

Smart Ships, Secure Seas

Charting a Course for Cyber-resilience



Maritime Innovation Unleashed

Data, Safety, and Cyber-resilience

Embark on a transformative journey through the realm of maritime innovation, where cutting-edge advancements reshape cargo tracking and operational efficiency. Amidst the pursuit of safety at sea, the maritime industry faces evolving challenges, from enhancing fuel efficiency to addressing port overcapacity and the impacts of delays. However, as digital transformation accelerates, cybersecurity emerges as a critical concern.

In this era of maritime innovation, data reigns supreme, driving initiatives to enhance safety, streamline operations, and boost productivity. Yet, with the increasing interconnectedness of smart ships, cybersecurity has become imperative for safeguarding vessels against evolving threats. As regulatory bodies enforce standards like IMO Resolution MSC.428(98) and IACS Unified Requirements (URs) E26 and E27, the industry is shifting its focus towards maritime cyber-risk management and secure integration of technology.

Furthermore, in line with the maritime trends of 2024, the industry is embracing decarbonization efforts by integrating data-driven solutions. The adoption of carbon capture systems and on-board energy storage solutions marks a significant step towards sustainability, reducing emissions and environmental impact while optimizing operational efficiency.

SMART SHIPS, SECURE SEAS

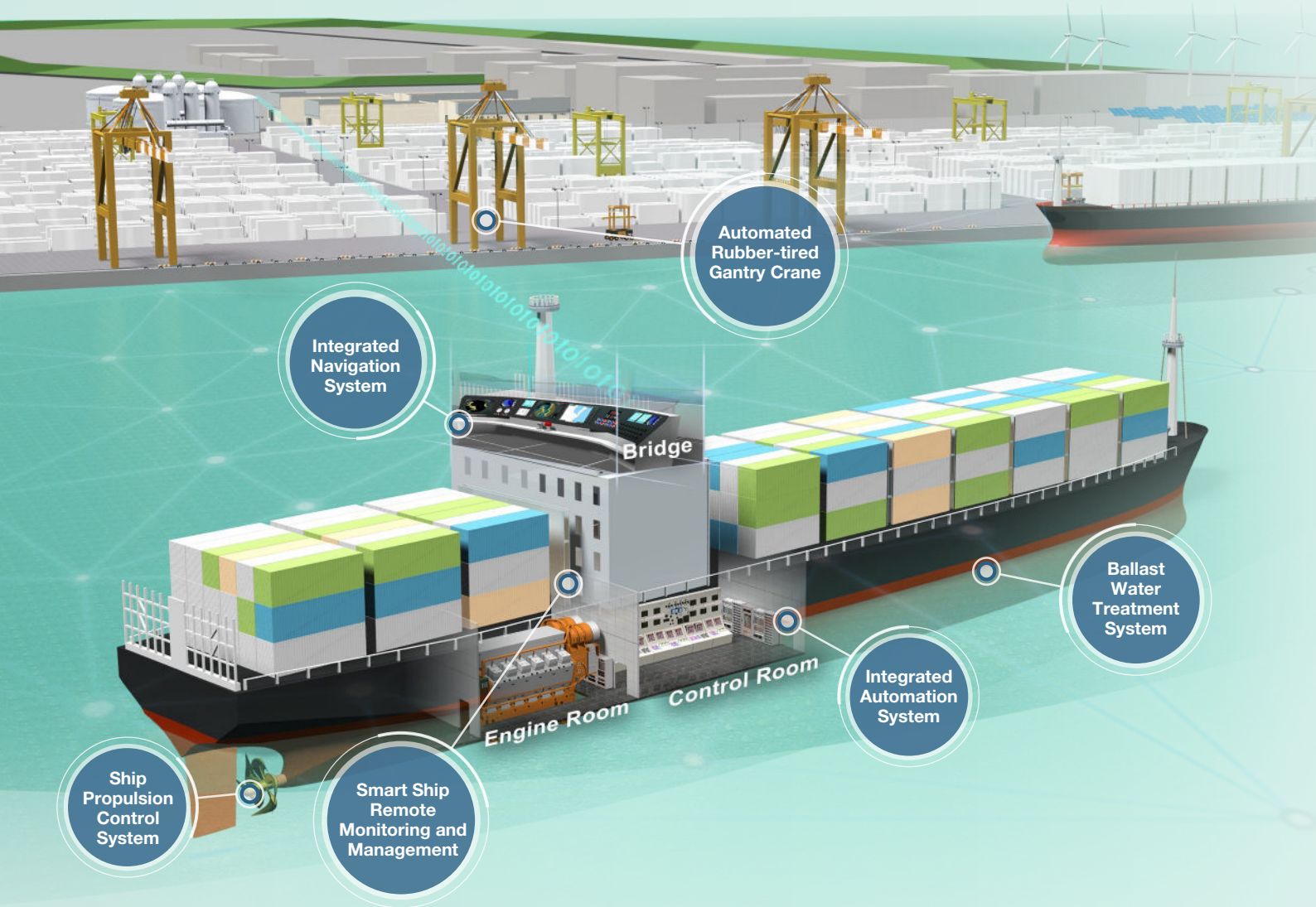


Seamless Navigation

Harnessing Data for Maritime Efficiency

The significance of data is unmistakable in advancing route planning, collision prevention, and creating intelligent vessels. Furthermore, it plays a pivotal role in monitoring and managing energy and fuel emissions efficiently. The necessity of automated ports is underscored by their ability to reduce waiting times, improve reliability and speed in vessel-to-port communication, and automate critical operations like piloting, tug, and berthing. Equally critical is data collection, processing, and analytics; these form the bedrock for performance optimization, predictive maintenance, and anomaly detection. Data-driven innovations permeate every facet of maritime operations, enhancing safety measures, optimizing performance, and ensuring seamless vessel-to-port interactions.





Maritime Compliance and Cybersecurity Navigation

As the maritime industry embraces smart ships, data is emerging as the cornerstone of compliance and cybersecurity. Moxa is leading the charge with state-of-the-art, regulation-compliant solutions. Our portfolio includes models compliant with IEC 62443 and E27, and are designed to meet the needs of applications from data collection to seamless processing. This holistic approach ensures real-time data integrity, cybersecurity, and adherence to regulations. In the digital age of maritime evolution—where IT and OT converge—compliance and cybersecurity are non-negotiable. Moxa remains at the helm, steering the industry towards a secure, compliant, and efficient future.



Seamless Maritime Data Management

- End-to-end solutions for onboard and onshore processes
- Secure data transfer to the cloud for analysis
- Robust data infrastructure ensures secure collection and storage



Comprehensive Cyber-resilience

- Real-time network connection for vessels ensures compliance
- Moxa's IEC 62443 solutions fortify cyber-resilience

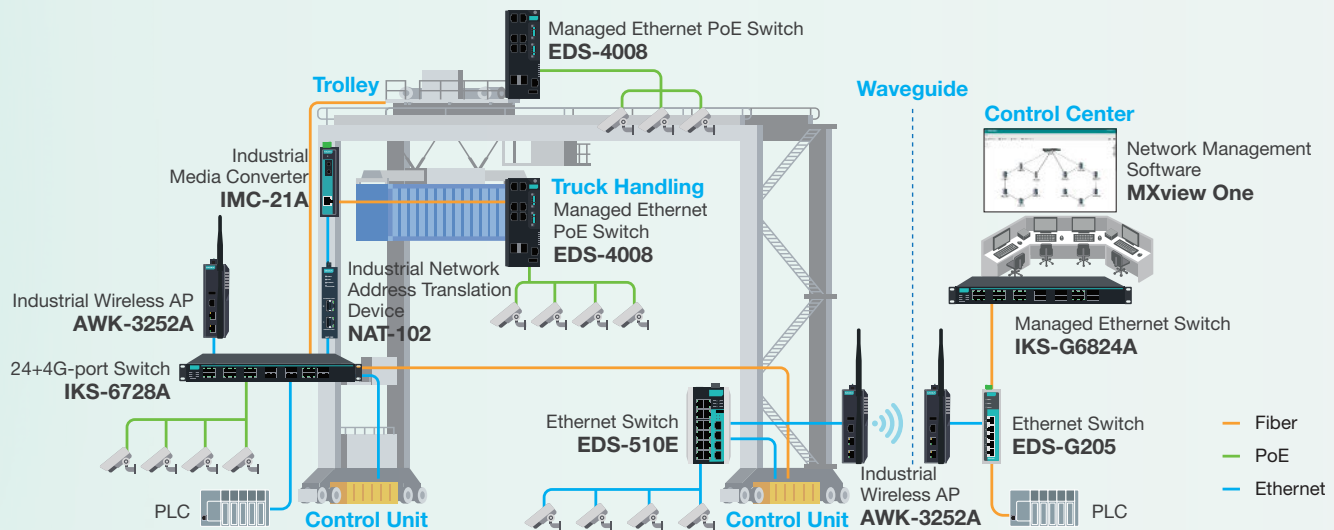


Integrated OT Network Solutions

- Moxa's integrated OT network meets E27 requirements
- Process visualization enables cloud-based data analysis
- Secure infrastructure ensures safe data collection, storage, and processing

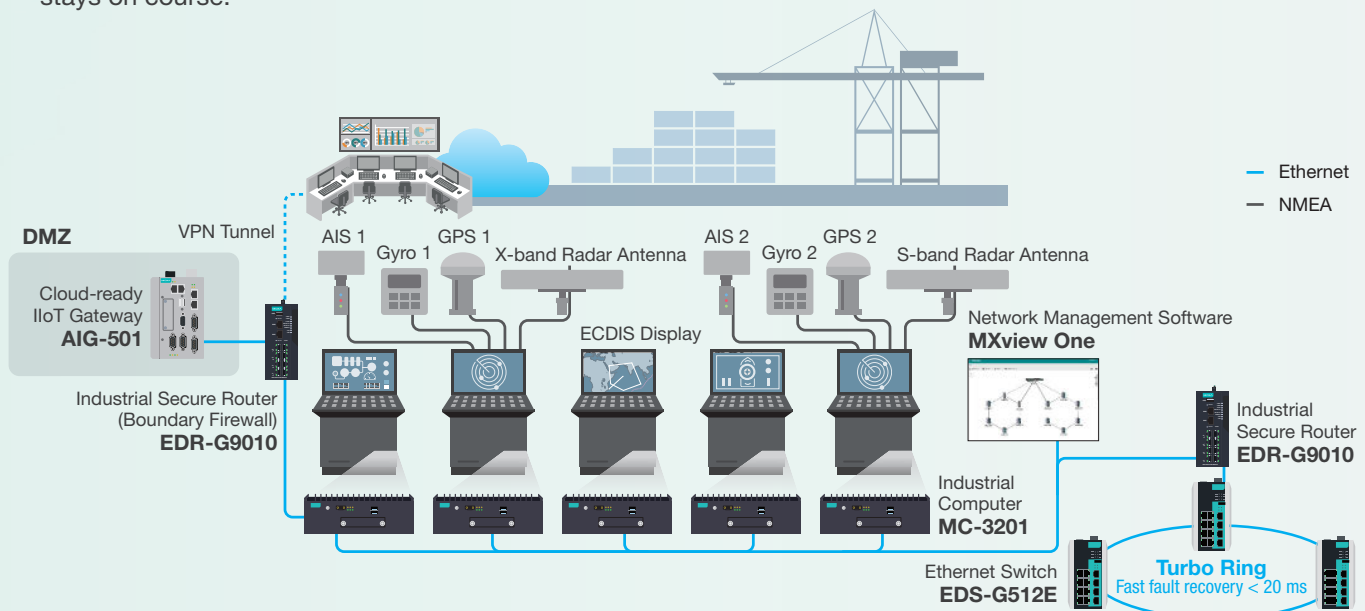
Automated Rubber-tired Gantry Crane (ARTG)

Around 2013, the pioneering ARTG system revolutionized port container handling through automation. Enhanced efficiency, safety, and environmental sustainability are its hallmarks. Moxa's switch solutions ensure seamless networking for easy upgrades and centralized management tools, optimizing efficiency and reducing downtime.



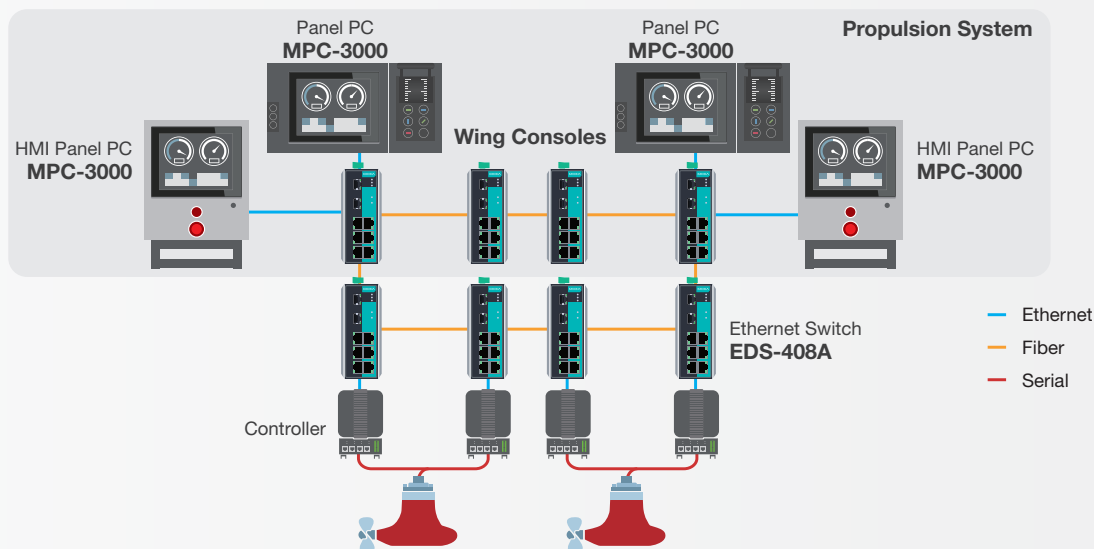
Integrated Navigation System (INS)

Moxa's marine solutions ensure reliability so you can achieve MSC.252(83) compliance with a redundant INS. Our serial device servers help reduce setup costs, and our compact MC-3201 computers are ideal for limited-space environments. Our EDS-G512E switches use Turbo Ring and Turbo Chain to achieve high availability so your vessel stays on course.



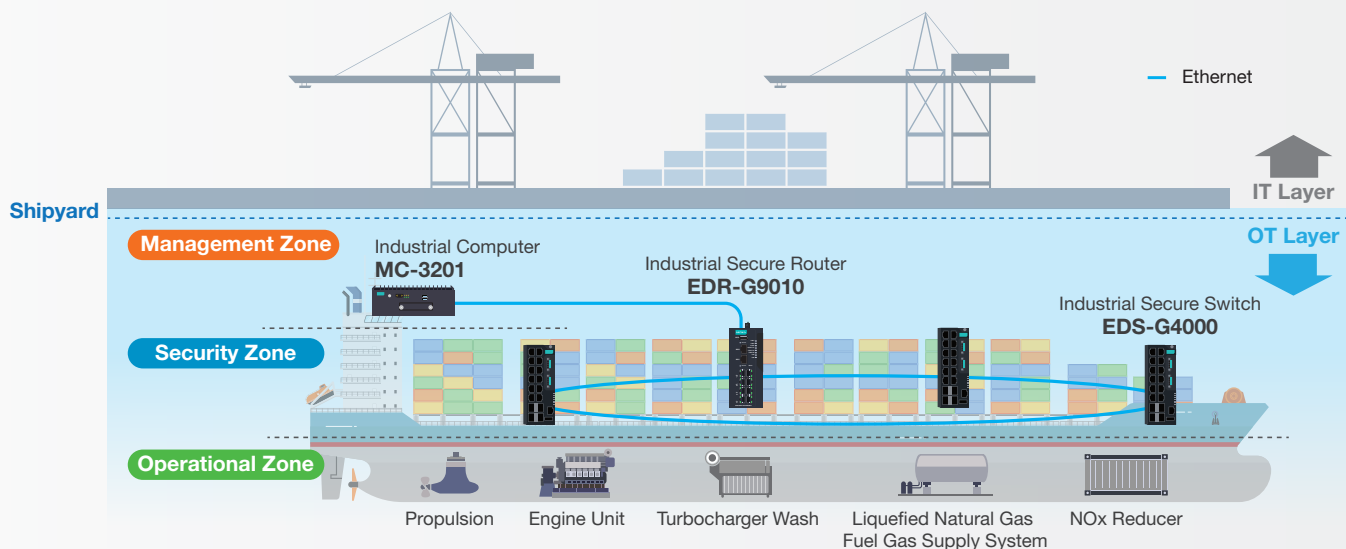
Ship Propulsion Control System

The ship's propulsion control system manages unmanned propulsion machinery from multiple onboard locations, which is vital for efficient operation and safe navigation. Rugged, marine-certified Ethernet switches enable seamless communication, which is essential for reliability in harsh marine environments. Moxa's switches—certified by DNV, ABS, LR, and NK—ensure compliance and reliability. The MPC-3000 Series offers intuitive HMI displays for system monitoring, while Turbo Ring technology guarantees fast recovery times, ensuring uninterrupted propulsion system operation and vessel safety.



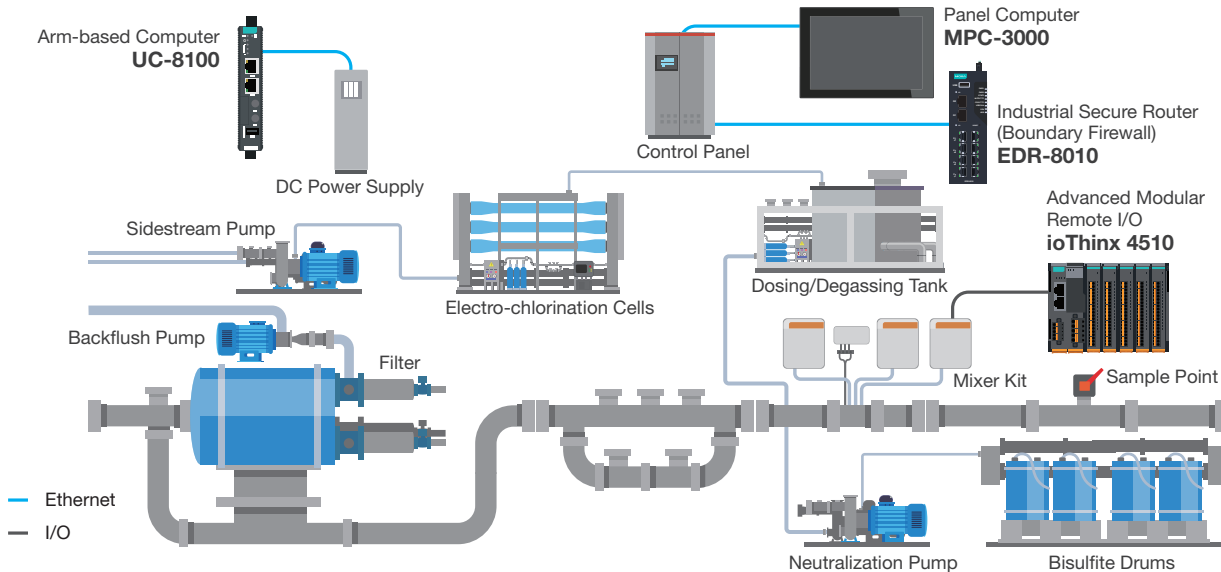
Smart Ship Remote Monitoring and Management

Efficient asset management on vessels relies on practical solutions like cloud-based services and remote monitoring for real-time insights and proactive maintenance. Robust cybersecurity measures are crucial to face ever-increasing cyberthreats. Moxa's MC-3201 fanless industrial computers offer reliable performance in harsh maritime environments, while the EDR-G9010 secure router encrypts communications to protect against cyberattacks. Our marine-grade products guarantee durability, reliability, and compliance, giving you a convenient one-stop solution for your maritime needs.



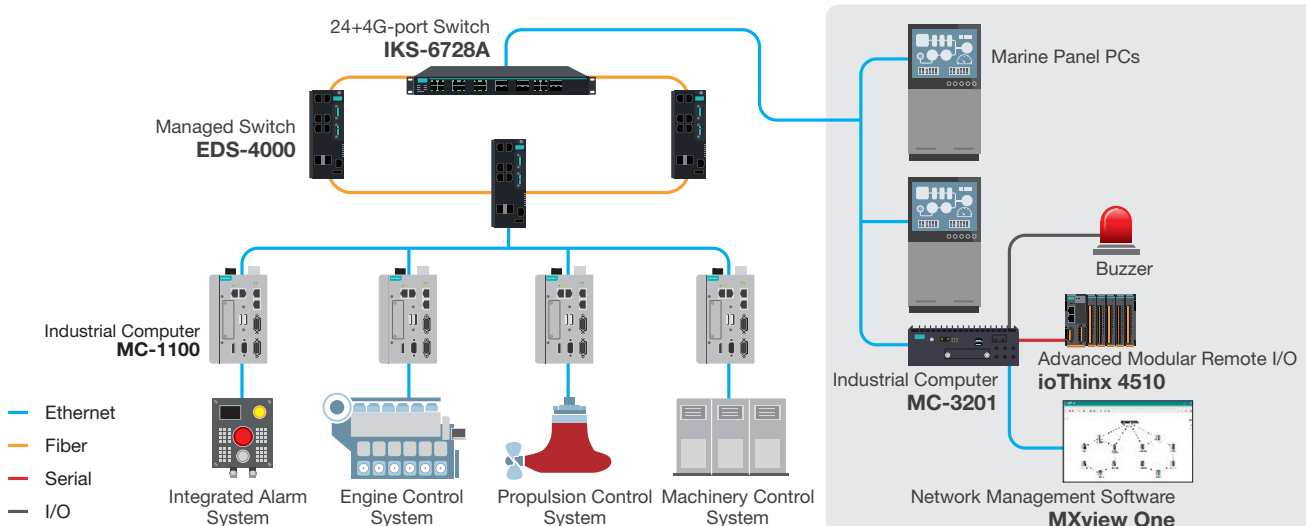
Ballast Water Treatment System (BWTS)

On September 8, 2017, the IMO's Ballast Water Management Convention came into force, mandating shipboard systems to prevent the spread of aquatic organisms. To comply with D2 standards by September 8, 2024, compact yet robust treatment solutions are required. Moxa's computer portfolio and ioThinX Series offer versatile, space-saving options to ensure reliable data acquisition and compliance with regulatory standards. Their simplified installation and enhanced efficiency are crucial for effective system implementation.



Integrated Automation System (IAS)

The IAS streamlines ship operations for enhanced productivity. Moxa's compact computers gather and process data from diverse systems throughout the vessel to enable real-time monitoring and alerts to ensure safety of the vessel and its crew. Power-efficient and robust, our solutions offer versatile connectivity and multiple LAN ports for seamless data handling. Turbo Ring's rapid recovery maximizes system availability, while MXview One simplifies troubleshooting. Moxa offers DNV certified devices that give you long-lasting performance, even in harsh maritime environments.



Moxa Marine Portfolio

Industrial Network Infrastructure

Secure Routers

EDR-G9004 Series **Preliminary**
EDF-G1002 Series **Preliminary**
EDR-G9010 Series
EDR-8010 Series



Ethernet Switches

EDS-(G)4000 Series
IKS-6728A Series



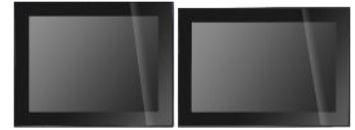
Industrial Computers

BXP/DRP Series
MC-3201 Series



Panel Computers

MPC-3000 Series **Preliminary**



Industrial Edge Connectivity

Serial-to-Ethernet Device Servers

NPort 5400 Series



Modbus TCP Gateways

MGate MB3170 Series



Ethernet-to-Fiber Media Converters

IMC-101 Series



* Please refer to our Maritime Microsite for the complete certified product list.

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 (IIoT). With over 35 years of industry experience, Moxa has connected more than 102 million devices worldwide and has a distribution and service network that reaches customers in more than 85 countries. Moxa delivers lasting business value by empowering industries with reliable networks and sincere service.

Information about Moxa's solutions is available at www.moxa.com.

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