QUAKE GLOBAL

Dual-Mode Telematics Whitepaper

Why You Need Dual-Mode Communication Modems for Monitoring Valuable Equipment

Communications technology is complex, and people often get overwhelmed with trying to understand which options they need and how the solutions will bring value to their organizations. To clarify some of the issues, we have provided some descriptions of the communication technologies Quake Global offers, what the benefits are to each aspect of dual-mode communication, how Satellite and LTE work in partnership to provide reliable communication. Finally, we have provided some real-world examples of how Quake's technology has been used by our customers.

Quake Global has designed products that offer dual-mode communications that include both LTE cellular and satellite technology.

Q4000 ™ is a small footprint telematics modem designed to be embedded as a component within any system our customers are building.

In some rare cases, customers use Q4000 as a satellite-based system without dual LTE, primarily when they have already invested in a system for cellular communication. We strongly recommend using an integrated system to ensure system compatibility and highest-quality communications.

Q4000
Dual-Mode Telematics

- SATELLITE AND CELLULAR DUAL MODE MODEM
- The industrial-grade Q4000 features cellular (LTE Cat M / NB IoT), satellite or dual-mode network configurations and fully programmable onboard applications with GPS.

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Why LTE?

Quake Global's LTE communication solution comes with the latest versions of global LTE. Our customers asked us for LTE to increase bandwidth data speeds, reduce latency, and increase network capacity, and speed. Some wanted the Low Power Wide Area cellular technology that enables them to get information from large numbers of assets with low data cost. Quake's flexible product configurations meet all of those demands and the technology's innovative features result in higher productivity, efficient communication and the enormous benefit of delivering immediate real-time data for the valuable high dollar assets many companies own.

Why Satellite Technology?

Satellite communication provides complete coverage, with truly global communication, from pole to pole. With these uniquely sophisticated global constellations of cross-linked satellites, communication is continuous and reliable, and the added benefit of low earth orbit gives the best communication signal strength regardless of the terrain.

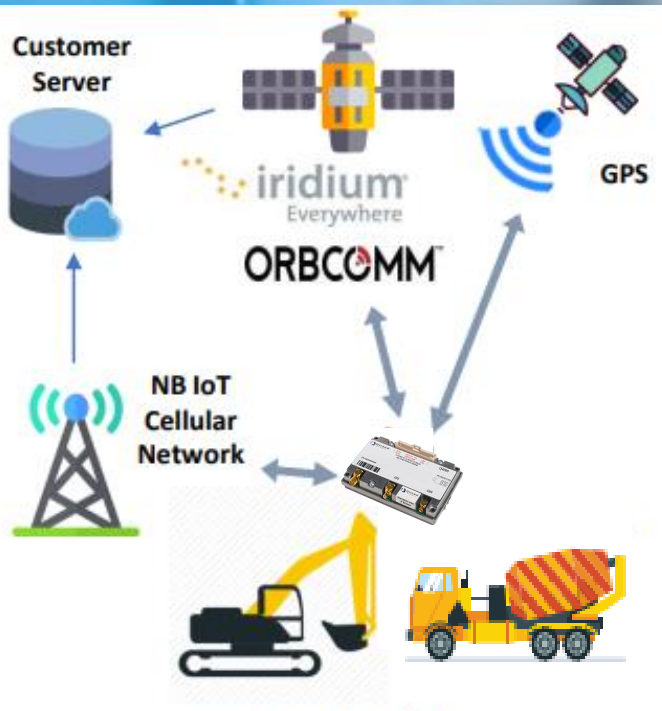
Q4000
The LTE / GPS Solution:

ADVANTAGES

- Stand-alone communications solution
- Increases developer capabilities with API
- Meets technical requirements by offering an array of customization options
- Built-in data compression
- Network agnostic for global use
- MQTT protocol support
- J1455 compliant

SPEC HIGHLIGHTS

- **CAN Bus J1939**
- 3 Serial RS-232C
- **Multiple inputs/outputs**: analog, digital GPIO (Digital Relay)
- Cellular network options: **LTE Cat M1/NB IoT**
- Satellite network options: **Iridium or Orbcomm, and GPS**



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Why is Dual Mode better?

Quake's Dual-mode solution provides users the ability to use lower-cost cellular data as the primary communication mode, and at the same time have satellite communication as a backup to guarantee the transmission of critical data. Quake offers the only complete dual-mode solution with failover that provides both global satellite and Cellular with LTE in the market today.

Quakes Q4000 offer the best of both technologies, bringing the worldwide and reliable satellite communication with global coverage combined with more efficient battery saving traffic management and the high speed and reduced latency of LTE

Who benefits from dual-mode communication?

Dual-mode systems can be used in a variety of industries that need location intelligence and can benefit from worldwide coverage such as aviation, oil and gas, construction, heavy equipment, fleet management and maritime.

Quake's customers have used dual-mode modems for location and diagnostics for:

- Heavy equipment in remote sites – construction, agriculture, forestry, military etc.
- Remote mining and gas operations
- Maritime customers such as buoys, small vessels, and container ships
- Aviation customers such as helicopters, drones, small planes, and satellites
- Commercial trucks in fleet management.
- Large manufacturing locating forklifts, shuttles, and other transport vehicles.

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Why invest in Quake Global's Location Intelligence Solution?

Quakes products are configurable and fully programmable with the flexibility to suit any user's needs. Our customers can customize location and machine diagnostics hardware features to extend their solutions for maximum benefit to their organization.

With 25 years of location intelligence, Quake Global has the experience and technology innovation needed by our customers. Our location and telematics solutions have stood the test of time with millions of devices delivered worldwide in over 150 countries. Investing in the solution with the best technology that will continue providing excellent communication services today and in the future is a smart choice. Quake Global's Intelligent location solutions provide 360-degree visibility to anything and at any time.

QUAKE GLOBAL™ - The Leading Provider of Synchronized Asset Intelligence Solutions. Our primary focus is IoT, M2M, Telematics, Modems, and RTLS.

The award-winning tracking pioneer Quake provides advanced data solutions for asset management and monitoring. Quake Global has developed hundreds of custom programable solutions for its customers utilizing Cellular, Satellite, GNSS, Wi-Fi, BLE, V2x, and RFID communications. Quake is the leading manufacturer of Machine to Machine (M2M) Telematics and Modems, delivering millions of solutions.

Headquartered in San Diego, California, Quake's solutions, products, and design services span the globe. Quake Global has engineered and manufactured market-leading asset monitoring and tracking communications systems for trucks, heavy equipment, ships, fishing boats, pipelines, trains, and utility meters around the world are being monitored,

Find out how Quake Global makes a difference for you.

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