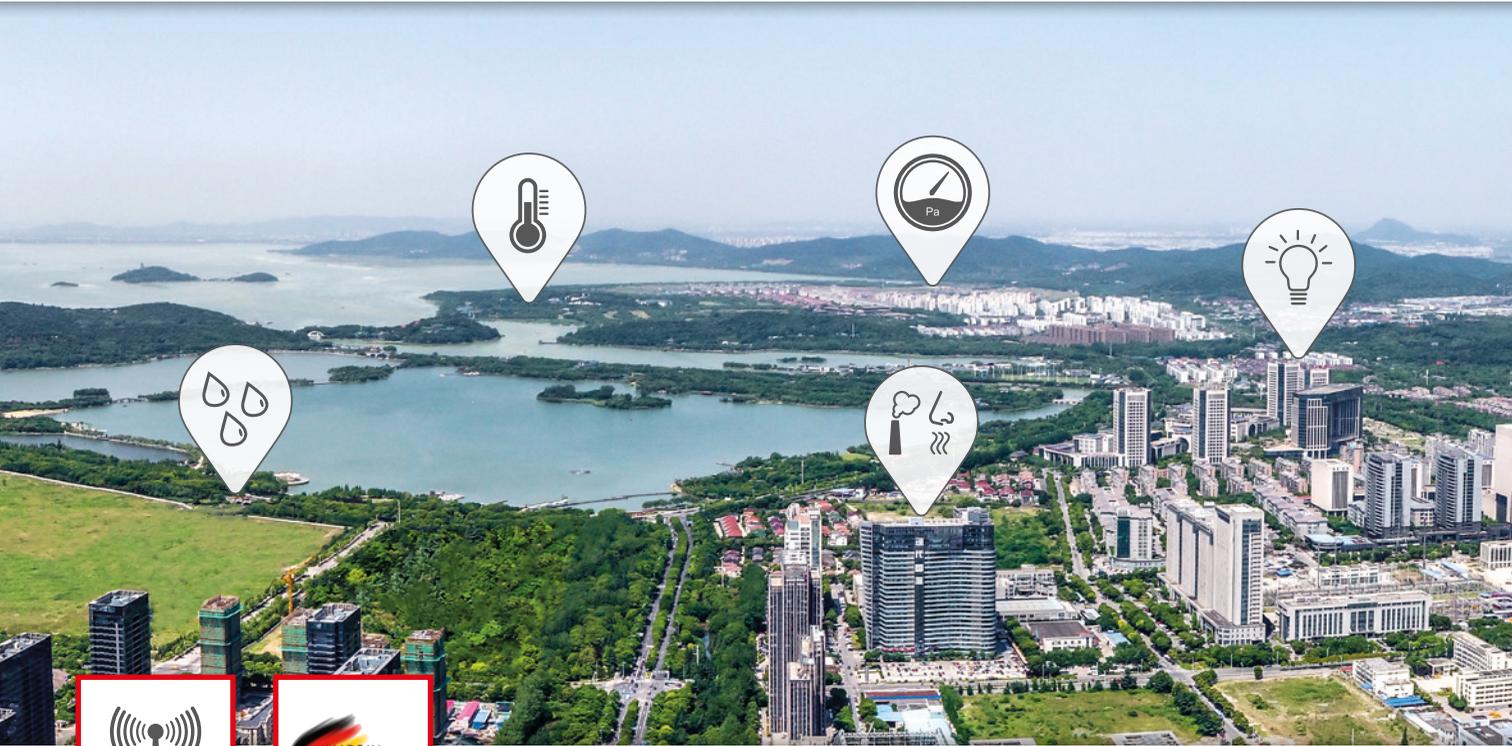


thermokon®

HOME OF SENSOR TECHNOLOGY



LoRaWAN®

LONG RANGE WIDE AREA NETWORK

 **LoRa Alliance®** Member





GENERAL INFORMATION

Long Range Wide Area Network – short LoRaWAN®* – is a radio technology that is capable of transmitting data over a long distance and even from remote and hard-to-reach locations in an energy-efficient, cost-effective and secure manner. Due to the low energy consumption, the batteries of the sensors are extremely durable and can last for several years.

LoRaWAN® uses the so-called ISM frequency band around 868 MHz in Europe, for which no licence fees and no cellular costs are incurred. LoRaWAN® is heavily involved in the development of so-called „smart cities“. In Germany for example, cities and municipalities in particular are building a sustainable and process-optimised infrastructure for building security and monitoring or controlling street lighting.

In Switzerland, France and the Netherlands, telecommunications providers operate a nationwide network of gateways. In addition to the public networks, companies can also set up their own networks (private networks).

ADVANTAGES AND HIGHLIGHTS

- » Defined standard of the LoRa Alliance® with a broad ecosystem of members, products and world-wide references of active networks
- » Location-independent access to all measured values through the Cloud
- » Interference-resistant radio frequency range sub 1 GHz
- » Configuring the device from virtually everywhere (Remote Configuration)
- » Wide range of applications indoors and outdoors

*LoRaWAN® is a registered trademark of the LoRa Alliance®



lora-alliance.org



HIGH RANGE

LoRa® provides long radio transmission ranges and a thorough signal penetration.



OPEN STANDARD

Guaranteed high security and interoperability due to LoRaWAN® network protocol.



HIGH ENERGY EFFICIENCY

Intelligent LoRaWAN® sensors reach up to 10 years lifetime in battery operation.



BI-DIRECTIONAL COMMUNICATION

LoRaWAN® enables bidirectional communication between sensors and network servers.



STEP 1 – SENSOR:
Sensor value acquisition and bidirectional transmission



STEP 2 – GATEWAY:
Receiving and forwarding data

SYSTEM ARCHITECTURE:
CLOUD



STEP 3 – NETWORK SERVER (CLOUD):
Network management and data routing



STEP 4 – APPLICATION SERVER:
Data processing through IoT platforms,
e.g. visualisation (Datacake, etc.)

SYSTEM ARCHITECTURE:
BMS

Network server integrated
in gateway



STEP 3 – BUILDING MANAGEMENT SYSTEM (BMS):
Integration into building management systems
e.g. via BACnet IP, Modbus TCP/IP, ...

The diagram features a central LoRa logo surrounded by icons for various measurements: TEMPERATURE, LIGHT, MOTION, HUMIDITY, SURVEILLANCE, PRESSURE, and AIR QUALITY. The background is a collage of images showing these sensors in use: a factory, a greenhouse, a modern building, a caravan park, and an airport terminal.



CAMPSITES

- » Status monitoring of windows, garages, doors, gates, containers, fire extinguisher boxes, ...
- » Motion detection and monitoring e.g. in sanitary facilities
- » Additional service for (permanent) campers: *Vandalism monitoring or moisture monitoring for prevention of mould and leakages*
- » Event-based notifications by e-mail or SMS possible



PLANT MONITORING

- » Retrofit remote monitoring of ventilation systems
- » No modification of the existing control system necessary
- » A wide range of sensor applications, e.g. for measuring differential pressure, air quality, supply and return temperatures
- » Enabler of predictive service/maintenance





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