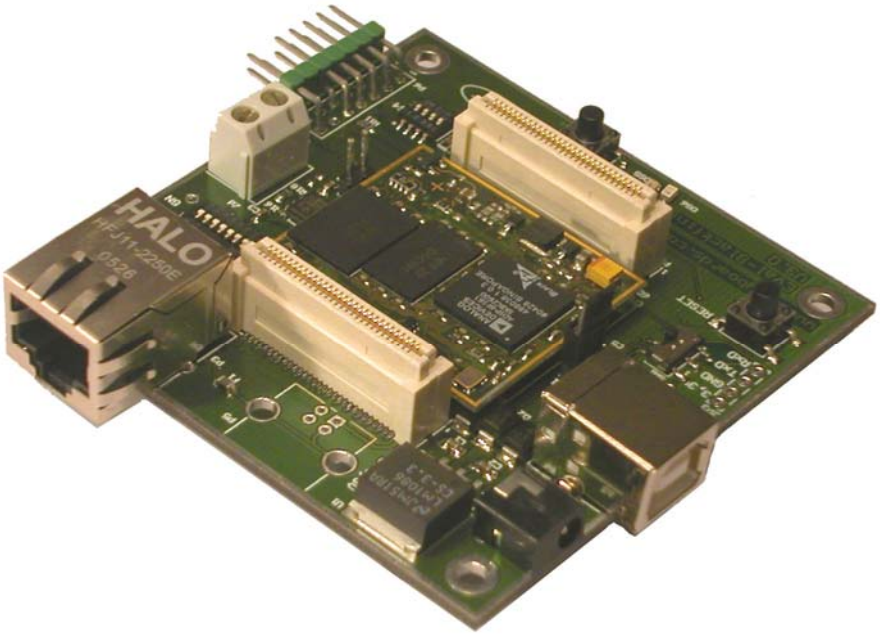
BLUE TECHNIX

Hardware User Manual



EVAL-BF5xx Board V3.0

PRELIMINARY

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Maximum Power at Minimum Size

Contact

Bluetechnix Mechatronische Systeme GmbH

Waidhausenstr. 3/19
A-1140 Vienna
AUSTRIA/EUROPE
office@bluetechnix.at
http://www.bluetechnix.com

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Information
For further information on technology, delivery terms and conditions and prices please contact Bluetechnix (http://www.bluetechnix.com).

Warnings
Due to technical requirements components may contain dangerous substances.

The Core Boards and Development systems contain ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Unused core boards and development boards should be stored in the protective shipping package.

1 Introduction

The EVAL-BF5xx Board is a low cost and lightweight evaluation platform for Bluetechnix Core Modules CM-BF533, CM-BF561, CM-BF534U, CM-BF537E, CM-BF537U and the upcoming TCM series of core modules. The small baseboard has all hardware necessary to test the performance of the core modules including a high-speed serial port directly connectable to a computers USB port, a digital video camera interface and a SD-Card mass storage device socket.

1.1 Overview

The EVAL-BF5xx Board includes the following components:

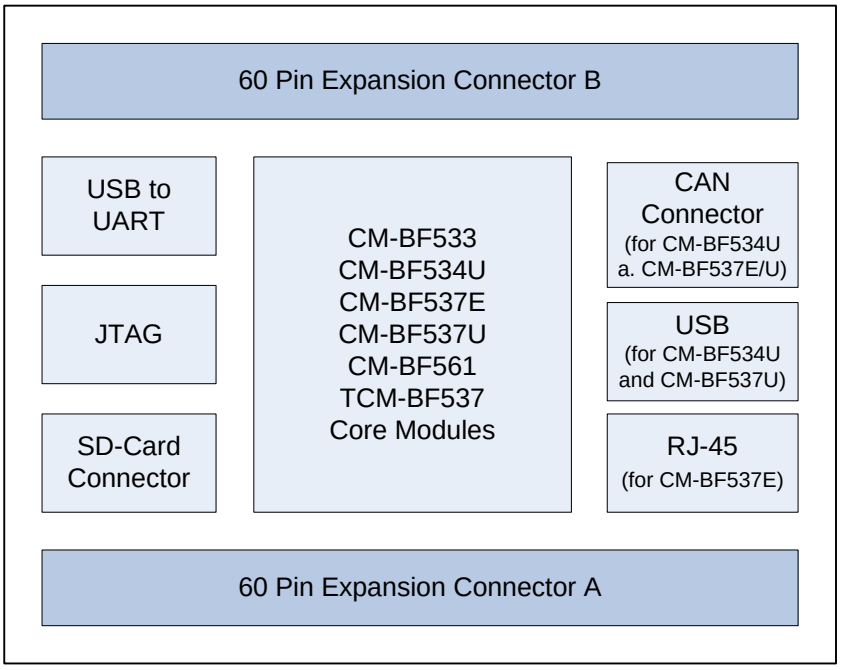


Figure 1-1: Overview of the EVAL-BF5xx Board

- **1 Core Module Slot**
  - Supports all current Bluetechnix Blackfin based Core Modules
- **USB**
  - Supports up to 915kbps UART-USB conversion.
  - Emulates a standard COM port on the computer.
- **JTAG**
  - JTAG-Plug that supports all analog Devices JTAG Emulators.

- **Expansion Connector 1**
  - SPORT 0
  - JTAG
  - UART
  - SPI
  - PPI-1 (Parallel Port Interface 1)
  - PFs (Programmable Flags)
- **Expansion Connector 2**
  - Data Bus
  - Address Bus
  - Memory Control Signals
  - PPI-2[1] (Parallel Port Interface 2)
  - Power Supply
- **2nd USB Connector (optional)**
  - Can only be used together with the CM-BF534U and CM-BF537U Core Module which has an on-board NETPLX 2272 USB2.0 Device Chip
- **RJ-45 Ethernet Plug**
  - Only in combination with the CM-BF537E module
  - Standard 10BASET/100BASET Ethernet connection

[1] Only available when using the CM-BF561 Core Module

1.2 Blackfin Products

CM-BF533: Blackfin Processor Module powered by Analog Devices single core ADSP-BF533 processor; up to 600MHz, 32MB RAM, 2MB Flash, 24 pin camera connector.

CM-BF534U: Blackfin Processor Module powered by Analog Devices single core ADSP-BF534 processor; up to 500MHz, 32MB RAM, 4MB Flash, integrated USB 2.0 Device.

CM-BF537U: Blackfin Processor Module powered by Analog Devices single core ADSP-BF537 processor; up to 600MHz, 32MB RAM, 4MB Flash, integrated USB 2.0 Device.

CM-BF537E: Blackfin Processor Module powered by Analog Devices single core ADSP-BF537 processor; up to 600MHz, 32MB RAM, 4MB Flash, integrated TP10/100 Ethernet physical transceiver.

CM-BF561: Blackfin Processor Module powered by Analog Devices dual core ADSP-BF561 processor; up to 2x 600MHz, 32MB RAM, 4MB Flash.

All CM-BFxxx Core Modules have two compatible 120pin connectors or a BGA option and a size of 36.5x31.5mm.

TCM-BF537: Blackfin Processor Module powered by Analog Devices single core ADSP-BF537 processor; up to 600MHz, 32MB RAM, 8MB Flash, 27.4x27.4mm, 120 pin expansion connector or border pads for reflow soldering, industrial temperature range -40°C to +85°C.

EVAL-BF5xx: Low cost Blackfin processor Evaluation Board with one socket for any Bluetechnix Blackfin Core Module. Additional periphery is available, such as a SD-Card.

DEV-BF5xx: Blackfin Development Board with two sockets for any combination of Core Modules. Additional periphery is available, such as CF-Card, SD-Card, DP-RAM, Ethernet, USB host and device, multi-port JTAG, connector for a LCD-TFT Display and 2 connectors for a digital stereo camera system.

EXT-Boards: The following Extender Boards are available: EXT-BF5xx-Audio, EXT-BF5xx-Video, EXT-BF5xx-Camera, EXT-BF5xx-Experimental. Additional boards based on customer request

BLACKSheep: The BLACKSheep VDK is a multithreaded framework for the Analog Devices Blackfin processor family that includes driver support for a variety of hardware extensions. It is based on the real-time VDK kernel included within the VDSP++ development environment.

Notes: For product development it is highly recommended to purchase the *DEV-BF5xx* Blackfin development board and the BLACKSheep VDK low level driver software for the on board peripherals.

2 Specification

2.1 Functional Specification

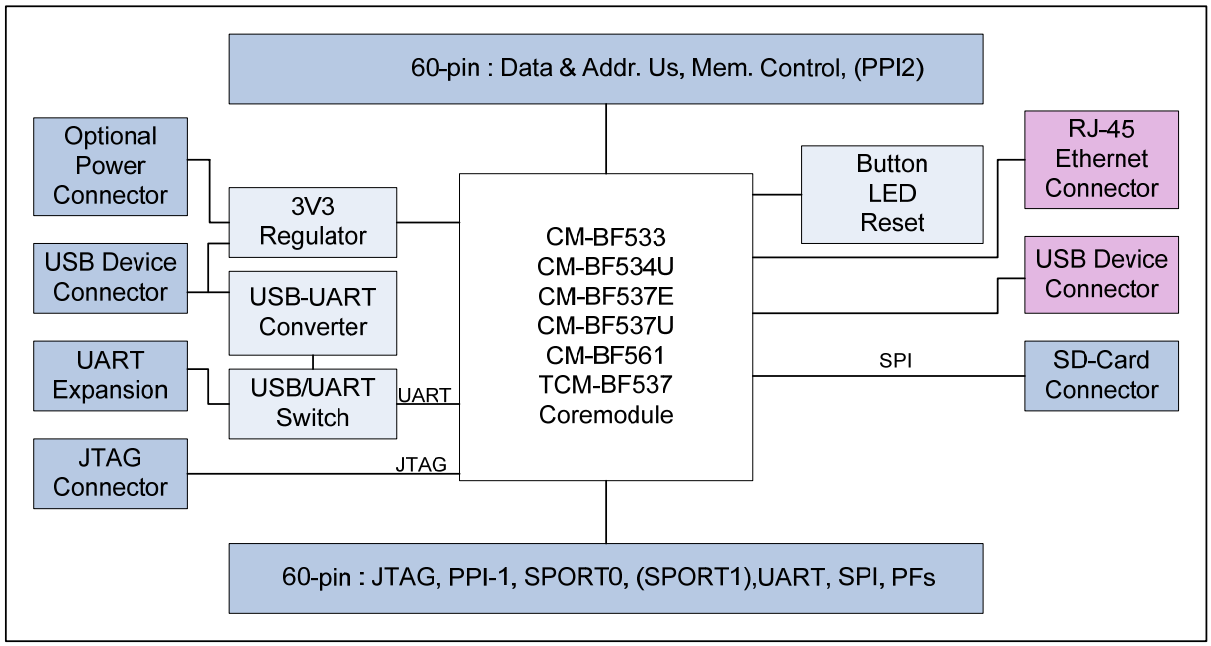


Figure 2-1: Detailed Block Diagram

Figure 2-1 shows a detailed block diagram of the EVAL-BF5xx Board.

For powering the board the *Power connector* or the *USB Device connector* can be used. Please note that your USB Device connector may not be sufficient for powering SD-Card or any Extension Board.

The serial port of the Core Module can be routed directly to the *USB Port* (USB/UART Switch Position A towards the board edge) or to the *UART Expansion Pads* (USB/UART Switch Position B towards the Core Module).

The two *60-pin expansion connectors* bring all pins of the Core Module (Pin assignement in Section 2.2.3 and 2.2.4) directly to the expansion slot.

An *SD-Card connector* mounted at the bottom of the board allows making use of file IO Functions delivered with the BLACKSheep Software. BLACKSheep supports SD-Cards and includes a FAT files systems as well as the most relevant File IO Functions (depending on the Software Version).

The 2nd USB Device connector (colored in purple) can only be used with the CM-BF534U or the CM-BF537U Core Module which has an on-board USB V2.0 Device (NET2272 by PLX-technology).

The RJ-45 Ethernet connector (colored in purple) can only be used in combination with the CM-BF537E Core Module.

2.2 Connectors, PCB Placement and PIN Assignment

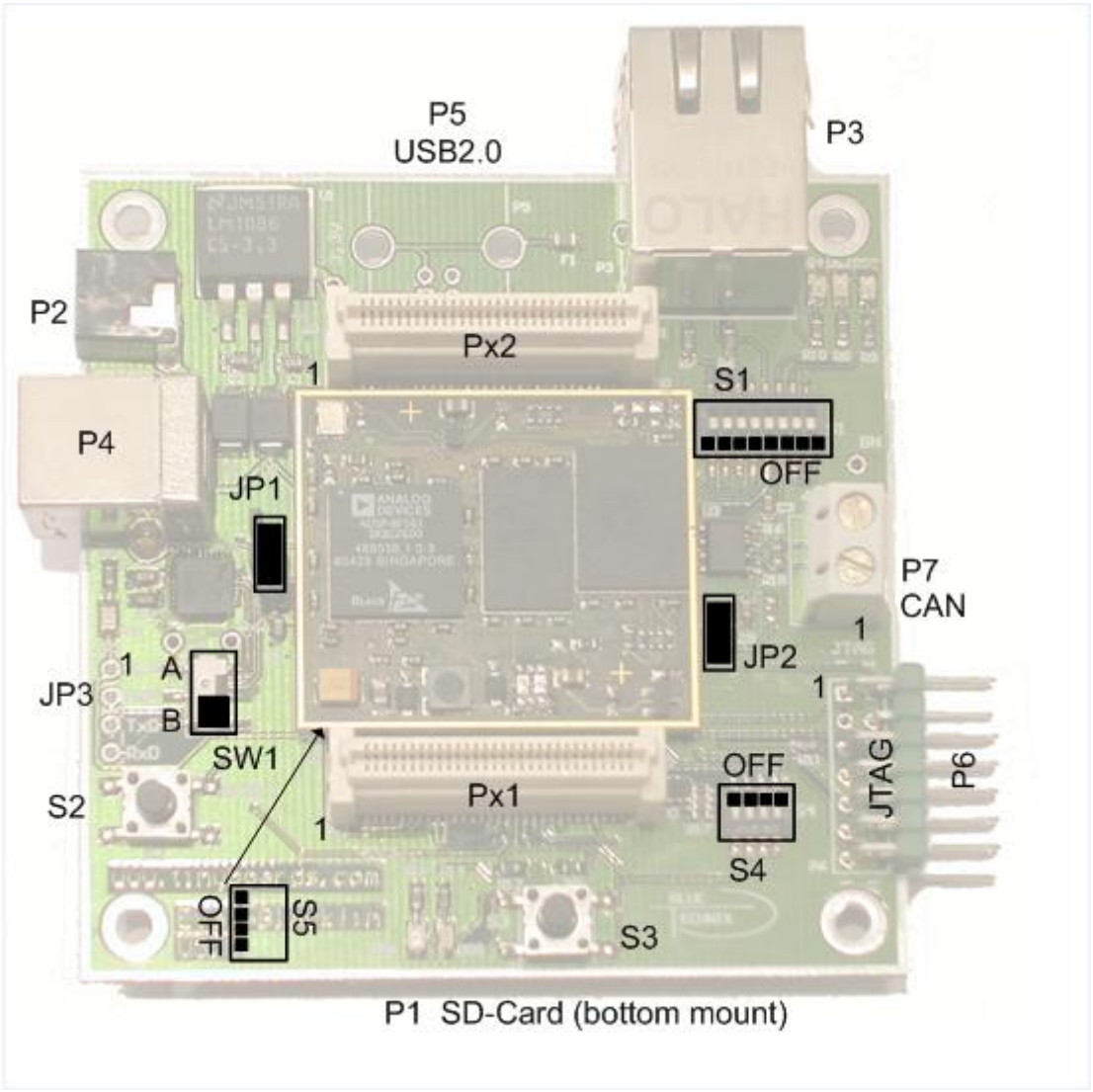


Figure 2-2: Connector PCB Placement

2.2.1 P4 and P5 – USB Connectors

P4 and P5 are standard USB-B Device Connectors. From P4 the board may draw its power of up to 500mA at most. Without extension board this is enough power to run a CM-BF561 board @ 600MHz including a SD-Card.

2.2.2 P2 – Power Connector

As a second power supply option, or if the 500mA provided by USB are not sufficient, P2 can be used as the main or as the secondary power connector. Both connectors P1 and P2 can be plugged into the evaluation board at the same time.

Pin No.	Signal	Description
1	GND	
2	NC	
3	+4V to +7V Input Supply	Preferable 5V

Table 2-1: Power Supply

2.2.3 Px1 – Expansion Connector 1

CM-BF533 (inserted):

PIN No	Signal	Signal type	Pin No	Signal	Signal type
1	RSCLK0	I/O	2	DR0PRI	I
3	TSCLK0	I/O	4	DT0PRI	O
5	RSCLK1	I/O	6	DR1PRI	I
7	TSCLK1	I/O	8	DT1PRI	O
9	3V3	PWR	10	3V3	PWR
11	PPI0	I/O	12	PPI2	I/O
13	PF15 / PPI4	I/O	14	PF13 / PPI6	I/O
15	PF11 / PPI8	I/O	16	PF9 / PPI10	I/O
17	PF7/SPISEL7/PPI12	I/O	18	PF5/SPISEL5/PPI14	I/O
19	PF3/SPISEL3/PPI_FS3	I/O	20	TMR1 / PPI_FS1	I/O
21	TMR0	I/O	22	PF1 / SPISEL1	I/O
23	RX	I	24	MOSI	I/O
25	SCK	I	26	BMODE0	I
27	GND	PWR	28	n.c.	-
29	n.c.	-	30	n.c.	-
31	Vin	PWR	32	Vin	PWR
33	n.c.	-	34	n.c.	-
35	n.c.	-	36	BMODE1	I
37	MISO	I/O	38	TX	O
39	PF0 / nSPISS	I/O	40	PF2 / SPISEL2	I/O
41	PPI_CLK	I/O	42	TMR2 / PPI_FS2	I/O
43	PF4/SPISEL4/PPI15	I/O	44	PF6/SPISEL6/PPI13	I/O
45	PF8 / PPI11	I/O	46	PF10 / PPI9	I/O
47	PF12 / PPI7	I/O	48	PF14 / PPI5	I/O
49	PPI3	I/O	50	PPI1	I/O
51	GND	PWR	52	GND	PWR
53	DT1SEC	O	54	TFS1	I/O
55	DR1SEC	I	56	RFS1	I/O
57	DT0SEC	O	58	TFS0	I/O
59	DR0SEC	I	60	RFS0	I/O

Table 2-2: Connector Px1 pin assignment for CM-BF533

CM-BF537E (inserted):

Pin No	Signal	Signal type	Pin No	Signal	Signal type
1	RSCLK0/TACLK2	I/O	2	DR0PRI/ TACLK4	I
3	TSCLK0/TACLK1	I/O	4	DT0PRI/SPI_CS2	O
5	CLK_out	O	6	SDA	I/O
7	PF4/TMR5/SPI_CS6	I/O	8	PF5/TMR4/SPI_CS5	I/O
9	3V3	PWR	10	3V3	PWR
11	PG0/PPI1D0	I/O	12	PG2/PPI1D2	I/O
13	PG4/PPI1D4	I/O	14	PG6/PPI1D6	I/O
15	PG8/PPI1D8/DR1SEC	I/O	16	PG10/PPI1D10/RSCLK1	I/O
17	PG12/PPI1D12/RE1PRI	I/O	18	PG14/PPI1D14/TFS1	I/O
19	PPI1SY3/PF7/TMR2	I/O	20	PPI1SY1/PF8/TMR0	I/O
21	PPI1SY1/PF8/TMR0	I/O	22	PF3/Tx1/TMR6/TACI6	I/O
23	PF1/DMAR1/TACI1/Rx0	I/O	24	PF11/MOSI	I/O
25	PF13/SCK	I/O	26	BMODE0	I
27	GND	PWR	28	n.c.	-
29	n.c.	-	30	n.c.	-
31	Vin	PWR	32	Vin	PWR
33	n.c.	-	34	BMODE2	I
35	n.c.	-	36	BMODE1	I
37	PF12/MISO	I/O	38	PF0/DMAR0/Tx0	O
39	PF14/SPI_SS	I/O	40	PF2/Rx1/TMR7	I/O
41	PPI1Clk/PF15/TMRCLK	I/O	42	PPI1Sy2/PF8/TMR1	I/O
43	PG15/PPI1D15/DT1PRI	I/O	44	PG13/PPI1D13/TSCLK1	I/O
45	PG11/PPI1D11/RFS1	I/O	46	PG9/PPI1D9/TD1SEC	I/O
47	PG7/PPI1D7	I/O	48	PG5/PPI1D5	I/O
49	PG3/PPI1D3	I/O	50	PG1/PPI1D1	I/O
51	GND	PWR	52	GND	PWR
53	PF5/TMR4/SPI_CS5	O	54	PF6/TMR3/SPI_CS4	I/O
55	PF10/SPI_SC1	I	56	SCL	I/O
57	DT0SEC/CANTX/SPICS7	O	58	TFS0	I/O
59	DR0SEC/TACI0/CANRX	I	60	RFS0/TACLK3	I/O

Table 2-3: Connector Px1 pin assignment for CM-BF537

CM-BF561 (inserted):

Pin No	Signal	Signal type	Pin No	Signal	Signal type
1	RSCLK0 / PF28	I/O	2	DR0PRI	I
3	TSCLK0 / PF29	I/O	4	DT0PRI / PF18	I/O
5	PF11(Clk_out optional)	I/O	6	PF9	I/O
7	PF7/SPISEL7/TMR7	I/O	8	PF5/SPISEL5/TMR5	I/O
9	3V3	PWR	10	3V3	PWR
11	PPI1D0	I/O	12	PPI1D2	I/O
13	PPI1D4	I/O	14	PPI1D6	I/O

15	PPI1D8 / PF40	I/O	16	PPI1D10 / PF42	I/O
17	PPI1D12 / PF44	I/O	18	PPI1D14 / PF46	I/O
19	PPI1SYNC3	I/O	20	PPI1SYNC1 / TMR8	I/O
21	PF3 / SPICS2	I/O	22	PF1/SPISEL1/TMR1	I/O
23	RX / PF27	I/O	24	MOSI	I/O
25	SCK	I/O	26	nABE2	O
27	ARDY	I	28	n.c.	-
29	n.c.	-	30	n.c.	-
31	Vin	PWR	32	Vin	PWR
33	n.c.	-	34	nAMS3	O
35	nABE1	O	36	nABE0	O
37	MISO	I/O	38	TX / PF26	I/O
39	PF0/SPISS/TMR0	I/O	40	PF2/SPISEL2/TMR2	I/O
41	PPI1CLK	I	42	PPI1SYNC2 / TMR9	I/O
43	PPI1D15 / PF47	I/O	44	PPI1D13 / PF45	I/O
45	PPI1D11 / PF43	I/O	46	PPI1D9 / PF41	I/O
47	PPI1D7	I/O	48	PPI1D5	I/O
49	PPI1D3	I/O	50	PPI1D1	I/O
51	GND	PWR	52	GND	PWR
53	PF4/SPISEL4/TMR4	I/O	54	PF6/SPISEL6/TMR6	I/O
55	PF8	I/O	56	PF10	I/O
57	DT0SEC / PF17	O	58	TFS0 / PF16	I/O
59	DR0SEC / PF20	I	60	RFS0 / PF19	I/O

Table 2-4: Connector Px1 pin assignment for CM-BF561

2.2.4 Px2 – Expansion Connector 2

CM-BF533 (inserted):

Pin No	Signal	Signal type	Pin No	Signal	Signal type
1	A1	O	2	A3	O
3	A5	O	4	A7	O
5	A9	O	6	A11	O
7	A13	O	8	A15	O
9	A17	O	10	A19	O
11	ABE1	O	12	n.c.	-
13	n.c.	-	14	n.c.	-
15	1V8	O	16	ADRY	I
17	n/BG	O	18	CLK_Out 25MHz	O
19	GND	PWR	20	nAMS3	O
21	nAWE	O	22	NMI	I
23	D0	I/O	24	D2	I/O
25	D4	I/O	26	D6	I/O
27	D8	I/O	28	D10	I/O
29	D12	I/O	30	D14	I/O
31	D15	I/O	32	D13	I/O
33	D11	I/O	34	D9	I/O
35	D7	I/O	36	D5	I/O

37	D3	I/O	38	D1	I/O
39	nRESET	I	40	nAOE	O
41	nARE	O	42	nAMS2	O
43	VDD-RTC	PWR	44	nBGH (at Slot B via R205)	O
45	nBR	I	46	n.c.	-
47	n.c.	-	48	n.c.	-
49	n.c.	-	50	n.c.	-
51	ABE0	O	52	A18	O
53	A16	O	54	A14	O
55	A12	O	56	A10	O
57	A8	O	58	A6	O
59	A4	O	60	A2	O

Table 2-5: Connector Px2 pin assignment for CM-BF533

CM-BF537E (inserted):

Pin No	Signal	Signal type	Pin No	Signal	Signal type
1	A1	O	2	A3	O
3	A5	O	4	A7	O
5	A9	O	6	A11	O
7	A13	O	8	A15	O
9	A17	O	10	A19	O
11	nABE1	O	12	LED_ACT	O
13	GND	-	14	RX+	I
15	RX-	I	16	ADRY	I
17	nBG	O	18	CLK_out	O
19	GND	PWR	20	nAMS3	O
21	nAWE	O	22	NMI	I
23	D0	I/O	24	D2	I/O
25	D4	I/O	26	D6	I/O
27	D8	I/O	28	D10	I/O
29	D12	I/O	30	D14	I/O
31	D15	I/O	32	D13	I/O
33	D11	I/O	34	D9	I/O
35	D7	I/O	36	D5	I/O
37	D3	I/O	38	D1	I/O
39	nReset	I	40	nAOE	O
41	nARE	O	42	nAMS2	O
43	VDD-RTC	PWR	44	nBGH (at Slot B via R205)	O
45	nBR	I	46	VA25	PWR
47	TX-	O	48	TX+	O
49	LED_FD	O	50	LED_SPEED	O
51	nABE0	O	52	A18	O
53	A16	O	54	A14	O
55	A12	O	56	A10	O
57	A8	O	58	A6	O

59	A4	O	60	A2	O

Table 2-6: Connector Px2 pin assignment for CM-BF537E

CM-BF561 (inserted):

Pin No	Signal	Signal type	Pin No	Signal	Signal type
1	nABE3	O	2	A3	O
3	A5	O	4	A7	O
5	A9	O	6	A11	O
7	A13	O	8	A15	O
9	PPI2SYNC1	I/O	10	PPI2SYNC2	I/O
11	PPI2D1	I/O	12	PPI2D3	I/O
13	PPI2D5	I/O	14	PPI2D7	I/O
15	PPI2D9 / PF33	I/O	16	PPI2D11 / PF35	I/O
17	PPI2D13 / PF37	I/O	18	PPI2D15 / PF39	I/O
19	GND	PWR	20	nAMST	O
21	nAWE	O	22	NMI0	I
23	D0	I/O	24	D2	I/O
25	D4	I/O	26	D6	I/O
27	D8	I/O	28	D10	I/O
29	D12	I/O	30	D14	I/O
31	D15	I/O	32	D13	I/O
33	D11	I/O	34	D9	I/O
35	D7	I/O	36	D5	I/O
37	D3	I/O	38	D1	I/O
39	nRESET	I	40	nAOE	O
41	nARE	O	42	nAMS2	O
43	n.c.	-	44	PPI2D14 / PF38 (at Slot B via R205)	I/O
45	PPI2D12 / PF36	I/O	46	PPI2D10 / PF34	I/O
47	PPI2D8 / PF32	I/O	48	PPI2D6	I/O
49	PPI2D4	I/O	50	PPI2D2	I/O
51	PPI2D0	I/O	52	PPI2SYNC3	I/O
53	PPI2CLK	I	54	A14	O
55	A12	O	56	A10	O
57	A8	O	58	A6	O
59	A4	O	60	A2	O

Table 2-7: Connector Px2 pin assignment for CM-BF561

2.2.5 Expansion Connector Types

The Expansion Connectors on the EVAL-BF5xx for a Stacked Height of 16mm are of the following type:

Part	Manufacturer	Manufacturer Part Nr.
Px1, Px2	AMP (Stacked Height = 16mm)	5-179010-2
Matching connector	AMP	179031-2

Table 2-8: DEV-board connector types

These connectors can be ordered from Bluetechnix.

2.2.6 S1 – Ethernet Switch for BF537E

This 8 pin DIP switch enables the Ethernet connector. It is necessary for the Core Module CM-BF537E.

Switch Settings	Description
	CM-BF537E
	CM-BF533, CM-BF537U, CM-BF561

Table 2-9: Ethernet Switch

2.2.7 P1 –SD-Card Connector

Pin No.	Signal (Core Module)	Description (SD Card)
0	-	DAT2
1	NCS	CD/DAT3
2	MOSI	CMD
3	GND	VSS1
4	3,3V	VDD
5	SPICLK	CLK
6	GND	VSS2
7	MISO	DAT0
8	-	DAT1
9	PP11	CD
10	WP	WP
11	-	-
12	GND	GND
13	GND	GND

Table 2-10: SD-Card Connector

2.2.8 P3 –RJ45 Ethernet Connector

Pin No.	Signal (Core Module)	Description
1	TX+	O
2	TX-	O
3	RX+	I
4	VA2.5V	PWR
5	NC	NC
6	RX-	I
7	-	-
8	GND	PWR

Table 2-11: Ethernet Connector

2.2.9 P5 – USB Connector

The USB connector is used for the CM-BF537U.

2.2.10 P6 – JTAG Connector

The JTAG connector is compliant to any Blackfin JTAG Emulator from Analog Devices.

2.2.11 P7 – CAN Connector

Pin No.	Signal (Core Module)	Signal Type
1	CAN-	I/O
2	CAN+	I/O

Table 2-12:CAN Connector

2.2.12 SW1 – UART Switch

Move Sw1 to POSITION A to route the Core Modules RX and TX signals to USB

Move Sw1 to Position B to route the Core Modules RX and TX signals to JP3

2.2.13 JP1 - Power Supply Jumper

This jumper can be removed in order to insert an AMPERE METER for current measurement of the entire Core Module.

2.2.14 JP2 - Power Supply Jumper for RTC

Enables power supply for RTC of the CM-BF53x.

2.2.15 JP3 – UART Solder Pads

Pin No.	Signal	Signal Type
1	RxD Blackfin	Input Core Module
2	TxD Blackfin	Output Core Module
3	GND	
4	3V3	Regulated Power

Table 2-13: UART Connector

2.2.16 Bootmode

Boot-settings for CM-BF561 (S4)

If you are using a CM-BF561 set all switches of S4 OFF!

Due to the limited number of pins on the two connectors, the CM-BF561 can only set its boot mode on the core module itself by changing the resistor settings. See the CM-BF561 Manual for further details.

Boot-settings for CM-BF533 (S4)

Switch Settings BMODE0,BMODE1	Boot Mode	Description
	0	Execute from16Bit ext. mem. Bypass ROM (Standard boot mode for uBoot)
	1	Boot from 8Bit or 16Bit EEPROM/Flash (Standard boot mode for BLACKSheep)
	2	Boot from SPI 8Bit
	3	Boot from SPI 16Bit

Table 2-14: Bootmode CM-BF533

Boot-settings for CM-BF537E and CM-BF537U (S4)

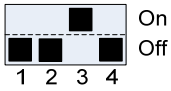
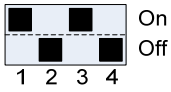
Switch Settings BMODE0,BMODE1,BMODE2	Boot Mode	Description
	0	Execute from16Bit ext. mem. Bypass ROM (Standard boot mode for uBoot)
	1	Boot from 8Bit or 16Bit EEPROM/Flash (Standard boot mode for BLACKSheep)
	2	Reserved
	3	Boot from serial SPI Memory
	4	Boot from SPI Host (slave mode)
	5	Boot from serial TWI memory
	6	Boot from TWI host (slave mode)
	7	Boot from UART host (slave mode)

Table 2-15: Bootmode CM-BF534/537

2.2.17 Core Module Configuration S5

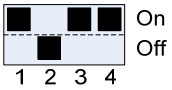
Switch Settings S5	Core Module inserted
CM-BF533 and CM-BF561	
CM-BF534U, CM-BF537E and CM-BF537U	

Table 2-16: Core Module Configuration

2.2.18 Buttons and LEDs

The Button S2 is the main Reset Button of the Core Module.
The Button S3 is a general-purpose input button.
The LED DS2 indicates that the board is powered.
The LEDs DS1 and DS3 are connected to general-purpose IO pins.

Core Module	**LED DS5**	**LED DS6**	**Button S3**
CM-BF533	PF8	PF9	PF5
CM-BF537U	PG11	PG10	PG14
CM-BF537E	PG11	PG10	PG14
CM-BF561	PF43	PF42	PF46

Table 2-17: Core Module LEDs

Ethernet LEDs		
DS2	Yellow	Fullduplex
DS3	Green	Activity
DS4	Green	100MB Speed LED

Table 2-18:Ethernet LEDs

2.3 Mechanical Outline

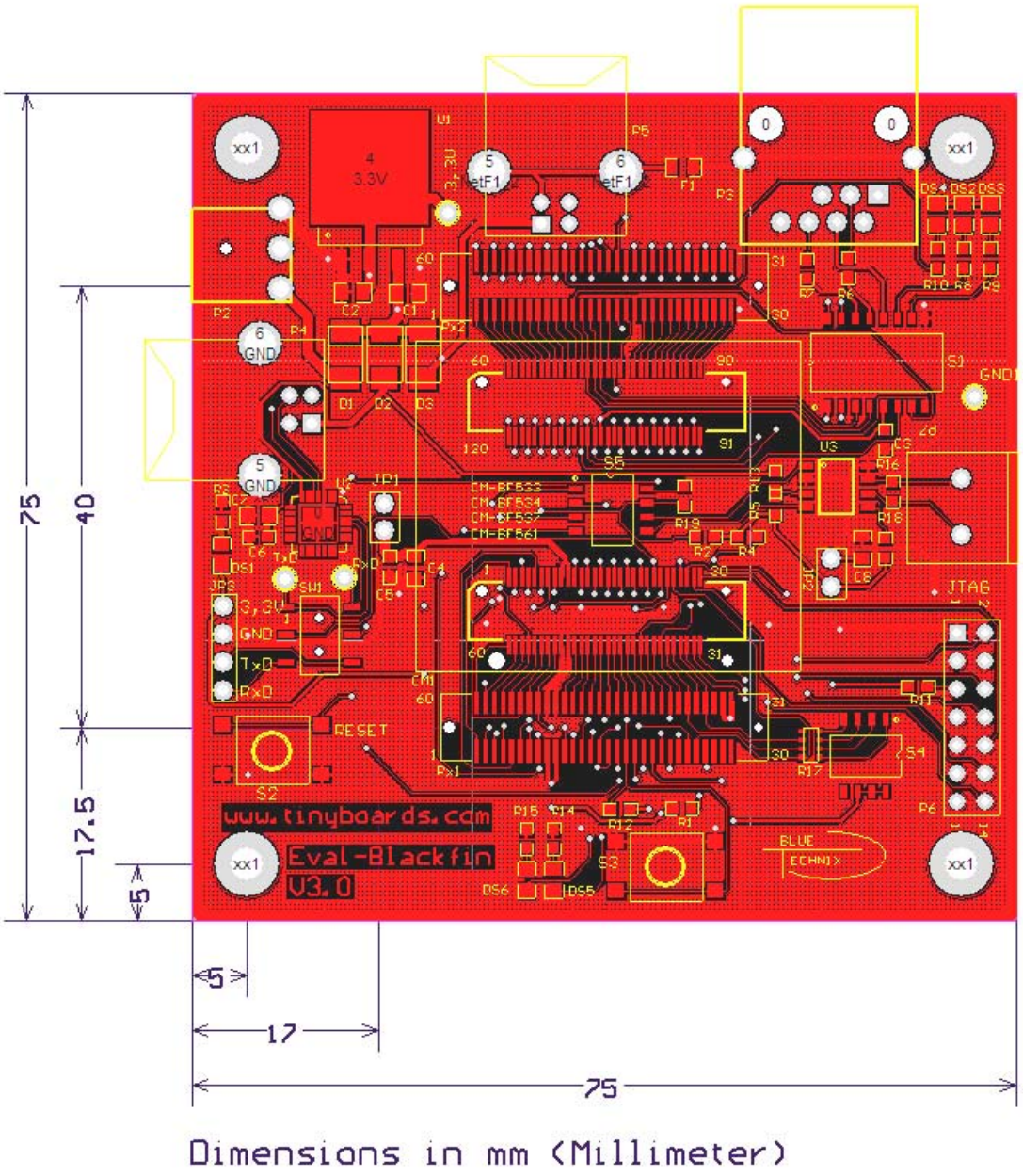


Figure 2-3: Mechanical Outline – Expansion Connector Placement

3 Installation

The installation guide is written for Windows (Windows 2000 and WinXP). However for connecting the USB device the driver for MAC and LINUX are available on the CD.

In order to set up und test your EVAL-board the following steps can be done:

1. Make sure the Jumper JP1 is set and the Switch SW1 is in Position A as shown in the following picture:

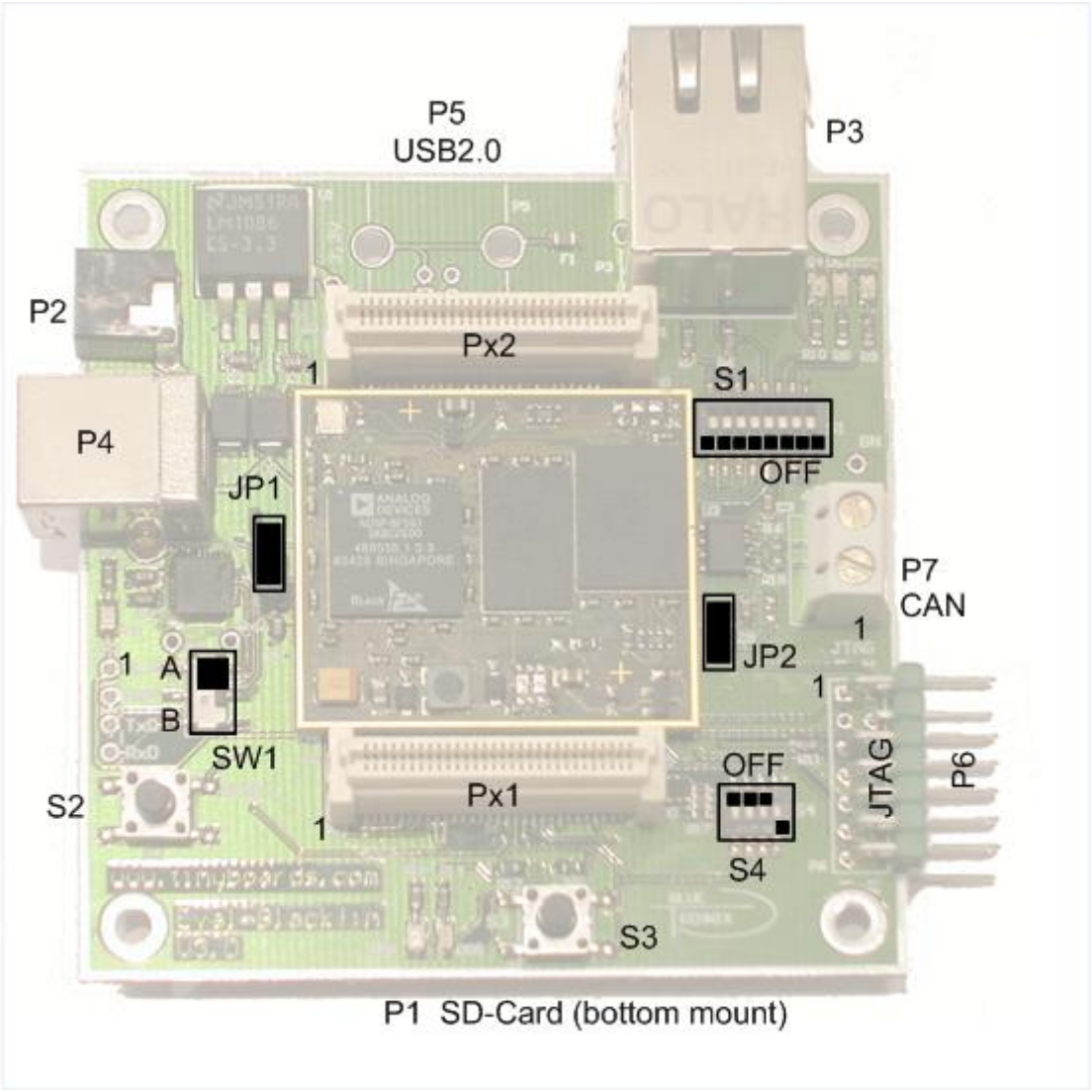
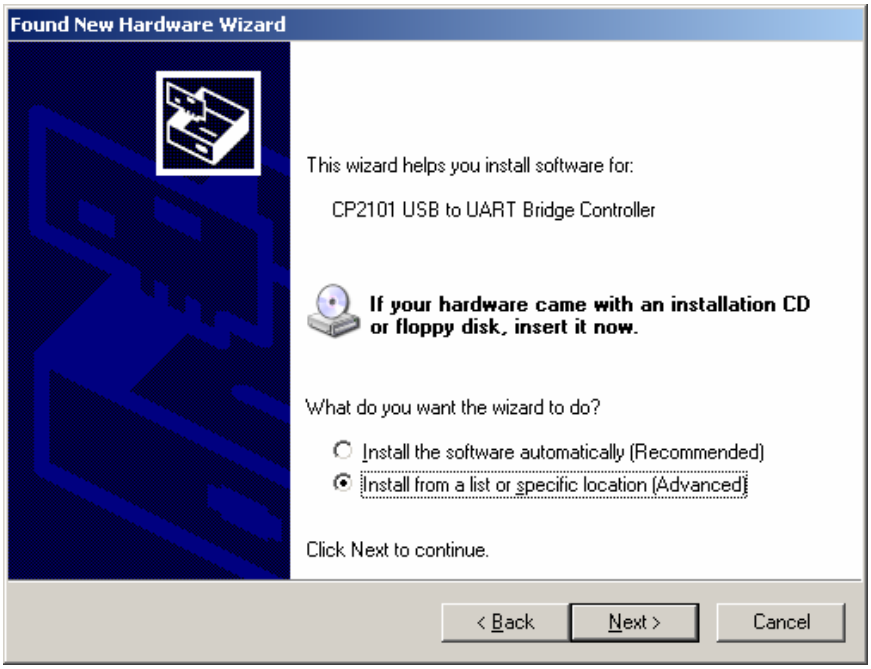


Figure 3-1: Overview of the EVAL-Board

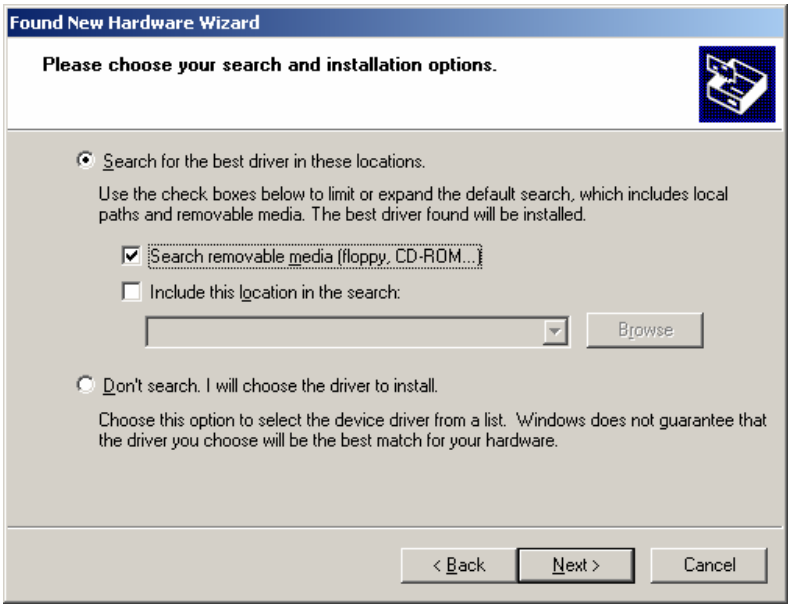
2. If you want to use an SD-Card, insert the SD-Card in the appropriate slot at the bottom side of the board.

3. Connect the EvalBoard via USB to the PC. The pre-flashed BLACKSheep starts and the LED mounted on the EVAL board starts blinking. On the PC usually the 'Found New Hardware Wizard' opens.

If the wizard is asking you to look at the windows update site, select "No, not this time"



Choose: "Install from a list or specific location". The driver is located on your support CD.

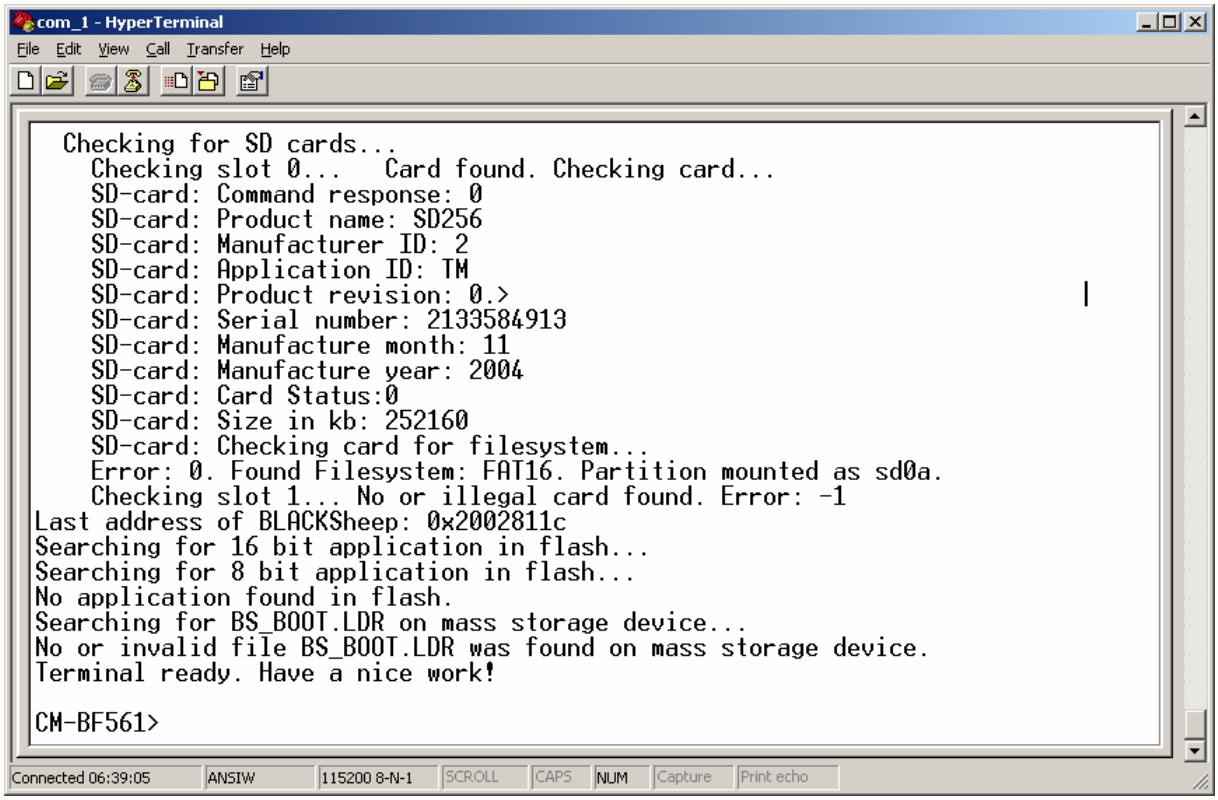


This procedure has to be done twice, because at first the USB driver will be installed. Then the Hardware Wizard opens again, because the UART bridge driver has to be installed in addition using the same driver file. Please do the same again as described in this point.

4. Open the Windows device manager (Control Panel → System → Hardware) to see which COM port number has been assigned to the CP2101 UART-to-USB Chip. This number differs from computer to computer based on the already installed COM ports. (e.g. COM4)

5. Open a Terminal program like the HyperTerminal included in Windows operating systems and open the respective COM port with **115200 Baud, 8 Data-bits, No Parity and 1 Stop bit**, **disable the Hardware flow control**.

6. Reset the Eval board (Press reset button S1). After this you will see the BLACKSheep boot-screen showing up. If you disconnect the device, you have to reconnect.



This shows a sample boot screen. Depending on the current software version, you might get different boot messages.

7. You can find a simple hello world program on your support CD or at the download section of the product homepage. To start the sample program, type "*xmr UART*" on your terminal program, then (Transfer → Send file) select the appropriate file "*UART.ldr"* depending on your Core Module, choose protocol "Xmodem" and send. After the download has finished type "*exec UART*" for executing the sample program.

8. Press reset to return to the BLACKSheep command line.

4 Using the VDSP Flash Programming Tool

4.1 Developing an Application

If you are developing your own projects with the VDSP++ development tools including the JTAG provided by Analog Devices you can use the flash programming tool included in the VDSP++ environment in order to flash your program on the core module. As flash driver you have to load the flash driver located on your EVAL board support CD (BF533EZFlasher.dxe).

4.2 Overriding BLACKSheep Code

If you overwrite intentionally or unintended the section in the flash containing the BLACKSheep code, you need a JTAG device and the VDSP++ flash tool to reprogram the flash. Flashing the file BLACKSheep53x.ldr located on the CD, reinstalls the BLACKSheep code.

5 Known Bugs

6 Revision History

2006 05 16	Ethernet Configuration
2006 03 03	Updated LED table
2006 02 28	Preliminary Version 3.0
2006 01 29	Update to Version 3.0
2005 12 19	Merging Getting Started with Hardware User Manual
2005 09 28	Release Version No. 2.0.1, board prepared for Ethernet and USB2.0
2005 02-08	Release Version No. 1.0
2004 12 20	Beta Version of the Document

A List of Figures and Tables