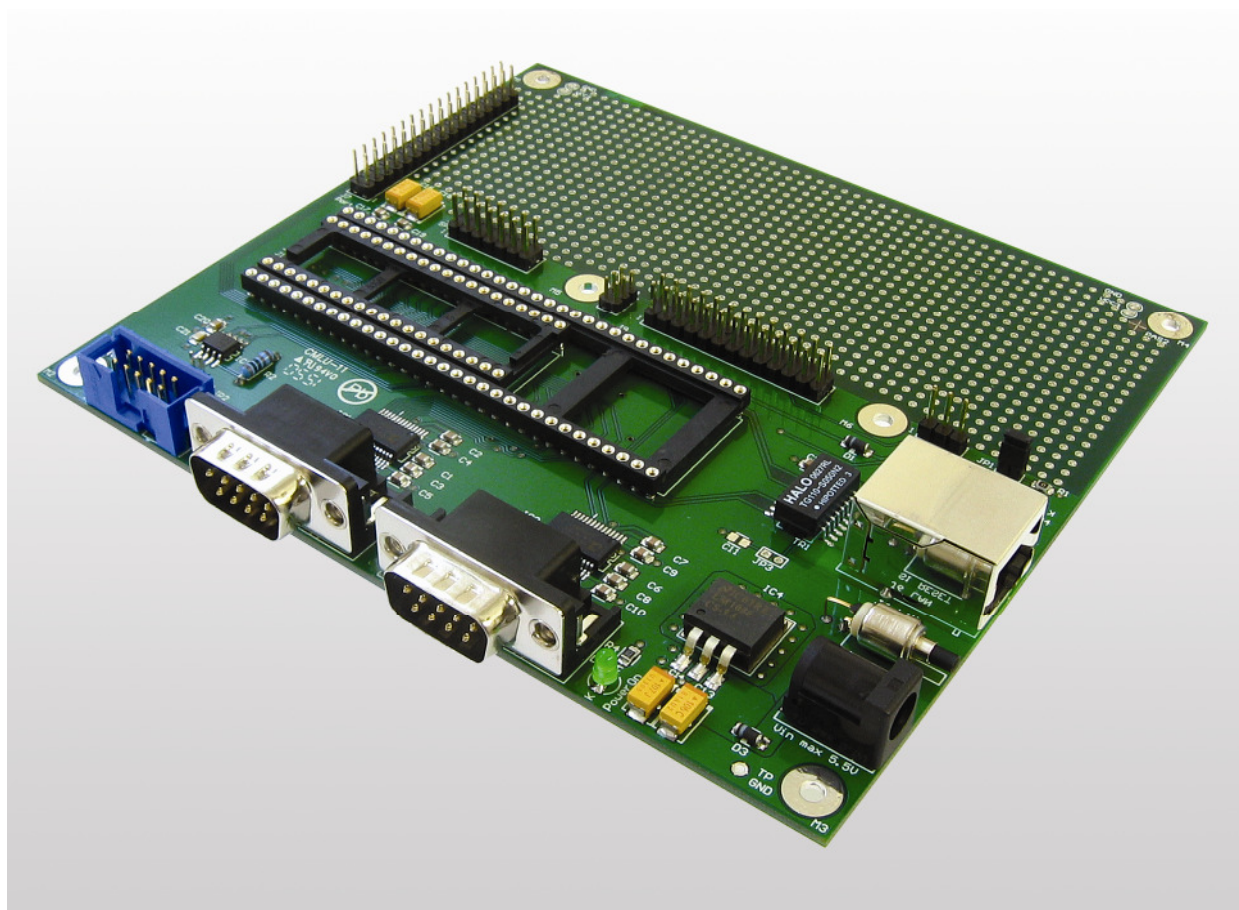


# ***DNP/EVA6***

## ***Board Revision 2.0***

# Hardware Reference



### **SSV Embedded Systems**

Heisterbergallee 72

D-30453 Hannover

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

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

E-mail: [sales@ist1.de](mailto:sales@ist1.de)

Manual Revision: 1.2

Date: 2007-06-20

# CONTENT

---

1	INTRODUCTION.....	3
1.1	Safety Guidelines .....	3
1.2	Conventions .....	3
1.3	Block Diagram .....	4
1.4	Features and Technical Data .....	4
2	BOARD LAYOUT .....	5
3	PINOUTS .....	6
3.1	DIL-40 Socket – J1 .....	6
3.2	DIL-64 Socket – J2 (Part 1) .....	7
3.3	DIL-64 Socket – J2 (Part 2) .....	8
3.4	COM1 Connector – J3 .....	9
3.5	COM2 Connector – J4 .....	9
3.6	CAN Connector – J5 .....	10
3.7	10/100 Mbps Ethernet Connector – J6.....	10
3.8	PIO/Bus signals 1 – J7 .....	11
3.9	PIO/Bus signals 2 – J8 .....	12
3.10	COM2 Connector – J9 .....	13
3.11	V <sub>BAT</sub> Connector – J10 .....	14
3.12	Power Connector – J11 .....	14
3.13	RCM Jumper – JP1 .....	15
3.14	CAN Termination Jumper – JP2.....	16
3.15	LAN Mode Jumper – JP3.....	17
3.16	COM2 Mode Jumper – JP4.....	17
4	MECHANICAL DIMENSIONS.....	18
5	HELPFUL LITERATURE.....	19
	CONTACT .....	19
	DOCUMENT HISTORY .....	19

# 1 INTRODUCTION

---

This document describes the hardware components of the DNP/EVA6 with both, the DIL-40 and the DIL-64 socket.

For further information about the individual components of this product you may follow the links from our website at <http://www.dilnetpc.com>. 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 Conventions

---

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

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

### 1.3 Block Diagram

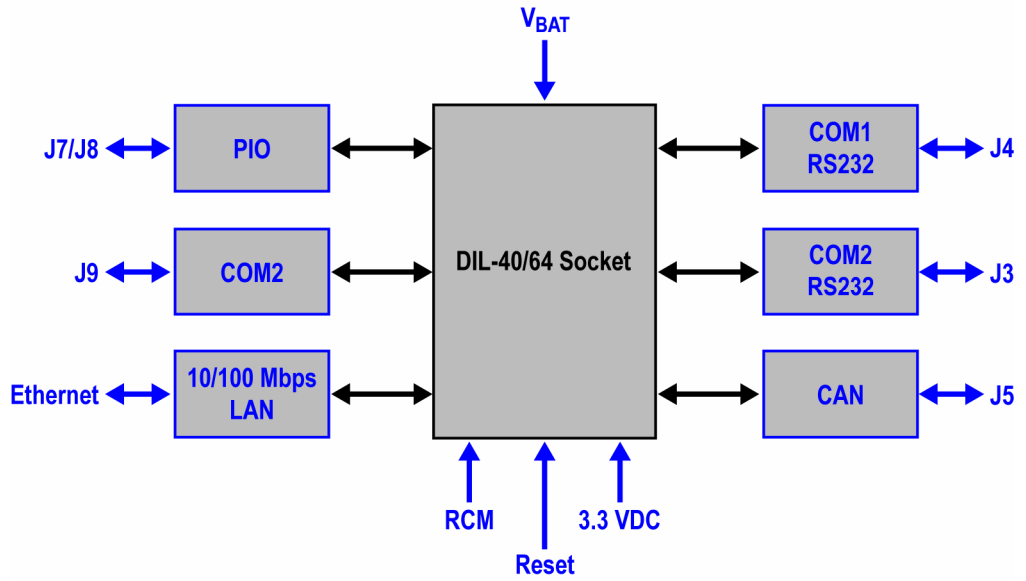


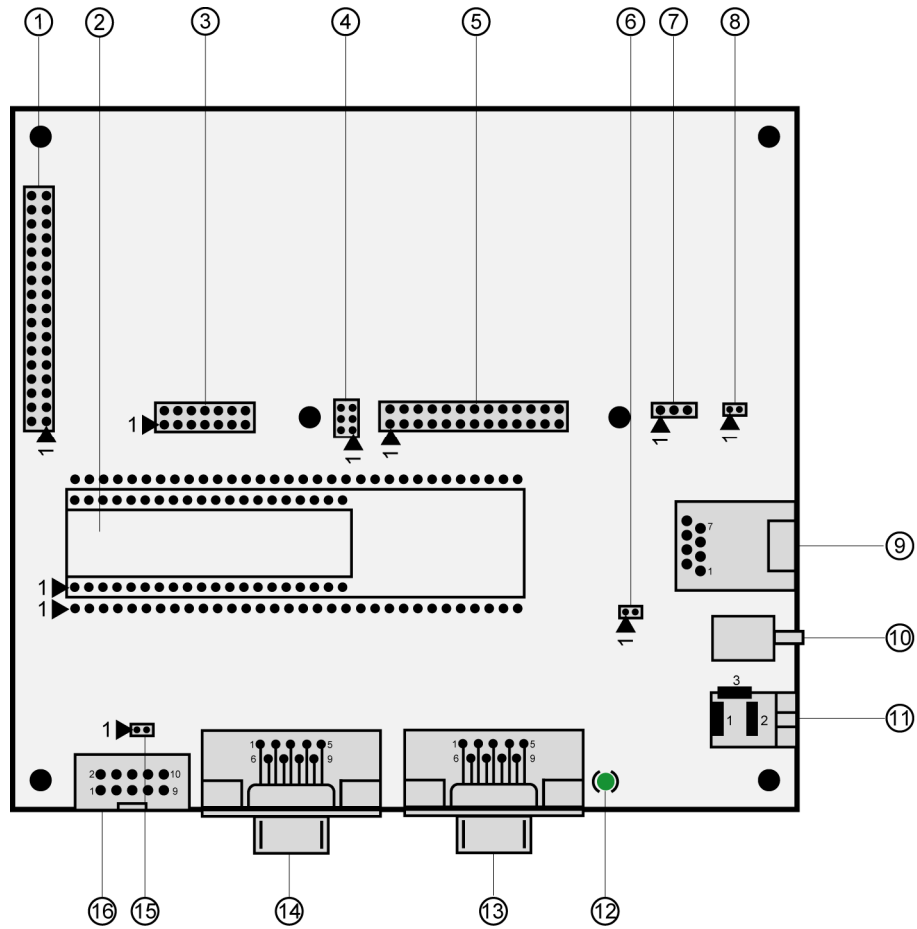
Figure 1: Block diagram of DNP/EVA6

### 1.4 Features and Technical Data

	Evaluation Board DNP/EVA6
Socket	DIL-40 or DIL-64
Serial Ports	2 x RS232
Ethernet	1 x 10/100 Mbps
PIO Bus Signals	1 x 14-pin, 1 x 34-pin
I/O Expansion Bus	✓
LEDs	1 x power
CAN	Only with DIL/NetPC DNP/5280 and DNP/5282
RCM Jumper	✓
Prototype Area	✓
Power	5 Volt DC input connector
Size	140.2 mm x 125.4 mm
DIL/NetPC	DNP/2110, DNP/5280, DNP/5282, DNP/7520
RoHS	✓

Table 2: Features of DNP/EVA6

## 2 BOARD LAYOUT



- |                             |                                      |
|-----------------------------|--------------------------------------|
| ① J7 - PIO/Bus signals 1    | ⑨ J6 - 10/100Mbps Ethernet interface |
| ② J1/J2 - DIL40/64 socket   | ⑩ S1 - Reset button                  |
| ③ J8 - PIO/Bus signals 2    | ⑪ J11 - Power connector              |
| ④ JP4 - COM2 mode jumper    | ⑫ D2 - Power LED                     |
| ⑤ J9 - COM2 connector (TTL) | ⑬ J4 - COM2 (RS232)                  |
| ⑥ JP3 - LAN mode jumper     | ⑭ J3 - COM1 (RS232)                  |
| ⑦ J10 - $V_{BAT}$ connector | ⑮ JP2 - CAN termination jumper       |
| ⑧ JP1 - RCM jumper          | ⑯ J5 - CAN connector                 |

**Figure 2: Board layout DNP/EVA6**

## 3 PINOUTS

### 3.1 DIL-40 Socket – J1

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	RESIN	RESET	Reset Input
18	SPI.CS1	SPI	QSPI Chip Select Output 1
19	SPI.CS2	SPI	QSPI Chip Select Output 2
20	GND	---	Ground
21	RCM	---	RCM (Remote Console Mode) Input
22	TX+	LAN	10/100 Mbps LAN, TX+ Pin
23	TX-	LAN	10/100 Mbps LAN, TX- Pin
24	RX+	LAN	10/100 Mbps LAN, RX+ Pin
25	RX-	LAN	10/100 Mbps LAN, RX- Pin
26	TXD2	SIO	COM2 Serial Port, TXD Pin
27	RXD2	SIO	COM2 Serial Port, RXD Pin
28	RI1	SIO	COM1 Serial Port, RI Pin
29	DTR1	SIO	COM1 Serial Port, DTR Pin
30	DSR1	SIO	COM1 Serial Port, DSR Pin
31	DCD1	SIO	COM1 Serial Port, DCD Pin
32	RTS1	SIO	COM1 Serial Port, RTS Pin
33	CTS1	SIO	COM1 Serial Port, CTS Pin
34	TXD1	SIO	COM1 Serial Port, TXD Pin
35	RXD1	SIO	COM1 Serial Port, RXD Pin
36	PC0	PIO	Parallel I/O, Port C, Bit 0
37	PC1	PIO	Parallel I/O, Port C, Bit 1
38	PC2	PIO	Parallel I/O, Port C, Bit 2
39	PC3	PIO	Parallel I/O, Port C, Bit 3
40	VCC	---	3.3 Volt Power Input

**Table 3: Pinout DIL-40 socket**

### 3.2 DIL-64 Socket – J2 (Part 1)

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	10/100 Mbps LAN, TX+ Pin
31	TX-	LAN	10/100 Mbps LAN, TX- Pin
32	GND	----	Ground

**Table 4: Pinout DIL-64 socket – pin 1 to 32**

### 3.3 DIL-64 Socket – J2 (Part 2)

Pin	Name	Group	Function
33	RX+	LAN	10/100 Mbps LAN, RX+ Pin
34	RX-	LAN	10/100 Mbps LAN, RX- Pin
35	RESOUT	RESET	Reset Output
36	VBAT	PSP	Real-Time Clock Battery
37	CLKOUT	PSP	Clock Output
38	TXD2	PSP	COM2 Serial Port, TXD Pin
39	RXD2	PSP	COM2 Serial Port, RXD Pin
40	INT5	PSP	Interrupt Input 5
41	INT4	PSP	Interrupt Input 4
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	IOCHRDY	PSP	I/O Channel Ready
50	IOR	PSP	I/O Read Signal
51	IOW	PSP	I/O Write Signal
52	SA3	PSP	Address Bit 3
53	SA2	PSP	Address Bit 2
54	SA1	PSP	Address Bit 1
55	SA0	PSP	Address Bit 0
56	SD7	PSP	Data Bit 7
57	SD6	PSP	Data Bit 6
58	SD5	PSP	Data Bit 5
59	SD4	PSP	Data Bit 4
60	SD3	PSP	Data Bit 3
61	SD2	PSP	Data Bit 2
62	SD1	PSP	Data Bit 1
63	SD0	PSP	Data Bit 0
64	VCC	PSP	3.3 Volt Power Input

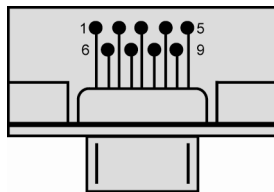
**Table 5: Pinout DIL-64 socket – pin 33 to 64**



### 3.4 COM1 Connector – J3

Pin	Name	Function
1	DCD	COM1 Serial Port, DCD Pin (RS232)
2	RXD	COM1 Serial Port, RXD Pin (RS232)
3	TXD	COM1 Serial Port, TXD Pin (RS232)
4	DTR	COM1 Serial Port, DTR Pin (RS232)
5	GND	Ground
6	DSR	COM1 Serial Port, DSR Pin (RS232)
7	RTS	COM1 Serial Port, RTS Pin (RS232)
8	CTS	COM1 Serial Port, CTS Pin (RS232)
9	RI	COM1 Serial Port, RI Pin (RS232)

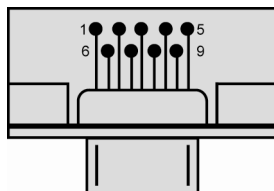
Table 6: Pinout COM1 connector



### 3.5 COM2 Connector – J4

Pin	Name	Function
1	DCD	not connected
2	RXD	COM2 Serial Port, RXD Pin (RS232)
3	TXD	COM2 Serial Port, TXD Pin (RS232)
4	---	not connected
5	GND	Ground
6	---	not connected
7	---	not connected
8	---	not connected
9	---	not connected

Table 7: Pinout COM2 connector



### 3.6 CAN Connector – J5

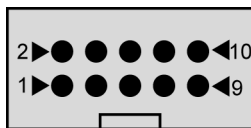


**Please note:** The CAN connector is only available with the DIL/NetPC DNP/5280 and DNP/5282.

If you need the termination resistor for the CAN connector please refer to **chapter 3.14**.

Pin	Name	Function
1	---	reserved
2	GND	Ground
3	CAN-	CAN Low Level
4	CAN+	CAN High Level
5	GND	Ground
6	---	reserved
7	---	reserved
8	---	reserved
9	---	reserved
10	---	reserved

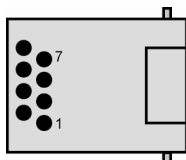
**Table 8: Pinout CAN connector**



### 3.7 10/100 Mbps Ethernet Connector – J6

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	---	not connected
5	---	not connected
6	RX-	10/100 Mbps LAN, RX- pin
7	---	not connected
8	---	not connected

**Table 9: Pinout 10/100 Mbps Ethernet connector**



### 3.8 PIO/Bus signals 1 – J7

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

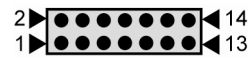
Table 10: Pinout PIO/Bus signals 1



### 3.9 PIO/Bus signals 2 – J8

Pin	Name	Function
1	VCC	Power
2	GND	Ground
3	PC0	Parallel I/O, Port C, Bit 0
4	GND	Ground
5	PC1	Parallel I/O, Port C, Bit 1
6	GND	Ground
7	PC2	Parallel I/O, Port C, Bit 2
8	GND	Ground
9	PC3	Parallel I/O, Port C, Bit 3
10	GND	Ground
11	SPI.CS1	QSPI Chip Select Output 1
12	GND	Ground
13	SPI.CS2	QSPI Chip Select Output 2
14	VCC	Power

Table 11: Pinout PIO/Bus signals 2



### 3.10 COM2 Connector – J9

Pin	Name	Function
1	VCC	Power
2	GND	Ground
3	TXD	COM2 Serial Port, TXD Pin (TTL)
4	RXD	COM2 Serial Port, RXD Pin (TTL)
5	---	Not connected
6	---	Not connected
7	---	Not connected
8	---	Not connected
9	GND	Ground
10	GND	Ground
11	---	Not connected
12	---	Not connected
13	---	Not connected
14	---	Not connected
15	---	Not connected
16	---	Not connected
17	---	Not connected
18	---	Not connected
19	---	Not connected
20	---	Not connected
21	---	Not connected
22	---	Not connected
23	---	Not connected
24	---	Not connected
25	GND	Ground
26	VCC	Power

Table 12: Pinout COM2 connector



**Please note:** If you want to use the COM2 connector, you must change the setting of the COM2 mode jumper JP4. Therefore please refer to **chapter 3.16**.

### 3.11 $V_{BAT}$ Connector – J10

Pin	Name	Function
1	VIN	Power In
2	GND	Ground
3	---	Not connected

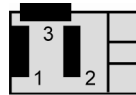
Table 13: Pinout  $V_{BAT}$  connector



### 3.12 Power Connector – J11

Pin	Name	Function
1	VCC	Power In (max. 5.5 VDC)
2	GND	Ground
3	GND	Ground

Table 14: Pinout power connector



**CAUTION:** Providing the DNP/EVA6 with a voltage higher than the regular 5 VDC  $\pm 10\%$  could resolve in damaged board components!

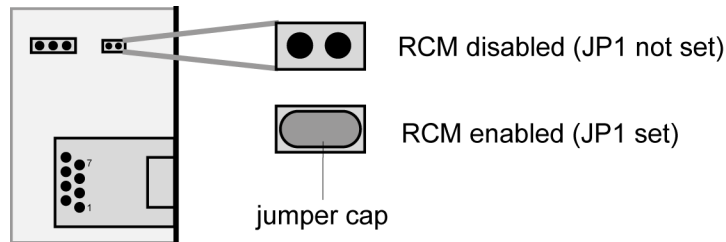
### 3.13 RCM Jumper – JP1

The **Remote Console Mode (RCM)** realizes some basic operating modes such as a boot loader or a ROM-monitor program.



**Please note:** The default setting of the RCM jumper is not set. Only if the RCM jumper is set you will be able to boot  $\mu$ CLinux on the DIL/NetPC.

To activate RCM on the DIL/NetPC place a jumper cap on the RCM jumper, so that it is short. If you remove the jumper cap or place it on just one pin, the jumper is not set and you are not able to use RCM.



**Figure 3: Position of RCM jumper JP1**

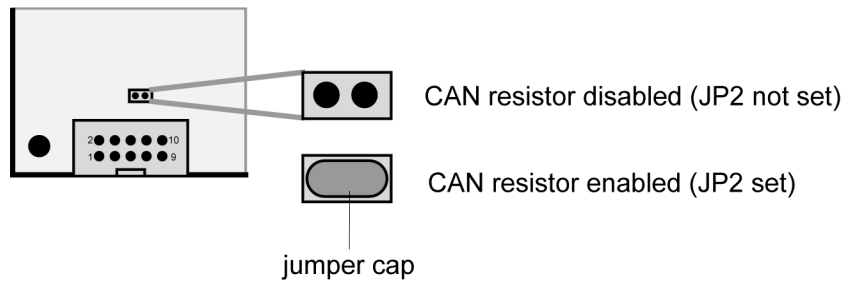
### 3.14 CAN Termination Jumper – JP2



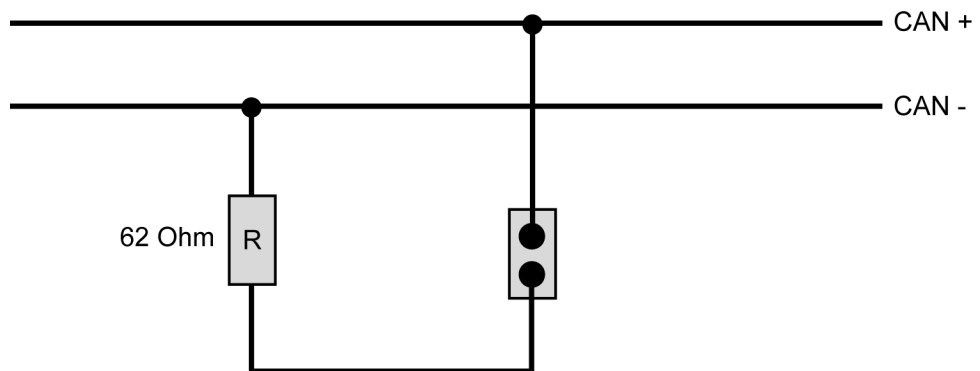
**Please note:** The CAN termination jumper JP2 is only available with the DIL/NetPC DNP/5280 and DNP/5282.

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, 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 4: Position of CAN termination jumper JP2**



**Figure 5: Function of CAN termination jumper JP2**



### 3.15 LAN Mode Jumper – JP3



**Please note:** The LAN mode jumper JP3 must be set only with the DIL/NetPC DNP/2110 on the board.

To enable LAN for the DIL/NetPC DNP/2110 place a jumper cap on the LAN mode jumper, so that it is short. If you remove the jumper cap or place it on just one pin, the jumper is not set.

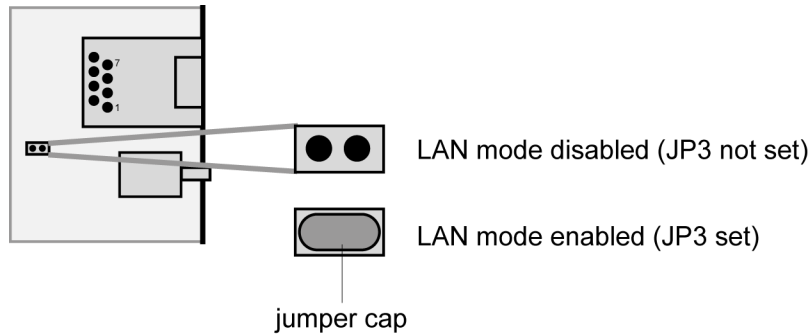


Figure 6: Position of LAN mode jumper JP3

### 3.16 COM2 Mode Jumper – JP4

The COM2 mode jumper JP4 switches the COM2 signals between the COM2 Sub-D interface J4 and the COM2 connector J9.



**Please note:** It is not possible to use the COM2 Sub-D interface and the COM2 connector at the same time.

The default setting is COM2 Sub-D interface J4 enabled. To switch between the COM2 Sub-D interface and the COM2 connector place the jumper caps like shown in the figure below.

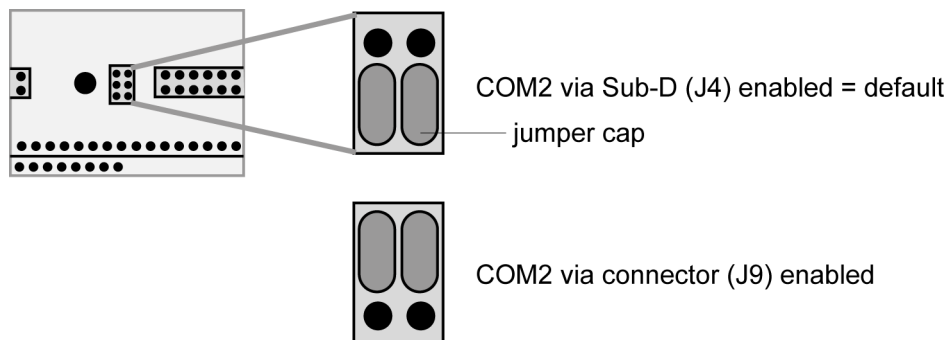


Figure 7: Position of COM2 mode jumper JP4

## 4 MECHANICAL DIMENSIONS

All length dimensions have a tolerance of 0.5 mm. The drillings are suitable for M3 screws.

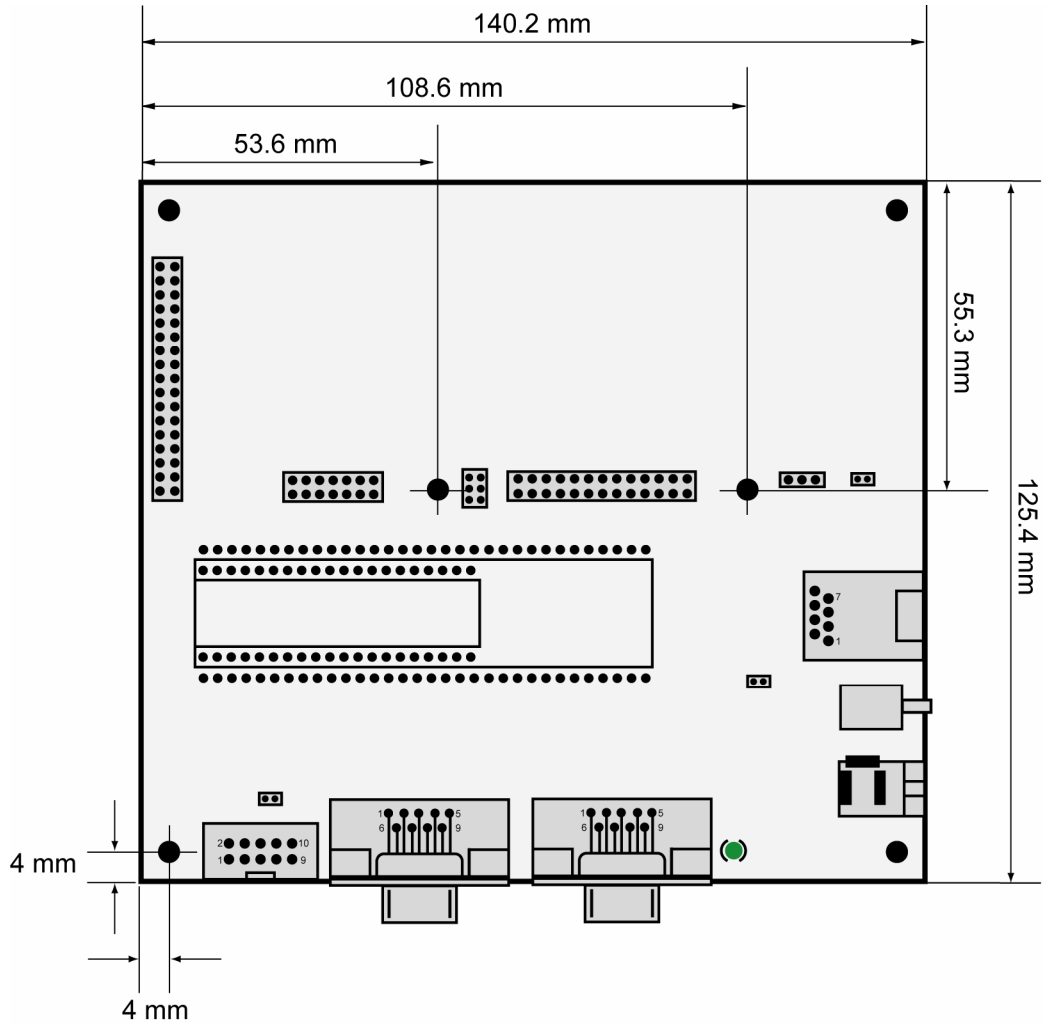


Figure 8: Mechanical dimensions of DNP/EVA6

## 5 HELPFUL LITERATURE

---

- DIL/NetPC DNP/2110 hardware reference manual
- DIL/NetPC DNP/5280 hardware reference manual
- DIL/NetPC DNP/5282 hardware reference manual
- DIL/NetPC DNP/7520 hardware reference manual
- First Steps Starter Kit DNP/SK14
- First Steps Starter Kit DNP/SK16
- First Steps Starter Kit DNP/SK26

## CONTACT

---

### SSV Embedded Systems

Heisterbergallee 72

D-30453 Hannover / Germany

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

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

E-mail: sales@ist1.de

Internet: [www.ssv-embedded.de](http://www.ssv-embedded.de)

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

## DOCUMENT HISTORY

---

Revision	Date	Remarks	Name
1.0	2005-08-11	first version	WBU
1.1	2006-06-12	safety guidelines, conventions and helpful literature added, document layout changed	WBU
1.2	2007-06-20	new board revision 2.0	WBU

The content of this document can change any time without announcement. There is taken over no guarantee for the accuracy of the statements. The user assumes the entire risk as to the accuracy and the use of this document. Information in this document is provided 'as is' without warranty of any kind. Some names within this document can be trademarks of their respective holders.

© 2007 SSV EMBEDDED SYSTEMS. All rights reserved.