IG61 Industrial Controller
Datasheet

OVERVIEW

Managed by Samsara’s secure web-based dashboard, the IG61 provides the same universal connectivity, easy setup, and global analytics and control that are standard across the IG-family. With expandable I/O modules that can be deployed as needed, high-capacity onboard storage and an advanced processor for low-latency control, the IG61 easily scales making it a great fit for the most demanding large-scale operations.

HIGHLIGHTS

**Modular I/O**
Expand deployments with analog input, analog output, and digital input/output modules

**Wireless connectivity**
Gain visibility and control into hard to wire locations with built in 4G LTE and Wi-Fi

**High-capacity storage**
Large storage capacity prevents data loss in the event of a network outage

**Security**
All Internet connectivity secured via SSL with 256-bit AES encryption (military-grade)
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 & DEPLOY PROGRAM CODE
Modern IEC 61131 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 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.
Inside the IG61

**Expandable I/O**
Connect hundreds of assets with I/O expansion modules

**Analog Input**
12-channel analog input module

**Analog Output**
8-channel analog output module

**Digital Input/Output**
24-channel input/output module

**Powerful Edge Processing**
Powerful edge processor for local program processing and execution in real-time, independent of network bandwidth.

**Easy Installation**
Wi-Fi, GPS, and pre-provisioned cellular LTE for quick installation and connectivity.

**Universal Connectivity**
Modbus RTU/TCP, EtherNet/IP, OPC-UA, and MQTT support. Instantly connects to Samsara sensors.

**High Capacity Storage**
Prevent data loss in the event of network outages with high capacity local storage.

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

Low-latency 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.

**Cloud Scalability**
Infinite scalability of historical data and reporting. Add new sites and I/Os as needed.
Visibility into manufacturing equipment or remote sites

Single-site manufacturing deployment

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

Power Requirement 24 VDC ± 20%

Typical Power Consumption 28 W

Maximum Power Consumption 72 W

Power connector Dual power input and UPS support

Controller Power Supply

ACC-IGM-PS

Output

DC Voltage: 24 V
Rated Current: 5 A
Current Range: 0 to 5 A
Rated Power: 120 W
Peak Current: 7.5 A
Peak Power: 180 W (3 sec.)
Ripple & Noise (max): 100 mVp-p
Voltage Adj. Range: 24 to 48 V
Voltage Tolerance: ± 1.0%
Line Regulation: ± 0.5%
Load Regulation: ± 1.0%
Setup, Rise Time: 1500 ms, 60 ms/230 VAC; 3000 ms, 60 ms/115 VAC at full load
Hold Up Time (Typ.): 20 ms/230 VAC; 20 ms/115 VAC at full load

Input

Voltage Range: 88 to 264 VAC; 124 to 370 VDC
Frequency Range: 47 to 63 Hz
Power Factor (Typ.): 0.93/230 VAC; 0.96/115 VAC at full load
Efficiency: 91%
AC Current (Typ.): 1.4 A/115 VAC; 0.7 A/230 VAC
Inrush Current (Typ.) 35 A/115 VAC; 70 A/230 VAC
Leakage Current: <1 mA/240 VAC

Protection

Overload

Normally works within 110 to 150% rated output power for more than 3 seconds and then shut down o/p voltage. >150% rated power, constant current limiting with auto-recovery within 3 seconds and shut down o/p voltage after 3 seconds
Controller Power Supply
ACC-IGM-PS (continued)

Over Voltage
29 to 33 V, Protection type: shut down o/p voltage, re-power on to recover

Over Temperature
95 °C ± 5 °C (TSW) detect on heatsink of power switch; Protection type: Shut down o/p voltage, recovers automatically after temperature goes down

Enclosure
Dimensions: 40 × 125.2 × 113.5 mm
Working Temperature: -25 to 70 °C
Working Humidity: 20 to 95% RH non-condensing
Temperature Coefficient: ± 0.03%/ °C (0 to 50 °C)
Vibration: Component– 10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes;
Mounting: Compliance to IEC60068-2-6

Safety
Safety Standards: Ul508, TUV EN60950-1 approved;(meet EN60204-1)
Withstand voltage: I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC O/P-DC OK:0.5KVAC
Isolation resistance: I/P-O/P, I/P-FG, O/P-FG:>100M Ohms / 500VDC / 25 °C/ 70% RH

EMC Emission
C10om(3p2/l6ia4nce to EN55011, EN55022 (CISPR22), EN61204-3 Class B, EN61000-3-2,-3
EMC Immunity
Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2 (EN50082-2), EN61204-3,
heavy industry level, criteria A, SEMI F47, GL approved

ENCLOSURE

Dimensions (W x H x D) 117 × 148.5 × 106 mm
Weight 1.4 kg (4.0 lbs)
Mounting DIN-rail, Wall mount
Operating Temperature -10 to 60°C (-4 to 140°F) at 5 to 85% RH with 0.7m/s Airflow
Relative Humidity 10 to 95% RH @ 40°C, non-condensing
Shock Protection Operating, IEC 60068-2-27, 5G, half sine, 11 ms
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ENCLOSURE

Vibration Protection Operating, IEC 60068-2-64, 2 Grms, random, 5 ~ 500 Hz, 1hr/axis (mSATA)

PROCESSING, STORAGE, AND SECURITY

Edge Processing Powerful edge processor for low-latency local control
Real-time Connectivity Streams data to the Samsara cloud in real-time
Data Security Data secured via SSL (256-bit, military-grade encryption)
Storage Onboard storage for offline data logging when internet connectivity is unavailable; uploads data to the cloud when connectivity is restored to ensure no data interruptions

CONNECTIVITY

Serial Port 1 x RS-232/422/485, DB9, 50 to 115.2kbps
USB 2 x USB 2.0 ports, 2x USB 3.0 ports, 1x internal USB
Protocols Modbus/RTU, Modbus/TCP, EtherNet/IP, OPC-UA, MQTT
LAN Ethernet 2 x RJ45, 10/100/1000 Mbps IEEE 802.3u 1000BASE-T Fast Ethernet
Wi-Fi 802.11 b/g/n
Cellular 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

WIRELESS SENSORS

Connectivity Proprietary low-energy wireless sensor connectivity (2.4 GHz)
Compatibility Works with Samsara wireless sensors
Range 2.4GHz: 30m (line of sight)

LICENSE

Requires IG license. License includes cloud software, mobile apps, ongoing firmware updates, maintenance, and support
12-Channel Analog Input
ACC-IGM-AI

**General**
Certification: CE, FCC class A
Power Consumption: 4 W @ 24 VDC (typical)

**Input**
Channels: 12 (differential)
Input Type: V, mV, MA
Voltage/Current Range: ± 10 V, 4-20 mA
Resolution: 16-bit
Accuracy: ±0.1% FSR (voltage), ±0.2% FSR (current)
Sampling Rates: 12 sample/second (total)
Input Impedance: >10 MΩ (voltage), 120 Ω (current)
Common Mode Voltage: 200 VDC

**Protection**
2500 VDC isolation between channels and backplane
Over voltage protection

8-Channel Analog Output
ACC-IGM-AO

**General**
Certification: CE, FCC class A
Power consumption: 3.5 W at 24 VDC (typical)

**Output**
Channels: 8
Output type: V, mA
Output range: ± 10 V, 4-20 mA
Resolution: 14-bit
Accuracy: ±0.1% FSR
Settling time: ~500 µs
Slew Rate: 0.7 VDC/µs (per channel)
Span Drift: ±60 ppm/°C
Zero Drift ±275 mV/°C (Voltage), ±250 mV/°C (Current)
Drive voltage: 15 VDC
Load range: 0-500 Ω

**Protection**
Short circuit protection
2,500 VDC isolation between channels and backplane
24-Channel Digital Input/Output

**General**
- Certification: CE, FCC class A
- Power consumption: 2.5 W at 24 VDC (typical)

**As Input**
- Channels: 12
- Type: Sink or source load
- Input voltage:
  - Rated value: 24 VDC
  - For "0" signal: -5 to 5 VDC
  - For "1" signal: 15 to 30 VDC and -15 to -30 VDC
- Input impedance: 10 KΩ
- Input delay: 0.2 ms
- Operating frequency: 3 kHz
- Input filter: 3 ms
- Span Drift: ±60 ppm/°C
- Zero Drift: ±275 mV/°C (Voltage), ±250 mV/°C (Current)
- Drive voltage: 15 VDC
- Load range: 0-500 Ω

**Protection**
- Short circuit protection
- 2,500 VDC isolation between channels and backplane

**As Output**
- Channels: 12
- Voltage range: 8 to 35 VDC
- Rated current output: 0.5 A
- Permitted current output: Max of 0.75 A
- Leakage current: 0.1 mA
- Switch rate:
  - Resistive load: 300 Hz (max)
  - Inductive load: 20 Hz (max)
  - Lamp load: 200 Hz (max)

**Protection**
- 2,500 VDC isolation between channels and backplane
- Short circuit protection (For DO channel)
- Thermal shutdown protection (For DO channel)
## DIGITAL AND ANALOG I/O ACCESSORY MODULES

### 2-Slot Initial Expansion Backplane

**ACC-IGM-Back**  
Initial backplane required for the initial addition of I/O and other modules, backplane supports two modules

### 2-Slot Additional Expansion Backplane

**ACC-IGM-BackExp**  
Expansion backplane required for the addition of more than two modules; 2-Slot Initial Expansion Backplane must be installed prior to installing Additional Expansion Backplanes; each additional backplane supports an additional two expansion modules. The first four modules attached to the unit can be powered by the main power supply. An additional power supply is required for every additional four modules that are connected to the backplane

### 2-Slot Initial Expansion Backplane

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### 2-Slot Additional Expansion Backplane

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