Siretta
Enabling Industrial IoT

Siretta Products IP addresses Explained

Applicable Products

ZETA Cellular Modems

Part number	Description
ZETA-GEP-LTE4 (EU)	Low Power LTE Cat 4 European Modem with GPIO and GNSS
ZETA-G-GPRS	Entry Level GPRS Modem with GNSS (GL)
ZETA-N2-GPRS	Entry Level GPRS Modem (GL)
ZETA-NEP-LTE4 (EU)	Low Power LTE Cat 4 European Modem with GPIO
ZETA-NEP-LTEM (GL)	Low Power Global LTE Cat M Modem with GPIO
ZETA-NLP-LTE1 (EU)	Ultra Low Power European LTE Cat 1 Modem
ZETA-NLP-LTEM (GL)	Ultra Low Power Global LTE Cat M Modem
ZETA-N-LTE (EU)	High Performance LTE Cat 4 Modem with GPIO
ZETA-NSP-LTE1 (EU)	Low Power European LTE Cat 1 Modem

SENTRY Cellular Survey Loggers

Part number	Description
SENTRY-G-LTE4 (EU)	Remote Continuous Survey LTE Logger (EU)
SENTRY-G-LTE4 (USA)	Remote Continuous Survey LTE Logger (USA)

SL500 Cellular Serial Gateways

Part number	Description
SL500-LTE1 (EU)	LTE Cat 1 RS232 Serial Gateway
SL500-LTEM (GL)	LTE Cat M / NB IoT RS232 Serial Gateway

QUARTZ Routers

Part number	Description
QUARTZ-22-LTE (EU)	Dual Port Dual SIM LTE Router (EU)
QUARTZ-22-UMTS (EU)	Dual Port Dual SIM UMTS Router (EU)
QUARTZ-COMPACT-11-LTE (EU)	Single Port Compact LTE Router (EU)
QUARTZ-COMPACT-11-UMTS (EU)	Single Port Compact UMTS Router (EU)
QUARTZ-COMPACT-G11-LTE (EU)	Single Port Compact LTE Router (EU) with GPS
QUARTZ-GOLD-21-5G (GL)	Dual Port Gigabit Ethernet 5G NR Router (GL)
QUARTZ-GOLD-W21-5G (EU)	Dual Port Gigabit Ethernet 5G NR Router (EU)
QUARTZ-GOLD-W21-5G (GL)	Dual Port Gigabit Ethernet 5G NR Router (GL)
QUARTZ-GW22-LTE (EU)	Dual Port Dual SIM LTE Router (EU) with GPS
QUARTZ-LITE-11-LTE (EU)	Dual Port Small Footprint LTE Router (EU)
QUARTZ-LITE-21-LTE (EU)	Dual Port Small Footprint LTE Router (EU)
QUARTZ-LITE-21-UMTS (EU)	Dual Port Small Footprint UMTS Router (EU)
QUARTZ-LITE-G21-LTE (EU)	Dual Port Small Footprint LTE Router (EU) with GPS
QUARTZ-LITE-G21-UMTS (EU)	Dual Port Small Footprint UMTS Router (EU)
QUARTZ-LITE-GW21-LTE (EU)	Dual Port Small Footprint LTE Router (EU) with GPS
QUARTZ-LITE-GW21-UMTS (EU)	Dual Port Small Footprint UMTS Router (EU)
QUARTZ-LITE-W21-LTE (EU)	Dual Port Small Footprint LTE Router (EU)
QUARTZ-LITE-W21-UMTS (EU)	Dual Port Small Footprint UMTS Router (EU)
QUARTZ-ONYX-GW42-5G (GL)	Quad Port Gigabit Ethernet 5G NR Router (GL) with GPS
QUARTZ-ONYX-W42-5G (GL)	Quad Port Gigabit Ethernet 5G NR Router (GL)
QUARTZ-W22-LTE (EU)	Dual Port Dual SIM LTE Router (EU)
QUARTZ-W22-UMTS (EU)	Dual Port Dual SIM UMTS Router (EU)

Objective

This application note explains IP address, types of IP addresses, version of IP addresses, classes of IP addresses, subnet mask, converting IP address into binary.

Solution

To avoid IP conflicts each device must be assigned a unique IP address.

IP address stands for an Internet Protocol address, it is a unique number that devices use to communicate with another device in a network.
There are four types of IP addresses.
1. Public IP address
2. Private IP address
3. Fixed/Static IP address
4. Dynamic IP address

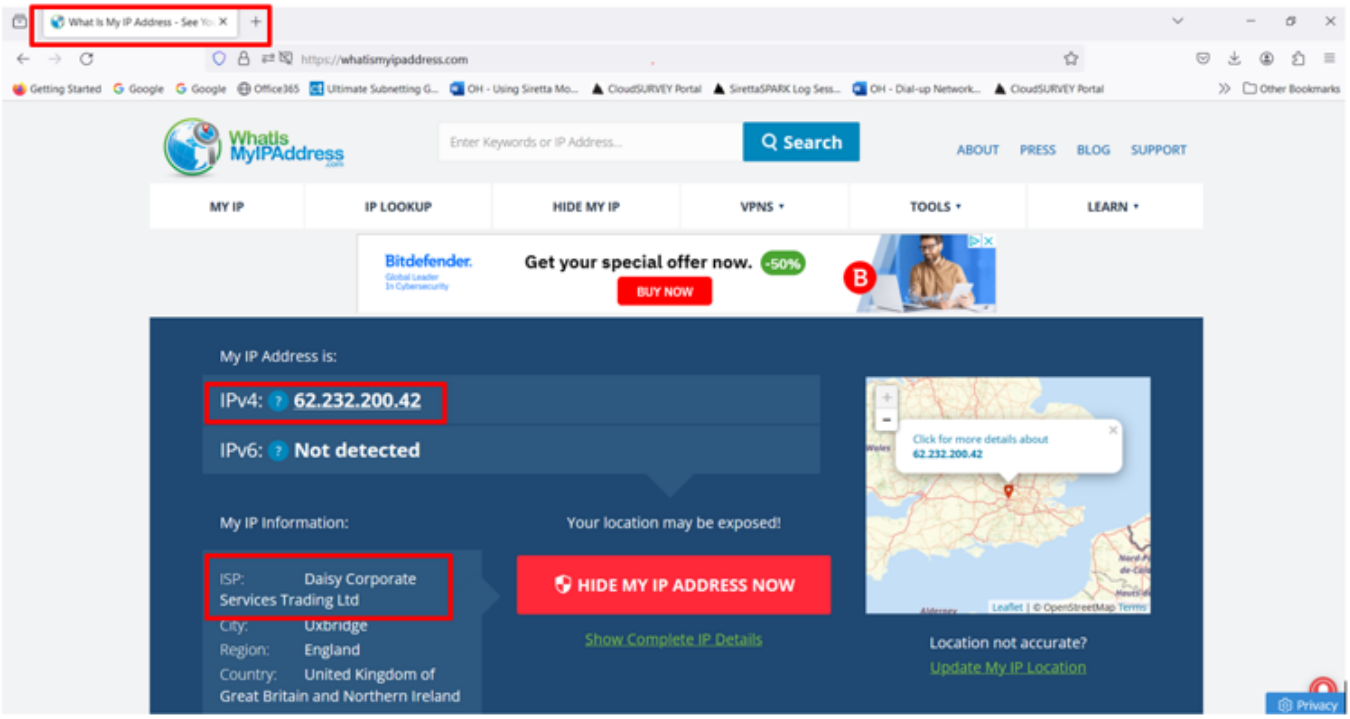
Public IP address

A Public IP address is the IP address that is provided for your cellular modem/router etc. by your ISP (Internet Service Provider) for access to the Internet. A public IP address may change once a device is rebooted.

How to obtain Public IP addresses of Siretta products

Siretta Quartz Routers

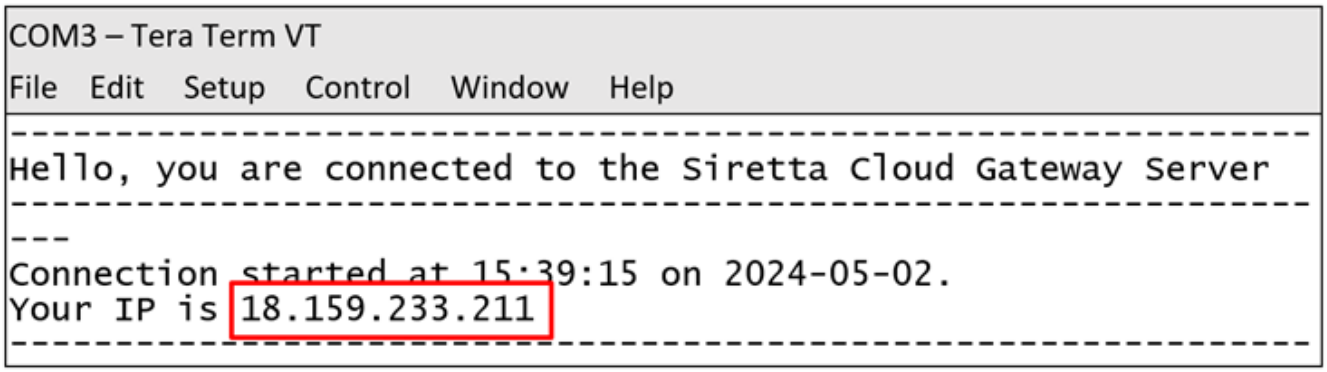
There are many ways to obtain Public IP address of a Siretta Quartz router. One example is to go to https://whatismyipaddress.com/ when the router is connected to your PC.



From this example the public IP address is 62.232.200.42

SL500 and ZETA Modems

When a Siretta modem is connected to a server (example below shows a ZETA modem connected to Siretta Cloud Gateway Server) the IP address is displayed.



Private IP addresses

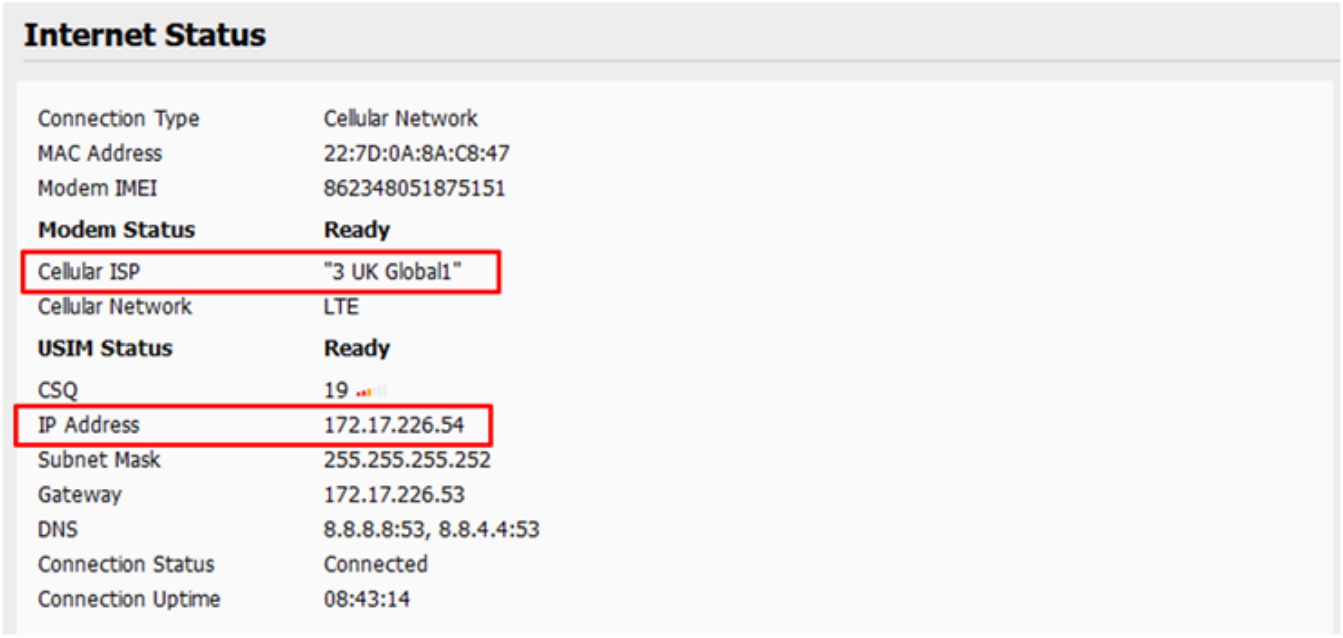
Private IP addresses are IP addresses used for internal communication within a Local Area Network (LAN). A private IP address cannot be used to access internet, as it is not visible outside the LAN.

For example, in Siretta Quartz routers the default private IP address is 192.168.1.1. This IP Address is for communication between router and a PC for configurations purposes and is not visible to the outside world.

How to obtain a Private IP addresses for Siretta product

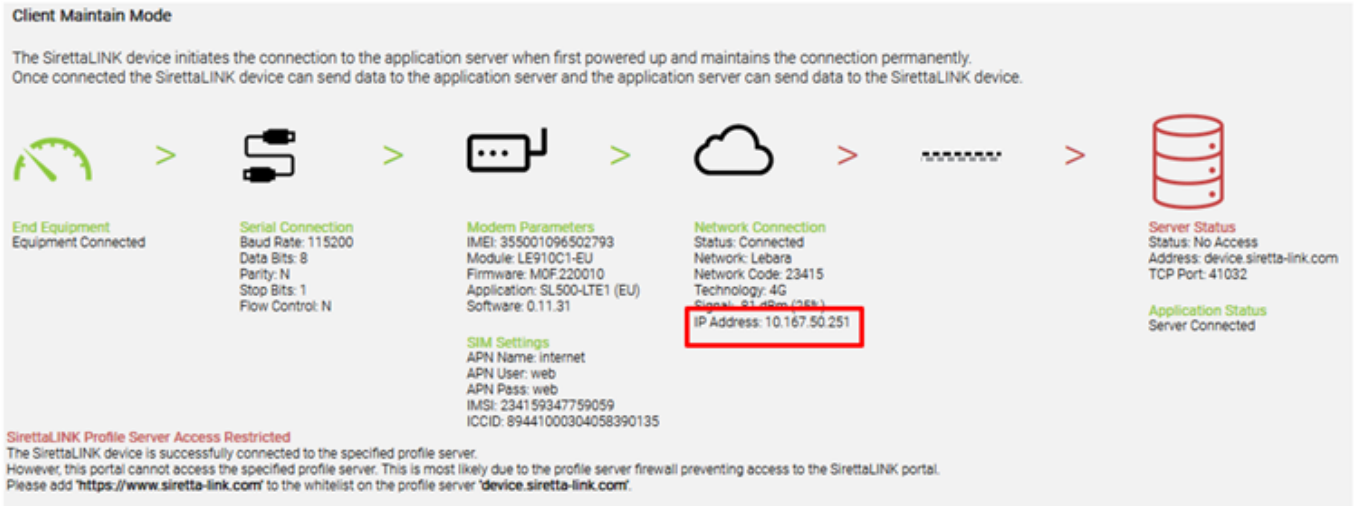
Quartz router

When the Siretta router is connected to the internet it acquires a private IP address from the mobile service provider as seen below.



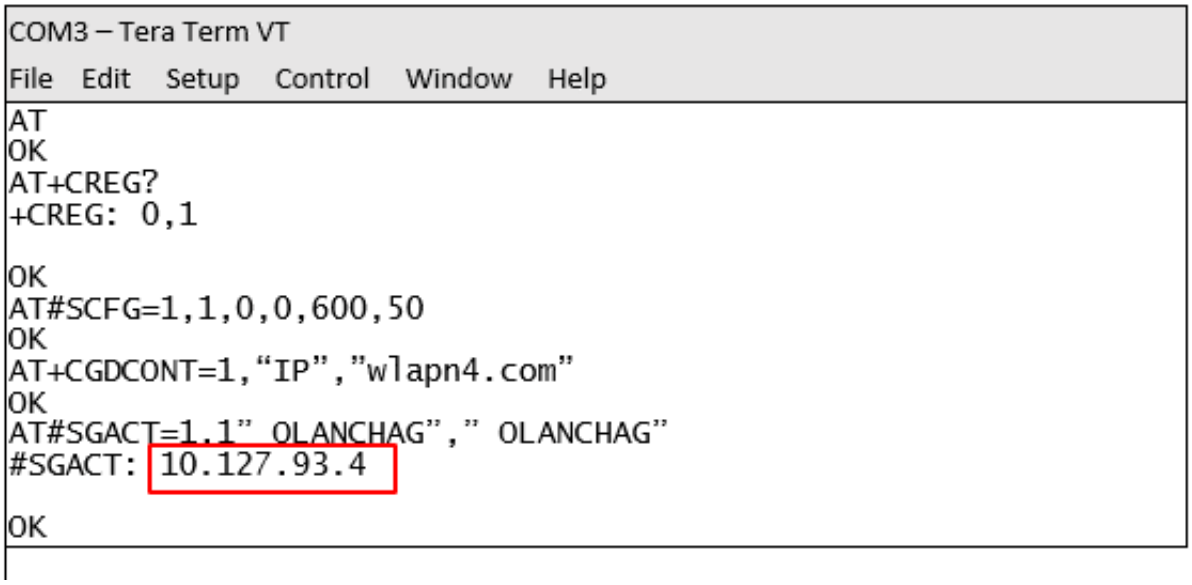
SL500 Serial Gateway

In SL500 Private IP address can be viewed on the device Management Portal when device becomes online on portal.

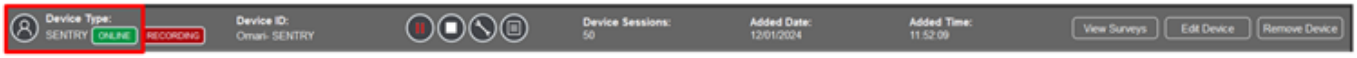


ZETA modem

The ZETA Private IP address can be viewed by issuing set of AT commands to the modem using Terminal Emulator program as seen below.



For SENTRY there is no way for user to identity what private IP address was used. Knowing private IP address in SENTRY is unnecessary, as the device is communicating directly with the portal, once portal shows device is ONLINE, then device has obtained a private IP address from the mobile service provider.



Fixed/Static IP address

A fixed IP address is the type of IP address that stays fixed.

Fixed IP addresses can be either Public or Private and are used to remotely access Siretta cellular devices such as SL500, ZETA and QUARTZ, or access services behind them using the internet.

When connecting to the Internet, not all SIM cards from an ISP come with a Fixed IP address and must be specifically

requested.

Dynamic IP address

Dynamic IP address is assigned by the router and changes when a device is rebooted. A Dynamic IP address does not allow the user to remotely access a cellular device. However, Intrenet access is possible, as the ISP can recognise the range of Dynamic IP addresses available to the router.

IP address versions

There are two **Versions** of IP addresses.

1. Internet Protocol Version 4 - **IPv4**
2. Internet Protocol Version 6 – **IPv6**

Internet Protocol Version 4 - IPv4

Internet Protocol Version 4 is 32 bit long, it contains four octets separated by dots, and is used for internet communication

Example of IPV4 is: 192.168.1.1.

1. The first octet is “192.”
2. The second octet is “168.”
3. Third octet is “1.”
4. Fourth octet is “1”

Internet Protocol Version 6 – IPv6

Internet Protocol Version 6 is the type of IP address, which is 128 bit long, it uses combination of numbers and letters to identify the device in a IPV6 network.

Example of IPV6 is: fe80::9428:944b:610a:c2b%28.

There are four **Classes** of IP addresses.
1. Class A
2. Class B
3. Class C
4. Class D

The table below shows a Summary of IP Classes and their IP range.

	Class A	Class B	Class C	Class D
Address Range	1-127	128 - 191	192 - 223	224 - 247
Subnet Mask	255.0.0.0	255.255.0.0	255.255.255.0	

Subnet Mask

Subnet stands for sub networking, subnet mask is the process of separating IP address into two portions, a network portion and host portion.

Subnetting is the process of diving a large single network into groups of sub networks.

Demonstration of Solution

Table below summarises sim card requirements for each application.

Part number	Application	Sim IP address	IP Version
ZETA	[Client] – Posting Data from RS232 to the Server.	Dynamic	IPV4
ZETA	[Server] - Dial in to the device RS232 to obtain data	Public Fixed/ Private Fixed with VPN	IPV4
SL500	[Client]- Posting Data from RS232 to the Server.	Dynamic	IPV4
SL500	[Server] - Dial in to the device RS232 to obtain data.	Public Fixed/ Private Fixed with VPN	IPV4
SENTRY	Cloud Survey Management Portal	Dynamic	IPV4
QUARTZ	Non- Remote access	Dynamic	IPV4
QUARTZ	Remote access	Public Fixed/ Private Fixed with VPN	IPV4

Note: Siretta products do not support IPv**6 currently.**

Note: When you order a SIM card from a mobile service provider remember to request a technology such as CAT-M (LTE-M), CAT NB-IOT, GSM (2G), UMTS (3G), LTE (4G) or 5G (NR) which are supported by your Siretta device and IP address requirements depending on application per table above.

Converting IP address into binary

IP addresses covered in this document are in a decimal format. For machine-to-machine communication binary format is needed. There are various online tools such as https://www.rapidtables.com/convert/number/decimal-to-binary.html which can be used to convert decimal to binary if required for your application.

Additional Reading

Description	Author
Assignment of IP address https://www.iana.org/	IANA
Dynamic IP address https://www.siretta.com/2019/04/setting-dynamic-dns-ddns-on-a-siretta-router/	Siretta
Remote Access https://pages.siretta.com/port-forwarding-using-a-siretta-router-application-note/	Siretta
https://www.siretta.com/2019/03/configuring-ip-passthrough-with-siretta-routers/	Siretta
https://www.siretta.com/2023/01/setting-incoming-and-outgoing-data-socket-connection-using-siretta-modem/	Siretta