Sixnet

R.A.M. REMOTE ACCESS & MONITORING

A CELLULAR SOLUTION

Real World Real-time Interfaces for Distributed Data Systems. A global economy requires global access to key operational information.

Efficiently connect people, devices and systems with real-time data. Enable real-time accurate information so you can increase productivity and reduce operating expenses.

- Improve productivity by 6 fold
- Improve data collection frequency to hourly or even shorter if necessary
- Reduce maintenance costs of manual equipment
- See trends, histories, conditions
- Profile and monitor for degradation
- Enable online diagnostics from remote
- Repair and prevent by using the right skilled resource
- Increase accuracy with automation
- Improve efficiency with real-time information
- Reduce service costs with cellular

PRODUCT BENEFITS AND HIGHLIGHTS

- Cellular connectivity and flexibility - Connect a R.A.M. solution from anywhere in the world to anywhere in the world using reliable cellular connectivity.
- Save money using R.A.M. – Automate and monitor remote sites real-time with cellular plans starting at $8 per month.
- Secure connections – Use secure VPN tunneling and authentication to keep your data safe.
- Log data with time stamping, trending, alarm logging
- Stand alone control of remote sites IEC 61131 ISaGRAF and high level C++ programming
- Alarm configuration wizard – Report on exception with an easy to configure alarm table.
- Small to large applications, scalable from 1 to 1,000+ Stations
- Cellular made easy – plug-and-play connectivity to the cellular network.
- Embedded Linux open source software, add applications, I/O drivers and much more
- An OEM's dream platform, pre-certified, add your application

TYPICAL R.A.M. SOLUTION APPLICATIONS

- Oil and Gas – Automate remote wellhead and pipeline locations saving on operating expensing and increasing efficiency.
- Asset Tracking – Accurately track and trend assets to reduce operating expenses and delivery schedules.
- Power Utilities – Receive alerts and control power status from the remote site reducing visits and increasing efficiency.
- Critical Equipment Monitoring – Track expensive equipment and trend the usage to perform preventative maintenance.
- Water and wastewater – Instantly enable remote and local well and tanks with a cellular (IP) connection

GENERAL

- Industrial powerPC (32 bit data bus)
- Operating system embedded Linux
- Dynamic memory (RAM) up to 32Mbytes - 32bit, 0 wait states
- Program memory (Flash) up to 64Mbytes
- Retained memory (RAM) 512K (battery-backed)
- Local I/O (on-board) up to 26
- I/O Expansion (up to 256) RS485 or Ethernet
- Datalogging support
- IEC 61131 programming
- High Level C programming, Linux open source

ETHERNET PORT

- 1 or 5 10/100BaseTx (auto-detecting)
- RJ45 connection (auto-crossover)
- Protocols TCP/IP, ARP, UDP, ICNP, DHCP, Modbus/TCP, SIXNET, and more

SERIAL PORT

- 1 or 2 RS485 port A screws (485+, 485-, GND) (2-wire half-duplex) up to 2 ports
- 1 or 2 RS232 Port B RJ45 (TD, RD, CTS, RTS, CD, DTR,DSR, GND) up to 2 ports.
- Protocols (master & slave) SIXNET & Modbus RTU/ASCII; many others available in Linux
- Flow control hardware, software, RTS-party (for radios and RS485)

DISCRETE INPUTS

- 8 or 12 channels (sinking or sourcing)
- Guaranteed ON voltage 9 VDC
- Maximum voltage 30 VDC
- Guaranteed OFF voltage & current 5.0 VDC & 1.5 mA DC
- Input resistance 10K Ohms
- Input current @ 24 VDC 3 mA

DISCRETE OUTPUTS

- 4 or 8 channels (10-30 VDC)
- Maximum output per channel 1 Amp
- Maximum output per module 8 Amps
- Max. OFF state leakage 0.05 mA
- Minimum load 1 mA
- Inrush current 5 Amps (100 mS surge)
- Typical ON resistance 0.3 Ohms
- Typical ON voltage (@1A) 0.3 VDC

ANALOG INPUTS

- 6 or 8 channels (4-20 mA)
- A/D resolution 16 bits (0.003%)
- Full scale accuracy +/-0.1% (@20°C)
- Span and offset temp. coef. +/-50 ppm per °C
- Input impedance 100 Ohm
- Current protection Self-resetting fuses
- DMRR (differential mode rejection) 66 dB at 50/60 Hz

ANALOG OUTPUTS

- up to 2 channels (4-20 mA)
- D/A resolution 16 bits (less than 1µA)
- Full scale accuracy (@20°C) +/- 0.02%
- Span and offset temp. coef. +/- 50 ppm per °C typical
- Max. output settling time 5 mS (to .05%)
- Load resistance range (@ +24 VDC supply) 0-750 Ohms
- Short circuit protection current limiting

ENVIRONMENTAL

- Wall mount included
  (see accessories for additional mounting options)
- Input power 10-30 VDC
- Input current 100 mA @ 24 VDC (typical)
- Temperature -40 to 65°C (-40 to 85°C storage)
- Humidity 5% to 95% RH (non-condensing)
- Flammability UL 94V-0 materials
- Electrical safety UL 508, CSA C22.2/14; EN610101; (IEC1010)
- EMI emissions FCC part 15, ICES-003, Class A; EN55022; EN61326-1
- EMC immunity EN61326-1 (EN61000-4-2,3,4,6)
- Vibration IEC68-2-6
- Hazardous locations (Class 1, Div 2, Groups A,B,C,D) UL 1604, CSA C22.2/213, Cenelec EN50021 Zone 2

All specifications are subject to change. Consult factory for latest info.

ORDERING GUIDE

RAM-	X	X	X	X	X	-	X	X X	DESCRIPTION
	1								12"x 10" NEMA 4x enclosure
		1							8DI, 4DO, 2AI, 2 RS232, 1 RS485, 16MB Flash/DRAM and 512K NVRAM
		4							12DI, 8DO, 6AI, 2 RS232, 1 RS485, 64MB Flash, 32MB DRAM and 512K NVRAM
		5							12DI, 4DO, 8AI, 2AO, 2 RS232, 2 RS485, 64MB Flash, 32MB DRAM and 512K NVRAM
			4						GSM EDGE cellular technology
			6						CDMA EVDO cellular technology
			8						GSM HSPA cellular technology
				1					1 Ethernet port
				5					5 Ethernet ports
					5				5 Amp 24VDC AC to DC power supply
							I		Internal 8-inch antenna
							E		Hole for an external box mounted antenna
								SP	Sprint (CDMA only)
								VZ	Verizon (CDMA only)

Order Examples:
RAM-11615-I SP: NEMA 4x enclosure, 8DI, 4DO, 2AI, CDMA Modem w/ 1 Ethernet port, power supply, Internal antenna, provisioned on Sprint
RAM-14455-E: NEMA 4x enclosure, 12DI, 8DO, 6AI, EDGE Modem (HSPA networks including AT&T), 5 Ethernet ports, power supply, Hole for external antenna

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