

Empower Your Factory Automation Applications with Fast and Easy Protocol Conversions

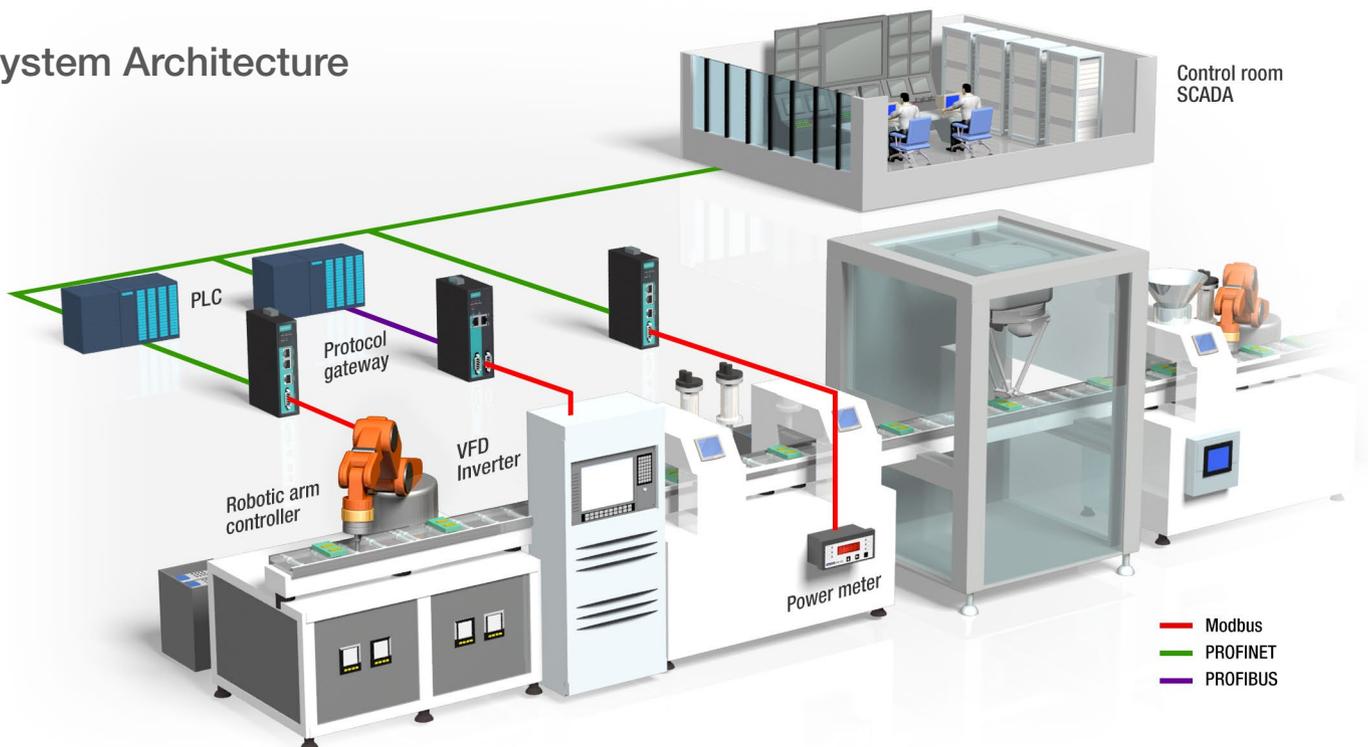
Industry Background

New innovations, propelled by the rise of Industry 4.0, give factories new opportunities to upgrade their legacy automation systems and enter the world of smart factories. These transformations, however, do not come without challenges. As Industry 4.0 is all about connecting things to Internet, a big challenge is to connect a large number of Modbus devices to networked control systems, such as SCADA systems and PLCs, which commonly use PROFINET or PROFIBUS protocols. To overcome this incompatibility between protocols, protocol gateways provide seamless protocol conversions, allowing manufacturers to reap the benefits of a smart factory.

System Requirements

- Fast and efficient protocol conversion as field devices, such as meters, VFDs, and robotic arms, use Modbus protocols and need to communicate with PROFINET or PROFIBUS-based PLCs.
- A flexible and cost-effective solution that extends the lifetime of existing and reliable machines and equipment, because engineers are familiar with them.
- An easy-to-configure solution that allows for maximum integration of subsystems, for example, robotic arms synchronized with the movement of conveyor belts to increase production.
- Proactive monitoring of both devices and control systems to prevent costly production loss.

System Architecture



► Complete Protocol Conversion Solutions

Moxa's MGate 5103 and 5111 gateways enable fast protocol conversions between Modbus devices and PROFINET/PROFIBUS-based SCADA systems and PLCs. The MGate 5103 converts a variety of protocols, such as Modbus RTU/ASCII/TCP, to PROFINET. Likewise, the MGate 5111 converts the same protocols to PROFIBUS. Additionally, the MGate 5103 and 5111 can also help you integrate EtherNet/IP PLCs into PROFINET or PROFIBUS systems. Our all-in-one design allows you to easily manage protocols conversions with just one gateway.

► Fast and Easy Configuration

A user-friendly web UI makes the configuration of the protocol gateways a breeze, saving engineers a lot of time adding new components in an existing system. Users can now remotely log in via web browser while an intuitive installation wizard guides them through these five easy steps:

1. System Settings
2. Select Protocol
3. Configure Protocol I
4. Configure Protocol II
5. Finish



MGate 5103

1-port Modbus RTU/ASCII/TCP/EtherNet/IP to PROFINET gateways

- Supports PROFINET IO devices
- Supports Modbus RTU/ASCII/TCP master/slave configurations
- Supports EtherNet/IP adapter
- Easy web-based configuration
- Complete diagnostics information for maintenance
- Embedded Modbus traffic monitoring
- microSD card for configuration backup and event logs
- -40 to 75°C wide operating temperature models available
- Modbus port with 2 kV built-in isolation protection
- Built-in Ethernet cascading for easy wiring
- Security features based on IEC-62443

► Flexibility and Scalability

Installing Moxa's MGate 5103 and 5111 gateways gives your network more flexibility in a distributed architecture than in a centralized architecture. Furthermore, these protocols gateways provide you with more options to scale up your network. Also, in a distributed architecture, wiring is less challenging because field devices are bundled with the gateways, reducing cabling costs and deployment difficulties significantly. Engineers also save a lot of time when it comes to the coding of PLCs.

► Easy Troubleshooting to Reduce Maintenance Efforts

Moxa's protocol gateways provide a variety of powerful built-in troubleshooting tools, including protocol diagnostics and traffic monitoring, that offer you a shortcut to find the root cause. In addition, the status monitoring and fault protection functions help to reduce downtime. The status monitoring function alerts the SCADA system when a slave device is not responding. The fault protection prevents incorrect actions downstream when the upstream connection is lost.



MGate 5111

1-port Modbus/PROFINET/EtherNet/IP to PROFIBUS slave gateways

- Supports PROFIBUS DP V0 slave
- Supports Modbus RTU/ASCII/TCP master or slave
- Supports EtherNet/IP adapter or PROFINET IO device
- Built-in traffic monitoring/diagnostics/status monitoring and fault protection
- Built-in Ethernet cascading for easy wiring
- Redundant dual DC power inputs and relay outputs supported
- microSD card for configuration backup/duplication, and event log
- Serial port with 2 kV built-in isolation protection
- -40 to 75°C wide operating temperature models available
- Security features based on IEC-62443