

# Hardware User Manual

**EXT-BF5xx-EXP V1.x**

*...maximum performance at minimum space*

## Contact

Bluetechnix Mechatronische Systeme GmbH

Waidhausenstr. 3/19

A-1140 Vienna

AUSTRIA/EUROPE

[office@bluetechnix.at](mailto:office@bluetechnix.at)

<http://www.bluetechnix.com>

Document No.: 100-2254-1.0

Document Revision 4

2010-06-28

## Table of Contents

BLACKFIN Products .....	4
BLACKFIN Design Service .....	5
1 Introduction .....	6
1.1 Overview .....	6
2 Schematic.....	7
2.1 Mechanical Outline .....	8
3 Anomalies .....	9
4 Product Changes .....	9
5 Document Revision History .....	9
A List of Figures.....	9

© Bluetechnix Mechatronische Systeme GmbH 2010  
All Rights Reserved.

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

Terms of delivery and rights of technical change reserved.

We hereby disclaim any warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

Bluetechnix makes and you receive no warranties or conditions, express, implied, statutory or in any communication with you. Bluetechnix specifically disclaims any implied warranty of merchantability or fitness for a particular purpose.

Bluetechnix takes no liability for any damages and errors causing of the usage of this board. The user of this board is responsible by himself for the functionality of his application. He is allowed to use the board only if he has the qualification. More information is found in the General Terms and Conditions (AGB).

#### Information

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

#### Warning

Due to technical requirements components may contain dangerous substances.

The Core Modules 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 Modules and Development Boards should be stored in the protective shipping



## BLACKFIN Products

### Core Modules:

TCM-BF518:	The new Core Module CM-BF518 is powered by Analog Devices' single core ADSP-BF518 processor; up to 400MHz, 32MB SDRAM, up to 8MB flash. The 2x60 pin expansion connectors are backwards compatible with other Core Modules.
CM-BF527:	The new Blackfin Processor Module is powered by Analog Devices' single core ADSP-BF527 processor; key features are USB OTG 2.0 and Ethernet. The 2x60 pin expansion connectors are backwards compatible with other Core Modules.
CM-BF533:	Blackfin Processor Module powered by Analog Devices' single core ADSP-BF533 processor; up to 600MHz, 32MB SDRAM, 2MB flash, 2x60 pin expansion connectors and a size of 36.5x31.5mm.
TCM-BF537:	Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 500MHz, 32MB SDRAM, 8MB flash, a size of 28x28mm, 2x60 pin expansion connectors, Ball Grid Array or Border Pads for reflow soldering, industrial temperature range -40°C to +85°C.
CM-BF537E:	Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 600MHz, 32MB SDRAM, 4MB flash, integrated TP10/100 Ethernet physical transceiver, 2x60 pin expansion connectors and a size of 36.5x31.5mm.
CM-BF537U:	Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 600MHz, 32MB SDRAM, 4MB flash, integrated USB 2.0 Device, 2x60 pin expansion connectors and a size of 36.5x31.5mm.
CM-BF548:	The new Blackfin Processor Module is powered by Analog Devices' single core ADSP-BF548 processor; key features are 64MB DDR SD-RAM 2x100 pin expansion connectors.
CM-BF561:	Blackfin Processor Module powered by Analog Devices' dual core ADSP-BF561 processor; up to 2x 600MHz, 64MB SDRAM, 8MB flash, 2x60 pin expansion connectors and a size of 36.5x31.5mm.
eCM-BF561:	Blackfin Processor Module powered by Analog Devices' dual core ADSP-BF561 processor; up to 2x 600MHz, 128MB SDRAM, 8MB flash, 2x100 pin expansion connectors and a size of 44x33mm.

### **Development Boards:**

- EVAL-BF5xx:** Low cost Blackfin processor Evaluation Board with one socket for any Bluetechnix Blackfin Core Module. Additional interfaces are available, e.g. an SD-Card.
- DEV-BF5xxDA-Lite:** Get ready to program and debug Bluetechnix Core Modules with this tiny development platform including an USB-Based Debug Agent. The DEV-BF5xxDA-Lite is a low cost starter development system including a VDSP++ Evaluation Software License.
- DEV-BF548-Lite:** Low-cost development board with one socket for Bluetechnix CM-BF548 Core Module. Additional interfaces are available, e.g. an SD-Card, USB and Ethernet.
- DEV-BF548DA-Lite:** Get ready to program and debug Bluetechnix CM-BF548 Core Module with this tiny development platform including an USB-Based Debug Agent. The DEV-BF548DA-Lite is a low-cost starter development system including a VDSP++ Evaluation Software License.
- EXT-Boards:** The following Extender Boards are available: EXT-BF5xx-AUDIO, EXT-BF5xx-VIDEO, EXT-BF5xx-CAM, EXT-BF5xx-EXP-TR, EXT-BF5xx-USB-ETH2, EXT-BF5xx-AD/DA, EXT-BF548-EXP and EXT-BF518-ETH. Furthermore, we offer the development of customized extender boards for our customers.

### **Software Support:**

- BLACKSheep:** The BLACKSheep VDK is a multithreaded framework for the Blackfin processor family from Analog Devices 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.
- LabVIEW:** LabVIEW embedded support for Bluetechnix Core Modules is done by Schmid-Engineering AG: <http://www.schmid-engineering.ch>
- uClinix:** All the Core Modules are fully supported by uClinix. The required boot loader and uClinix can be downloaded from: <http://blackfin.uClinix.org>.

### **Upcoming Products and Software Releases:**

Keep up-to-date with all the changes to the Bluetechnix product line and software updates at: <http://www.bluetechnix.com>.

## **BLACKFIN Design Service**

Based on more than five years of experience with Blackfin, Bluetechnix offers development assistance as well as custom design services and software development.

# 1 Introduction

The EXT-BF5xx-Experimental Board is an extender plug-on board for all Blackfin based Development and Evaluation Boards. Please note the images may vary from actual product

## 1.1 Overview

The EXT-BF5xx-Experimental Board includes the following components:

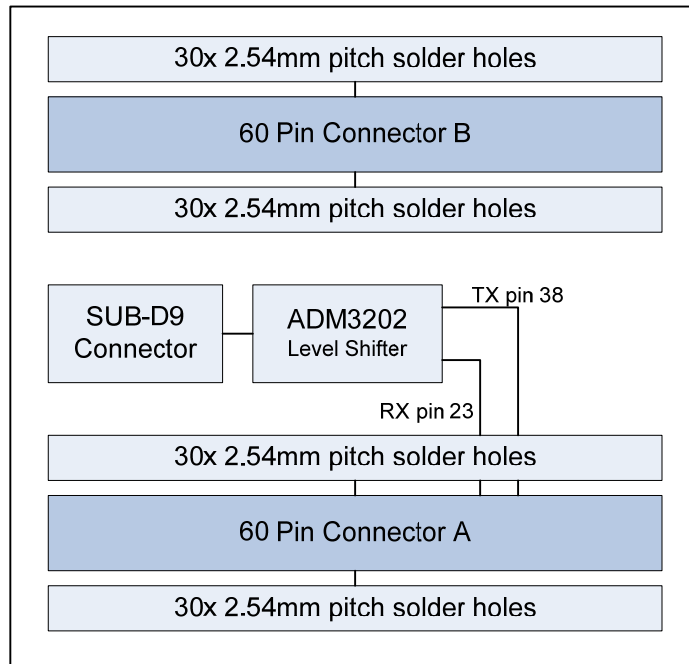


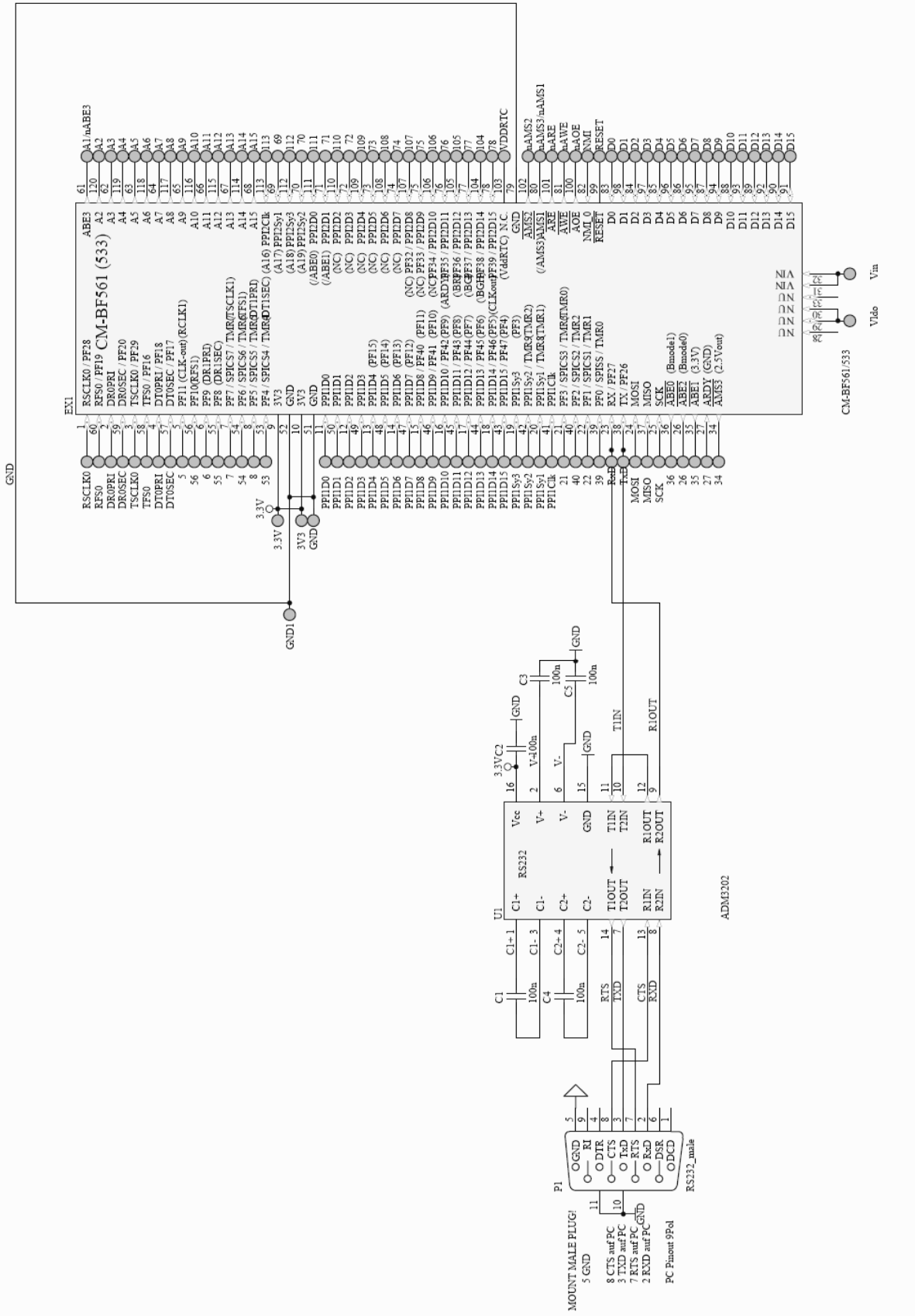
Figure 1-1: Overview of the EXT-BF5xx-Experimental Board

- **1 SUB-D9 UART Connector**
  - ADM3202 1Mbps transceiver compatible to RS232
- **120 Expansion Holes**

**Important NOTE:**

**When using the Eval-BF5xx or the DEV-BF5xxDA-Lite make sure SW1 on these boards is at position B so that the RX/TX lines are not routed towards the USB-to-UART Chip U2. These lines then directly feed the ADM3202 level shifter!**

## 2 Schematic





## 2.1 Mechanical Outline

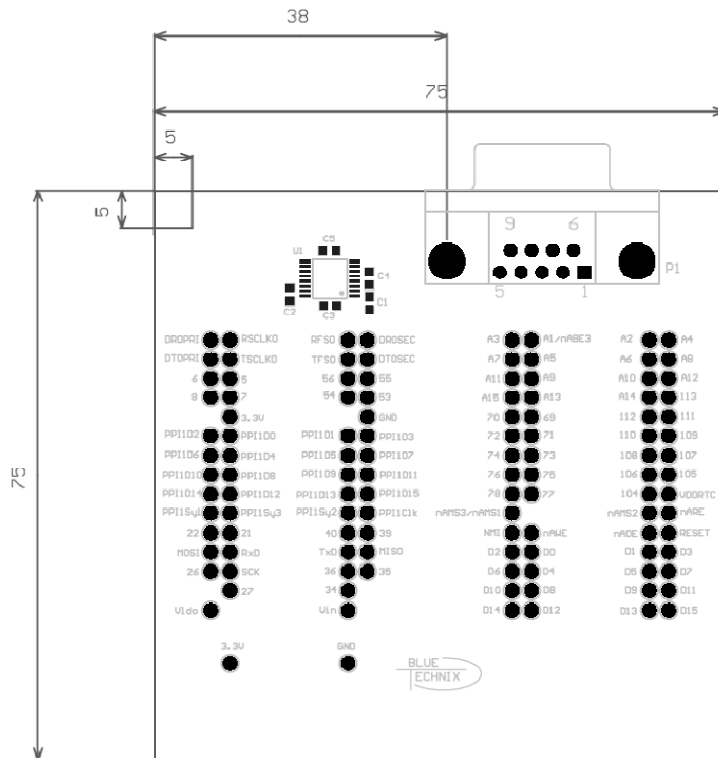


Figure 2-1: Mechanical Outline – TOP

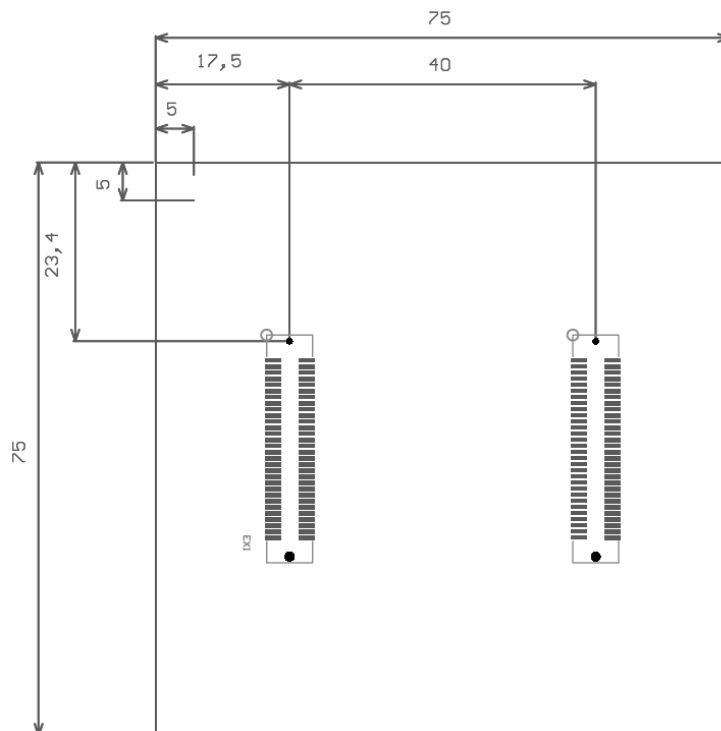


Figure 2-2: Mechanical Outline – Bottom

### 3 Anomalies

Version	Anomalie
-	no

Table 3-1: Anomalies

### 4 Product Changes

Version	Changes
V1.2	Some parts moved from top to bottom
V1.1	RS232 added
V1.0	-

Table 4-1: Product Changes

### 5 Document Revision History

Version	Date	Document Revision
4	2010 06 23	Layout updated.
3	2008 08 13	English checked for grammar, spelling and clarity.
2	2006 12 01	Version 1.1
1	2006 09 08	Version 1.0

Table 5-1: Revision History

## A List of Figures

Figure 1-1: Overview of the EXT-BF5xx-Experimental Board.....	6
Figure 2-1: Mechanical Outline – TOP.....	8
Figure 2-2: Mechanical Outline – Bottom.....	8