

INDUSTRIAL IOT GATEWAY FOR REDUCED WATER CONSUMPTION

HIGHLIGHTS

- ✓ [Lumo Robotics](#) is a Brazilian company specialising in semi-autonomous cleaning robots for solar power plants. Its semi-autonomous robot, [Lumobot V1](#), is designed to improve energy efficiency, reduce water consumption, and enhance operational management, contributing to sustainable energy solutions.
- ✓ A reliable connectivity device capable of withstanding the challenging conditions of solar plant environments was essential to ensure transmission of telemetry data from the Lumobot V1 to the Lumo Robotics cloud platform.
- ✓ Enter the [TRB256](#) IoT gateway – 4G LTE connectivity device with dual SIM, compatible with Teltonika's Remote Management System (RMS).

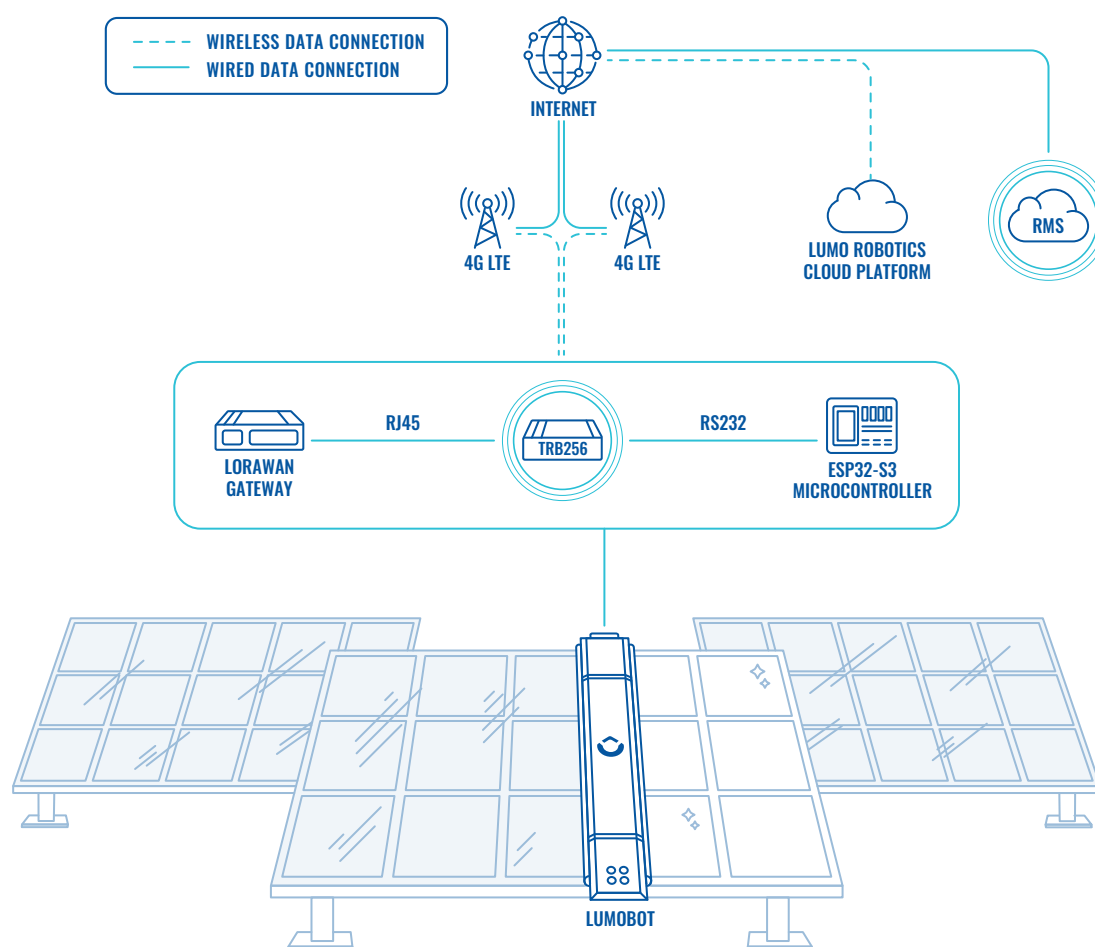
THE CHALLENGE – CONSUMING LESS WATER

In 2024, global water consumption reached approximately [4.3 trillion cubic meters](#), marking a significant increase from the 2.9 trillion cubic meters consumed by the beginning of 2023. Rising global water consumption intensifies [water scarcity](#), with [over 3 billion people](#) already living in water-stressed regions.

Recognising this challenge, our Brazilian partner, Lumo Robotics, have developed the Lumobot V1, a semi-autonomous robot designed to clean solar panels efficiently while conserving water.

To ensure reliable delivery of telemetry data from the Lumobot V1 to the Lumo Robotics cloud platform, a reliable connectivity device was needed – one capable of maintaining stable performance in remote desert locations with limited cell towers and extreme temperature fluctuations, ranging from scorching daytime heat to freezing cold at night

TOPOLOGY



THE SOLUTION – IOT GATEWAY & REMOTE MANAGEMENT

The Lumobot V1 model reduces water consumption, time, and labour by up to 80% compared to manual cleaning. With its own software and the Lumo Robotics cloud platform, end users can manage and monitor productivity in a centralised and practical way.

But even the most advanced cleaning robot needs reliable connectivity to perform at its best. That's where Teltonika's TRB256 IoT gateway comes in – the perfect choice to tackle connectivity challenges and ensure seamless operation.

This 4G LTE gateway has dual SIM functionality and supports NB-IoT and CAT-M1 technologies. The dual SIM feature guarantees uninterrupted connectivity with automatic [failover](#), seamlessly switching between operators to ensure continuous telemetry data transmission, even in areas with limited coverage.

In addition, the NB-IoT and CAT-M1 technologies are ideal for remote environments, providing great coverage and energy efficiency. On top of that, our 4G LTE gateway's sturdy, aluminium housing can withstand operating temperatures from -40 °C to 75 °C, making it great choice for harsh condition establishments, such as solar plants.

Moreover, the TRB256 4G LTE gateway is seamlessly connected to a LoraWAN gateway via the RJ45 port, facilitating long-range, low-power communication. At the same time, our IoT gateway is connected to the ESP32-S3 microcontroller via an RS232 connection and transmits telemetry data to the Lumo Robotics cloud platform using the MQTT protocol.

This IoT solution also relies on Teltonika's [Remote Management System](#) (RMS). Using this remote monitoring tool, Lumo Robotics was able to remotely manage equipment status and cellular data usage, significantly reducing costs.

A myriad of VPN services, including OpenVPN, IPsec, [ZeroTier](#), Stunnel, and many more make our IoT gateway especially secure.

As our partner stated, "Reliable visualisation of water and energy consumption data is essential to the Lumo Robotics business model. The Teltonika TRB256 IoT gateway met these expectations, transmitting telemetry data from the Lumobot V1 reliably, even in demanding environments."

So, don't wait too long – get in touch with us and see how our connectivity devices could benefit your IoT solutions!

