CELLULAR ROUTER FOR FIRSTNET LIFT STATION REMOTE MONITORING

HIGHLIGHTS

✓ LEC is a U.S.-based automation and integration specialist dedicated to providing its clients with industrial automation, control engineering, and industrial IoT enablement and cloud platform services of the highest quality.

✓ Its iQ2 remote management tool provides IoT remote monitoring and management capabilities to lift stations across the U.S. by transmitting critical data through the FirstNet cellular network to the iQ2 platform, allowing for quick response to alarms.

✓ This data transmission requires a reliable, FirstNet-certified 4G LTE router – the RUT956. This cellular router checks all the boxes by providing this solution with seamless, uninterrupted connectivity, interface versatility, and support of a wide range of industrial protocols.

THE CHALLENGE – THE LAST RESPONDERS OF LIFT STATIONS

Across the United States are over 2 million sewer lift stations transporting wastewater from a lower level to a higher one, enabling continuous water flow with the help of good, old-fashioned gravity.

To achieve this, sewer lift stations utilise a combination of float switches, lift station pumps, and a wet well where the wastewater is collected. An above-ground control panel is then installed for on-site management of the station.

These lift stations are incredibly important infrastructure, particularly in the event of a natural disaster, such as a hurricane or a flash flood. In spite of this, the monitoring practices of these stations often range from subpar to outright outdated.

Common examples include a flashing red light or an audible alarm that must be detected and reported by on-site personnel or a routine drive-by before any further action can be taken. This means that, in practice, these alarm signals can and do go unnoticed for some time. Given the importance of lift stations functioning properly at all times, a lack of 24/7 monitoring is a disaster waiting to happen.

This is where FirstNet enters the picture. FirstNet is a U.S. authority meant to establish, operate, and maintain an interoperable public safety broadband network. In other words – to provide and ensure connectivity for first responders, disaster response, and emergencies.

To connect sewer lift stations across the U.S. to the FirstNet cellular network and enable IoT remote monitoring and management capabilities in line with Industry 4.0 standards, our partners at LEC created the iQ2 lift station remote management tool.

Their solution required a reliable, FirstNet-certified cellular router to ensure uninterrupted connectivity to the FirstNet network. Teltonika Networks had the perfect device for the job: the RUT956 4G LTE router.

TOPOLOGY

WIRELESS DATA CONNECTION
WIRED DATA CONNECTION
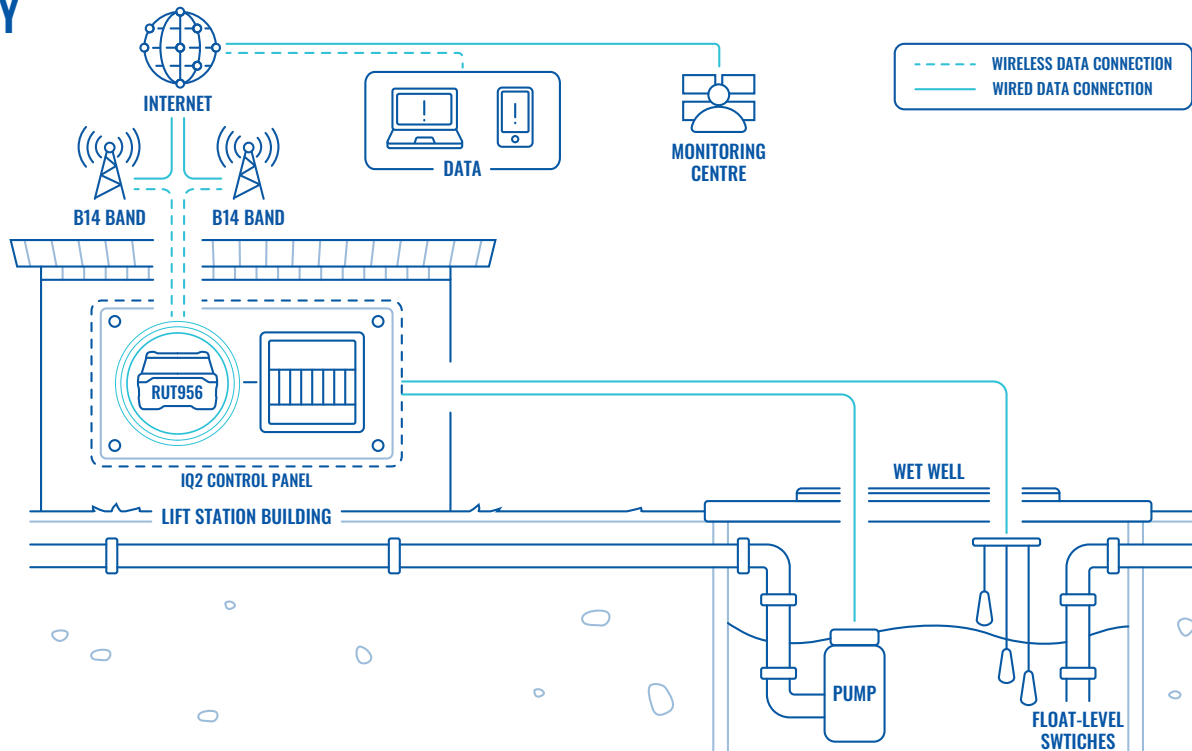
THE SOLUTION – LIFTING YOUR STATION TO FIRSTNET

The Teltonika Networks RUT956 cellular router is a reliable and versatile networking device that makes the iQ2 remote management tool tick with seamless uninterrupted connectivity.

This 4G router is connected to the iQ2 control panel via Ethernet. The control panel is connected to the different parts within the wet well, such as the float-level switches and lift station pumps, and receives signals like float and motor status from them. These signals are then transmitted through the RUT956 via the Modbus TCP protocol and are held in an internal LEC database.

At user-defined intervals, the data collected via Modbus TCP is transmitted through the FirstNet cellular network to LEC's iQ2 platform using the MQTT protocol – the golden standard for IoT remote monitoring.
The user can then view the data and control all lift station operations remotely, with a push of a button, from anywhere in the world. If an alarm does go off for any reason, it will be detected and responded to quickly, ensuring the lift station functions properly at all times.

A number of key features make the RUT956 an excellent choice for this solution. Its interface versatility and support of a wide range of industrial protocols, including the MQTT protocol and Modbus TCP, make it easy to slot the 4G router into iQ2 control panels while also future-proofing the solution for potential upgrades at a later point.

This cellular router not only provides seamless connectivity, but ensures an uninterrupted connection thanks to having dual SIM slots, auto-failover, backup WAN, and other switching scenarios. This level of connection safeguarding is exactly what a networking solution connected to the FirstNet network needs.

In addition, the RUT956 is easy to integrate into an IoT remote monitoring solution. It features GNSS capabilities for effective device tracking and is compatible with the Remote Management System (RMS) of Teltonika Networks, meaning that integration with LEC's iQ2 platform is simple by design.

Lastly, this cellular router was engineered for adverse industrial environments. Protected by sturdy aluminium housing and capable of withstanding vibrations and extreme temperatures from -40 °C to 75 °C, the RUT956 will perform in just about any environment a sewer lift station can be installed in.

If you're in the market for a FirstNet-certified cellular router for your lift station solution, the RUT956 of Teltonika Networks is your IoT dream come true.