GPRS Carrier Board CAB/GPRS1

User Manual

Content

1 Introduction

The GPRS Carrier Board is an universal carrier board for industrial applications such like process automation, remote support and services. The central element is a modular computer of the DIL/NetPC series. The board offers possibilities to use a GPRS modem as well as an optional module for Bluetooth® wireless technology or a CompactFlash™ interface.

This document describes how to start with the GPRS Carrier Board. 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 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

Compare the content of your GPRS Carrier Board package with the standard checklist below. If any item is missing or appears to be damaged, please contact SSV Embedded Systems.

Standard Items

- GPRS Carrier Board
- DIL/NetPC ADNP/1520
- Null modem cable
- Power supply
- Power cable
- User manual
- Support CD-ROM

Optional Items

- ISP adapter (Bluetooth option only)

Please note that SSV does not include a Bluetooth or GSM/GPRS antenna.

1.3 Main Features

GPRS Carrier Board

- 128-pin QIL socket for one DIL/NetPC (like the ADNP/1520)
- 10/100Base-T Ethernet Interface
- RS232 Serial interface (COM1)
- RS232/422/485 Serial interfaces (COM2 and COM3)
- In-System Programming interface (Bluetooth option only)
- HF-Out interface to connect an external antenna (Bluetooth option only)
- Dual Band GSM/GPRS modem E-GSM 900/1800
- RF connector type MMCX (Miniature Micro Connector) to connect an external GSM/GPRS antenna
- CAN-bus interface (only with DNP/5280)
- CompactFlash card interface
- 6 LEDs
- 1 Reset switch
- 5VDC Power Input Connector
- Size 180 x 100 mm

DIL/NetPC ADNP/1520 (standard)

- 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 design of your GPRS Carrier Board depends on the DIL/NetPC and the Bluetooth option. Therefore some components like the ISP connector, the Bluetooth chipset, the antenna connector, or the CAN-bus interface may not be mounted on your board.

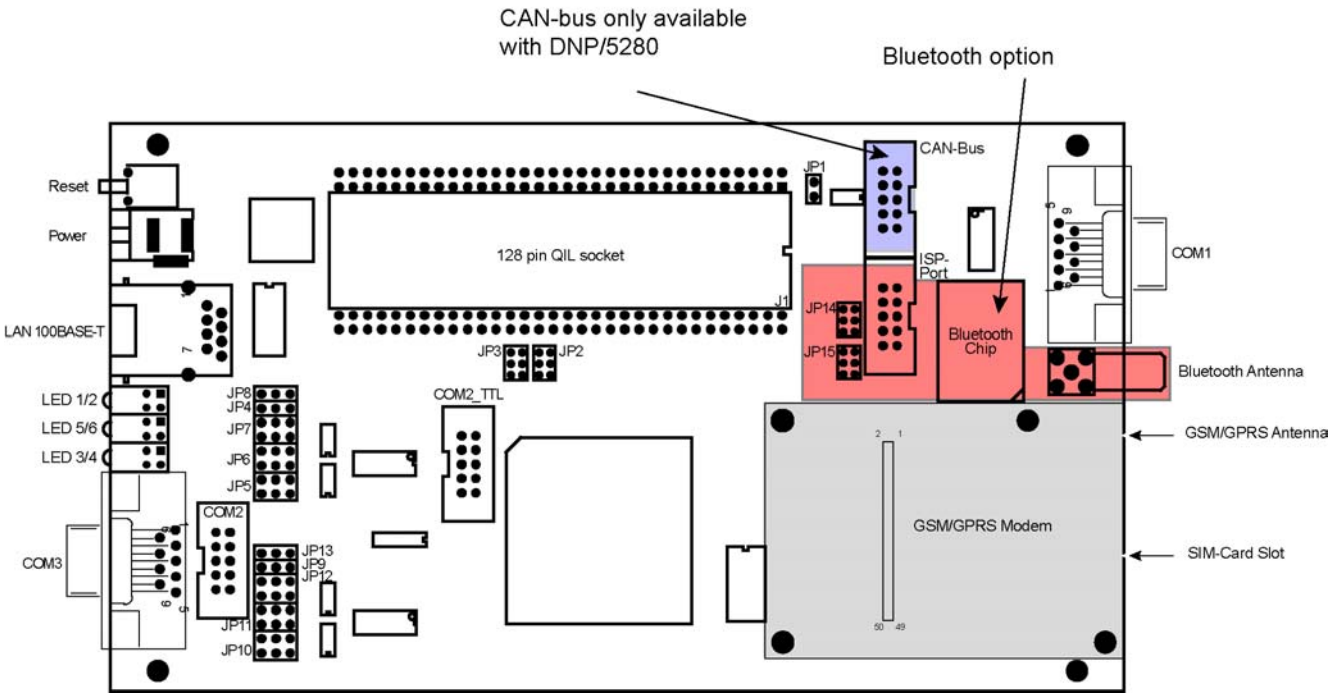


Figure 2-1: Top view of GPRS Carrier Board

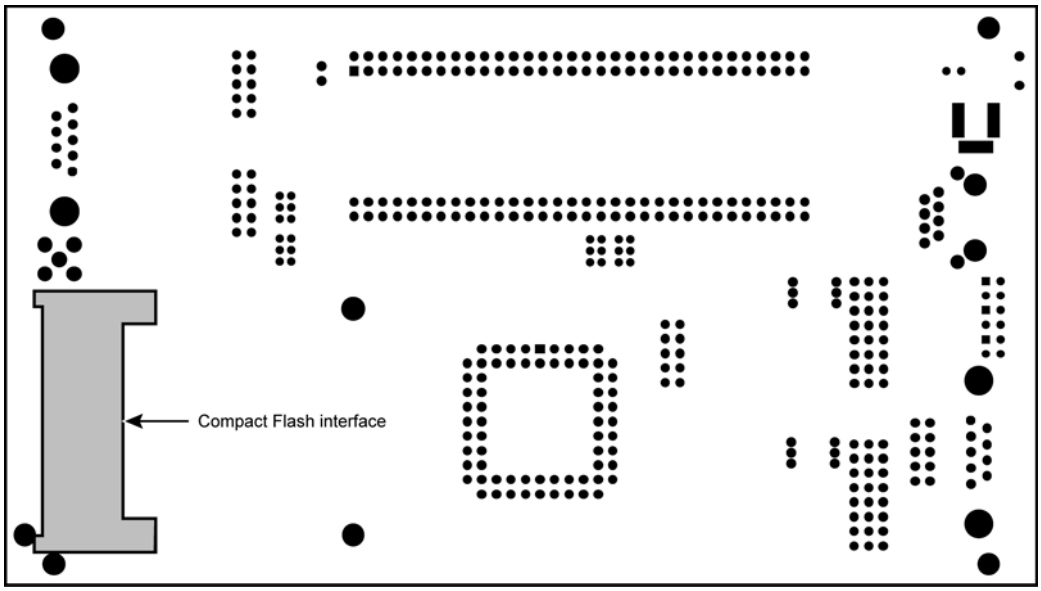


Figure 2-2: Bottom view of GPRS Carrier Board

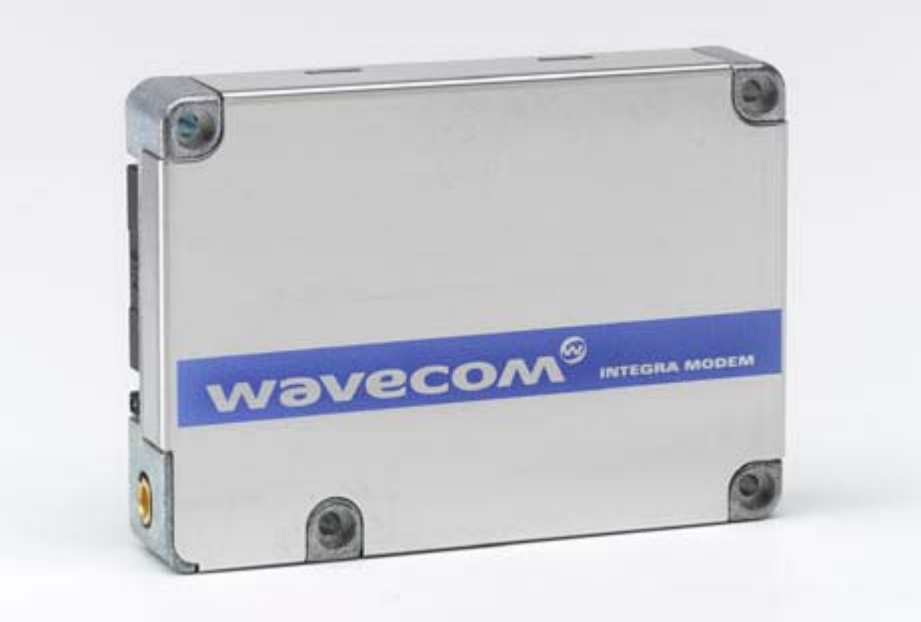


Figure 2-3: Wavecom® Integra® GSM/GPRS modem

Figure 2-4: SIM card slot and MMCX antenna connector

3 Board Components

3.1 128-pin QIL socket

The QIL socket with 128 pins can hold one DIL/NetPC like the ADNP/1520. Please refer to chapter 4.1 how to mount your DIL/NetPC safely. If you are interested in pin signals please refer to the appendix.

3.2 GSM/GPRS Modem

The board contains a GSM/GPRS modem made by Wavecom®. Some basic features are:

- Dual Band integrated GSM modem (EGSM900/1800 MHz)
- Fully Type Approved
- Compliant with ETSI GSM Phase 2+ standard (Normal MS)
- Class 4 (2W at 900 MHz)
- Class 1 (1W at 1800 MHz)
- MMCX antenna connector for 900 and 1800 MHz
- Internal 3V SIM reader (5V SIM with external level shifter)

3.3 Bluetooth Option

The Bluetooth technology is a standard for short-range wireless communications between different devices. The module option on the carrier board is a complete baseband/RF solution that allows you a quick and easy integration of Bluetooth wireless technology outgoing from Handheld, PDA, Cell Phone or Laptop into embedded or standard devices. The Bluetooth option follows the Bluetooth standard with all its included advantages like transmission security and noise immunity in the industrial environment area.

The onboard Bluetooth module allows the connection between the ADNP/1520 and other devices via Bluetooth. To use all features offered by the Bluetooth module it is necessary to connect a standard Bluetooth antenna to the GPRS Carrier Board. For this, any standard 2.4 GHz Bluetooth antenna with an impedance of 50 ohm and SMA connector can be used with the HF-out connector.

The GPRS Carrier Board offers an ISP interface. This interface is used to communicate with the onboard Bluetooth module, e.g. to load a new firmware.

3.4 CompactFlash Interface

On the back side of the GPRS Carrier Board a CompactFlash interface is located, that will operate with 3.3V.

3.5 10/100Mbps Ethernet

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

3.6 CAN-Bus Option

The GPRS carrier board offers a CAN-bus option. The CAN-bus interface will be available if using the DIL/NetPC DNP/5280.

3.7 COM Serial Interfaces

The GPRS Carrier Board is equipped with 3 serial COM interfaces: COM1 (9-pin sub-D male connector), COM2 (10-pin boxed header), and COM3 (9-pin sub-D male connector).

COM1 is used for initial communication with the carrier board. It follows the RS232 protocol.

COM2 can either be used with RS232 TTL level or with the RS232, RS485 or RS422 protocol.

COM3 can be used with the RS232, RS485 or RS 422 protocol.

3.8 Onboard Jumper

JP1:	RCM jumper for terminal mode
JP2/3:	Chip select (CS) jumper
JP4 - JP8	Jumper field for setting COM2 to RS232/RS485/RS422
JP9 - JP13	Jumper field for setting COM3 to RS232/RS485/RS422
JP14/15	Jumpers for using the ISP interface (Bluetooth option only)

3.9 LEDs

You will find 6 LEDs on your GPRS Carrier Board, which are illustrated in figure 3-1.

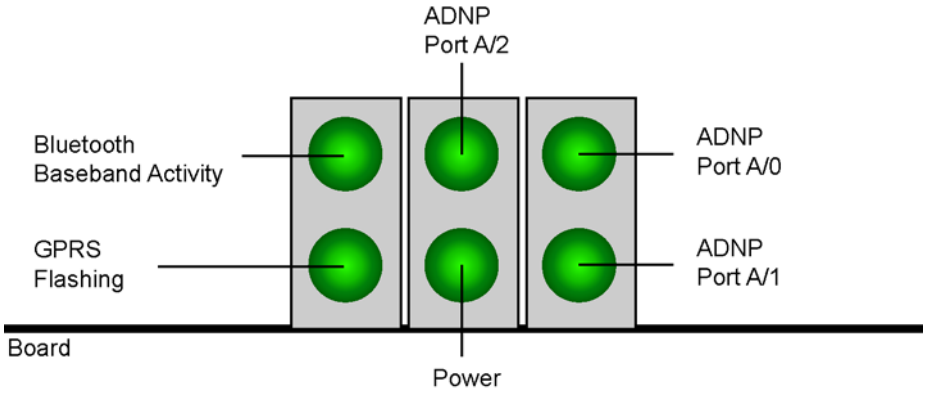


Figure 3-1: LEDs

3.10 Reset Button

Press the reset button if the system hangs or you need to restart it. Pressing the reset button will only restart the ADNP/1520. To reset connected devices, turn off power from the system.

3.11 Power Connector

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

The GPRS Carrier Board needs a supply voltage of 5V DC to work. In your carrier board package you will find a plug-in power supply unit to provide the system with the necessary power.

4 The GPRS Carrier Board in Use

4.1 Mounting the DIL/NetPC (ADNP/1520)

Caution: Too high pressure on the DIL/NetPC can resolve in damaged components and/or in bent or broken pins.

To mount the ADNP/1520 on the GPRS Carrier Board set it carefully on the 128-pin QIL socket. Please note, that the ADNP/1520 is positioned in the right way as shown in figure 4-1. After that, press the ADNP/1520 carefully down, so that the QIL socket fixes it.

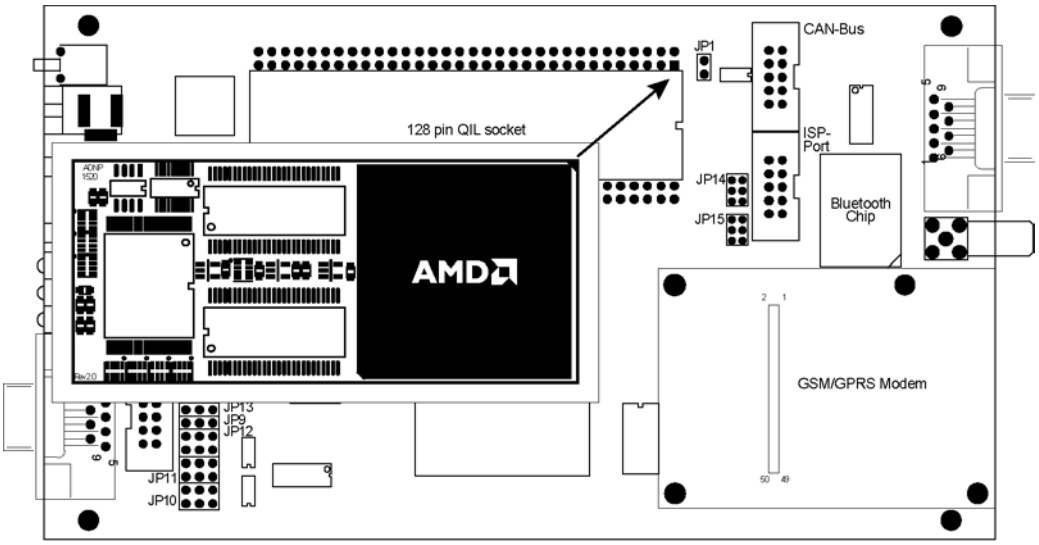


Figure 4-1: Mounting the ADNP/1520 on the GPRS Carrier Board

4.2 Providing with Power

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

Caution: SSV recommends to power off the GPRS carrier board every time you alter or modify board configurations like jumper settings or cable connections.

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

4.3 RCM Jumper

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 can not 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 4-2 shows the exact position of the RCM jumper.

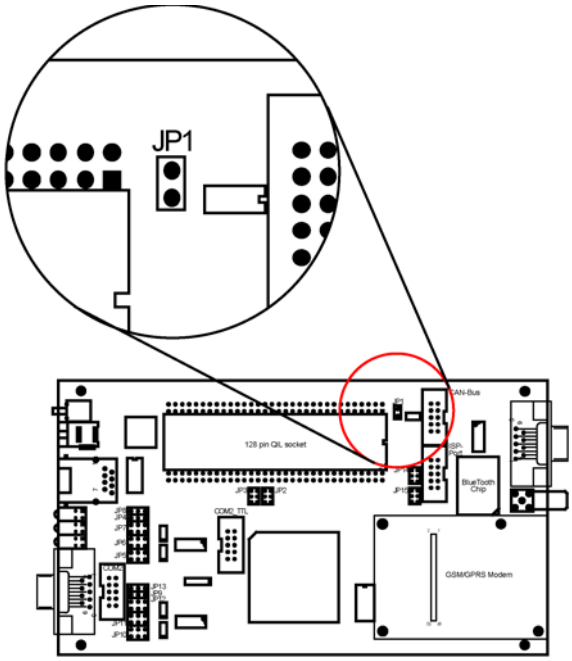
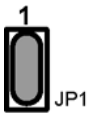
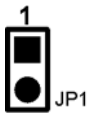


Figure 4-2: RCM jumper

RCM mode enabled **RCM mode disabled**





4.4 COM Serial Interfaces

4.4.1 COM1 Serial Interface

COM1 is mostly used for initial communication with the carrier board and follows the RS232 protocol. The interface has a 9-pin sub-D male connector. When using a remote terminal on this port, make sure the RCM jumper is set (see chapter 4.3).

4.4.2 COM2 Serial Interfaces

Attention: Use only one COM2 serial interface at the same time. Use a TTL level adapter when using the TTL level COM2 interface.

COM2 can either be used with RS232 TTL level or with the RS232, RS485 or RS422 protocol. The RS232 TTL level interface has got a 10-pin boxed header. The second COM2 port on the board has also a boxed header. In addition the protocol (RS232, RS485, or RS422) can be set by jumpers for this interface.

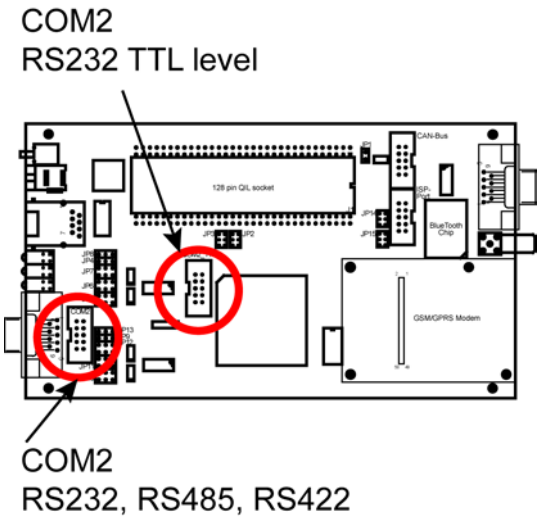


Figure 4-3: COM2 interfaces

With jumpers JP4 to JP8 the COM2 protocol can be set as shown in figure 4-4.

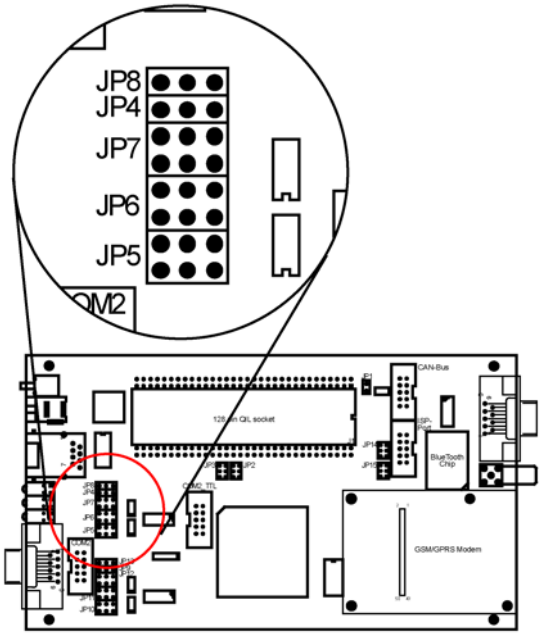
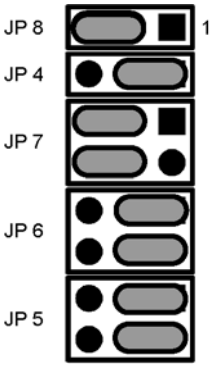
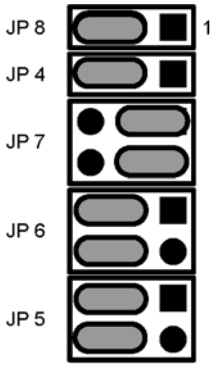


Figure 4-4: COM2 jumper field

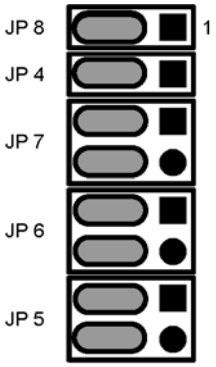
COM2 RS232



COM2 RS485



COM2 RS422



Jumper JP8 is used as termination jumper (default = off). To use termination, three optional resistors have to be onboard. Set the JP8 jumper cap on pins 1 and 2 to terminate the COM2 interface for RS485 and RS422 mode. In RS232 mode the COM2 interface can not be terminated.

4.4.3 COM3 Serial Interface

COM3 can be used with RS232, RS485 or RS 422 protocol. It has a 9-pin sub-D male connector. The COM3 protocols can be set by jumpers JP9 to JP13 as shown below.

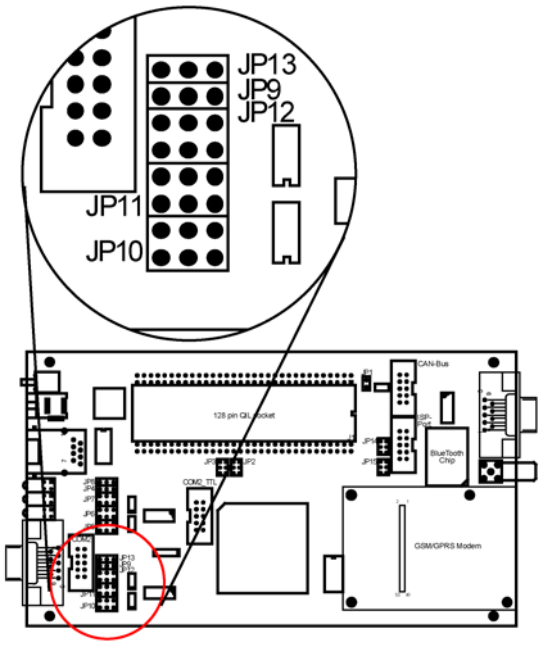
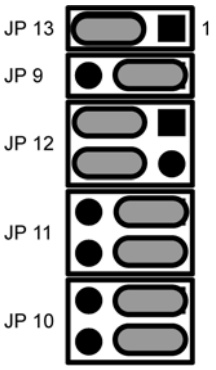
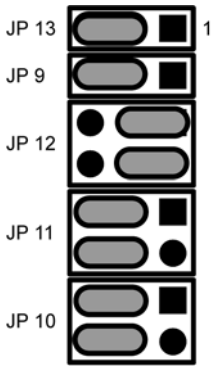


Figure 4-5: COM3 jumper field

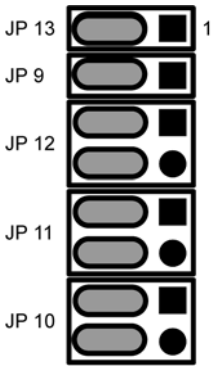
COM3 RS232



COM3 RS485



COM3 RS422



Jumper JP13 is used as termination jumper (default = off). To use termination, three optional resistors have to be onboard. Set the JP13 jumper cap on pins 1 and 2 to terminate the COM3 interface for RS485 and RS422 mode. In RS232 mode the COM3 interface can not be terminated.

4.5 Using CompactFlash Cards

4.5.1 Jumper Settings

Attention: Using the Bluetooth option is not possible when using the CompactFlash interface simultaneously.

To use the CompactFlash card interface it is required to set jumpers JP2 and JP3 to the right positions as shown below.

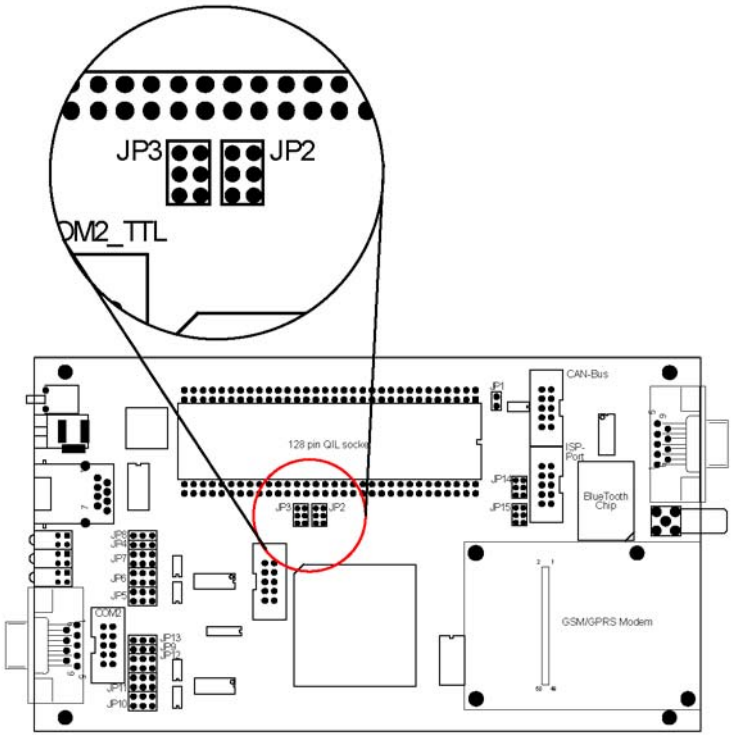
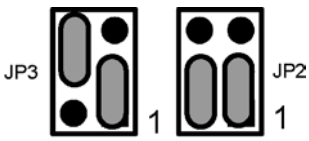


Figure 4-6: Jumpers JP2 and JP3

CompactFlash interface enabled



4.5.2 CompactFlash Cards

Insert your CompactFlash card (CF card) as shown in the figure below. Use only CompactFlash cards of type I. Cards of type II will not mount into the CompactFlash slot. Make sure, the card is face-up. Otherwise it will not mount into the slot.

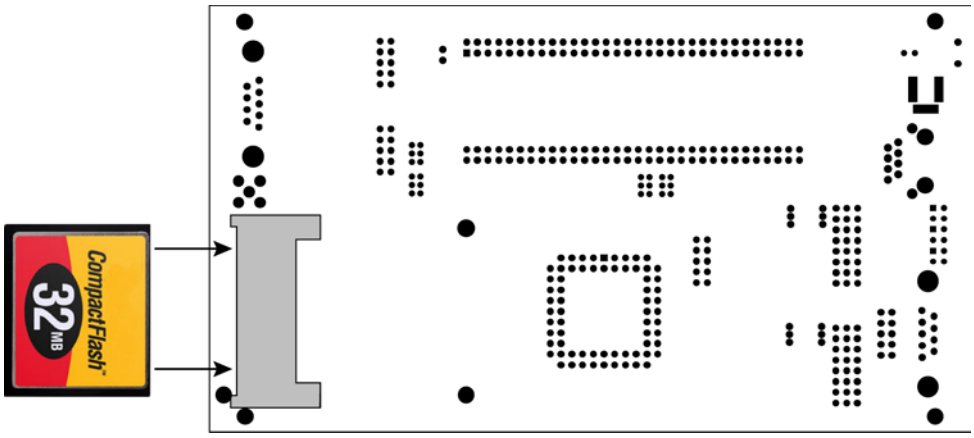


Figure 4-7: Using CompactFlash cards (bottom view of GPRS Carrier Board)

4.6 Using the GSM/GPRS Modem

4.6.1 GSM/GPRS Antenna

The Integra Wavecom GSM/GPRS modem has an MMCX connector to hold an antenna. Please refer to the antenna manual how to safely mount and use it.

4.6.2 SIM Card

Push in the pin lever with e.g. a ballpoint pen to open the SIM card slot of the GSM/GPRS modem. Take out the card sledge and insert your SIM card appropriately. Push the card sledge back into the modem softly.

Figure 4-8: Insertion of a SIM card

4.7 Using the Bluetooth Option

4.7.1 Jumper Settings

Attention: Using the Bluetooth option is not possible when using the CompactFlash interface simultaneously.

To use the Bluetooth module it is required to set jumpers JP2 and JP3 to the positions as shown below.

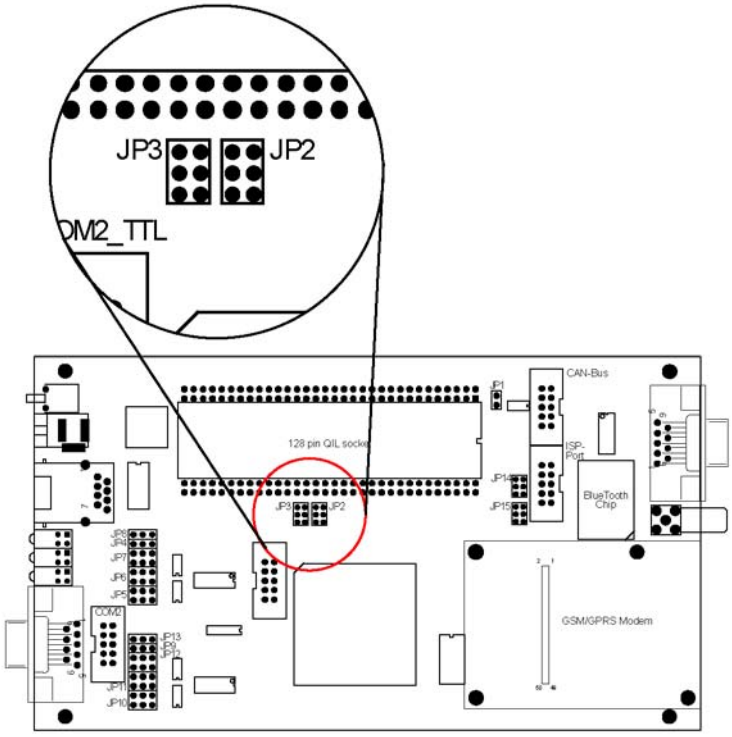
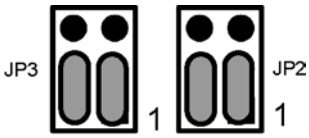


Figure 4-9: Jumpers JP2 and JP3

Bluetooth module enabled



4.7.2 Antenna

The optional onboard Bluetooth module allows the connection between the ADNP/1520 and other devices via Bluetooth. To use all features offered by the Bluetooth module it is necessary to connect a standard Bluetooth antenna to the GPRS Carrier Board. For this, any standard 2.4 GHz Bluetooth antenna with an impedance of 50 ohm and SMA connector can be used with the HF-out connector.

Please refer to your antenna manual how to safely mount and use it.

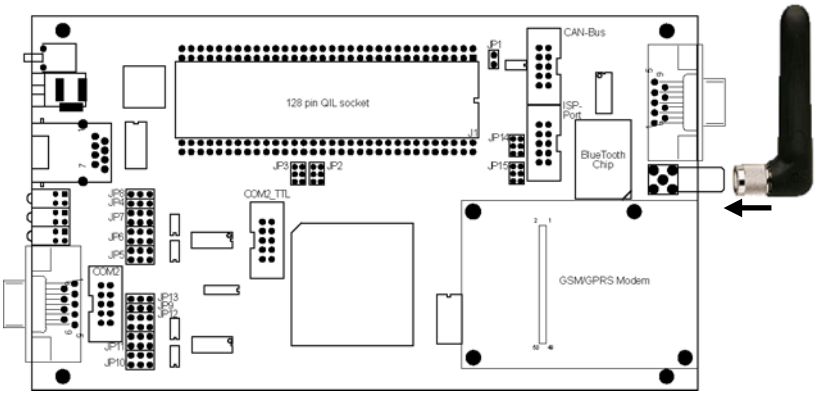


Figure 4-10: Bluetooth antenna

4.8 Reset Button

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

4.9 LEDs

Six LEDs are placed on your GPRS carrier board:

Power-LED	This LED lights when the board is powered.
Bluetooth Baseband Activity	The baseband activity LED flickers or lights up if there is some traffic via the Bluetooth interface.
GPRS Flashing	The GPRS flashing LED flickers or lights up if there is some traffic via the GPRS/GSM modem.
ADNP PORT A/0 PORT A/1 PORT A/2	The function of these LEDs are user definable.

Table 4-1: LEDs

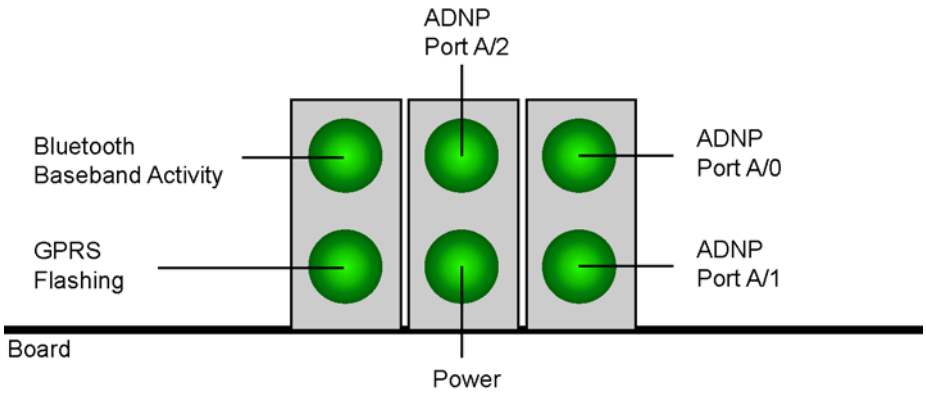


Figure 4-11: LEDs

4.10 Connections

In addition to Bluetooth and GPRS/GSM connections several cable connections can be made to your GPRS carrier board. In the following subchapters three types of connections are described.

4.10.1 Serial Link

For an initial communication with the GPRS carrier board use a null modem cable on port COM1. For the serial link, you need a null modem cable. This cable comes along with your GPRS Carrier Board package. Please connect the GPRS Carrier Board with a COM port of your development system (for example COM1 or COM2) by using this cable.

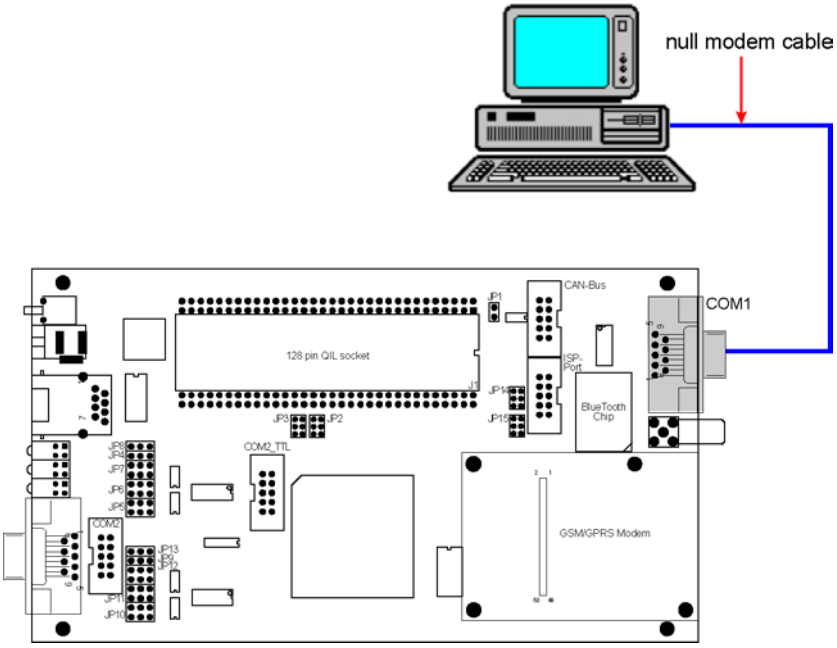


Figure 4-12: Serial link

4.10.2 Ethernet Link

The Ethernet link requires two standard 10 Base-T patch cables, one hub or switch and an Ethernet LAN adapter for your development system.

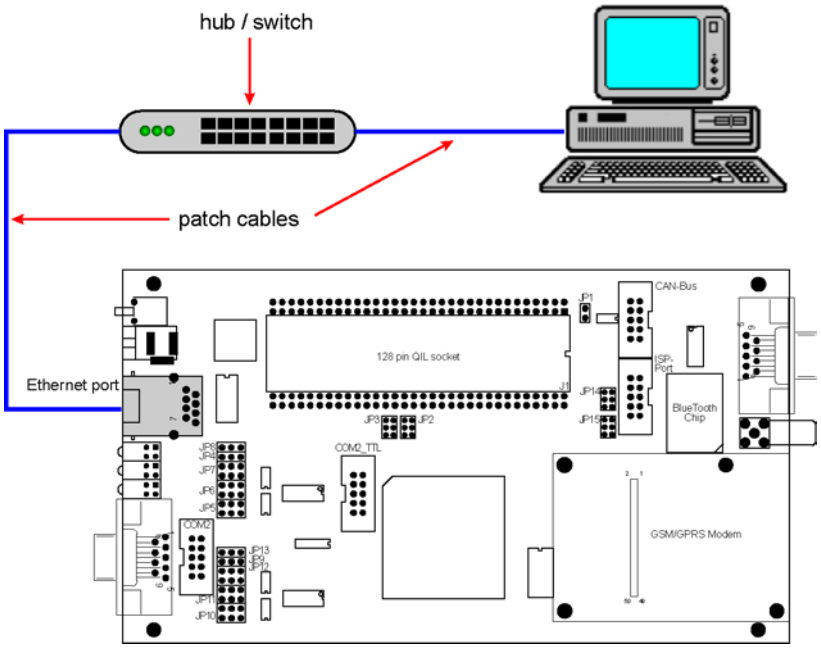


Figure 4-13: Ethernet link with hub or switch

If you want to connect your development system directly to the GPRS Carrier Board place a crossover cable between these two systems as shown in figure 4-14.

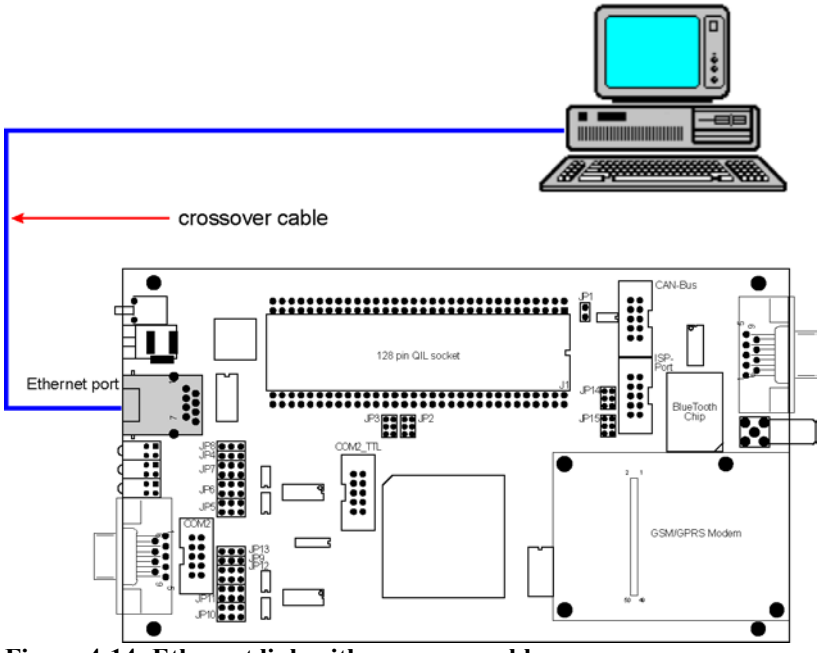


Figure 4-14: Ethernet link with crossover cable

4.10.3 ISP Link

Caution: The ISP interface uses TTL levels. To connect it to a standard RS232 serial port a special adapter which converts the TTL level to standard RS232 level is necessary. This optional adapter can be delivered on request.

To provide the optional Bluetooth module with another firmware an adapter is needed. This adapter converts the RS232 signal levels provided by the development system into TTL signal levels which are needed by the Bluetooth module on the Carrier Board. The figure below shows the cable connection to transfer data to the Bluetooth module via the ISP link.

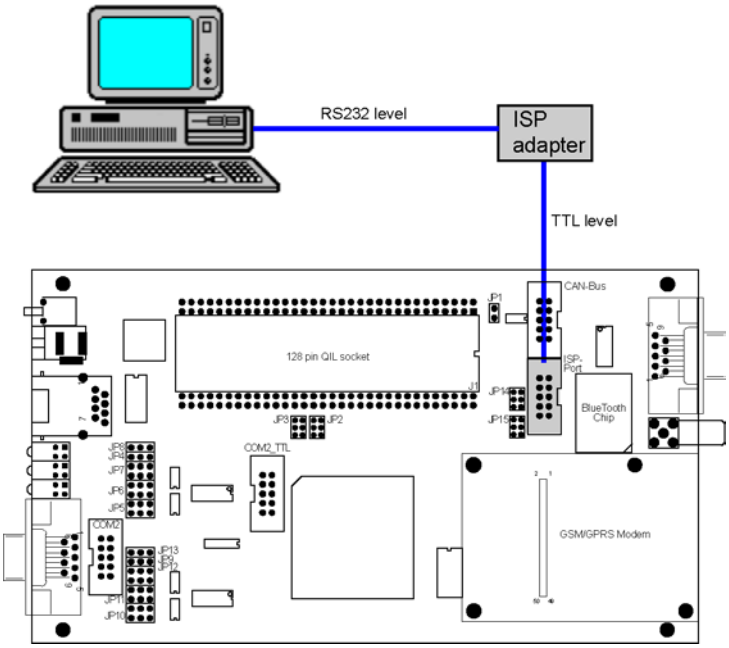


Figure 4-15: ISP link

ISP Jumper Field

Use the jumpers JP14 and JP15 to activate the ISP-interface (**I**n-**S**ystem **P**rogramming). With the ISP interface it is possible to upgrade the firmware of the Bluetooth module (option).

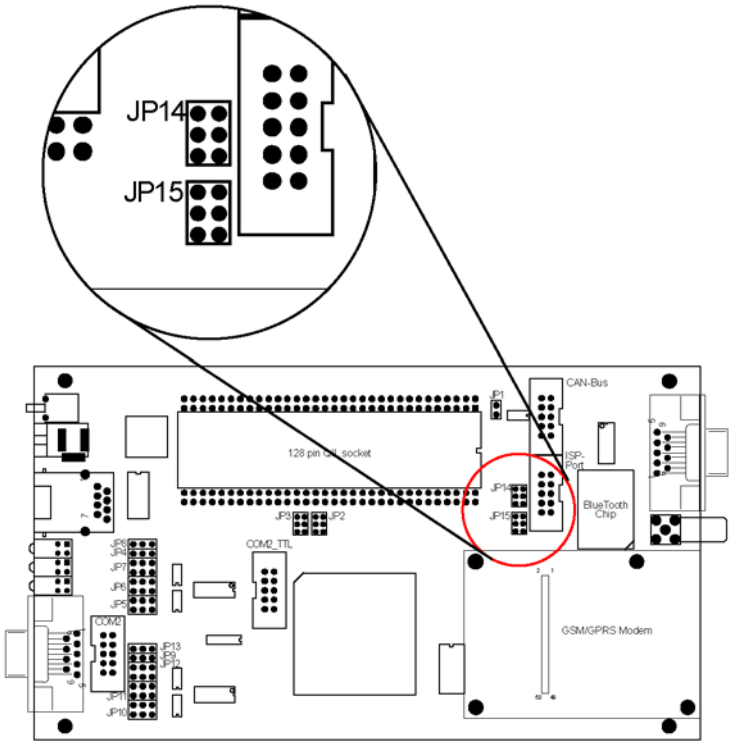
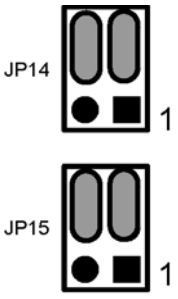
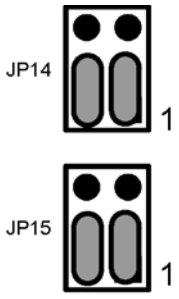


Figure 4-16: ISP jumper field

Jumper positions for connecting the ISP adapter to the Bluetooth module



Jumper positions for normal communication between the onboard UART and the Bluetooth module



5 Appendix

The Appendices 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 (1st 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 (2nd 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 (3rd 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

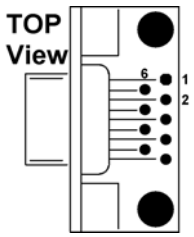
Appendix 1: Pin Assignment –128-pin QIL Connector (4th Part)

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: ADNP/1520 pinout - pin 97 to 128

Appendix 2: Pin Assignment of Components

COM1 Connector (RS232 Only)



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 (RS232) connector

COM2 Connectors (RS232/RS422/RS485)

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

Pin	Signal
6	DSR
7	RTS
8	CTS
9	RI

Table A2-2: Pinout COM2 (RS232) connectors

Pin	Signal
1	reserved
2	TX+
3	TX-
4	reserved
5	GND

Pin	Signal
6	RX+
7	RX-
8	reserved
9	reserved

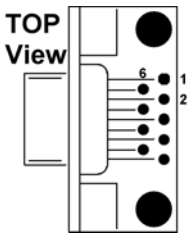
Table A2-3: Pinout COM2 (RS422) connectors

Pin	Signal
1	reserved
2	RX+/TX+
3	RX+/TX+
4	reserved
5	GND

Pin	Signal
6	RX-/TX-
7	RX-/TX-
8	reserved
9	reserved

Table A2-4: Pinout COM2 (RS485) connectors

COM3 Connector (RS232/RS422/RS485)



Pin	Signal	Pin	Signal
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Table A2-5: Pinout COM3 (RS232) connector

Pin	Signal	Pin	Signal
1	reserved	6	RX+
2	TX+	7	RX-
3	TX-	8	reserved
4	reserved	9	reserved
5	GND		

Table A2-6: Pinout COM3 (RS422) connector

Pin	Signal	Pin	Signal
1	reserved	6	RX-/TX-
2	RX+/TX+	7	RX-/TX-
3	RX+/TX+	8	reserved
4	reserved	9	reserved
5	GND		

Table A2-7: Pinout COM3 (RS485) connector

ISP Connector

Pin	Signal	Pin	Signal
1		6	
2	RXD	7	RTS
3	TXD	8	CTS
4		9	
5	GND	10	Vcc

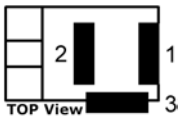
Table A2-8: Pinout ISP connector

CAN-Bus Connector

Pin	Signal	Pin	Signal
1		6	
2	GND	7	
3	CAN-L	8	
4	CAN-H	9	
5	GND	10	

Table A2-9: Pinout CAN-bus connector

Power Connector



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

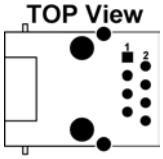
Table A2-10: Pinout power connector

CompactFlash Connector

Pin	Signal	Pin	Signal
1	GND	26	/CD1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	/CS0	32	/CS1
8	A10	33	/VS1
9	/ATASEL	34	/IOR
10	A9	35	/IOW
11	A8	36	/WE
12	A7	37	IRQ
13	VCC	38	VCC
14	A6	39	/CSEL
15	A5	40	VS2
16	A4	41	RESET
17	A3	42	/WAIT
18	A2	43	/INPACK
19	A1	44	/REG
20	A0	45	/DASP
21	D0	46	/PDIAG
22	D1	47	D8
23	D2	48	D9
24	/IOCS16	49	D10
25	/CD2	50	GND

Table A2-11: Pinout CompactFlash 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 A2-12: Pinout 10/100 Mbps Ethernet connector

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