

RAM[®] 9000 Industrial Cellular RTUs

Sixnet Networking Series



▶▶▶ Cellular Automation

The RAM 9000 industrial cellular RTU provides a rugged, reliable solution for monitoring and controlling remote assets and processes in extreme conditions.

The RAM 9000 combines built-in I/O, Wi-Fi and active GPS with multiple serial and Ethernet ports to securely monitor remote devices via 4G LTE cellular communications. Ideal for deployment in industrial M2M networks such as oil and gas, water/wastewater, utility, transportation and mining applications, the RAM 9000 provides a seamless network extension to remote locations. As a robust cellular automation platform, the RAM 9000 enables customers to 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
- > Built-in I/O lowers total system cost
- > Multiple communication ports
- > Active GPS receiver automatically tracks device location
- > Routing capabilities provide secure, reliable communication

FEATURES & BENEFITS

- > High-Density On-Board I/O
 - 2 digital inputs, 2 digital outputs, 3 analog inputs and 1 relay output reduces the need for external I/O devices
- > Multiple Communication Ports
 - RS-232 and RS-485 provides seamless connectivity to remote devices
- > Rugged, High-Performance Design
 - Reliable operation in rugged environments
 - -40° to 75°C operating temperature*
- > Complies with IEEE802.11b/g/n Wi-Fi
 - Supports local client access to communicate with network assets
 - Configure and update firmware without physically connecting to RAM
- > Secure Ethernet Connectivity
 - Routing capabilities for reliable communication
 - Stateful firewall, SSL, GRE and VPN services and deep packet inspection reduce the risk of unwanted access
- > Easy Configuration Options
 - Use Command Line Interface (CLI) or streamlined Web-browser interface

industrial
networking



RAM 9000 Specifications

WIRELESS INTERFACE

AT&T LTE with fall back to HSPA and EDGE
 Verizon 3G EVDO with fallback to CDMA
 Dual-band CDMA2000 EVDO Rev. A (backward compatible with 1xRTT)
 GSM HSPA (backward compatible with EDGE)
 EDGE/GPRS

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 Memory
 128 MB RAM

TUNNELING

IPsec, GRE, OpenVPN

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

ETHERNET INTERFACE (10/100 AUTO-SENSING)

1x or 2x RJ45
 WAN capability on 2nd port

SERIAL INTERFACE

1x RS-232 Serial DB9 115200bps
 1x RS-485 Serial Screws 115200bps

USB INTERFACE

1x USB 2.0 Device mini

INPUTS & OUTPUTS

2 digital inputs
 2 digital outputs
 3 analog inputs
 1 relay output
 See detailed I/O specifications

WIRELESS INTERFACE

Complies with IEEE802.11b/g/n
 Maximum output power up to 25dBm
 Supports up to 150Mbps with 40MHz channel

POWER INPUT

Range: 8-30 VDC (12 or 24 VDC nominal)
 Power consumption: (less DO power)
 Standby: 4W (all models)
 Transmitting:
 -96x1: 4.6W – 5.5W (cellular only)
 -97x1: 5.0W – 9.4W (cellular only)
 -9631: 4.6W – 9.7W (cellular and Wi-Fi)
 -9731: 5.0W – 13.6W (cellular and Wi-Fi)
 Power consumption of DO: (max. each)
 30 W (1A at 30 VDC)
 Heat dissipation: 46 BTU/hour max

MECHANICAL

Dimensions: 132H x 127D x 70W mm (5.2" x 5.00" x 2.75")
 Material: Steel with black zinc coating
 Weight: 906 g (2 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 (Contact Red Lion for latest)
 RoHS compliant

WARRANTY

3 years on design and manufacturing defects

* See Hardware Manual for thermal considerations.

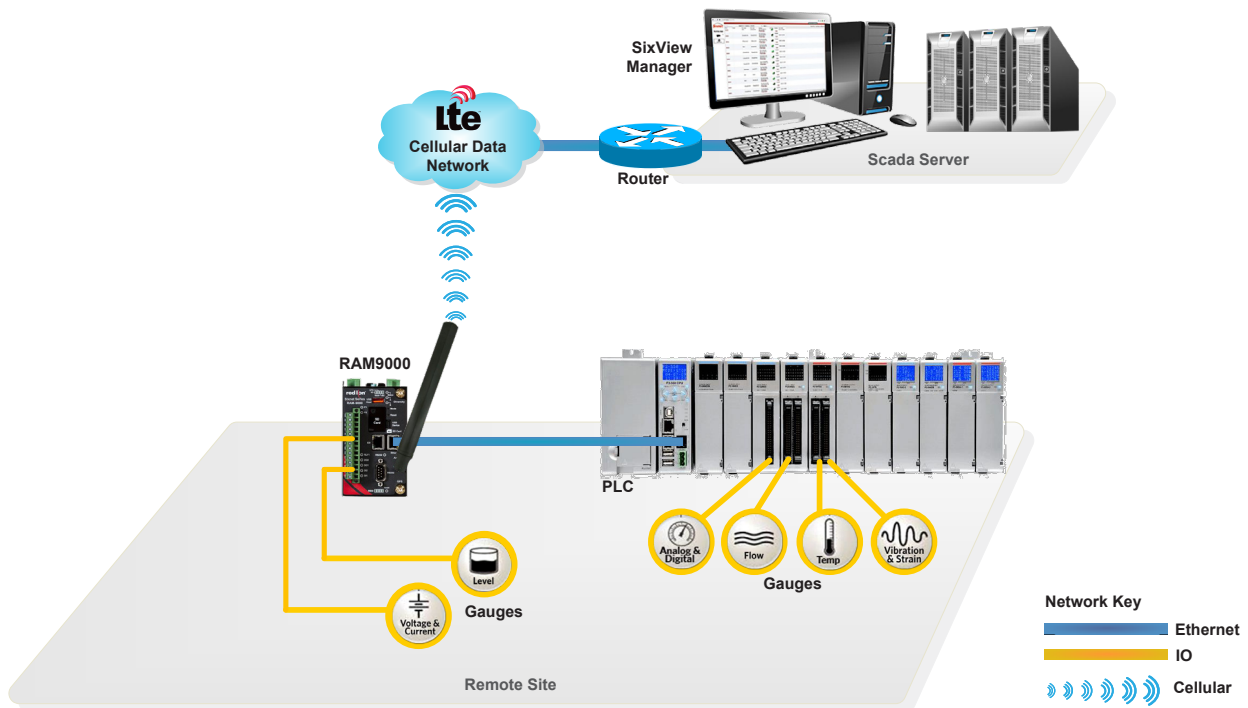
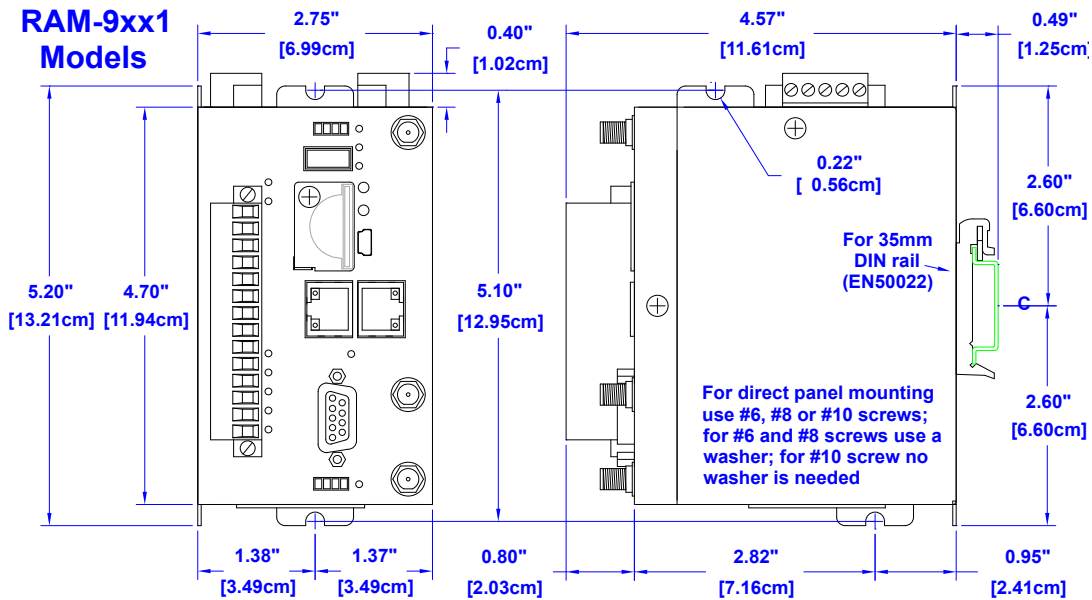
ORDERING GUIDE

MODEL NUMBER	SERIES	SERIAL		ETHERNET	WI-FI	CELLULAR	POWER CONNECTOR	SUPPORTED CARRIERS
		RS232	RS485	10/100				
RAM-9601-(Carrier Code)	RAM	1	1	1	N	3G EVDO/CDMA	DC powered	(VZ) Verizon
RAM-9611-(Carrier Code)	RAM	1	1	2 (WAN/LAN)	N	3G EVDO/CDMA	DC powered	
RAM-9631-(Carrier Code)	RAM	1	1	2 (WAN/LAN)	Y	3G EVDO/CDMA	DC powered	
RAM-9701-(Carrier Code)	RAM	1	1	1	N	4G LTE	DC powered	(AT) AT&T; (GE) Generic*
RAM-9711-(Carrier Code)	RAM	1	1	2 (WAN/LAN)	N	4G LTE	DC powered	
RAM-9731-(Carrier Code)	RAM	1	1	2 (WAN/LAN)	Y	4G LTE	DC powered	

* (GE) Generic carrier support. Please see data sheet for specific bands and frequencies for carrier compatibility.

RAM 9000 Specifications

DIMENSIONS In inches (mm)



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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 award-winning 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. For more information, please visit www.redlion.net. Red Lion is a Spectris company.