IOBridge

Key Solutions for Equipment Automation

The IOBridge series has been a trusted solution for equipment automation and integration for over 20 years, delivering seamless communication and message transmission with an improved user-friendly API.
 BridgeX, a SECS communication driver, ensures reliable equipment connectivity with enhanced performance and a modern user experience. BridgeP simplifies and standardizes various PLC communications, making equipment control and integration more flexible and efficient.



Standard solution for semiconductor manufacturing process communication automation

Field-oriented Optimized service



What is BridgeX?

The standard solution for automating communication in semiconductor manufacturing processes

Bridge X is a flagship product in the IOBridge series, specifically designed to act as a bridge for equipment automation and optimized for manufacturing processes.
Fully compliant with the SEMI Standards, it supports SECS/GEM and HSMS protocols, the industry benchmarks for semiconductor manufacturing. Purpose-built for online communication in production lines of semiconductor manufacturers and equipment providers, Bridge X handles every stage of the process, from defining message specifications to programming and message testing.
This solution enables the efficient management of communication between semiconductor manufacturing equipment and host system integration. Its intuitive interface makes it easy to design and implement even the most complex communication systems. With real-time data exchange monitoring and control capabilities, Bridge X maximizes communication efficiency in manufacturing processes, driving optimal productivity. It also includes simulation and testing tools to ensure system stability before deployment.

BridgeX Key Components

XConnector

 A SECS/GEM communication driver that serves as a plugin library for equipment online integration software

XDefiner

A tool for defining message communication specifications

XMulator

A testing tool for message communication specifications

01 Key Advantages

Compliance with SEMI Standards

 Complete implementation of SECS-I, SECS-II, and HSMS (SECS-IP) protocols; support for GEM (Generic Equipment Model) and GEM300 standards

User-friendly Interface

 Intuitive and streamlined design for easy use; optimized logging system for developers and operators

Automation and Productivity Enhancement

 Code generation and scenario-based test automation features

High-performance Communication

 Over 50% faster transmission, reception, and driver operation speeds; reliable handling of large-scale and high-volume messages

Flexible Message Definition and Management

- Provides standard SEMI message templates with customization options
- Offers diverse modeling methods via UI and editor

Scalability and Compatibility

 Compatible with various semiconductors and precision manufacturing equipment; integrates with major production and logistics systems

02 Coverage

Industry Coverage

- Core focus: Semiconductor manufacturing
- Display manufacturing
- Electronic component manufacturing
- Solar cell manufacturing

Protocol Coverage

- SECS-I / SECS-II / HSMS (SECS-IP)
- GEM (Generic Equipment Model) / **GEM 300**

Support for Multiple Environments

 Compatible with both C# and Java environments; support for serial communication (RS232C) and HSMS communication

Powerful Simulation and Testing

 Includes a dynamic simulator capable of acting as equipment or host

Quality Management and Continuous Improvement

- Adheres to a systematic software development process
- Focused on performance optimization and ongoing feature enhancements

- Other precision manufacturing industries

Software Environment Coverage

- Windows operating system / Linux operating system
- NET Framework / Java Runtime Environment

Development LanguageCoverage

• C# (including COM-based languages like VC++ and Delphi) Java

Functional Coverage

- Equipment communication interface / Host system integration
- Real-time data collection and monitoring
- Remote equipment control / Alarm and event management / Recipe management / Quality data collection

Product Configuration

BridgeX

BridgeX is a SECS communication driver that guarantees stable equipment connectivity with a modern user experience and enhanced performance.



Field-oriented Optimized service

01 SECS/GEM Communication Driver

XConnector

A perfect balance of speed, reliability, and flexibility

- With over 50% faster performance and the ability to handle large-scale message processing, this SECS/GEM communication driver (**XConnector**)stands out as a top-tier solution.
- Supporting both C# and Java environments, it ensures seamless compatibility across SECS-I and HSMS communication protocols.

Key Features

• High-performance, reliable driver compatible with both C# and Java environments



- Fast, stable handling of large-scale, high-volume message transmission and reception
- Support for SECS-I and HSMS communication for serial communication (via RS232C)
- Message filtering and auto-completion tools
- Optimized hierarchical list structure tailored to real-world message formats

• Dynamic message generation



Innovation Highlights

- Over 50% improvement in communication speed and driver performance
- * Logging management to reduce file logging I/O impacts on performance

XDefiner

A faster and simpler message definition tool

• Definer streamlines the process of defining SECS messages. Its intuitive interface and diverse templates makes the process faster and easier than ever, with its automatic code generation boosting development efficiency.

This innovative tool simplifies and accelerates complex communication protocol definitions, dramatically reducing the time required for developing SECS communication.



Key Features

- UI-based message definition
- SEMI/GEM message templates
- Message template management
- Separate modeling of message headers and data types
- Optimized UX with enhanced user experience to reduce errors and improve productivity
- Class code builder

Innovation Highlights

- Quick modeling with node expression
- Message visualization with navigator
- Advanced message filtering

03 Program validation

Xmulator

The All-in-One Simulator for Testing and Validation

• With advanced scenario features and a dynamic simulator, Xmulator delivers near-real-world testing environments, offering the flexibility to simulate either equipment or host roles.

This minimizes errors during the development phase and thoroughly validates system stability before implementation.



Key Features

- Message editing between simulations
- Bulk updates to message data
- Various message sending features, including standard send, hot send, and control message send
- Test scenario simulation
- Message sending for stress testing
- SECS-I to SECS-II log conversion
- Log-based message registration

Innovation Highlights

- Manual and automatic sending settings during scenario simulations
- Advanced tools for message analysis
- Logging for stress testing