pironex
electronic and software solutions

Make your devices and machines smart!

piSmart-Gateway - Your IoT solution for the Internet of Things!

What is IoT?

IoT (Internet of Things) is also known as the „all network". Objects, things and IoT gateways are networked with one another and linked to the internet.

Every single thing acts autonomously and communicates independently via the internet. In this way, it can perform various tasks for its owner, and vice versa, the owner can control and configure it despite its physical distance.

The data of things are collected, linked and evaluated. From general information supply to automatic orders to warning and emergency functions, almost everything is possible with the smart things.

medicine

Data acquisition in research and development

research

› networked medical devices (scales/mailboxes, that record and report activity)

› networked fitness armbands and activity trackers (pulse rate, blood pressure)

› unique identification of patients and medical devices (wristband, barcode, RFID, BT etc.)

› continuous data transmission even during patient transport (within the clinic, in the ambulance, in the helicopter)

› independent contamination detection by sensors (gas, surface)

› Speed measurement and operating data acquisition of machines

› wear detection

piSmart-IoT-Sensor

- • Bluetooth 4.2 Low Energy
- • Motion sensor
- • rechargeable battery
- • acoustic signal and LED signal
- • USB interface
- • IO interface for device operation

Our piSmart-Gateways meet the requirements of modern IoT solutions. Equipped with sensors and radio modules, they serve as interfaces between your devices and the Internet of Things.

All solutions equipped with the piSmart-Gateway form an effective, highly modern sensor network in which the devices can communicate with each other and exchange data.
The gateways link devices with monitoring, sharing and data analysis systems and network them with many other devices. They can be configured and controlled, located and tracked remotely.

Access is easy via the backend with the help of the pironex-iot.de software or the pironex app.

› Data acquisition and signal transmission; captures the data and sends it to a gateway or mobile phone

› Sensor for rotations and revolutions (e.g. for drills or wheels)

› Signal output device linked to previously defined events and times (e.g. opening and closing, switching on and off, etc.)
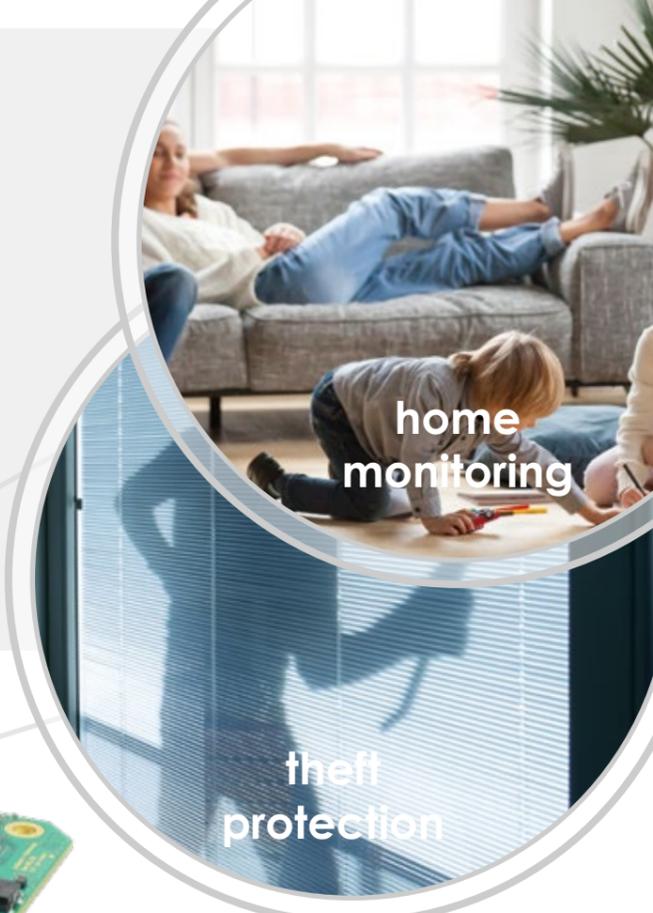
› small and energy-saving

research

Gateway as interface to your devices ...

asset tracking

industry

- for remote monitoring and optimization of large industrial plants
- for machine tracking
- for machine runtime recording
- as warning system when certain thresholds are reached
- as status overview of the machines
- for data acquisition from machines
- for correlation analysis
- for tracking routes for the transport of delicate or fragile goods
- for monitoring vibrations, container openings, maintenance

smart home

- as intelligent alarm system (motion and change detection)
- as your digital assistent
- for your automated blinds (presence detection)
- for your automated household appliances, such as lawn mowers or vacuum cleaners
- for your air conditioning system for independent temperature control of the rooms (presence detection)

- möglich: zu Ihrem Warnsystem bei Erreichen bestimmter Schwellwerte (Temperatur-, Luftfeuchtigkeit-, CO2-, Kohlenmonoxid-, Gaserkennung)

home monitoring
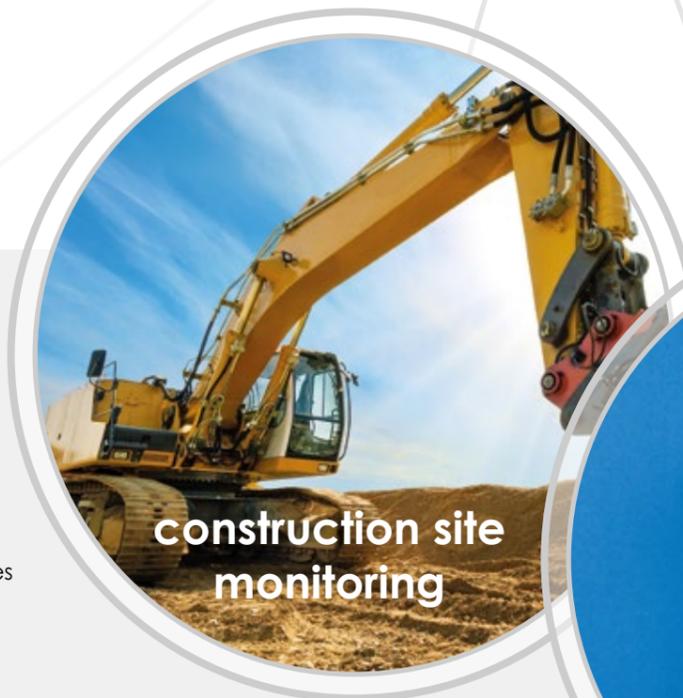
theft protection

piSmart-Gateway

- mobile 2G (LoRa)
- Bluetooth 4.2
- GPS
- motion sensor
- rechargeable battery
- acoustic and LED signal
- IO interface for device operation
- CANopen interface
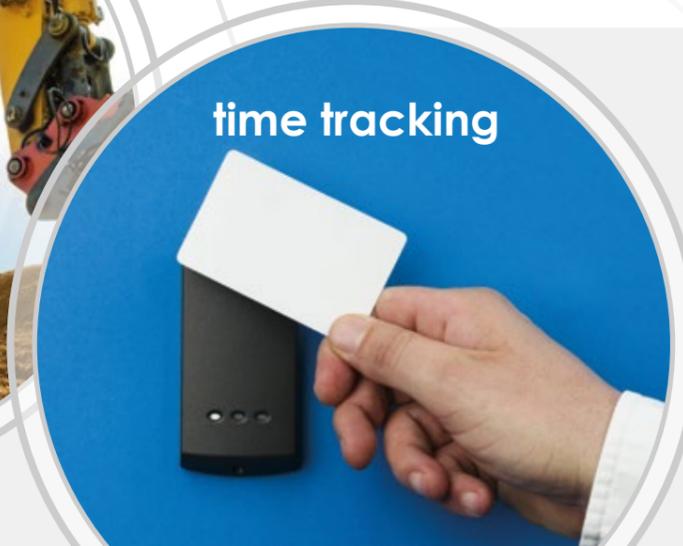- UART interface
- RS485 interface
- SIM chip

› robust
› many interfaces
› can be used for mobility, construction and industry, especially container tracking, data acquisition from construction machinery or for vehicle rental.

hall monitoring

construction site monitoring

time tracking

construction site

- for tool/device tracking
- for machine runtime recording
- for checking the battery level
- for status overview of the devices
- for data acquisition of construction machines
- for recording operating hours

office

- for device tracking
- for device runtime recording
- for status overview of the devices
- for presence detection in conference rooms
- for connection to intelligent energy management system in the building
- for connection to intelligent alarm systems (movement and position change detection)
- for connection to other digital devices

solution for innovative e-mobility

scooter

theft protection

e-scooter
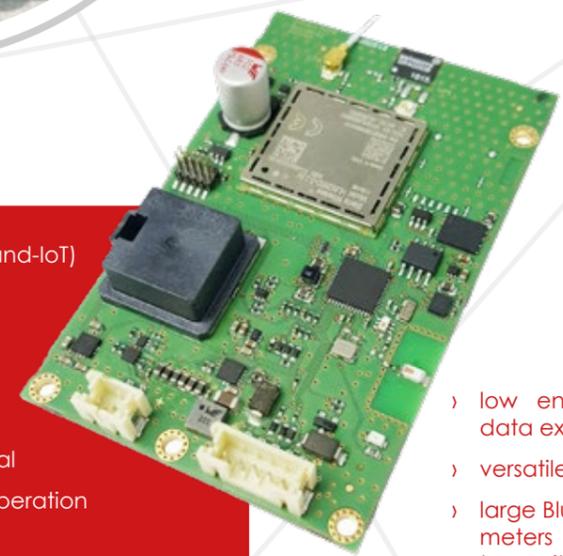
piSmart-Gateway-Premium

- mobile 2G (LoRa)
- Bluetooth 4.2
- GPS
- motion sensor
- RFID reader
- rechargeable battery
- acoustic and LED signal
- CANopen interface
- IO interface for device operation
- UART interface
- RS485 interface
- SIM chip

› many functions
› RFID reader enables cards or sensors to be scanned (unique assignment of a user or object)
› lock interface through IO interface (e.g. open flap / helmet)
› best gateway for car sharing (also scooter and bike)

piTrack-IoT

- mobile 2G (LTE Narrowband-IoT)
- Bluetooth 4.2 Low Energy
- GPS
- motion sensor
- rechargeable battery
- loud buzzer and LED signal
- IO interface for device operation
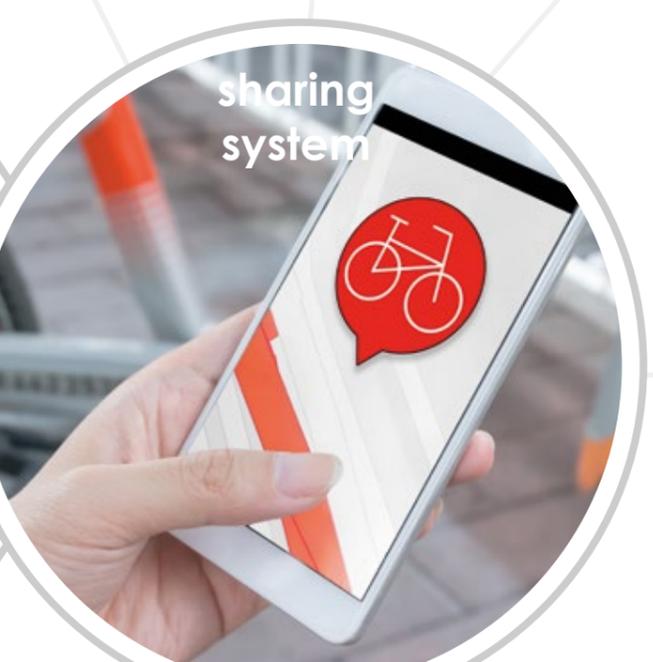- UART interface
- SIM chip

› low energy consumption & power-saving data exchange
› versatile
› large Bluetooth range: Connections up to 200 meters (possible without obstacles between transmitter and receiver), in areas with many walls, 8 m is realistic.
› ideal solution for monitoring and remote parameterization of mobile devices (especially scooter or bicycle rental)

e-mobility

- vehicle tracking
- vehicle running time recording
- low energy warning
- vehicle maintenance
- status overview of the vehicles
- route recording / route control
- theft protection
- geofence (leaving and reaching defined areas)
- vehicle parameterization
- vehicle diagnosis / remote diagnosis
- location-independent software updates
- telemetry / remote measurement
- pressure, voltage, temperature, current, humidity detection
- operating hours / runtime recording
- open the vehicle / lock without a key using the app
- trunk lid opening without a key

bike

sharing system

car

self-sufficient long-term use

piSmart-Gateway-LTE-NB-IoT

- mobile 2G, LTE Narrowband-IoT, LTE Cat-M1
- Quectel
- GPS
- Bluetooth 5.0 or 4.2 Low Energy
- motion sensor
- rechargeable battery
- acoustic signal
- LED signal
- CANopen interface
- UART interface
- USB interface
- SIM chip

› lots of data at once

› functional

› particularly energy-saving

› large Bluetooth range: Connections up to 200 meters (possible without obstacles between transmitter and receiver), in apartments with many walls, 8 m is realistic.

› higher transmission rate: more data can be sent at once compared to the piSmart-Gateway

› can be used perfectly for recording measurement and control data, as it is particularly energy-efficient

future-proof - all in one

piSmart-Gateway-II-IoT

- mobile 2G, LTE Narrowband-IoT, LTE Cat-M1(3G, LTE)
- Bluetooth 5.0
- GPS
- RFID reader
- rechargeable battery
- acoustic signal
- CANopen interface
- IO interface for device operation
- UART interface
- RS485 interface
- USB interface
- SIM chip

› future proof

› enables the networking of devices and machines with high radio coverage and low energy consumption.

› devices with a battery can communicate easily over long periods of time (up to 10 years) and consume little power

› high and reliable data transmission even in difficult surroundings and over long distances

› good solid body penetration (also works in buildings, sometimes also in basements, such as cellars) e.g. read out water meters; allows worldwide roaming and thus global scaling of IoT applications

› lock

› sharing

› gateway solutions

piSmart-Socket

- mobile 2G
- Bluetooth 4.2
- rechargeable (UART)
- acoustic signal

Controllable via cellular network

› socket can be easily switched on and off remotely via cellular network

All gateways at one glance

	piSmart-IoT-Sensor	piSmart-Gateway	piTrack-IoT	piSmart-Gateway-LTE-NB-IoT	piSmart-Gateway-Premium	piSmart-Gateway-II-IoT	
Navigation							
GPS		✓	✓	✓	✓	✓	GPS
A-GPS						✓	A-GPS
Dead Reckoning						(✓)	Dead Reckoning
Radio data transmission							**Radio data transmission**
WLAN						✓	WLAN
Bluetooth 4.2 Low Energy		✓	✓		(✓)		Bluetooth 4.2 Low Energy
Bluetooth 5.0	✓			✓			Bluetooth 5.0
Bluetooth 5.1						✓	Bluetooth 5.1
Cellular							**Cellular**
2G		✓	✓	✓	✓	✓	2G
3G						(✓)	3G
LTE						(✓)	LTE
LTE Narrowband-IoT			(✓)	✓		✓	LTE Narrowband-IoT
LTE Cat-M1				✓		✓	LTE Cat-M1
LoRa		(✓)			(✓)	(✓)	LoRa
SIM-Chip (eSIM)		✓	✓	✓	✓	✓	SIM-Chip (eSIM)
RFID reader	✓				✓	✓	RFID reader
motion sensor	✓	✓	✓	✓	✓	✓	motion sensor
rechargeable battery	✓	✓	✓	✓	✓	✓	rechargeable battery
acoustic signal	✓	✓	✓	✓	✓	✓	acoustic signal
LED signal	✓	✓	✓	✓	✓	✓	LED signal
Interfaces							**Interfaces**
USB	(✓)			✓		(✓)	USB
IO for device operation	✓	✓	✓		✓	✓	IO for device operation
CANopen		✓		✓	✓	✓	CANopen
UART		✓	✓	✓	✓	✓	UART
RS485		✓			✓	(✓)	RS485
SD/MMC						(✓)	SD/MMC
→	autarkic data acquisition	robust and functional	tracker for scooters and e-scooters	LTE to CAN interface, energy-saving and functional	multifunctional gateway with CAN and RFID	energy-saving, multifunctional and future-proof	←

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