

Rugged & Programmable RTU Solutions



Modular RTU Controller: ioPAC 8000 Series

- Compliant with EN 50121-3-2, EN 50121-4 and essential sections of EN 50155
- Supports C/C++ programming languages
- 2-port Ethernet switch for daisy-chain topologies with by-pass function
- Modular I/O for versatility, flexibility, and scalability



Cellular RTU Controller: ioLogik W5300 Series

- Easily manage devices over dynamic/private IP cellular networks
- Active communication with patented Active OPC Server
- Front-end intelligence options: C, C++ or patented Click&Go™



Ethernet RTU Controller: ioLogik E2200 Series

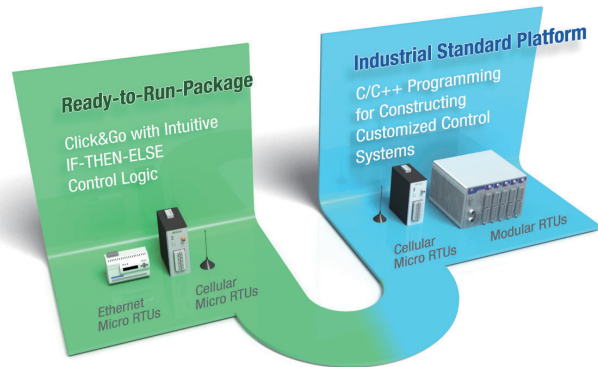
- Smart alarm management with e-mail, SNMP Trap, TCP, and UDP
- Save time and wiring costs with peer-to-peer communication
- Front-end intelligence with patented Click&Go™



▶ Moxa RTU Controller Solutions

Patented Click&Go™ or C/C++ Programming Capability

Moxa's programmable RTU controllers support the C/C++ programming languages or Moxa's patented Click&Go™ to aid in constructing customized control systems. Click&Go™ control logic bridges the gap between information technology and industrial automation, providing an intuitive IF-THEN-ELSE style of control logic that makes control and alarm configuration extremely simple. With the ability to select multiple conditions and actions already embedded in the product, users only need a few clicks and a couple of minutes to program simple I/O control tasks, configure message events, and coordinate alarms. Moxa RTU controllers also provide C/C++ programmable platform for those other applications that require more complicated control logic or computation. In either its ready-to-run or bundled open platform, the Moxa RTU controller has front-end intelligence for event response and alarm messaging.



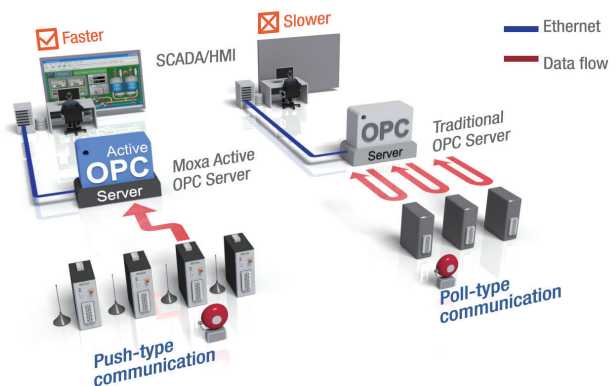
Active Alarming with Local Intelligence

With its embedded programming capabilities, Moxa's RTU controllers are able to execute local control logic to actively respond to unusual events with triggered, time-stamped exception messages through UDP, TCP, email, SMS or SNMP traps, whether for simple intrusion detection (as when triggered by input status) or for critical fast-moving vehicles, unmanned track-side signaling, and control cabinet applications.



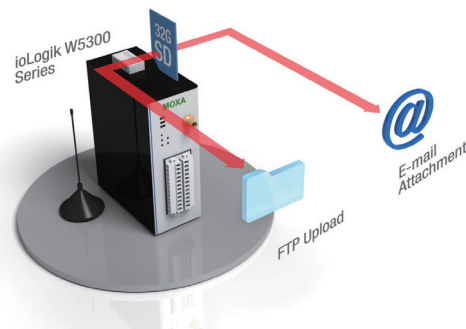
Faster, More Accurate Data Collection than Traditional "Pull Technology"

Moxa has pioneered the concept of "active type" OPC software in the automation industry. With the patented Active OPC Server™, Moxa's RTU controllers utilize a push-based network architecture. This adaptation of push technology means that I/O status will be updated at the Active OPC Server™ only when there is an I/O status change, a pre-configured interval is reached, or when a request is issued by a user. Using push technology in this way cuts metadata overhead, resulting in faster I/O response times and more accurate data collection than traditional pull-based architectures. With Moxa's "Active Server" advantage, users will instantly receive alarms and real time updates allowing for timely risk response.



Local Data logging

Moxa's RTU Controllers log I/O and serial device data to a single, expandable SD card slot that supports up to 32 GB of storage space and provide multiple methods to remotely retrieve data logs, whether through FTP, e-mail or Moxa's DA-Center™. The DA-Center™ provides a standard OPC interface that interacts with Active OPC Server™, so that when users want to retrieve logs associated with the RTU, DA-Center™ will automatically compare historical data stored on the SD cards in the individual device with locally stored datasets and then retrieve the missing data by requesting re-transmission from the RTU (Note: ioLogik W5300 series only).



Modular RTU Controllers for Railway Condition Monitoring Applications

Ruggedized Modular RTU Controller

- Anti-vibration, tough design
- -40 to 75°C operating temperature range



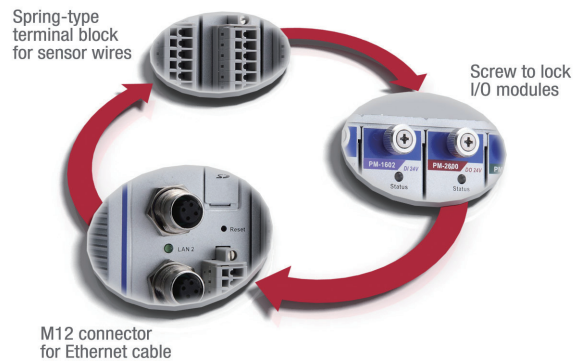
Modular I/O for Versatility, Flexibility and Scalability

ioPAC 8020 RTU controllers come with either 5 or 9 I/O expansion slots in a compact and rugged design. This line of devices offers a wide selection of analog, digital and communication modules for flexible configuration capabilities. ioPAC 8020 RTUs also come

equipped with dual power inputs, a 3-in-1 serial port, dual M12/RJ45 Ethernet connectors, and one SD card slot offering up to 32GB of storage for local programs and data logging.

Anti-Vibration Design

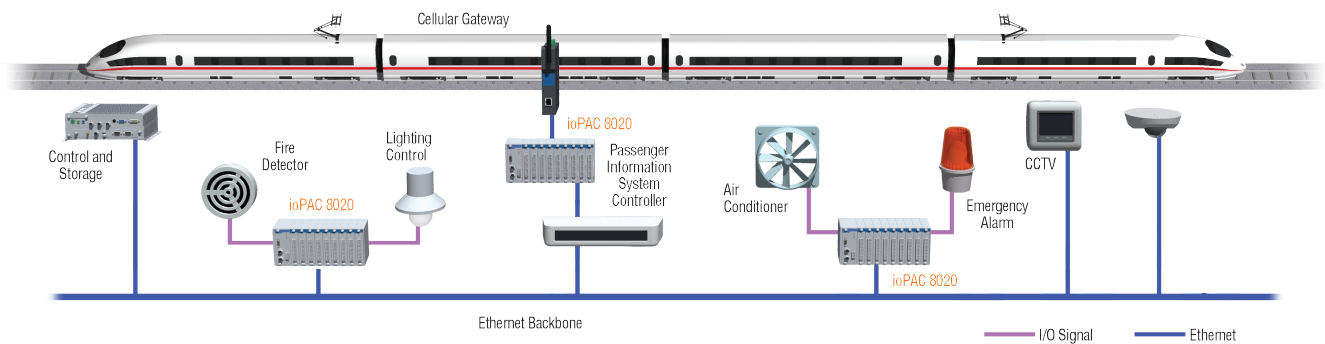
The DIN-Rail mount of the ioPAC 8020 RTU is specifically designed to withstand severe vibrations; features include aluminum chassis for vandal protection, spring-type terminal blocks for gas-tight and vibration resistant wire contacts, and optional M12 connectors to ensure a stable Ethernet connection.



Tailor-Made for Railway Condition Monitoring Applications

The ioPAC 8020 RTU is compliant with EN 50121-3-2, EN 50121-4 and undergoes strict environmental testing to ensure reliable performance under a variety of power supply conditions that include voltage variations, power interruptions, and supply changeovers. The

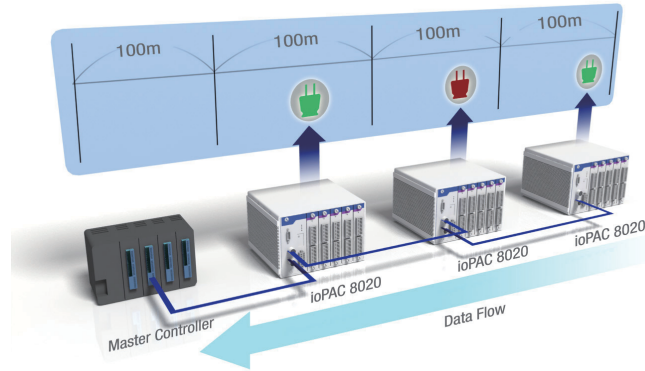
ioPAC 8020 RTU is also designed with anti-vibration features including spring-type terminal blocks for sensor wires and optional M12 connectors to ensure a stable Ethernet connection for uninterrupted data transmission.



Seamless data transmissions with Ethernet by-pass function

The ioPAC RTU controller provides an Ethernet switch with 2 ports to enable daisy-chaining of multiple ioPAC RTU controllers with minimal hassle via cascade wiring. Together with the power-off bypass

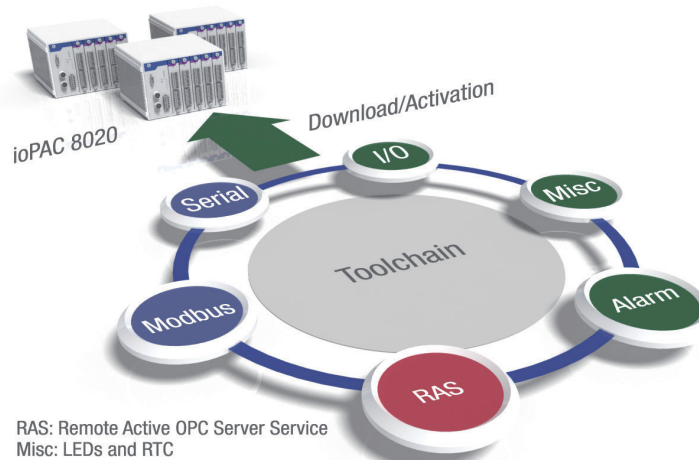
mechanism, ioPAC RTU controllers are able to maintain continuous and seamless data transmissions even when a linked device fails.



Innovative C/C++ Programming with timesaving I/O access and control

The ioPAC 8020-C comes designed with the flexibility needed to create and upload imaginative, user-defined programs from a Linux/GNU programming platform. The main advantage of its open C platform is the embedded development toolchain, that helps users economize installation and configuration time by reducing programming overhead for key areas like I/O control and alarming, interoperability

with SCADA/DB systems, and improving network communication controls. By using this open programming platform, users not only enjoy the benefits of flexibility but can also call upon Moxa's patented push technology through the RAS™ API to speed up SCADA communications.



3G Cellular RTU for Reliable and Cost Effective Remote Automation



All-in-one Programmable Controller

The ioLogik W5300 combines a cellular modem, a data logger, and an I/O controller in one compact box, to dramatically reduce the amount of effort required to integrate devices from multiple vendors. The cellular interface supports tri-band HSDPA/UMTS and quad-band GSM/GPRS/EDGE frequencies, offering a full spectrum of 3G mobile communication services. The cellular RTU provides I/O and serial device data logging with one expandable SD card slot that can support up to 32 GB of storage space. Multiple ways are available to remotely

retrieve data logs, such as FTP, e-mail or Moxa's DA-Center™. In addition, this cellular RTU is a programmable controller that supports Click&Go™ or C/C++ logic programming languages to construct customized control systems. The ioLogik W5300 is a rugged, wide-temperature RTU well suited for hard-to-wire remote monitoring and alarm applications such as the monitoring of unmanned sites like riversides and pipelines.

Automatic Data Updates from SD Cards Following Network Failures

When Active OPC Server™ and DA-Center™ are used together, upon network reconnection Moxa's ioLogik W5300 series of RTU controllers are able to transmit data logs collected offline. After each network connection, the DA-Center database gateway will compare historical

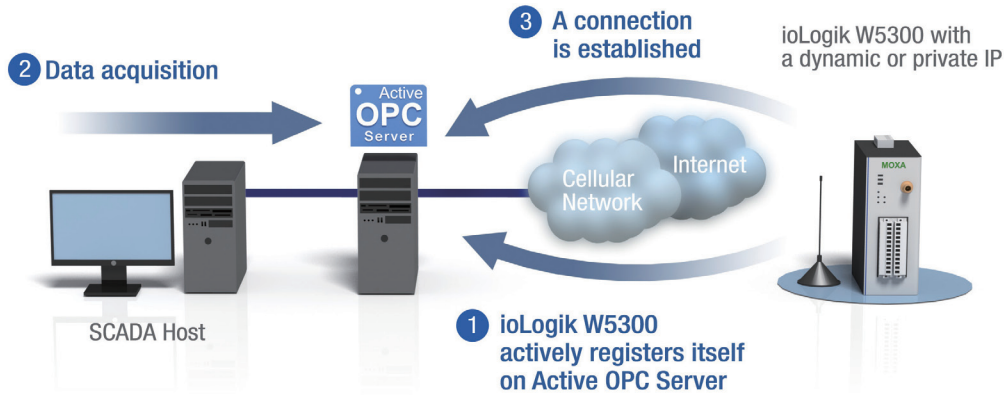
data stored on the ioLogik W5300's local SD card with its received, real-time data, and then supplement any missing data by requesting re-transmission from the RTU.



Dynamic IP Assignments

For most cellular solutions, each remote modem as well as the central SCADA server is assigned static public IP when establishing bi-directional communication. Yet cellular network carriers charge higher monthly fees for static, public IPs than dynamic, private ones. Moxa's ioLogik W5300 series and patented Active OPC Server allow

users to implement dynamic IP assignments for the RTUs. The ioLogik W5300 can automatically establish communications with the Active OPC Server using a fixed IP, and the Active OPC Server™ will receive and register the ioLogik W5300's IP address and receive or record tag updates accordingly.



Faster, More Accurate Serial Data Collection than Traditional “Pull Technology”

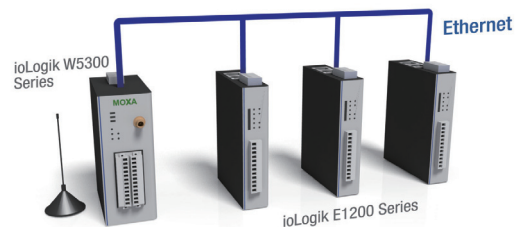
The ioLogik W5300 Series of RTU controllers are equipped with a 3-in-1 serial port that supports RS-232, RS-422 and RS-485, making it more convenient than ever (and saving users money) when connecting field serial devices. This cellular RTU can also create user-defined Modbus serial tags, to translate serial data from remote serial meters and flow sensors into OPC tags. Further, ioLogik W5300 Series can

also actively update tag data to Active OPC Server, resulting in faster I/O response times and more accurate data collection than in typical pull-based systems. Except for its active serial tag functions, the ioLogik W5300 line of cellular RTUs provides transparent serial tunnel and Modbus RTU communications for direct connectivity between field devices and central control systems.

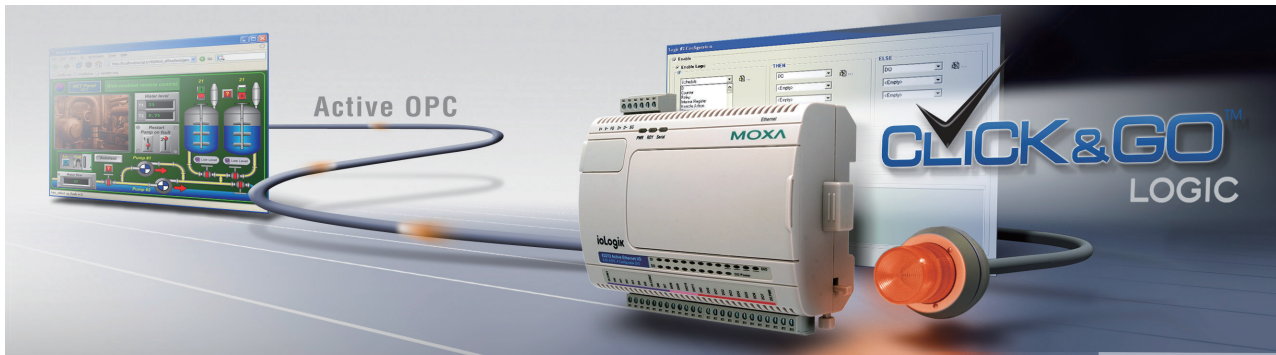


I/O Expandability

The ioLogik W5300 can integrate external wired clients via daisy-chained ioLogik E1200 I/O modules. ioLogik E1200 modules support simple daisy chaining and cost-free peer-to-peer I/O extensions. Through the RJ45 Ethernet port, the ioLogik W5300 can support up to three connected ioLogik E1200 series I/O modules to enforce a flexible and scalable network expansion that best fits customers' needs.



Intelligent Micro RTU for Remote Monitoring and Alarm Applications



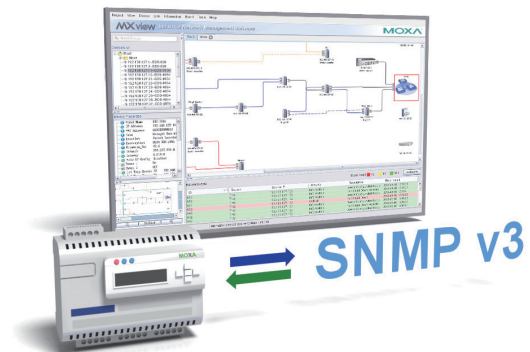
PC-free Alarm and Control Intelligence

The ioLogik E2200 Micro RTU supports simple and powerful Click&Go™ technology to deliver event-driven reports and allow alarm messages to be sent by email, TCP/UDP, and SNMP Trap with real-time stamps. With built-in Click&Go™ intelligence, the ioLogik E2200 micro RTU can be used for simple output control when it is triggered by input status, without the need for a PC controller. The ioLogik E2200 micro RTU reports I/O status automatically based on user-specified conditions. This report-by-exception approach requires far less bandwidth than the traditional polling approach.



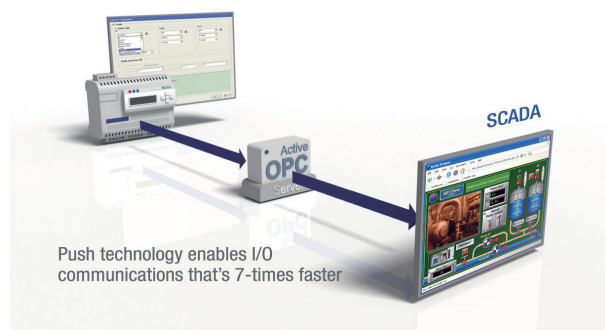
Use SNMP Protocol to Manage All Devices over Ethernet

In addition to Modbus/TCP, ioLogik E2200 RTUs support the widely used SNMP and CGI (Common Gateway Interface) protocols, giving IT engineers easy access to control and monitoring systems with familiar SNMP protocols and knowledge. The ioLogik E2200 micro RTU can send out SNMP trap alarms and also accept SNMP as a means of reading or writing to I/Os. To protect network communications, the ioLogik E2200 micro RTU also supports SNMP v3 for message authentication and encryption. With Moxa's SNMP-capable ioLogik RTU controllers, even IT customers can easily integrate any connected sensors and devices into an Ethernet backbone, and achieve proficient network management for many other applications, such as environmental monitoring, telecom, power, and transportation.



Push Technology for Events and Alarms

The ioLogik E2200 micro RTU supports the free, push-based Active OPC Server utility to build seamless connections with any SCADA system. Using active communications, Moxa Active OPC Server is extremely efficient at “pushing” event-triggered data from the ioLogik RTU to the SCADA system or IT database. In a test of network performance, Active OPC Server and Moxa's ioLogik RTUs demonstrated proven performance in delivering an I/O response that's 7 times faster and 80% of the normal bandwidth usage, compared to a traditional OPC server polling architecture.



Rapid Response Trackside Monitoring System

Application Introduction

Monitoring trackside assets is a critical factor in identifying technical risks in the infrastructure environment and can provide critical early indications of pending malfunctions from component failure or age before an incident actually occurs. This aids railway operators in reducing maintenance costs and achieving operational reliability with prioritized corrective maintenance. The question is, which modular design solutions collect real-time data in a way that effectively complements railway operators in their attempts to prepare for these failures?



Moxa's Solution

The ioPAC 8020-C is a compact, modular RTU controller with a wide selection of analog, digital and communication modules that is ideal for monitoring trackside assets. Its Linux-based C/C++ programming platform delivers maximum coding flexibility in ready-to-use toolchain APIs, making I/O access and control easier than ever. In addition, through its bundled SDK the ioPAC 8020-C can be easily integrated with Moxa's patented push technology to provide immediate SCADA speed improvements in event response times. Engineers now can

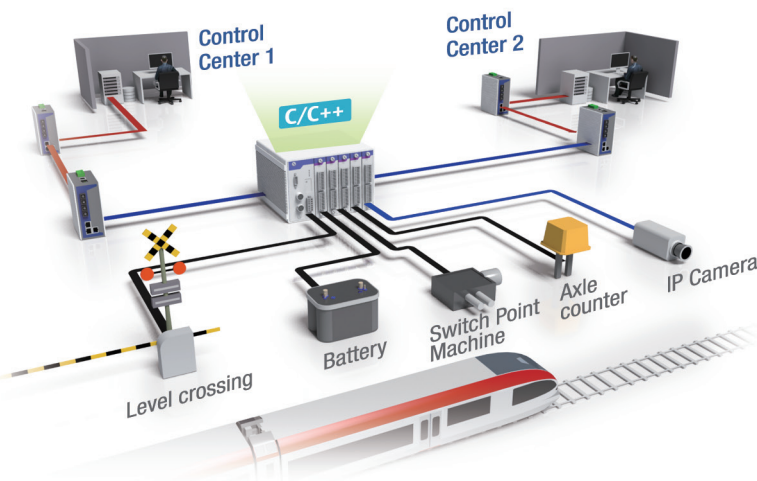
create imaginative, user-defined programs that integrate with localized domains, giving end-users considerable additional value.

This rugged platform is also compliant with EN 50121-3-2, EN 50121-4 and essential sections of EN 50155 railway standard covering operating temperature, power input voltage, surge, ESD and vibration. It also tolerates wide operating temperatures (-40 to 75°C) to withstand harsh trackside environments.

Key Product

ioPAC 8000 series modular RTU controller

- Compliant with EN 50121-3-2, EN 50121-4 and essential sections of EN 50155
- Supports C/C++ programming languages
- 2-port Ethernet switch for daisy-chain topologies, with by-pass function
- Modular I/O for versatility, flexibility and scalability



Business Benefits

- Versatile I/O modules for flexibility and reliability
- C/C++ programming platform with user-friendly SDKs reduce programming effort

Reliable Remote Pipeline Monitoring Systems over Cellular Networks

Application Introduction

Monitoring the pressure, flow and liquid leakages of pipelines used to transfer water, petroleum, and natural gas is a complicated task, because those pipelines are usually located in isolated areas where wired communication devices are not available. Consequently, these networks have come to rely on radio communications. Using radio communications is cost effective but a major disadvantage in terms of the limits on data transmission speeds. Are there other options for utility companies seeking a more reliable and efficient remote monitoring system?



Moxa's Solution

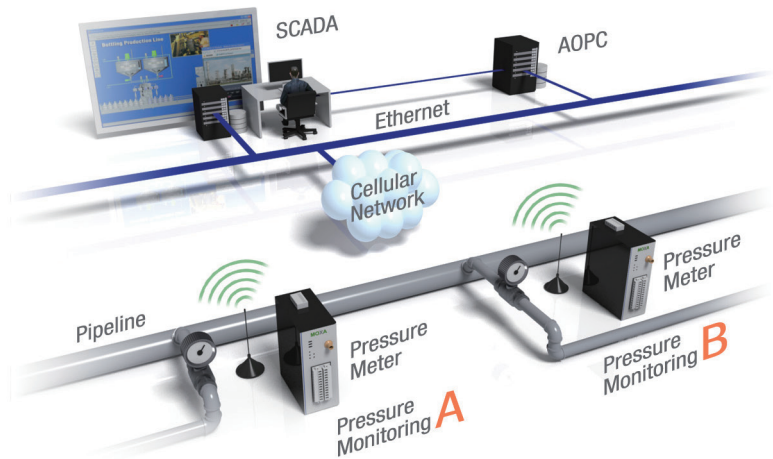
Moxa's ioLogik W5340 is a line of cellular RTUs designed specifically for remote pipeline monitoring systems. Compared with RF monitoring solutions, cellular networks offer a more cost efficient way to build remote monitoring systems. Traditional cellular products use polling to request data, which requires both a costly static and public IP; but when using the patented Active OPC Server, the ioLogik W5340 can actively update data to the SCADA system regardless of what kind of IP

address it uses. In addition, in comparison to polling systems, active reporting provides a way to increase data throughput when receiving real-time data from the remote location. In addition, the ioLogik W5300 series also supports local intelligence, so its control logic can be executed and stored in the front-end device for a truly PC-free solution.

Key Product

ioLogik W5300 series cellular RTU controller

- Easily manage devices over dynamic/private IP cellular networks
- Active communication with patented Active OPC Server™
- Front-end intelligence options: C/C++ or the patented Click&Go
- GPRS/3G wireless connectivity, with wide operating temperature models



Business Benefits

- Reduction of deployment time and cost with 3-in-1 design (cellular modem+ I/O controller + data logger)
- Reduction of communications costs by reducing the number of data packets

Easy Unmanned Base Station Monitoring with SNMP Alarm

Application Introduction

To provide reliable connectivity to their customers is important for the wireless communication industry to manage widely-spread base stations effectively. To maintain consistent, uninterrupted operations on cellular base stations and prevent station failures, station owners must monitor a number of key environmental and operational indicators and receive early warnings as unusual situations happen.



Moxa's Solution

The devices in our ioLogik E2200 series are ideal environmental monitoring devices that support the widely-used SNMP protocols, giving IT engineer's easy access to unfamiliar control and monitoring systems via familiar and easy-to-use SNMP protocols. The ioLogik E2200 series micro RTU can also accept SNMP as a means of reading or writing to I/O devices. To protect network communications, the ioLogik E2200 micro RTU also supports SNMP v3 for message authentication and encryption.

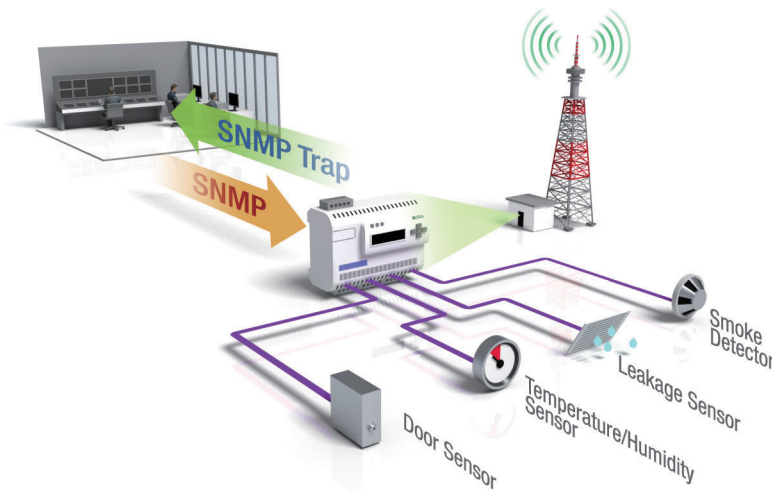
In addition, the ioLogik E2200 Micro RTU supports simple Click&Go™ IF-THEN-ELSE control logic, so easy it requires virtually no programming effort to set up event-driven reports. As with the rest of Moxa's RTU controllers, the ioLogik E2200 utilizes Moxa's patented push technology to send real-time, time-stamped alarms out by email, TCP/UDP, and SNMP Traps.

Key Product

ioLogik E2200 series Ethernet RTU controller

- Smart alarm management with e-mail, SNMP Trap, TCP, and UDP
- Save time and wiring costs with peer-to-peer communications

- Front-end intelligence with patented Click&Go



Business Benefits

- Save time and money by eliminating the need to program the transmission of SMS and email alarms
- Reduce equipment costs with mix Als and DI0s