VIOLA systems

Arctic RTU
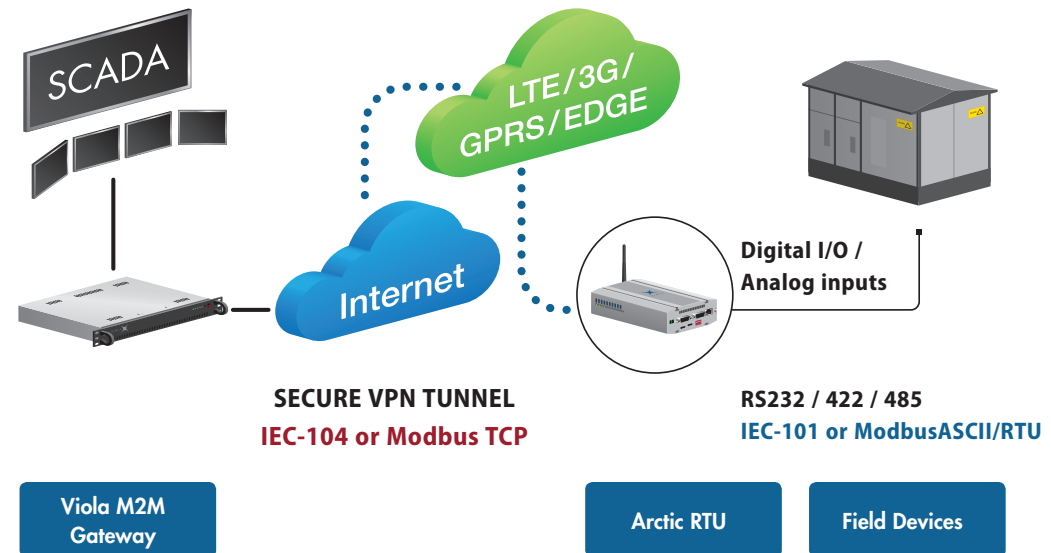
Wireless gateways for enhanced
field asset connectivity

Wireless Control of Field Devices with Digital I/O, Analog Inputs, Serial and Ethernet Interfaces

Arctic RTU product family includes a number of Arctic RTU product variants. Arctic RTU products provide wireless monitoring and control of field devices via commercial mobile network connectivity to central control systems like SCADA. Several interfaces are available for field device connectivity: Digital inputs and outputs, analog inputs, serial and Ethernet ports. Industrial protocols IEC-104 and ModbusTCP are supported for SCADA connectivity. With Arctic RTU protocol conversion feature the conventional IEC-101 and Modbus serial devices can be connected in a reliable way to a modern TCP/IP based IEC-104 and Modbus TCP control systems via mobile networks.

In industrial applications reliability of the communication device and the wireless connection is essential. This is achieved by using sophisticated connection diagnostic and monitoring features like real time status information of Arctic RTU devices and automatic connection re-establishment in case of connection lost. The complete Arctic RTU solution provides always-on and secure two-way communication channel over commercial networks. Standard SIM cards can be used which enables low operating costs of the solution.

- Enhanced connectivity - Digital I/O and analog input interfaces
- IEC-104 and Modbus TCP for centralized I/O system controlling
- Legacy serial device connectivity - extends the life cycle of the field devices
- IEC-101 to IEC-104 or Modbus ASCII/RTU to Modbus TCP protocol conversion
- Reliable and secure - automated two way ommunication
- No unnecessary site visits - automatic connection re-establishment in case of fault
- DNP3 over TCP/IP
- Compatible with all operators and standard SIM cards
- Complete cost optimized static IP based RTU solution
- Any application and field asset - no restrictions in terms of the customer application
- The necessary intelligence in the same device - the easiest possible installation and commissioning
- On-site gateway to connect multiple field devices
- Aluminum casing with DIN rail mounting option

SCADA

LTE/3G/ GPRS/EDGE

Internet

Digital I/O / Analog inputs

SECURE VPN TUNNEL
IEC-104 or Modbus TCP

RS232 / 422 / 485
IEC-101 or ModbusASCII/RTU

Viola M2M Gateway

Arctic RTU   **Field Devices**

APPLICATION EXAMPLES

- Distribution automation
- Unmanned substations
- Transformer monitoring
- Water and waste water treatment
- Oil and gas pipeline monitoring
- Weather monitoring stations
- Remote measurement of levels and temperatures
- Security applications
- Intelligent building control

CONFIGURATION & MANAGEMENT

- Graphical user interface to be used with a web browser

- Convential serial console interface
- Viola Patrol - application for the communication monitoring and management

SOFTWARE

Network protocols

- PPP, IP, ICMP, UDP, TCP, ARP, DNS, DHCP, FTP, TFTP, HTTP

VPN

- SSH client, OpenVPN client, IPsec, L2TP

Management

- WEB, SSH and serial console
- SW remote update

Routing related

- Static routing, Proxy ARP,
- Port Forward
- IP Masquerading/NAT, Firewall

Serial device connectivity

- Device server application

KEY FEATURES

- Static IP routing
- Serial data over TCP/IP
- Ethernet over TCP/IP (bridge)
- Viola Patrol application to monitor communication
- Secure communication with internal VPN and firewall
- Mobile operator independent static IP addressing with Viola M2M Gateway
- Intelligent self-diagnostic functionality and automatic re-connection
- Robust aluminum casing
- DIN rail mounting option
- DNP3 over TCP/IP
- Modbus RTU to Modbus TCP conversion
- IEC-101 to IEC-104 conversion

HARDWARE

Processor Environment

- 32 bit RISC processor
- 128 MB FLASH memory
- 128 SDRAM memory

Power

- 12-48 VDC nominal input voltage
- 1 – 5 W power consumption
- ESD protection

Other

- Temperature sensor
- Real time clock

Environment

Temperature ranges:
–30 to +75 °C
–40 to +85 °C (storage)
Humidity 5 to 85 % RH

Approvals

- CE

DIMENSIONS

175 mm
108 mm
45 mm

PRODUCT VARIANT TABLE	R-3201	R-3202	R-3221	R-3222	R-3251	R-3252	R-3261	R-3262
Ethernet	x	x	x	x	x	x	x	x
GPRS	-	-	x	x	x	x	x	x
EDGE	-	-	-	-	x	x	x	x
3G	-	-	-	-	x	x	x	x
LTE	-	-	-	-	-	-	x	x
IEC-101 to IEC-104 protocol conversion	x	x	x	x	x	x	x	x
Modbus ASCII/RTU to Modbus TCP protocol conversion	x	x	x	x	x	x	x	x
DNP3 over TCP/IP	x	x	x	x	x	x	x	x
Analog Inputs (4-20mA)	-	2	-	2	-	2	-	2
Digital Inputs	8	6	8	6	8	6	8	6
Digital Outputs	2	4	2	4	2	4	2	4

NETWORK INTERFACES

Ethernet

- 10/100 Base-T. Shielded RJ-45
- 1,5 kV isolation transformer
- Ethernet IEEE 802-3, 802-2

Wireless

Arctic RTU (R-3221, R-3222)

- GPRS: 850, 900, 1800, 1900 MHz
- Air interface GPRS 85.6 Kbps downlink max

Arctic RTU (R-3251, R-3252

- GPRS/EDGE: 850, 900, 1800, 1900 MHz
- WCDMA: 850, 900, 1900, 2100 MHz
- Air interface HSPA+ 21 Mbps downlink max 5.76 Mbps uplink max

Arctic RTU (R-3261, R-3262)

- GPRS/EDGE: 850, 900, 1800, 1900 MHz
- WCDMA: 850, 900, 1900, 2100 MHz
- LTE: 800 (band 20) , 900 (band 8), 1800 (band 3), 2100 (band 1), 2600 (band 7) MHz
- Air interface LTE 100 Mbps downlink max 50 Mbps uplink max

SERIAL PORTS

- Serial 1: RS-232 DTE
- Serial 2: RS-232/422/485
- Male DB-9 connector
- Full serial and modemn signals
- Speed 300 - 460 800 bps
- Data bits - 7 or 8
- Stop bits - 1 or 2
- Parity - None, Even, Odd
- Flow control - None,RTS/CTS
- Protection - 15 kV ESDn and short circuit
- Console (Serial1) 19200 bps, 8 data bits, v1 stop bit, no parity (8N1)

I/O

I/O board 1 (IO-1)

- 8 Digital Input (5-60V, bipolar)
- 2 Digital Output (CMOS relay, 50mA)

I/O board 2 (IO-2)

- 6 Digital Input (6-60V, bipolar)
- 4 Digital Output (CMOS relay, 100mA)
- 2 Analog Input (4-20 mA)

ORDERING INFORMATION

Code	Product
R-3201	Arctic RTU (Ethernet, IO-1)
R-3202	Arctic RTU (Ethernet, IO-2)
R-3221	Arctic RTU (GPRS, IO-1)
R-3222	Arctic RTU (GPRS, IO-2)
R-3251	Arctic RTU (3G, IO-1)
R-3252	Arctic RTU (3G, IO-2)
R-3261	Arctic RTU (LTE, IO-1)
R-3262	Arctic RTU (LTE, IO-2)

VIOLA systems

2015-03-30