

# RAM<sup>®</sup> 6000 Cellular RTUs

Sixnet Networking Series



## ▶▶▶ Cellular Automation

Red Lion's Sixnet series RAM 6000 industrial cellular RTUs with 4G LTE provide a rugged, reliable solution for monitoring and controlling remote assets and processes in extreme conditions.

RAM 6000 RTUs seamlessly connect Modbus or DNP3 enabled SCADA equipment with master station or control center servers utilizing secure cellular 4G LTE or 3G wireless networks. A built-in I/O concentrator allows the RAM 6000 to collect local sensor data and optimize the cellular bandwidth by optionally reporting only on an exception. Ideal for deployment in industrial M2M networks such as oil and gas, water/wastewater, utility, transportation and mining applications, our industrial cellular RTUs provide a reliable network extension to remote locations. The end result helps customers save wiring time, space and cost by combining separate functions into one cellular device.



### APPLICATIONS

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

### PRODUCT HIGHLIGHTS

- > High-performance 4G LTE cellular connectivity
- > Natively supports Modbus and DNP3 protocols
- > Multiple communication ports
- > Routing capabilities provide secure, reliable communication

### FEATURES & BENEFITS

- > Multiple Communication Ports
  - One RS232 serial port, and up to five Ethernet ports provide seamless connectivity to remote devices
- > Rugged, High-Performance Design
  - Reliable operation in rugged 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 RS232 port
  - Pre-loaded with many console port configurations
- > Secure Ethernet Connectivity
  - Routing capabilities for reliable communication
  - Stateful firewall, SSL, GRE and VPN services and packet inspection reduce the risk of unwanted access
- > Easy Configuration Options
  - Streamlined web-browser interface

industrial  
networking



# RAM 6000 Specifications

## WIRELESS INTERFACE

AT&T LTE with fall back to HSPA+  
 Bell Mobility LTE with fall back to HSPA+  
 Generic LTE with fall back to HSPA+  
 Manitoba LTE with fall back to HSPA+  
 Rogers LTE with fall back to HSPA+  
 Sprint EVDO Rev. A with fall back to 1xRTT  
 TELUS LTE with fall back to HSPA+  
 Verizon LTE with fall back to EVDO  
 Dual-band CDMA2000 EVDO Rev. A  
 (backward compatible with 1xRTT)  
 GSM/HSPA+ (backward compatible with EDGE)

## PROGRAMMABLE PLATFORM

Software Development Kit (SDK)  
 C/C++/Perl

## PROTOCOL GATEWAY

I/O controller  
 Modbus RTU/TCP/ASCII  
 DNP3 – slave

## SYSTEM PERFORMANCE

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

## TUNNELING

IPsec, GRE, OpenVPN

## IP

NAT, port forwarding, dynamic DNS, DHCP  
 Stateful inspection firewall, IP transparency

## ETHERNET INTERFACE (10/100 AUTO-SENSING)

1x or 5x RJ45  
 WAN capability on 5th port

## SERIAL INTERFACE

1x RS232 serial DB9 115200bps

## USB INTERFACE

1x USB 2.0 device mini

## INPUTS & OUTPUTS

1x digital/analog inputs  
 1x digital output (open-collector)

## POWER INPUT

Range: 8-30 VDC (12 or 24 VDC nominal)  
 Standby: 1.4W - 3.3W (typical)  
 Transmitting:  
 6401: 2.0W – 5.0W  
 6421: 3.4W – 6.4W  
 660x: 2.0W – 2.9W  
 6621: 3.6W – 4.5W  
 680x: 2.6W – 5.0W  
 6821: 4.2W – 6.6W  
 670x: 2.6W – 6.9W  
 6721: 4.3W – 8.7W  
 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

## CERTIFICATION

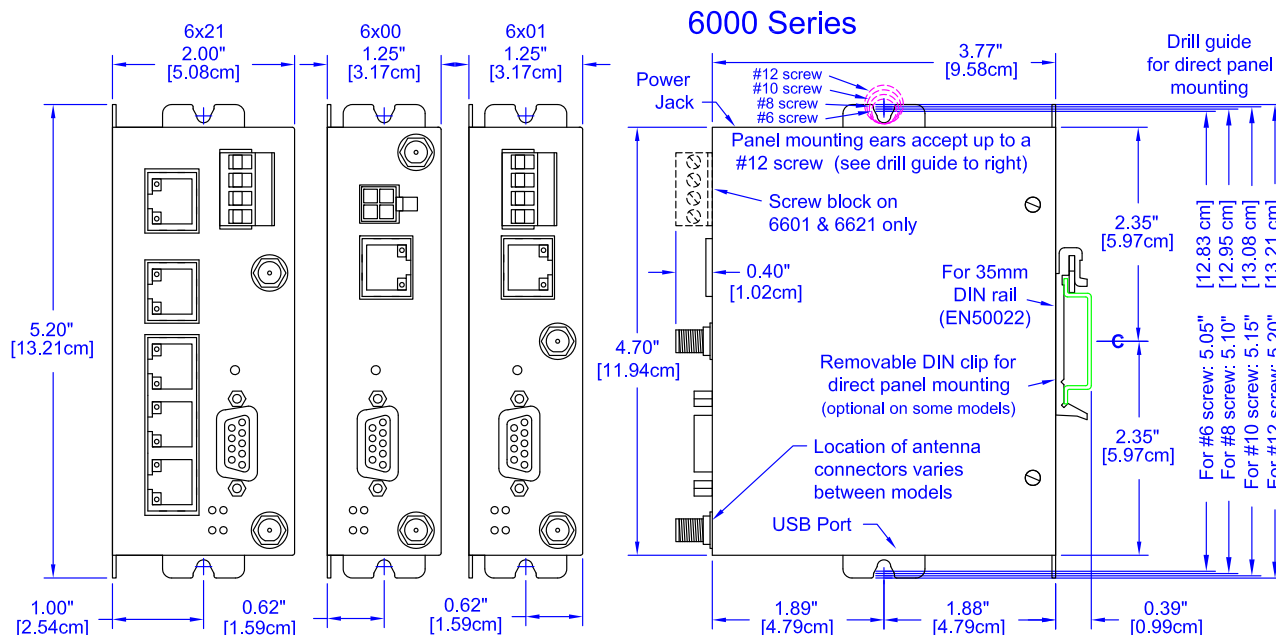
EMI/EMC:  
 Emissions: FCC, Part 15 and Industry Canada, ICES-003; Class A;  
 EN55022, IEC61000-6-4  
 Immunity: IEC61000-6-2 (EN61000-4-2,3,4,5,6,8)  
 Hazardous locations: Class I, Div. 2, Groups A, B, C, D, ISA 12.12.01  
 Electrical safety: UL508/CSA22.2/14 (CUL); IEC61010-1  
 Carrier specific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

## WARRANTY

3 years on design and manufacturing defects

\* See Hardware Manual for thermal considerations.

## DIMENSIONS in inches (mm)



# RAM 6000 Specifications

## ORDER GUIDE

PART NUMBER	PRODUCT LINE	SERIAL RS232	ETHERNET 10/100	CELLULAR	POWER CONNECTOR	SUPPORTED CARRIERS	
RAM-6600-(Carrier Code)	RAM	1	1	3G/CDMA	Molex end connector cable	(SP) Sprint; (VZ) Verizon	
RAM-6600-(Carrier Code)-AC	RAM	1	1	3G/CDMA	AC adapter		
RAM-6600-(Carrier Code)-MX	RAM	1	1	3G/CDMA	AC adapter/Molex end connector		
RAM-6601-(Carrier Code)	RAM	1	1	3G/CDMA	DC powered		
RAM-6601-(Carrier Code)-AC	RAM	1	1	3G/CDMA	AC adapter		
RAM-6601EB-(Carrier Code)	RAM	1	1	3G/CDMA	PoE (Power Over Ethernet)		
RAM-6621-(Carrier Code)	RAM	1	5	3G/CDMA	DC powered		
RAM-6621-(Carrier Code)-AC	RAM	1	5	3G/CDMA	AC adapter		
RAM-6700-(Carrier Code)	RAM	1	1	4G LTE	Molex end connector cable		(AT) AT&T; (BM) Bell Mobility; (GE) Generic*; (MTS) Manitoba; (RO) Rogers; (TE) TELUS; (VZ) Verizon
RAM-6700-(Carrier Code)-AC	RAM	1	1	4G LTE	AC adapter		
RAM-6700-(Carrier Code)-MX	RAM	1	1	4G LTE	AC adapter/Molex end connector		
RAM-6701-(Carrier Code)	RAM	1	1	4G LTE	DC powered		
RAM-6701-(Carrier Code)	RAM	1	1	4G LTE	AC adapter		
RAM-6701EB-(Carrier Code)	RAM	1	1	4G LTE	PoE (Power Over Ethernet)		
RAM-6721-(Carrier Code)	RAM	1	5	4G LTE	DC powered		
RAM-6721-(Carrier Code)-AC	RAM	1	5	4G LTE	AC adapter		
RAM-6800-(Carrier Code)	RAM	1	1	3G/GSM	Molex end connector cable	(AT) AT&T; (BM) Bell Mobility; (GE) Generic*; (MTS) Manitoba; (RO) Rogers; (TE) TELUS	
RAM-6800-(Carrier Code)-AC	RAM	1	1	3G/GSM	AC adapter		
RAM-6800-(Carrier Code)-MX	RAM	1	1	3G/GSM	AC adapter/Molex end connector		
RAM-6801-(Carrier Code)	RAM	1	1	3G/GSM	DC powered		
RAM-6801-(Carrier Code)-AC	RAM	1	1	3G/GSM	AC adapter		
RAM-6801EB-(Carrier Code)	RAM	1	1	3G/GSM	PoE (Power Over Ethernet)		
RAM-6821-(Carrier Code)	RAM	1	5	3G/GSM	DC powered		
RAM-6821-(Carrier Code)-AC	RAM	1	5	3G/GSM	AC adapter		

\* See Band/Frequency table for compatibility

## FREQUENCY SPECIFICATIONS

PART NUMBER	PRODUCT LINE
RAM-66XX-SP/VZ	EVDO: 800/1900 MHz CDMA: 800/1900 MHz LTE: Bands 1, 4, 17; Frequencies 700/2100MHz, AWS (1700/2100) MHz
RAM-67XX-AT/BM/GE/MTS/RO/TE	HSPA: Bands 1, 2, 5, 6; Frequencies 800/850/1900/2100 MHz GSM: 850/900MHz
RAM-67XX-VZ	LTE: Band 13; Frequency 700 MHz WCDMA: 850/900/1900/2100 MHz
RAM-68XX-AT/BM/GE/MTS/RO/TE	HSPA: Bands 1, 2, 5, 6, 8; Frequencies 800/850/900/1900/2100 MHz GSM: 850/900/1800/1900 MHz

