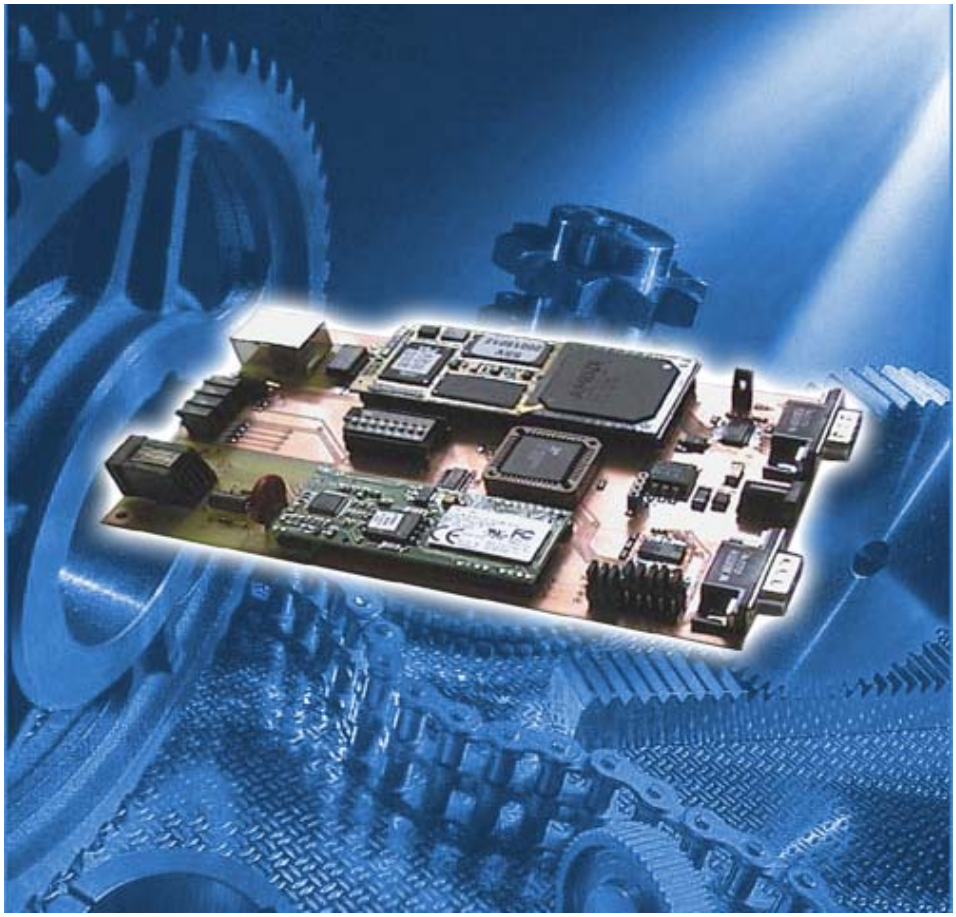
Carrier Board Socket Modem CAB/MOD1



User Manual

Content

1 Introduction

The SSV Carrier Board Socket Modem CAB/MOD1 is designed and developed to integrate a socket modem into embedded applications. The Carrier Board offers a more flexible and cost-effective alternative for the more rigid modem-chip solutions.

The Carrier Board Socket Modem design offers very low operating power requirements and a small form factor. This makes it ideal for many applications, such as embedded control systems or communications for instrumentation equipment.

This document describes how to get started with the Carrier Board Socket Modem. For further information about the individual components 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 Conventions used in this Document

Convention	Usage
italic	Filenames, as well as Internet addresses such as www.ssv-embedded.de
italic	User inputs, command lines and pathnames
bold	New terms
`monospace text`	Program code

Table 1-1: Convention usage

1.2 Checklist

This manual assumes that the items listed below are present. If any item is missing it is possible to order this by SSV Embedded Systems.

Standard Items

- Carrier Board Socket Modem
- DIL/NetPC ADNP/1520
- 5VDC Power Supply
- Null-Modem Cable
- Ethernet Crossover Cable
- Standard TAE Phone Cable
- Power Cable
- User Manual
- Support CD-ROM

1.3 Main Features

Carrier Board Socket Modem

- QIL-128 Socket for one DIL/NetPC ADNP/1520
- Conexant Socket Modem
- 10/100 Mbps Ethernet Interface
- 1 RS232 Serial Interface (COM1)
- 1 RS232/485/422 Serial Interface (COM2)
- 1 RJ-12 Socket for analog phone line (PSTN)
  (optional RJ-45 ISDN Socket)
- 8 Dip Switches
- 8 LEDs
- 1 Reset Switch
- 5VDC Power Input Connector
- Size 160 x 100 mm

DIL/NetPC ADNP/1520

- AMD SC520 CPU with 133 MHz Clock Speed and FPU
- 32/64 MByte SDRAM Memory
- 16 MByte FLASH Memory
- 10/100Mbps Ethernet Interface
- Real Time Clock
- IDE Support
- Two 16C550 UART Serial Ports
- 20-bit General Purpose High-Speed Parallel I/O
- 7 Interrupt Inputs, 4 Chip Select Outputs
- In-System Programming Features
- 128-pin QIL-Connector
- 3.3 Volt Low Power Design, Single 3.3 VDC Supply
- Size 82 x 36 mm

2 Board Layout

The base component of the Carrier Board Socket Modem CAB/MOD1 is the ConexantSmartSCM socket modem. On the CAB/MOD1 you find a QIL-128 socket (QIL = Quad In Line) to mount your ADNP/1520. By delivery the ADNP/1520 is already mounted onto the CAB/MOD1.

The Carrier Board Socket Modem provides all required basic hard- and software environment, which allows you the development of individual applications for your ADNP/1520. For an instant connection to your hardware the CAB/MOD1 supports two serial COM1 interfaces, one 10/100Base-T Ethernet interface as well as a QIL-128 (QIL =Quad In Line) interface to mount the ADNP/1520. Further you will find six LEDs, one reset switch and some dip switches. The figure 2-1 shows the base components of the Carrier Board Socket Modem.

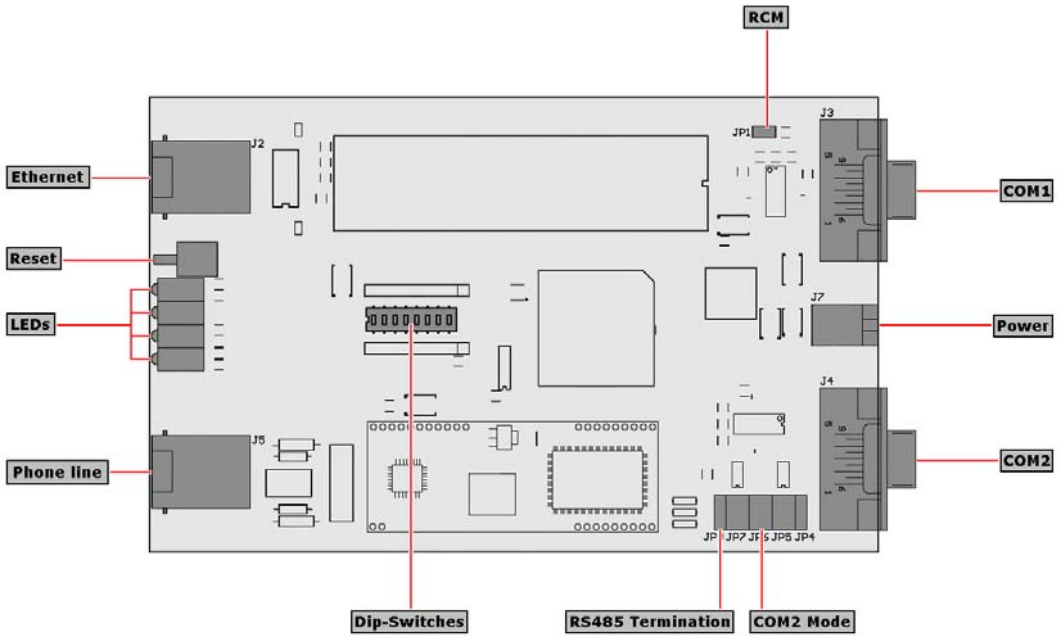


Figure 2-1: Components of the Carrier Board Socket Modem

3 Board Components

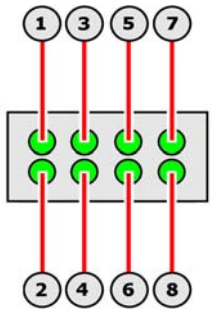
This chapter describes the most interesting components of the Carrier Board and gives a short overview about their respective functions.

3.1 Phone Line Connector

Connect the phone line connector on the Carrier Board with your telephone line connector by using a suitable n-coded telephone cable.

3.2 LEDs

The Carrier Board is equipped with some green LEDs. These LEDs allow to check the status from connection and phone line. In addition, the allocation as well as incoming calls will be indicated.



1 Ethernet LAN LED
2 Power LED
3 Receive Data (RX)
4 Transmit Data (TX)
5 GPIO 0 (Port A)
6 GPIO 1 (Port A)
7 GPIO 2 (Port A)
8 GPIO 3 (Port A)

3.2.1 Ethernet LAN LED

The Ethernet LAN LED (1) will flicker or light up to indicate traffic on the Ethernet LAN port.

3.2.2 Power LED

This Power LED (2) will light up when the Carrier Board is provided with the necessary operating voltage.

3.2.3 Base-Band-Activity LEDs

The Base-Band-Activity LEDs (3,4) will flicker or light up when there is some traffic via the phone line.

3.2.4 Output LEDs

These LEDs (5..8) indicate high level on the programmable output ports PA0–PA3. The function of this LEDs can be user defined.

3.3 Reset Button

Press the reset button down if the system hang or you need to restart it. Pressing the reset button will only restart the ADNP/1520 on the Carrier Board. To reset any connected devices turn off power from the system.

3.4 10Base-T Ethernet Interface

The ADNP/1520 on the Carrier Board uses a SMSC LAN91C111 chip that allows Ethernet connectivity with a speed up to 100Mbps. The RJ45 Ethernet interface is just a simple connection over a transformer to the QIL-128 interface pins, which are connected to the SMSC LAN controller on the ADNP/1520.

3.5 Serial Interface COM1

For an easy connection between the Carrier Board and your development system you can use the serial interface COM1. The COM1 interface is realized by a RS232 standard compliant Sub-D port with 9 pins. The exact pinout is shown on table 2.

3.6 Power Connector

The power connector onto the Carrier Board has to be connected with an adequate power supply. Please use a power supply that provides +5V DC $\pm$ 10% and about 2A current.

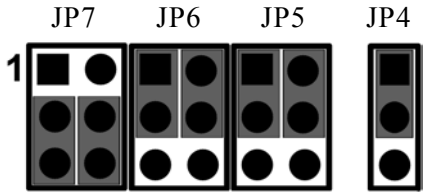
3.7 Serial Interface COM2

The Carrier Board offers a second COM-interface. For a proper connection it is recommended to set the jumpers JP4-JP7 on the respective positions.

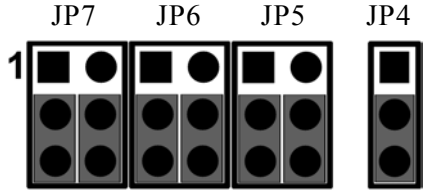
The possible data settings for the COM2 interface and there corresponding jumper settings are shown below.

Note: To use the RS485 mode it is needed to set the termination jumper JP8. For more information please see chapter 3.7.

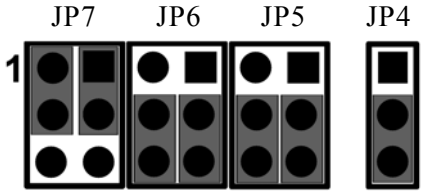
RS232



RS485



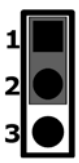
RS422



3.7.1 RS485 Termination (JP8)

Use this jumper to activate the RS485 mode for the COM2 interface. To activate the RS485 mode for the COM2 interface place a jumper cap on the pins 1-2 of the jumper, so that it is short. If you remove the jumper cap, or place the jumper cap on the pins 2-3, the jumper is open and you are not able to use the RS485 mode.

RS485 termination



Short pins 2-3

No RS485 termination

Short pins 2-3

3.8 RCM Jumper (JP1)

Use this jumper to activate the RCM mode of the ADNP/1520. The RCM mode (Remote Console Mode) offers the possibility to control the ADNP/1520 via terminal program. To activate the RCM mode place a jumper cap on both pins of the RCM jumper, so that it is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open and you are not able to use the RCM mode.When closed you will see some boot messages on the serial port COM1. If the RCM jumper is open, these messages are blocked.

Figure 3-1 shows the exact position of the RCM jumper onto the Carrier Board.

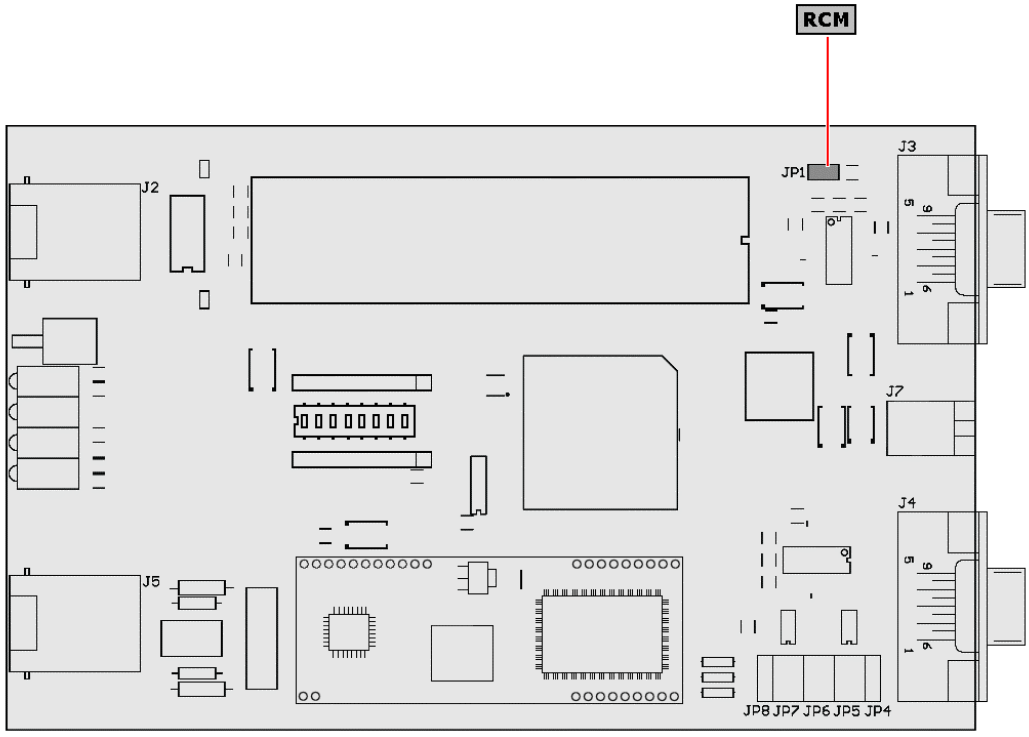


Figure 3-1: RCM Jumper

3.9 DIP Switches

The Evaluation Board has a set of eight DIP-switches that give you the possibility to control the input ports PB0–PB7.

Switch open – Signal V_{in} Low (GND)
Switch closed – Signal V_{in} High (V_{cc})

4 Mounting the Socket Modem

The Conexant SmartSCM socket modem module allows the connection between the ADNP/1520 and other devices via phone line.

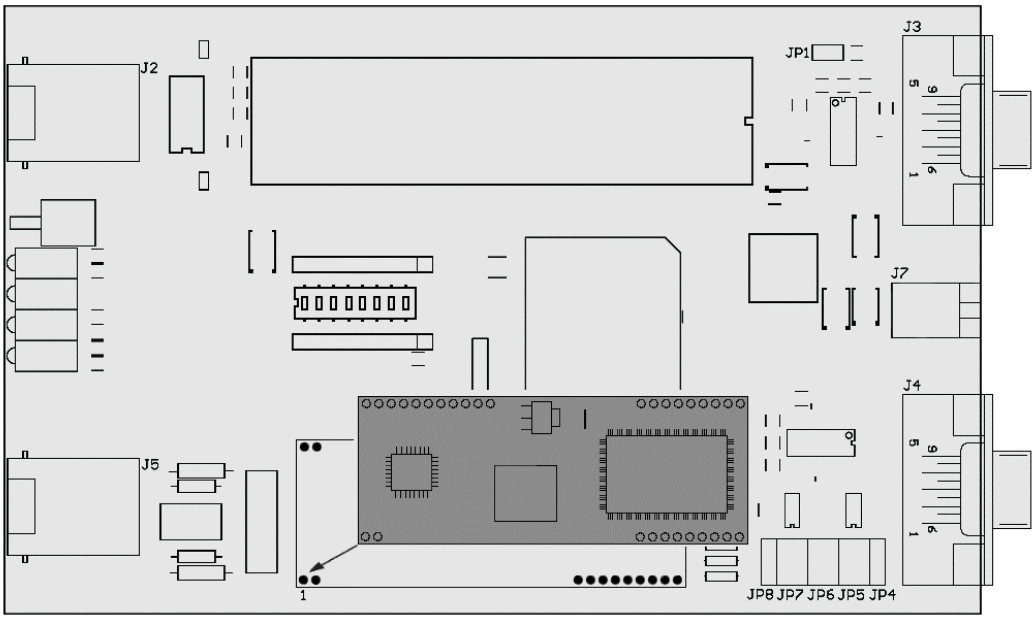


Figure 4-1: Socket modem connection

5 Mounting the DIL/NetPC

To mount the ADNP/1520 on the Carrier Board set the module carefully on the QIL-128 socket onto the Carrier Board. Please note, that the ADNP/1520 is positioned in the right way like shown in figure 5-1. Then, push the ADNP/1520 carefully down, so that the QIL-128 socket fixes it.

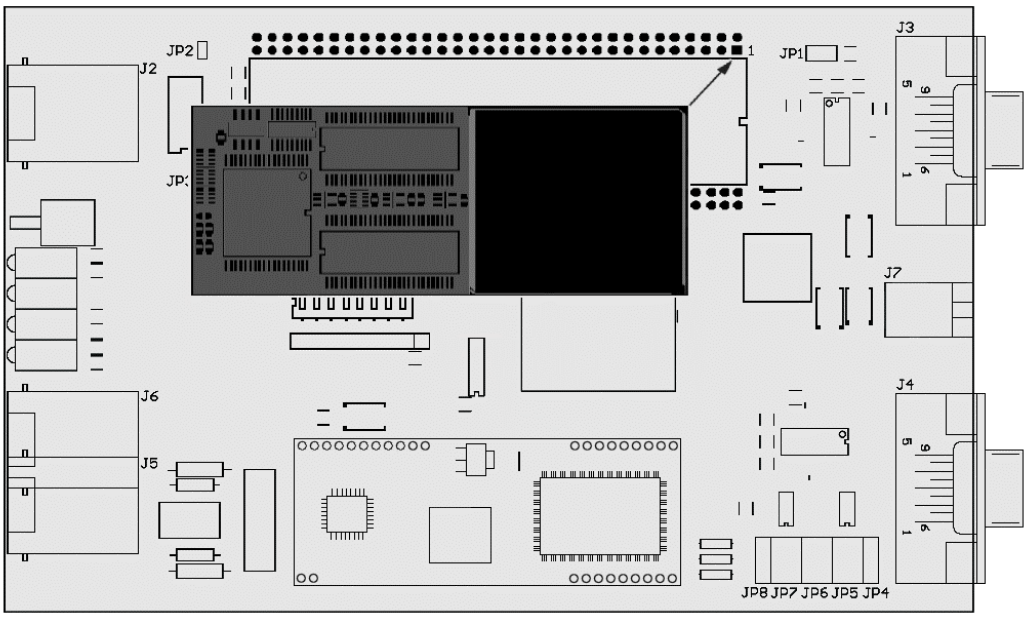


Figure 5-1: Position of the DIL/NetPC on the BlueTooth™ Carrier Board

6 Cable Connections

Before installing the necessary cable connections you should check the correct setting of the RCM jumper (see chapter 3.8). Normally this jumper is set by default. Before you can use your DIL/NetPC Starter Kit you need a further Desktop- or Notebook-PC that act as development system. This development system should run under MS-Windows or Linux in an ideal manner. This computer will act as your development system. Between the development system and the Starter Kit are two new connections required. At first the **RS232 Serial Link** and second the **Ethernet Link**. The PC will act as development system and as **Remote Console Monitor (RCM)** for the ADNP/1520 on the Carrier Board Socket Modem. Please make sure, that the RCM jumper on the ADNP/1520 is set correctly.

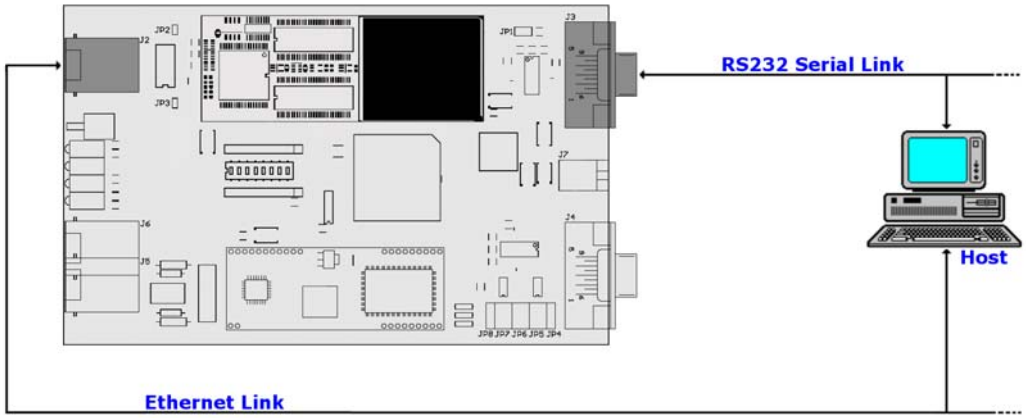


Figure 6-1: Overview about the required cable ConnectionsSerial Link

For the Serial Link, you need a Null-Modemcable. This cable comes along with your Starter Kit. Please connect the COM1 port of the CAB/MOD1 with a COM port of your development system (for example COM1 or COM2) by using this cable.

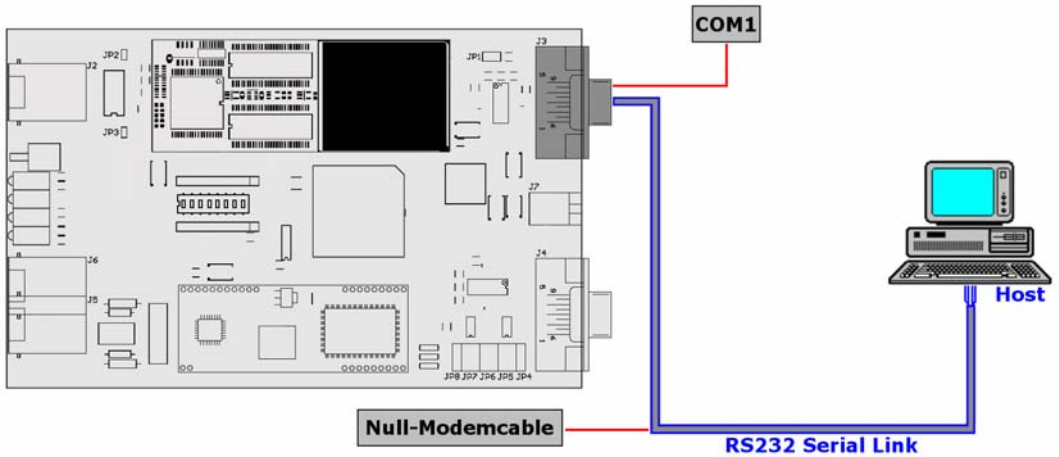


Figure 6-2: Serial Link Connection

6.1 Ethernet Link

The Ethernet Link requires two standard 10Base-T patch cables, one Hub or Switch and an Ethernet-LAN interface for your development system.

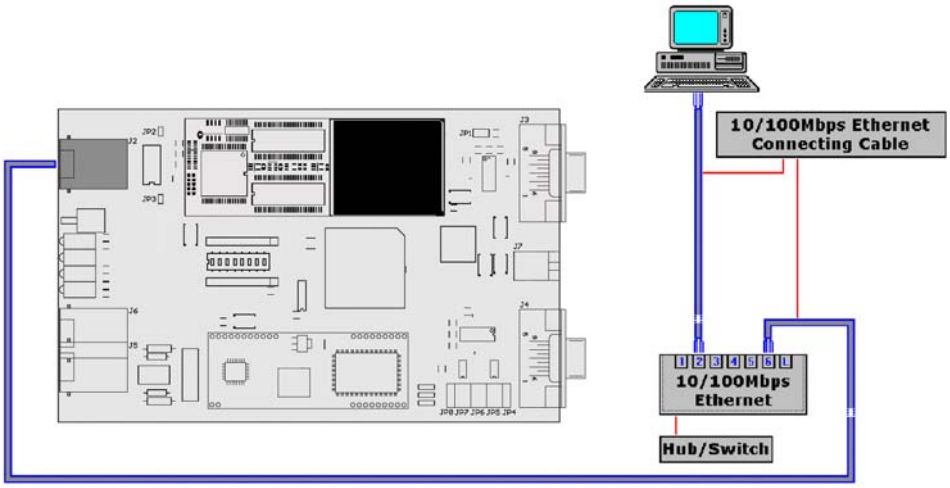


Figure 6-3: Ethernet Link Connection using a Hub/Switch

If you want to connect your development system directly to the Carrier Board place a crossover cable between this two systems like shown in the next figure.

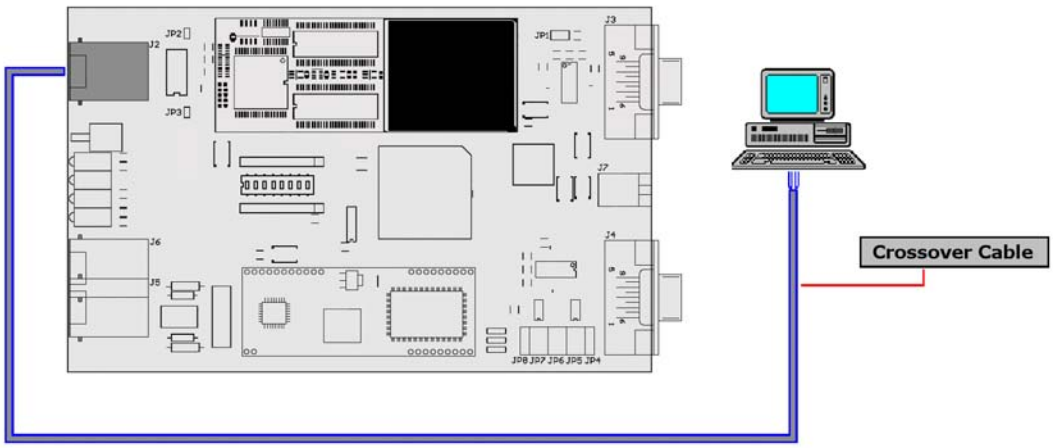


Figure 6-4: Ethernet Link Connection using a crossover cable

6.2 Telephone Link

To use all features offered by the Conexant SmartSCM socket modem module it is necessary to connect the Carrier Board via standard telephone cable to the telephone outlet.

6.3 Power Supply

The Carrier Board needs a supply voltage of 5VDC to work. In your Starter Kit package you will find a plug-in power supply unit to provide the system with the necessary power.

Caution: Providing the Carrier Board with a voltage higher than the regular 5V DC ± 10% could resolve in damaged board components.

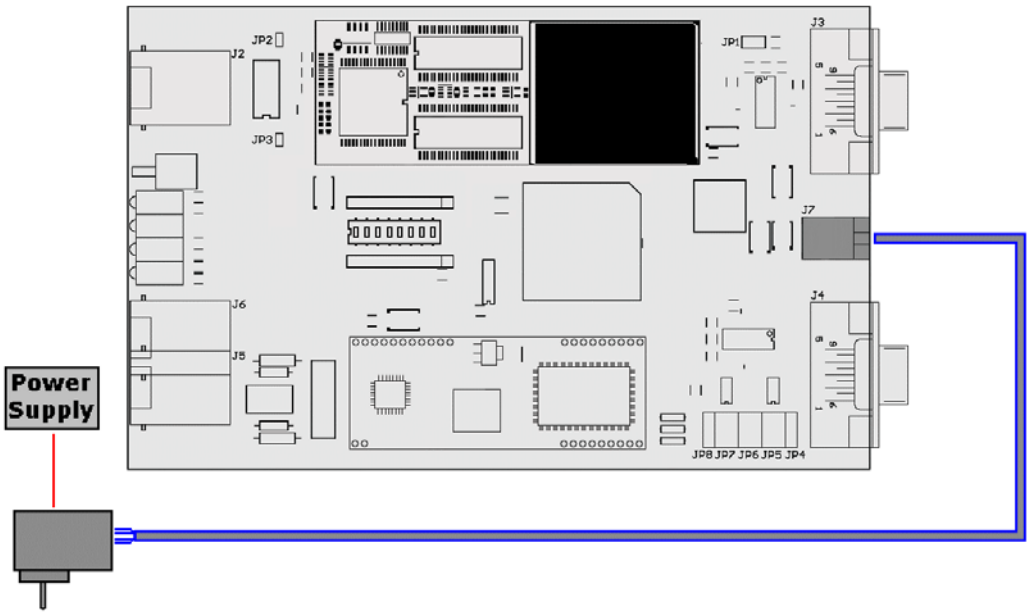


Figure 6-6: Power Supply Connection

After the successful connection of all cables between the Carrier Board and your development system, the system is ready to run.

7 Appendix

The Appendixes 1 to 4 give you more detailed information about the signals on the individual connectors. Table cells marked with NC indicate signals, which may be not connected.

Appendix 1: Pin Assignment – 128-pin QIL Connector (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	Ethernet Interface, TX+ Pin
31	TX-	LAN	Ethernet Interface, TX- Pin
32	GND	----	Ground

Table A1-1: ADNP/1520 Pinout – Pin 1 to 32

The PIO pins 1 to 20 are driven by an in-system programmable (ISP) high density PLD (ispMACH256 or similar). It is possible to change the function of these pins over the ADNP/1520 JTAG interface. Please contact our support staff for more information.

Appendix 1: Pin Assignment – 128-pin QIL Connector (2. Part)

Pin	Name	Group	Function
33	RX+	LAN	Ethernet Interface, RX+ Pin
34	RX-	LAN	Ethernet Interface, RX- Pin
35	RESOUT	RESET	Reset Output
36	VBAT	PSP	SC520 Real Time Clock Battery Input
37	CLKOUT	PSP	Clock Output (Default 1.8432 MHz)
38	TXD2	PSP	COM2 Serial Port, TXD Pin
39	RXD2	PSP	COM2 Serial Port, RXD Pin
40	INT5	PSP	Programmable Interrupt Input 5
41	INT4	PSP	Programmable Interrupt Input 4
42	INT3	PSP	Programmable Interrupt Input 3
43	INT2	PSP	Programmable Interrupt Input 2
44	INT1	PSP	Programmable Interrupt Input 1
45	CS4	PSP	Programmable Chip Select Output 4
46	CS3	PSP	Programmable Chip Select Output
47	CS2	PSP	Programmable Chip Select Output 2
48	CS1	PSP	Programmable Chip Select Output 1
49	IOCHRDY	PSP	I/O Channel Ready
50	IOR	PSP	I/O Read Signal, I/O Expansion Bus
51	IOW	PSP	I/O Write Signal, I/O Expansion Bus
52	SA3	PSP	System Expansion Bus, Address Bit 3
53	SA2	PSP	System Expansion Bus, Address Bit 2
54	SA1	PSP	System Expansion Bus, Address Bit 1
55	SA0	PSP	System Expansion Bus, Address Bit 0
56	SD7	PSP	System Expansion Bus, Data Bit 7
57	SD6	PSP	System Expansion Bus, Data Bit 6
58	SD5	PSP	System Expansion Bus, Data Bit 5
59	SD4	PSP	System Expansion Bus, Data Bit 4
60	SD3	PSP	System Expansion Bus, Data Bit 3
61	SD2	PSP	System Expansion Bus, Data Bit 2
62	SD1	PSP	System Expansion Bus, Data Bit 1
63	SD0	PSP	System Expansion Bus, Data Bit 0
64	Vcc	PSP	3.3 Volt Power Input

Table A1-2: ADNP/1520 Pinout – Pin 33 to 64

Appendix 1: Pin Assignment –128-pin QIL Connector (3. Part)

Pin	Name	Group	Function
65	SBHE	PSP	System Byte High Enable, Sys. Exp. Bus
66	IOCS16	PSP	I/O Chip Select 16, Sys. Expansion Bus
67	MEMCS16	PSP	Memory Chip Select 16, Sys. Exp. Bus
68	MEMW	PSP	Memory Write Signal, Sys. Expansion Bus
69	MEMR	PSP	Memory Read Signal, Sys. Expansion Bus
70	BALE	PSP	Bus Address Latch Enable, Sys. Exp. Bus
71	AEN	PSP	Address Enable Signal, Sys. Expansion Bus
72	Reserved	PSP	Reserved. Don't use
73	RCME	PSP	Remote Console Mode Enable
74	Reserved	PSP	Reserved. Don't use
75	Reserved	PSP	Reserved. Don't use
76	Reserved	PSP	Reserved. Don't use
77	Reserved	PSP	Reserved. Don't use
78	Reserved	PSP	Reserved. Don't use
79	Reserved	PSP	Reserved. Don't use
80	Reserved	PSP	Reserved. Don't use
81	Reserved	PSP	Reserved. Don't use
82	Reserved	PSP	Reserved. Don't use
83	Reserved	PSP	Reserved. Don't use
84	Reserved	PSP	Reserved. Don't use
85	INT6	PSP	Programmable Interrupt Input 6
86	INT7	PSP	Programmable Interrupt Input 7
87	IDERES	PSP	IDE Interface Reset Output
88	IDECS0	PSP	IDE Interface Chip Select 0
89	IDECS1	PSP	IDE Interface Chip Select 1
90	Reserved	PSP	Reserved. Don't use
91	Reserved	PSP	Reserved. Don't use
92	Reserved	PSP	Reserved. Don't use
93	Reserved	PSP	Reserved. Don't use
94	Reserved	PSP	Reserved. Don't use
95	Reserved	PSP	Reserved. Don't use
96	GND	---	Ground

Table A1-3: ADNP/1520 Pinout – Pin 65 to 96

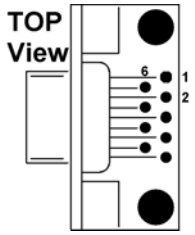
Appendix 1: Pin Assignment –128-pin QIL Connector (4. Part)

Pin	Name	Group	Function
97	LANLED	PSP	LAN Interface Activity LED
98	Reserved	PSP	Reserved. Don't use
99	RSTDRV	PSP	Reset Output, System Expansion Bus
100	SA23	PSP	System Expansion Bus, Address Bit 23
101	SA22	PSP	System Expansion Bus, Address Bit 22
102	SA21	PSP	System Expansion Bus, Address Bit 21
103	SA20	PSP	System Expansion Bus, Address Bit 20
104	SA19	PSP	System Expansion Bus, Address Bit 19
105	SA18	PSP	System Expansion Bus, Address Bit 18
106	SA17	PSP	System Expansion Bus, Address Bit 17
107	SA16	PSP	System Expansion Bus, Address Bit 16
108	SA15	PSP	System Expansion Bus, Address Bit 15
109	SA14	PSP	System Expansion Bus, Address Bit 14
110	SA13	PSP	System Expansion Bus, Address Bit 13
111	SA12	PSP	System Expansion Bus, Address Bit 12
112	SA11	PSP	System Expansion Bus, Address Bit 11
113	SA10	PSP	System Expansion Bus, Address Bit 10
114	SA9	PSP	System Expansion Bus, Address Bit 9
115	SA8	PSP	System Expansion Bus, Address Bit 8
116	SA7	PSP	System Expansion Bus, Address Bit 7
117	SA6	PSP	System Expansion Bus, Address Bit 6
118	SA5	PSP	System Expansion Bus, Address Bit 5
119	SA4	PSP	System Expansion Bus, Address Bit 4
120	SD15	PSP	System Expansion Bus, Data Bit 15
121	SD14	PSP	System Expansion Bus, Data Bit 14
122	SD13	PSP	System Expansion Bus, Data Bit 13
123	SD12	PSP	System Expansion Bus, Data Bit 12
124	SD11	PSP	System Expansion Bus, Data Bit 11
125	SD10	PSP	System Expansion Bus, Data Bit 10
126	SD9	PSP	System Expansion Bus, Data Bit 9
127	SD8	PSP	System Expansion Bus, Data Bit 8
128	Vcc	---	3.3 Volt Power Input

Table A1-4: Pin assignment ADNP/1520 pin 97 to 12

Appendix 2: Pin Assignment DNP/EVA2-SV4 Components

COM1 Connector



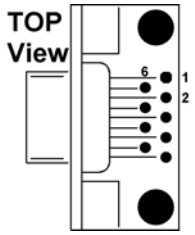
Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND

Pin	Signal
6	DSR
7	RTS
8	CTS
9	RI

Table A2-1: Pinout COM1 Connector

Caution: All COM1-port signals are on RS232 level. There is no TTL level available on these ports. To use TTL level in combination with the Carrier Board you have to use an external level shifter circuit.

COM2 Connector

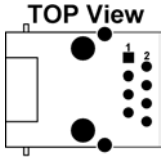


Pin	Signal
1	DCD
2	RXD/TX+
3	TXD/TX-
4	DTR
5	GND

Pin	Signal
6	DSR/RX+
7	RTS/RX-
8	CTS
9	RI

Table A2-2: Pinout COM2 Connector

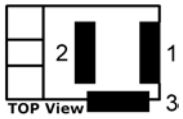
10/100 Mbps Ethernet Connector



Pin	Name	Signal
1	TX+	TXD+
2	TX-	TXD-
3	RX+	RXD+
4	NC	–
5	NC	–
6	RX-	RXD-
7	NC	–
8	NC	–
S1..2	Shield	–

Table A2-3: Pinout 10/100 Mbps Ethernet Connector

Power Connector



Pin	Name	Signal
1	Vcc	Power In
2	GND	Power-
3	GND	Power

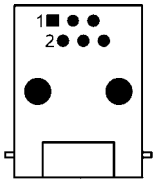
Table A2-4: Pinout Power Connector

RCM Jumper (JP1)

Jumper JP3	Function
open	Disable RCM mode
close	Enable RCM mode

Table A2-5: RCM Jumper Settings

Phone Line Connector (J5)



Pin	Name	Signal
1	NC	NC
2	a	
3	La	
4	Lb	
5	b	
6	NC	NC

Table A2-6: Pinout phone line connector

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1.01	21.08.03	Minor Corrections	BKA