

RAM[®] 6000 Cellular RTUs

Sixnet[®] 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 for monitoring and controlling 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 connectivity with fallback to 3G networks. 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 local sensor data and can optimize cellular bandwidth by optionally reporting only on an exception. 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
- > Multiple Communication Ports
- > 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

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 75°C operating temperature*
- > Modbus and DNP3 Support
 - Easily communicates with SCADA equipment with native protocols
- > 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

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

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

VRP

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 - 3.3W (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-6x0x
 Dimensions: 120 x 96 x 32 mm (4.7" x 3.77" x 1.25")
 Weight: 453g (1 lb)
 RAM-6x21
 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 +75°C*
 Shock: IEC60068-2-27
 Vibration: IEC60068-2-6
 Humidity: 5 to 95% non-condensing
 Ingress: IP30 protection

CERTIFICATION

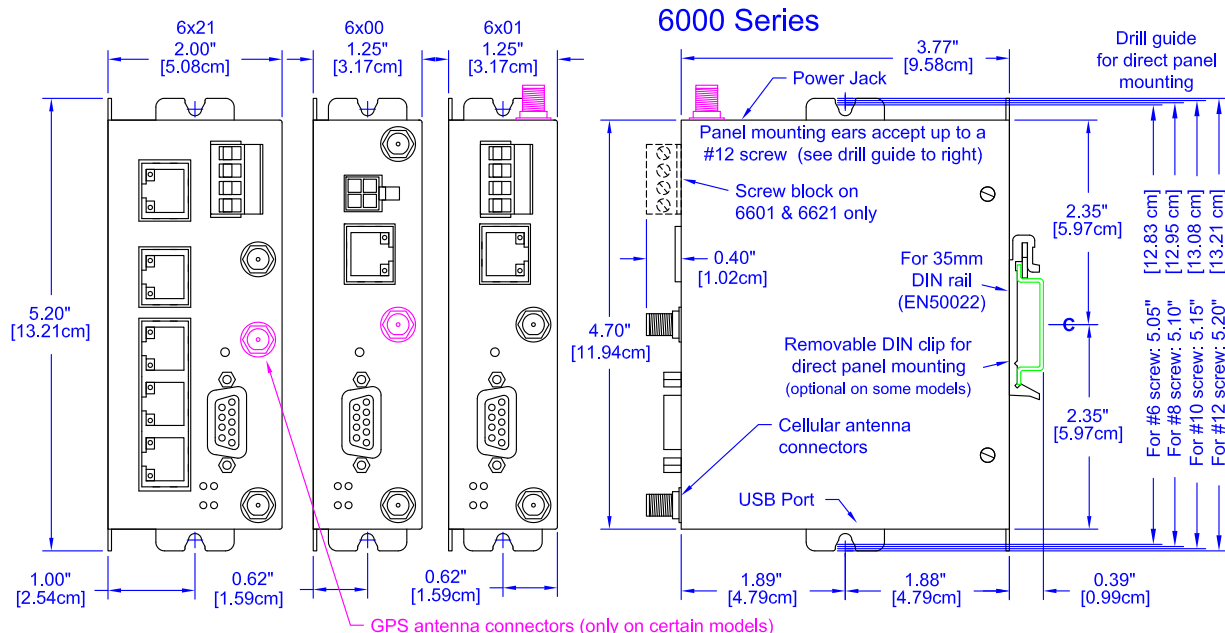
EMI/EMC:
 Emissions: FCC, Part 15 and Industry Canada, ICES-003; Class A; EN55022, IEC61000-6-4
 Immunity: IEC61000-6-2 (EN61000-4-2,3,4,5,6,8)
 Hazardous Locations: Class I, Div. 2, Groups A, B, C, D, ISA 12.12.01
 Electrical safety: UL508/CSA22.2/14 (CUL); IEC61010-1
 Carrier Specific Approvals
 RoHS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

WARRANTY

3 years on design and manufacturing defects

* See Hardware Manual for thermal considerations.

DIMENSIONS in inches (cm)



▶▶▶ RAM 6000 LTE Multi-Carrier Specifications

ORDERING GUIDE

PART NUMBER	PRODUCT LINE	SERIAL RS-232	ETHERNET 10/100	CELLULAR	POWER CONNECTOR	DEFAULT CARRIERS**
RAM-6900-(Carrier Code)	RAM	1	1	4G LTE	Molex end connector cable	AT (AT&T); VZ (Verizon); AM (Generic - Bell Mobility, TELUS and Rogers); EU (Europe and Asia Carrier Support); 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	

* See Band/Frequency table for compatibility

** Carrier that is pre-configured on device. Carrier can be selected via software.

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

Connect. Monitor. Control.

Americas
sales@redlion.net

Asia-Pacific
asia@redlion.net

**Europe
Middle East
Africa**
europe@redlion.net

+1 (717) 767-6511

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.

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