

BLUETECHNIX  
Embedding Ideas

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# LPC Demo Project (MSD)

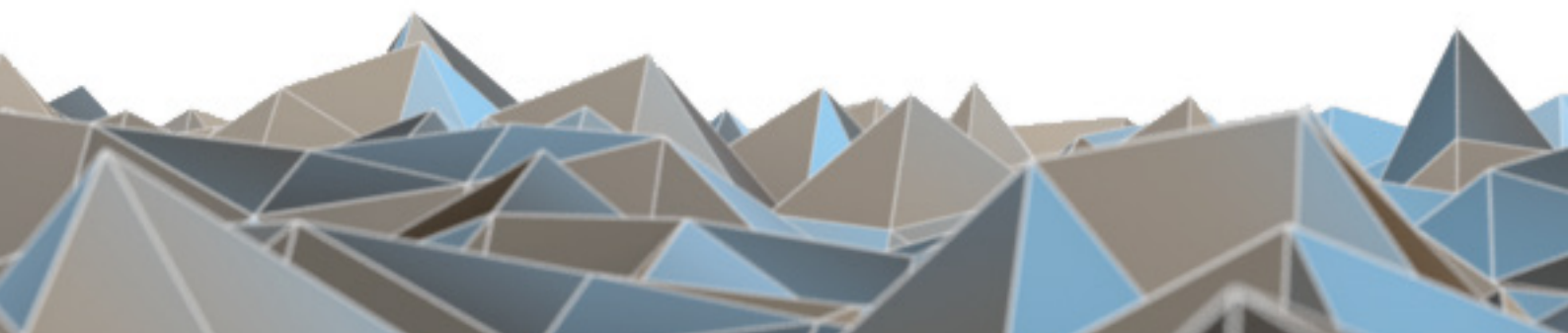
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Getting Started

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Version 1.3

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#### Information

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#### Warning

Due to technical requirements components may contain dangerous substances.



## 1 Introduction

The *LPCDemoproject* is intended as a guideline on how to read data from a NFC Tag.

Once the stick is connected to a PC, the stick will register as a Mass Storage Device (named "RFID2USB") in Windows Explorer. Once a NFC Tag is brought into the RF field of the NFC Adapter - Programmable, the data from the NFC Tag (Mifare 1k or Mifare Ultra Light card) is being read. This data is then (in its raw form) presented as a file on the Mass Storage Device. The file will be named "carddata.bin". Upon receiving new data from a tag, this file will be overwritten. There is also a status LED on the NFC Adapter - Programmable. It flashes green in the case of a successful card reading and red if there is an error.



## 2 Requirements

1. **NFC Adapter - Programmable** from Bluetechnix (Order No. 909-2131-1)
  - i. <http://www.bluetechnix.com/goto/rfid2usb>
2. **Micro JTAG Adapter** (included)
3. **LPCDemoProject(MSD)** (included)
  - a. LPCDemoProject(MSD) only supports
    - i. Microsoft® Windows XP
    - ii. Microsoft® Windows Vista
    - iii. Microsoft® Windows 7
4. **IAR Embedded Workbench for ARM** (tested on Version 6.21 and 6.30)
  - i. <http://www.iar.com/en/Products/IAR-Embedded-Workbench/ARM/>
5. **Segger J-Link** or other compatible JTAG
  - i. <http://www.segger.com/jlink.html>
6. **PN51x, Basic function library (v.4.2)** downloadable for free at <http://www.nxp.com/documents/software/109141.zip>



### 3 Installation

1. Download LPCDemoProject(MSD) from Bluetechnix homepage.
2. Unzip the project files into your working directory (e.g. C:\workspace\LPCDemoProject)
3. Download the *PN51x, Basic function library (v.4.2)* and extract the zip file.
4. Start the NFC-Tools-Setup-V4\_1.exe and install the PN51x tools to the default location.
5. Go to the installation directory of the PN51x tools (e.g. C:\Program Files (x86)\Philips Semiconductors\NFC PN51x Tools V4.1.0\Bfl) and copy the contents of the Bfl folder into the src\Drivers\mifare folder of the LPCDemoProject(MSD) (e.g. C:\workspace\LPCDemoproject(MSD)\src\Drivers\mifare).

## 4 Execution

1. Start IAR Embedded Workbench for ARM (V6.21)
2. Open workspace of the LPCDemoProject(MSD)
  - "File / Open / Workspace", then select LPCDemoProject(MSD)\_Workspace.eww
3. Choose "Project / Rebuild All" to compile and build the whole LPCDemoProject(MSD)
4. Before you can run the software on the NFC Adapter - Programmable you have to connect J-Link, JTAG adapter, NFC Adapter - Programmable and PC as shown in the following diagram.

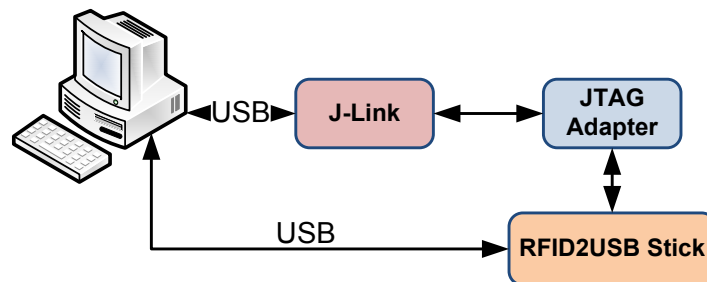


Figure 4.1 - Connection scheme

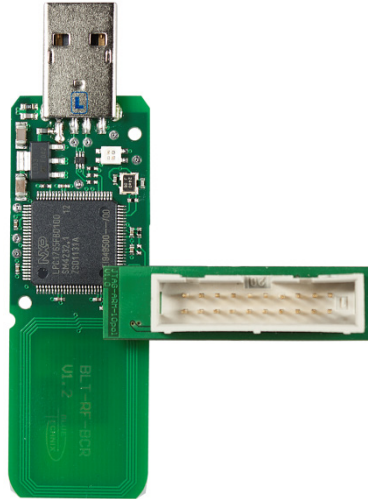


Figure 4.2 - Correct JTAG adapter connection

- Select "Project / Download and Debug" to start downloading the software onto the NFC Adapter - Programmable.
- Select "Debug / Go" to start running the software.





## 5 Using Semihosting

Using "Semihosting", it is possible to write debug outputs to the Terminal I/O window of IAR Embedded Studio. Therefore, in "Semihosting" mode the application can run using a JTAG only and will not start standalone. Activate Semihosting during debugging and disable it upon delivery.

### 5.1 Activation of Semihosting

- Define SEMIHOSTING in BCRUtils.h
- Go to "Project / Options / General Options / Library Configuration"
  - Set "Library implementation" to "Semihosted"
  - Set "stdout/stderr" to "Via semihosting"

### 5.2 Deactivation of Semihosting

- Undefine SEMIHOSTING in BCRUtils.h
- Go to "Project / Options / General Options / Library Configuration"
  - Set "Library implementation" to "none".



## 6 Software History

### 6.1 Version Information

#### 6.1.1 LPCDemoProject(MSD)

Version	Release Date	Changes
1.0.0	2012 01 03	No changes.

Table 6.1: Overview of LPCDemoProject

### 6.2 Anomalies

Version	Date	Description
V1.0	2012 08 28	No anomalies reported yet.

Table 6.2 – Version anomalies



## 7 Document Revision History

Version	Date	Document Revision
1	2012 01 03	First release V1.0 of the Document
2	2012 08 28	Formatted according to new CI.
3	2013 08 12	Updated internet links

Table 7.1: Revision history



## 8 List of Abbreviations

Abbreviation	Description
<b>ADI</b>	Analog Devices Inc.
<b>AI</b>	Analog Input
<b>AMS</b>	Asynchronous Memory Select
<b>AO</b>	Analog Output
<b>CM</b>	Core Module
<b>DC</b>	Direct Current
<b>DSP</b>	Digital Signal Processor
<b>eCM</b>	Enhanced Core Module
<b>EBI</b>	External Bus Interface
<b>ESD</b>	Electrostatic Discharge
<b>GPIO</b>	General Purpose Input Output
<b>I</b>	Input
<b>I<sup>2</sup>C</b>	Inter-Integrated Circuit
<b>I/O</b>	Input/Output
<b>ISM</b>	Image Sensor Module
<b>LDO</b>	Low Drop-Out regulator
<b>MTBF</b>	Mean Time Between Failure
<b>NC</b>	Not Connected
<b>NFC</b>	NAND Flash Controller
<b>O</b>	Output
<b>OS</b>	Operating System
<b>PPI</b>	Parallel Peripheral Interface
<b>PWR</b>	Power
<b>RTOS</b>	Real-Time Operating System
<b>SADA</b>	Stand Alone Debug Agent
<b>SD</b>	Secure Digital
<b>SoC</b>	System on Chip
<b>SPI</b>	Serial Peripheral Interface
<b>SPM</b>	Speech Processing Module
<b>SPORT</b>	Serial Port
<b>TFT</b>	Thin-Film Transistor
<b>TISM</b>	Tiny Image Sensor Module
<b>TSC</b>	Touch Screen Controller
<b>UART</b>	Universal Asynchronous Receiver Transmitter
<b>USB</b>	Universal Serial Bus
<b>USBOTG</b>	USB On The Go
<b>ZIF</b>	Zero Insertion Force

Table 8.1: List of abbreviations



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