Samsara Industrial Control System

CLOUD-MANAGED INDUSTRIAL CONTROLLER FAMILY DATASHEET

Overview

Samsara's IG series industrial controllers provide a modern platform for data collection, alerts and control, and analytics. Managed by Samsara's secure cloud dashboard, the integrated system is easy to deploy anywhere—from the plant floor to remote sites. The IG series combines the local control and data collection capabilities of a programmable logic controller (PLC) or remote terminal unit (RTU) with a 4G LTE cellular gateway into a single device designed to meet the harsh demands of water/wastewater, oil and gas, and industrial environments. Customers looking for added visibility of their assets will appreciate the open platform, out-of-the-box access to real-time and historical data, and simple alerting without the hassle of additional software or complexity.

Highlights

• Modern, open platform for improved visibility and control into manufacturing and remote sites

• Centralized data collection, local control, secure communication, and powerful analytics

• Operates in standalone mode (built-in analog, digital, and counter IOs) or integrates alongside PLC/DCS systems (Modbus/RTU, Modbus/TCP, EtherNet/IP, OPC-UA)

• Deploys in minutes and scales from a single plant to distributed operations with thousands of sites

• Secured with 256-bit AES encryption; automatically creates a secure encrypted tunnel connection to Samsara's cloud

• Certified for Class 1, Division 2, Groups A, B, C, D

Applications

• Designed for use in oil & gas, water/wastewater, food and beverage, mining and construction, agriculture, and manufacturing

• Monitor well and pump sites to control operations, view alerts, and measure equipment efficiency

• Monitor and control tank levels, pressure, flow

• Gain live remote visibility into plant operations, production metrics, monitor critical equipment, set alerts, and manage overall operational efficiency

• Gain visibility and control into hard to wire locations with built in 4G LTE
Inside the IG21 industrial control unit

Battery Backup
Data and control continuity

Local Storage
Low-latency control, and data storage

High-performance ARM CPU
Scales up to hundreds of IOs

Serial Port
Industry standard protocols

Ethernet Port
Local LAN Connectivity

USB
USB 2.0 compatible

Analog Input/Output
Built-in isolated channels for fast deployment

6 Digital IOs

2 Counter IOs

WiFi 802.11 b/g/n
Out-of-the-box sensor connectivity

Embedded Cellular
4G LTE Connectivity

Class 1, Division 2 Certified
Ready for harsh environments

Low latency local control with the infinite scalability of cloud

Samsara's architecture delivers enterprise-grade hardware for mission-critical applications with on-device data storage that ensures highly responsive local control and battery backup to ensure data continuity and integrity in the case of network or power outages. Samsara’s included cloud dashboard provides unlimited scalability, and easy access to data across all sites as a standalone system, or integrated with existing SCADA software.

Local Program Execution
No dependency on connectivity ensures low latency control functions

Local Storage
Local memory ensures data collection continues even if cloud connection is lost

Cloud Scalability
Infinite scalability of historical data and reporting. Add new sites and IOs as needed.
Features and Capabilities

FASTER AND EASIER TO DEPLOY

An integrated platform means that whether you are monitoring critical equipment on the shop floor or hundreds of remote sites, it’s easy to gain immediate visibility on your browser or mobile device. Simply connect your IOs—no servers to set up, no software to manage, no complexity.

OPERATIONAL DATA AT YOUR FINGERTIPS

Samsara makes getting your data easy and lets you manipulate it to get the most out of it. With cloud dashboards that automatically resize to fit any device, you can view critical data anywhere, anytime. It’s also easy to export data to the analytics tool of your choice or to directly integrate with your existing historian through modern API functionality.
Features and Capabilities

REAL TIME VISIBILITY AND ALERTS

Samsara’s cloud dashboard acts as historian and HMI to provide immediate visibility into real-time and historical data, and allows for simple, easy to manage alerts. Cloud infrastructure allows infinite scalability without any infrastructure investment, and on-device storage means data is captured even if the network connection is down.

EASILY VIEW AND DEPLOY PROGRAM CODE

Modern IEC 61131-3 programming environment allows engineers to reuse code and audit program execution all without going onsite. Samsara’s central visibility dramatically increases the speed at which industry standard IEC 61131-3 programs can be written and deployed across any number of locations.

DESIGNED FOR MODERN DATA SECURITY

Unlike legacy solutions that were designed in a different era and patched over time, Samsara is purpose-built to aggregate and process sensor data securely. Cyber threats continuously evolve, and your industrial IoT architecture should as well. Samsara’s architecture ensures always up-to-date cloud software and seamless over-the-air firmware patches for on-premise devices. Find out more at samsara.com/security.
Gain operational visibility into manufacturing equipment or remote sites

Single-site manufacturing deployment

Remote site plug & play visibility scales from a single location to thousands

Ethernet / WiFi
## Technical Specifications

### Models Available

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW-IG21</td>
<td>LAN Ethernet, WiFi, and Cellular Connectivity</td>
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<tr>
<td>HW-IG21-LAN</td>
<td>LAN Ethernet and WiFi Connectivity</td>
</tr>
<tr>
<td>LIC-IG-ENT</td>
<td>License for IG Series Industrial Control System</td>
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</table>

### Digital and Analog Inputs/Outputs

The IG Family is designed to maximize usability with built-in IO support for basic remote sites out-of-the-box and support for scalable expansion IO modules for higher density deployments.

#### Built-in Analog Inputs
- 4, Isolated channels with 0-12 V or 0-24 mA
- Resolution: 14-bit ADC
- Accuracy: 0.1% FSR at 25C
- ESD/EFT/Surge protected
- Input Resistance @ 24mA: 300 ohm

#### Built-in Analog Outputs
- 2, Isolated channels with 0-12 V or 0-24 mA
- Resolution: 16-bit
- Accuracy up to +/-0.2% FSR at 25C
- ESD/EFT/Surge protected
- Settling Time: 5us
- Load Range: 1000 ohm (12V) - 600 ohm (20mA)

#### Built-in Digital Inputs/Outputs
- 6, User-configurable as inputs or outputs (open-drain)
- ESD/EFT/Surge protected
- As Input:
  - Dry-contact (internally sourced 3.3V @ 1mA)
  - Wet-contact (0-30V)
- As Output: Sinking MOSFET output, rated 30V, 0.5A

#### Built-in Counter Inputs
- 2, Counter Input (0-30V)
- Up to 10Hz (dry-contact)
- Up to 10kHz (wet-contact)

#### I/O Expansion
- Digital and Analog input/output expansion modules available

### Built-in Power

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>10-28 VDC</td>
</tr>
<tr>
<td>Maximum Power draw without analog outputs</td>
<td>10.8W @ 12V</td>
</tr>
<tr>
<td>Maximum Power draw with analog outputs</td>
<td>20W @ 12V</td>
</tr>
</tbody>
</table>

### Communications

<table>
<thead>
<tr>
<th>Port</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Port</td>
<td>RS485: Up to 20Mbps, 2-wire, half-duplex</td>
</tr>
<tr>
<td></td>
<td>RS232: Up to 1Mbps, 2-wire, full or half-duplex</td>
</tr>
<tr>
<td></td>
<td>(ESD Protected)</td>
</tr>
<tr>
<td>Protocols</td>
<td>Modbus slave/master, EtherNet/IP, OPC-UA</td>
</tr>
<tr>
<td>Ethernet</td>
<td>8-pin modular RJ45 jack, 10/100 Mbps (10/100 Base-T), transformer-isolated</td>
</tr>
<tr>
<td>USB Host</td>
<td>USB 2.0 compatible &quot;A&quot;-type receptacle</td>
</tr>
</tbody>
</table>
## Technical Specifications

### Internet Connectivity

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Cellular (IG21 only)</td>
<td>4G LTE cellular connectivity, with 3G fallback where LTE coverage is unavailable. LTE: quad band 2/4/5/12. 3G: dual band 2/5. Operating area: United States, Canada, Mexico.</td>
</tr>
<tr>
<td>LAN Ethernet</td>
<td>10/100 Mbps</td>
</tr>
<tr>
<td>WiFi</td>
<td>WiFi 802.11 b/g/n</td>
</tr>
<tr>
<td>Data Security</td>
<td>All Internet connectivity secured via SSL with 256-bit AES encryption.</td>
</tr>
</tbody>
</table>

### Data Transmission and Storage

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Real-time connectivity</td>
<td>Streams sensor data to the Samsara Cloud in real time</td>
</tr>
<tr>
<td>Built-in storage for offline logging</td>
<td>Sensor data stored in built-in flash memory when Internet connectivity is unavailable, syncs with cloud when connectivity is restored to ensure no data interruptions.</td>
</tr>
</tbody>
</table>

### Wireless Sensors

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>Proprietary low-energy wireless sensor connectivity (2.4 GHz)</td>
</tr>
<tr>
<td>Compatibility</td>
<td>Works with Samsara wireless sensors</td>
</tr>
<tr>
<td>Range</td>
<td>2.4GHz: 30m (line of sight)</td>
</tr>
</tbody>
</table>

### Enclosure

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Dimensions</td>
<td>180mm x 118mm x 32mm (7.09in x 4.65in x 1.26in)</td>
</tr>
<tr>
<td>Weight</td>
<td>725g</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>~40° to 80°C</td>
</tr>
<tr>
<td>Backup Battery</td>
<td>10 minutes (approx 430 mAh)</td>
</tr>
<tr>
<td>Mounting</td>
<td>Tool-less DIN rail mounting</td>
</tr>
<tr>
<td>Hazardous Locations</td>
<td>Certified for Class 1, Division 2, Groups A, B, C, D</td>
</tr>
</tbody>
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