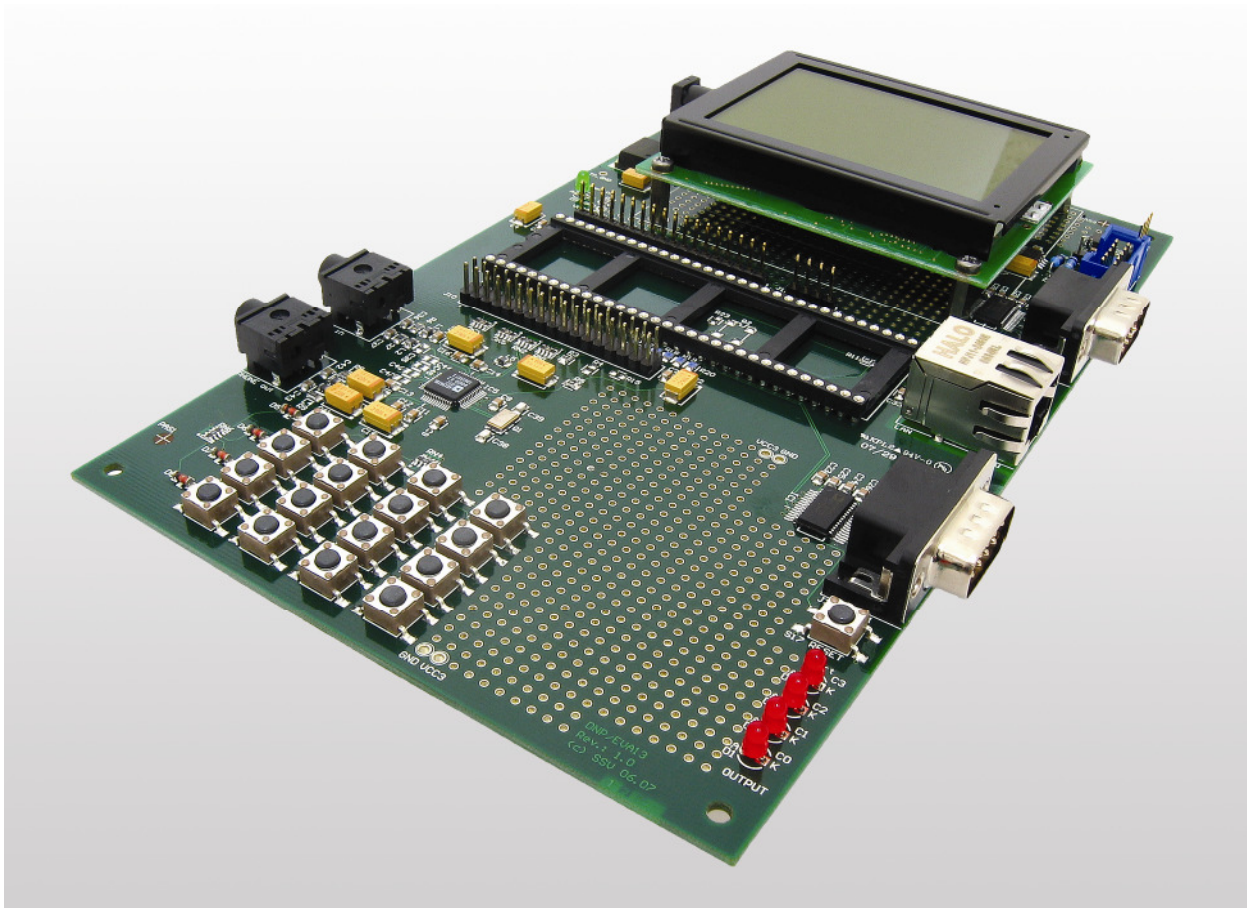


# ***DNP/EVA13***

## ***Board Revision 1.0***

# Hardware Reference



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# 1 INTRODUCTION

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This document describes the hardware components of the Evaluation Board DNP/EVA13. 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

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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

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Convention	Usage
<b>bold</b>	Important terms
<i>italic</i>	Filenames, user inputs
monospace	Pathnames, program code, command lines

**Table 1: Conventions used in this document**

### 1.3 Block Diagram

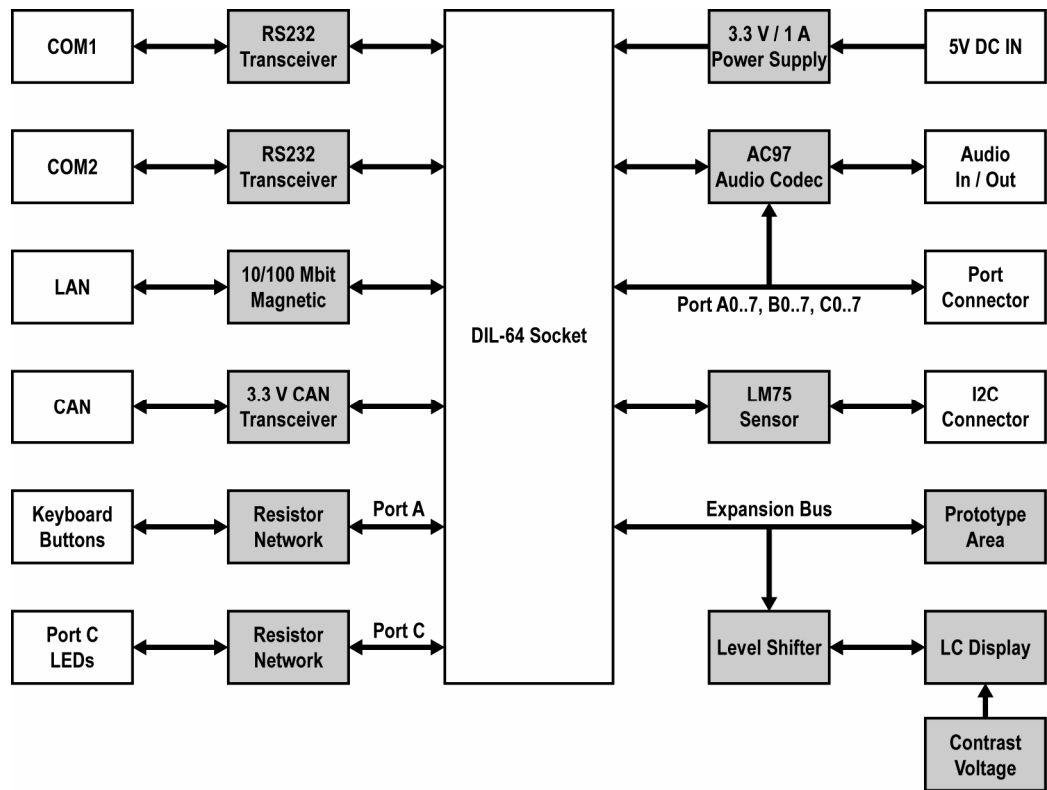


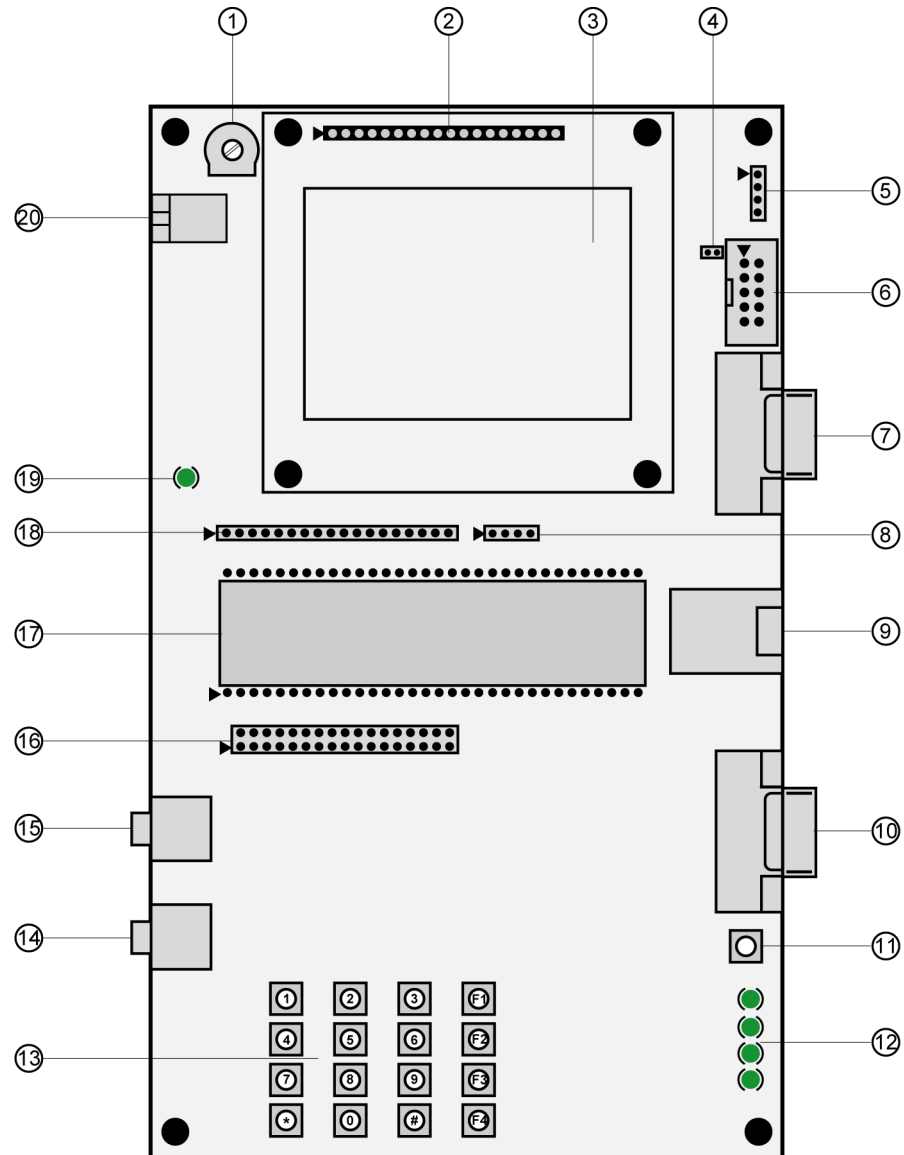
Figure 1: Block diagram of DNP/EVA13

### 1.4 Features and Technical Data

Evaluation Board DNP/EVA13	
Socket	DIL-64
DIL/NetPC	DNP/5370
Serial Port	2 x RS232
Ethernet Interface	1 x 10/100 Mbps
Audio Out Interface	✓
Audio In Interface	✓
CAN Connector	✓
I2C Connector	✓
Interrupt Connector	✓
Port Connector	✓
Expansion Bus Connector	✓
Keyboard Buttons	16 (0 – 9, *, # , F1 – F4)
Reset Button	✓
LC Display	✓ (128 x 64 dots)
LEDs	1 x power, 4 x PIO port C
Power	5 Volt DC
Size	120 mm x 200 mm
RoHS	✓

Table 2: Features of DNP/EVA13

## 2 BOARD LAYOUT



- |                                       |                                 |
|---------------------------------------|---------------------------------|
| ① R13 - LCD contrast                  | ⑪ S17 - Reset button            |
| ② J9 - LCD connector                  | ⑫ D1 to D4 - Port C LEDs        |
| ③ LCD (128 x 64 dots)                 | ⑬ S1 to S16 - Keyboard buttons  |
| ④ JP1 - CAN termination jumper        | ⑭ J8 - Audio out interface      |
| ⑤ J6 - I2C connector                  | ⑮ J7 - Audio in interface       |
| ⑥ J5 - CAN connector                  | ⑯ J10 - Port connector          |
| ⑦ J3 - COM2 port                      | ⑰ J1 - DIL-64 socket            |
| ⑧ J12 - Interrupt connector           | ⑱ J11 - Expansion bus connector |
| ⑨ J4 - 10/100 Mbps Ethernet connector | ⑲ D1 - Power LED                |
| ⑩ J2 - COM1 port                      | ⑳ J13 - Power connector         |

**Figure 2: Board layout of DNP/EVA13**

### 3 PINOUTS

#### 3.1 DIL-64 Socket – J1 (1. Part)

Pin	Name	Group	Function
1	PA0	PIO	Parallel I/O, Port A, Bit 0
2	PA1	PIO	Parallel I/O, Port A, Bit 1
3	PA2	PIO	Parallel I/O, Port A, Bit 2
4	PA3	PIO	Parallel I/O, Port A, Bit 3
5	PA4	PIO	Parallel I/O, Port A, Bit 4
6	PA5	PIO	Parallel I/O, Port A, Bit 5
7	PA6	PIO	Parallel I/O, Port A, Bit 6
8	PA7	PIO	Parallel I/O, Port A, Bit 7
9	PB0	PIO	Parallel I/O, Port B, Bit 0
10	PB1	PIO	Parallel I/O, Port B, Bit 1
11	PB2	PIO	Parallel I/O, Port B, Bit 2
12	PB3	PIO	Parallel I/O, Port B, Bit 3
13	PB4	PIO	Parallel I/O, Port B, Bit 4
14	PB5	PIO	Parallel I/O, Port B, Bit 5
15	PB6	PIO	Parallel I/O, Port B, Bit 6
16	PB7	PIO	Parallel I/O, Port B, Bit 7
17	PC0	PIO	Parallel I/O, Port C, Bit 0
18	PC1	PIO	Parallel I/O, Port C, Bit 1
19	PC2	PIO	Parallel I/O, Port C, Bit 2
20	PC3	PIO	Parallel I/O, Port C, Bit 3
21	RXD1	SIO	COM1 Serial Port, RXD Pin
22	TXD1	SIO	COM1 Serial Port, TXD Pin
23	CTS1	SIO	COM1 Serial Port, CTS Pin
24	RTS1	SIO	COM1 Serial Port, RTS Pin
25	DCD1	SIO	COM1 Serial Port, DCD Pin
26	DSR1	SIO	COM1 Serial Port, DSR Pin
27	DTR1	SIO	COM1 Serial Port, DTR Pin
28	RI1	SIO	COM1 Serial Port, RI Pin
29	RESIN	RESET	RESET Input
30	TX+	LAN	10BASE-T/100BASE-TX Ethernet Interface, TX+ Pin
31	TX-	LAN	10BASE-T/100BASE-TX Ethernet Interface, TX- Pin
32	GND	---	Ground

Table 3: Pinout DIL-64 socket – pin 1 to 32



### 3.2 DIL-64 Socket – J1 (2. Part)

Pin	Name	Group	Function
33	RX+	LAN	10BASE-T/100BASE-TX Ethernet Interface, RX+ Pin
34	RX-	LAN	10BASE-T/100BASE-TX Ethernet Interface, RX- Pin
35	RESOUT	RESET	RESET Output
36	VBAT	PSP*	Real Time Clock Battery Input
37	CLKOUT	PSP*	Clock Output
38	TXD2	PSP*	COM2 Serial Port, TXD Pin
39	RXD2	PSP*	COM2 Serial Port, RXD Pin
40	RX	PSP*	CAN Interface, RX Pin
41	TX	PSP*	CAN Interface, TX Pin
42	INT3	PSP*	Interrupt Input 3
43	INT2	PSP*	Interrupt Input 2
44	INT1	PSP*	Interrupt Input 1
45	CS4	PSP*	Chip Select Output 4
46	CS3	PSP*	Chip Select Output 3
47	CS2	PSP*	Chip Select Output 2
48	CS1	PSP*	Chip Select Output 1
49	RDY	PSP*	External Ready Input
50	RD	PSP*	Read Signal, Expansion Bus
51	WR	PSP*	Write Signal, Expansion Bus
52	SA3	PSP*	Expansion Bus, Address Bit 3
53	SA2	PSP*	Expansion Bus, Address Bit 2
54	SA1	PSP*	Expansion Bus, Address Bit 1
55	SA0	PSP*	Expansion Bus, Address Bit 0
56	SD7	PSP*	Expansion Bus, Data Bit 7
57	SD6	PSP*	Expansion Bus, Data Bit 6
58	SD5	PSP*	Expansion Bus, Data Bit 5
59	SD4	PSP*	Expansion Bus, Data Bit 4
60	SD3	PSP*	Expansion Bus, Data Bit 3
61	SD2	PSP*	Expansion Bus, Data Bit 2
62	SD1	PSP*	Expansion Bus, Data Bit 1
63	SD0	PSP*	Expansion Bus, Data Bit 0
64	VCC	---	3.3 Volt Power Input

**Table 4: Pinout DIL-64 socket – pin 33 to 64**

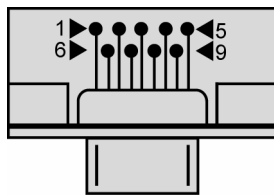


**\* Please note:** Some pins are called "Product Specific Pins (PSP)". Other members of the DIL/NetPC family will differ with these pins from the DNP/5370. All other pins will have the same primary functions.

### 3.3 COM1 Port – J2

Pin	Name	Function
1	DCD1	COM1 Serial Port, DCD pin
2	RXD1	COM1 Serial Port, RXD pin
3	TXD1	COM1 Serial Port, TXD pin
4	DTR1	COM1 Serial Port, DTR pin
5	GND1	Ground
6	DSR1	COM1 Serial Port, DSR pin
7	RTS1	COM1 Serial Port, RTS pin
8	CTS1	COM1 Serial Port, CTS pin
9	RI1	COM1 Serial Port, RI pin

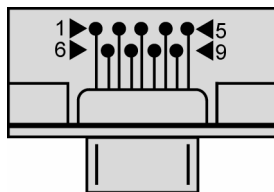
Table 5: Pinout COM1 connector



### 3.4 COM2 Port – J3

Pin	Name	Function
1	DCD2	COM2 Serial Port, DCD pin
2	RXD2	COM2 Serial Port, RXD pin
3	TXD2	COM2 Serial Port, TXD pin
4	DTR2	COM2 Serial Port, DTR pin
5	GND2	Ground
6	DSR2	COM2 Serial Port, DSR pin
7	RTS2	COM2 Serial Port, RTS pin
8	CTS2	COM2 Serial Port, CTS pin
9	RI2	COM2 Serial Port, RI pin

Table 6: Pinout COM2 connector

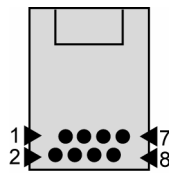




### 3.5 10/100 Mbps Ethernet Connector – J4

Pin	Name	Function
1	TX+	10/100 Mbps LAN, TX+ pin
2	TX-	10/100 Mbps LAN, TX- pin
3	RX+	10/100 Mbps LAN, RX+ pin
4	GND	Ground
5	---	Not Connected
6	RX-	10/100 Mbps LAN, RX- pin
7	---	Not Connected
8	GND	Ground

Table 7: Pinout 10/100 Mbps Ethernet connector

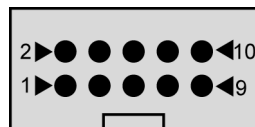


### 3.6 CAN Connector – J5

If you need the **termination resistor** for the CAN connector please refer to **chapter 3.15**.

Pin	Name	Function
1	---	Not Connected
2	---	Not Connected
3	CAN-	CAN Low Level
4	CAN+	CAN High Level
5	GND	Ground
6	---	Not Connected
7	---	Not Connected
8	---	Not Connected
9	---	Not Connected
10	---	Not Connected

Table 8: Pinout CAN connector



### 3.7 I2C Connector – J6

Pin	Name	Function
1	VCC	3.3 V Power Input
2	SCL	I2C Clock
3	SDA	I2C Data
4	GND	Ground

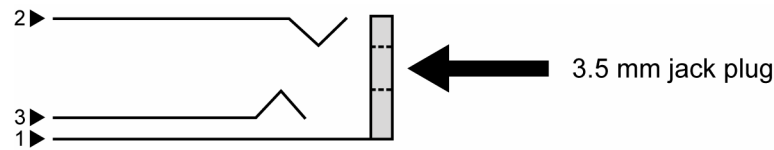
Table 9: Pinout I2C connector



### 3.8 Audio In Interface – J7

Pin	Name	Function
1	GND	Ground
2	L	Left Channel
3	R	Right Channel

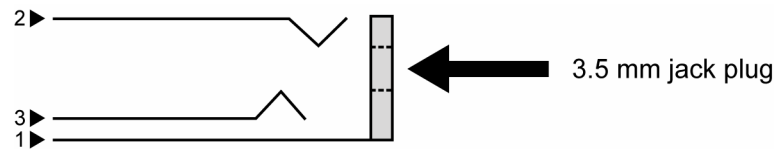
Table 10: Pinout audio in interface



### 3.9 Audio Out Interface – J8

Pin	Name	Function
1	GND	Ground
2	L	Left Channel
3	R	Right Channel

Table 11: Pinout audio out interface



### 3.10 LCD Connector – J9

Pin	Name	Function
1	---	Not Connected
2	GND	Ground
3	VCC	5 VDC Power
4	VO	Contrast Voltage
5	BUF_RD	Buffered I/O Read Signal
6	BUF_WR	Buffered I/O Write Signal
7	BUF_CS2	Buffered Programmable Chip Select Output 2
8	BUF_SA2	Buffered Address Bit 2
9	BUF_RST	Buffered LCD Reset
10	BUF_SD0	Buffered Data Bit 0
11	BUF_SD1	Buffered Data Bit 1
12	BUF_SD2	Buffered Data Bit 2
13	BUF_SD3	Buffered Data Bit 3
14	BUF_SD4	Buffered Data Bit 4
15	BUF_SD5	Buffered Data Bit 5
16	BUF_SD6	Buffered Data Bit 6
17	BUF_SD7	Buffered Data Bit 7
18	---	Not Connected

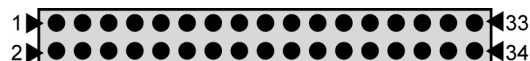
**Table 12: Pinout LCD connector**



### 3.11 Port Connector – J10

Pin	Name	Function
1	GND	Ground
2	PC3	Parallel I/O, Port C, Bit 3
3	PC0	Parallel I/O, Port C, Bit 0
4	PC1	Parallel I/O, Port C, Bit 1
5	GND	Ground
6	PA4	Parallel I/O, Port A, Bit 4
7	PA0	Parallel I/O, Port A, Bit 0
8	PA1	Parallel I/O, Port A, Bit 1
9	PA2	Parallel I/O, Port A, Bit 2
10	PA3	Parallel I/O, Port A, Bit 3
11	PA4	Parallel I/O, Port A, Bit 4
12	GND	Ground
13	PA5	Parallel I/O, Port A, Bit 5
14	PA6	Parallel I/O, Port A, Bit 6
15	PA7	Parallel I/O, Port A, Bit 7
16	PB0	Parallel I/O, Port B, Bit 0
17	PB1	Parallel I/O, Port B, Bit 1
18	PB2	Parallel I/O, Port B, Bit 2
19	GND	Ground
20	PB7	Parallel I/O, Port B, Bit 7
21	PB3	Parallel I/O, Port B, Bit 3
22	PB4	Parallel I/O, Port B, Bit 4
23	PB5	Parallel I/O, Port B, Bit 5
24	PB6	Parallel I/O, Port B, Bit 6
25	PB7	Parallel I/O, Port B, Bit 7
26	GND	Ground
27	PC2	Parallel I/O, Port C, Bit 2
28	VCC	3.3 VDC Power Input
29	VCC	3.3 VDC Power Input
30	VCC	3.3 VDC Power Input
31	VCC	3.3 VDC Power Input
32	---	Not Connected
33	---	Not Connected
34	---	Not Connected

**Table 13: Pinout Port connector**



### 3.12 Expansion Bus Connector – J11

Pin	Name	Function
1	GND	Ground
2	SD0	Expansion Bus, Data Bit 0
3	SD1	Expansion Bus, Data Bit 1
4	SD2	Expansion Bus, Data Bit 2
5	SD3	Expansion Bus, Data Bit 3
6	SD4	Expansion Bus, Data Bit 4
7	SD5	Expansion Bus, Data Bit 5
8	SD6	Expansion Bus, Data Bit 6
9	SD7	Expansion Bus, Data Bit 7
10	SA0	Expansion Bus, Address Bit 0
11	SA1	Expansion Bus, Address Bit 1
12	SA2	Expansion Bus, Address Bit 2
13	SA3	Expansion Bus, Address Bit 3
14	WR#	Expansion Bus, Write Signal
15	RD#	Expansion Bus, Read Signal
16	RDY	Expansion Bus, Ready Signal
17	CS1	Expansion Bus, Chip Select 1
18	CS2	Expansion Bus, Chip Select 2

Table 14: Pinout expansion bus connector



### 3.13 Interrupt Connector – J12

Pin	Name	Function
1	INT1	Interrupt 1
2	INT2	Interrupt 2
3	INT3	Interrupt 3
4	GND	Ground

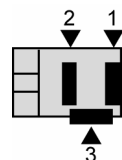
Table 15: Pinout interrupt connector



### 3.14 Power Connector – J13

Pin	Name	Function
1	5 VDC	Power Input (max. 5.5 VDC)
2	GND	Ground
3	GND	Ground

Table 16: Pinout power connector



### 3.15 CAN Termination Jumper – JP1

To switch the CAN termination resistor (62 Ohm) to the CAN signals CAN + and CAN - place a jumper cap on both pins of the CAN termination jumper JP1, so that it is short.

If you remove the jumper cap or place it on just one pin the CAN termination jumper is not set and there is no CAN termination resistor for the CAN-signals CAN + and CAN -.

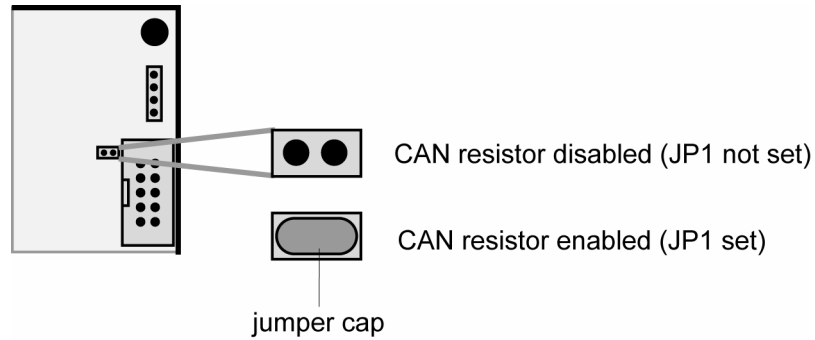


Figure 3: Position of CAN termination jumper JP1

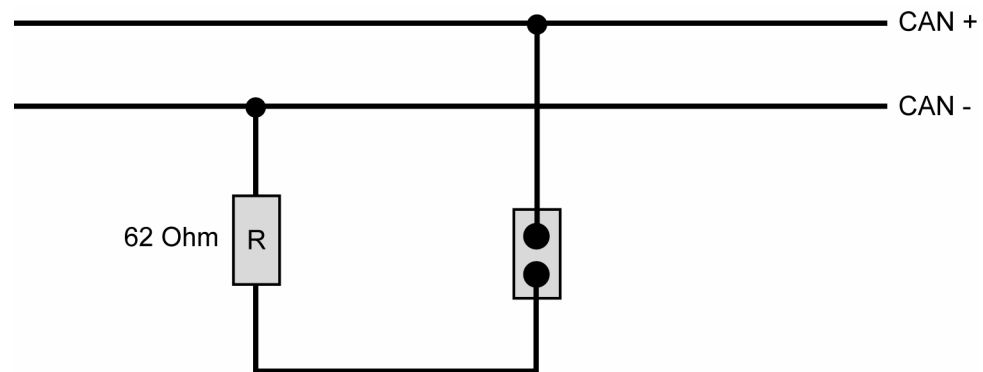
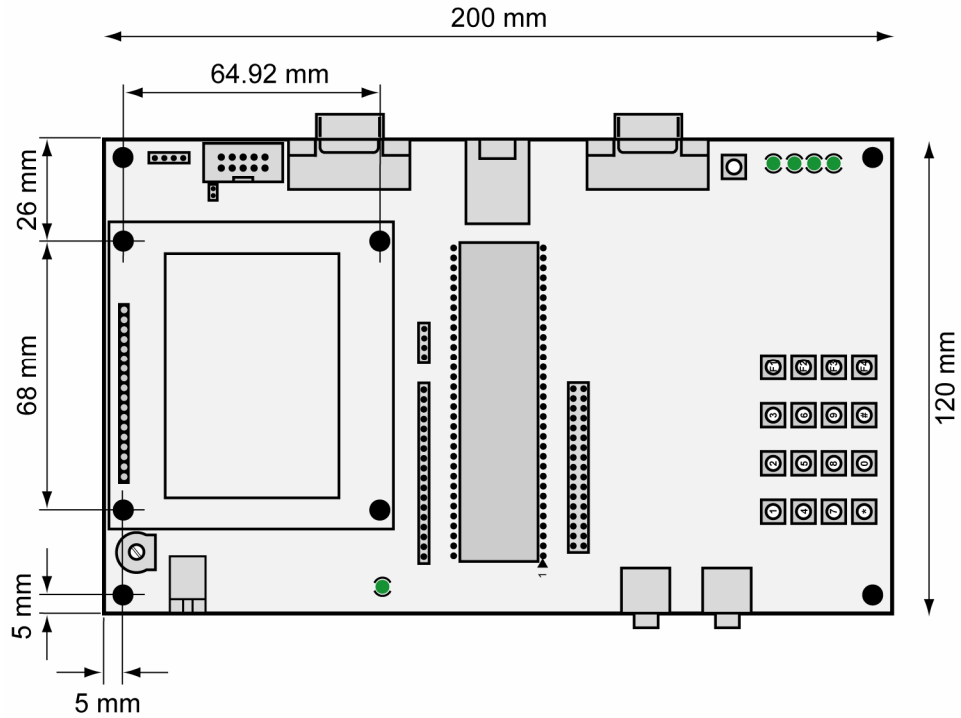


Figure 4: Function of CAN termination jumper JP1

## 4 MECHANICAL DIMENSIONS

All length dimensions have a tolerance of 0.5 mm. The drillings are suitable for M3 screws. The drillings of the LCD area are suitable for M2.5 screws.



**Figure 5: Mechanical dimensions of DNP/EVA13**

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## 5 HELPFUL LITERATURE

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- DIL/NetPC DNP/5370 hardware reference manual
- First Steps Starter Kit DNP/SK28

## CONTACT

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Support: [www.ssv-comm.de/forum](http://www.ssv-comm.de/forum)

For actual information about the DNP/EVA13 visit us at [www.dilnetpc.com](http://www.dilnetpc.com).

## DOCUMENT HISTORY

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Revision	Date	Remarks	Name
1.0	2008-14-01	first version	WBU

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