

# Industrial LoRaWAN + 5G NR Cellular Gateway with 5-Port 10/100/1000T



## Connect to 5G NR and LoRa Network with Excellent LoRaWAN Cellular Gateway

PLANET LCG-300-NR is an industrial-grade 5G NR Cellular LoRaWAN Gateway with reliable connectivity for IoT deployments. It is able to provide ultra-fast broadband access with 5G cellular network.

The LCG-300-NR also features five Ethernet ports (4 LANs and 1 WAN), serial port (RS-485), and DI and DO interfaces designed in a compact yet rugged metal case. It establishes a fast 5G NR cellular connection between the Ethernet equipped devices. The LCG-300-NR is an integrated 5G NR and LoRaWAN solution for System Integrators, ISPs and Enterprises.

The LCG-300-NR LoRa wireless allows sensors to transmit data over extremely long ranges with low power consumption, and is fully compatible with LoRaWAN protocol and supports connection with up to 300 end-nodes. It also provides pre-configured standard LoRaWAN frequency bands for different countries. PLANET LCG-300-NR is the best choice to help you to promote the implementation of AIoT network.



## Automatic Failover between 5G NR and Dual WAN

With 5G NR, and dual Gigabyte Ethernet WAN interfaces, the LCG-300-NR ensures Internet connectivity by featuring failover functionality between 5G NR and dual WAN. It provides flexibility to set priority for 5G NR or dual WAN connection. When the main WAN interface fails, the secondary WAN interface will automatically back up the connection to ensure always-on connectivity.

## Highlights

- Global 5G NR (NSA/SA)/4G LTE network with SIM design for cellular network redundancy
- Automatic failover between 5G NR and Gigabit WAN
- Supports EU868, US915, AS923 (Sub 1G)
- 8 programmable parallel demodulation paths
- 2 x DI/DO and 1 serial port (RS485) for Modbus applications
- SSL VPN and robust hybrid VPN (IPSec/PPTP/L2TP over IPSec)
- Stateful packet inspection (SPI) firewall and content filtering
- Blocks DoS/DDOS attack; port range forwarding
- Planet NMS controller system and CloudViewer app supported
- -45 to 75 degrees C operating temperature; DIN-rail and fanless designs

## Hardware

- 3 x 10/100/1000BASE-T RJ45 LAN ports, auto-negotiation, auto MDI/MDI-X
- 1 x 10/100/1000BASE-T RJ45 LAN/WAN port, auto-negotiation, auto MDI/MDI-X
- 4 x 5G NR antennas
- 1 x SIM card slot
- 1 x LoRa antenna
- 1 x RJ45 type RS485 for Modbus TCP
- 1 x reset button

## Cellular Interface

- Supports multi-band connectivity with 5G NR (NSA/SA), LTE-FDD, LTE-TDD, and WCDMA
- Built-in SIM and broadband backup for network redundancy
- Four detachable antennas for 5G NR connection
- LED indicators for signal strength and connection status

## LoRa Interface

- Supports EU868/AU915/US915/AS923(Sub 1G)
- 8 programmable parallel demodulation paths

## IP Routing Feature

- Static route
- Dynamic route
- OSPF

### Automatic Failover



#### Ultra-Fast Speed 4G/5G Network\*

The LCG-300-NR supports 5G NR DL (downlink) speeds higher than 2.4 Gbps and 4G LTE DL speeds of up to 1 Gbps. The wide spectrum bandwidth accelerates internet speeds and reduces network latency for premium and time-sensitive connectivity services. It also supports multi-band connectivity including LTE FDD/TDD, WCDMA and GSM for a wide range of applications.

\*The real 5G NR/4G LTE data rate is dependent on local service provider.

### Download speed up to 2.4 Gbps



#### GPS Included

The LCG-300-NR is equipped with (global positioning system) feature. It adapts 5G-NR technology to incorporate multiple global navigation systems (GPS/GLONASS/BeiDou/Galileo/QZSS). It helps to position location of cellular gateway based on a network of satellites that continuously transmits necessary data. More signals transmitted from more satellites can triangulate its location on the ground, meaning any location can be easily tracked.

### GNSS Positioning



#### LoRaWAN Compatibility

The LCG-300-NR is LoRaWAN compatible and make sure it works well with LoRa sensor without any problem. LoRaWAN is a low-power, wide area networking protocol built on top of the LoRa radio modulation technique. LoRaWAN networks and devices

### Firewall Security

- Cybersecurity
- Stateful Packet Inspection (SPI) firewall
- Blocks DoS/DDoS attack
- Content filtering
- MAC filtering and IP filtering
- NAT ALGs (Application Layer Gateway)
- Blocks SYN/ICMP flooding

### VPN Features

- IPsec/Remote Server (Net-to-Net, Host-to-Net), GRE, PPTP Server, L2TP Server, SSL Server/Client (Open VPN)
- Max. Connection Tunnel Entries: 60 VPN tunnels.
- Encryption methods: DES, 3DES, AES, AES-128/192/256
- Authentication methods: MD5, SHA-1, SHA-256, SHA-384, SHA-512

### Networking

- Outbound load balancing
- Failover for dual-WAN
- Static IP/PPPoE/DHCP client for WAN
- DHCP server/NTP client for LAN
- Protocols: TCP/IP, UDP, ARP, IPv4, IPv6
- Port forwarding, QoS, DMZ, IGMP, UPnP, SNMPv1, v2c, v3
- MAC address clone
- DDNS: PLANET DDNS, Easy DDNS, DynDNS and No-IP

### Others

- Setup wizard
- Dashboard for real-time system overview
- Supported access by HTTP or HTTPS
- Auto reboot
- PLANET NMS System and Smart Discovery Utility for deployment management
- Planet CloudViewer app for real-time monitoring

such as sensor and gateway allow public or private network to connect multiple applications such as IoT, M2M, smart city, sensor network, and industrial automation applications in the same space.

*Ideal High-Availability VPN Security Router Solution for Industrial Environment*

The LCG-300-NR provides complete data security and privacy for accessing and exchanging the most sensitive data, built-in IPSec VPN function with DES/3DES/AES encryption and MD5/SHA-1/SHA-256/SHA-384/SHA-512 authentication, and GRE, SSL, PPTP and L2TP server mechanism. The full VPN capability in the LCG-300-NR makes the connection secure, more flexible, and more capable.



*Excellent Ability in Threat Defense*

The LCG-300-NR has built-in SPI (stateful packet inspection) firewall and DoS/DDoS attack mitigation functions to provide high efficiency and extensive protection for your network. Thus, virtual server and DMZ functions can let you set up servers in the Intranet and still provide services to the Internet users.



*Cybersecurity Network Solution to Minimize Security Risks*

The cybersecurity feature included to protect the switch management in a mission-critical network virtually needs no effort and cost to install. For efficient management, the LCG-300-NR is equipped with HTTPS web and SNMP management interfaces. With the built-in web-based management interface, the LCG-300-NR offers an easy-to-use, platform independent management and configuration facility. The LCG-300-NR supports SNMP and it can be managed via any management software based on the standard SNMP protocol.

*Maximizing Work Efficiency with PLANET SD-WAN Gateway*

PLANET VR-300FW-NR incorporated in SD-WAN (software-defined wide area network) function can greatly increase WAN optimization for multiple WAN links to be managed. With SD-WAN, users can connect any application across all available network connections at every site. It improves application performance and provides a high-quality user experience for increasing business productivity and reducing IT costs.

## Applications

### 5G NR Cellular Communication Solution

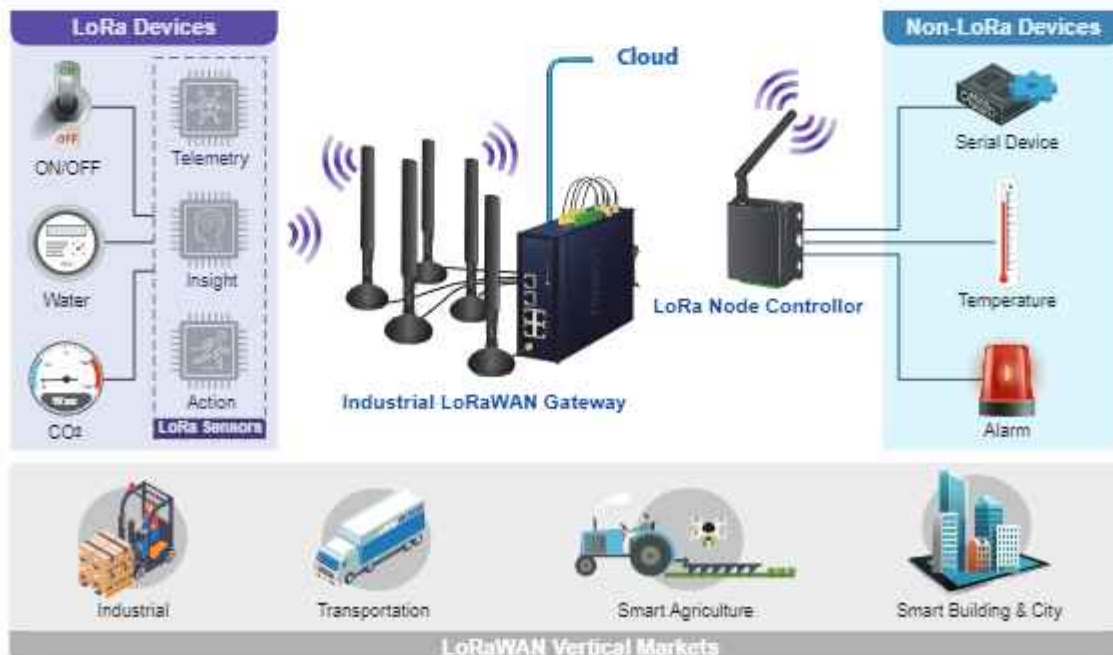
PLANET LCG-300-NR adopts 5G NR cellular technology and thus breaks the 100m limitation of RJ45 transmission. To avoid data loss affected by an unexpected breakdown connection on the part of ISP, the LCG-300-NR provides failover functions and advanced features like VLAN, VPN, Modbus, and network management to cover more applications:



### LoRa Communication Solution

PLANET LCG-300-NR LoRa gateway supports LoRa and LoRaWAN standard. Transceivers configured with LoRa devices like CO<sub>2</sub> and water sensors are embedded into end-nodes, or sensor devices that capture and transmit data to gateways over distances through wireless network. The LCG-300-NR can send information via Ethernet to the Network Server, which is responsible for network management functions that distribute information to each application accordingly.

## LoRa Communication Solution

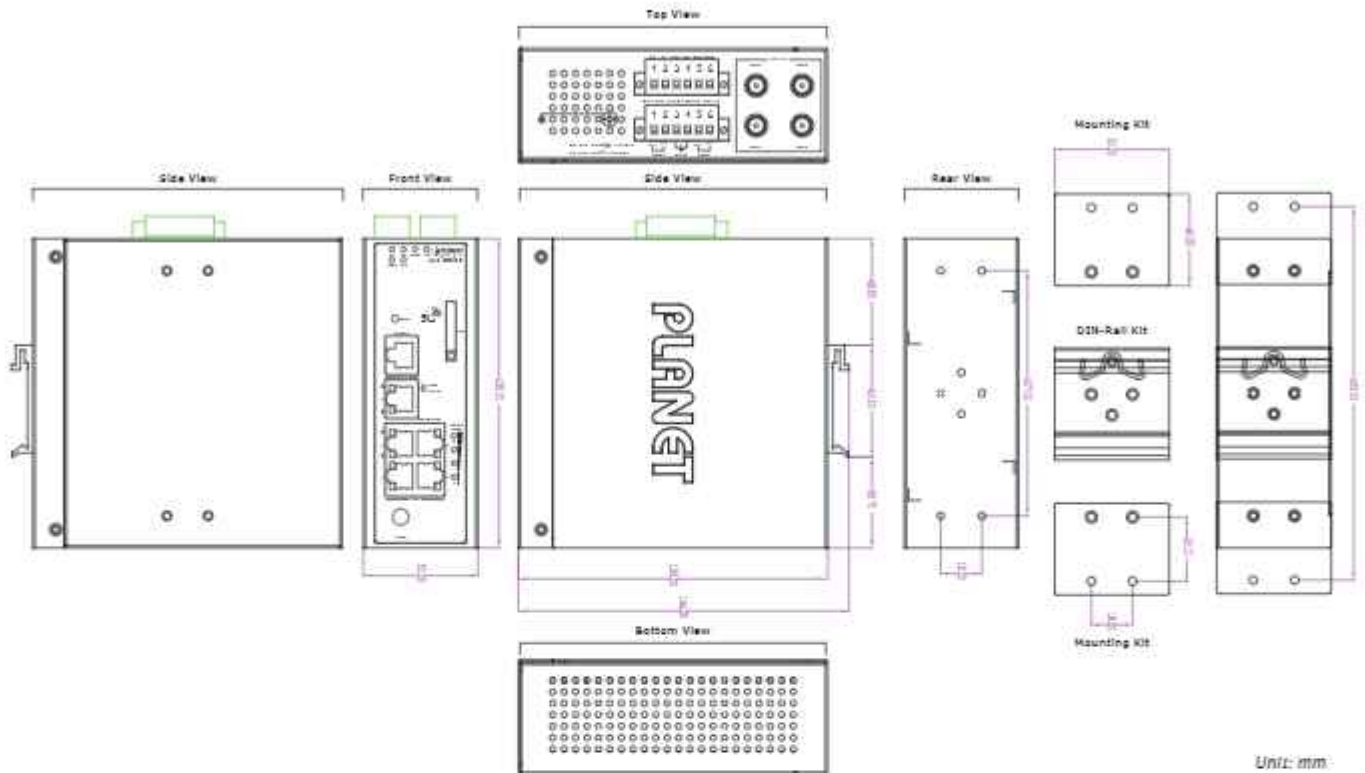


## Specifications

Product	LCG-300-NR
<b>Hardware Specifications</b>	
Ethernet	5 10/100/1000BASE-T RJ45 Ethernet ports including -3 LAN ports (Ports 1 to 3) -1 LAN/WAN port (Port 4) -1 WAN port (Port 5)
Serial Interface	RJ45 type RS485 for Modbus TCP
Cellular Antenna	5 dBi external antennas with SMA connectors for 5G-NR
SIM Interface	1 SIM card slot with mini SIM card tray
LoRa Antenna	2 dBi external antennas with SMA connectors for LoRa
DI & DO Interfaces	2 Digital Input (DI): Level 0: -24V~2.1V (±0.1V) Level 1: 2.1V~24V (±0.1V) Input Load to 24V DC, 10mA max.  2 Digital Output (DO): Open collector to 24V DC, 100mA max.
Connector	Removable 6-pin terminal block for power input Pin 1/2 for Power 1, Pin 3/4 for fault alarm, Pin 5/6 for Power 2
Reset Button	< 5 sec: System reboot > 5 sec: Factory default
Enclosure	IP30 metal case
Installation	DIN-rail, desktop, wall-mounting
LED Indicators	System: P1, P2, LoRa, SIM (Green) Alarm, I/O (Red)  Interfaces (Ports 1-4 and WAN Port): 1000 LNK/ACT (Green) 10/100 LNK/ACT (Amber)  Cellular signal: 4 levels (Green)
Dimensions (W x D x H)	50 x 135 x 135 mm
Weight	924g
Power Requirements – DC	9~34V DC, 1.5A Max.
Power Consumption	Max. 3.9 watts/13.2 BTU (No Loading) Max. 11.6 watts/39.5 BTU (Full loading)
<b>LoRaWAN</b>	
Frequency Band	LCG-300-NR-EU: 863~870MHz (IN865/EU868/RU864) LCG-300-NR-US: 902~928MHz (US915/AU915/KR920/AS923)
Receiving Sensitivity	-142.5dBm
Output Power	27dBm Max.
<b>Multi Band Supports</b>	
5G SUB6 BANDS	NSA: n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n28/n29/n30/n38/n40/n41/ n48/ n66/n70/n71/n75/n78/n77/n78/n79 SA: n1/n2/n3/n5/n7/n8/n12/n13/n14/n18/n20/n25/n28/n29/n30/n38/n40/n41/ n48/n66/n70/n71/n75/n78/n77/n78/n79
LTE BANDS	FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B14/B17/B18/B19/B20/B25/B26/B28/ B29/B30/B32/B66/B71 TDD: B34/B38/B39/B40/B41/B42/B43/B46 LAA: B46
UMTS BANDS	FDD: B1/B2/B6/B4/B5/B19 MAX DL SPEED: DL 3.4Gbps; UL 550 Mbps GNSS: GPS/ GLONASS/ BDS/ Galileo/ QZSS
WCDMA	TDD: MAX DL SPEED DL 2.4 Gbps; UL 900 Mbps B1/B2/B3/B4/B5/B8
GNSS	GPS L1+L5 dual bands/GLONASS/BeiDou/Galileo/QZSS
Data Transmission Throughput	2.4Gbps (DL)/500Mbps (UL) for NR 1Gbps (DL)/200Mbps (UL) for LTE 42Mbps (DL)/5.76Mbps (UL) for HSPA+

Security Service	
Firewall Security	Cybersecurity SSL (HTTPS) Inspection Stateful Packet Inspection (SPI) Blocks DoS/DDoS attack
NAT	Port forwarding DMZ Host UPnP
Content Filtering	MAC filtering IP filtering Web filtering
Bandwidth Management	Outbound load balancing Failover for dual-WAN QoS (Quality of Service)
Networking	
Operation Mode	Routing mode
Routing Protocol	Static Route, Dynamic Route (RIP), OSPF
VLAN	802.1q Tag-based, Port-based, Multi-VLAN
Multicast	IGMP Proxy
NAT Throughput	Max. 900Mbps
Outbound Load Balancing	Supported algorithms: Weight
Protocol	IPv4, IPv6, TCP/IP, UDP, ARP, HTTP, HTTPS, NTP, DNS, PLANET DDNS, PLANET Easy DDNS, DHCP, PPPoE, SNMPv1/v2c/v3
Key Features	HA (High Availability) Captive Portal RADIUS Server/Client AP Control
Advanced Functions	
VPN Function	IPSec/Remote Server (Net-to-Net, Host-to-Net) GRE PPTP Server L2TP Server SSL Server/Client (Open VPN)
VPN Tunnels	Max. 60
VPN Throughput	Max. 108Mbps
Encryption Methods	DES, 3DES, AES or AES-128/192/256 encrypting
Authentication Methods	MD5/SHA-1/SHA-256/SHA-384/SHA-512 authentication algorithm
Management	
Basic Management Interfaces	Web browser SNMP v1, v2c PLANET Smart Discovery utility/UNI-NMS supported
Secure Management Interfaces	SSHv2, TLSv1.2, SNMP v3
System Log	System Event Log
Others	Setup wizard Dashboard System status/service Statistics Connection status Auto reboot Diagnostics
Standards Conformance	
Regulatory Compliance	CE, FCC
Environment	
Operating	Temperature: -40 ~ 75 degrees C Relative humidity: 5 ~ 90% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C Relative humidity: 5 ~ 90% (non-condensing)

## Dimensions



## Ordering Information

LCG-300-NR-EU	Industrial LoRaWAN + 5G NR Cellular Gateway with 5-Port 10/100/1000T (2 DI/DO, -40~75 degrees C, EU868 Sub 1G)
LCG-300-NR-US	Industrial LoRaWAN + 5G NR Cellular Gateway with 5-Port 10/100/1000T (2 DI/DO, -40~75 degrees C, US915 Sub 1G)

## Related Products

LCG-300-EU	Industrial LoRaWAN Gateway with 5-Port 10/100/1000T (2 DI/DO, -40~75 degrees C, EU868 Sub 1G)
LCG-300-US	Industrial LoRaWAN Gateway with 5-Port 10/100/1000T (2 DI/DO, -40~75 degrees C, US915 Sub 1G)
LCG-300W-EU	Industrial LoRaWAN Wireless Gateway with 5-Port 10/100/1000T (802.11ax 1800Mbps, 2 DI/DO, -40~75 degrees C, EU868 Sub 1G)
LCG-300W-US	Industrial LoRaWAN Wireless Gateway with 5-Port 10/100/1000T (802.11ax 1800Mbps, 2 DI/DO, -40~75 degrees C, US915 Sub 1G)
LN501	IP67 LoRaWAN Node Controller
LN1152	IP30 LoRaWAN Node Controller