

## Concept: From Sensor to Cloud

PHYTEC's concept to provide a complete solution for cloud-connected sensor nodes

---

Data acquisition, processing, and visualization are basic tasks of modern embedded systems. Connecting to a cloud that takes over parts of these tasks or from which embedded systems are managed is a logical further development. Radio modules, gateways, and radio nodes for networked applications have long been part of PHYTEC's hardware portfolio. In the future, we will significantly expand our range of solutions and also offer our own software solutions for the secure use of our hardware in cloud environments.

We observe market trends and provide orientation on a wide range of options and offerings. At the same time, it is our aim to react to your specific requirements and to consider the needs of your applications in all of our future offerings. This corresponds to our philosophy of offering standard products as either a finished solution or a starting point for customer-specific adaptations. We, therefore, plan complete solutions for collecting and evaluating data as well as for visualization in the cloud. PHYTEC is also developing an option for device management and security updates of your systems via a network.

Whether you need a cloud solution for developing new electronics or for retrofitting existing devices, whether you are already planning specific applications or are in an early phase of your project - talk to us about your goals or ideas and benefit from our experience from numerous customer projects.



## Data Acquisition



Gathering & analyzing data generated by nodes and preprocessing them in a gateway

Monitoring the filtered results in a dashboard in the cloud

### Operating systems:

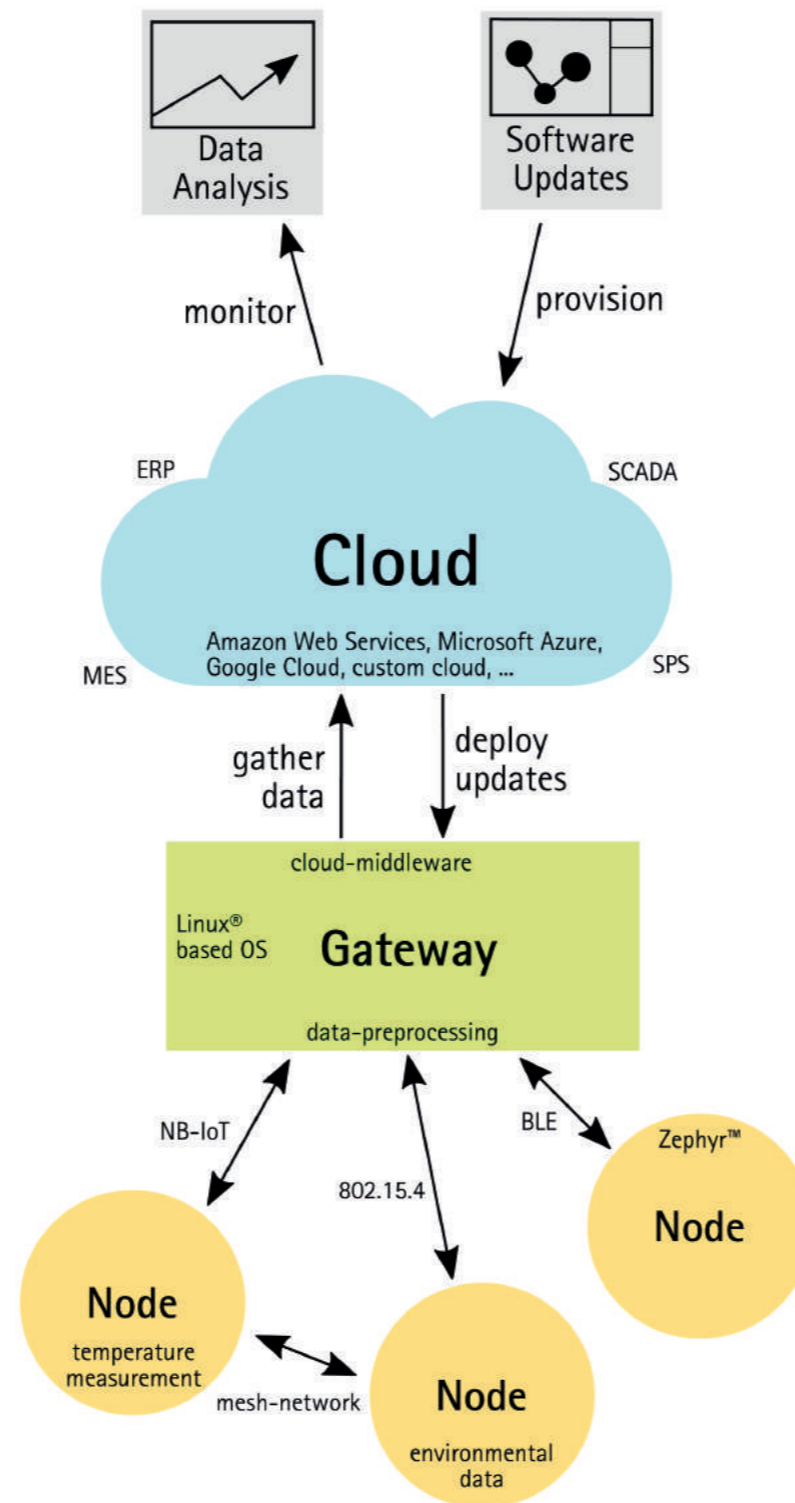
- Nodes: centralized or mesh network with nodes using a Zephyr™ based operating system
- Gateway: using a Linux® based OS with cloud-middleware and data-preprocessing

### Hardware:

- Nodes: Cortex-M (e.g. phyNODE)
- Gateway: Cortex-A/M (e.g. phyGATE, phyCORE, ...)

### Security:

- Authentication using key-pairs
- Encrypted communication between all devices and the Cloud
- Secure devices (Secure Boot, Tamper Protection, ...)



## Device Management

### Provisioning:

Supply new software (bootloader, OS, applications)

### Deployment:

(OTA-)updates to the target nodes and gateways

### Remote-debugging:

Analyze problems via the cloud, log debug messages

### Diagnosis:

Monitoring device status and health report of nodes and gateway

### Provide frequent updates:

Automated update for the operating system, bootloader and new software, resulting in less maintenance and better security

### Automatic device registration:

No preconfiguration required, using a PHYTEC-Cloud or a custom cloud

### Explicit access rights:

Decide on granted access rights and policies

### Managed deployment:

Individually manage your devices, allowing for different hardware and software configurations

### Security:

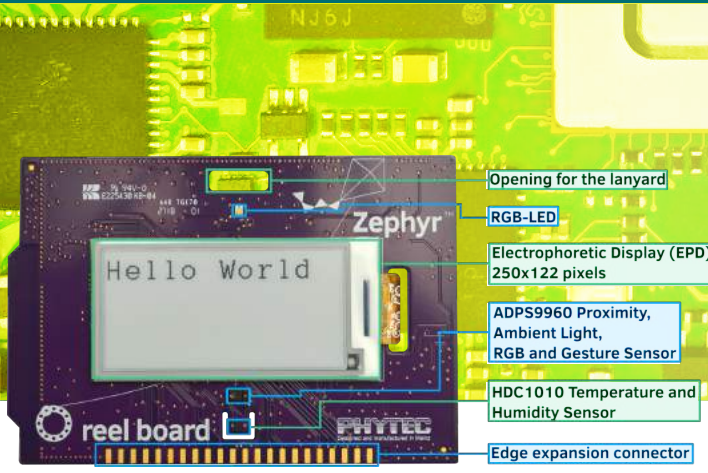
Securing all links of the communication chain (using key-pairs, encryption, Secure Boot, ...)

### Possible additional offerings:

- Building in the Cloud (Linux images, applications, ...)
- Product change notifications dynamically updated and displayed via the cloud







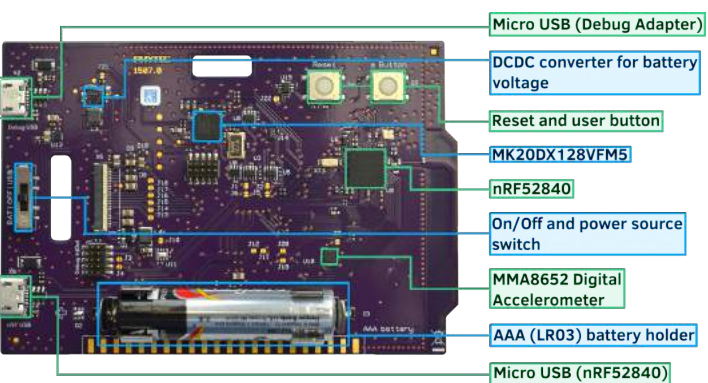
Sample Price  
**49 €**  
(excl. VAT)  
Partnumber  
PBA-D-05A0

# reel board

## Nordic nRF52840

I'm equipped with an Epaper Display, environmental sensors, and Bluetooth connectivity. Explore the world of low-power solutions with me and Zephyr OS.

- battery powered sensor node
- low power, low cost HMI for remote control or environmental sensor monitoring
- interactive badge for the meetings and conferences
- product, name or price tag
- just a temperature and humidity sensor on your table

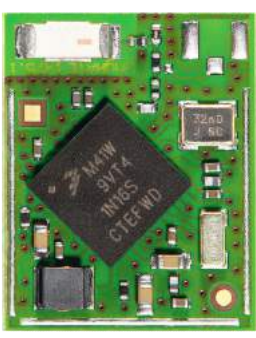


- Opening for the lanyard
- RGB-LED
- Electrophoretic Display (EPD), 250x122 pixels
- ADPS9960 Proximity, Ambient Light, RGB and Gesture Sensor
- HDC1010 Temperature and Humidity Sensor
- Edge expansion connector
- Micro USB (Debug Adapter)
- DCDC converter for battery voltage
- Reset and user button
- MK20DX128VFM5
- nRF52840
- On/Off and power source switch
- MMA8652 Digital Accelerometer
- AAA (LR03) battery holder
- Micro USB (nRF52840)

# phyWAVE® - KW41Z

ARM® Cortex™ - M0+

- Dimensions: 15 x 19 mm
- On module power management
- input voltage range 0,9 - 4,2V
- Populated chip antenna or U.FL connector on PCB
- Populated 32kHz oscillator for deep sleep mode
- Hybrid Radio Module for BLE & Thread simultaneously
- CE/FCC compliant
- Variant types for NXP SOCs (on request: KW21Z, KW31Z)



Series Price  
**8.90 €**  
(excl. VAT)  
Partnumber  
PWA-007



**NEW**  
from **120 €**  
(at 500 units, excl. VAT)  
Part number  
PG-02813-001.A0

# phyGATE® - Sirius

- IoT gateway with comprehensive connectivity
- High-performance Cortex™ A7 processor
- Expandable with LTE, Wifi and I/Os
- Building installation case
- according to DIN 43880