

Rugged Onboard Connectivity for Seamless Mobility



Product Showcase



EDS-2005-EL Series Industrial Unmanaged Ethernet Switches

- Compact size for easy installation
- Robust design with high EMC

In automated warehouses, AGVs rely on seamless embedded network connections to coordinate navigation and control systems. However, constant motion and vibration can affect performance or sometimes even lead to intermittent failures. Limited onboard space combined with demanding operational conditions create a challenging environment where connectivity loss can lead to costly operational interruptions.

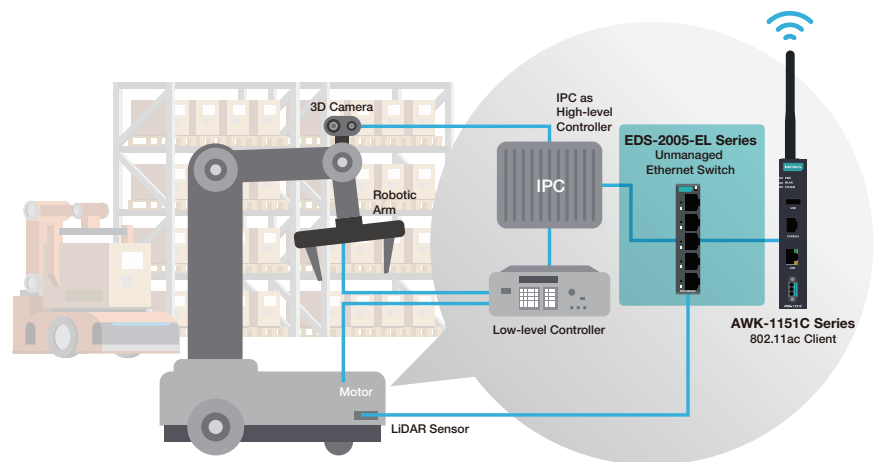
Moxa offers resilient solutions built to withstand the harsh conditions of AGV operations in a compact form factor that fits in tight onboard cabinets. By ensuring a seamless flow of data between controllers and devices, our solutions can help AGV builders optimize their mobile operations with robust connectivity.

System Requirements

- Space-efficient hardware that fits in space-constrained onboard AGV cabinets
- High vibration and shock resistance to provide stable connectivity while in constant motion
- Robust, reliable network connectivity for maximum uptime

Moxa's Solution

- **Compact Flexibility:** The EDS-2005-EL Series' small design fits easily into confined spaces, simplifying installation and future scalability.
- **Superior Reliability:** The rugged metal build with high EMC and outstanding MTBF make the EDS-2005-EL Series ideal for harsh environments.



Enhancing Switchgear Resilience with Space-saving and Secure Digitization



Product Showcase



EDS-2010-ML Series

Industrial Unmanaged Ethernet Switches

- Compact and easy to use
- QoS to prioritize critical data during heavy network traffic
- Relay output warning for power failure and port break alarm



MGate MB3170-G2/MB3270-G2/MB3470-G2 Series

Modbus TCP Gateways

- Compliance with IEC 62443-4-2 Security Level 2 requirements
- Supports high-performance and low-latency agent mode to poll Modbus devices and cache data
- Supports Auto Device Routing for easy configuration



ioLogik E1200 Series

Ethernet Remote I/Os

- Slim 27.8 mm DIN-rail design for vertical installation in tight spaces
- 2-port Ethernet switch for daisy-chain topologies

For power equipment builders, stable output and low-latency data are top priorities. Building a robust network with real-time diagnostics is essential for enhancing overall system resilience and preventing costly downtime. Achieving this requires digitizing breaker contacts in space-constrained cabinets for remote monitoring. However, this digital shift also exposes equipment to security risks, prompting the need for robust cybersecurity to prevent unauthorized access and data tampering.

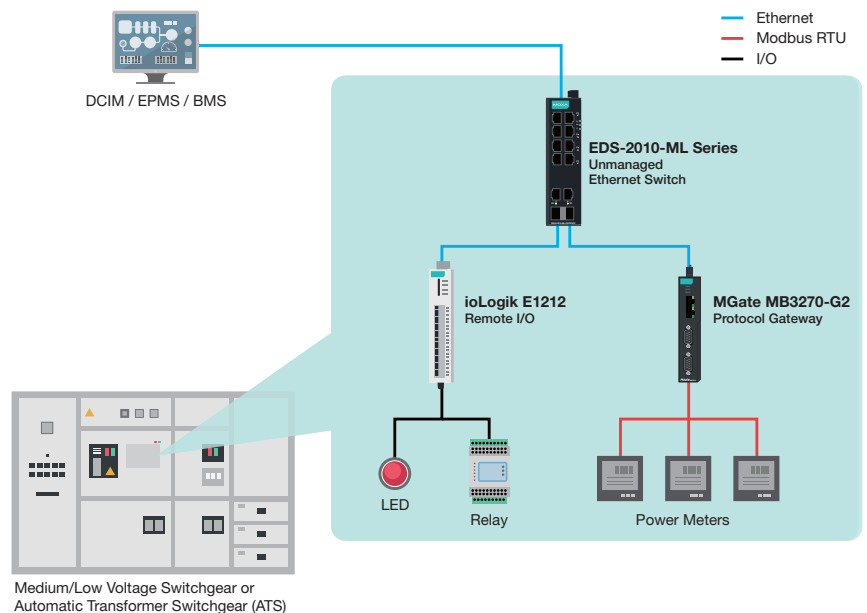
Moxa's solutions help bridge the IT/OT gap by converting Modbus RTU to TCP with SNMPv3 support, streamlining the integration of legacy serial components. Meanwhile, encrypted data transmissions with TLS 1.2 and isolated management traffic ensure complete data integrity. By combining space-efficient hardware with advanced protocol conversion, our solutions simplify the creation of a secure network backbone for modern power infrastructure.

System Requirements

- Digitize breaker contacts in tight cabinets to enable remote diagnostics, monitor blind spots, and prevent unexpected trips
- Reliable field data aggregation with real-time alerts for link failures
- RTU-to-TCP conversion with SNMPv3 support and cybersecurity measures to protect sensitive data and isolate management traffic

Moxa's Solution

- **Space-efficient Design:** The ioLogik E1212 features an ultra-slim 27.8 mm design to digitize breaker status while optimizing cabinet space.
- **Plug-and-play Connectivity:** The EDS-2010-ML Series streamlines field data consolidation and supports relay alarms for instant link issue alerts.
- **Power Data Security:** The MGate MB3270-G2 handles protocol conversion with SNMPv3 support and TLS v1.2 encryption to secure critical power control data.



Optimizing Packaging Networks for High-OEE Operations



Product Showcase



EDS-4008 Series Industrial Managed Ethernet Switches

- IEC 62443-4-2 Security Level 2 certified
- Compact and flexible housing design to fit into confined spaces



ioLogik E1200 Series Ethernet Remote I/Os

- 2-port Ethernet switch for daisy-chain topologies
- Acts as an EtherNet/IP Adapter



EDR-8010 Series Secure Routers

- 8 FE + 2 1GbE-port all-in-one firewall/NAT/VPN/router/switch
- Next-generation industrial firewall with Intrusion Prevention/Detection System (IPS/IDS)



MGate 5135/5435 Series Modbus RTU/ASCII/TCP-to-EtherNet/IP Gateways

- Protocol conversion between Modbus and EtherNet/IP
- Embedded traffic monitoring and diagnostics for easy troubleshooting

In the Industry 4.0 era, maximizing overall equipment efficiency (OEE) and accelerating time-to-market are the cornerstones of smart food packaging. However, the complexity of integrating diverse machinery and harsh operating conditions on the factory floor can complicate these goals. Technical bottlenecks such as protocol silos between packaging sections can delay deployment times while EMI from motors can lead to invisible disruptions that may compromise data integrity. If not addressed, these complications can lead to costly downtime and longer machine development cycles.

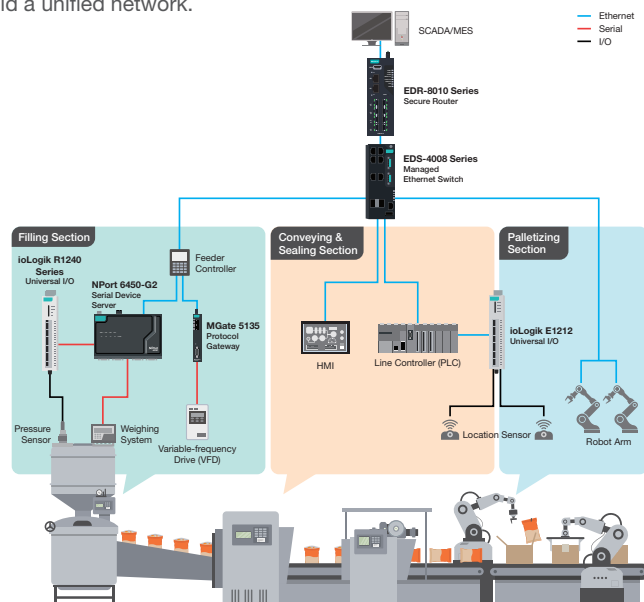
A reliable industrial network is the key to addressing these challenges. Moxa provides the tools necessary to build integrated infrastructure that combines robust switching, secure routing, and protocol translation. By ensuring seamless interoperability from filling to palletizing while shielding critical data from interference, Moxa's solutions help builders speed up product readiness and streamline deployment.

System Requirements

- Minimize network latency and motor-induced EMI to maximize OEE
- Robust network security to protect vulnerable OT assets
- Unify multiple protocols such as serial, Modbus, and EtherNet/IP, to reduce engineering overhead

Moxa's Solution

- **Hardened Efficiency:** The EDS-4008 Series, ioLogik R1240, and ioLogik E1212 ensure reliable data flow and precise sensor synchronization, even in high-EMI environments.
- **Integrated Security:** The EDR-8010 Series provides secure access to external services for private OT/IT assets while enforcing strict traffic segmentation, source validation, and least-privilege communication to protect against cyberthreats.
- **Seamless Interoperability:** The MGate 5135 converts Modbus to EtherNet/IP while the NPort 6450-G2 integrates legacy serial devices into Ethernet infrastructure to build a unified network.



Reinforcing Press Brake Machines for High-vibration Environments



Product Showcase



EJS-08 Series EtherCAT Junctions

- Meets the EN 61000-6-2 and EN 61000-6-4 standards for industrial EMC applications
- Compact size for easy installation
- Supports topology conversion for more flexible EtherCAT networks



MGate 5216 Series Modbus-to-EtherCAT Gateways

- Converts proprietary serial and Modbus protocol data to EtherCAT
- Serial port with 2 kV isolation protection
- Built-in Ethernet cascading for easy wiring



NPort IA5000-G2 Series Serial Device Servers

- Fast 30-second classic Real COM mode configuration with new DSU v3.0 provisioning software tool
- In-house Moxa driver with multi-OS support for seamlessly connecting serial data to applications
- Two Ethernet ports for Ethernet cascading and dual subnet deployments

Material bending is a demanding process that requires absolute control accuracy for precise ram positioning and multi-axis synchronization. To achieve this level of precision and bending consistency, press brake systems require a high-speed backbone capable of microsecond-level synchronization. However, these machines typically operate in confined spaces with extreme EMI and vibration. Additionally, the need to integrate serial fieldbus peripherals for monitoring creates fragmented network, complicating the link between control and manufacturing systems.

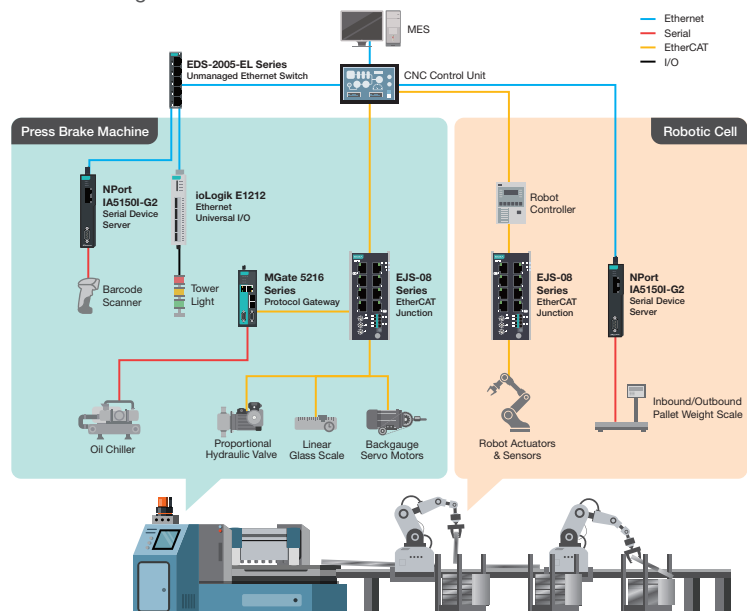
Moxa's industrial-grade EMI-resistant infrastructure solutions are designed for reliable connectivity in high-stress environments. Our solutions facilitate microsecond-level precision through a deterministic EtherCAT backbone while seamlessly incorporating serial devices into a consolidated network.

System Requirements

- Stable operation in confined spaces with very strong hydraulic vibration and EMI
- Microsecond-level synchronization between various sensors via a low-latency control backbone
- Integration of serial peripherals into the press brake system to facilitate recipe management and factory-wide monitoring

Moxa's Solution

- **Compact & Rugged Edge Connectivity:** Moxa offers a broad portfolio of compact, high-EMC edge solutions for field layer signal monitoring and Ethernet expansion.
- **EtherCAT-ready Precision:** The EJS-08 Series connects EtherCAT components while the MGate 5216 Series integrates Modbus devices into EtherCAT networks, ensuring synchronized data for precise hydraulic control.
- **Seamless Serial Integration:** The NPort IA5150I-G2 combines 2 kV EMI protection with Moxa driver technology to connect serial data to CNC control units without the need for coding.



Building the Digital Nervous System for DNA Sequencing Systems



Product Showcase



EDS-G4012 Series Industrial Managed Ethernet Switches

- IEC 62443-4-2 Security Level 2 certified
- Fiber SFP slots with speeds up to 2.5 Gbps for high-bandwidth applications
- Compact housing and rotatable power module for flexible installation in confined spaces



NPort 5600 Series Serial Device Servers

- Integrate multiple serial devices into IP networks with 16 high-density ports
- Standard 19-inch rackmount size
- Easy IP address configuration via panel buttons and LCD display (standard temperature models only)



ioThinX 4510 Series Modular Remote I/Os

- Easy tool-free installation and removal
- Supports up to 32 I/O modules
- Intuitive web interface and easy reconfiguration

In the era of precision medicine, DNA sequencing has become the cornerstone of genomic research. A single test can last several days, involving the simultaneous processing of massive image streams and the precise coordination of different pumps, valves, and sensors to manage temperature, pressure, and leak detection. Because these processes use high-value reagents, the cost of failure is immense. Even the slightest signal instability can lead to catastrophic library loss or data corruption. This high-stakes environment requires a resilient network for seamless communication and absolute reliability.

Moxa offers integrated infrastructure solutions to build a “digital nervous system”, combining a high-bandwidth Ethernet backbone, stable serial connectivity, and flexible I/O acquisition. This resilient framework helps ensure data reliability and allows builders to quickly adapt to sequencer design requirements.

System Requirements

- High-bandwidth communication for handling massive data streams to ensure the integrity of base calling while protecting genomic data privacy
- High-density connectivity to integrate multiple serial peripherals, including syringe pumps and valves, into a unified Ethernet network
- Modular I/O configurations to enable swift implementation of different sequencer models

Moxa's Solution

- **Reliable and Secure Switching:** The IEC 62443-4-2 Security Layer 2 certified EDS-G4012 Series delivers stable, secure image data processing and high EMC for uninterrupted data flow.
- **High-density Serial Connectivity:** The NPort 5650-16 consolidates multiple serial devices into a single link, providing centralized data access and simplified cable management.
- **Compact Design & Easy Installation:** The ioThinX 4510 Series features tool-free, push-in wiring and slide-in modules that reduce cabinet footprint and manual wiring errors, streamlining equipment mass production.

