SIEMENS

RUGGEDCOM Products at a Glance

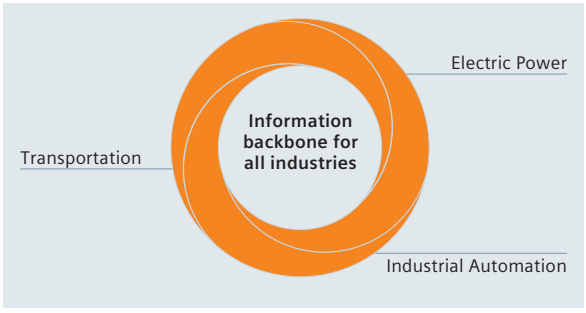
Rugged network components

siemens.com/ruggedcom

Answers for industry.

RUGGEDCOM product family

RUGGEDCOM products provide a level of robustness and reliability that have set the standard for communications networks deployed in harsh environments.



RUGGEDCOM products offer extreme temperature range, Zero-Packet-Loss technology for immunity to high levels of electromagnetic interference, and enhanced Rapid Spanning Tree Protocol (eRSTP™) for ultra high-speed network fault recovery.

RUGGEDCOM products can be found in mission critical networks used in substation automation, self healing power grids or "Smart Grid" systems, intelligent transportation systems for traffic management and railway control systems, as well as in process control and manufacturing automation systems used across multiple industrial sectors.

"RUGGEDCOM products are at their best when the environment around them is at its worst."

Rugged Rated

Communications products that have been specifically designed and tested to withstand the demands of the substation environment.

Reliable operation in harsh electrical environments

- IEC 61850-3 and IEEE 1613 (electric power substations)
- IEC 61000-6-2 and IEC 61800-3 (industrial environments)
- NEMA TS-2 (traffic control equipment)
- EN 50121-4 (railway applications)
- EN 50155 (equipment on-board rail vehicles)

Error-free operation in high EMI environments

- Zero-Packet-Loss technology for fiber-based networking devices
- IEEE 1613 class 2 error-free performance under EMI stress
- Fiber optic ports supporting both short and long haul fiber

Operation over a wide temperature range

- -40°C to +85°C
- Passive cooling – no fans.
- CSA/UL 60950 safety approved to +85°C

High availability

- Integrated single or redundant power supplies
- Universal high-voltage range: 88-300VDC or 85-264VAC
- Low Voltage DC: 24VDC (10-36VDC) or 48VDC (36-72VDC)
- Dual power supplies can be powered independently, from different input voltages

Industrial installations

- Full metal enclosure
- Heavy duty mounting
- Industrial terminal blocks for power and I/O connections

HALT – Eliminate weaknesses in design

Highly Accelerated Life Testing (HALT) subjects design prototypes to vibration and ambient temperatures far beyond their normal operation range. Siemens uses HALT results to verify and improve its designs.

HASS – Remove manufacturing errors

Siemens performs Highly Accelerated Stress Screening (HASS) on all RUGGEDCOM products, in order to ensure a shipment that is free of manufacturing errors and random defects.

Multi Service Platform

RUGGEDCOM's multi service platform products include a rich array of carrier grade features. A subset of the available software features common to multi service platform products are shown below:

Future-proof your investment with a modular platform. Simplify your logistics with easy to spare components. Improve your network uptime by reducing time to repair.

RUGGEDCOM RX5000

- Support for up to 96 ports TX, 48 ports 100FX or 24 ports GigE
- Modular redundant power supplies

RUGGEDCOM RX1500

- Modular redundant power supplies
- Four line module slots

RUGGEDCOM RX1501

- Modular single power supply
- Six line module slots

RUGGEDCOM RX1510

- Modular redundant power supplies
- Four line module slots

RUGGEDCOM RX1511

- Modular single power supply
- Two line module slots

RUGGEDCOM RX1512

- Fixed DC power supply
- Two line module slots

Cyber Security Appliance Functions

- Integrated router/firewall/VPN
- VPN with 3DES, AES128, AES256 support
- RADIUS centralized password management
- Multi-level user passwords
- SSH/SSL (128-bit encryption)
- Enable/disable ports, MAC based port security
- Port-based network access control (802.1x)
- VLAN (802.1Q) to segregate and secure network traffic
- SNMP v3 encryption, integrity and authentication
- CheckPoint GAiA™ supported on RUGGEDCOM APE
- CROSSBOW SAC for NERC-CIP compliance

Routing Features

- VRRP, OSPF, RIP, BGP
- DHCP agent (option 82 capable)
- Traffic prioritization, NTP server
- IP multicast routing

Switching Features

- Simple plug and play operation – automatic learning, negotiation and crossover detection
- MSTP 802.1Q-2005 (formerly 802.1s)
- RSTP (802.1w) and enhanced Rapid Spanning Tree (eRSTP™) network fault recovery (<5ms)
- Quality of Service (802.1p) for real-time traffic
- VLAN (802.1Q) and GVRP support
- Link aggregation
- Traffic prioritization
- Transaction-based configuration with rollback
- GMRP and services
- Telecom style CLI

WAN Features

- Frame Relay RFC 1490 or RFC 1294
- PPP
- PAP, CHAP authentication
- IEC 61850 GOOSE messaging support

Advanced Features

- MPLS – static label support
- MPLS – dynamic label support
- PIM-SM

Management Features

- Web-based, CLI management interfaces
- SNMP v1/v2/v3
- NETCONF
- Remote Monitoring (RMON)
- Rich set of diagnostics with logging and alarms

Line Modules

- Power modules: HI (88-300 VDC or 85-264VAC), 48VDC (36-72VDC), 24VDC (15-36VDC)
- 2 port Gigabit fiber, fixed, SFP, multimode, singlemode
- 3 port 10FL / 100SX, multimode
- 2 port 100FX, multimode, singlemode
- 4 port 100FX, fixed, SFP, multimode, singlemode
- 6 port 100FX, SFP, multimode, singlemode
- Single, dual, quad T1/E1 (channelized)
- Single, dual, E1 (channelized)
- Single 56K/64K DDS
- Dual port cellular (HSPA/EVDO)
- 6 port serial (RS232, RS422, RS485)
- RUGGEDCOM APE
- 4 port 100TX A- and D-coded M12
- 2 port Gigabit A- and X-coded M12
- Controlled and fail-safe M12 bypass

Technology for OEM Solutions

Reduce your time to market when integrating
Layer 2 switching into your products.

RUGGEDCOM RS900M OEM Module

10 Port Managed Ethernet Switch Module for OEM Applications

- Supports up to 10 FastEthernet™ ports, or 8 FastEthernet™ ports and 2 Gigabit Ethernet ports
- Full RUGGEDCOM Operating System (ROS®) feature set
- Compact design and small footprint (3”x4”)
- Low power consumption - 3.3VDC operation

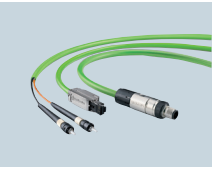
RUGGEDCOM RNA Technology Module

3 Port PRP/HSR Redbox OEM modules

- Supports 1 local and 2 HSR/PRP ports
- 10/100/1000 Mbps fiber or copper
- IEEE 1588v2 transparent clock

FastConnect™ Cabling System

Stringent demands are placed on the installation of cables in the industrial environment. Siemens offers FastConnect™, a system that fulfils all these requirements: On-site assembly - quick, easy and error-free.



- Less time is spent connecting terminals
- Greater flexibility due to configuring the optimum cable length with the right connector for the terminal directly on site
- Reduced planning costs for ordering preassembled cables
- Easy installation using just one tool
- Easy routing of cables with pre-assembled connectors
- Mistakes are prevented thanks to color coding and the transparent contact cover

19” Ethernet Switches

Maximize productivity with utility grade reliability
Cyber attack prevention via advanced security
Field proven MTBF delivers lower OPEX costs.

RUGGEDCOM RSG2488

28 Port Advanced Utility Grade, High Density Managed Gigabit Ethernet Switch

- Field replaceable Ethernet Media Modules
- Hot swappable power supplies
- Full 28 Gigabit non-blocking architecture
- 10/100/1000 Mbps Copper (RJ45 or M12) or 100/1000 Mbps Fiber (LC, SC or ST)
- IEEE 1588 hardware time stamping
- Available PTP module provides GPS time source and IRIG-B in/out
- Time conversion between IEEE 1588, IRIG-B and NTP/SNTP

RUGGEDCOM RSG2100

19 Port Modular Managed Ethernet Switch with Gigabit Uplinks

- 3 x 1000BaseX (Gigabit) + 16 10/100BaseX
- Power over Ethernet (PoE) version available
- EN50121-4 (railway applications)

RUGGEDCOM RSG2200

9 Port Managed Gigabit Ethernet Switch

- 1000BaseX (Gigabit) and/or 10/100/1000BaseTX

RUGGEDCOM RSG2288

9 Port Managed Gigabit Ethernet Switch with IEEE 1588 v2 and IRIG-B Conversion

- 1000BaseX (Gigabit) and/or 10/100/1000BaseTX

RUGGEDCOM RSG2300

32 Port Managed Ethernet Switch with Gigabit Uplinks

- 24 10/100BaseTX and optional 4 1000BaseX (Gigabit) or 8 100BaseX
- Power over Ethernet (PoE) version available

Common Features

- Rugged Rated for reliability in harsh environments
- Many different fiber port options available
- Long haul fiber support
- High immunity to EMI and heavy electrical surges
- -40°C to +85°C operating temperature (no fans)
- Hazardous location certification: Class 1 Division 2
- Fully integrated power supply (no external adaptors)
- Universal high-voltage range: 88-300VDC or 85-264VAC
- Dual low-voltage DC inputs: 24VDC (10-36VDC) or 48VDC (36-59VDC)

Compact Ethernet Switches

Space saving high performance compact design.
Cyber attack prevention with advanced security.
Field proven MTBF delivers lower OPEX costs.

RUGGEDCOM RS900

9 Port Managed Ethernet Switch with Fiber Uplinks

- 6 10/100BaseTX + optional 3 100BaseFX or 3-10/100BaseTX

RUGGEDCOM RS900G

10 Port Managed Ethernet Switch with Gigabit Uplinks

- 8 10/100BaseTX + 2-1000BaseX (Gigabit)
- EN50121-4 (railway applications)

RUGGEDCOM RS900GP

10 Port Managed Ethernet Switch with Gigabit Uplinks

- 8 10/100BaseTx 802.3af / 802.3at compliant ports
- Up to 2 fiber optical Gigabit Ethernet ports
- Up to 2 10/100/1000 BaseTx copper ports
- 1 x 54VDC, 160W (powers 8 ports with 802.3af or 4 ports 802.3at)
- 2 x 54VDC, 160W (powers 8 ports with 802.3at)

RUGGEDCOM RS940G

8 Port Managed Gigabit Ethernet Switch

- 6 10/100/1000BaseTX + optional 2 1000BaseX (Gigabit)

RUGGEDCOM RS950G

3 Port Managed PRP Redundancy Box

- 1 x 100BaseX local port
- 2 x 100BaseX PRP ports

RUGGEDCOM RS969

IP66/IP67 Rated 10 Port Managed Ethernet Switch with Fiber Uplinks

- 8 10/100BaseTX ports + optional 2 1000BaseX (Gigabit)
- Waterproof: IP66 (water jets) and IP67 (water immersion)
- IP67 rated M12 or RJ45 copper port connectors
- Integrated power supply

Compact Switches with Fiber Optics

Space saving high performance compact design.
Full array of intelligent functionality.
High network availability and manageability.

RUGGEDCOM i800 Product Family

Unmanaged or Managed Ethernet Switch

- Four models to choose from with up to 8 10/100 BaseTX Ports and up to 3 fiber ports
- i800: 8 10/100Tx
- i801: 8 10/100Tx + 1 1000LX or 1 10/100/1000Tx
- i802: 6 10/100Tx + 1 100FX or 2 100FX or 2 1000LX or 2 10/100/1000Tx
- i803: 4 10/100Tx + 1 100FX + (2 1000LX or 2 100FX)

Common features

- Rugged Rated for reliability in harsh environments
- Long haul fiber support
- High immunity to EMI and heavy electrical surges
- Serial management console
- Fail-safe relay
- -20°C to +60°C operating temperature (-40°C to +85°C optional)
- Fanless operation
- Hazardous location certification: Class 1 Division 2
- Dual low-voltage DC inputs: 24VDC (10-36VDC)

EoVDSL Ethernet Switches

VDSL reduces installation costs using existing cabling.
Space saving high performance compact design.
Field proven MTBF delivers lower OPEX costs.

RUGGEDCOM RS900L
8 Port Managed Ethernet Switch with EoVDSL Uplinks

- 1 EoVDSL + 6 10/100BaseTX + optional 2 10/100BaseTX or 2 100BaseFX ports

RUGGEDCOM RS910L
Serial and Ethernet Device Server with EoVDSL Uplinks

- 1 EoVDSL + 2 serial + 2 10/100BaseTX or 2 100BaseFX

RUGGEDCOM RS920L
Dual Port Serial Device Server with EoVDSL Uplinks

- 2 EoVDSL + 2 serial ports

RUGGEDCOM RS930L
6 Port Managed Ethernet Switch with EoVDSL Uplinks

- 2 EoVDSL + 6 10/100BaseTX ports

Common Features

- Rugged Rated for reliability in harsh environments
- Long haul fiber support
- High immunity to EMI and heavy electrical surges
- Serial management console
- Fail-safe relay
- -40°C to +85°C operating temperature (no fans)
- Hazardous location certification: Class 1 Division 2
- Fully integrated power supply (no external adaptors)
- Universal high-voltage range: 88-300VDC or 85-264VAC
- DC inputs: 24VDC (10-36VDC) or 48VDC (36-59VDC)

Media Converters

Converts speed and media to preserve existing cabling.
Reduces installation costs.
Plug and play reduces configuration costs.

RUGGEDCOM RMC
Ethernet Media Converter (Copper to Fiber)

- 10BaseT to 10BaseFL
- 100BaseTX to 100BaseFX

RUGGEDCOM RMC20
Serial Media Converter (Copper to Fiber)

- RS485, RS422 or RS232 conversion to multimode fiber optics
- RS232 to RS485/422 conversion mode

RUGGEDCOM RMC40
4 Port Ethernet Media and Speed Converter

- 2 10/100TX ports + 1 100FX port
- 2 10/100TX ports + 2 100FX port
- 4 10/100TX ports

RUGGEDCOM RMC41
2 Port Ethernet Media and Speed Converter

- 1 10/100TX port + 1 100FX port (SC/ST)

Common Features

- Rugged Rated for reliability in harsh environments
- -40°C to +85°C operating temperature (no fans)
- Integrated power supply (24, 48, 88-300VDC/85-264VAC)
- Power supplies (HI, etc.)
- Fail-safe relay

Serial Device Servers

Increases ROI of legacy serial devices.
Reduces serial cabling costs.
Remote accessibility reduces management costs.

RUGGEDCOM RS416

16 Port Serial Device Server with Integrated 4 Port Managed Ethernet Switch and IEEE 1588 v2 to IRIG-B Conversion

- Modular: up to 16 serial ports (4 port modules)
- RS485/RS422/RS232 (DB9 or RJ45)
- Serial fiber interface (ST)
- Optional dual redundant power supplies
- Power over Ethernet (PoE) version available

RUGGEDCOM RS400

4 Port Serial Device Server with Integrated 4 Port Managed Ethernet Switch

- 4 RS485/RS422/RS232 serial ports (DB9, RJ45, or screw)
- Integrated V.90 modem (optional)

RUGGEDCOM RS910

2 Port Serial Device Server with Integrated 3 Port Managed Ethernet Switch

- 2 RS485/RS422/RS232 serial ports (DB9 or RJ45)
- Serial fiber interface option (ST)

RUGGEDCOM RMC30

2 Port Serial Device Server

- 1 RS232 and 1 RS422/485 port, 1 10BaseTX

Common Features

- Rugged Rated for reliability in harsh environments
- Transmit serial data over an IP network
- Support for Modbus TCP, DNP3, TIN serial protocols
- Raw socket mode allows conversion of any serial protocol
- -40°C to +85°C operating temperature (no fans)
- Integrated power supply (10-36VDC, 36-59VDC, 88-300VDC/85-264VAC)

Power Injectors

Reduces costs by eliminating separate power and data cabling.
Investment protection – handles low and high power devices.
Plug and play reduces configuration costs.

RUGGEDCOM RP100

Single Port PoE Injector

- 802.3at / af compliant or RM version for connection to RUGGEDCOM WIN products

RUGGEDCOM RP110

Serial Power over Ethernet Injector

- 1 x RS422/485 port + 1 RS232 port
- IRIG-B output
- Transmits serial data over an IP network
- Support for Modbus TCP, DNP3, TIN serial protocols
- Raw socket mode allows tunneling of any serial protocol

Common Features

- Rugged Rated for reliability in harsh environments
- IEEE 1613 and IEC 61850-3 compliant
- Space saving compact design (11.75cm x 5.65cm x 9.52cm H/W/D)
- -40°C to +85°C operating temperature (no fans)
- Integrated power supply (10-60 VDC, 88-300VDC/85-264VAC)
- Space saving compact design
- Reduces cabling, connection and power supply requirements for PoE devices
- Automatic detection of remote power devices
- Output fault protection

Utility Grade Routers

Facilitates NERC-CIP compliance.
Reduces logistics costs.
Simplified implementation for industrial-specific applications.

RUGGEDCOM RX1000
Utility Grade Router

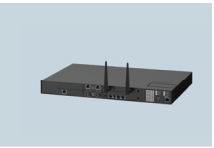
- Power over Ethernet (PoE) version available

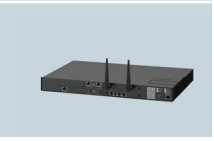
RUGGEDCOM RX1100
Utility Grade Router with Security Features

- Power over Ethernet (PoE) version available

Common Features

- Rugged Rated for reliability in harsh environments
- Integrated router/firewall/VPN
- WAN port: up to 8 ports (T1/E1, T3/D3, DSL, DDS)
- Ethernet ports: up to 4 10/100BaseTX or 100BaseFX
- Serial ports: up to 8 (RS485/RS422/RS232)
- GPS/IRIG-B/NTP/IEEE1588 time synchronization server
- -40°C to +85°C operating temperature (no fans)
- Power over Ethernet (PoE) versions available
- Integrated power supply (10-36VDC, 36-59VDC, 88-300VDC/85-264VAC) - optional redundant supplies





RUGGEDCOM RX1000 Line Modules
Cellular Module for RX1000 series

- Leased line alternative
- Availability without backhaul infrastructure cost
- GSM HSPA and CDMA EVDO support

Common Features

- Rugged Rated for reliability in harsh environments
- Integrated router/firewall/VPN
- Built-in GSM/EDGE/HSPA or CDMA/EVDO modem
- -40°C to +85°C operating temperature (no fans)
- High immunity to EMI: Meets or exceeds IEC 61850-3, IEEE 1613, NEMA TS-2 and more
- Integrated power supplies: low and high voltage ranges with true (N+1) redundancy option
- Various types and configuration of interface ports

MIL-STD Ethernet Family

COTS switch and router technology
that meets MIL-STD specifications.

RUGGEDCOM MX5000
MIL-STD Multi-Service Platform

- Layer 2 and layer 3 platform
- Supports up to 48 ports 100FX or 24 ports GigE

RUGGEDCOM MX5000RE
MIL-STD Multi-Service Platform with Enclosure

- MIL-STD switching/routing platform
- IP65 EMI/EMC/shock/vibration-rated packaging
- Replaceable enclosure

RUGGEDCOM M2100
MIL-STD 19 Port Modular Managed Ethernet Switch

- 3 1000BaseX (Gigabit) +16 10/100BaseX

RUGGEDCOM M2200
MIL-STD 9 Port Managed Gigabit Ethernet Switch

- 1000BaseX (Gigabit) and/or 10/100/1000BaseTX

RUGGEDCOM M969
MIL-STD and IP66/IP67 Rated 10 Port Managed Ethernet Switch with Fiber Uplinks

- 8 10/100BaseTX ports + 2-1000BaseX (Gigabit)
- IP66/67 rated

MIL-STD Rating

- MIL-STD 901D – shock (hard mounted)
- MIL-STD 167 – vibration
- MIL-STD 461 – EMI
- MIL-STD 1399 – DC magnetic field exposure
- MIL-STD 810 – temperature and humidity

Common Features

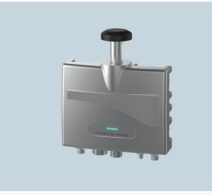
- Many different fiber port options available
- Long haul fiber support (90km for 100FX, 100km for 1000SX)
- High immunity to EMI and heavy electrical surges
- -40°C to +85°C operating temperature (no fans)
- Fully integrated power supply (no external adaptors)
- Universal high-voltage range: 88-300VDC or 85-264VAC
- Dual low-voltage DC inputs: 24VDC (10-36VDC) or 48VDC (36-59VDC)
- Mechanically retained electrical connectors
- Conformal coating for extra environmental protection

WiMAX 4G Broadband Private Radio

Optimized for multi service support.
Deployable in any environment.
Extends network boundaries through a standards based wireless solution.

RUGGEDCOM WIN7000
High Power Base Station

- Available in multiple frequencies (1.x, 2.x, 3.x GHz)
- High output power of 2 x 36dBm
- Single cable power and Ethernet, or fiber optic interface options



RUGGEDCOM WIN7200
Small Form Factor Base Station

- Available in multiple frequencies (2.x, 3.x, 3.65, 4.9, 5.8 GHz)
- Small form factor and low power consumption
- Power over Ethernet (PoE) single cable design

RUGGEDCOM WIN5100
Vehicular Subscriber Unit

- 2 antenna connectors for external or roof top antenna connection
- Powered directly through 10-30 VDC or PoE

RUGGEDCOM WIN5200
Outdoor Subscriber Unit

- High gain integrated antenna
- Power over Ethernet (PoE)
- RP100/110 compatible for 10-60 VDC or 85-265VAC, 88-300VDC

Common Features

- Rugged Rated for reliability in harsh environments
- Over the air IEC 61850 GOOSE messaging support
- Unique standalone architecture allows cost effective, incremental deployment
- Seamless mobility in standalone mode
- Excellent performance in NLOS conditions – overcoming multipath and deep fading
- Greater than 40 Mbps aggregate throughput
- Mobile-WiMAX compliance based on IEEE 802.16e standard and WiMAX Forum Wave2 (MIMO) certification
- Multiservice support including, voice, SCADA, mission critical control data, video and more
- Central management through RUGGEDCOM NMS

Wireless LAN Extension

Secure wireless extension of LAN to field devices.
Lower Mean Time To Repair.
Engineered for harsh environments.

RUGGEDCOM RS900W
Wireless Ethernet with Integrated 8 Port Switch

- 6 10/100BaseTX + optional 2 10/100BaseTX or 2 100BaseFX
- Can be configured as an access point, client or bridge device

RUGGEDCOM RS910W
Wireless Device Server with 2 Serial and/or 2 Ethernet Ports

- 2 serial and/or 2 Ethernet ports
- RS485/RS422/RS232 (DB9 or RJ45)
- Copper or fiber Ethernet ports

RUGGEDCOM RS920W
Wireless Serial Device Server with 2 Serial Ports and/or Ethernet over VDSL Interface

- 1 Ethernet over VDSL (EoVDSL) interface
- 2 serial ports RS485/RS422/RS232 (DB9 or RJ45)

RUGGEDCOM RS930W
Wireless Ethernet with Integrated 6 Port Switch and Ethernet over VDSL Interface

- 1 Ethernet over VDSL interface
- 6 10/100BaseTX Ethernet ports
- Can be configured as an access point, client or bridge device

Common Features

- Rugged Rated for reliability in harsh environments
- IEEE 802.11b/g compliant (up to 54 Mbps)
- WPA2/802.11i with CCMP for robust security and encryption
- WPA (Wi-Fi Protected Access) with TKIP (Temporal Key Integrity Protocol) for enhanced security and encryption
- IEEE 802.1X/RADIUS using EAP-PEAP for secure “enterprise class” authentication configuration
- Pre-shared Key Mode (PSK) for “personal” mode authentication configuration
- Central management through RUGGEDCOM NMS
- Many different fiber port options available
- High immunity to EMI and heavy electrical surges
- -40°C to +85°C operating temperature (no fans)
- Integrated power supply (10-36VDC, 36-59VDC, 88-300VDC/85-264VAC)

Software Solutions

Secure IED access management and NERC CIP compliance.
IED password and configuration management.
Substation automation and data integration.

A modern substation contains vast amounts of data, subsets of which are of interest to control center or enterprise applications and users. RUGGEDCOM software solutions have been developed to help the electric utility industry by providing secure access to this data, processing it into useful information and making it available in a usable format to a wide range of users and enterprise systems.

RUGGEDCOM CROSSBOW

An enterprise level solution for managing and securing remote maintenance access to field devices in compliance with the NERC CIP standards. Offers tremendous ease of use, and unique automation capabilities for change management applications.

Features:

- Secure remote IED access
- Authenticate users against IT systems
- Automate user login
- Manage device passwords and configurations
- Control, log, and report user access

RUGGEDCOM ELAN

RUGGEDCOM ELAN modular, Linux/ROX-based substation servers and front-end processors excel at accessing all types of IED data, and getting it to the clients that require it.

Features:

- Preserves investment in legacy devices and control center applications
- Supports both SCADA and non-SCADA hosts, such as data historians
- Real-time engine with support for most commonly used protocols
- Automated event file retrieval from major relay vendors
- Powerful automation processing capabilities

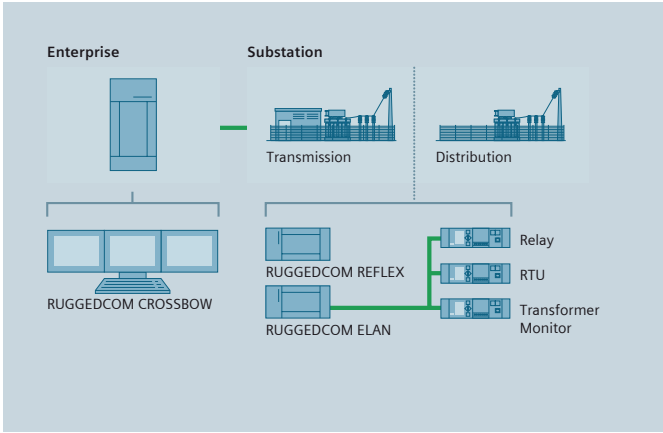
Web-launched HMI for substations and small SCADA.
Complete substation data visualization and analysis.
Support for Condition-Based Maintenance (CBM).

RUGGEDCOM REFLEX

RUGGEDCOM REXLEX is a monitoring and control application purpose built for distribution networks, allowing the creation of systems that cover the spectrum from single user HMI to mobile distribution management to enterprise level monitoring and control.

Features:

- Single line visualization
- Graphic trending of values
- Alarm summary and alerting
- Report generation
- Web-launched client
- Integrated data historian



Network Management and Configuration

RUGGEDCOM NMS

RUGGEDCOM NMS is a fully-featured enterprise grade network management software solution. Based on OpenNMS, RUGGEDCOM NMS provides a comprehensive, centralized, scalable platform for monitoring, configuring and maintaining mission-critical IP-based communications networks. It features a powerful web based UI which provides a clear, high-level view of network activities. A versatile auto discovery and polling subsystem simplifies configuration and management.

In addition, RUGGEDCOM NMS offers comprehensive reporting capabilities as well as the ability for users to create custom reports. ROS, ROX and ROXII based RUGGEDCOM products, as well as the RUGGEDCOM WIN product family, can be easily configured and managed with RUGGEDCOM NMS.

Features:

- Centralized management and monitoring of network and networked devices to achieve desired level of network availability performance and operational efficiency
- Greater network visibility to enable proactive corrective actions and improved capacity utilization
- Web based UI with graphical network view
- Configurable auto discovery and polling subsystem
- Flexible reporting options
- Event handling via polling and SNMP trap support
- Interfaces for equipment configuration via external applications such as Web Browser and TELNET
- Supports the use of SNMP v1, v2c and v3 (SNMP security)

RUGGEDCOM PING

RUGGEDCOM PING is a high speed graphical ping tool. This handy utility can send an ICMP echo request message every 1ms. Network administrators will be able to perform RSTP performance testing, ping sweeps, and monitor devices with RUGGEDCOM PING.

Features:

- Allows users to test the recovery time of their networks
- Provides up to 1ms accuracy on Ethernet switching equipment response times
- Gives detailed reports of network outages
- Discovers and probes the responsiveness of multiple devices simultaneously

RUGGEDCOM EXPLORER

RUGGEDCOM EXPLORER is a powerful tool to easily provision and configure new and existing ROS® based devices. RUGGEDCOM EXPLORER can run on any LAN based MS Windows PC, eliminating the need to connect a serial cable to any of the devices. Its built-in file transfer capabilities allow users to easily upload and download files and firmware from one convenient console.

Features:

- Fast, automatic discovery of ROS® devices
- Uses RSH to configure network parameters on non-provisioned or provisioned devices
- Intuitive GUI displays all ROS® devices and visually identifies duplicate IP addresses
- Automatically discovers new devices added to the network
- Manage and transfer files to ROS devices
- Visually identify devices by using RUGGEDCOM EXPLORER to flash the device's LED

RUGGEDCOM DIRECTOR

RUGGEDCOM DIRECTOR is a serial port re-direction application that is designed to extend the life and reach of applications written for serial communications. With RUGGEDCOM DIRECTOR, serial port communications are no longer limited by serial protocol cable length requirements or physical port counts that restrict the design and flexibility of networks and the ability to manage them.

Features:

- Redirect serial port traffic over the network extending the life and range of serial devices
- Eliminate physical port restriction with up to 128 virtual serial ports
- Intuitive Windows based GUI to get up and running quickly
- Monitor real-time status and log traffic for quick problem resolution
- Load and save configuration profiles for backup and migration
- Re-use existing applications without modification

Security information:

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit **http://www.siemens.com/industrialsecurity**.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit **http://support.automation.siemens.com**.

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