



## HW Release Note

### Dev. Kit 4.5x HW Release Note

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# 1 INTRODUCTION

The Z-Wave Developer's Kit version 4.5x contains a complete HW package for testing of the enclosed Z-Wave modules and development of customer products. The HW can be used in conjunction with SW tools provided by Zensys to evaluate communication reliability, communication range, sample code, and Z-Wave network functionalities. A Z-Wave development platform, ZDP02A, works as a programmer for the enclosed Z-Wave modules in the development kit and optionally for customer products in the development phase. ZDP02A is not designed as a production volume programmer. ZDP02A datasheet and programming guide are available in [9] and [10].

The HW package is based on the ZW0301 chip. All ZM3102, ZM3106C, ZM3120C modules contains the ZW0301 ASIC. Please refer to the ZW0301 datasheet for a detailed description of the functionalities available in the chip [1].

Generic modules like the ZDP02A (programming module), the interface module ZW010x, and ZW010x Development Module is compatible with all Z-Wave modules (ZMxx06C, ZMxx20C) based on the ZW0102, ZW0201, and ZW0301 ASICs.

The Developer's Kit 4.5x is specifically designed to help developers creating Z-Wave enabled products based on the ZW0301 Z-Wave Single Chip in a fast and cost effective manner. The Developer's Kit 4.5x consists of the following hardware:

| Developer's Kit 4.5x                |   |
|-------------------------------------|---|
| Zensys P/N                          | Modules   |
| 370100760 (US) or<br>370100770 (EU) | ZM3102N Z-Wave Module [2]                           |
| 370100850 (US) or<br>370100860 (EU) | ZM3106C Module (incl. ZM3102N) [3]                  |
| 370100801 (US) or<br>370100811 (EU) | ZM3120C Z-Wave Module, PCB Antenna [4]              |
| 370100800 (US) or<br>370100810 (EU) | ZM3120C Z-Wave Module, SMA Connector [4]            |
| 371000250                           | ZMxx06 Converter Module [5]                         |
| 371000190                           | ZW010x Interface Module [6]                         |
| 371000240                           | ZW010x Development Module [7]                       |
| 370100670                           | ZDP02A Development Platform (Z-Wave Programmer) [9] |
| 193600010 (EU) or<br>193600020 (US) | Power Adaptor                                       |
| 193600040                           | Power Unit, Cell Battery 9V (AA 1.5Vx6pcs.)         |
| 199000390                           | RS 232 cable  |
| 199000450                           | USB A-B cable (Used to connect ZDP02A to PC)        |

|           |   |
|-----------|---|
| 310100360 | ISP cable (Used to connect ZDP02A to Z-Wave module in target) |
| 198000000 | Antenna, UHF Flexi  |
| 490300520 | CD with documentation and software                            |

**Table 1** Developer's Kit 4.5x HW contents

The ZM3106C Z-Wave Modules supplied with the Developer's Kit contain the ZM3102N Z-Wave Module. The ZM3106C Z-Wave Module is designed to let OEM customer in an easy and fast way migrate from the ZM1206 or ZM2106C Z-Wave Modules to the new ZW0301 Z-Wave Single Chip based modules. Additionally the ZM3106C or ZM3120C Z-Wave modules can be used as converter modules for the ZM3102N Z-Wave Module to enable easy testing in the Developer's Kit 4.5x hardware platform.

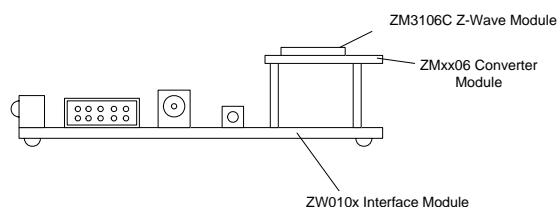
The modules delivered in the Developer's Kit version 4.5x package are based on the ZW0301 Z-Wave Single Chip [1]. The modules ZM3102N, ZM3106C, ZM3120C are at gate 5 level. Please see Appendix A for Zensys A/S product development model.

## 2 COMPATIBILITY AND UPGRADE

The Z-Wave Modules, ZM3106C and ZM3120C, supplied with the Developer's Kit 4.5x are based on the ZM3102N Z-Wave Module. The ZM3102N Z-Wave Module is a 12.5x13.6mm pin connector-less module using castellation notches as connection to the Application Module.

Originally the ZW010x Development controller and the ZW010x Interface Module were designed for the HW modules ZM1220 and the ZM1206. The successive Z-Wave modules ZM2106C/ZM3106C and ZM2120C/ZM3120C have been designed to maintain compatibility with the hardware platform. The development platform, ZDP02A, is used for programming of Z-Wave modules and customer products. ZDP02A is also compliant with all Z-Wave modules based on ZW0102, ZW0201, and ZW0301.

A ZMxx06 Converter module is used as interconnection between the ZM3106C and ZW010x Development Module, ZW010x Interface Module, or the ZDP02A platform. This is illustrated in Figure 1.



**Figure 1** Interface Module setup using the ZM3106C as Z-Wave Module

The Developer's Kit 4.5x contains additional ZM3102N Z-Wave Modules, which may be mounted on an OEM Application PCB. The developers kit does not contain a programming platform for ZM3102 modules. The ZM3102 can either be programmed in the target HW, if a programming interface exists, or using a programming fixture made for this purpose. The modules can also be used as spare parts if a ZM3102N module mounted on ZM3106C or ZM3120C is not working properly. This may happen if a Z-Wave module is driven beyond its specified operating conditions.

## 3 DEVELOPER'S KIT HW

### 3.1 ZM3102N Z-Wave Module

The ZM3102N is the Z-Wave Module containing the ZW0301 Z-Wave Single Chip, System Crystal, RF Front-end and RF Supply Voltage Filtering. Besides the ZM3102N only the antenna and optionally an EEPROM, required for some SW API's, needs to be implemented when designing the Z-Wave enabled product.

The ZM3102N Z-Wave Module contains a system crystal. In order to get a very reliable and high performance RF communication, the RF Front-end has an optimized and thoroughly tested matching circuitry, a narrow band SAW filter dedicated for Z-Wave communication, and filtering of the RF circuitry supply voltage.

The ZM3102N Z-Wave Module is connector-less using Castellated Notches for easy mounting of the module on an OEM Application PCB. A EMC shield can optionally be soldered on the ZM3102N Z-Wave Module, which improves the noise immunity of the module.

#### New features

- The HW Z-Wave modules in Developers Kit 4.5x is based on the new ZW0301 single chip. Refer to the ZW0301 and ZM3102N datasheets for a complete list of functionalities.

#### Fixed problems since last release

- None

#### Known Issues

- No known issues

#### Gate Level

- ZM3102N EU, US, ANZ, HK: Gate 5

### 3.2 ZM3106C Z-Wave Module

The ZM3106C Z-Wave Module contains the ZM3102N Z-Wave Module, EEPROM, HW interface protection circuitry and antenna matching circuitry. The ZM3106C Z-Wave Module has the same physical form factor as the ZM1206/ZM2106C Z-Wave Modules, enabling easy migration to the new ZW0301 Z-Wave Single Chip platform and allows re-use of the existing Developer's Kit HW platform.

#### New features

- See ZM3102N.

#### Fixed problems since last release

- None

#### Known Issues

- No known issues

#### Gate Level:

- ZM3106C EU, US, ANZ, HK: Gate 5

### 3.3 ZM3120C Z-Wave Module

The ZM3120C Z-Wave Module contains the ZM3102N Z-Wave Module, EEPROM, HW interface protection circuitry, antenna matching circuitry, SMA connector and PCB antenna. The ZM3120C Z-Wave Module has the same physical form factor as the ZM1220/ZM2120C Z-Wave Module, enabling easy migration to the new ZW0301 Z-Wave Single Chip platform and allows re-use of the existing Developer's Kit HW platform.

#### New features

- See ZM3102N.

#### Fixed problems since last release

- None

#### Known Issues

- No issues known

#### Gate Level

- ZM3120C EU, US: Gate 5
- ZM3120C ANZ, HK: Gate 4

### 3.4 ZMxx06 Converter Module

There are no changes to the ZMxx06 Converter Module (previously called the "ZM1206 Converter Module"). The datasheet for the module is changed to reflect the possible use with other 6cm<sup>2</sup> form factor modules like the ZM3106C. The datasheet has been renamed to "ZMxx06 Converter Module" and contains description of the support for ZM3106C.

#### New features

- None

#### Fixed problems since last release

- None

#### Known Issues

- No known issues.

#### Gate Level

- Gate 4

### 3.5 ZW010x Development Module

No changes are made to the ZW010x Development Module.

#### New features

- None

**Fixed problems since last release**

- None

**Known Issues**

- When using a ZW0301 based Z-Wave Module and a ZW010x Development Module as a Development Controller (using the Development Controller sample code on the CD) a jumper cable must be mounted in order to control LED1. The jumper cable is supplied with the Developer's Kit. For further information see [8].

**Gate Level**

- Gate 4

**3.6 ZW010x Interface Module**

The ZW010x Interface Module is the same as used in previous Developer's Kits.

**New features**

- None

**Fixed problems since last release**

- No known issues.

**Known Issues**

- No known issues

**Gate Level**

- Gate 4

**3.7 ZDP02A Development Platform**

The ZDP02A is a development platform. In Developer's Kit 4.5x ZDP02A works as a programming device for Z-Wave modules. The ZDP02A and PC programming SW are designed by Zensys. The benefits of the new programming platform are a simpler programming setup, by the use of only one communication interface (USB) between the computer and ZDP02A, and an user-friendly programming interface. Furthermore, ZDP02A uses the SPI interface both for programming the ZW0301 flash memory and EEPROM, which increases programming speed. The PC SW has a user friendly interface to select programming SW for both the flash memory and EEPROM.

**New features**

- Please refer to the ZDP02A datasheet [9] and programming guide [10].

**Fixed problems since last release**

- No known issues.

**Known Issues**

- The interface connector on the ZM1206 Z-Wave module does not contain a chip select for the EEPROM. Chip select is required when using the SPI to program the EEPROM. The EEPROM on ZM1206 is not programmable using the ZDP02A.

**Gate Level**

- Gate 4

## 4 REFERENCES

The following documents can be found on the development kit CD or the technical service homepage:  
<http://support.zen-sys.com>

- [1] Zensys, DSH10717, Datasheet, ZW0301 With Developers Kit
- [2] Zensys, DSH10756, Datasheet, ZM3102N Z-Wave Module Datasheet
- [3] Zensys, DSH10856, Datasheet, ZM3106C Z-Wave Module Datasheet
- [4] Zensys, DSH10857, Datasheet, ZM3120C Z-Wave Module Datasheet
- [5] Zensys, DSH10088, Datasheet, ZMxx06 Converter Module
- [6] Zensys, DSH10086, Datasheet, Datasheet ZW010x Interface Module
- [7] Zensys, DSH10087, Datasheet, Datasheet ZW010x Development Module
- [8] Zensys, INS10236, Instruction, Development Controller User Guide
- [9] Zensys, DSH10704, Datasheet, ZDP02A, Z-Wave Development Platform
- [10] Zensys, INS10679, Instruction, Z-Wave Programmer User Guide

## APPENDIX A STAGE GATE MODEL

All Zensys A/S developed hardware products follows a well-defined development process, which consists of up to 6 phases:

- I. Idea Phase
- II. Specification Phase
- III. Product Development Phase
- IV. Product Refinement Phase
- V. Product Maturation Phase
- VI. Production Phase

Each project consists of the phases I, II, III and IV as opposed to the phases V and VI that are added to a project when required. The production phase, VI, is not the responsibility of Zensys but of Zensys OEM customers.

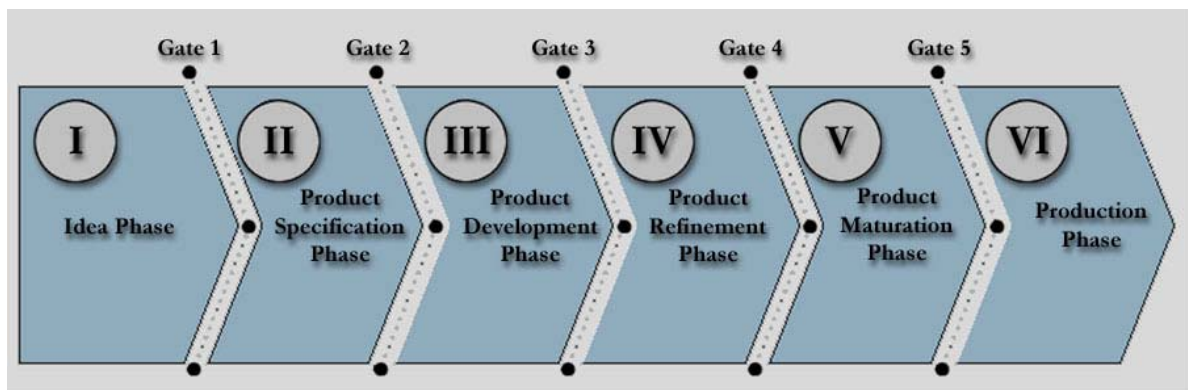


Figure 2 Zensys Hardware Development Model

At the end of each Project Phase there is a Project Gate to be passed. The purpose of the Project Gate is to specify the results that must be accomplished to have a Project Phase approved. The products maturation level for Gate 3, 4 and 5 is described in the following.

### Gate 3

Objective: First prototypes (initial proto type production)

Products maturation level:

- 5 working samples
- No RF/EMC regulatory scans

Blueprint Documentation (for quotation):

- Bill-Of-Material for quotation

**Gate 4**

Objective: Product Refinement (proto type production)

Products maturation level:

- 20-50 working samples
- Partly Product Verification (not all tests have been performed)
- RF/EMC regulatory scans

Blueprint Documentation (for prototyping):

- Bill-Of-Material for prototyping
- Schematics
- PCB Documentation
- Preliminary Datasheet(s)
- RF/EMC scan report (no final approval)

**Gate 5**

Objective: Product Maturation (pre-production)

Products maturation level:

- 500+ working samples
- Full Product Verification (PVT)
- RF/EMC regulatory approval

Blueprint Documentation (for pre-production):

- Bill-Of-Material for pre-production
- Schematics
- PCB Documentation
- PCB Assembly Instructions
- Production Test Instructions
- Assembly Test Report (summary of Zensys A/S production results)
- Final Datasheet(s)
- RF/EMC scan report (final FCC/EN approval)