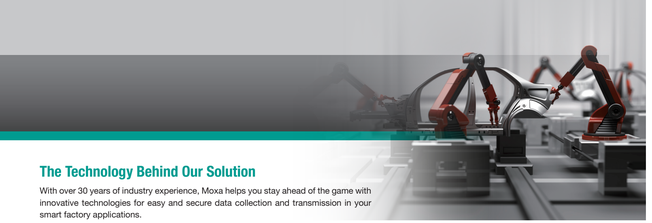

The Technology Behind Our Solution

With over 30 years of industry experience, Moxa helps you stay ahead of the game with innovative technologies for easy and secure data collection and transmission in your smart factory applications.

Efficient OT/IT Protocol Interoperability

Multi-Protocol Support: I/O Data Acquisition and Protocol Conversion

- Protocol Gateway: Conversion support for a wide portfolio of industrial protocols
- Ethernet I/O: All-in-one OT/IT protocol data-acquisition solution
- Easy-to-configure tool

ThingsPro: Intelligent Data-Acquisition Solution

- Easy data acquisition with Modbus APIs and MQTT
- Ethernet/serial-to-cellular 4G routing with keep-alive function
- RESTful APIs for easy access to and integration of data from an IIoT gateway

Seamless Connectivity Solutions

Turbo Roaming: Rapid Handover Times for WLAN Clients

- Millisecond-level roaming ensures no loss in wireless communication
- Smooth handover with WPA2 security level
- Deployment flexibility with multiple scanning roam channels

AeroMag: Error-Free WLAN Configuration for Machines

- Automatic configuration for fast and easy WLAN setup
- WLAN spectrum optimization for radio coverage in noisy spots
- Secure remote setup protocol to prevent system intrusion

Protection of Critical Devices and Secure Remote Access

IEC 62443-4-2 Compliance and Security View Enhanced Device Security

- Mitigation of cyberattack risks
- Defense-in-depth security architecture to ensure industrial control system integrity
- Easy-to-use security monitoring and configuration software

Secure Remote Connection: Cloud-Based Connection Management Platform

- Plug-and-play auto-configuration for non-IT users
- Native firewall-friendly centralized VPN connection management
- End-to-end encryption of data traffic with SHA-256 and AES-256

Overall Equipment Effectiveness (OEE)

MX-AOPC Suite: Active Data Acquisition and Automatic Data Integrity Check

MX-AOPC UA Server:

- Uplink: OPC UA/DA protocol
- Downlink: Modbus and Moxa propreitory AOPC protocol

MX-AOPC UA Logger:

- ODBC driver for local data storage
- Microsoft Azure Cloud SDK support

V-ON™: Network Optimization for Non-Stop Operations in PLC Systems

- Millisecond-level redundancy for unicast and multicast applications
- Minimized system downtime increases production utilization rate

Your Trusted Partner in Automation

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things. With over 30 years of industry experience, Moxa has connected more than 50 million devices worldwide and has a distribution and service network that reaches customers in more than 70 countries. Moxa delivers lasting business value by empowering industry with reliable networks and sincere service for industrial communications infrastructures.

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MOXA®
Reliable Networks ▲ Sincere Service

Smart Factory, Smart Connectivity

Getting your data from the field to the cloud

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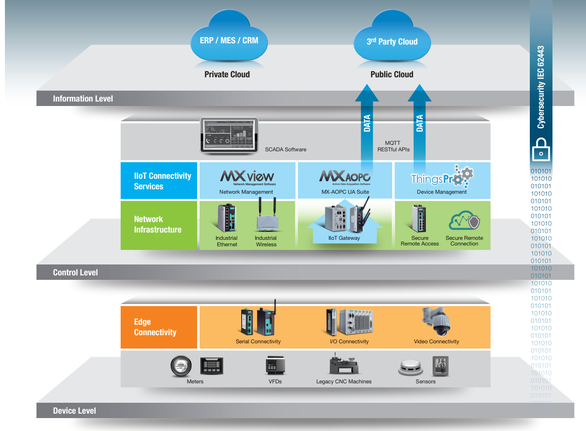
Smart Connectivity for a Smart Factory

To increase production efficiency and reduce system downtime, smart factories rely on Industry 4.0 technology for connecting sensors and other devices to collect and analyze data and control equipment. As data accuracy is the key to achieving the goals of a smart factory, a reliable and secure data connection and acquisition infrastructure is a prerequisite. A smart factory solution must cater to the following four requirements: (1) the ability to connect to all devices, including those that were not part of the traditional factory architecture, (2) protocol interoperability among different devices, (3) maximum protection against cyberattacks, and (4) an architecture that maximizes overall equipment effectiveness (OEE).

Moxa's smart factory solution is designed to provide you with an easy-to-implement architecture that can support the smooth flow of data from the device level to the information level in a factory to facilitate easy and secure collection and analysis of data.



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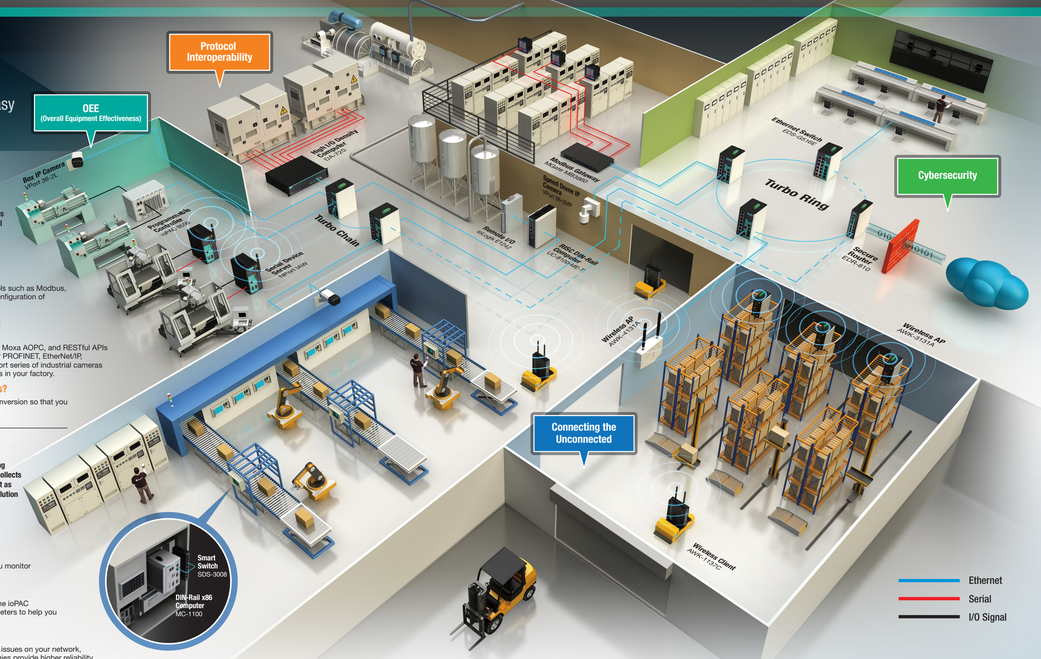
Keys to a Smart Factory

See how Moxa's device connectivity solutions make it easy to take your data from the field to the cloud



Protocol Interoperability

Hundreds or even thousands of devices may be deployed in a factory. **The challenge is to integrate all these devices that run different protocols, including those that use proprietary protocols, and connect them to the cloud. With Moxa's cross-platform solution, you can easily integrate devices with different protocols so that they can operate smoothly with the minimal cost and maintenance effort.**

How Moxa simplifies protocol conversions between industrial devices?

▶ The MGate series protocol gateways provide out-of-the-box conversion for a wide variety of protocols such as Modbus, Ethernet/IP, PROFIBUS, PROFINET, and DNP3 as well as an intuitive user interface to simplify the configuration of devices and system integration.

How to provide both OT (operational technology) and IT professionals with operations data and facilitate data analysis?

▶ The ioLogik E1200 series I/Os support multiple protocols including Modbus TCP, EtherNet/IP, SNMP, Moxa AOPC, and RESTful APIs in one device to ease your data-acquisition efforts. The EDS series switch with its built-in support for PROFINET, EtherNet/IP, Modbus TCP protocols facilitates the connections to easily gather network information while the VPort series of industrial cameras with their Modbus TCP and OPC support make it possible for you to instantly view the problem areas in your factory.

How to reduce the development time to collect operational data for cloud applications?

▶ The UC-8100 series of computers integrate RTU/TCP and MQTT protocols for effortless IIoT to IT conversion so that you can focus more on data management applications.

OEE (Overall Equipment Effectiveness)

OEE (Overall Equipment Effectiveness) is a tool for measuring manufacturing productivity. To measure the OEE, you will need an integrated system that collects and analyzes data on the availability and performance of factory equipment as well as the quality of the products. Moxa's complete device connectivity solution can ensure that all data can be easily collected, and transmitted, offering customers reliable measurement for evaluating and analyzing the OEE.

How to get real-time production data from machines?

▶ You can use Moxa's NPort IO and ioLogik 2500 to collect real-time production data that can help you monitor the entire process and avoid unexpected problems.

How to monitor the quality of your products?

▶ The high-speed analog input sampling (8-channel sampling rate bandwidth of 40 kHz) capability in the ioPAC programmable controller helps you monitor the vibration, motor current, and other production parameters to help you identify potential risks in product quality and machine operability.

How to build a reliable IP network and effectively manage it?

▶ The MXstudio all-in-one NMS toolbox helps you plan and monitor a network and easily troubleshoot issues on your network, either from the control center or on the go. In addition, Turbo Ring, Turbo Chain, and V-ON technologies provide higher reliability, flexibility, and help reduce network infrastructure costs.

Cybersecurity

As the scale of cyberattacks, especially on industrial networks, reach new highs, factories are compelled to take urgent cybersecurity measures to increase the protection of data and assets in their industrial networks. Hackers are finding new ways to compromise networks with the intention to cause damage to systems or stop production altogether. A comprehensive and reliable cybersecurity policy and intrusion-proof network design is a must in a smart factory. Moxa's tailor-made, secure industrial Ethernet switch and all-in-one firewall/VPN/NAT secure router/switch solutions provide multi-layer defense-in-depth protection for your entire network infrastructure.

How to enhance device- and system-wide security in a factory network while providing network convergence?

▶ The EDS-G500E series managed IEC 62443-4-2 level-2 compliant switches and EDR-810 series all-in-one industrial firewall/VPN/NAT secure router/switch make it easy for you to implement a plant network with defense-in-depth network security.

How to measure the security level and ensure that the factory networks are maintained at the highest security level?

▶ The Security View supported in the Moxa MXview NMS tool provides a complete view of the network security status at-a-glance.

How to establish and manage secure remote access of devices?

▶ Moxa's plug and play VPN cloud is a cloud-based connection service with mesh-type transparent connection, which is easy to install and deploy. It combines IT technology and industrial applications to facilitate easy and secure machine-to-machine connections over the Internet.

Connecting the Unconnected

As legacy field devices are most often not connected to the core network, system administrators need to visit the field site to maintain these devices manually, which makes system maintenance costly and difficult. Moxa's comprehensive solution that includes remote I/Os, industrial Ethernet switches and industrial wireless devices, ensures that all your devices with different communication needs can be connected and monitored.

How to monitor the status of non-serial legacy equipment?

▶ The ioLogik series I/Os enable legacy equipment to connect to the core network for real-time data acquisition by providing various communication interfaces such as RS-485, Ethernet, Wi-Fi, and cellular as well as different types of I/O inputs such as DI, DO, AI, AO, RTD, and TC.

How to avoid wireless communication downtime in mobile equipment and moving parts?

▶ Long handover times between access points and obstacles in the wireless transmission path are the two main reasons for interruption in wireless communication. Moxa's Turbo Roaming technology, enabled with MIMO antennas, shortens the handover time to milliseconds thereby providing uninterrupted connections in a variety of indoor and outdoor scenarios.

How to optimize wireless performance on the factory floor?

▶ AeroMag technology makes wireless configuration easy, secure, and error free. It automatically selects the best available channels to optimize wireless performance.

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Product Highlights

NPort IA5x50A-8I/O Series
Serial Device Server
- Link any serial or Ethernet device to an IEEE 802.11a/b/g/n network
- Device server with I/Os in a compact design for space-limited applications
- 4 kV serial surge protection to protect against the high risk of surges on factory floors

MGate MB3660 Series
Industrial Modbus Gateway
- 8 and 16-port Modbus serial to Modbus TCP gateway
- 2 Ethernet ports with the same IP or dual IP addresses
- Supports agent mode with active polling capability

ioPAC 8500 Series
Programmable Controller
- Millisecond timestamp granularity for digital input and analog input
- Supports an 8-channel sampling rate bandwidth of 40 kHz for analog inputs
- 6-second data buffering for analog inputs at 5 kHz sampling rate

ioLogik E1242
Remote I/O
- Supports multiple protocols, including Modbus, EtherNet/IP, SNMP, RESTful APIs
- 2-port Ethernet switch for daisy-chain topologies
- Active communication with the MX-AOPC UA Server

EDS-G516E Series
Industrial Ethernet Switch
- Up to 12 10/100/1000BaseT(X) ports and 4 100/1000BaseSFP ports
- Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches) for network redundancy
- IEC 62443-4-2 compliant for network security
- V-ON technology for system-wide optimization

EDR-810 Series
Industrial Secure Router
- 8+2G-port SFP all-in-one industrial firewall/VPN/NAT secure router/switch
- Transparent firewall for bump-in-the-wire protection and integration
- Deep packet inspection for controlling the behavior of industrial protocols

SDS-3008 Series
Industrial Smart Ethernet Switch
- 1-click enabling of profile-based industrial protocols such as PROFINET/EtherNet/IP/Modbus TCP
- Easy device installation and maintenance for automation engineers
- Intuitive Web GUI design to minimize configuration and management effort

AWK-3131A / AWK-4131A Series
Industrial Wireless AP
- Supports 802.11n with up to 300 Mbps data rate
- Supports AeroMag for easy and error-free wireless deployment
- The AWK-4131A has a rugged IP68 rating, well suited for outdoor use

AWK-1137C
Industrial Wireless Client
- Connects both serial and Ethernet devices to the WLAN network
- Supports Turbo Roaming with <150 ms handover time
- Supports AeroMag for easy and error-free wireless deployment

DA-720 Series
High I/O Density Rackmount Computer
- Intel® 6th Gen Core™ i7/i5 CPU
- Supports up to 14 Gigabit Ethernet + 18 serial ports
- Supports 110 to 240 VDC and 100 to 240 VAC power inputs
- Proactive Monitoring tool for computer predictive maintenance

MC-1100 Series
Front-End x86 DIN-Rail Automation Computer
- Intel Atom E3845 Quad-core 1.91 GHz processor
- Multiple I/O interfaces (LAN, USB, Serial, DIO, VGA, DP, and Wireless)
- Smart Recovery and Proactive Monitoring tools for easy maintenance

UC-8100-ME-T Series
Compact RISC Communication Platform
- ARM® Cortex™-A8 1 GHz processor
- Dual auto-sensing 10/100 Mbps Ethernet ports
- Fanless design with –40°C to 70°C operating temperature range

VPort 36-2L Series
1080P Industrial Box IP Camera
- 1080P (1920x1080) @ 60 frames/second for smooth video streams
- 3 to 23 mm varifocal lens for different image-focus applications
- ONVIF and Modbus/TCP supported

VPort 66-2MP Series
1080P Industrial PTZ Speed Dome IP Camera
- 1080P (1920x1080) @ 60 frames/second for smooth video streams
- 360° endless pan, -6° to 96° tilt, and 4.3 to 129 mm zoom capability
- Designed for harsh and corrosive environments with NEMA Type 4X, ASTM B117