - Trigger I/O, alarms and send SMS messages based on operational data

industrial  
networking



# RAM 6000 LTE Multi-Carrier Specifications

## WIRELESS INTERFACE

AT&T LTE with fallback to HSPA+  
 Generic LTE with fallback to HSPA+  
 Verizon LTE with fallback to EVDO

### SELECTABLE IIOT CLOUD PLATFORMS\*

Amazon® - AWS™ IoT  
 AT&T® - M2X  
 Autodesk® - Fusion Connect  
 Cumulocity  
 Inductive Automation's Ignition SCADA  
 LEC - IQ Web SCADA  
 Microsoft - Azure®  
 Nokia - IMPACT  
 Set-Point Control - IPwebcontrol  
 Skkynet® - SkkyHub™  
 Telenor - Connexion Cloud Connect  
 Telit® - deviceWISE®

## PROGRAMMABLE PLATFORM

Configurable Events: up to 99 events can be triggered by I/O,  
 Modbus registers, or over 200 system variable which in turn  
 can send text messages or control I/O  
 Software Development Kit (SDK)  
 C/C++/Perl

## SYSTEM PERFORMANCE

32-bit ARM9 400 MHz CPU  
 512 MB NAND  
 128 MB RAM

## TUNNELING

IPsec, GRE, OpenVPN

## Routing Protocols

OSPF, BGP, RIP

## Clustering

VRRP

## IP

NAT, Port Forwarding, Dynamic DNS, DHCP  
 Stateful Inspection Firewall, IP Transparency

## GPS

GNSS supported: GPS L1, GLONASS L1, Galileo E1 high RF  
 sensitivity plus jamming detection/removal

## Connectors

Ethernet: One (1) or five (5) 10/100Base-T RJ-45 ports  
 WAN capability on port 5  
 Serial: One (1) RS-232 (DB9) 115,200bps  
 USB: One (1) USB 2.0 (mini)  
 Antennas: Three (3) SMA connectors (antenna, diversity, GPS)

## INPUTS & OUTPUTS

Input: One (1) digital/analog  
 Output: One (1) digital (open-collector)

## POWER INPUT

Input Voltage: 8-30 VDC (12 or 24 VDC nominal)  
 Standby Power: 1.4W - 4.0W (typical)  
 Transmitting:  
 690x: 2.6W - 6.9W  
 6921: 4.3W - 8.7W  
 PoE Operation (EB models only)  
 IEEE 802.3af compliant  
 Powered Device (PD)  
 PoE Input: 37-57 VDC (48 VDC nominal)  
 Heat dissipation: 30 BTU/hour max

## MECHANICAL

RAM-690x  
 Dimensions: 120 x 96 x 32 mm (4.7" x 3.77" x 1.25")  
 Weight: 453g (1 lb)  
 RAM-6921  
 Dimensions: 120 x 96 x 51 mm (4.7" x 3.77" x 2.0")  
 Weight: 500g (1.1 lbs)

## ENVIRONMENTAL

Operating Temperature: -40° to +70°C\*\*  
 Shock: IEC60068-2-27  
 Vibration: IEC60068-2-6  
 Humidity: 5 to 95% non-condensing  
 Ingress: IP30 protection

## CERTIFICATION

EMI/EMC:  
 Emissions: FCC, Part 15 and Industry Canada, ICES-003; Class A;  
 EN55022, IEC61000-6-4  
 Immunity: IEC61000-6-2 (EN61000-4-2,3,4,5,6,8)  
 Hazardous Locations: Class I, Div. 2, Groups A, B, C, D, ISA 12.12.01  
 Electrical safety: UL508/CSA22.2/14 (CUL); IEC61010-1  
 Carrier Specific Approvals  
 RoHS compliant

## WARRANTY

3 years on design and manufacturing defects

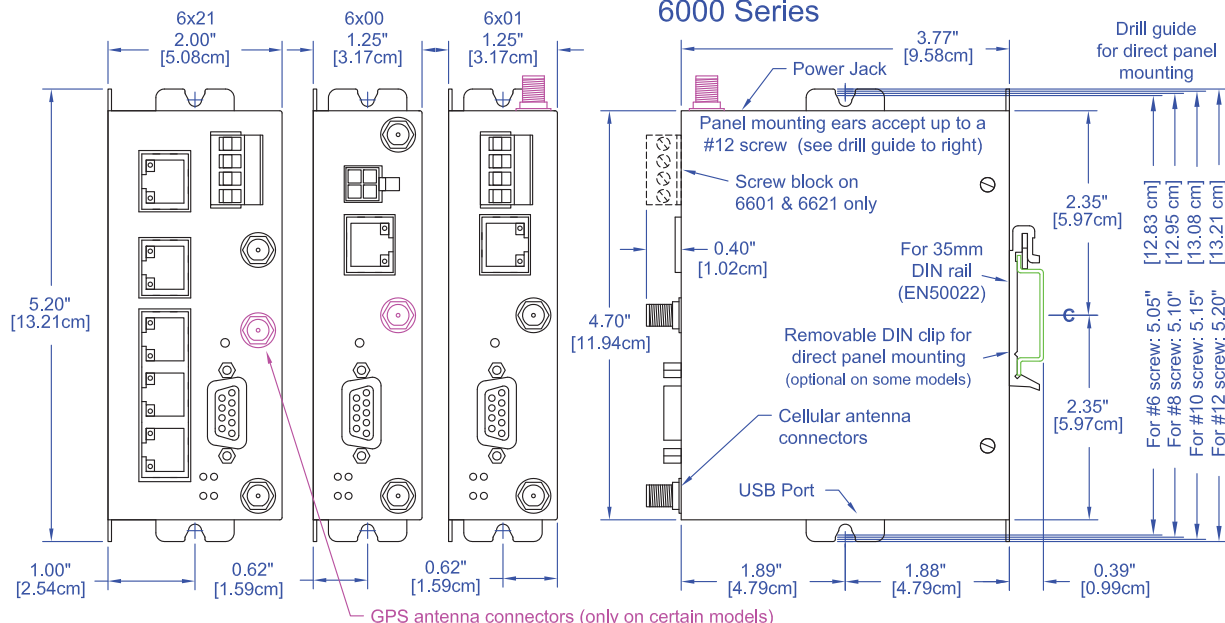
Specifications are subject to change. Visit [www.redlion.net](http://www.redlion.net) for more information.

\* Monthly service fees may be required for cloud platform access,

not every platform client is preloaded.

\*\*See Hardware Manual for thermal considerations.

## DIMENSIONS



# RAM 6000 LTE Multi-Carrier Specifications

## ORDERING GUIDE

PART NUMBER	PRODUCT LINE	SERIAL RS-232	ETHERNET 10/100	CELLULAR	POWER CONNECTOR	CARRIER CODES
RAM-6900-(Carrier Code)	RAM	1	1	4G LTE	Molex end connector cable	(AT) AT&T; (VZ) Verizon; (AM) Generic; (EU) Europe and Asia; (JP) Japan
RAM-6901-(Carrier Code)	RAM	1	1	4G LTE	DC powered	
RAM-6901EB-(Carrier Code)	RAM	1	1	4G LTE	PoE (Power Over Ethernet)	
RAM-6921-(Carrier Code)	RAM	1	5	4G LTE	DC powered	

Notes: 1. See Band/Frequency table for compatibility.

2. Carrier Code indicates the carrier pre-configured on the device. Alternate carrier can be selected via software.

3. AM (Generic) model includes Bell Mobility, TELUS and Rogers carriers or other North American carriers. EU (Europe/Asia) model is not supported in North America. JP (Japan) model only supported in Japan.

## FREQUENCY SPECIFICATIONS

North America Models (AT/VZ/AM)

TECHNOLOGY	BANDS	FREQUENCIES	ANTENNA CONFIGURATION
LTE	2, 4, 5, 13, 17, 25	700/850/1900 & 1700(AWS)/2100(AWS) MHz	MIMO Required
Fallback CDMA/EVDO	BC0, BC1, BC10	800/1900 MHz	Diversity Support
Fallback HSPA+	1, 2, 4, 5, 8	850/900/1900/2100 & 1700(AWS)/2100(AWS) MHz	Diversity Support
Fallback GSM/GPRS/EDGE	-	850/900/1800/1900 MHz	-

Rest of World Model (EU)

TECHNOLOGY	BANDS	FREQUENCIES	ANTENNA CONFIGURATION
LTE	1, 3, 7, 8, 20	800/900/1800/2100/2600 MHz	MIMO Required
Fallback HSPA+	1, 2, 5, 8	850/900/1900/2100 MHz	Diversity Support
Fallback GSM/GPRS/EDGE	-	850/900/1800/1900 MHz	-

Japanese Model (JP)

TECHNOLOGY	BANDS	FREQUENCIES	ANTENNA CONFIGURATION
LTE	1, 19, 21	850/1500/1900/2100 MHz	MIMO Required
Fallback HSPA+	1, 5, 6, 19	800/850/2100 MHz	Diversity Support
Fallback GSM/GPRS/EDGE	-	850/900/1800/1900 MHz	-

All specifications are subject to change. Consult the company website for more information.



[www.redlion.net](http://www.redlion.net)

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As the global experts in communication, monitoring and control for industrial automation and networking, Red Lion has been delivering innovative solutions for over forty years. Our automation, Ethernet and cellular M2M technology enables companies worldwide to gain real-time data visibility that drives productivity. Product brands include Red Lion, N-Tron and Sixnet. With headquarters in York, Pennsylvania, the company has offices across the Americas, Asia-Pacific and Europe. Red Lion is part of Spectris plc, the productivity-enhancing instrumentation and controls company. For more information, please visit [www.redlion.net](http://www.redlion.net).

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