

CELLULAR ROUTER FOR COLD CHAIN TEMPERATURE MONITORING SYSTEM

HIGHLIGHTS

- ✓ [Mantys.app](#) is a Chilean leader in IoT solutions for real-time monitoring and digital transformation of industrial processes, dedicated to providing comprehensive solutions that increase operational efficiency and reliability.
- ✓ For its cold chain temperature monitoring system used in operating rooms and vaccine storage, it needed a 4G router with BLE and remote monitoring and management capabilities.
- ✓ The chosen device is our RUTX11 industrial cellular router, bringing this network solution to life with resilient LTE Cat 6 connectivity and enabling Mantys to take full advantage of the alerts and automation capabilities of our RMS.

THE CHALLENGE – MONITORING THE COLD

Cold chain logistics keep food produce from spoiling and extend its longevity via cold storage. It also enables vaccine research and distribution and safe operating room operations by ensuring optimal and consistent temperatures. In 2023, [this market was valued at](#) \$270.98 billion, and it's expected to grow with a CAGR of 18.9% from 2024 to 2030.

Needless to say, the global cold chain market is a hot one.

However, the road to achieving this ambitious market growth is not without challenges. Since cold is key, the stepping stone for innovations such as automation and [predictive maintenance](#) is the remote monitoring of parameters that affect cold, such temperature and humidity monitoring systems. Such systems necessitate the deployment of measurement sensors, which require connectivity for real-time data transmission and remote capabilities.

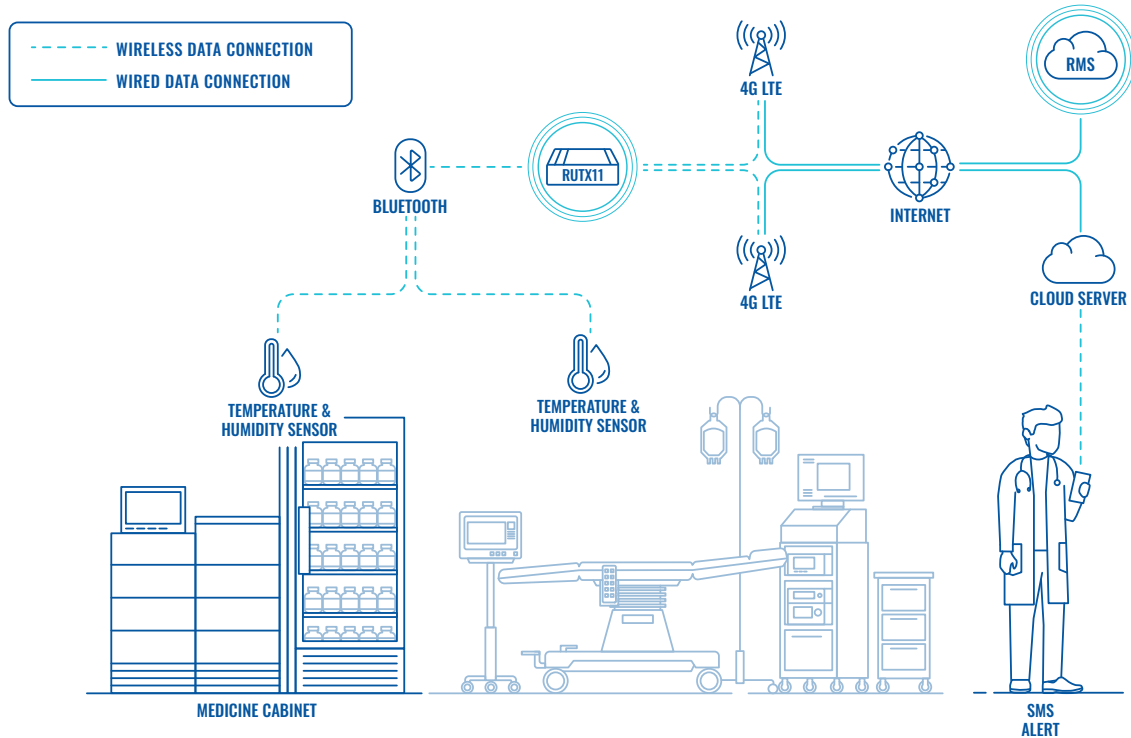
There an issue, though. Just as heat naturally disperses, so do the locations where temperature and humidity monitoring systems are needed.

Critical supplies such as refrigerated cabinets or cold chambers are used in surgical wards and clinics for vaccines, as well as in every step of the modern food chain. If you're a cold chain logistics provider, monitoring temperatures for all your clients is no simple task.

But where there is connectivity, there is a way.

Our partner, Mantys.app, provides an SaaS application allowing its clients to remotely monitor their cold chain equipment in real-time, from anywhere, on any device. At the centre of the network infrastructure of its cold chain monitoring solution is a stellar industrial cellular router.

TOPOLOGY



THE SOLUTION – COLD HARD RELIABILITY

The device chosen for Mantys’s temperature monitoring system is Teltonika’s RUTX11 cellular router, enhancing this cold solution with reliable LTE Cat 6 connectivity, Bluetooth and GNSS capabilities, and access to a world of remote management efficiency via our [Remote Management System \(RMS\)](#).

Temperature and humidity monitoring sensors are stationed in the operating rooms and cold storage equipment of each of Mantys’s clients. A RUTX11 4G LTE router is deployed to the premises of each client, and the device facilitates communication with the sensors via [Bluetooth Low Energy \(BLE\)](#). A single RUTX11 device can connect to up to 200 BLE-enabled sensors.

The RUTX11 cellular router then collects the data from the temperature and humidity monitoring sensors and transmits it the [MQTT protocol](#) to Mantys’s cloud server, where it is stored for end-user management and visualisation. Automatic email or SMS alerts can be configured to go off at predefined thresholds.

The connectivity provided by this 4G router is LTE Cat 6, bringing with it cellular speeds of up to 300Mbps with [carrier aggregation](#). The connection is made extra-reliable thanks to the RUTX11’s dual SIM functionality, with [auto-failover](#), backup WAN, and other switching scenarios that ensure an uninterrupted connection.

Speaking of keeping things uninterrupted, the cellular router is also connected to an external battery that extends its use by up to six hours in case of power supply interruptions. This makes Mantys’s cold chain monitoring solution independent from their clients’ power infrastructure, further reinforcing the reliability of the RUTX11’s resilient network.

The fleet of RUTX11 4G LTE routers is managed remotely via Teltonika's RMS, allowing for quick and easy firmware updates, password changes, troubleshooting, and other routine device management tasks. Of course, this remote connection is secured by the numerous VPNs supported by RMS for optimal data safeguarding.

RMS also features comprehensive [alerts and automation capabilities](#), allowing Mantys to construct predefined and automated responses to potential issues, such as temperature irregularities, adding extra value to its services.

The RUTX11 industrial cellular router is perfect for this network solution. On top of seamless connectivity and BLE support, the device features four Gigabit RJ45 ports, [GNSS](#) capabilities for GPS tracking, a wide range of supported industrial protocols, and operating temperatures comfortable with -40 °C.

Together with RMS, the RUTX11 cellular router brings this cold chain monitoring solution to life with robust plug-and-play features and availability, all while allowing Mantys.app to maintain competitive costs for its services.

