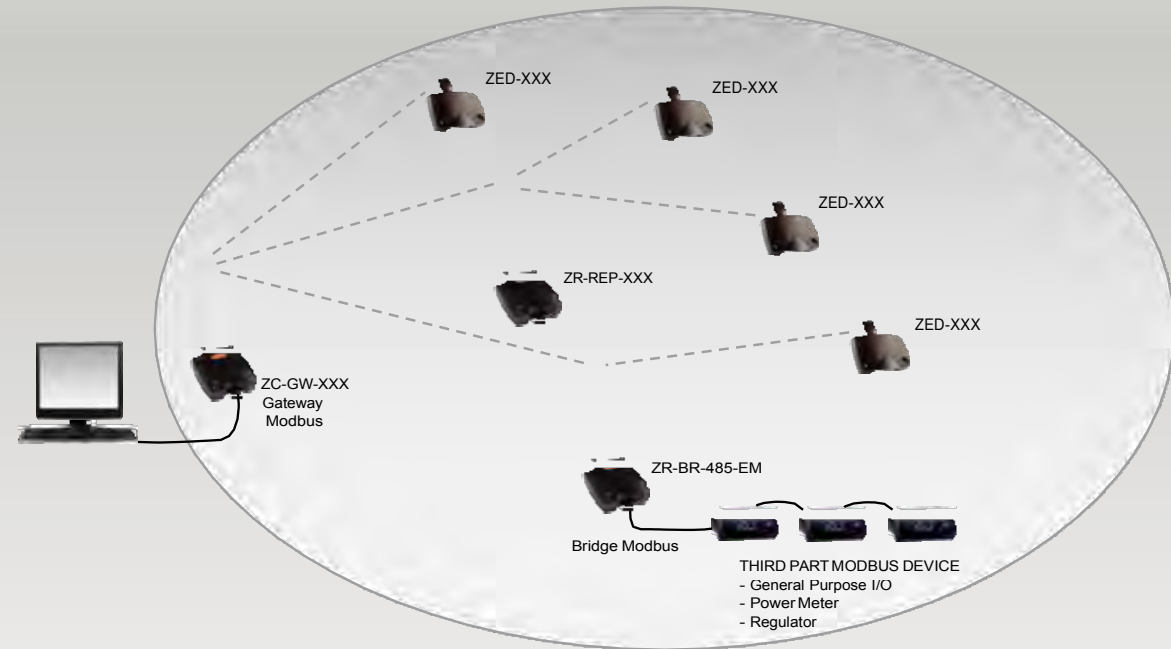## ZB-Connection: the 4-noks ZigBee "Plug & Play" Wireless Network for Industrial Applications

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.

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
- No ZigBee and RF skills required
- Standard Modbus interfaces into ZigBee network
- No API or SDK required
- Quick and low-cost installation
- Complete family of sensors and actuators
- Portable handheld diagnostic tool available
- Customized modules for OEM devices
- Third part Modbus devices can be connected

(diagram labels: ZED-XXX, ZED-XXX, ZED-XXX, ZED-XXX, ZED-XXX, ZR-REP-XXX, ZC-GW-XXX Gateway Modbus, ZR-BR-485-EM, Bridge Modbus, THIRD PART MODBUS DEVICE - General Purpose I/O - Power Meter - Regulator)

ZR-REP-EM/ ZR-REP-E230M
ZigBee Repeater
- Repeating ZigBee messages between devices with poor link or out of coverage
- Routing function
- RF power 1mW (ZR-REP-EM)
- RF power 10mW (ZR-REP-E230M)
- External antenna
- 12-24 Vdc/Vac power supply (ZR-REP-EM)
- 230 Vac power supply (ZR-REP-E230M)

ZED-THL-M/ ZED-THI-M/ ZED-TI-M
- Temperature, humidity and light measurements for indoor/outdoor use (ZED-THL-M), temperature and humidity for indoor use (ZED-THI-M), temperature for indoor use (ZED-TI-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 ditigal 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

ZC-GW-xxx
Gateways: 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

ZR-BR-485-EM
Bridge: ZigBee into Modbus RS485
- Connecting third part Modbus devices to the ZigBee network
- Using Modbus/RTU protocol and RS485 interface
- Routing function
- RF power 1mW
- External antenna

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-TCM-M/ ZED-TCMR-M
- Full remotely configurable thermostat
- Wide 3 digit display
- 4 buttons
- Battery powered
- Internal antenna
- Bi-stable relay output to achieve low power consumption (ZED-TCMR-M)

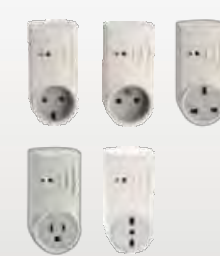### ZR-TIDCI-EM/ ZR-ES-EM
ZigBee S0 pulse counter with router
- 2 pulse counter inputs S0 compatible
- 2 thermal resistor inputs -NTC resistors not included- (ZR-TIDCI-EM)
- 2 digital inputs (ZR-ES-EM)
- Sampling and transmission rates are configurable
- 12-24Vdc/Vac supply
- Routing function
- External 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)
- 2 digital inputs
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered
- Long life battery
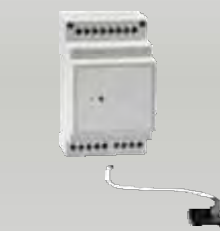- Internal antenna

ZED-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

Open protocol

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
- Pass-through socket for many countries available: Schuko (ZR-PLUG-EU-M), French (ZR-PLUG-FR-M), UK (ZR-PLUG-UK-M), Italian (ZR-PLUG-IT-M), US (ZR-PLUG-US-M)
- Modbus profile on ZigBee platform
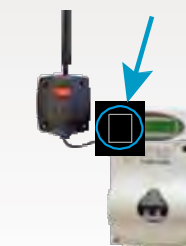- Router function

ZR-HMETER.D-M
- 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
- Modbus profile on ZigBee platform
- Router function

ZED-3IAC-M/ ZED-3IACR-M
ZigBee module for alternate current measurements
- 3 inputs 5A compatible with most popular commercial current transformers -not included- (ZED-3IAC-M)
- 3 inputs Rogowsky coils 10-1000A included (ZED-3IACR-M)
- Simple and quick installation, without services breakdown
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered - Internal antenna

ZR-TIDCI-OPT1-EM
ZigBee optical interface for generation meters
- LED pulse counter of electricity and energy meter settable from 1 to 99 Wh/pulse
- It manages electricity and energy meter in Wh
- Digital input for remote alarms
- Compatible with generation meters (single phase/three phase); other European generation meters under development

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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.W-M
- 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
- Wall mounted
- Modbus profile on ZigBee platform
- Router function

ZED-ICC-M
ZigBee hall effect sensor for direct current measurements
- Hall effect sensor for direct current measurements
- Range between 0 and 1000A
- Simple and quick installation, without services interruption
- Alarm thresholds
- Sampling and transmission rates are configurable
- Battery powered
- Internal antenna

ZED-SIS-M
Solar irradiation and panel temperature sensor
- Radiation in W/m2
- Energy theoretically generated according to the solar radiation and settable parameters that take into account the efficiency of PV panels and the rated power plant
- Temperature probe for modules
- Powered by solar cell and battery

ZB-Connection

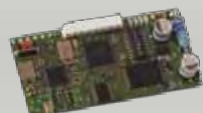### ZR-BR-BMH-M/ ZR-BR-BMV-M
ZigBee Module for OEM device

- No RF and ZigBee expertise required
- Bridge function between the OEM device and the 4-noks ZigBee network
- Horizontal and vertical version
- Using Modbus/RTU protocol with TTL (3.3V) interface
- Routing function
- RF power 2mW
- Antenna on-board

ZC-GW-BMH-M/ ZC-GW-BMV-M
OEM Gateway: Modbus into ZigBee

- Protocol converter from Modbus/RTU to ZigBee
- Standard Modbus TTL interfaces (3.3 V)
- Coordinator function for ZigBee network
- Local memory stores battery powered sensors data (only for 4 devices)
- RF power 2mW
- Antenna on-board
- No bridge function

ZC-GW-FCMOD-M
Gateway Modbus OEM - Vertical Mounting

- Protocol converter from Modbus/RTU to ZigBee
- Standard Modbus TTL interfaces (3.3 V)
- Coordinator function for ZigBee network
- Local memory stores battery powered sensors data
- Transparent bridge towords other Modbus devices
- External antenna

Z-HANDZER-M
Handy Net Analyzer

- Simple-to-use analyzer for 4-noks ZB-Connection networks
- Portable handheld tool
- Visualize RF strength of gateway and routers
- Find good position for ZigBee devices deployment
- Show all the ZigBee Pro networks in area
- Energy scan

Z-CONFIG-M
Z-Config sniffer for ZB-Connection network

- Non-invasive ZB-Connection network analysis
- Works with specific USB device
- Detections of weaknesses in the network infrastructure

Visit our web site www.4-noks.com for more information

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Member

ZB-Connection

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4-noks® Distributor:

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or to download the technical data sheets.