Mod/Zbee1

Board Revision 1.0

Hardware Reference

SSV Embedded Systems
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CONTENT

1 INTRODUCTION

This document describes the hardware components of the Mod/Zbee1. For further information about the individual components of this product you may follow the links from our website at `http://www.ssv-embedded.de`. Our website contains a lot of technical information, which will be updated in regular periods.

1.1 Safety Guidelines

Please read the following safety guidelines carefully! In case of property or personal damage by not paying attention to this document and/or by incorrect handling, we do not assume liability. In such cases any warranty claim expires.

ATTENTION: Observe precautions for handling – electrostatic sensitive device!

- Discharge yourself before you work with the device, e.g. by touching a heater of metal, to avoid damages.
- Stay grounded while working with the device to avoid damage through electrostatic discharge.

1.2 Block Diagram

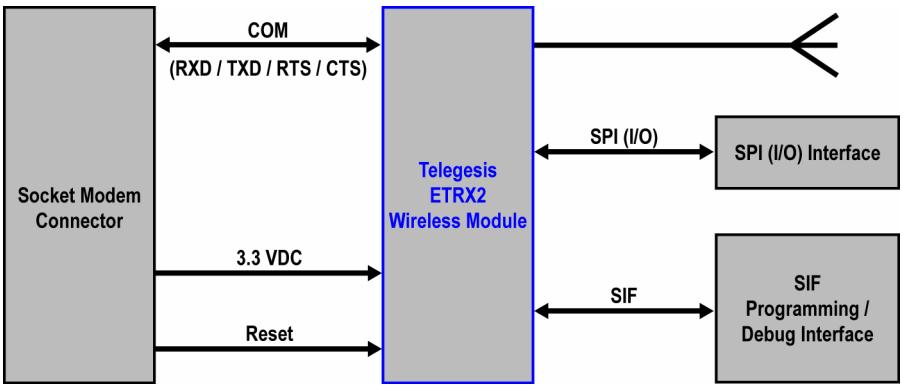


Figure 1: Block diagram of Mod/Zbee1

1.3 Feature Overview

- Modem socket connector with standard pinout
- 3.3 VDC / 50 mA (max.) power supply
- Operating temperature 0° to +70° C
- Module size 26.54 mm x 64.54 mm

1.4 Features Telegesis ETRX2 Wireless Module

- The ETRX2 is a Wireless Mesh Networking module
- Based on the Ember EM250 single chip ZigBee/IEEE 802.15.4 solution
- 2.4 GHz ISM band
- AT-style command interface for all functions
- 250 Kbps over the air data rate 16 channels (IEEE 802.15.4 channel 11 to 26)
- +3 dBm output power (+5 dBm in boost mode)
- High sensitivity of -98 dBm typ. at 1 % packet error rate
- Hardware acceleration for IEEE 802.15.4 compliant transmissions
- Firmware upgrades via RS232 or over the air (password protected)
- Hardware supported encryption (AES-128)
- Tested for CE and FCC compliance (with integrated antenna), FCC modular approval
- Module can act as an end device, router or coordinator

1.5 Typical Operation Environment

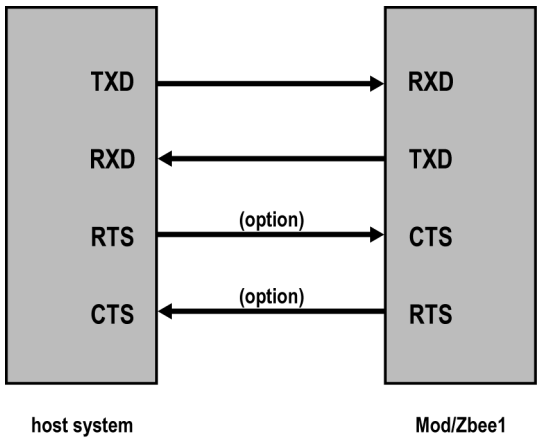
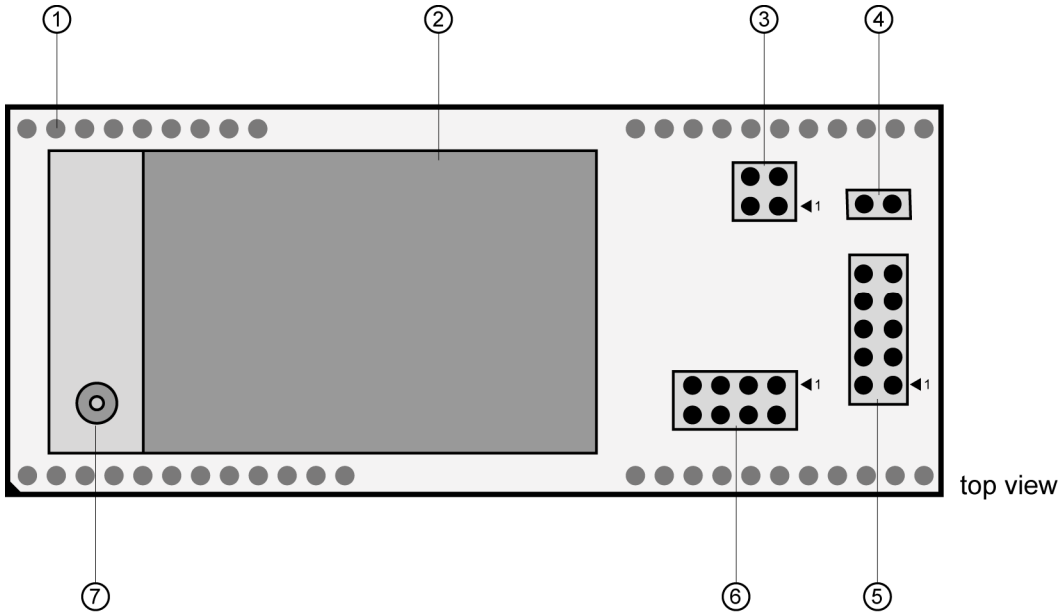


Figure 2: Typical operation environment of Mod/Zbee1

The use of RTS/CTS is optional. The AT-style command interface needs only TXD and RXD.

2 BOARD LAYOUT



① J1 - Modem socket connector (bottom side)
② MOD1 - Telegesis ETRX2 wireless module
③ JP1 - Hardware flow control jumper
④ JP2 - Boot loader enable jumper
⑤ J2 - SIF connector
⑥ J3 - SPI connector
⑦ Antenna connector

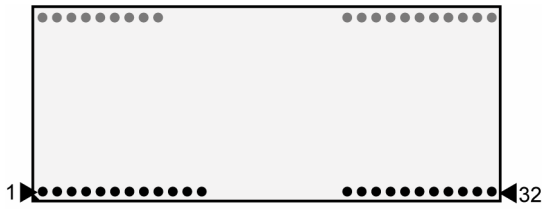
Figure 3: Board layout Mod/Zbee1

3 PINOUTS

3.1 J1 – Socket Modem Connector (1. Part)

Pin	Name	Function	Direction
1	---	Not Connected	---
2	---	Not Connected	---
3	---	Not Connected	---
4	---	Not Connected	---
5	---	Not Connected	---
6	---	Not Connected	---
7	---	Not Connected	---
8	---	Not Connected	---
9	---	Not Connected	---
10	---	Not Connected	---
11	---	Not Connected	---
12	---	Not Connected	---
22	---	Not Connected	---
23	---	Not Connected	---
24	RESET#	Reset Input	Input
25	---	Not Connected	---
26	GND	Ground	---
27	---	Not Connected	---
28	---	Not Connected	---
29	---	Not Connected	---
30	---	Not Connected	---
31	---	Not Connected	---
32	---	Not Connected	---

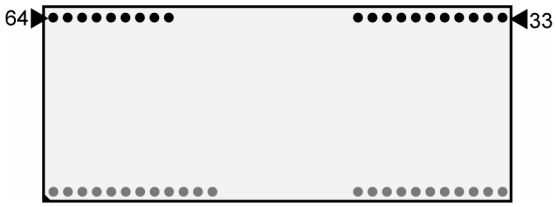
Table 1: 64-pin socket modem connector pinout – pin 1 to 32



3.2 J1 – Socket Modem Connector (2. Part)

Pin	Name	Function	Direction
33	RTS#	Serial Port, RTS Pin	Input
34	RXD	Serial Port, RXD Pin	Output
35	TXD	Serial Port, TXD Pin	Input
36	RI#	Serial Port, RI Pin	Output (Pull-up only)
37	DSR#	Internally bridged to DCD and DTR	Output
38	CTS#	Serial Port, CTS Pin	Output
39	DCD#	Internally bridged to DSR and DTR	Output
40	DTR#	Internally bridged to DSR and DCD	Input
41	GND	Ground	---
42	---	Not Connected	---
43	---	Not Connected	---
56	---	Not Connected	---
57	---	Not Connected	---
58	---	Not Connected	---
59	---	Not Connected	---
60	---	Not Connected	---
61	VCC	3.3 Volt Power Input	Input
62	---	Not Connected	---
63	GND	Ground	---
64	---	Not Connected	---

Table 2: 64-pin socket modem connector pinout – pin 33 to 64



3.3 J2 – SIF Connector

Pin	Name	Function	ETRX2 Pin
1	VCC3	3.3 Volt Power Input	---
2	MISO	SIF MISO	17
3	GND	Ground	---
4	MOSI	SIF MOSI	18
5	GND	Ground	---
6	CLK	SIF Clock	16
7	LOAD	SIF Load	19
8	RESET#	Reset Input	24
9	PTI_EN	PTI Enable	9
10	PTI_DATA	PTI Data	10

Table 3: SIF connector pinout

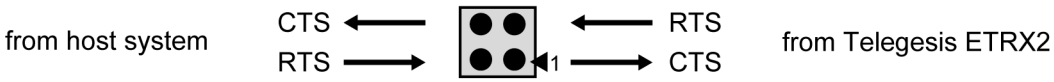
3.4 J3 – SPI Connector

Pin	Name	Function	ETRX2 Pin
1	VCC3	3.3 Volt Power Input	---
2	GND	Ground	---
3	MOSI	SPI MOSI	4
4	MISO	SPI MISO	13
5	SCLK	SPI Clock	12
6	CS#	SPI Chip Select	11
7	VCC3	3.3 Volt Power Input	---
8	GND	Ground	---

Table 4: SPI connector pinout

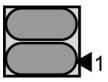
3.5 JP1 – Hardware Flow Control Jumper

JP1 allows changing the hardware flow control mode. The following figure shows the possible settings.



Hardware handshake bridged (default)

Hardware handshake connected to wireless module



Please note: If you want to connect the hardware handshake to the Telegesis wireless module, you have to activate this function in both, the host system and the wireless module settings! Please refer therefore to the user manuals of the host system and the Telegesis wireless module.

3.6 JP2 – Boot Loader Enable Jumper

The boot loader enable jumper allows entering the boot loader of the Telegesis wireless module.

Jumper	Function
Open	Normal Operation (default)
Shorted	Boot Loader enabled

Table 5: Boot loader enable jumper settings

4 MECHANICAL DIMENSIONS

All length dimensions are in millimeters and have a tolerance of 0.5 mm.

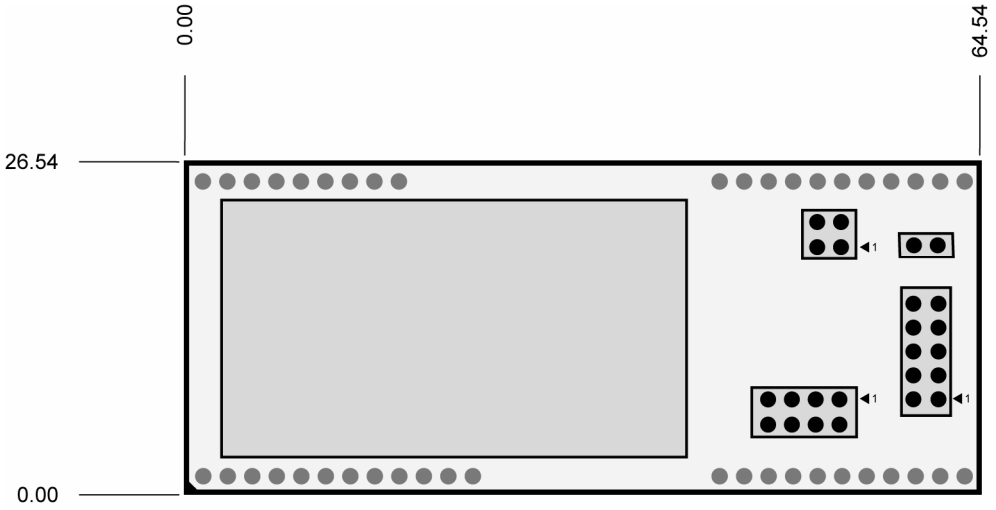


Figure 4: Mechanical dimensions of Mod/Zbee1

5 HELPFUL LITERATURE

- MB/920-E2M hardware reference manual
- Telegesis manuals, data sheets etc. at www.telegesis.com

CONTACT

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For actual information about the Mod/Zbee1 visit us at www.dilnetpc.com.

DOCUMENT HISTORY

Revision	Date	Remarks	Name
1.0	2008-05-14	first version	WBU