MYTHINGS Pilot Kit

The MYTHINGS product line features MIOTY's fully ETSI TS 103 357-compliant specifications to deliver unparalleled interference immunity, scalability and power-efficiency for large-scale IoT deployments in the industrial and commercial marketplaces.

A well-designed Proof-of-Concept (PoC) is critical for a successful full scale IoT rollout. To simplify your PoC planning and reduce time-to-market of your IoT solution, the MYTHINGS Pilot Kit delivers a fully packaged offering to help you set up and test your MYTHINGS network with the shortest lead time.

The Pilot Kit comes with a MYTHINGS Base Station, two MYTHINGS Smart Sensors, an antenna, the accessory kit and an insightful user guide. The Base Station and Smart Sensors are pre-programmed with MYTHINGS OS and Library respectively, to deliver out-of-the-box LPWAN connectivity.

Product Features

- All-in-one packaged offering for rapid edge-to-cloud deployment of a MYTHINGS LPWA private network

- Preconfigured components with a powerful suite of features to ensure a hassle-free installation process.

- Network range of up to 15 km in open space and 5 km in urban areas

- Support for 868 MHz (EU) and 915 MHz (North America) license free frequency bands

- Native integration with Microsoft Azure for storage and visualization of incoming sensor data

- Native integration with MQTT for connectivity with additional cloud offerings and on-prem analysis

BEHRTECH
www.behrtech.com

Predictive
Maintenance
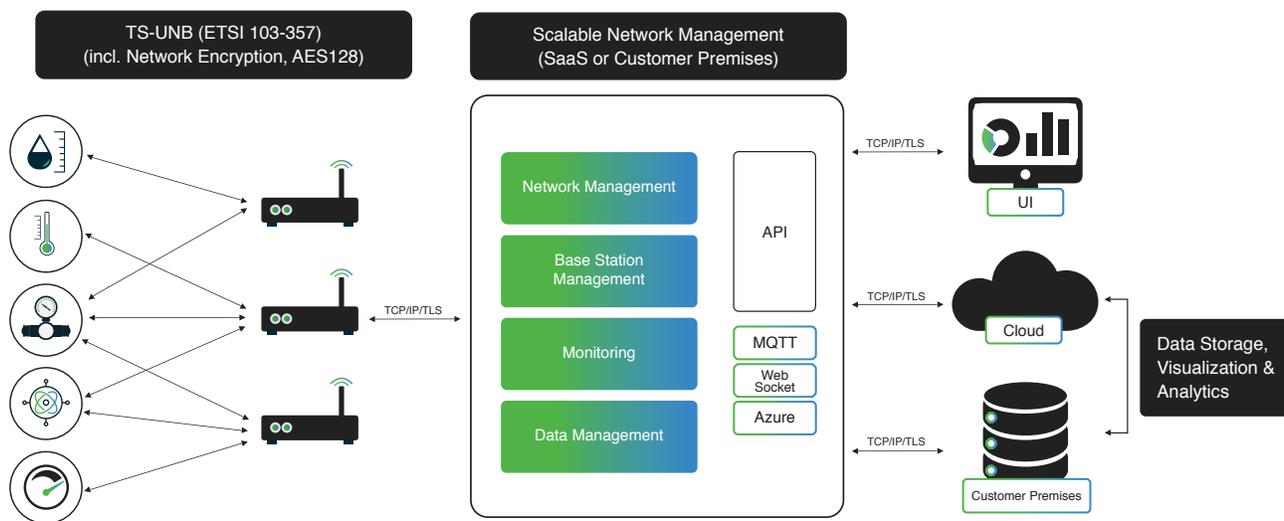
Environmental
Monitoring

Worker Health &
Safety

HVAC & Energy
Management

Infrastructure &
Facility Management

Asset
Tracking

How It Works

The deployment of the MYTHINGS Pilot Kit starts with the physical installation of the Base Station which is explained in the User Guide. In order to set up a MYTHINGS network environment, the Smart Sensors must then added to the Base Station. This so-called on-boarding process is either performed directly on the web-based MYTHINGS Central Platform for network management or via API calls. It requires inputs of the network session key and the Extended Unique Identifier (EUI) that can be found on the back of each Smart Sensor. Once set up and running, all network data including reception time, Sensor ID, user payload, signal level and noise level will be displayed on the MYTHINGS Central platform as well as users' preferred interfaces.

TS-UNB (ETSI 103-357)
(incl. Network Encryption, AES128)

Scalable Network Management
(SaaS or Customer Premises)

Network Management

Base Station Management

Monitoring

Data Management

API

MQTT

Web Socket

Azure

TCP/IP/TLS

TCP/IP/TLS

TCP/IP/TLS

TCP/IP/TLS

UI

Cloud

Customer Premises

Data Storage, Visualization & Analytics

MYTHINGS Base Station

The MYTHINGS Base Station is a highly scalable and manageable IoT communications gateway geared for a multitude of demanding industrial and commercial IoT applications. It uses the Advantech ARK-2250L hardware model – a high-performance industrial gateway running powerful Intel Core i3/i5 processor. The ruggedized design makes the Base Station suitable for installation in typical industrial environments.

www.behrtech.com

MYTHINGS OS is an Ubuntu-based operating system that runs on the Base Station. The OS incorporates two major components: ETSI-compliant TS 103 357 wireless software stack and the MYTHINGS Central software for network management. Both run on a modular, Docker-based architecture with automated updates and support for 3rd party docker components such as nodeRED. The design also allows users to run MYTHINGS Central software in any other docker environment, for a flexible network architecture with one central management instance. This enables the deployment of multiple base stations for massive coverage, management in the cloud and flexible on-premises architecture.

The MYTHINGS Base Station is available for sub-gigahertz license-free frequency bands in Europe (868 MHz) or North America (915 MHz) and has the capacity to handle millions of messages a day from thousands of endpoints. In addition to a web-based user interface for management, the Base Station offers built-in integration with Microsoft Azure Cloud and MQTT interface for large-scale data collection and business analytics. It can additionally be configured with ease to enable data transfer and visualization on users' on-premises IT systems and devices.

Product Features

- Preconfigured MIOTY wireless receiver

- Ability to handle millions of messages per day

- Integrated system configuration and end device management (registration/de-registration)

- Native connection to Azure IoT Hub for advanced cloud services

- Security features including v firewall and AES 128 network security layer

- Flexible interfaces (MQTT, REST, WebSocket) for data transfer to external systems

- Ethernet backhaul connectivity

- Operating frequency: 868 MHz (Europe) or 915 MHz (North America)

How It Works

After the physical setup and booting, users can access the Base Station command-line interface (CLI) and the web-based MYTHINGS Central platform. The console is used for performing operating system-level commands such as changing user account passwords or backing up the system data. The MYTHINGS Central platform is used to carry out network management tasks including device registration/de-registration, MQTT mappings and Azure configuration.

There are multiple options for forwarding data from the Base Station to other systems. Configuration of MQTT broker and mappings can be executed in a few simple steps to send data from the Base Station (acting as the MQTT publisher) directly to on-premises data repository and management systems (subscribers). Alternatively, Azure mappings can be easily set up to enable seamless workflow and advanced data handling leveraging Azure cloud services. To make the configuration simple BehrTech offers Azure Resource Manager (ARM) template examples to enable simple, preconfigured setup of Azure resources.

MYTHINGS Smart Sensor

The MYTHINGS Smart Sensor is a self-contained, battery-powered multi-purpose sensor that allows you to capture various data points with one single unit. It is intended as a demo platform to demonstrate MYTHINGS' long-range, robust and power-efficient radio communication enabled by Telegram Splitting technology. The Smart Sensor is integrated with MYTHINGS Library – a hardware independent, small-footprint and power optimized library of code, featuring MIOTY software. It offers a transmission rate of 512 bit/s at license free sub- gigahertz frequency in EU or North America.

The compact, portable design makes the MYTHINGS Smart Sensor ideal for a wide variety of industrial and commercial IoT applications, whether mobile or stationary. It provides built-in sensing capabilities for acceleration, temperature, humidity and pressure measurements. On top of that, it offers an open serial interface for connection to a wide variety of existing equipment, to send custom payload from other sources over the MYTHINGS network. This facilitates easy deployment in a brownfield environment and grants users with great flexibility in defining their application data.

Providing exceptional mobile communication support, the Smart Sensor can be attached to devices traveling at up to 120 km/h. The integrated GPS unit additionally enables various asset tracking use cases and can be used to establish a real-world wireless coverage map.

MIOTY or its technical specification, Telegram Splitting Ultra-narrow Band (TS-UNB), is the only LPWAN protocol standardized by ETSI (TS 103 357).

Product Features

- EU: 14 dBm output power, US: 20dBm

- AES 128 network security layer

- 65x105x19 mm modular design

- External antenna available; MCP connector for internal antenna options

- Rechargeable battery with USB

  Serial interface over USB

- Embedded acceleration, temperature, humidity, pressure and GPS sensors

- Operable at up to 120 km/h velocity

- Operating frequency: 868 MHz (Europe) or 915 MHz (North America)

How It Works

With multiple sensing capabilities and the open serial interface, the MYTHINGS Smart Sensor offers flexible deployment options. It can be affixed to an existing asset and system for transmission of condition and process data or installed as a stand-alone environmental sensor to record preferred ambient parameters. The housing provides different mounting options including Clips, Straps and Ring Eyelets.

After it is registered at a MYTHINGS Base Station (i.e. onboarding) and powered on with the on/off button, the Smart Sensor will automatically send messages at pre-defined message frequency. There is also an option to transmit data manually using the trigger button on the sensor.