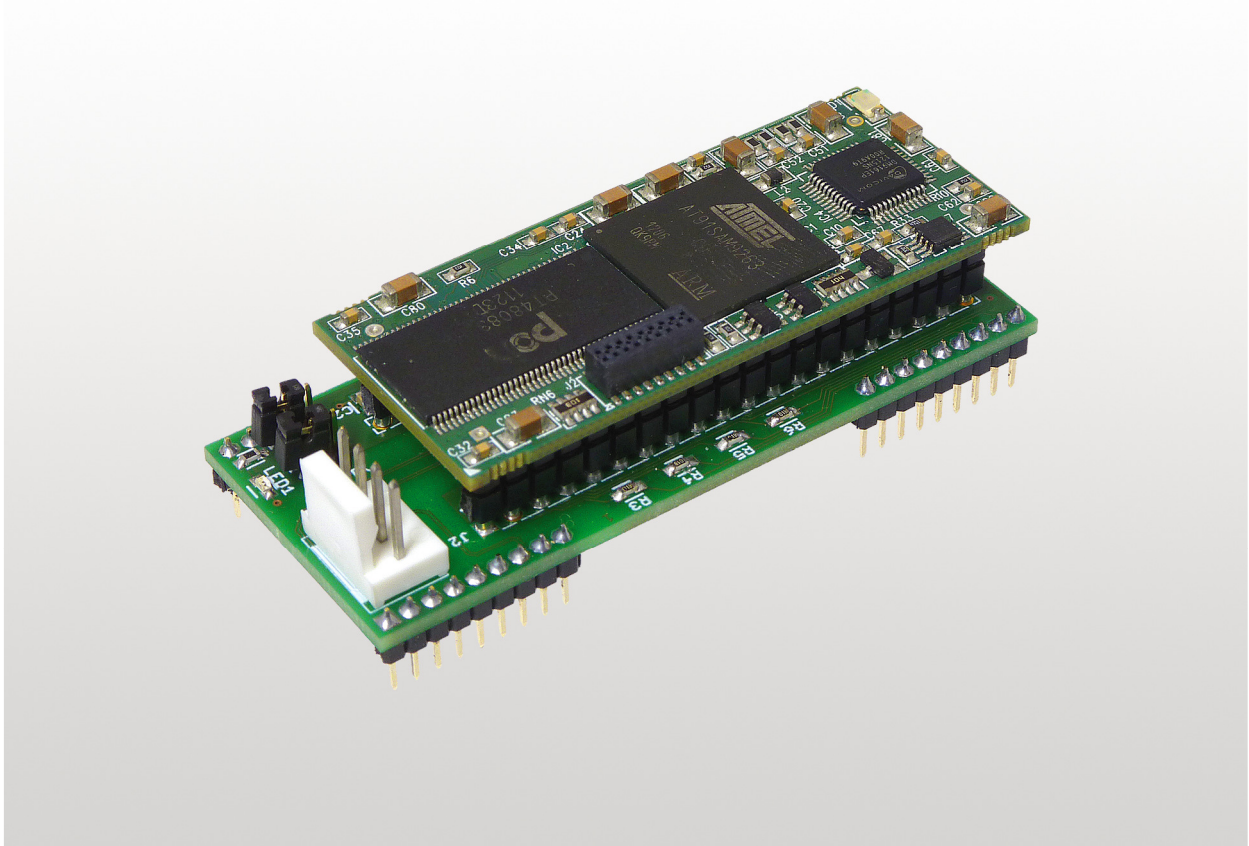# DIL/NetPC DNP/9265-SMOE
Socket Modem Emulator

Hardware Reference

SSV Embedded Systems
Dünenweg 5
D-30419 Hannover
Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
E-mail: sales@ssv-embedded.de

Document Revision: 1.2
Date: 2016-08-18

CONTENT

1   INTRODUCTION

This document describes the hardware components of the socket modem emulator DIL/NetPC DNP/9265-SMOE.

The socket modem emulator consists of the DNP/9265 with AT modem emulator software on a socket modem adapter.

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   Conventions

Convention	Usage
bold	Important terms
`monospace`	Filenames, Pathnames, URLs, command lines and program code

Table 1:   Conventions used in this Document

1.3   Presets

IP address:	**192.168.0.126**
AutoIP:	**169.254.x.x**
UPnP:	**enabled**
URL Web ConfigTool:	**http://192.168.0.126:7777/**
User:	**admin**
Password:	**ssvadmin**
Modem settings:	**38400 baud, N, 8, 1**
Modem TCP port:	**6400**

1.4   Usage and Integration

The DIL/NetPC DNP/9265-SMOE replaces serial socket modems seamlessly and allows the unaffected operation of connected devices via IP networks.

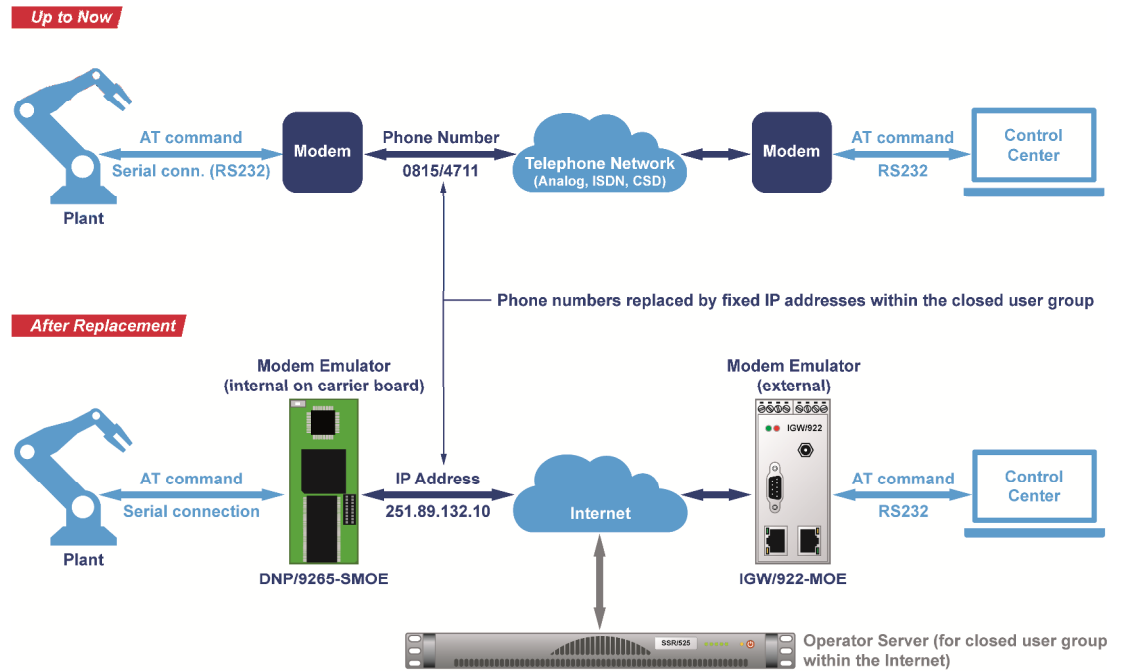The up to now used AT commands are emulated and the behavior of certain AT commands can be adjusted if required.

Figure 1:   Usage of DIL/NetPC DNP/9265-SMOE

The DNP/9265-SMOE is mounted on an existing circuit with modem socket as replacement for the up to now used analog or ISDN modem.
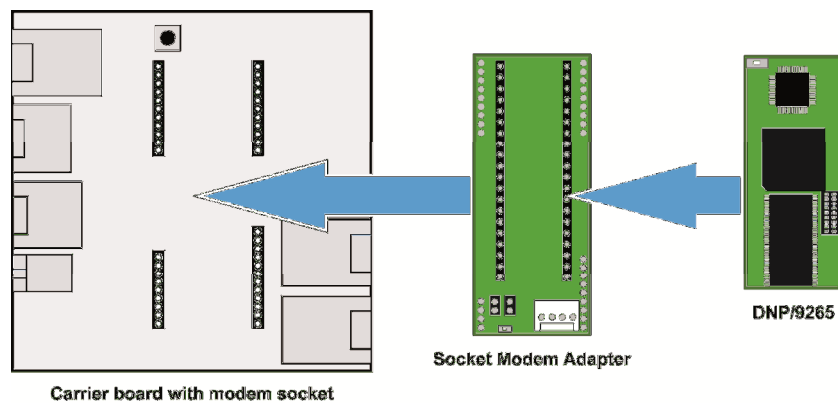
Figure 2:   Integration of DIL/NetPC DNP/9265-SMOE

The power supply voltage for the DNP/9265-SMOE must be **3.3 VDC**. The DNP/9265-SMOE does not work with a different voltage.
The DNP/9265-SMOE offers one 10/100 Mbps LAN interface for the Internet connection. Its four pins are available over the socket modem pinout as well as over the 4-pole connector on the socket modem adapter. For the 4-pole connector there is an optional pigtail cable with an RJ45 LAN connector at one end available.

1.5 Features and Technical Data DNP/9265

- AT91SAM9263 32-bit ARM9 SoC @ 192 MHz

- 32 MByte SDRAM

- 32 MByte NOR-type flash device

- 1x 10/100 Mbps Ethernet LAN interface

- 20-bit GPIO (General Purpose Input Output)

- 3x UART (COM1 with all hardware handshake signals, COM2 TX/RX only, COM3 TX/RX/RTS/CTS - functional OR with four GPIO signals)

- 1x SPI master/slave controller, functional OR with four GPIO signals

- 1x I2C interface master/slave controller, functional OR with two GPIO signals

- 1x ISO/11898A 2.0B CAN controller

- 1x USB 2.0 host port with FS and LS support

- 1x SD card interface signals for external socket functional OR with GPIO signals

- Programmable watchdog timer

- Power supervisor for VCC control

- 1x 40-pin JEDEC DIL-40 socket, 2.54 mm centers

- Pin-compatible to other SSV DIL-40 devices

- Supply voltage: 3.3 VDC (±5 %)

- Supply current: 300 mA typical / 500 mA max.

- Size: 23 mm x 55 mm

- Preinstalled AT modem emulator software "**TCPSER**"

- Preinstalled U-Boot boot loader with flash device support

- Preinstalled Linux O/S with 2.6.24 kernel (**see note 1**)

Note 1:
The DNP/9265 Linux O/S is based on the OpenEmbedded software framework. Not all functions are usable in Socket Modem Adapter.

1.6 Features and Technical Data Socket Modem Adapter

- 1x Socket modem connector

- 1x DIL-40 socket

- 1x 10/100 Mbps Ethernet LAN interface (4-pin connector)

- 1x RCM jumper

- 1x Configuration jumper

- Supply voltage: 3.3 VDC (±5 %)

- Size: 27 mm x 65 mm

2 BOARD LAYOUT

Socket Modem Adapter
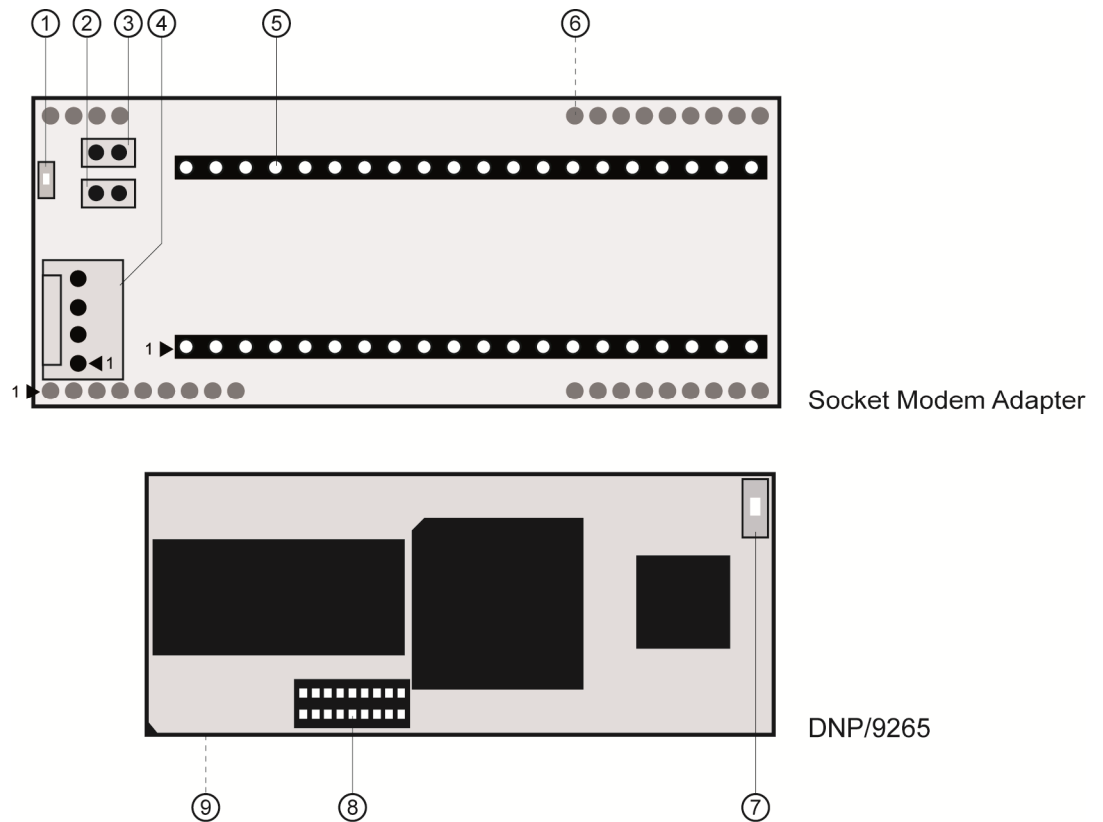
DNP/9265

Adapter:

① Power LED
② X1: Configuration jumper
③ X2: RCM jumper
④ J1: 10/100 Mbps Ethernet connector
⑤ J2: DIL-40 socket
⑥ J3: Modem connector (bottom)

DNP/9265:

⑦ 10/100 Mbps LAN activity LED
⑧ J2: JTAG connector
⑨ J1: DIL-40 connector (bottom)

Figure 3:   Board layout DIL/NetPC DNP/9265-SMOE

3   PINOUTS DNP/9265

3.1   DIL-40 Connector – J1

Pin	Name	Function	
1	PA0	Parallel I/O, Port A, Bit 0	
2	PA1	Parallel I/O, Port A, Bit 1	
3	PA2	Parallel I/O, Port A, Bit 2	
4	PA3	Parallel I/O, Port A, Bit 3	
5	---	Not connected	
6	---	Not connected	
7	---	Not connected	
8	---	Not connected	
9	CFG	CFG Input (Configuration/Factory Reset)	
10	---	Not connected	
11	---	Not connected	
12	---	Not connected	
13	---	Not connected	
14	---	Not connected	
15	---	Not connected	
16	---	Not connected	
17	RESIN	Reset Input (Low Active)	
18	---	Not connected	
19	---	Not connected	
20	GND	Ground	
21	RCM	RCM Input (Remote Console Mode)	
22	TX+	10/100 Mbps LAN, TX+ Pin	
23	TX-	10/100 Mbps LAN, TX- Pin	
24	RX+	10/100 Mbps LAN, RX+ Pin	
25	RX-	10/100 Mbps LAN, RX- Pin	
26	---	Not connected	
27	---	Not connected	
28	RI1	COM1 Serial Port, RI Pin	< Input
29	DTR1	COM1 Serial Port, DTR Pin	> Output
30	DSR1	COM1 Serial Port, DSR Pin	< Input
31	DCD1	COM1 Serial Port, DCD Pin	< Input
32	RTS1	COM1 Serial Port, RTS Pin	> Output
33	CTS1	COM1 Serial Port, CTS Pin	< Input
34	TXD1	COM1 Serial Port, TXD Pin	> Output
35	RXD1	COM1 Serial Port, RXD Pin	< Input
36	---	Not connected	
37	---	Not connected	
38	---	Not connected	
39	---	Not connected	
40	VCC	3.3 Volt Power Input	

Table 2:   Pinout DIL-40 connector

3.2   JTAG Connector – J2

You can use an adapter to convert the miniature JTAG connector of the DNP/9265 to the common 2.54 mm raster. Then standard JTAG connector modules can be used.

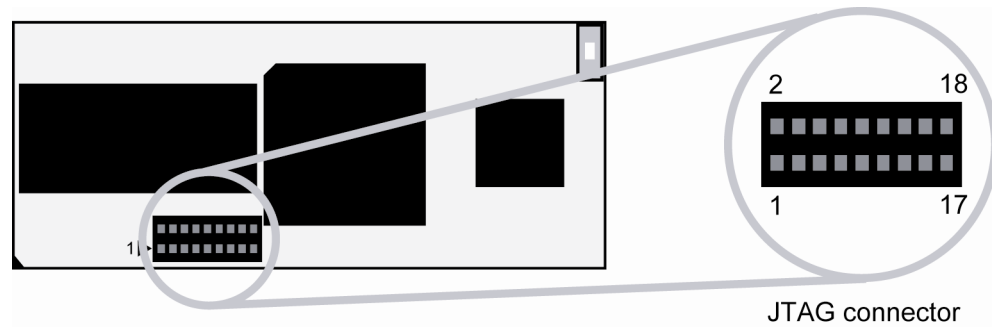Manufacturer of the JTAG connector (1 mm grid / 2 lines / 2 x 9 pins) is W+P Products (`http://www.wppro.com`), type 7091-18-10-ST.

JTAG connector

Figure 4:   Position of JTAG connector on the DNP/9265

Pin	Name	Function
1	VCC	3.3 VDC I/O Voltage
2	GND	Ground
3	TRST#	Test Reset
4	BMS	Boot Mode Select
5	TDI	Test Data In
6	DTXD	Debug Port TXD
7	TMS#	Test Mode Select
8	DRXD	Debug Port RXD
9	TCK	Test Clock
10	GND	Ground
11	RTCK	Return Clock
12	DDP	USB Device Port +
13	TDO	Test Data Out
14	DDM	USB Device Port -
15	RESET#	Reset
16	---	Not connected
17	GND	Ground
18	---	Not connected

Table 3:   Pinout JTAG connector

3.3 JTAG Interface

The JTAG signals of the DNP/9265 connector J2 are directly connected to the JTAG TAP controller of the AT91SAM9263 32-bit ARM SoC.
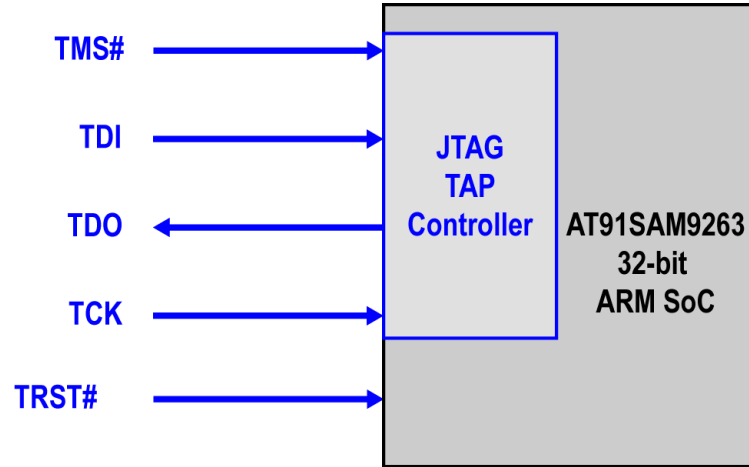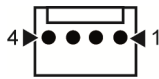
Figure 5: **DNP/9265 JTAG interface**

4   PINOUTS SOCKET MODEM ADAPTER

4.1   10/100 Mbps Ethernet Connector – J1

Pin	Name	Function
1	RX-	Ethernet RX- Pin
2	RX+	Ethernet RX+ Pin
3	TX-	Ethernet TX- Pin
4	TX+	Ethernet TX+ Pin

Table 4:   Pinout 10/100 Mbps Ethernet connector

4.2   DIL-40 Socket – J2

The pinout of the DIL-40 socket corresponds with the pinout of the DNP/9265 DIL-40 connector in **chapter 3.1**.

4.3   Socket Modem Connector – J3

Pin	Name	Function	Direction
1	---	Not connected	---
2	---	Not connected	---
3	---	Not connected	---
4	---	Not connected	---
5	---	Not connected	---
6	TX+	Ethernet TX+	Output
7	RX+	Ethernet RX+	Input
8	RX-	Ethernet RX-	Input
9	TX-	Ethernet TX-	Output
24	RESET	Reset (connect to OpenCollector driver)	Input
25	---	Not connected	---
26	GND	Ground	---
27	---	Not connected	---
28	---	Not connected	---
29	LED_DCD	Modem DCD Signal LED (incl. 1 kΩ resistor)	Output
30	LED_RX	Modem RX Signal LED (incl. 1 kΩ resistor)	Output
31	LED_DTR	Modem DTR Signal LED (incl. 1 kΩ resistor)	Output
32	LED_TX	Modem TX Signal LED (incl. 1 kΩ resistor)	Output
33	RTS	Modem RTS, LVTTL Level (not 5 V tolerant)	Input
34	RXD	Modem RXD, LVTTL Level (3.3 V)	Output
35	TXD	Modem TXD, LVTTL Level (not 5 V tolerant)	Input
36	RI	Modem RI, LVTTL Level (3.3 V)	Output
37	DSR	Modem DSR, LVTTL Level (3.3 V)	Output
38	CTS	Modem CTS, LVTTL Level (3.3 V)	Output
39	DCD	Modem DCD, LVTTL Level (3.3 V)	Output
40	DTR	Modem DTR, LVTTL Level (not 5 V tolerant)	Input
41	GND	Ground	---
61	VCC3	3.3 VDC Power	---
62	---	Not connected	---
63	GND	Ground	---
64	---	Not connected	---

Table 5:   Pinout socket modem connector
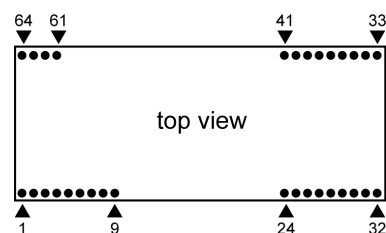
4.4   Configuration Jumper – X1

The configuration jumper is used for a factory reset.

Jumper	Function
Not set (default)	---
Set	Factory reset while booting up

Table 6:   Configuration jumper settings

4.5   RCM Jumper – X2

The **RCM (Remote Console Mode)** offers the possibility to control the DNP/9265 via a terminal emulation program over the UART-based serial port COM1 (serial-based CLI = Command Line Interface).

To disable RCM remove the jumper cap of the RCM jumper. This frees UART based serial port COM1 for application usage.

Jumper	Function
Not set (default)	Disable Remote Console Mode
Set	Enable Remote Console Mode

Table 7:   RCM jumper settings

> **IMPORTANT!**
> The Remote Console Mode is only for service purposes. The modem emulator software will not work properly, if the RCM jumper is set!

5   MECHANICAL DIMENSIONS

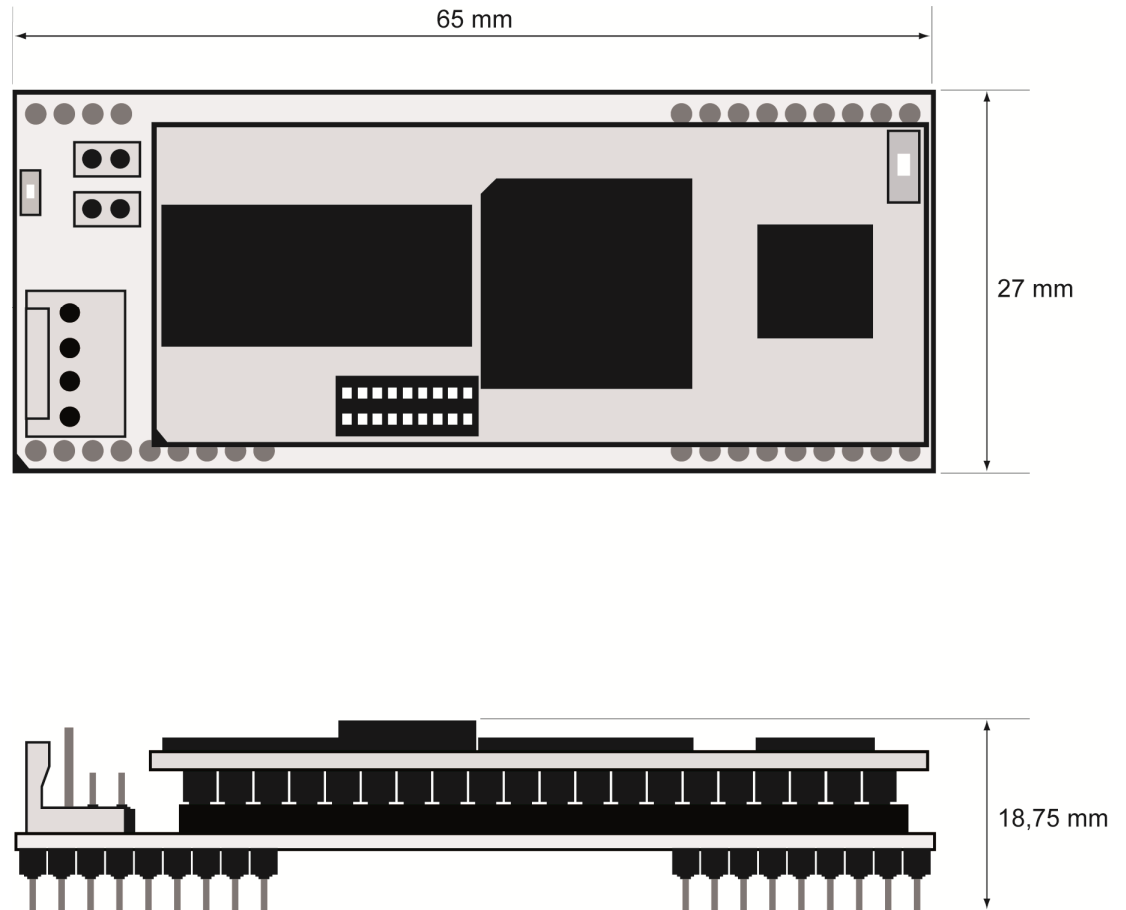All length dimensions have a tolerance of 0.5 mm.

Figure 6:   Mechanical dimensions of DIL/NetPC DNP/9265-SMOE

6   HELPFUL LITERATURE

- TCPSER Modem Emulator Software User Manual

- AT91SAM9263 Preliminary `www.atmel.com`

- AT91SAM9263 Preliminary Summary `www.atmel.com`

- • ARM926EJ-S Technical Reference manual `www.atmel.com`

CONTACT

SSV Software Systems GmbH
Dünenweg 5
D-30419 Hannover

Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40

E-mail: sales@ssv-embedded.de

Internet: `www.ssv-embedded.de`
Forum: `www.ssv-comm.de/forum`

DOCUMENT HISTORY

Revision	Date	Remarks	Name	Review
1.0	2016-03-01	first version	WBU	HNE
1.1	2016-06-24	table 2: added direction of modem signals	WBU	FKI
1.2	2016-08-18	table 5: corrected interchanged pins 8 and 9	WBU	HNE