

UM10956

OM29110 NFC's SBC interface boards

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User manual
COMPANY PUBLIC

Document information

Information	Content
Keywords	OM29110, NFC, demo kit, Raspberry Pi, BeagleBone, Arduino
Abstract	This document is the user manual of the OM29110 NFC's SBC interface boards.



1 Revision history

Revision history

Rev	Date	Description
1.2	20210614	Update according to new board version
1.1	20160502	<ul style="list-style-type: none">• Fix connection issue on BBB interface• Security status changed into COMPANY PUBLIC
1.0	20151203	First official release of the document

2 Introduction

The present document describes the OM29110-B interface boards, which are used to connect NFC's demo boards (e.g. OM5579 related to PN7150 NFC controller) to Single-Board-Computer (like Raspberry Pi, BeagleBone...).

This document first describes the NFC generic interface implemented by the OM29110-B interface boards.

Then, it gives printed circuit boards details.

3 Generic NFC interface

3.1 Interface description

The Generic NFC interface exposes Single-Board-Computer physical interfaces required by the NFC's boards. Those are:

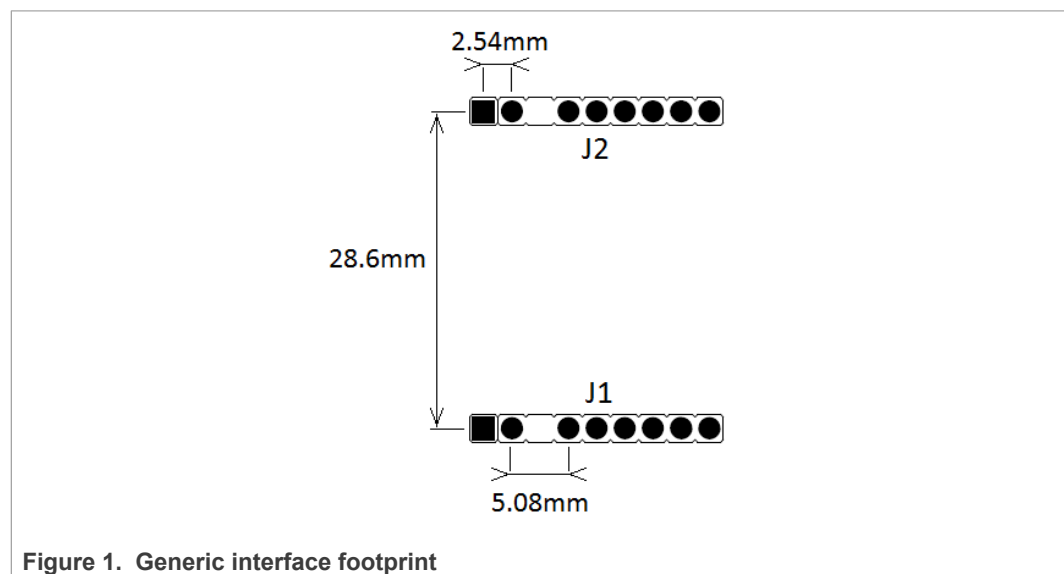
- Usual power supplies (3.3 V, 5.0 V)
- Usual IC interfaces (I²C, SPI, UART)
- Generic GPIOs (can be used for different purposes depending on IC feature (field detect, interrupt, reset...))

3.2 Hardware description

In order to offer a robust and unambiguous assembly with NFC's, board 2 raw of 2+6 pins are used.

The connector model used is AGSP1-BCZ1.3 from Antelec (refer to [\[1\]](#)).

Below [Figure 1](#) shows the connectors footprint position.



3.3 Pinning description

Table 1. J1 – Supplies and GPIO

#	Name	Purpose
1	3.3 V	3.3 V supply to the NFC board from the SBC
2	5 V	5 V supply to the NFC board from the SBC
3	Vout	Supply from the NFC board to the SBC (RF harvesting case)
4	GND	Ground
5	GPIO0	General Purpose IO
6	GPIO1	General Purpose IO
7	GPIO2	General Purpose IO
8	GPIO3	General Purpose IO

Table 2. J2 – Host interface

#	Name	Purpose
1	I2C_SDA	I ² C data line
2	I2C_SCL	I ² C clock line
3	SPI_MOSI	SPI Master Output, Slave Input
4	SPI_MISO	SPI Master Input, Slave Output
5	SPI_NSS	SPI Slave Select
6	SPI_SCKI	SPI Serial Clock
7	UART_TX	SBC GPIO pin
8	UART_RX	SBC GPIO pin

4 OM29110-B BeagleBone interface board

4.1 Overview

The BeagleBone interface board offers support for connection to BeagleBone board (refer to [2] for more details).

As such it integrates the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of the BeagleBone board.

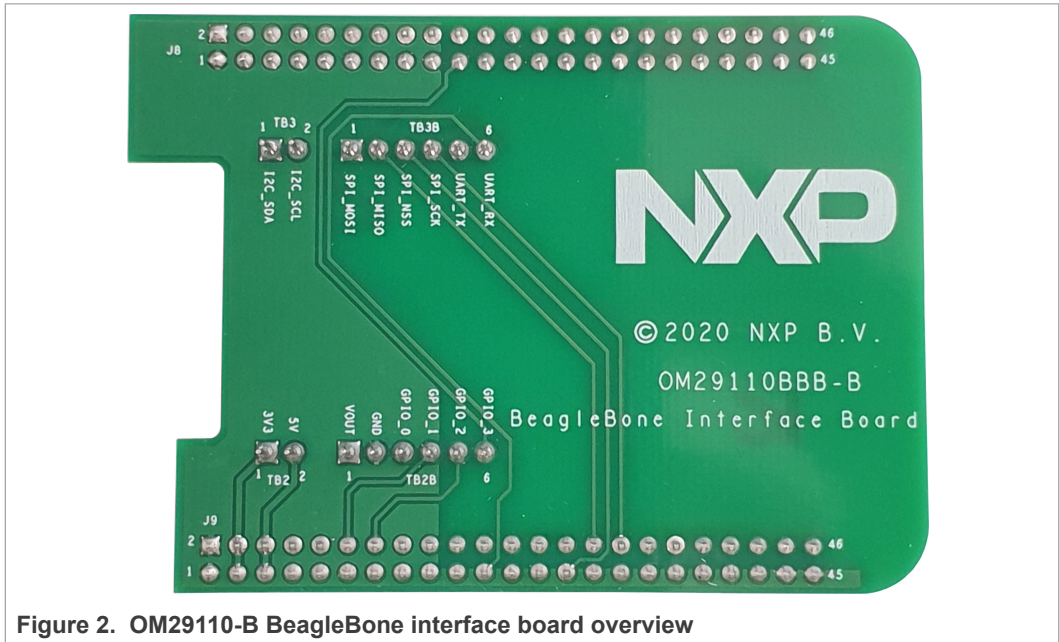


Figure 2. OM29110-B BeagleBone interface board overview

4.2 Schematics

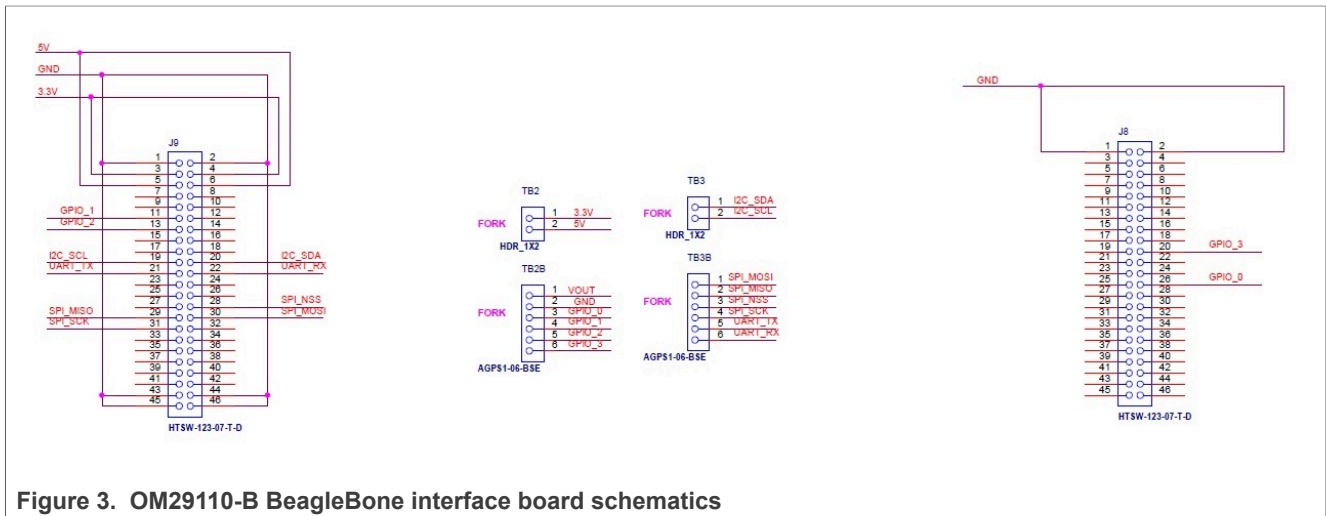


Figure 3. OM29110-B BeagleBone interface board schematics

5 OM29110-B Raspberry Pi interface board

5.1 Overview

The Raspberry Pi interface board offers support for connection to Raspberry Pi board (refer to [3] for more details).

As such it integrates the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of the BeagleBone board.

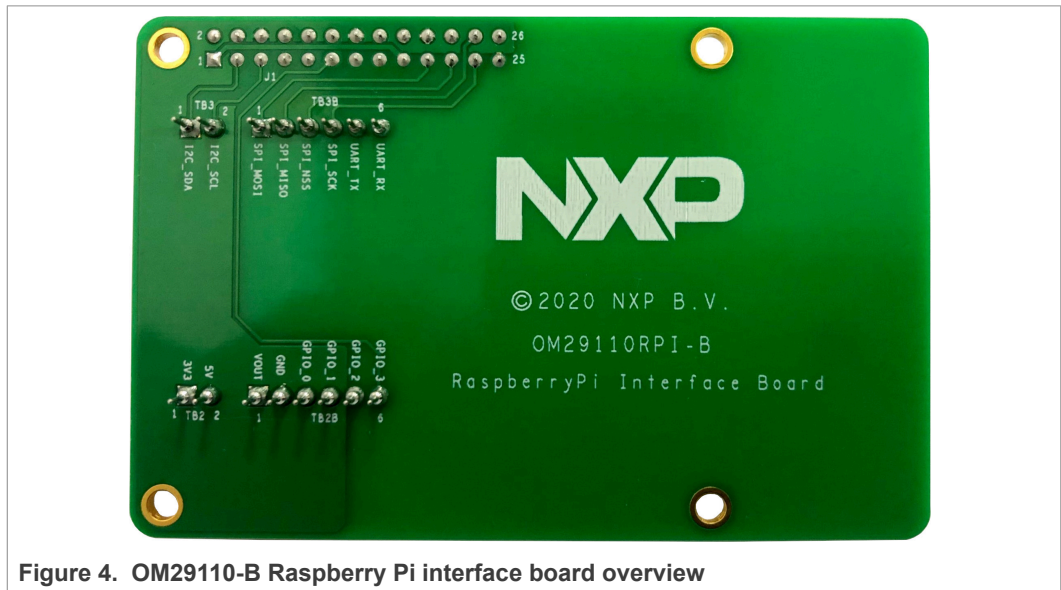


Figure 4. OM29110-B Raspberry Pi interface board overview

5.2 Schematics

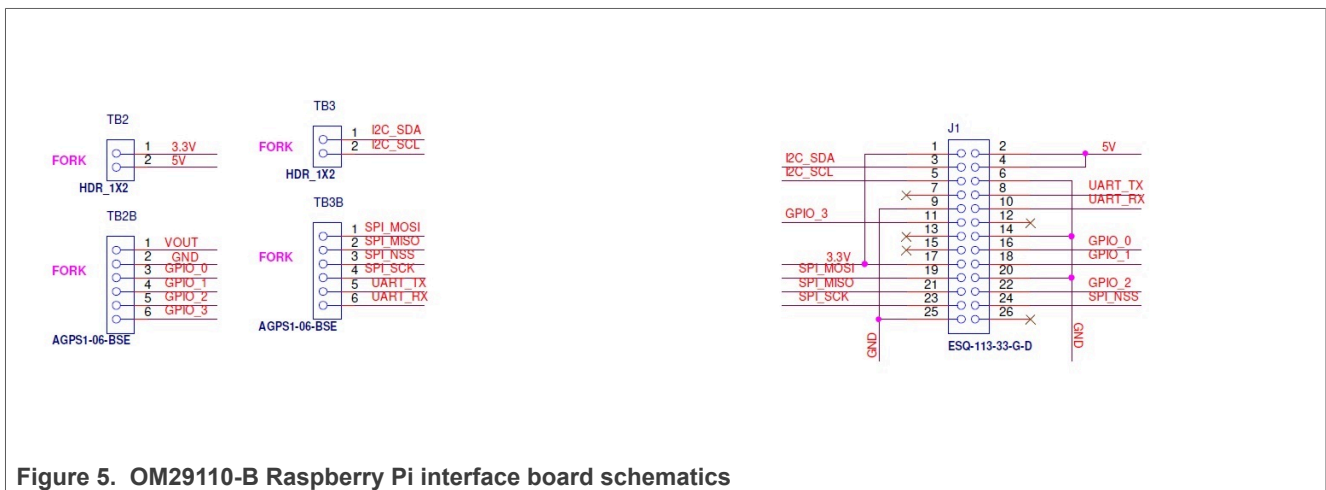


Figure 5. OM29110-B Raspberry Pi interface board schematics

6 OM29110-B Arduino interface board

6.1 Overview

The Arduino interface board offers support for connection to any SBC board implementing Arduino connectors compatible with the 'Arduino UNO' platform (see [4]).

As such it integrates the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of an Arduino compatible controller board like for instance LPC824 MAX LPCXpresso board (see [5]).

The board includes a R1 footprint between the VOUT pin of the NFC generic connector and the VIN pin of the Arduino connector. The purpose of it is to allow powering the Arduino compatible platform from the NFC board in case both support it (for instance in the case of RF harvesting).

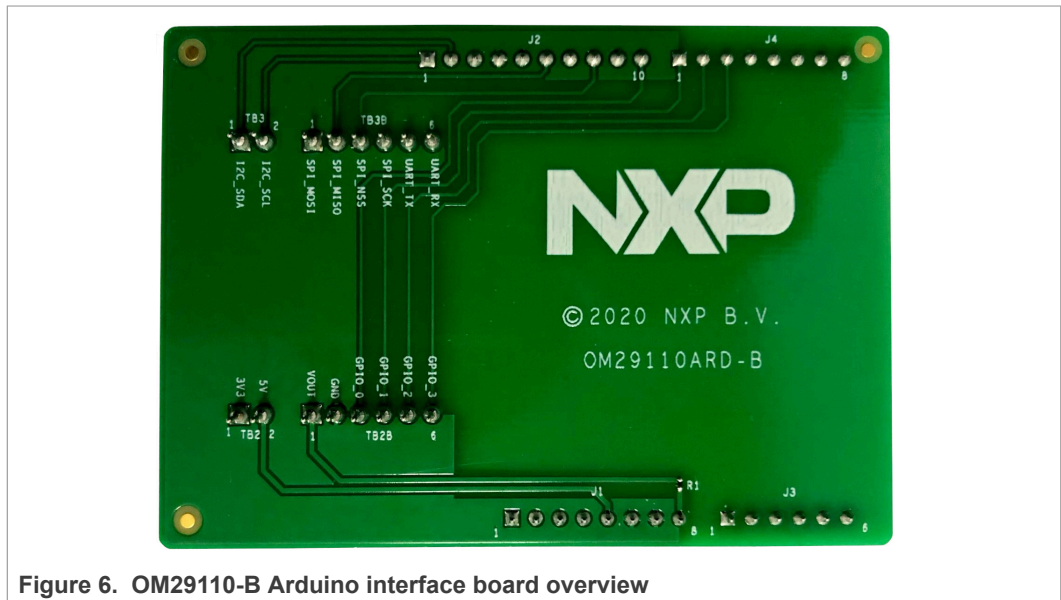


Figure 6. OM29110-B Arduino interface board overview

6.2 Schematics

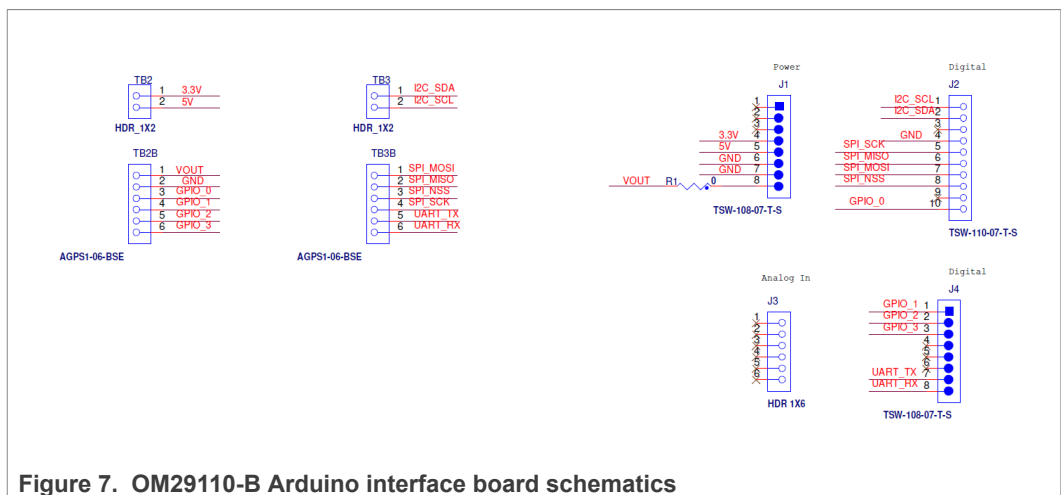


Figure 7. OM29110-B Arduino interface board schematics

7 References

- [1] Antelec AGSP1 connector: <http://www.antelec.fr/page.php?lang=en&id=264&t=0>
- [2] The BeagleBone is a low-cost, community-supported development platform for developers and hobbyists. It is a credit-card-sized Linux computer that connects to the Internet and runs software such as Android 4.0 and Ubuntu. With plenty of I/O and processing power for real-time analysis provided by an ARM® processor. For more information visit <http://www.beagleboard.org/bone>.
- [3] The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It is capable of doing everything you would expect a desktop computer to do, from browsing the Internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. For more information visit <http://www.raspberrypi.org/>
- [4] The Arduino Uno is a microcontroller board with 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. For more information visit <https://store.arduino.cc/arduino-uno-rev3>.
- [5] The LPC824 MAX LPCXpresso board with NXP's Arm Cortex-M0+ microcontroller has been designed to make it as easy as possible to get started with Cortex-M0+. For more information visit http://www.embeddedartists.com/products/lpcxpresso/lpc824_xpr.php.

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