RAM® 6000 Cellular RTUs

Sixnet® Networking Series

red lion®

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

industrial networking

CE FC c(UL)us LISTED RoHS compliant

WIRELESS INTERFACE
AT&T LTE with fallback to HSPA+
Bell Mobility LTE with fallback to HSPA+
Generic LTE with fallback to HSPA+
Rogers LTE with fallback to HSPA+
TELUS 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
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 - 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
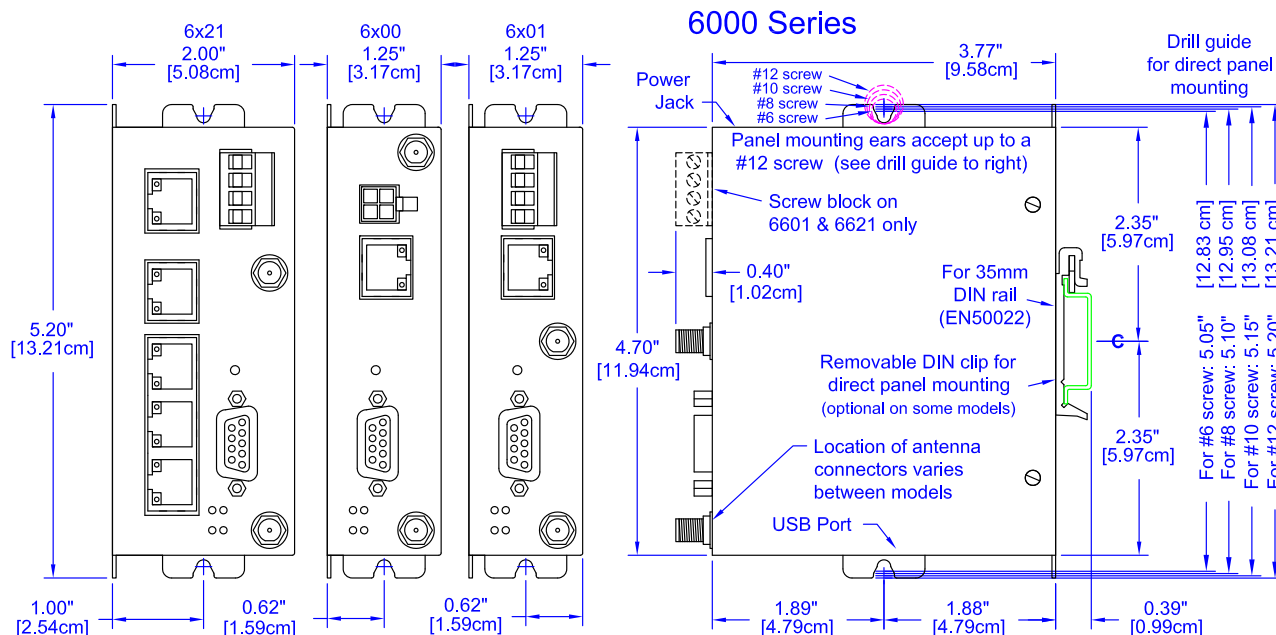
CERTIFICATION
EMI/EMC:
   Emissions: FCC, Part 15 and Industry Canada, ICES-003; Class A;
   EN55022, IEC61000-6-4
   Immunity: IEC61000-6-2 (EN61000-4-2,3,4,5,6,8)
Hazardous Locations: Class I, Div. 2, Groups A, B, C, D, ISA 12.12.01
Electrical safety: UL508/CSA22.2/14 (CUL); IEC61010-1
Carrier Specific Approvals
RoHS compliant

WARRANTY
3 years on design and manufacturing defects

See Hardware Manual for thermal considerations.

DIMENSIONS *in inches (mm)*

6x21
2.00"
[5.08cm]

6x00
1.25"
[3.17cm]

6x01
1.25"
[3.17cm]

6000 Series

Power
Jack

3.77"
[9.58cm]

Drill guide
for direct panel
mounting

#12 screw
#10 screw
#8 screw
#6 screw

Panel mounting ears accept up to a
#12 screw (see drill guide to right)

Screw block on
6601 & 6621 only

2.35"
[5.97cm]

[12.83 cm]
[12.95 cm]
[13.08 cm]
[13.21 cm]

5.20"
[13.21cm]

0.40"
[1.02cm]

For 35mm
DIN rail
(EN50022)

4.70"
[11.94cm]

Removable DIN clip for
direct panel mounting
(optional on some models)

2.35"
[5.97cm]

For #6 screw: 5.05"
For #8 screw: 5.10"
For #10 screw: 5.15"
For #12 screw: 5.20"

Location of antenna
connectors varies
between models

USB Port

1.00"
[2.54cm]

0.62"
[1.59cm]

0.62"
[1.59cm]

1.89"
[4.79cm]

1.88"
[4.79cm]

0.39"
[0.99cm]

ORDER 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* includes Bell Mobility, TELUS and Rogers
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 compatability
** Carrier that is pre-configured on device. Carrier can be selected via software.

FREQUENCY SPECIFICATIONS

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	-

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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.