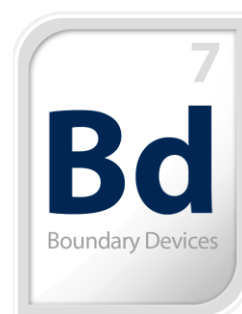

Nitrogen6_Lite Hardware User Manual

Revision History

Date	Revision	Description
04-25-2013	1.0	First Draft
08-18-2014	1.1	For Rev 2 board
11-23-2015	1.2	For Rev 3 Board



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2 Overview

The Nitrogen6_Lite is a multi-purpose single board computer based on the i.MX6 SOLO processor from Freescale. The hardware specifications for the Nitrogen6_Lite board are the following:

- Single-Core ARM® Cortex A9 processor at 1GHz
- 512mByte of 32-bit wide DDR3 @ 400MHz (expandable to 1GB)
- Three display ports (RGB, LVDS, and HDMI)
- microSD slot
- PCIe port (1 lane)
- LED Backlight Driver (27V, 0.35A)
- 4-wire resistive touch screen controller
- Analog (headphone/mic) and Digital (HDMI) audio
- 2W Stereo Amplified Speaker Out
- 10/100 Ethernet with POE capability
- Optional 12V input
- 10-pin JTAG interface
- 1 USB Host + 1 USB OTG
- I2C and 2 RS232 Interfaces
- UART for barcode scanner interface
- 2 Open-Collector Transistor Outputs (GPIO-controlled)
- Optional Reed Relay
- RTC with battery backup
- 802.11 a/b/g/n + BT4.0 via Optional Daughter Card

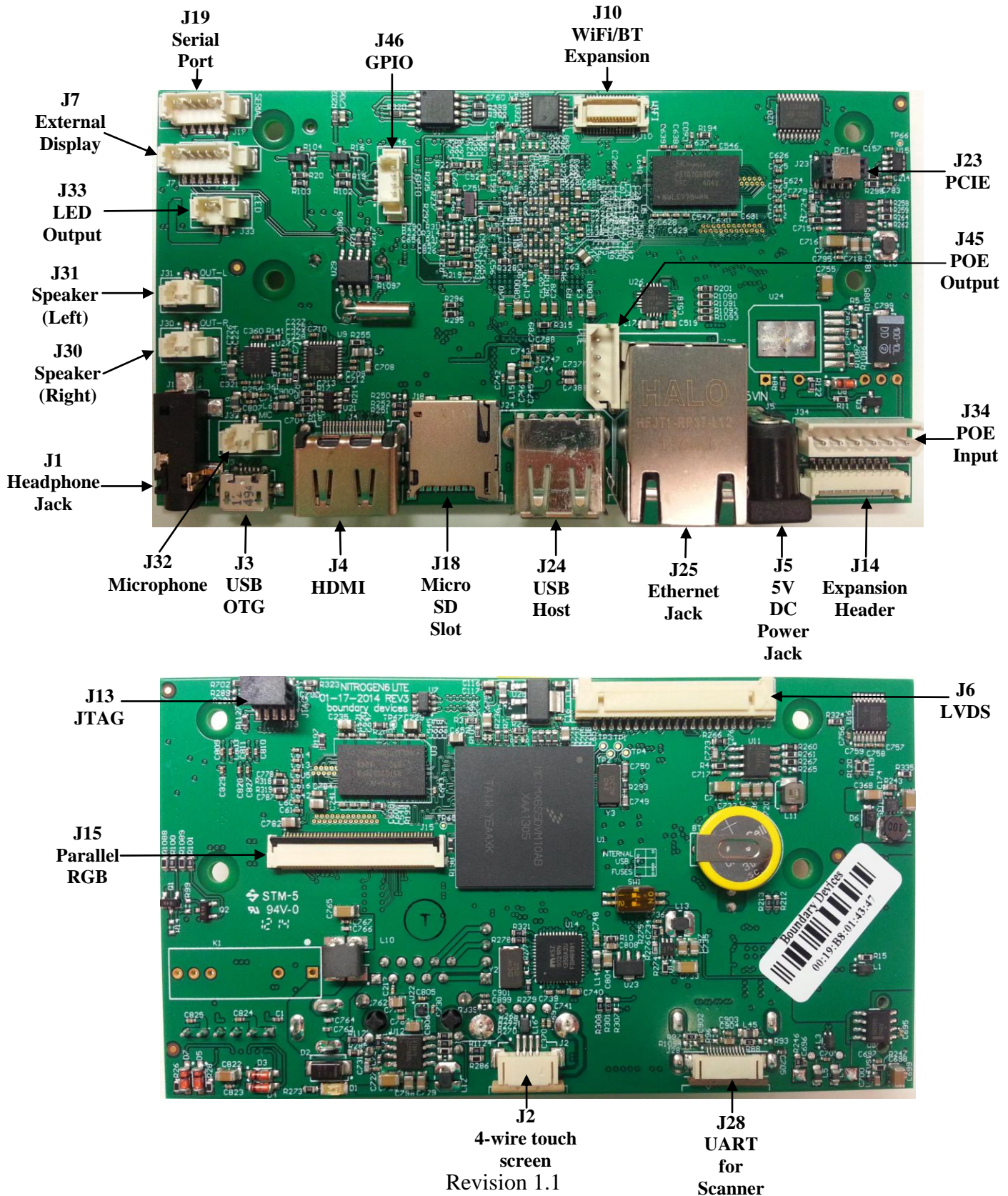
3 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Main Input Voltage	TBD	5	TBD	V
Power Consumption*	-	-	TBD	W
CPU Clock	-	1.0	1.0	GHz

*The Power Consumption refers to a single board with no other peripherals plugged in.

4 Connector Details

Figure 1 shows the details of each connector.



4.1 Standard Connectors

The list of industry standard connectors with known pin outs is the following:

Ref Designator	Function
J1	Headphone Jack
J3	USB OTG
J4	HDMI
J5	DC Power Jack
J18	microSD Slot 1
J24	USB Host
J25	10/100 Ethernet Jack

4.2 Custom Connectors

The Nitrogen6_Lite board has a wide variety of peripheral interfaces available via custom connectors.

J2: 4-wire touch screen (Molex 52271-0479)

Pin#	Function
1	Y-
2	X-
3	Y+
4	X+

J6: LVDS (Hirose DF14-20P-1.25H)

Pin#	Function
1	3.3V
2	3.3V
3	GND
4	GND
5	TX0_N
6	TX0_P
7	GND
8	TX1_N
9	TX1_P
10	GND
11	TX2_N
12	TX2_P
13	GND
14	CLK_N
15	CLK_P
16	GND
17	TX3_N
18	TX3_P

19	DISP0_CONTRAST
20	PWM4

J7: External Display (Molex 53398-0771)

Pin#	Function
1	+5V
2	+5V
3	PWM1
4	GPIO9
5	I2C3_SDA
6	I2C3_SCL
7	GND

J10: WiFi/BT Expansion (Molex 52991-0308)

Pin#	Function	
1	GND	
2	GND	
3	WL_EN	NANDF_CS1
4	BT_REG_ON	NANDF_CS2
5	SD2_CMD	
6	SD2_CLK	
7	SD2_DAT0	
8	SD2_DAT1	
9	SD2_DAT2	
10	SD2_DAT3	
11	BT_HOST_WAKE	NANDF_CS3
12	BT_RESET	NANDF_ALE
13	WL_REG_ON	NANDF_CLE
14	RESERVED1	NANDF_D0
15	RESERVED2	NANDF_D1
16	RESERVED3	NANDF_D2
17	RESERVED4	NANDF_D3
18	RESERVED5	NANDF_D4
19	SLOW_CLK	
20	FM_AUD_O	
21	FM_AUD_O1	
22	CLK_REQ_OUT	NANDF_WP_B
23	UART3_CTS	
24	UART3_RXD	
25	UART3_RTS	
26	UART3_TXD	
27	+3.3V	
28	+3.3V	
29	GND	
30	GND	

J13: JTAG (FCI 20021121-00010T4LF)

Pin#	Function
1	+3.3V
2	JTAG_TMS
3	GND
4	JTAG_TCK
5	GND
6	JTAG_TDO
7	JTAG_MOD
8	JTAG_TDI
9	JTAG_nTRST
10	BRESET_N

J14: Expansion Header (Molex 53261-1071)

Pin#	Function	IMX6 Pad Name
1	GLED (Transistor)	GPIO_2
2	+12V (optional)	
3	RLED (Transistor)	GPIO_3
4	+12V (optional)	
5	KEY_VOL_UP	GPIO_18
6	GND	GND
7	KEY_VOL_DN	GPIO_19
8	Dry Contact 1	
9	Dry Contact 2	
10	GND	

J15: Parallel RGB (Omron XF2M-4515-1A)

Pin#	Function
1	GND
2	GND
3	+3.3V
4	+3.3V
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3

17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	DISP0_CLK
31	+3.3V
32	DISP0_HSYNC
33	DISP0_VSYNC
34	DISP0_DRDY
35	+3.3V
36	GND
37	Y+
38	X+
39	Y-
40	X-
41	GND
42	LEDK
43	LEDA
44	NC
45	NC

J17: COM1 & COM2 (Molex 53398-0671)

Pin#	Function
1	UART1 TX
2	+5V
3	GND
4	UART2 TX
5	UART2 RX
6	UART1 RX

J23: PCIe (FCI 20021321-00010C4LF)

Pin#	Function
1	PCIE_RXM
2	GND
3	PCIE_RXP
4	CLK1_N

5	GND
6	CLK1_P
7	PCIE_TXM
8	GND
9	PCIE_TXP
10	+3.3V

J28: UART for Scanner (Molex 52746-1270)

Pin#	Function
1	NC
2	+3.3V
3	NC
4	NC
5	GND
6	UART3_RTS
7	BACK (GPIO_4)
8	UART3_RXD
9	UART3_TXD
10	GND
11	+3.3V
12	+3.3V

J30: Right Channel (Molex 53398-0271)

Pin#	Function
1	Speaker Right Plus
2	Speaker Right Minus

J31: Left Channel (Molex 53398-0271)

Pin#	Function
1	Speaker Left Plus
2	Speaker Left Minus

J32: Microphone IN (Molex 53398-0271)

Pin#	Function
1	MIC_IN_P
2	Analog GND

J33: LED Output (Molex 53398-0271)

Pin#	Function
1	LEDA
2	LEDK

J34: POE Input (from BD POE Board) (Molex 22-03-5065)

Pin#	Function
1	+5V

2	+5V
3	GND
4	GND
5	+12V
6	+12V

J45: POE Output (Molex 22-03-5045)

POE Output is meant to interface with BD POE module. If you need further details, please contact us.

5 Mounting

The overall dimensions of the Nitrogen6_Lite board are 4.5"x2.5"

