ZB-Connection

The ZigBee “Plug & Play” wireless Network for Building and Industrial Applications

Energy Management
Renewable Monitoring
Environment Monitoring
Open Modbus Integration

Products Range Overview
ZB-Connection: the 4-noks® ZigBee Network for Building and Industrial Applications

4-noks® introduces the idea of “Plug & Play Network”, i.e. a ZigBee wireless network for which the installation and the commissioning are fast, simple and no specific skills are required.

Many ZigBee wireless sensors and actuators for civil and industrial processes have been developed by 4-noks, in particular for buildings energy monitor, meters and control.

Thanks to ZB-Connection Gateways, 4-noks® ZigBee wireless sensors and actuators can be connected to a PC by using interfaces such as RS232, RS485, USB or Ethernet and the MODBUS RTU/TCP protocol. No API or SDK are required, simple Modbus commands only. Data collected from the network can be processed with SCADA (Supervisory, Control And Data Acquisition) or BMS (Building Management System). Also in the same way it is possible to connect PLC to actuate advanced automatic logics of control or also with our new offering GreenBox - a bi-directional hub for the ZB-Connection Network. It is browser based and user friendly, allowing for simple setup and configuration of the wireless sensors. Along with multiple export methods via external Webservice Calls, FTP, CSV and Modbus.

In order to keep the system as open as possible, a ZigBee-Modbus Bridge has been developed; this allows to connect third part ModBus devices to a Modbus Master through the wireless ZigBee network, using 4-noks® ZB-Connection Bridge and Gateway.

Key features:
- ZigBee technology - a robust wireless communication network
- Standard Modbus protocol interfaces into ZigBee network
- No ZigBee and RF skills required
- Quick and low-cost installation
- Wide range of sensors and actuators
- Energy monitoring – Main Meter & Sub Meter Level
- Intelligent HVAC/lighting control (switching)
- Environment monitoring (Temperature, Humidity, Lux, CO₂ Levels)
- Individual Circuit & Appliance Level Monitoring & Control
- Connect third party Modbus devices without wires
- Integrate ZB-Connection to an existing BMS/PLC/SCADA System
- Portable handheld diagnostic tool available
- Customized modules for OEM devices

4-noks® Gateways:
- ZC-GW-XXX/ ZC-GW.485.D-EM
  - Gateway: Modbus into ZigBee
  - Protocol converter from Modbus/RTU to ZigBee
  - Standard Modbus interfaces (RS485, RS232, USB, Ethernet)
  - Coordinator function for ZigBee network
  - Local memory stores battery powered sensors data
  - Transparent bridge towards other Modbus devices
  - Din rail mounted version with RS485 interface (ZC-GW.D-EM)

4-noks® ZB-Connection Gateways:
- ZC-GB-EM
  - Gateway: bi-directional hub for ZB-Connection devices
  - Integrated data logger with Gateway Zigbee and GSM/GPRS modem
  - Browser based interface for config, + set up (i.e., Firefox, Chrome)
  - Big data logging capacity
  - Communications for integration to BMS/PLC/SCADA systems
  - Push or Pull data to any server/database - Full API provided
  - Data access via Ethernet or Cellular
  - Logged data sent via E-mail or FTP (CSV Format)
  - System, sensor and communication diagnostics

NEW

GREEN Box
Bridge: ZigBee into ModBus RS485
- Connecting third party Modbus devices to the ZigBee network
- Using Modbus/RTU protocol and RS485 interface
- Routing function
- RF power 1mW
- External antenna
- Din rail mounted version (ZC-GW.D-EM)

ZR-TIREL2-EM
ZigBee module with relay
- 2 relay outputs 250V/5A
- 2 digital inputs
- 1 NTC thermistor input (thermistor not included)
- Programmable thermostat function
- Routing function
- 24 Vdc/Vac supply
- External antenna

ZED-TIRM-L/ ZED-TIRM-TH-M
ZigBee sensor for temperature, humidity and light
- Temperature, humidity and light measurements for indoor/outdoor use (ZED-TIRM-L), temperature and humidity for indoor use (ZED-TIRM-TH-M)
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered
- Long life battery
- Internal antenna

ZR-TID-EM
ZigBee module with 2 NTC inputs, 2 digital inputs and router
- Input for two NTC temperature sensors (not included)
- Two digital inputs
- Alarm thresholds
- Sampling and transmission rates are configurable
- 12-24 Vdc/Vac supply
- RF power amplifier: 10 mW
- Routing function
- External antenna

ZR-TIDCI-EM
ZigBee S0 pulse counter with router
- 2 pulse counter inputs S0 compatible
- 2 thermal resistor inputs (NTC resistors not included)
- Sampling and transmission rates are configurable
- 12-24Vdc/Vac supply
- Routing function
- External antenna
- RF power amplifier: 10 mW

ZED-TID-M
ZigBee module with 2 NTC inputs and 2 digital inputs
- Input for two NTC temperature sensors (not included)
- Two digital inputs
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered
- Long life battery
- Internal antenna

ZR-TIDCI-M
ZigBee S0 pulse counter
- 2 pulse counter inputs S0 compatible
- 2 thermal resistor inputs (NTC resistors not included)
- Sampling and transmission rates are configurable
- Battery powered
- Internal antenna
ZR-PLUG-XX-M
ZigBee electricity meter and remote control pass-through socket
- Real time electricity active power measurement up to 2,5 kW
- Electricity energy counter
- Remote switch up to 2,5 kW
- Stand-by killer
- Override push-button
- ModBus profile on ZigBee platform
- Router function

ZR-SWITCH-M
ZigBee electricity meter and remote control wall mounted unit
- Real time electricity active power measurement up to 2,5 kW
- Electricity energy counter
- Remote switch up to 2,5 kW
- Stand-by killer
- Override push-button
- ModBus profile on ZigBee platform
- Router function

ZR-HMETER.D-M - ZR-HMETER.W-M
ZigBee electricity meter and remote control unit
- Real time electricity active power measurement up to 15 kW with external CT included
- Electricity energy counter
- Digital output to drive external high power relay
- Stand-by killer
- Override push-button
- CT included with core split
- Din rail mounted or wall mounted
- ModBus profile on ZigBee platform
- Router function

ZED-3IAC-M
ZigBee module for alternate current measurements
- 3 inputs 5A/380V compatible with most popular commercial current transformers (not included)
- Simple and quick installation, without services breakdown
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered
- Internal antenna

ZR-AIC-EM/ZR-AIV-EM
ZigBee module with 2 analogue inputs, 2 digital inputs and router
- Two analogue inputs (0-20mA: ZR-AIC-EM, 0-10V: ZR-AIV-EM)
- Two dry contacts digital inputs
- Alarm threshold
- Sampling and transmission rates are configurable
- 12-24 Vdc/Vac supply
- RF power amplifier: 10 mW
- Routing function
- External antenna

ZR-TIDCI-OPT1-ZB-EM/ ZR-TIDCI-OPT2-ZB-EM
ZR-TIDCI-D-OPT1-EM/ZR-TIDCI-D-OPT2-ZB-EM
ZR-BIDCI-PRO-ZB-EM/ ZR-BIDCI-OPT(1/2)-ZB-M/ ZR-BIDCI-HMT-ZB-M
Optical/electrical interface for bi-directional main meter
- Optical or electrical S0 interface
- OPT monophase version: direction of the electricity energy thanks to the CT with core split (HTM)
- PRO version interfaced to ES card or three-phase meter on BT with transducer and external CT
- Programming Wh/pulse
- Three time slots for energy bought and sold (with programmable meters)
- Universal optical interface for every kind of meter, Supply 230 Vac
**ACCESSORIES**

**Antennas**

- **ANT-EXT02**: Directional antenna for external use high panel, gain 2.4 GHz, 10 dBi, IP65 + 2 mt cable
- **ANT-EXT07**: Directional antenna for external use high panel, gain 2.4 GHz, 10 dBi, IP65 + 7 mt cable
- **ANT-EXT03**: Ominidirectional antenna 9 dBm, IP65 + cable 2 mt
- **ANT-EXT04**: Ominidirectional antenna 9 dBm, IP65 + cable 7 mt
- **ANT-EXT05**: Ominidirectional antenna 12 dBm, IP65 + cable 2 mt
- **ANT-EXT06**: Ominidirectional antenna 12 dBm, IP65 + cable 7 mt
- **ANT-INT01**: External omnidirectional antenna for internal use 7dBi with stand + cable 1.5 mt with magnetic base
- **ANT-RP-SMA-MF2**: Cable for antenna RP-SMA M/F 2 mt
### TYPICAL APPLICATIONS

<table>
<thead>
<tr>
<th>Meters &amp; Sensors</th>
<th>ZB-Connection Products</th>
<th>Wireless Sensor Network Data Access</th>
<th>External Comms</th>
<th>Integration &amp; Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric</td>
<td>ZR-TIDCI-OPT</td>
<td>GATEWAY</td>
<td>Local Area Network (LAN)</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>TIDCI</td>
<td></td>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>ZR-PLUG-XX-M</td>
<td></td>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>ZED-THL-M</td>
<td>GREENBox</td>
<td>GSM/GPRS Network</td>
<td></td>
</tr>
</tbody>
</table>

ZB-Connection products are compatible with different protocols:

- **M** Modbus
- **HA** Home Automation
- **J** Kaleidos

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**Innovated by 4-noks**

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