VISAM
Smart Solutions

Low Power Wireless
LoRaWAN
Wide-range radio

Spanning large distances:
Automation with LoRaWAN
and VBASE.

LoRaWAN™

VBASE
VISAM Automation Base

Bridging large distances at low cost

Automation via wide-area radio network LoRaWAN and VBASE

Digitisation and automation with conventional networking on extensive company premises, in large buildings or from distributed locations can quickly lead to escalating costs due to the labour- and material-intensive cable work. A much faster and cheaper way to connect is to transmit data by radio.
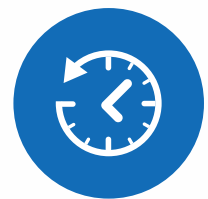

UP TO 10 KM RANGE

UP TO 10 YEARS BATTERY LIFE

SMALL INSTALLATION COST

PERFECTLY SUITED FOR RETROFIT

VBASE supports LoRaWAN technology for wireless integration of automation components over long distances. LoRaWAN specifies a Low Power Wide Area Network or low power wide area network for wireless, battery-powered systems. The LoRa-WAN specification enables seamless collaboration of different systems over long distances and also provides the necessary security through multiple layers of encryption. Typically, the network architecture of LoRaWAN is built as a star topology. With one or more gateways establishing the connection to the central network servers and the distributed end devices.

What is LoRaWAN?
Long **Ra**nge **W**ide **A**rea **N**etwork (LoRaWAN) is a low-power wireless network protocol at the network layer. The specifications are defined by the LoRa Alliance. They are freely available and basic software modules are available as open source software. LoRaWAN uses the proprietary „LoRa" transmission method on the physical layer.

Versatile use in automation projects

Based on this technology, large areas in industry, agriculture and professional building services can be covered with a wireless and maintenance-free network. Many different sensors and actuators cover a wide range of applications. Many automation projects can be realised with sensors for status detection such as temperature, humidity or door/window contacts, digital consumption meters and small controls.

We are already using LoRaWAN technology in several projects for our customers. A concrete practical example:

At one of our customers, we retroactively implemented the collection of environmental and energy data in a logistics centre. For this purpose, sensors for recording temperature, humidity and air quality were placed at strategic points and the existing electricity meters were converted for the transmission of meter readings via LoRaWAN. In this way, the complex and very extensive site could be completely opened up for the collection of the desired data and for further processing in VBASE. By using LoRaWAN, the time and costs involved could be reduced to a minimum.

VBASE communicates directly with the LoRaWAN gateway and uses the data from the linked sensors for further calculations, display in the visualisation, archiving in databases or forwarding to higher-level systems. Once the data is available in the VBASE system, it is available for all further automation tasks. In addition, an IOT cloud server (e.g. MQTT) can be integrated to make the data available to other systems.
systems as well.

Cloud Server

LoRaWAN Gateway

**LoRaWAN
Sensoren**

VBASE RT
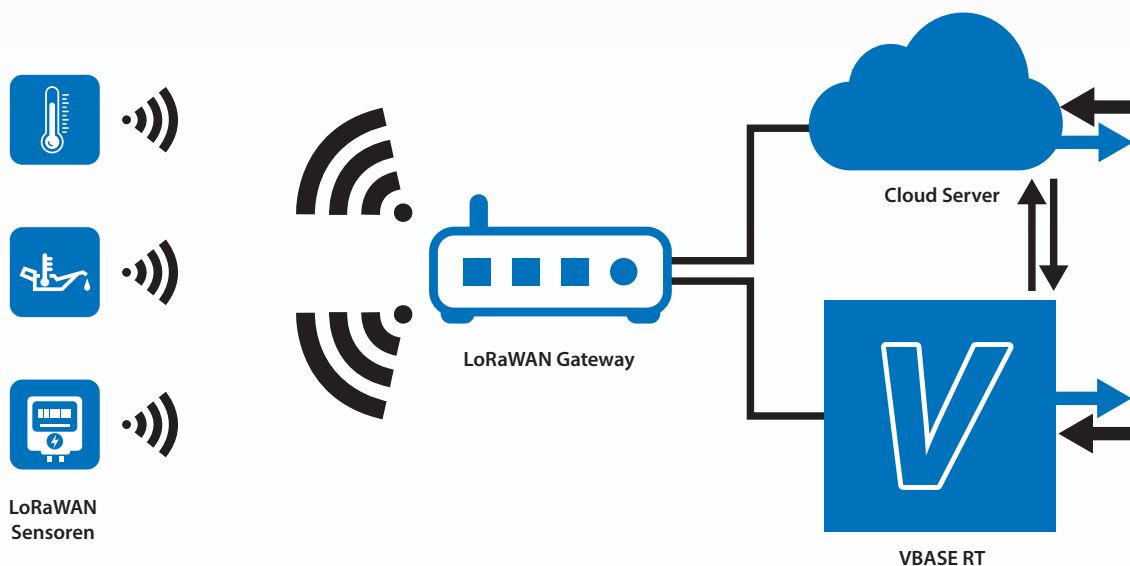
VBASE communicates directly with the LoRaWAN gateway and processes the data from the connected sensors or transfers it to other dedicated systems.

Retrofit existing systems and expand functionalities

LoRaWAN technology is perfectly suited for retrofitting, i.e. for subsequent integration into existing systems and buildings. Since no cables need to be laid for the sensors, they can be integrated quickly and easily, even in existing systems. Thanks to their compact design, they can also be placed in locations that are difficult to access.

> LORAWAN FACILITATES RETROFITTING AND THE SUBSEQUENT
> EXPANSION OF EXISTING SYSTEMS.

In a retrofit, older machines, production plants or buildings are brought up to the current state of the art through the targeted retrofitting of modern components. Thanks to its flexibility and its diverse communication options, plants of any level of automation can be integrated into the digital future with VBASE. The use of LoRaWAN additionally fuels this process and facilitates the placement of the components

Self-sufficient and maintenance-free sensors for several years

LoRaWAN is particularly well suited for the transmission of small amounts of data (measured values, etc.); the protocol is only conditionally designed for the transmission of large amounts of data (e.g. images, video, audio). However, if LoRaWAN is used, for example, for the transmission of temperature readings or machine data, these can be sent over the LoRaWAN in the long term and almost maintenance-free.

up to 10KM

IP65

up to 10 YEARS

SOLAR

10 ~50 VDC

Depending on the amount and frequency of the data to be transmitted, LoRaWAN sensors can be operated autonomously and maintenance-free for several years; equipped with a cable- or solar-powered energy supply, they can even be operated indefinitely.

LoRaWAN Advantages

✓ The usage of LoRaWAN simplifies the digitalisation of processes

✓ No cabling necessary. Placement in inaccessible locations

✓ Long range of up to 10 KM with free line-of-sight

✓ Perfectly suited for retrofitting into existing infrastructure.

✓ Self-sufficient sensors with up to 10 years battery life or cable / solar powered power supply possible

✓ Large selection of sensors, e.g.: Temperature, humidity, parking sensors, consumption counters, door/ window contacts, Modbus converters, etc.

Potential LoRaWAN application fields

✓ **Smart Industry**
e.g. condition monitoring, remote monitoring and maintenance, activity monitoring, mobile applications

✓ **Smart Building**
e.g. counter monitoring, energy monitoring, temperature monitoring, flood alarm, security applications

✓ **Smart City**
e.g. infrastructure monitoring, air quality measuring, parking space management, people counting

✓ **Smart Agriculture**
e.g. moisture measurement, irrigation control, pasture fence monitoring

WISE - LoRaWAN gateways and sensors

Sensors, gateways and automation software perfectly matched to each other

With LoRaWAN, automation applications benefit from well-matched hardware and software. Due to the robust hardware design and the low demand on existing infrastructure, the LoRaWAN gateways and modules of the WISE series can also be placed in inaccessible locations in harsh environmental conditions.

WISE-6610

VPN | IP30 | 4G

Industrial LoRaWAN gateways

WISE-6610 is a high-performance LoRaWAN gateway that provides reliable connectivity for industrial environments. It supports the LoRaWAN protocol for establishing private and public LoRaWAN networks, as well as various protocols including MQTT.

The WISE-6610's hardware and software flexibility provides extensive functions for edge intelligence systems, and its support for VPN tunneling with various protocols ensures secure communication.

WISE-6610 is equipped with a network server that ensures optimal processing of LoRaWAN data. Likewise, the gateway has redundant functions to prevent connection loss.

- robust metal housing (IP30)
- VPN tunneling support
- 4G / LTE optional

WISE-4610

-25°C ~ 70°C | IP65 | GPS

Industrial LoRaWAN sensor modules

The wireless I/O modules support the protocols of Private LoRa as well as LoRaWAN. Both enable transmissions with a very large range at low power consumption in the spectrum that is not subject to licensing.

The modules consist of a base unit (WISE-4610) with an I/O module (WISE-S6xx), which can be adapted to the requirements. The power supply for the standard modules is a corded PSU, for the extended modules alternatively via battery or solar panel. These modules also have a GPS chip.

LoRaWAN networks are set up in star topology with a central gateway. Transmitters and receivers can bridge distances of several kilometres and encrypt the data for secure transmission.
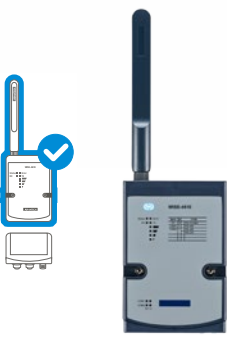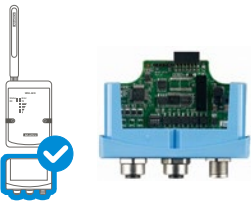
- I/O modules with various interfaces
- Power supply, solar panel or battery possible
- GPS optional

WISE-6610 series   Industrial LoRaWAN gateways

Industrial LoRaWAN gateways						
Model	AT-WISE-6610-A100	AT-WISE-6610-A500	AT-WISE-6610-E100	AT-WISE-6610-E500	AT-WISE-6610-N100	AT-WISE-6610-N500
Frequency	923 MHz	923 MHz	868 MHz	868 MHz	915 MHz	915 MHz
max. Nodes	100	500	100	500	100	500
Communication	LoRaWAN					
Antenna	1					
Operat. temperature	-40 ~ 75° C (-40 ~ 167° F)					
Power supply	9 ~ 36 VDC | 4 W | 4-pin Molex mini-fit connector					

Industrial LoRaWAN + LTE gateways				
Model	AT-WISE-6610-E100C	AT-WISE-6610-E500C	AT-WISE-6610-N100C	AT-WISE-6610-N500C
Frequency	868 MHz	868 MHz	915 MHz	915 MHz
max. Nodes	100	500	100	500
communication	LoRaWAN + LTE			
Antenna	3			
Operat. temperature	-40 ~ 75° C (-40 ~ 167° F)			
Power supply	9 ~ 36 VDC | 4 W | 4-pin Molex mini-fit connector			

WISE-4610 series   Industrial LoRaWAN modules

Industrial LoRa / LoRaWAN modules			
Model	AT-WISE-4610-NA	AT-WISE-4610-EA	AT-WISE-4610-JA
Frequency	US 902 ~ 923 MHz	EU 863 ~ 870 MHz	AS 923 ~ 923.5 MHz
Function	Funkmodul		
Positioning	GPS / Galileo / GLONASS / BeiDou		
Power supply	4000 mA Lithium battery / 10 ~ 50 VDC power supply / 17 ~ 21,6 VDC solar panel		
Configuration	Micro-USB		

IP65 I/O modules					
Model	AT-WISE-S614-A	AT-WISE-S615-A	AT-WISE-S617-A	AT-WISE-S672-A	AT-WISE-S600
Specification	4x AI 4x DI	RTD	2x AI 2x DI + 1x DO 1x RS-485	6x DI 1x RS-485 1x RS-232/485	indivdiual configuration *consider MOQ

Wzzard LRPv2

Industrial LoRaWAN nodes

The Wzzard LRPv2 LoRaWAN smart nodes quickly and easily establish connectivity between sensors and applications over a long distance. These nodes are designed for wireless transmission of analogue as well as digital signals or Modbus RTU sensor data to a WISE-6610 LoRaWAN gateway or any other LoRaWAN compatible gateway.

The Wzzard LRPv2 LoRaWAN node can be connected to virtually any industry-standard external sensor, using conduit or cable glands for connection. Digital and analogue sensor interfaces are available, as well as a serial interface.

The nodes can be easily placed using the integrated magnet or firmly screwed to the mounting lugs. With a weatherproof housing and a very wide operating temperature range, the Wzzard nodes are ideally suited for outdoor use and in heavy industrial environments.

- Long-range IOT applications
- Compatible with common industrial sensors
- Power supply, solar panel or battery

-40°C ~ 75°C   IP66   mount

IP66 LoRaWAN nodes

	Model	BB-WSW2C00015-x	BB-WSW2C42100-x
	Sensor interface	1x RS-485	4x analog IN 2x digital IN 1x digital OUT
	Technology	LoRaWAN 868/915/923 MHz	
	Positioning	GPS / Galileo / GLONASS / BeiDou	
	Power supply	9 ~ 36 VDC power supply 2x 2500 mA Lithium AA battery Solar panel	
	Housing	fiber-reinforced synthetic material, all-weather, IP66	
	Operat. temperature	-40 ~ 75 °C (-40 ~ 167 °F)	
	Configuration	Micro-USB	

More information: www.vbase.net