



Datasheet

## piSmart-Gateway Linux

Item number: 911130621



Artificial intelligence in miniature expandable IoT gateway for AI and machine learning

## Overview

piSmart-Gateway Linux brings artificial intelligence into industrial plants. By integrating innovative AI architecture, the gateway enables the machines to recognize structures, evaluate results and thereby automatically optimize themselves.

- › **KI-Chip** for automated pattern and anomaly detection
- › **Microphone** for AI-sound capture and speech recognition (VUI – Voice-User-Interface)
- › **Multifunction sensor** for environmental measurements such as pressure, air quality, humidity and various gases
- › **Digital/analog IOs** for connecting additional sensors
- › **LTE NB-IoT** for reliable internet connection and minimal energy consumption
- › **optional Cat 1** for faster data transfer
- › **Cloud-Plattform** [pironex-iot.com](http://pironex-iot.com) for the visualization and analysis of the data

With the MikroBus Click Board, the piSmart-Gateway Linux can be expanded to meet your requirements and any abnormalities that occur on site can be detected without losing additional time and without disclosing sensitive data. In the event of an incident, users are immediately informed via the [pironex-IoT Cloud](http://pironex-iot.com) via a push-up message.

The gateway was specially developed for extreme environments with limited space and withstands shocks, vibrations and extreme temperature conditions.

Application-specific modifications are possible - the form factor, the interfaces and the performance can be customized.

## Possible uses

Thanks to the intelligent processing of the sensor data, the piSmart gateway Linux can make forecasts that provide the basis for needs-based maintenance and consequently reduce downtimes. With the knowledge of which devices have to be serviced and when, the resources for maintenance work such as spare parts or people can be optimally planned.

- › Predictive Maintenance
- › Condition Monitoring
- › Anomaly Detection (pointanomaly, collective anomaly, contextual anomaly)
- › Investments- und process optimization
- › Over-the-Air-Updates



The system is flexible and can be adapted or expanded if necessary (including form format, interface expansion, battery life, software modules).



## Technical specifications

### Basics

<b>Supply tension</b>	5,5 - 60V DC
<b>Processor</b>	Arm® Cortex®-M4 32-bit RISC + NDP101 Syntiant NDP architecture, ARMCortex-M0 processor
<b>Tact</b>	up to 1 GHz
<b>Battery</b>	1x prismatic, Capacity still undefined
<b>Dimensions</b>	93 x 72,5 x 30 mm
<b>Temperature</b>	with external power supply: -40 - 60°C in battery operation: -10 - 40°C

### Other characteristics

<b>Sensors</b>	Possible clickboards: <ul style="list-style-type: none"> <li>› Humidity sensor</li> <li>› Air quality sensor</li> <li>› Accelerometer</li> <li>› Mikrophone</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>› SRAM: 512 MB DDR3L</li> <li>› Flash: 4 GB eMMC µSD-Halter</li> <li>› EEPROM: 4 kB</li> </ul>
<b>Casing</b>	<ul style="list-style-type: none"> <li>› PA6, Aluminium</li> <li>› for screwing</li> </ul>
<b>Sonstiges</b>	<ul style="list-style-type: none"> <li>› Buzzer</li> <li>› 3 Status-LEDs</li> <li>› RTC</li> </ul>

### Interfaces

<b>Entrances</b>	› 2x Membrane switch
<b>CAN-Bus</b>	up to 1MBit/s
<b>SIM</b>	Nano-SIM Halter
<b>Cellular Option 1</b>	<ul style="list-style-type: none"> <li>› externe SMA Antenne</li> <li>› Option1: 2G (EGPRS): 850/900/1800/1900 MHz</li> <li>› Option1: LTE-CAT-M1 (LTE-FDD): B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B71/B85</li> <li>› Option1: LTE-NB-IoT( LTE-FDD): B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85</li> </ul>
<b>Cellular Option 2</b>	<ul style="list-style-type: none"> <li>› externe SMA Antenne</li> <li>› 2G (EGPRS): 1800/1900 MHz</li> <li>› LTE-Cat1( LTE-FDD): B1/B3/B5/B7/B8/B20</li> </ul>
<b>WLAN</b>	802.11 b/g/n, 2,4 GHz
<b>GNSS</b>	GPS, Galileo, GLONASS, BeiDou, Chipantenna

### Software

<b>Update</b>	<ul style="list-style-type: none"> <li>› FOTA</li> <li>› CAN-Bootloader</li> </ul>
<b>supported Logs</b>	<ul style="list-style-type: none"> <li>› Modbus</li> <li>› CAN-Open</li> <li>› SSH</li> <li>› JSON</li> <li>› MQTT</li> <li>› AWS</li> <li>› https</li> <li>› CoAP</li> </ul>
<b>Functions</b>	› A-GPS
<b>Cloud</b>	<p>pironex-IoT.de with following modules:</p> <ul style="list-style-type: none"> <li>› Data Logging</li> <li>› Monitoring</li> <li>› Sharing</li> <li>› Remote Control</li> <li>› Geofencing</li> <li>› Asset Tracking</li> <li>› Predictive Maintenance</li> <li>› Anomaly Detection</li> </ul>
<b>App</b>	native pironex-IoT-Apps for Android and iOS