

Product Brief

Si2 Microsystems

IIoT Gateway



Industrial IoT Gateways bridge the gap between edge and cloud by collecting, processing, and standardizing data from sensors, I/O devices, and PLCs before sending it to the cloud. Although IIoT Gateway devices are simply industrial computers, the software that lives on the devices is incredibly important. While edge devices have the ability to connect to a variety of manufacturing equipment, systems, and devices, it is necessary to transform the data into a standard model so that it can be ingested and used by other cloud-based systems. Effective IIoT Gateway software has the ability to connect and standardize data across all manufacturing equipment, from modern machine controls to legacy assets.

The main functions of Si2 Microsystems IIoT Gateway devices:

1. Connectivity, Data Collection, and Communication

The Si2 Microsystems Industrial IoT Gateways ensure connectivity among industry networks and legacy devices. With IIoT Gateways, manufacturers can collect data to monitor performance across all equipment, including both modern machines and legacy assets. This data is also standardized into a common model for consumption in cloud-based systems as well as actionability at the edge. This enables interoperability among systems, machines, and devices to unlock efficient communication and automation.

Although the cloud is a valuable resource for storing and analyzing data, it requires network connectivity, increases latency over local computing, and requires reliance upon 3rd party security. With IIoT Gateways, edge computing can be introduced to solve these problems, enabling unprecedented flexibility, reliability, and speed in a cost-controlled, security-conscious way.

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2. Real-Time Processing and Decision Making

Real-time data collection and processing enabled autonomous and low-latency decision-making to happen at the edge. For example, a model can be built to predict the failure of equipment and this model can be deployed at the edge device. When a given anomaly occurs, the IIoT device can immediately take action to prevent the impending failure from occurring. This local data analysis functionality also reduces strain on the cloud. As data is processed at the edge, irrelevant information can be discarded to ensure only necessary information is sent to the cloud. This also acts as a fail-safe in the case of a lost connection between edge and cloud. In the case that it should happen, data can buffer at the edge to ensure that no information is lost until the cloud is available. This reliability is incredibly important for data-conscious end users.

3. Condition Monitoring

Monitoring entire plants and even individual machines manually is a major challenge for maintenance teams. In order to track equipment condition data, manufacturers can deploy IIoT Gateways and additional devices (such as industrial sensors) to monitor the health of their assets and enable maintenance teams to make better decisions. This allows teams to move from calendar-based or reactive maintenance strategies to condition-based or even predictive maintenance.

4. Production Monitoring

Deeper operational visibility drives better, faster decisions which is a key component to enable greater operational efficiency. With real-time, accurate data from equipment, manufacturers have immediate insight into production performance. This real-time visibility ensures problems can be tackled as soon as they appear. IIoT-enabled production monitoring also drives deeper insights to unlock hidden capacity, reduce waste, and optimize processes.

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Si2 Microsystems IIoT Gateway specifications and capabilities

Specifications

Processor	8 Arm Cortex-A57cores operating at 1.5 GHz
RAM	4 GB, DDR4-2400
Storage	SATA II SSD (32 GB)
Interfaces	2xGbE LAN, 1xMiniPCIe
Dimensions	130x155x38 mm
Operating temperature	From 10 to 60°C
Extras	3G/4G (optional)

Connection

Ethernet	Two interfaces for connecting to different network segments via twisted pair (LAN and WAN)
Industrial interfaces	like RS485/Modbus & CAN bus* (optional)
Cellular modem	Mobile data network* (optional)
Routing and NAT	Automatic routing between gateway interfaces NAT managing
DHCP server	Automatic distribution of network configuration to IIoT and other devices on the local network.

Monitoring

Device detection	The user interface will display all network devices that are already communicating with the gateway, new devices on the local network are recognizing based on their network activity.
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Gateway management

Web interface	Convenient IIoT network configuration and monitoring, transparent management thanks to WebGUI. Informative presentation of information allows you quickly get all the necessary information.
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IIoT infrastructure protection

Firewall	The firewall uses the Default Deny principle. Only allowed network communications can pass through the gateway.
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