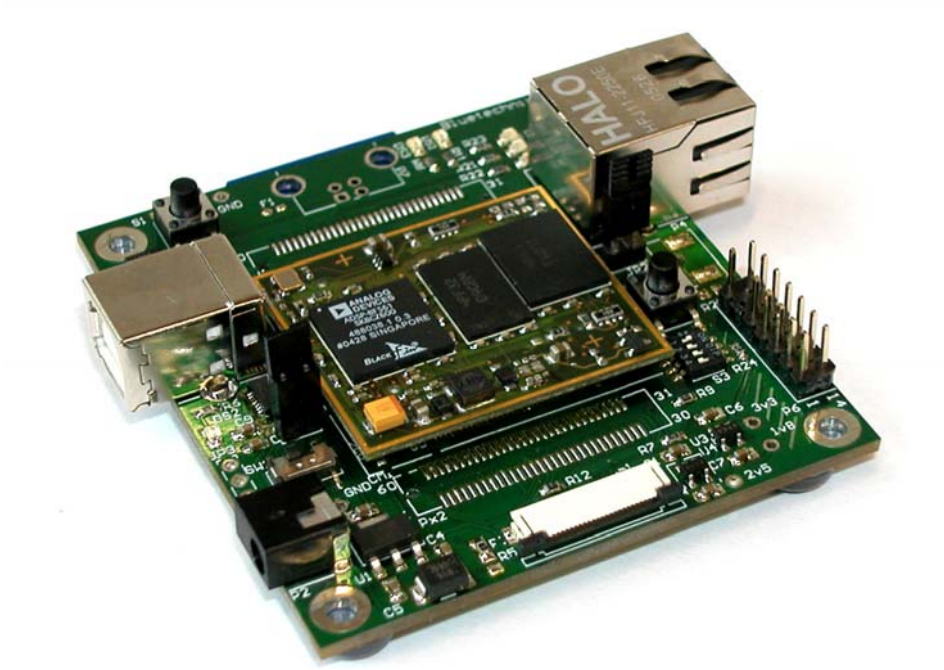
BLUE TECHNIX

Hardware User Manual



EVAL-BF5xx Board V2.0

www.tinyboards.com

Maximum Power at Minimum Size

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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. Electro-static 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-BF537 and upcoming CM-BF534. 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:

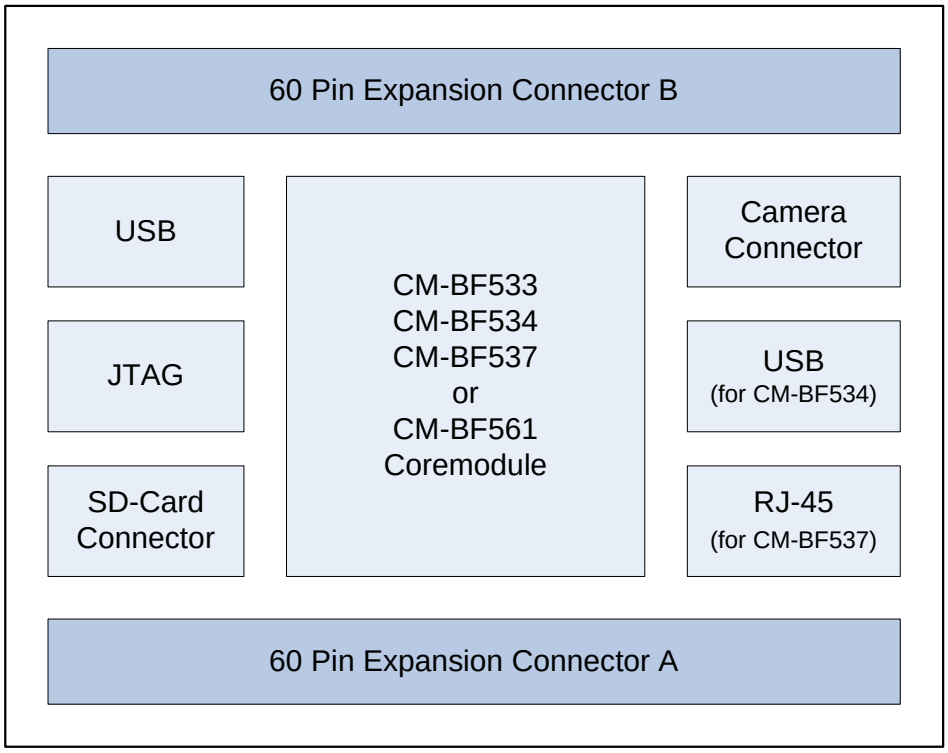


Figure 1-1: Overview of the EVAL-BF5xx Board

- **1 Core Module Slot**
  - Supports the CM-BF533, CM-BF534, CM-BF537 as well as the CM-BF561 core modules
- **Camera Connector**
  - Supports the ITU-656 OmniVision Camera OV7660 available in the camera kit.
  - Camera drivers are supplemented in the camera kit.
- **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-BF534 module which has an on-board NETPLX 2272 USB2.0 Device Chip
- **RJ-45 Ethernet Plug**
  - Only in combination with the CM-BF537 module
  - Standard TP10/100 Ethernet connection

The EVAL Board is prepared for using the *Kit-CAM-OV1* CMOS Camera Kit, which can be purchased from Bluetechnix.

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

1.2 Blackfin Products

CM-BF533: Blackfin DSP Processor Module powered by Analog Devices single core BF533 processor. Up to 600MHz, 32MB RAM, 2MB Flash, 36x31mm, 120 pin expansion connector, 24 pin camera connector, BGA option.

CM-BF534: Blackfin DSP Processor Module powered by Analog Devices single core BF534 processor. Up to 600MHz, 32MB RAM, 4MB Flash, 36x31mm, 120 pin expansion connector, integrated USB 2.0 Device, BGA option.

CM-BF537: Blackfin DSP Processor Module powered by Analog Devices single core BF533 processor. Up to 600MHz, 32MB RAM, 4MB Flash, 36x31mm, 120 pin expansion connector, integrated TP10/100 Ethernet, BGA option.

CM-BF561: Blackfin DSP Processor Module powered by Analog Devices new dual core BF561 processor. Up to 2x 600MHz, 32MB RAM, 4MB Flash, 36x31mm, 120 pin expansion connector, BGA option.

EVAL-BF5xx: Blackfin DSP Evaluation board with one socket for a CM-BF533 or a CM-BF561 core module. Additional periphery is available, such as a single camera plug and an SD-Card.

DEV-BF5xx: Blackfin DSP Development board with two sockets for any combination of CM-BF533, CM-BF534, CM-BF537 and CM-BF561 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.

Kit-CAM-OV1: Camera Kit including one OmniVision OV7660 camera for the Blackfin core boards and the respective software driver

1.3 Notes

For product development it is highly recommended to purchase the *DEV-BF5xx* Blackfin development board. This board includes low level driver software for the on board peripherals.

2 Specification

2.1 Functional Specification

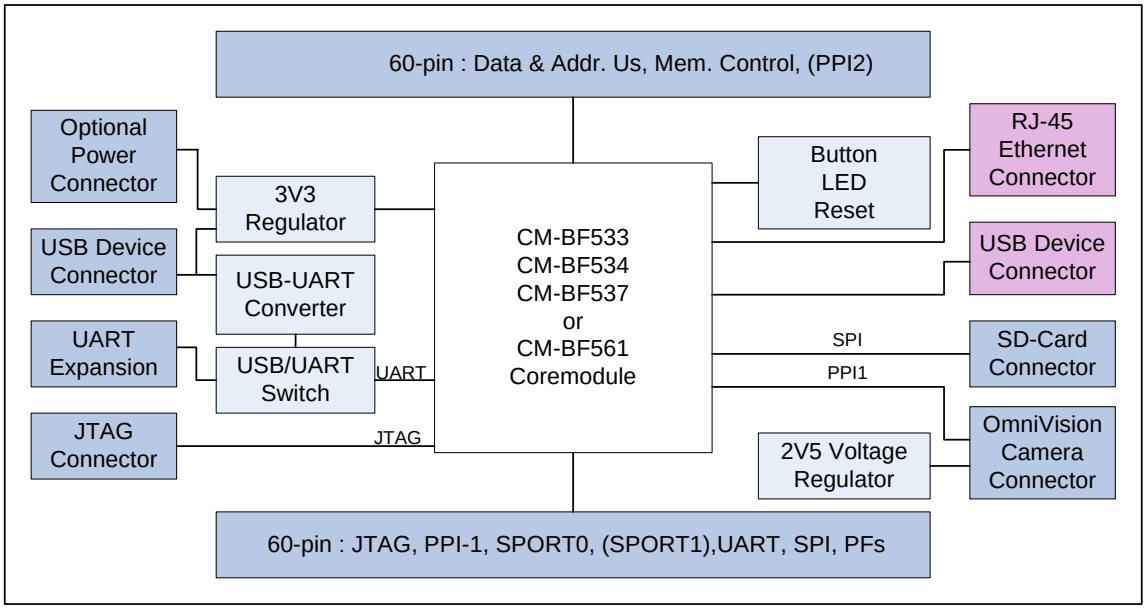


Figure 2-1: Detailed Block Diagram

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

From the *Power connector* or the *USB Device connector* power connects to a 1 Ampere linear voltage regulator that powers the Core Module.

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 up to 512 MB and includes a FAT16 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-BF534 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-BF537 Core Module.

Adding a Camera Kit to the EVAL-BF5xx Board allows connecting a high performance OmniVision Camera to the board via the OmniVision Camera connector.
The BLACKSheep Software fully supports drivers for the Camera Module.

2.2 Connectors, PCB Placement and PIN Assignment

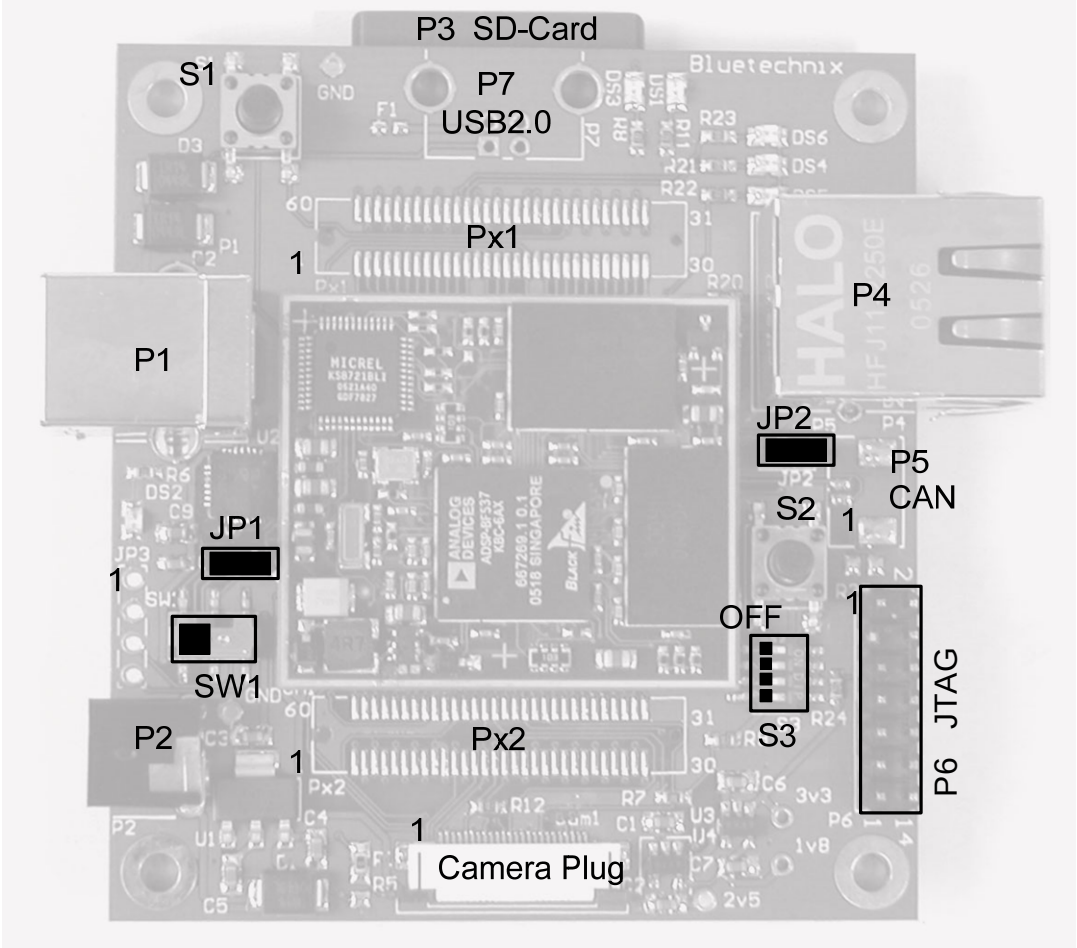


Figure 2-2: Connector PCB Placement

2.2.1 P1 and P7 – USB Connectors

P1 and P7 are standard USB-B Device Connectors from which 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 and the OmniVision Camera.

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

CM-BF537 (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 2-3: Connector Px1 1 pin assignment for CM-BF537

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

2.2.4 Px2 – Expansion Connector 2

Pin 1 through Pin 60 of Px2 is connected directly to Pin 1 through Pin 60 of any Core Module.

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	n.c.	-	32	n.c.	-
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 2-5: Connector Px2 pin assignment for CM-BF533

CM-BF537 (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/Rx 0	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	n.c.	-	32	n.c.	-
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 2-6: Connector Px2 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	n.c.	-	32	n.c.	-
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 2-7: Connector Px2 in 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 Cam1 – Expansion OmniVision Camera Connector

Pin No.	**Signal**	**Signal type**	**PIN Px1 = PIN CM**	**Signal**	**Signal type**
1	GND	I/O	2	HREF (NC)	I
3	VSYNC (NC)	I/O	4	PWDN (PPID10)	O
5	PCLK (PPICLK)	I	6	2V5 VDD	I/O
7	3V3 DOVDD	PWR	8	SIO_D (PPID9)	I/O
9	CamClk (*)	I	10	SIO_C (PPID8)	I
11	D0	O	12	D1	O
13	D2	O	14	D3	O
15	GND	O	16	D4	O
17	D5	O	18	D6	O
19	D7	O	20	Reset (GND)	I

(*) Mount option R1/R5: Mount R1 for CM-BF533 clock source; Mount R5 for CM-BF561 clock source

2.2.7 P3 –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

2.2.8 P4 –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

2.2.9 P5 – CAN Connector

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

2.2.10 P6 – JTAG Connector

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

2.2.11 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

2.2.12 JP1 - Power Supply Jumper

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

2.2.13 JP2 - Power Supply Jumper for RTC

Enables power supply for RTC of the CM-BF53x.

2.2.14 JP3 – UART Solder Pads

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

2.2.15 Bootmode

Boot-settings for CM-BF561

If you are using a CM-BF561 set all switches 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

Switch Settings BMODE0,BMODE1	Bootmode	Description
	0	Execute from16Bit ext. mem. Bypass ROM
	1	Boot from 8Bit or 16Bit EEPROM/Flash
	2	Boot from SPI 8Bit
	3	Boot from SPI 16Bit

Table 2-9: Bootmode CM-BF533

Boot-settings for CM-BF534 and CM-BF537

Switch Settings BMODE0,BMODE1,BMODE2	Bootmode	Description
	0	Execute from16Bit ext. mem. Bypass ROM
	1	Boot from 8Bit or 16Bit EEPROM/Flash
	2	Reserved
	3	Boot from serial SPI Memory
	4	Boot from SPI Host (slave mode)

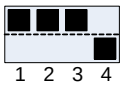
S103 S203 	5	Boot from serial TWI memory
S103 S203 	6	Boot from TWI host
S103 S203 	7	Boot from UART host (slave mode)

Table 2-10: Bootmode CM-BF534/537

2.2.16 Buttons and LEDs

The Button S1 is the main Reset Button of the Core Module.
The Button S2 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 DS1**	**LED DS3**	**Button S2**
CM-BF533	PF5	PF4	PF6
CM-BF534	PG14	PG15	PG13
CM-BF537	PG14	PG15	PG13
CM-BF561	PF46	PF47	PF45

Ethernet LEDs		
DS4	Yellow	Fullduplex
DS5	Green	Activity
DS6	Green	100MB Speed LED

2.3 Mechanical Outline

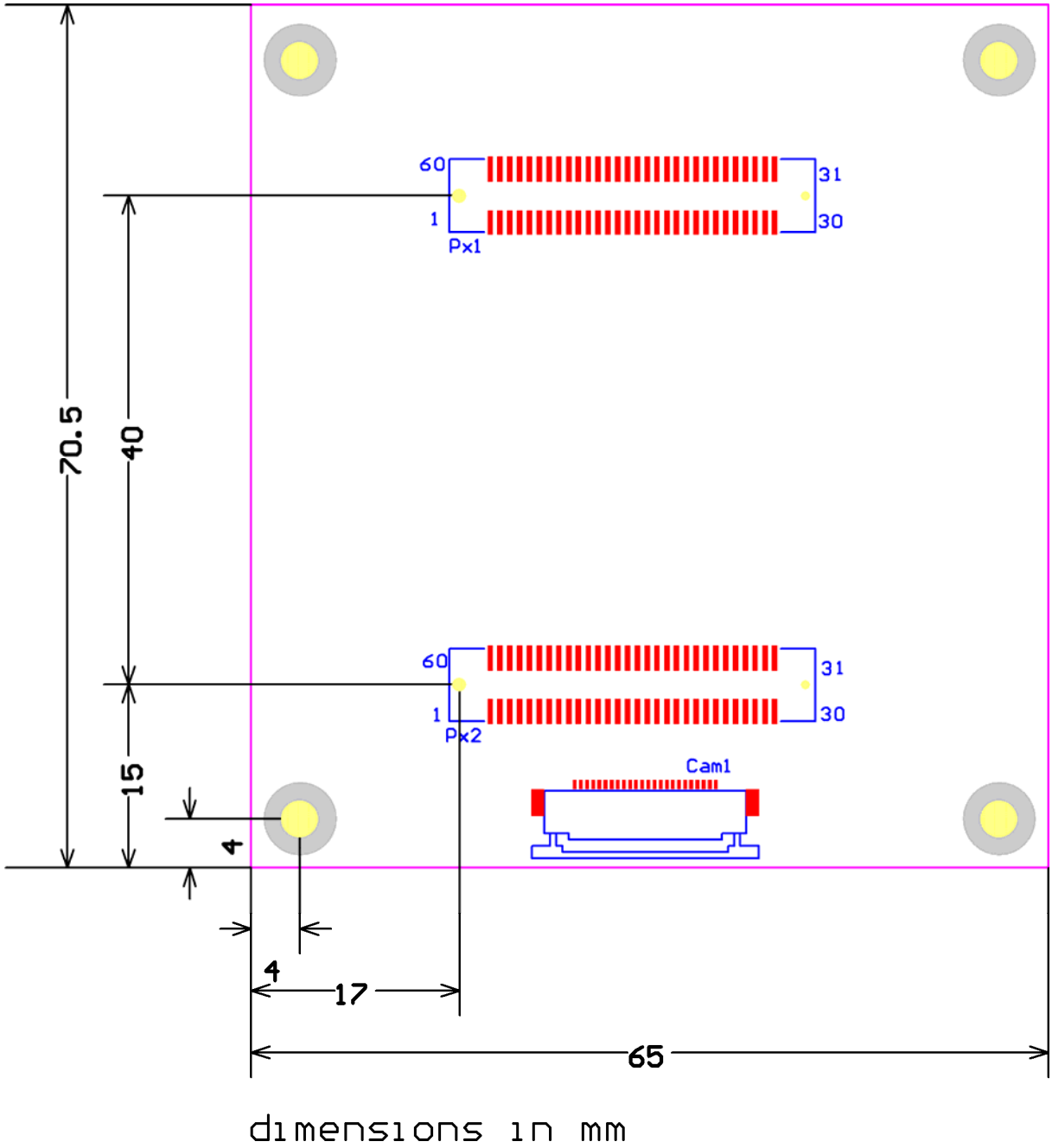


Figure 2-3: Mechanical Outline – Expansion Connector Placement

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:

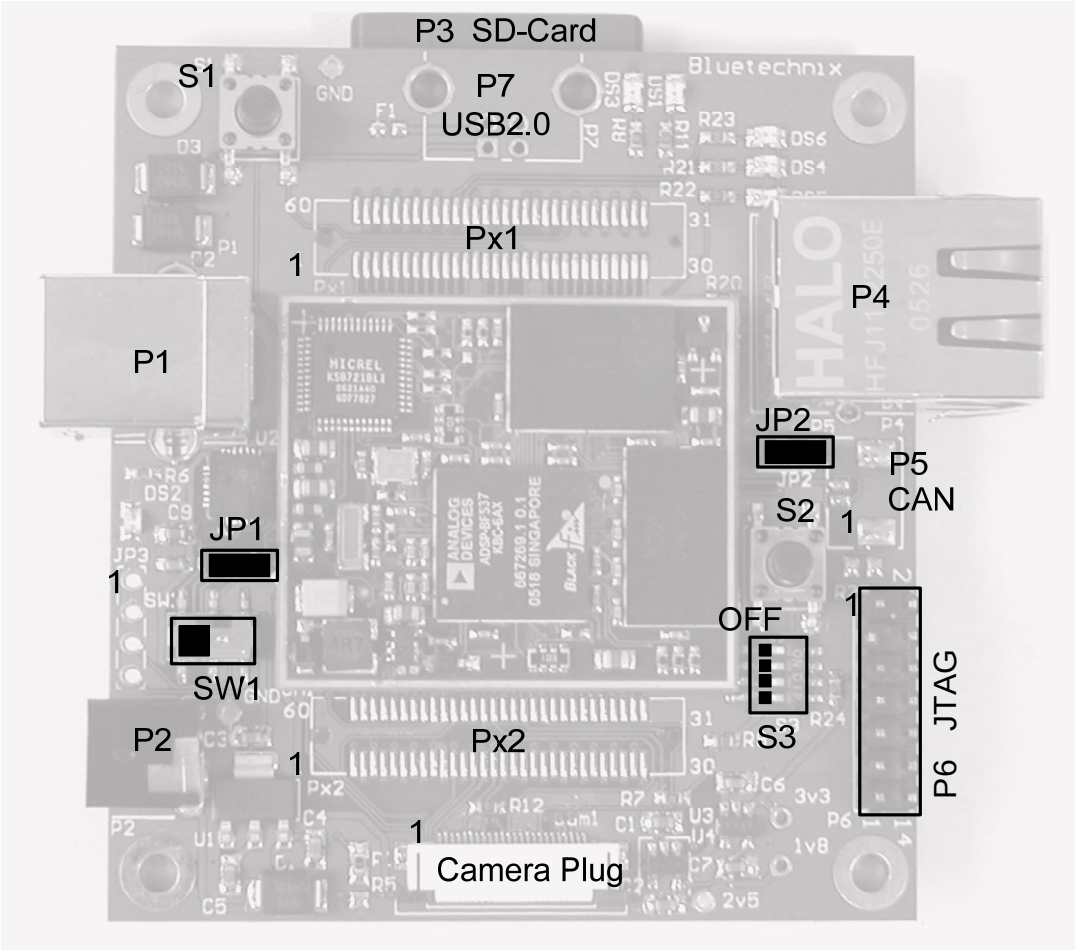
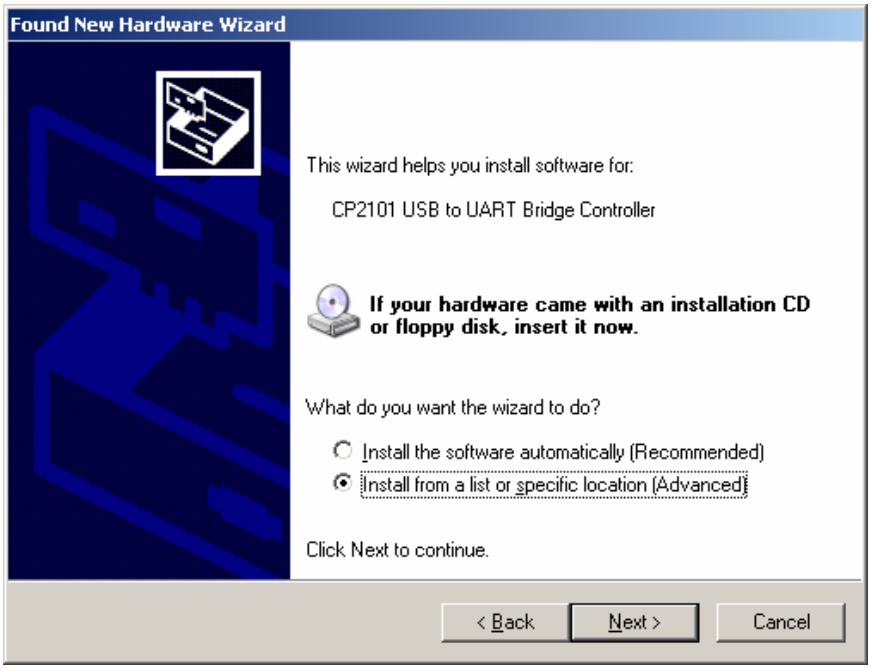


Figure 3-1: Overview of the EVAL-Board

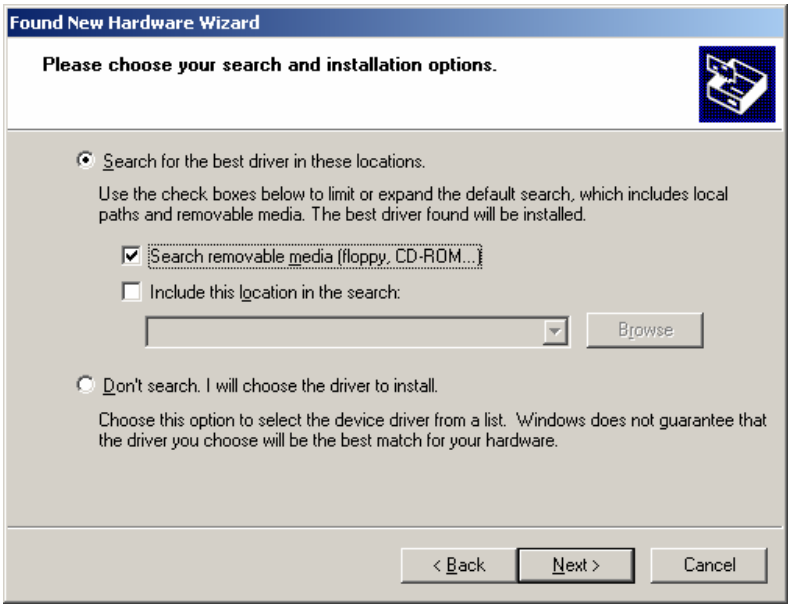
2. If you want to use an SD-Card, insert the SD-Card in the appropriate slot at the bottom side of the board.

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.

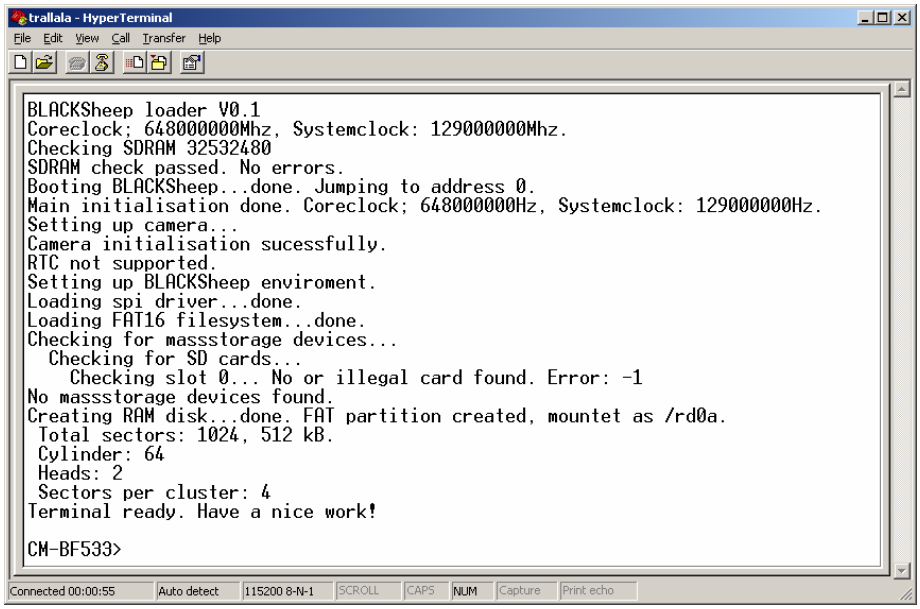


This procedure has to be done twice, because at first the USB driver will be installed. Then the Hardware Wizard opens again, because the UART bridge driver has to be installed in addition using the same driver file. Please do the same again as described in this point.

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 bootscreen. Depending on the current software version, you might get different boot messages.

7. You can find a sample program on your support CD. To start the sample program, type "*xmr SAMPLE*" on your terminal program, then (Transfer → Send file) select the file "*EVAL-BF5xx\BLACKSheep\CM-BF533\V0.4.5\sample\BLACKSheepFunctions\prj\Release\SampleExec.ldr*" on your CD drive, choose protocol "Xmodem" and send. After the download has finished type "*exec SAMPLE*" for executing the sample program.

4 Using the on-board Peripherals

4.1 Using the Camera-Kit with the EVAL-BF5xx Board

If you have purchased the Camera kit (Kit-CAM-OV1) you can use it together with the EVAL-BF5xx board. Plug the camera connector P5 so that the camera metal contacts look away from the board (connector is a top contact version)

How to use BLACKSheep for taking pictures:

You have two possibilities to take pictures with the EVAL-BF5xx Board:

1) Pressing button S2: A Windows bitmap will be saved on RAM disk or SD card if inserted. If you do not have an SD card than you can copy the picture via an XModem transfer to the host PC. See command reference. The pictures will be saved with an auto-incremented filename. (This depends on the software version.)

2) Using the command *getimg* on BLACKSheep command line.

4.2 Using an SD Card

Before connecting the EVAL-BF5xx to the power supply, insert an SD-Card (<= 512 MB) in the appropriate connector and boot BLACKSheep. The board detects automatically the SD card size and type. If no SD card is inserted before the board gets a reset, the BLACKSheep creates a little RAM disk, where you can store your images.

The SD-CARD must be formatted with a FAT16 partition previous to insertion!

5 Using the VDSP Flash Programming Tool

5.1 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).

5.2 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.

6 Known Bugs

	CS for SD-card using the CM-BF537 (work around)

7 Revision History

2004 12 20	Beta Version of the Document
2005 02-08	Release Version No. 1.0
2005 09 28	Release Version No. 2.0.1, board prepared for Ethernet and USB2.0
2005 12 19	Merging Getting Started with Hardware User Manual

A List of Figures and Tables