MYS-6ULX Single Board Computer

- *528MHz NXP i.MX 6UltraLite / 6ULL ARM Cortex-A7 Processor*
- *256MB DDR3, 256MB Nand Flash*
- *Ethernet, WiFi, LCD, USB Host, OTG, TF Card, Buttons, LED, IO…*
- *Optional 4.3 or 7 inch LCD/TSP*
- *Two Variants of Boards Respectively for Industry 4.0 and IoT Applications*
- *Support Linux 4.1.15 with Debian distribution or by Yocto Project with Ported QT*

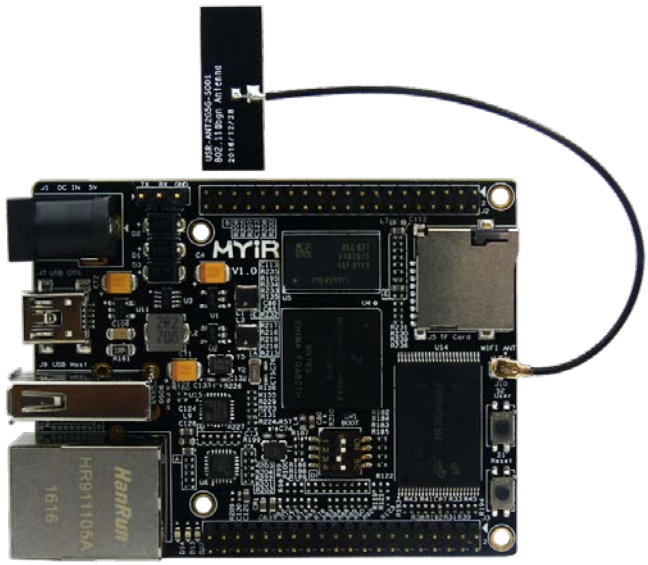

Figure 1-1 MYS-6ULX-IOT

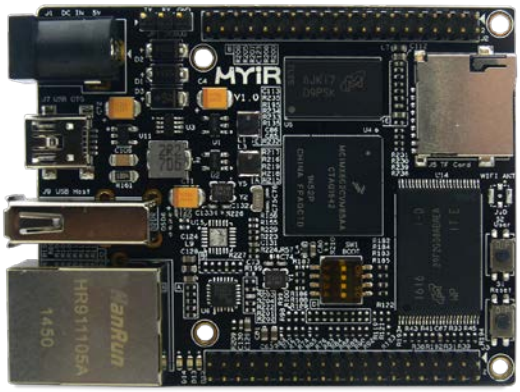

Figure 1-2 MYS-6ULX-IND

Description

Measuring only 70mm by 55mm, the MYS-6ULX is a high-performance low-cost Single Board Computer specially designed for Industry 4.0 (Industrie 4.0) and Internet of Things (IoT) applications. It is based on NXP's i.MX 6UltraLite / 6ULL processor family which features the most efficient ARM Cortex-A7 core and can operate at speeds up to 696 MHz. It has two 2.0mm pitch 2x20-pin headers on board to allow extension of the controller signals and ports to the base board through headers and connectors, thus exposing more features of the i.MX 6UL / 6ULL ARM Cortex-A7 Processors, so it can also be used as a System-on-Module (SoM) for your next embedded design.

The MYS-6ULX has two variants of boards which are called MYS-6ULX-IND and MYS-6ULX-IOT to meet different applications. The MYS-6ULX-IND is targeting industry 4.0 applications and based on i.MX6UL series processors while the MYS-6ULX-IOT is oriented for IOT applications and using i.MX6ULL series processors. They share the same hardware circuit design and fully compatible in software but also have their own characteristics. MYIR has ported **Linux 4.1.15** for the board with **Debian** distribution as well as **Yocto project** with ported **QT**. MYIR has also provided an interesting demo to enable customers to experience Amazon Alexa Voice Service.

In addition, MYIR will offer optional LCD modules, camera modules and expansion base board to add functionality to the boards.

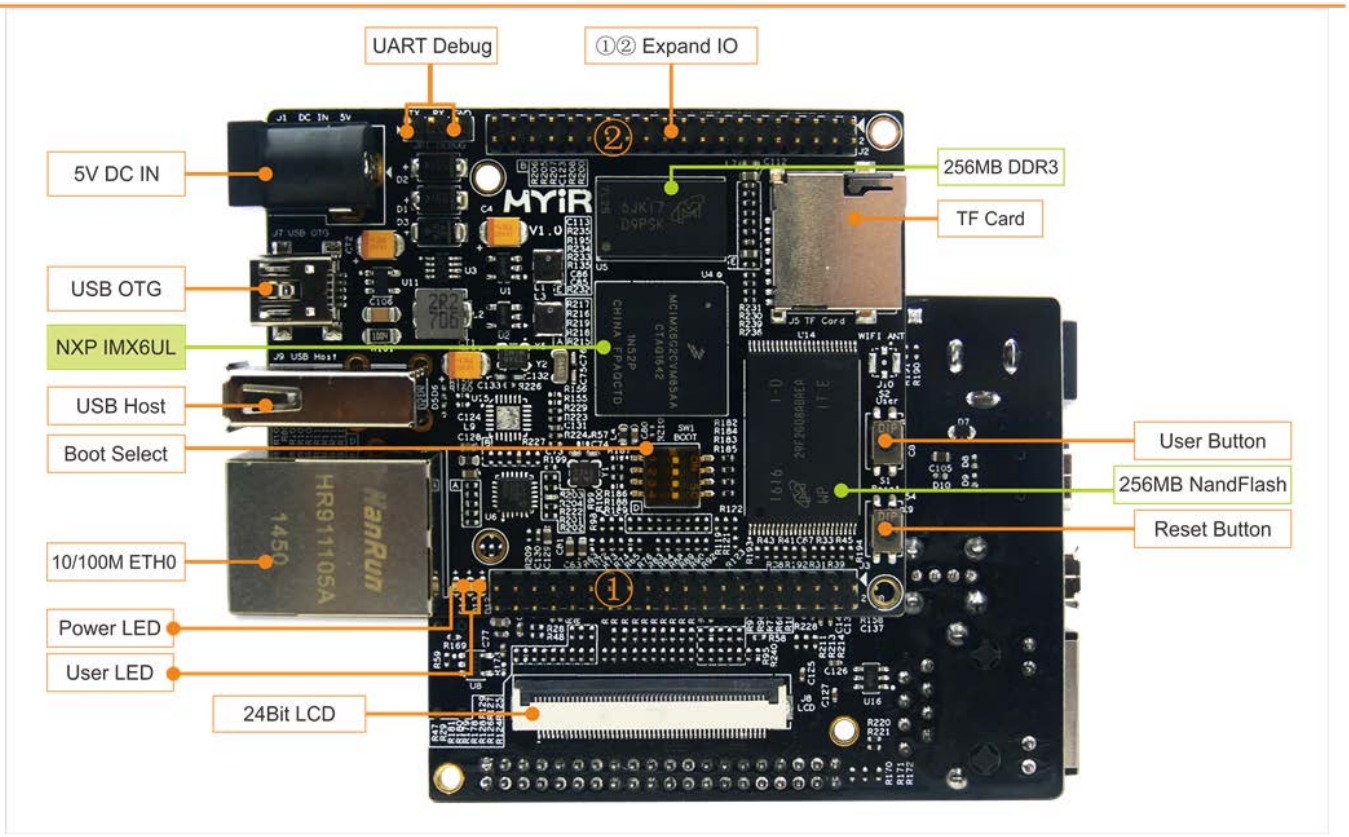

Figure 1-3 MYS-6ULX-IND

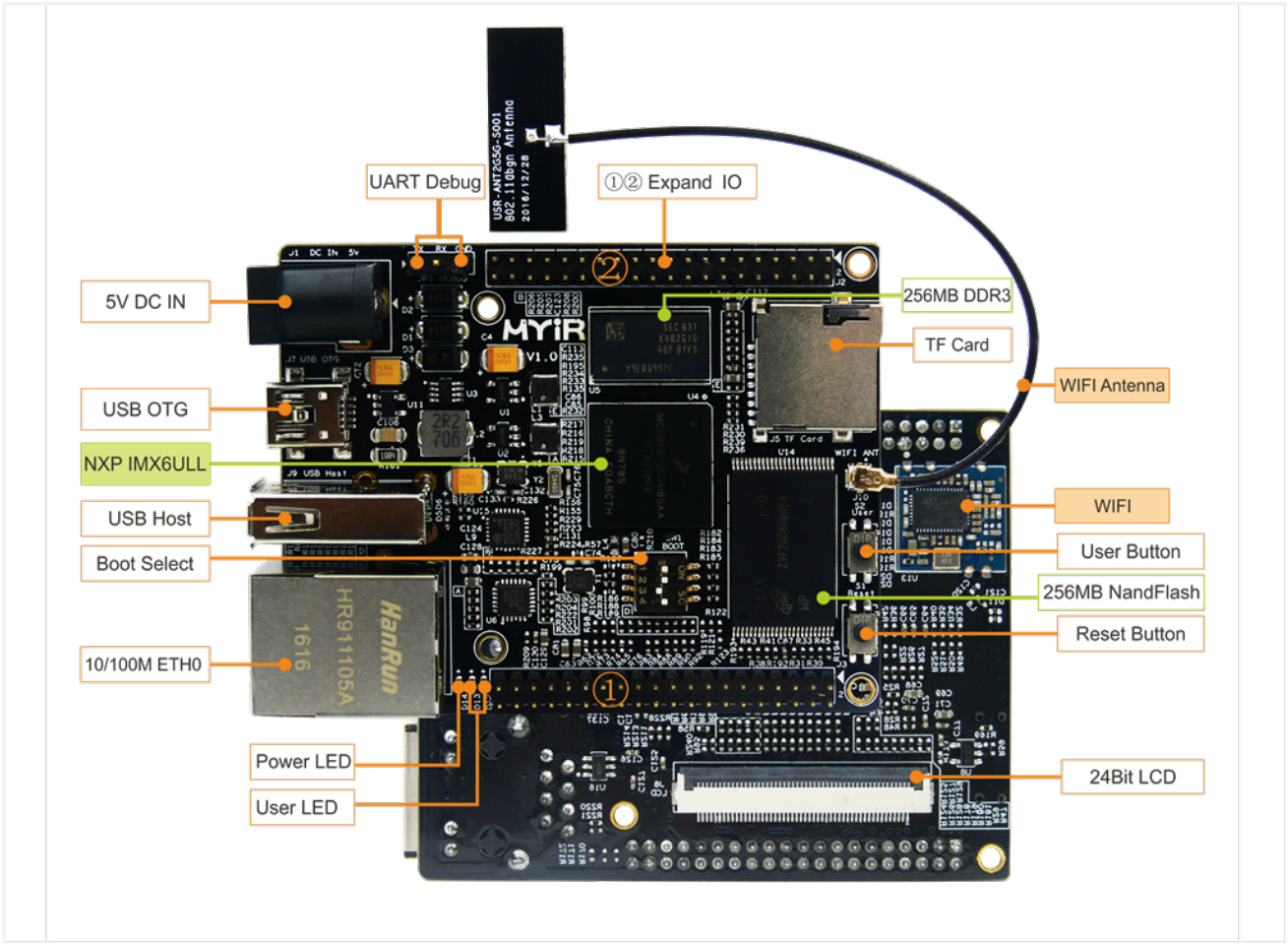

Figure 1-4 MYS-6ULX-IOT

Hardware Specification

The MYS-6ULX-IND is based on the high performance, ultra-efficient i.MX 6UltraLite processor family featuring an advanced implementation of a single ARM® Cortex®-A7 core, which operates at speeds up to 696 MHz. It includes an integrated power management module that reduces the complexity of external power supply and simplifies power sequencing. Each processor in this family provides various memory interfaces, including 16-bit LPDDR2, DDR3, DDR3L, raw and managed NAND flash, NOR flash, eMMC, Quad SPI and a wide range of other interfaces for connecting peripherals such as WLAN, Bluetooth™, GPS, displays and camera sensors.

MYIR is using the 14 x 14mm, 0.8 mm ball pitch, 289 MAPBGA package i.MX6UL application processor on the MYS-6ULX-IND board which provides multiple compatible options of G0, G1, G2 and G3 sub families. The MCIMX6G2CVM05AA is the default part delivered with the board and MYIR offers optional configurations for mass customization.

Feature	MCIMX6G0	MCIMX6G1	MCIMX6G2	MCIMX6G3
Speed	528 MHz	528 MHz, 696 MHz	528 MHz, 696 MHz	528 MHz
Cache	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2
OCRAM	128 KB	128 KB	128 KB	128 KB
DRAM	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR4L	16-bit LP-DDR2, DDR3/DDR5L	16-bit LP-DDR2, DDR3/DDR6L
eFuse	512-bit	1024-bit	1536-bit	2048-bit
NAND (BCH40)	Yes	Yes	Yes	Yes
EBI	Yes	Yes	Yes	Yes
Ethernet	10/100-Mbit/s x 1	10/100-Mbit/s x 1	10/100-Mbit/s x 2	10/100-Mbit/s x 2
USB	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	0	1	2	2
Security	Basic	TRNG, Crypto Engine (AES/TDES/SHA), Secure Boot	TRNG, Crypto Engine (AES/TDES/SHA), Secure Boot	TRNG, Crypto Engine (AES with DPA/TDES/SHA/RSA), Secure Boot, tamper monitor, PCI4.0 pre-certification, OTF DRAM encryption
Graphic	None	None	PxP	PxP
CSI	None	None	24-bit Parallel CSI	24-bit Parallel CSI
LCD	None	None	24-bit Parallel LCD	24-bit Parallel LCD
Quad SPI	1	1	1	1
SDIO	2	2	2	2
UART	4	8	8	8
I2C	2	4	4	4
SPI	2	4	4	4
I2S/SAI	1	3	3	3
S/PDIF	1	1	1	1
Timer/PWM	Timer x 2, PWM x 4	Timer x 4, PWM x 8	Timer x 4, PWM x 8	Timer x 4, PWM x 8
12-bit ADC	1 x 10-ch.	1 x 10-ch.	2 x 10-ch.	2 x 10-ch.

Table 1-1 i.MX 6UltraLite Device Options

The MYS-6ULX-IOT is based on i.MX 6ULL processor which is a high-performance, ultra-efficient processor family featuring an advanced implementation of a single ARM® Cortex®-A7 core and capable of operating at speeds up to 528 MHz. The i.MX 6ULL is supported by discrete component power circuitry. It is a cost down version of i.MX 6UltraLite with fewer security features and lower maximum CPU frequency, but adding ePD support.

MYIR is using the 14 x 14mm, 0.8 mm ball pitch, 289 MAPBGA package i.MX6ULL application processor on the MYS-6ULX-IOT board which provides multiple compatible options of Y0, Y1 and Y2 sub families. The MCIMX6Y2DVM05AA is the default part delivered with the board and MYIR offers optional configurations for mass customization.

Feature	MCIMX6Y0	MCIMX6Y1	MCIMX6Y2
Core	ARM® Cortex-A7	ARM® Cortex-A7	ARM® Cortex-A7
Speed	528 MHz	528 MHz	528 MHz
Cache	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2
OCRAM	128 KB	128 KB	128 KB
DRAM	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR4L	16-bit LP-DDR2, DDR3/DDR5L
eFuse	256-bit	256-bit	256-bit
NAND (BCH40)	Yes	Yes	Yes
EBI	Yes	Yes	Yes
Ethernet	10/100-Mbit/s x 1	10/100-Mbit/s x 1	10/100-Mbit/s x 2
USB	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	0	1	2
Graphic	None	None	PxP
CSI	None	None	16-bit Parallel CSI
LCD	None	None	24-bit Parallel LCD
Quad SPI	1	1	1
SDIO	2	2	2
UART	4	8	8
I2C	2	4	4
SPI	2	4	4
I2S/SAI	1	3	3
ESAI	1	1	1
S/PDIF	1	1	1
Timer/PWM	Timer x 2, PWM x 4	Timer x 4, PWM x 8	Timer x 4, PWM x 8
12-bit ADC	1 x 10-ch.	1 x 10-ch.	2 x 10-ch.
Security	None	AES-128, HAB	AES-128, HAB
Temperature	-40°C to 105°C (Tj)	-40°C to 105°C (Tj)	0°C to 90°C (Tj)

Table 1-2 i.MX 6ULL Device Options

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The MYS-6ULX Single Board Computer takes full features of the i.MX 6UltraLite / 6ULL processors. Below table list the hardware features of the two MYS-6ULX boards to help customers make choices according to your requirements.

Features	MYS-6ULX-IND	MYS-6ULX-IOT
Dimensions	70mm x 55mm	70mm x 55mm
PCB Layer	8-layer	8-layer
Power Supply	5V/1A	5V/1A
Power Consumption	About 5V/0.25A (single board) About 5V/0.4A (board + 4.3" LCD) About 5V/0.8A (board + 7" LCD)	About 5V/0.25A (single board) About 5V/0.4A (board + 4.3" LCD) About 5V/0.8A (board + 7" LCD)
Working Temp.	-40°C~85°C	0°C~70°C
Target Applications	Industry 4.0	IoT
CPU	MCIMX6G2CVM05AA	MCIMX6Y2DVM05AA
DDR3	256MB (support up to 2GB)	256MB (support up to 2GB)
Nand Flash	256MB (support 512MB/1GB)	256MB (support 512MB/1GB)
eMMC	DNP (Reserved design)	DNP (Reserved design)
Ethernet	10/100Mbps	10/100Mbps
USB	1 x USB Host 1 x USB OTG	1 x USB Host 1 x USB OTG
TF Card	1 x Micro SD card slot	1 x Micro SD card slot
Button	1 x Reset Button 1 x User Button	1 x Reset Button 1 x User Button
LED	1 x Power Indicator 2 x User LEDs	1 x Power Indicator 2 x User LEDs
LCD Connector	24-bit RGB LCD & Touch Screen (50-pin FPC connector)	24-bit RGB LCD & Touch Screen (50-pin FPC connector)
Debug Connector	2.5mm pitch 3-pin Headers, TTL	2.5mm pitch 3-pin Headers, TTL
Expansion Headers	Two 2.0mm pitch 2x20-pin Headers (1 x Ethernet, 8 x UARTs, 4 x I2C, 2 x CAN, 4 x SPI, 8 x ADC, 4 x PWM, 2 x I2S, 1 x 8-bit Camera, 1 x JTAG, up to 46 x GPIOs)	Two 2.0mm pitch 2x20-pin Headers (1 x Ethernet, 8 x UARTs, 4 x I2C, 2 x CAN, 4 x SPI, 8 x ADC, 4 x PWM, 2 x I2S, 1 x 8-bit Camera, 1 x JTAG, up to 46 x GPIOs)
WiFi Module	-	USB based, 2.4GHz, IEEE 802.11b/g/n standards

Note: the peripheral signals brought out to the expansion headers are listed in maximum number. Some signals are reused. Please refer to the board schematic and processor datasheet.

Table 1-3 Hardware Features of MYS-6ULX Single Board Computer

Function Block Diagram

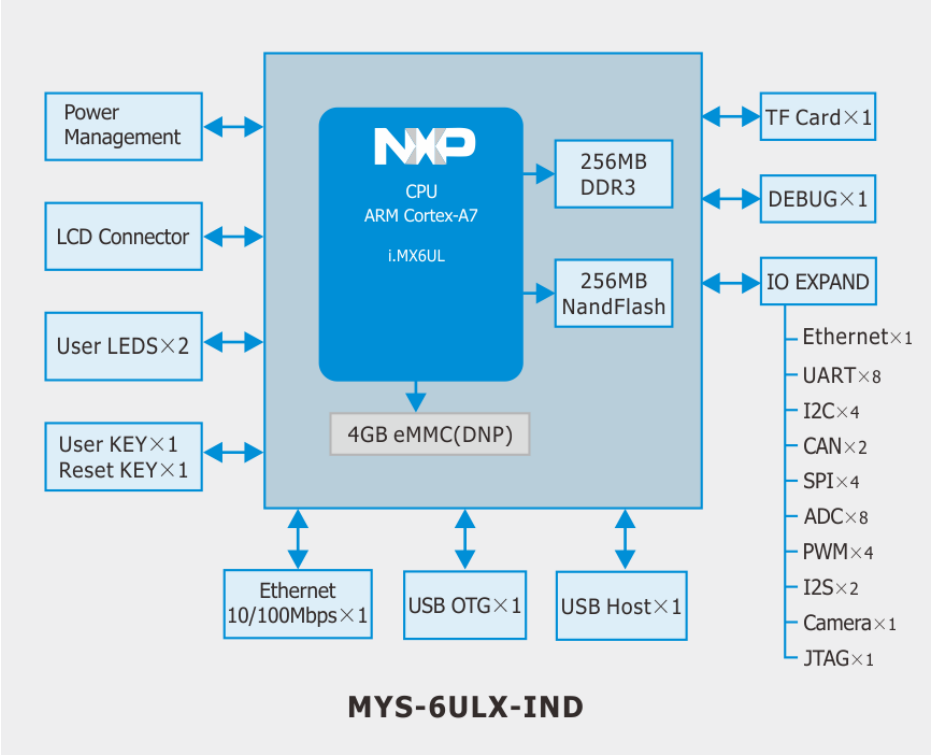

Figure 1-5 Function Block Diagram of MYS-6ULX-IND

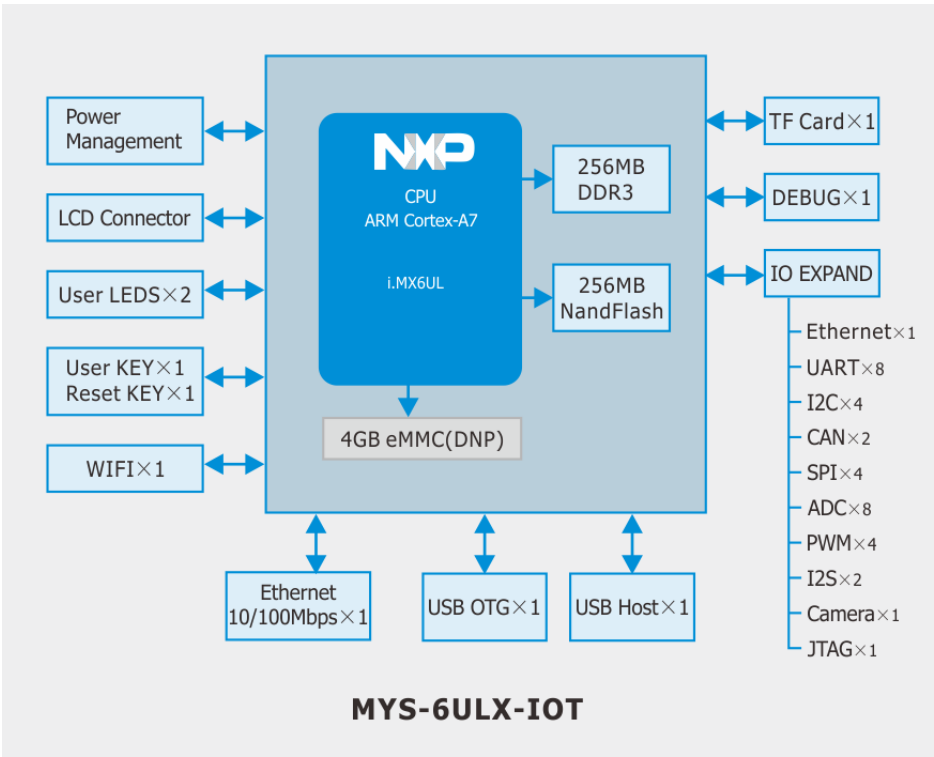

Figure 1-6 Function Block Diagram of MYS-6ULX-IOT

Dimension Chart of MYS-6ULX

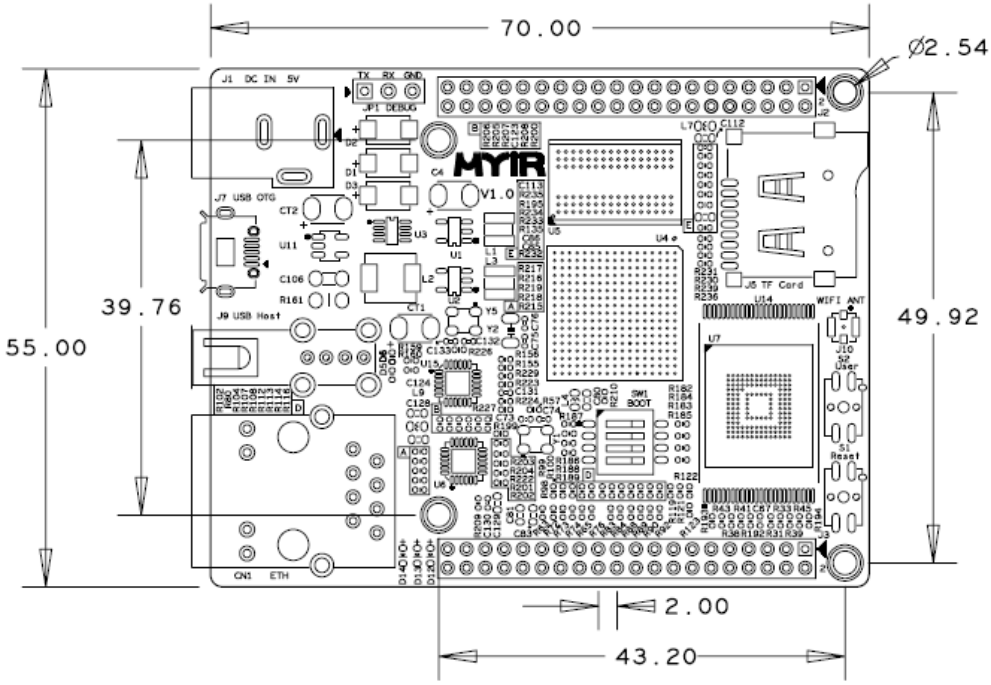

Figure 1-7 Dimension Chart of MYS-6ULX

Software Features

The MYS-6ULX Single Board Computer is ready to run Linux with Debian distribution or by Yocto project with QT. Many peripheral drivers are in source code to help accelerate customers' designs with a stable and reliable hardware and software platform. The software features are summarized as below:

Item	Features	Description
Bootstrap program	u-boot	The primary bootstrap (source code)
Linux Kernel	Version	Linux 4.1.15 (source code)
Linux Drivers	USB	HOST and OTG drivers (source code)
	Ethernet	Ethernet driver (source code)
	MMC/SD	MMC/SD card driver (source code)
	NandFlash	Nand Flash driver (source code)
	UART	UART driver (source code)
	LCD Controller	LCD driver, supporting MYIR's 4.3- and 7- inch LCD module (source code)
	RTC	RTC driver (source code)
	Touch Panel	Touch screen driver, supporting 4-wire capacitive and resistive touch screen (source code)
	Button	Button driver (source code)
	LED	LED driver (source code)
File System	Yocto	Including QT (source code)
	Debian	Source code
		Amazon Alexa Voice Service Demo
Compiler Tool Chain	Linaro GCC 4.9 hf	Binary file

Table 1-3 Software Features of MYS-6ULX Single Board Computer

MYB-6ULX Base Board for MYS-6ULX

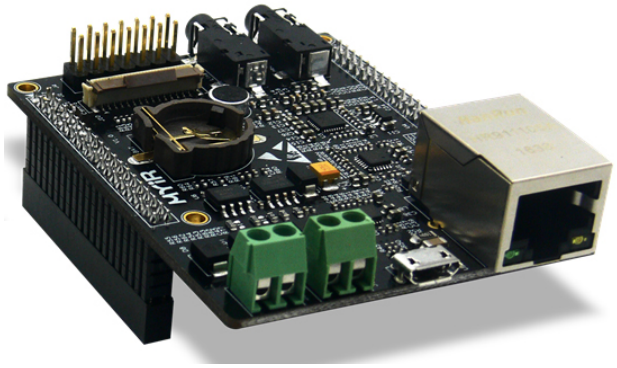

Figure 1-8 MYB-6ULX Base Board

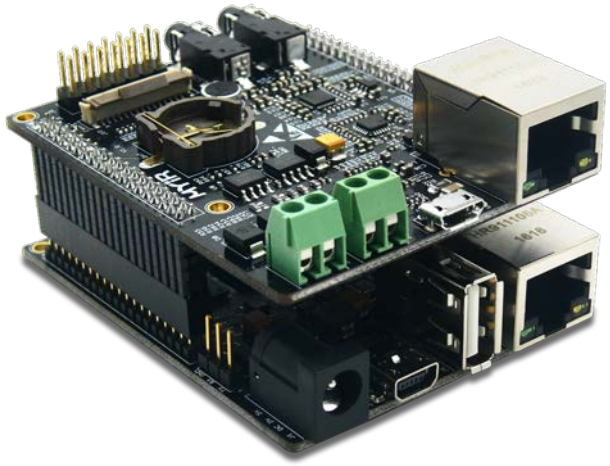

Figure 1-9 MYS-6ULX Connected with MYB-6ULX Base Board

Order Information

Product Item	**Part No.**
MYS-6ULX Single Board Computer	MYS-6ULX-IND
	MYS-6ULX-IOT
MYB-6ULX Base Board	MYB-6ULX
MY-LCD43TP 4.3-inch LCD Module with Resistive Touch Screen	MY-TFT043RV2
MY-LCD70TP 7-inch LCD Module with Resistive Touch Screen	MY-TFT070RV2
MY-LCD70TP-C 7-inch LCD Module with Capacitive Touch Screen	MY-TFT070CV2

MYIR Tech Limited
Room 1306, Wensheng Center, Wenjin Plaza, North Wenjin Road, Luohu District,
Shenzhen, China 518020
E-mail: sales@myirtech.com
Phone: +86-755-22984836
Fax: +86-755-25532724
Website: http://www.myirtech.com