V1.6 June, 2019

IGMG-P83244GC+-D4G

Industrial Dual 4G LTE M2M IoT Gateway with 4x10/100/1000Base-T(X), 4xGigabit SFP Combo ports, 2xSerial ports and web-based software for IIoT and SCADA applications

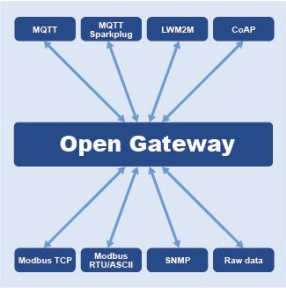
Highlights

- Powerful all-in-one industrial gateway solution for Edge to Cloud IIoT applications
- Industrial grade design compliant with the requirements of IEC 61850-3
- Support redundant/load-balanced **4G LTE** connection certificated by **AT&T®**
- Provide built-in 8-port Gigabit Ethernet switch with 4x10/100/1000Base-T(X) and 4xGigabit SFP Combo ports
- Support 2x Serial ports: RS-232/422/485 in DB9 connector and RS-422/485 in terminal block
- Support **ORing Open Gateway** (protocol converter) software feature for easy and quick IIoT deployment
- **Inductive Automation Ignition/Ignition Edge on board** – powerful, web-deployed industrial application platform for HMI, SCADA, MES and IIoT with **MQTT** connections
- **Node-RED** on board for data flow design and rapid prototyping
- Support **MQTT/Sparkplug B** and **CoAP** IoT protocols
- Support **Modbus TCP/RTU** industrial protocols
- Support 64GB **SSD storage** for data logging (128/256GB option)
- Support **PostgreSQL Database** on board
- Support **VRRP** (Virtual Router Redundancy Protocol)
- Support VPN for secured network connection (OpenVPN, PPTP, IPSec)
- Event warning by Syslog, Email, SNMP Trap, Relay output
- Redundant multiple host devices:
  5 host devices: TCP Server, TCP Client mode
  4 IP ranges: UDP
- PoE IEEE802.3at compatible Powered Device with 1KV isolation
- Dual isolated power inputs 12~48VDC
- Rugged IP-30 casing design and wide operating temperature range for harsh environment operation

IEC61850 | OpenGateway | VPN | 4G LTE | Full | RS-422/485 | RS-232/422/485 | PoE/PD | -40~75°C Temperature | Isolation | Redundant PWR

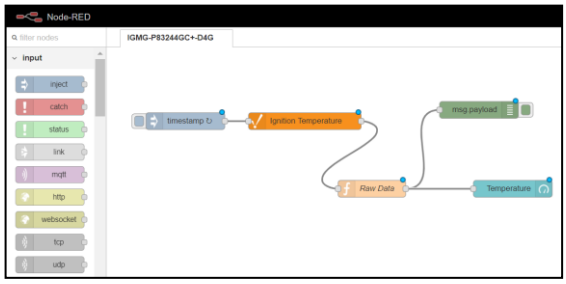
Introduction

Hardware features: IGMG-P83244GC+-D4G is a breakthrough IoT M2M industrial grade gateway which is a combination of a powerful hardware and software capabilities. It uses dual core ARMv7 Cortex-A9 CPU with operating speed up to 1.3 GHz. Supporting multiple I/O it has integrated 8-port (4+4 Combo for copper and fiber) Gigabit Ethernet switch including 6 LAN and 2 WAN ports. Additionally there are two serial ports for RS-232/422/485 and RS-422/485 communication standards. All gateway's ports support Modbus TCP and RTU protocols for connection with Ethernet and serial end-devices like PLCs, machines and sensors at factory floor, providing possibilities of monitoring and controlling them. IGMG-P83244GC+-D4G has successfully passed 4G LTE connectivity tests with AT&T® and is certified to operate in this carrier's network. With telecom certification and dual SIM card support for redundant or load balance function it can provide the highest reliability level for cellular connectivity. Thanks to built-in mSATA SSD storage with 64GB capacity (optionally up to 256GB) provides capabilities for huge IoT data logging. Rugged and yet fanless design for -40 to +75°C degrees of operating temperature range makes IGMG-P83244GC+-D4G a perfect solution for industrial applications.

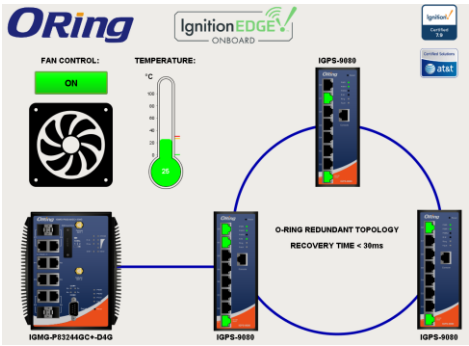


Software features: IGMG-P83244GC+-D4G introduces cutting edge features and defines new standards for IoT gateways market. Thanks to ORing branded **Open Gateway** software feature it simplifies to maximum IoT solution deployment. Connecting big variety of end-devices, very often with different communication interfaces, to different cloud platforms has never been so easy. Open Gateway protocol converter from a very simple and user-friendly web-based configuration interface turns the gateway into a transparent man in the middle between Modbus field devices and MQTT/CoAP/LWM2M servers.

Built-in **Node-RED** free open source programming tool software, which can be activated from IGMG-P83244GC+-D4G web interface with just single button click, provides useful and powerful flow-based development features. Browser-based editor makes it easy to wire together data flows using the wide range of nodes in the palette, at the same time providing a capability for rapid Dashboard prototyping including basic user interface components.



The most powerful feature of the IGMG-P83244GC+-D4G gateway is the **Ignition** SCADA software installed on-board. Ignition, designed by **Inductive Automation**, is a web-deployed industrial application platform for HMI/SCADA/IIoT that's been deployed in more than 100 countries. **Ignition** provides unlimited licensing and open-standards connectivity. Thanks to the user-friendly and easy-to-learn dashboard designer including an impressive number of standard and customized components **Ignition** provides powerful visualization tools for displaying, controlling, alarming, historian, and reporting. IGMG-P83244GC+-D4G supports both **Ignition and Ignition Edge**. Depending on application needs, either can be easily chosen and activated by the user from the gateway's web interface. As the IGMG-P83244GC+-D4G gateway provides SSD storage for massive data collecting, it also includes integrated **PostgreSQL Database,** which by default is already connected with Ignition software. Users do not have to worry about additional software installation and configuration, as the gateway is ready out of the box.

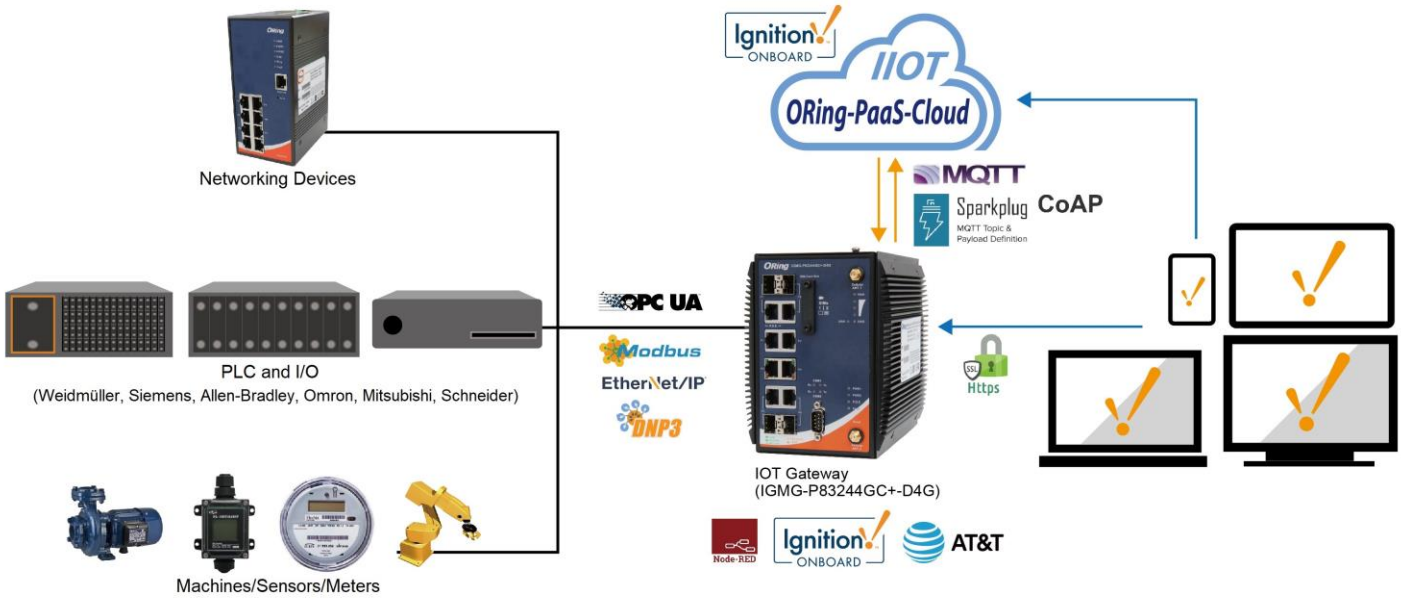


Both **Ignition** versions by default run in a trial mode, which means a new user can easily learn how to use the software and test it before deploying it in the real system. The following table explains the differences between **Ignition** and **Ignition Edge**.

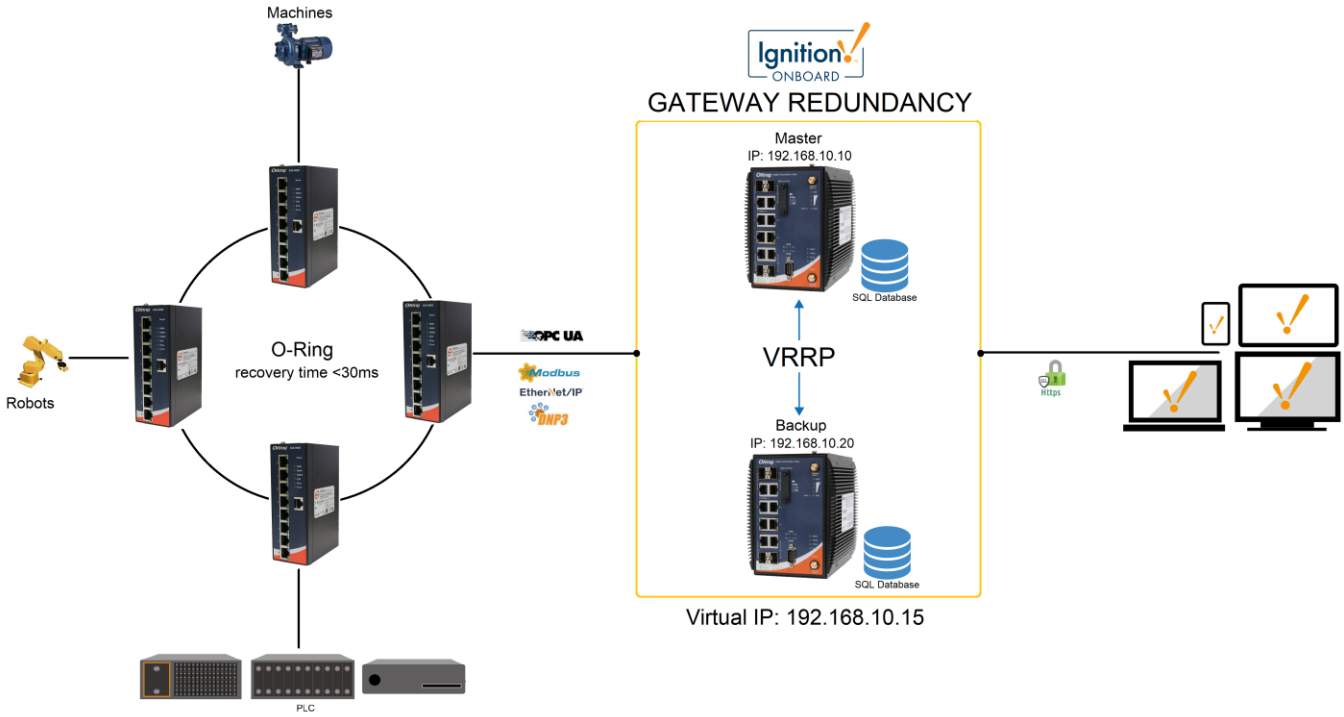
	Ignition by inductive automation	Ignition EDGE by inductive automation
Tags	Unlimited	Unlimited
Clients	Unlimited	Limited to two
Ignition Projects	Unlimited	Limited to one
Alarm Notifications	✔	One way e-mail notifications
Foundation Drivers	✔	✔
Reporting Module	✔	-
Voice Notification Module	✔	-
SMS Notification Module	✔	-
Mobile Module	✔	-
Database Access	✔	-
Tag Historian	✔	Up to one week or 10 million data points
OPC UA Client	✔	✔
OPC UA Server	✔	-
Scripting	✔	Client scripting only

Edge to Cloud Application

This is an example application of IGMG-P83244GC+-D4G connected with the cloud platform and edge devices.



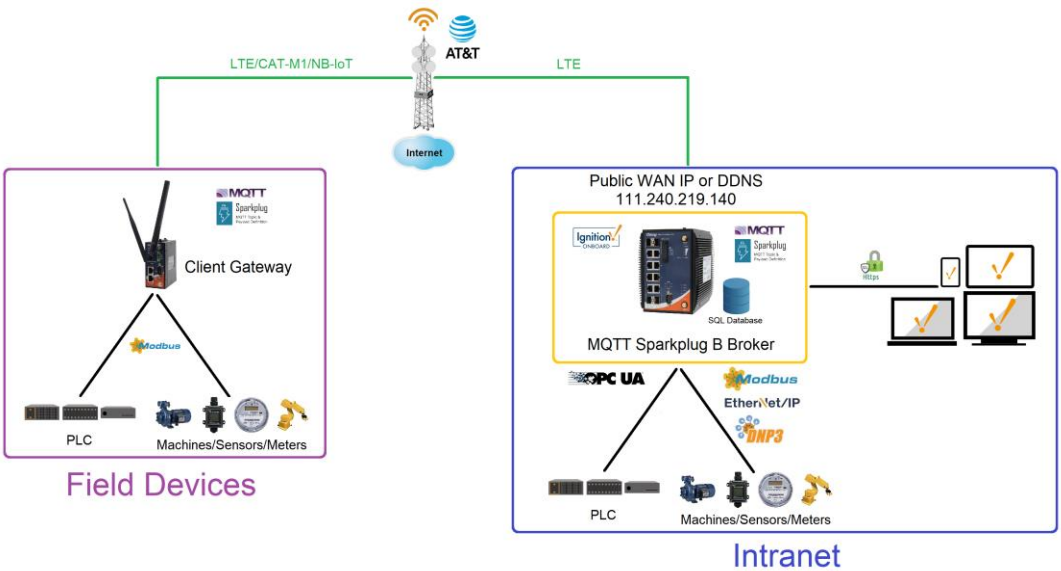
Redundant Application



Both IGMG-P83244GC+-D4G Gateway and Ignition software provide full range of redundant features for extremely reliable SCADA systems. Dual DC power input in the device allows connecting two independent power sources to secure mission critical implementations from possible power failure. Virtual Router Redundancy Protocol (VRRP) creates a virtual IP address which can be reached from field host devices no matter if Master or Backup gateway is active. Additionally Master and Backup gateways provide SQL Database synchronization, so crucial data will never be lost. Two Ignition installations can be linked together, so if one server fails, the other takes over and continues executing. All of the clients connected will be redirected to the backup machine, and historical data will continue to be logged. The transition is always seamless what means processes will never be prevented from executing due to one server going down.

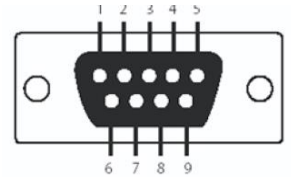
When deciding to use redundant architecture the user can be ensured that his mission critical system has low chances of failing. And all of these with a special price discount for the second backup unit of IGMG-P83244GC+-D4G and Ignition redundant license (*check with ORing Sales for more details).

IoT Internet Application



Ignition MQTT Broker installed onboard in IGMG-P83244GC+-D4G Gateway makes the system self-contained and more cost effective when a Cloud server does not have to be used. End-devices can access the MQTT server remotely and directly with its Public WAN IP or DDNS address. Ignition running in user's premises can work with local clients and devices and simultaneously provide a possibility of data visualization and storage as well as end-devices control via cellular link.

Pin Definition

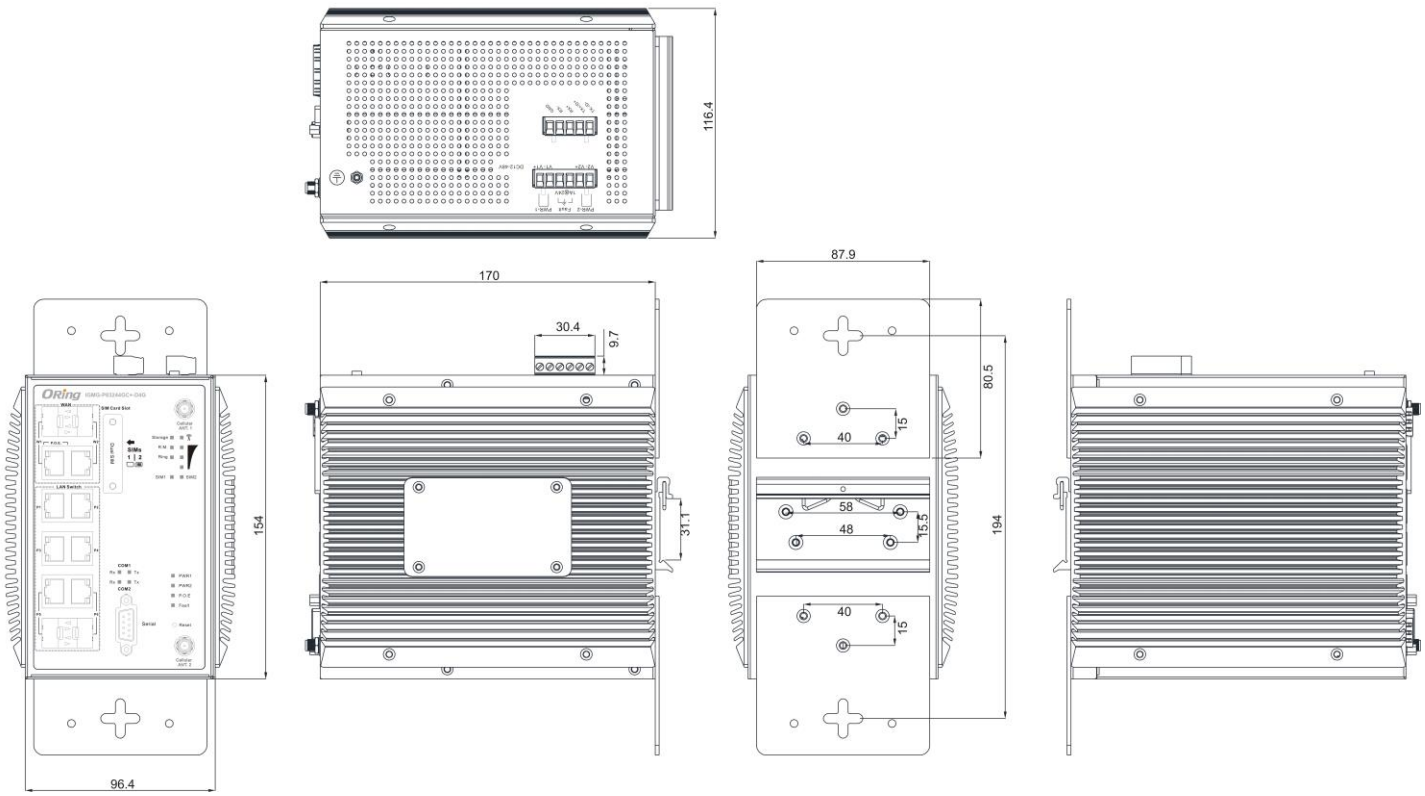


DB9 connector

Pin #	RS-232	RS-422	RS-485 (4 wire)	RS-485 (2 wire)
1	DCD	TX-	TX-	DATA -
2	RXD	TX+	TX+	DATA +
3	TXD	RX+	RX+	
4	DTR	RX-	RX-	
5	GND	GND	GND	
6	DSR			
7	RTS			
8	CTS			
9	RI			

Dimension

Dimension (Unit =mm)



Specifications

ORing M2M Model	IGMG-P83244GC+-D4G
Networking Ports	
10/100/1000 Base-T(X) Ports in RJ45 Auto MDI/MDIX	**4**
Gigabit Combo port with 10/100/1000Base-T(X) and 100/1000Base-X SFP ports	**4**
Cellular interface	
Cellular Standard	GSM / GPRS / EGPRS / EDGE / WCDMA / HSDPA / HSUPA/HSPA+/LTE
SIM card slot	**2**
Band options	**America(US)** LTE: 700/1700/2100/ MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 800/850/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz **Europe(EU)** LTE: FDD:2100(B1)/1800(B3)/2600(B7)/900(B8)/800(B20) MHz TDD:TDD:2600(B38)/2300(B40)/2500(B41) MHz UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+: 2100(B1)/900(B8) MHz GSM/GPRS/EDGE: 900/850 MHz
Antenna Connector (SMA Female)	2
Serial Ports	
Connector	Terminal Block x 1 (Port 1), DB9 male x 1 (Port 2)
Operation Mode	Port 1 : RS-422/RS-485(2W/4W), Which can be configured by utility Port 2 : RS-232/RS-422/RS-485(2W/4W). Which can be configured by utility
Serial Baud Rate	110 bps to 921.6 Kbps
Data Bits	7, 8
Parity	odd, even, none, mark, space
Stop Bits	1, 1.5, 2
Serial signals	RS-232 : TxD, RxD, DCD, RTS, CTS, DSR, DTR, RI, GND RS-422 : TX+, TX-, RX+, RX-, GND RS-485 (2W): D+, D- RS-485 (4W): TX+, TX-, RX+, RX-, GND
LED Indicators	
Power indicator	3 x LEDs, PWR 1, 2, PoE : Green On: Power is on
10/100/1000Base-T(X) RJ45 & SFP port indicator	2 x LEDs, LNK/ACT: Green for port LNK/ACT Speed: Amber for port Link at 100Mbps Off for port Link at 1000/10Mbps
WWAN status	Green On : Power is on and functioning Normal
WWAN signal strength	3 x LEDs Green for Strength: 1<30%, 2 >30% <60%, 3>75%
SIM Indicator	Green On: in active
Fault	Power failure or port disconnected
Serial TX/RX LED	Red : Receiving data Green : Transmitting data
Storage	Green Blinking : Data access

R.M.	Reserved
Ring	Reserved
Fault contact	
Relay	Relay output to carry capacity of 1A at 24VDC
Power	
Power Input	Dual DC inputs. 12-48VDC on 6-pin terminal block
Power consumption (Typ.)	18 Watts
Overload current protection	Present
Reverse polarity protection	Present
Physical Characteristic	
Enclosure	IP-30
Dimension (W x D x H)	116.4mm W x 170mm D x 154mm H (4.6" W x 6.7" D x 6.1" H)
Weight (g)	2400 g
Environmental	
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Temperature	-40 to 75°C (-40 to 167°F)
Operating Humidity	5% to 95% Non-condensing
Regulatory Approvals	
EMC	CE EMC (EN 55024, EN 55032), FCC Part 15 B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3,FCC Part 15 B class A
EMS	EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS), IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8 (PFMF), IEC/EN61000-4-11(DIP))
Shock	IEC60068-2-27
Free Fall	IEC60068-2-31
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	140345.5955 hrs
Warranty	5 years

Ordering Information

	Model Name	Description
Available Model	IGMG-P83244GC+-D4G_EU	Industrial 4G LTE Cellular M2M IoT Gateway with 4x10/100/1000Base-T(X) and 4xGigabit SFP combo ports, 2xSerial ports, 1-port PoE P.D, EU band
	IGMG-P83244GC+-D4G_US	Industrial 4G LTE Cellular M2M IoT Gateway with 4x10/100/1000Base-T(X) and 4xGigabit SFP combo ports, 2xSerial ports, 1-port PoE P.D, US band

Packing List

- **IGMG-P83244GC+-D4G x 1**
- **Wall-Mount Kit x 2**
- **Quick Installation Guide x 1**
- **CD x 1**
- **Din-Rail Kit x 1**
- **LTE antenna x 2**

Optional Accessories

- **DR/SDR/DRP Series DIN-Rail power supply**