

TENTATIVE

Industrial Controller

IG41 Datasheet



OVERVIEW

The Samsara IG41 combines the power of a PLC and flexibility of an IoT gateway for control and data collection across industrial operations. With built-in connectivity, modular and wireless I/O, data storage, and dual processing, the IG41 can be deployed in a fraction of the time compared to traditional PLCs.

The IG41 seamlessly connects to the Samsara cloud where you can easily build custom dashboards, alerts, and reports. View real-time data down to the second and track key performance indicators over time, whether you're in the control room, board room, or out in the field.

HIGHLIGHTS

Modular design	Up to 8 stackable modules supporting up to 64 analog inputs, 128 digital inputs and outputs, and 32 analog outputs
Wireless IO	Out-of-the-box support for long range wireless IO module WM11 to connect remote assets
Dual processing	Dual CPU for low latency data transmission and local control program execution
Flexible connectivity	Dual SIM for AT&T and Verizon, built in Ethernet, RS-485/232, USB, CAN, and more.

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ENCLOSURE

Dimensions (WxHxD) 100 mm x 86 mm x 102 mm

Weight 0.68 kg (1.5 lbs)

Mounting DIN-rail, Wall mount

System LED

LED State	Indicates
Blinking Green	Establishing connectivity
Solid Green	Connected to the Samsara Cloud
Blinking Red	Device is starting up
Solid Red	Critical error - contact Samsara support
Blinking Blue	PLC program running

RS-232/RS-485 LED

LED State	Indicates
Solid Orange	RS232 device configured
Solid Blue	RS485 device configured

CAN LED

LED State	Indicates
Solid Blue	CAN configured

ENVIRONMENTAL

Operating temperature -30°C to +70°C (-22°F to +158°F)

Storage temperature -40°C to +85°C (-40°F to +185°F)

Operating humidity 10% RH to 90% RH, noncondensing

Storage humidity 5% RH to 95% RH, noncondensing

Ingress protection IP20

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POWER

Power requirement	10-28 VDC
Typical power consumption	8 W nominal
Maximum power consumption	36 W

SHOCK & VIBRATION

Free fall	IEC 60068-2-32 (Freefall)
Operating shock	IEC 60068-2-27, half-sine wave, 30G 11ms, 18 shocks IEC 60068-2-27, half-sine wave, 50G 3ms, 18 shocks
Operating vibration	IEC 60068-2-64, 5~500 Hz, 5Grms, 30 min/axis, total 90 min IEC 60068-2-6, 10~500 Hz, 5G, 30 min/axis, total 90 min

SAFETY, HAZARDOUS LOCATIONS, & COMPLIANCE*

Hazardous locations	US (UL) • Class I, Division 2, Groups A, B, C, D, Temperature Class T4 • Class I, Zone 2, Group IIC
Safety & hazardous locations standards	• UL/IEC 61010-1 (Safety) • UL/IEC 61010-2-201 (Safety) • UL 121201, CSA C22.2#213 (Hazardous Locations)
Electromagnetic compatibility	• FCC 47 CFR Part 15B, Class A • ICES-003 (ITE)

Note: In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

For use in hazardous locations, device needs to be installed in a tool secured NEMA 4X enclosure.

**pending certifications*

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PROCESSING & STORAGE

Data storage	Stores 1 week of data across 50 registers sampling on a per second basis and transmits data to the cloud for unlimited cloud storage within duration of contract.
Internal real-time clock	Deviation per month, max: 25 s/month at 25 °C Note: Maintenance-free supercapacitor. During power failures, it maintains the time in the clock for at least seven days.
Programming languages	IEC 61131-3 structured text, ladder logic coming soon

NETWORK/ETHERNET

Number of ports	2
Network interface	10Base-T, 100Base-TX, and 1000Base-T Ethernet
Compatibility	IEEE 802.3
Communication rates	10 Mbps, 100 Mbps, 1000 Mbps auto-negotiated
Connector	RJ45
Ethernet protocols	EthernetIP, Modbus TCP, ROC TCP

WIFI

WAN connectivity	WiFi: 802.11 a/b/g/n/ac WiFi/WLAN client for remote connection
Frequencies supported	1×1 2.4/5 GHz
Security	WPA2, WPA
Antenna connector	RP-SMA male connector

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CELLULAR

3G Frequencies	WCDMA B2/B5
4G Frequencies	CAT 4 LTE B2/4/5/12/13
Carrier support	AT&T, Verizon (coming soon)
Antenna connector	2x SMA female connector

LORAWAN

Frequency	915 MHz
Antenna connector	1x SMA female connector

LOW ENERGY WIRELESS

Compatibility	Works with up to 12 Samsara proprietary low-energy wireless sensors
Range	2.4GHz: 30m (line of sight)

RS-232

Number of ports	1 configurable between 232/485
Port type	3-pin screw terminal
Maximum baud rate	115,200 bps
Data bits	5, 6, 7, 8
Stop bits	1, 2
Parity	Odd, Even, None
Flow control	XON/XOFF
Voltage level	±9 V
Serial protocols	Modbus RTU, Modbus ASCII, ROC RTU

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RS-485

Number of ports	1 configurable between 232/485
Port type	3-pin screw terminal
Maximum baud rate	115,200 bps
Data bits	5, 6, 7, 8
Stop bits	1, 2
Parity	Odd, Even, None
Flow control	XON/XOFF
Wire mode	2-wire, Half-duplex
Voltage level	0-5 V
Serial protocols	Modbus RTU, Modbus ASCII, ROC RTU

CAN

Max baud rate	1 Mbps
CAN termination	Software configurable 120 Ohm termination
Standard compatibility	ISO 11898-2

USB

Number of ports	2
Type	USB 2.0 Type A
Max current per port	1.5 A

GPS

GNSS	Supports GPS L1, GLONASS L1, and Galileo
Antenna connection	1x SMA - female external active antenna required

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FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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INDUSTRY CANADA STATEMENT

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference
- (2) This device must accept any interference, including interference that may cause undesired operation of the device

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter [IC: 21492-1041] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Le présent émetteur radio [IC: 21492-1041] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

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INDUSTRY CANADA STATEMENT

TYPE	CONNECTOR	GAIN	REMARK
Dipole	R-SMA	2.2dBi	For BT
Dipole	R-SMA	2.2dBi (2400~2483.5MHz) 6.2dBi (5150~5250MHz) 6.2dBi (5725~5850MHz)	For Wi Fi
PIFA	R-SMA	4.8dBi (2400~2483.5MHz) 9.6dBi (5150~5250MHz) 9.6dBi (5725~5850MHz)	For Wi Fi
Dipole	SMA	0.7dBi	For Lora
PIFA	SMA	3.5dBi	For Lora
Dipole	SMA	2.5dBi (1850~1910MHz / 1710~1755MHz) 0.9dBi (824~849MHz / 699~716MHz / 777~787MHz)	For LTE
Array	N Jack	10dBi (1850~1910MHz / 1710~1755MHz) 7dBi (824~849MHz) 8dBi (699~716MHz / 777~787MHz)	For LTE
PIFA	SMA	5.6dBi (1850~1910MHz / 1710~1755MHz) 0.5dBi (824~849MHz / 699~716MHz / 777~787MHz)	For LTE

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INDUSTRY CANADA STATEMENT

Caution:

the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

Avertissement:

les dispositifs fonctionnant dans la bande de 5150 à 5250MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20 cm entre le radiateur et votre corps.

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PROFESSIONAL INSTALLATION INSTRUCTIONS

Please be advised that due to the unique function supplied by this product, the product will be distributed through controlled distribution channels and installed by trained professional and will not be sold directly to the general public through retail stores.

1. Installation personal: This product is designed for specific applications and needs to be installed by qualified personal who has RF and related rule knowledge. A general user shall not attempt to install the product or change the settings.
2. Installation location: The product shall be installed at a location where the radiating antenna can be kept 40 cm from nearby persons in normal operation conditions to meet regulatory RF exposure requirement.
3. External antennas: Use only the antennas which have been approved by Samsara. Non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/IC limits and is prohibited.
4. Installation procedure: Please refer to user's manual for details.
5. Warning: Please carefully select the installation position and make sure that the final output power does not exceed the limit set in FCC/IC regulations. The violation of this rule could lead to serious federal penalty.

Instructions d'installation professionnelle

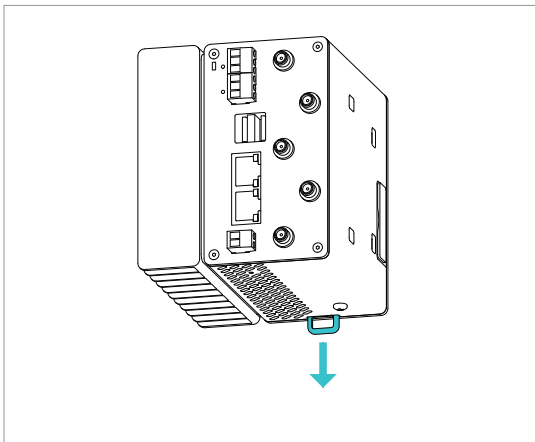
Veuillez noter que l'appareil étant dédié à une fonction unique, il doit être utilisé avec notre logiciel propriétaire de divertissement interactif. Ce produit sera proposé par un réseau de distribution contrôlé et installé par des professionnels; il ne sera pas proposé au grand public par le réseau de la grande distribution.

1. Installation: Ce produit est destiné à un usage spécifique et doit être installé par un personnel qualifié maîtrisant les radiofréquences et les règles s'y rapportant. L'installation et les réglages ne doivent pas être modifiés par l'utilisateur final.
2. Emplacement d'installation: En usage normal, afin de respecter les exigences réglementaires concernant l'exposition aux radiofréquences, ce produit doit être installé de façon à respecter une distance de XXcm entre l'antenne émettrice et les personnes.
3. Antenne externe: Utiliser uniquement les antennes approuvées par le fabricant. L'utilisation d'autres antennes peut conduire à un niveau de rayonnement essentiel ou non essentiel dépassant les niveaux limites définis par FCC/IC, ce qui est interdit.
4. Procédure d'installation: Consulter le manuel d'utilisation.
5. Avertissement: Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne dépasse pas les limites en vigueur. La violation de cette règle peut conduire à de sérieuses pénalités fédérales.

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INSTALL GUIDE

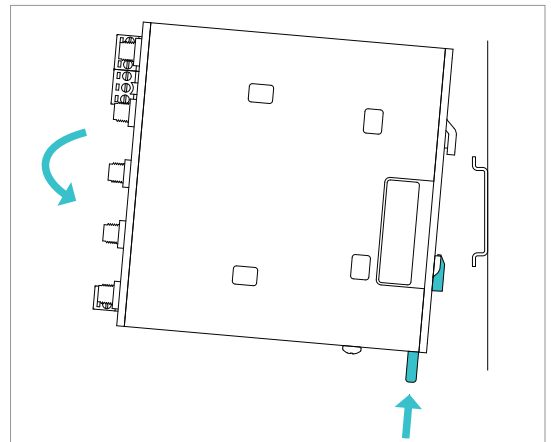
1



The IG should be mounted on a 35mm DIN rail inside a properly rated enclosure, e.g. NEMA 4x.

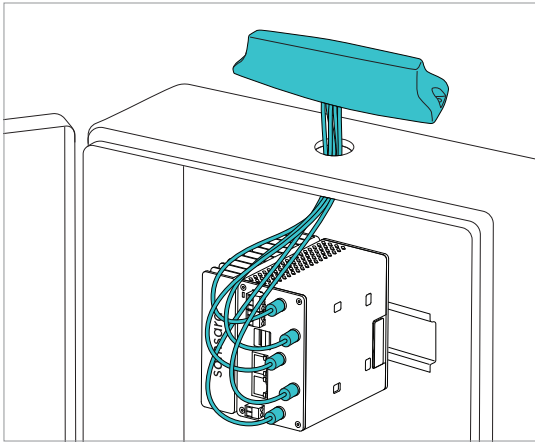
To mount it, pull down the latch on the bottom of the device.

2



Angle the unit and hook it onto the DIN rail, angle it down and push the latch back up to lock.

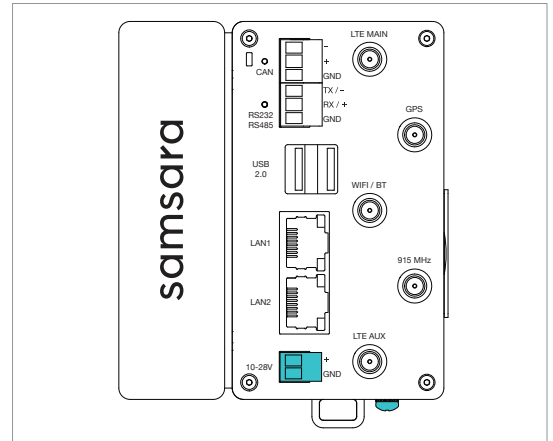
3



If installing a multiband antenna on the enclosure, drill a $\frac{7}{8}$ " hole and wipe the surface clean before routing the cables and applying the double sided tape.

Connect all five labeled cables to the respective ports on the IG41.

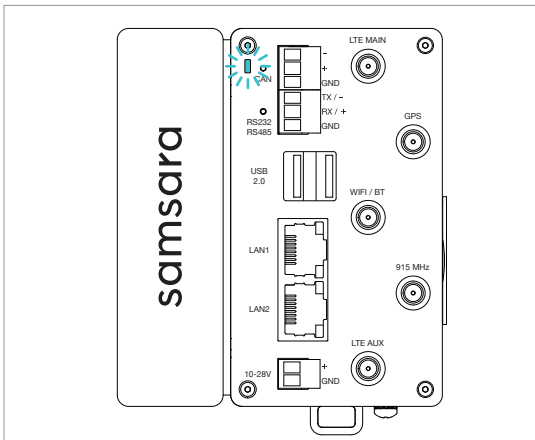
4



Connect IG to power, power plug denotes positive and ground, use 18AWG wire.

Connect IG ground screw to chassis ground.

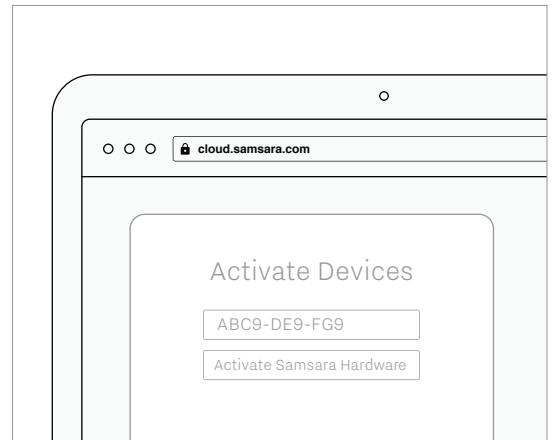
5



Power LED will be blinking red on startup. It will start flashing green when connecting, and turn solid green when connected.

If the blinking red state persists, a reboot is required. Solid red means there is a hardware error, please contact Samsara support for assistance.

6



Create an account at cloud.samsara.com and activate the IG by entering the serial number found on the front of the unit and back of the box.

Go to kb.samsara.com to finish setting up your device.