



Duckbill 2 SPI Datasheet

I2SE GmbH

March 22, 2016

Contents

- 1 Revisions** **3**

- 2 Introduction** **3**
 - 2.1 Features 3
 - 2.2 Applications 3

- 3 Technical Data** **4**
 - 3.1 Overview 4
 - 3.2 Pinout 5

- 4 LED** **5**
 - 4.1 Switches 6
 - 4.2 Hardware Revision Detection 6

- 5 Order Information** **7**

- 6 Contact** **7**

1 Revisions

Revision	Release Date	Changes
1	March 22, 2016	initial version

2 Introduction

Duckbill 2 SPI is a tiny ARM 9 based computer in a thumb-drive format. It is intended to be set up as a small home-server for automation purposes. It comes with Debian Linux as operation system but without any specific user programs by default. However, the whole board support package is publically available as open source software, thus it's possible to run any desired Linux system on it.

Duckbill 2 SPI is an extended version of Duckbill. It's got an additional 20 pin connector (JP4) which is compatible to I2SE's PLC Stamp micro Evaluation Kit and the Qualcomm Atheros PL16 (QCA7000 Evaluation Kit) SPI connector. The 20 pin connector also has four i.MX28 GPIO pins available.

2.1 Features

- based on Freescale's i.MX28 with ARM9 core and with up to 454 MHz
- power supply 5V via USB Plug
- Network interface: Fast Ethernet (RJ45 jack)
- Operating system: Debian with recent Linux Kernel (see software documentation)
- RAM Memory: DDR2-RAM 128 Mbyte – 8 Meg x 16 x 8 banks
- Flash Storage:
 - \geq 2 GB, 8 bit wide eMMC
- Interfaces: UART, SPI, Ethernet, USB 2.0 Device, GPIO

2.2 Applications



The Duckbill SPI is powered by an USB power supply and connected to your network via Ethernet. It's main use is to bridge Ethernet traffic to the SPI using the protocol of the QCA7000.

By changing the preprogrammed software you can use the eMMC to store log files, databases, etc. Since Duckbill devices run Linux you are totally free to install additional software components.

3 Technical Data

Symbol	Parameter	Min	Typical	Max	Unit
VDD5V	5 V Supply voltage (USB voltage)	4.75	5.00	5.25	V
TSTORE	Storage Temperature	-40	-	70	°C
TACASE	Ambient Operating Temperature	0	-	40	°C
VUSB_DP/DM	USB data signal voltage	-0.3	-	3.63	V
VIO	IO signal voltage (JP4)	-0.3	-	3.63	V

3.1 Overview

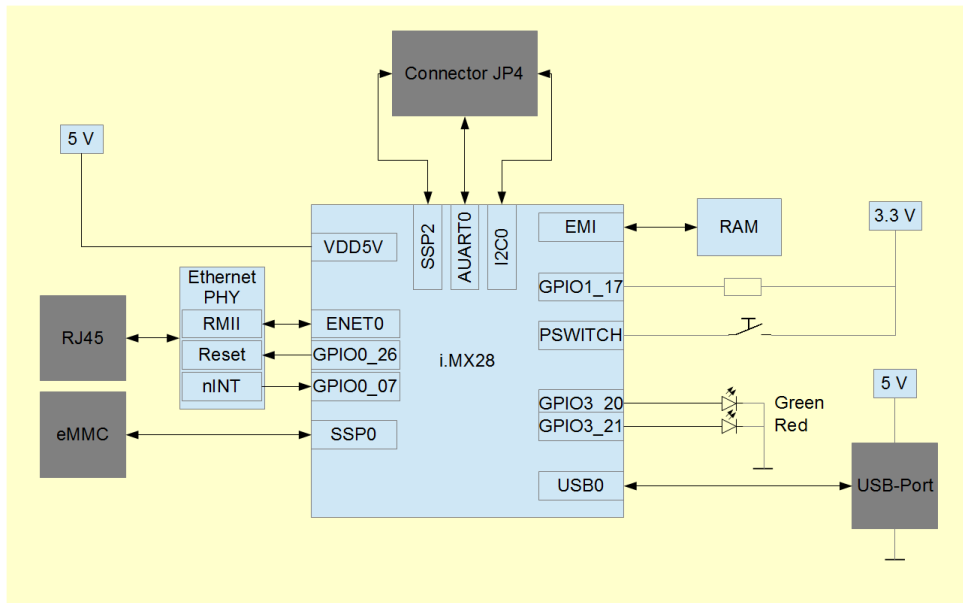


Figure 1: Block Diagram

3.2 Pinout

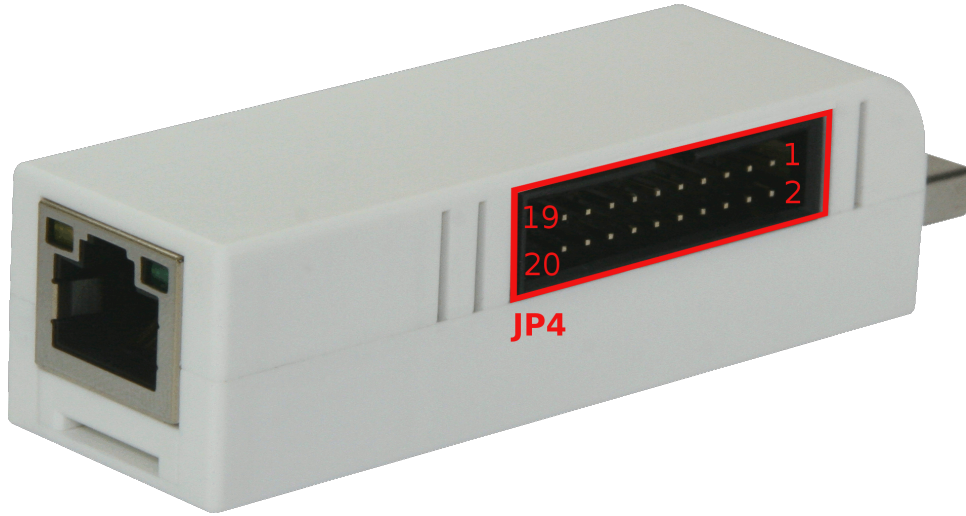


Figure 2: Connector JP4

JP4 Pin	i.MX28 Pin Name	i.MX28 Ball	MUX0	MUX1	MUX2	MUX3 (Bank, Pin)
1,2,4,6,8,10,12,14,16,18,20	GND	-	-	-	-	-
3	SSP2_SS0	C4	SSP2.D3	AUART3.TX	SAIF1.SDATA2	GPIO (2, 19)
5	SSP2_SCK	A3	SSP2_SCK	AUART2.RX	SAIF0.SDATA1	GPIO (2, 16)
7	SSP2_MISO	B3	SSP2.D0	AUART3.RX	SAIF1.SDATA1	GPIO (2, 18)
9	SSP2_MOSI	C3	SSP2_CMD	AUART2.TX	SAIF0.SDATA2	GPIO (2, 17)
11	AUART0_RTS	J7	AUART0.RTS	AUART4.TX	DUART_TX	GPIO (3, 03)
13	AUART0_TX	H5	AUART0.TX	I2C0.SDA	DUART_RTS	GPIO (3, 01)
15	AUART0_RX	G5	AUART0.RX	I2C0_SCL	DUART_CTS	GPIO (3, 00)
17	SSP2_SS2	D4	SSP2.D5	SSP2.D2	USB0.OVERCURRENT GPIO	GPIO (2, 21)
19	SSP2_SS1	D3	SSP2.D4	SSP2.D1	USB1.OVERCURRENT GPIO	GPIO (2, 20)

Table 4: Pin Out Duckbill 2 SPI JP4

4 LED

Duckbill 2 has one dual-color LED to indicate system status.



Figure 3: Position LED

4.1 Switches

Duckbill SPI 2 has one switch which is accessible from bottom side. It's connected to the i.MX28's PSWITCH signal.

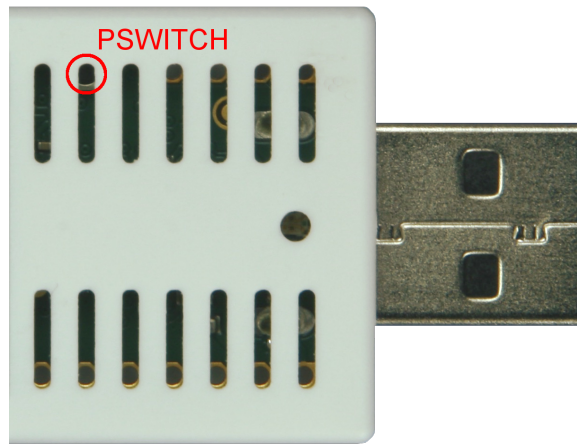


Figure 4: Position PSWITCH

4.2 Hardware Revision Detection

Duckbill provides pull-up and pull-down resistors for hardware revision detection.

Pin	LCD_D17 (GPIO1_17)
Duckbill	pull-down
Duckbill 2	pull-up

This information can be used by software to find out which Duckbill revision it is running. It can not detect which addon PCB revision (SPI, EnOcean etc.) is used.

5 Order Information

The following variants of this product are available:

Order code	availability
I2DUBL-SP-002	standard

If you want to buy Duckbill with customer specific deviations to the described standard product (including specific software images on delivery), please contact I2SE.

6 Contact

Home Page: <http://www.i2se.com>

I2SE GmbH
Friedrich-Ebert-Str. 61
04109 Leipzig
Germany