MYD-SAM9X5 Development Board

- ➢ *MYC-SAM9X5 CPU Module as Controller Board and Fully Compatible with Atmel's Official Board*
- ➢ *400MHz Atmel AT91SAM9X5 Series ARM926EJ-S Processors*
- ➢ *128MB DDR2 SDRAM, 256MB Nand Flash, 4MB Data Flash, 64KB EEPROM*
- ➢ *Serial ports, USB, Ethernet, CAN, RS485, SD, Audio, LCD*
- ➢ *Two Ethernet for SAM9X25*
- ➢ *Two CAN for SAM9X25/X35*
- ➢ *4.3 or 7 inch LCD/TSP for SAM9G15/G35/X35*
- ➢ *Ready-to-Run Linux 2.6.39 and Android 2.3.5*
- ➢ *Complete MDK-ARM Sample Codes*
- ➢ *Supports -40 to +85°C Extended Temperature Operation*

Figure 1-1 MYD-SAM9X5 Development Board

Description

The MYD-SAM9X5 Development Board is designed by MYIR for the Atmel AT91SAM9X5 series ARM926EJ-S processors which can operate at up to 400MHz. It has a base board which can be equipped with five different CPU modules based respectively on Atmel's SAM9G15, SAM9G25, SAM9G35, SAM9X25 and SAM9X35 embedded MPUs. All five CPU modules are sharing the same circuit design with minor configuration settings. It is capable of running Linux and Android operating systems and also provided with complete sample codes bundle for the peripherals using Keil's MDK-ARM to enhance debugging capabilities for non-OS development. 4.3- and 7-inch LCD panels are add-on options. It can work in harsh environment supporting -40 to +85°C extended temperature operation.

The CPU module MYC-SAM9X5 has the most features of the processor and integrates 128MB DDR2 SDRAM, 256MB Nand Flash, 4MB Data Flash, 64KB EEPROM and Ethernet PHY on board. It is connected with the base

board through a 1.8v DDR2 SD-DIMM 200-pin connector which provides an interface for the base board to carry all the I/O signals to and from the CPU module. A set of peripherals have been brought out through headers and connectors on the base board including serial ports, USB, Ethernet, CAN, LCD, Audio, SD, etc.

The MYD-SAM9X5 development board series have following models:

- *MYD-SAM9G15 Development Board* – with *MYC-SAM9G15 CPU Module* for Atmel *AT91SAM9G15*
- *MYD-SAM9G25 Development Board* – with *MYC-SAM9G25 CPU Module* for Atmel *AT91SAM9G25*
- *MYD-SAM9G35 Development Board* – with *MYC-SAM9G35 CPU Module* for Atmel *AT91SAM9G35*
- *MYD-SAM9X25 Development Board* – with *MYC-SAM9X25 CPU Module* for Atmel *AT91SAM9X25*
- *MYD-SAM9X35 Development Board* – with *MYC-SAM9X35 CPU Module* for Atmel *AT91SAM9X35*

Item	MYD-SAM9G15	MYD-SAM9G25	MYD-SAM9X25	MYD-SAM9G35	MYD-SAM9X35
Processor	AT91SAM9G15	AT91SAM9G25	AT91SAM9X25	AT91SAM9G35	AT91SAM9X35
Ethernet	0	1 x 10/100M	2 x 10/100M	1 x 10/100M	1 x 10/100M
UART	2	2	2	2	2
LCD	1	0	0	1	1
CAN	0	0	2	0	2

Table 1-1 Comparison for Model Selection

From table 1-1, we can see if you need Ethernet, except the MYD-SAM9G15, other four models all can support; if you need two CANs, two Ethernet but no need LCD, the MYD-SAM9X25 is a good choice; if you want to evaluate the performance of this industrial board, the MYD-SAM9X35 has the most complete functions.

The MYD-SAM9X5 Development Board comes along with Linux 2.6.39 and android 2.3.5 software packages, MDK-ARM sample codes bundle, necessary cable accessories as well as detailed documents to allow customers to start development soon when getting the goods out of box. It is a low-cost full-featured development board for embedded and industrial applications.

The MYD-SAM9X5 Development Kit includes following items:

| MYD-SAM9X5 board | Ethernet cable | Serial cable | USB cable |

| Product DVD | 5V Power Adapter | Optional 4.3- or 7-inch LCD/TSP |
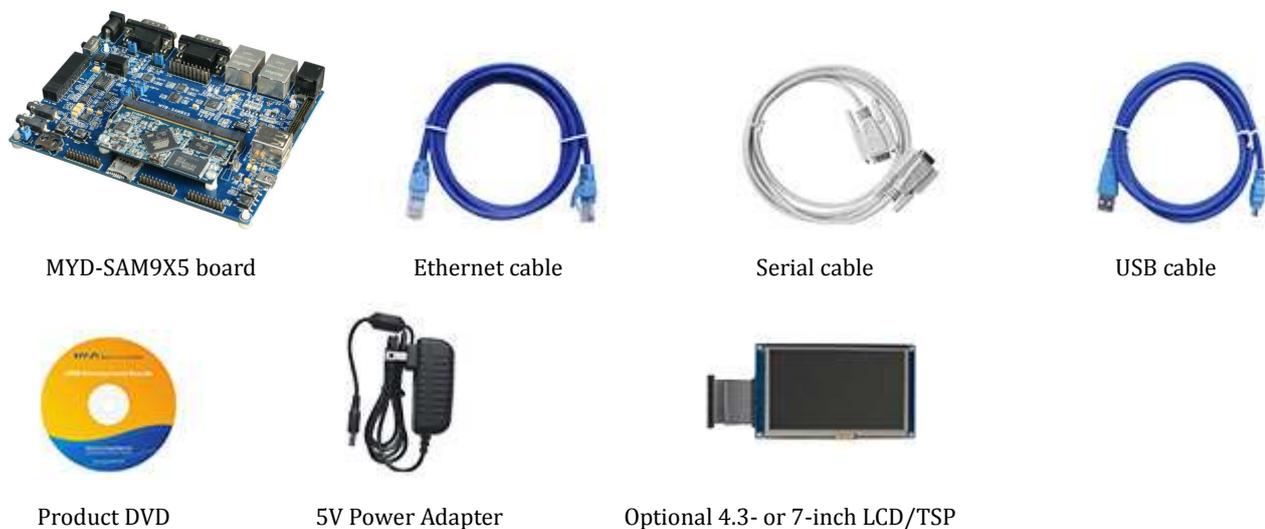
Figure 1-2 MYD-SAM9X5 Development Kit

Hardware Specification

The Atmel® SAM9G and SAM9X embedded MPUs are high-performance, highly integrated processors built the good foundation of the Atmel® ARM926-based embedded MPU line. Running at 400 MHz, they are designed to complement the power of the ARM926 core; these flexible devices deliver a rich combination of peripherals including up to two Ethernet, two CAN, three USB ports and seven UARTS. Additional features include an integrated soft modem, TFT LCD controller and LPDDR/DDR2 memory support. A multilayer bus matrix architecture and multiple DMA channels ensure uninterrupted data transfer with minimum processor intervention. Low voltage, low power consumption and reduced system cost make these devices ideal for cost-sensitive machine-to-machine applications.

The MYD-SAM9X5 series development boards include one CPU module mounted on one base board. It takes full features of the Atmel SAM9G and SAM9X processors and is characterized as in below table 1-2:

Figure 1-4 MYC-SAM9X5 CPU Module

Controller Board of MYD-SAM9X5

Figure 1-3 Base Board of MYD-SAM9X5

Item	MYD-SAM9G15	MYD-SAM9G25	MYD-SAM9G35	MYD-SAM9X25	MYD-SAM9X35
Processor	AT91SAM9G15	AT91SAM9G25	AT91SAM9G35	AT91SAM9X25	AT91SAM9X35
CPU Module	MYC-SAM9G15	MYC-SAM9G25	MYC-SAM9G35	MYC-SAM9X25	MYC-SAM9X35
	- 400MHz Atmel AT91SAM9G15, 9G25, 9G35, 9X25 and 9X35 ARM926EJ-S Processors - CPU internal 32KB of SRAM and 64KB of ROM - On-board 128MB DDR2 SDRAM, 256MB Nand Flash, 4MB Data Flash, 64KB EEPROM - On-board Ethernet PHY - 1.8V DDR2 SO-DIMM 200-pin Expansion Connector - Fully Compatible with Atmel's SAM9X5-EK Official Board				
Dimensions	CPU Module – 67.6 x 35mm; Base board – 140 x 108mm				
PCB Layer	CPU Module – 8-layer design; Base board – 4-layer design				
Power Supply	5V/2A				
Working Temp.	0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)				
Storages	One Micro SD card slot				
Serial ports	One 3-line RS232 Debug serial port (DB-9) One 5-line RS232 serial port (UART0, multiplexed with RS485, DB-9)				

	One RS485 serial port (Multiplexed with UART0, 10-pin 3.5mm pitch terminal block connector)				
	Two 5-line TTL serial ports (UART1 and UART3, the expansion interface)				
	One 3-line RS232 serial port (UART2, the expansion interface)				
USB	Two High-speed USB 2.0 Host ports (Type A)				
	One Mini USB 2.0 OTG port (Mini USB Type-AB)				
Ethernet	0	1 (J11)	1 (J11)	2 (J10 & J11)	1 (J11)
CAN	0	0	0	2	2
Audio	Audio input/output port				
LCD/TSP	Support	Not support	Support	Not support	Support
	Supports 24-bit true color TFT LCD, resolution up to 800 x 600 pixels				
	4-line resistive touch screen				
	4.3-inch LCD for option (including Touch screen, with resolution 480 x 272 pixels)				
	7-inch LCD for option (including Touch screen, with resolution 800 x 480 pixels)				
Telephone	One telephone interface				
JTAG	20-pin standard JTAG interface				
RTC	Battery backed RTC socket				
Buttons	One Reset button, One Wakeup button and Two User buttons				
LED	Two Power indicators (Red, one on CPU Module and one on base board)				
	One user LED (Blue, on CPU Module)				
Expansion Interface	There expansion interfaces (2.0mm pitch 20-pin dip headers) brings out:				
	3 x UARTs (UART 1, 2, 3), 2 x SPI, 2 x I2C, 4 x ADC, 41 x GPIOs				
	Note: The resources brought out from the expansion interfaces may be multiplexed with others. Please refer to the product user manual and schematics for details for your development.				

Table 1-2 Hardware Specification of MYD-SAM9X5 Development Board

Function Block Diagram
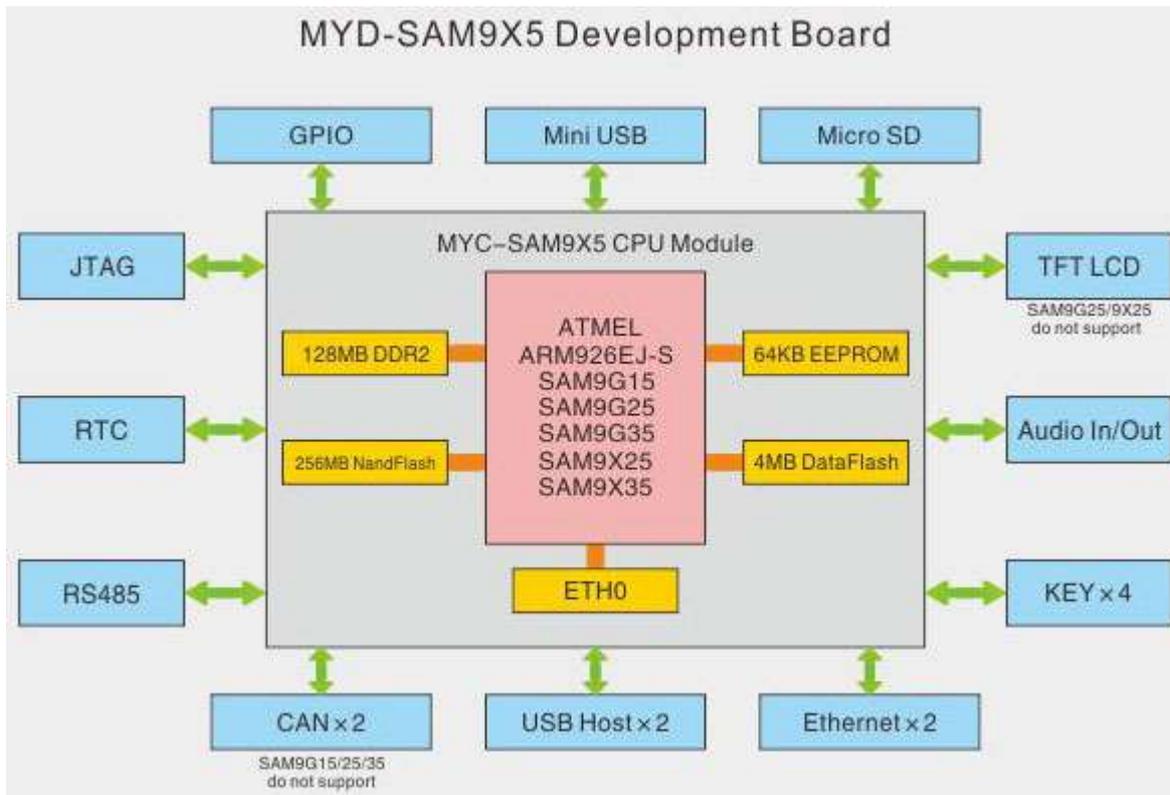
Figure 1-5 Function Block Diagram of MYD-SAM9X5

Dimension Chart of MYD-SAM9X5
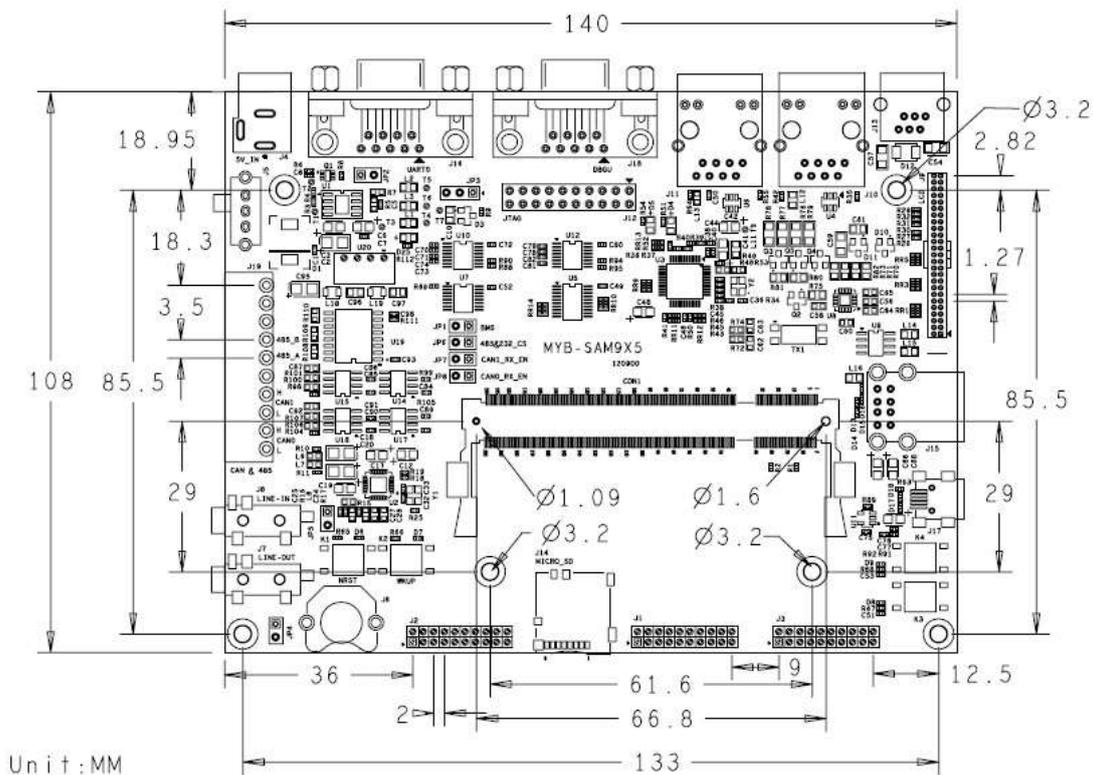
Figure 1-6 Dimension Chart of MYD-SAM9X5

MYD-SAM9X5 Development Board Layout
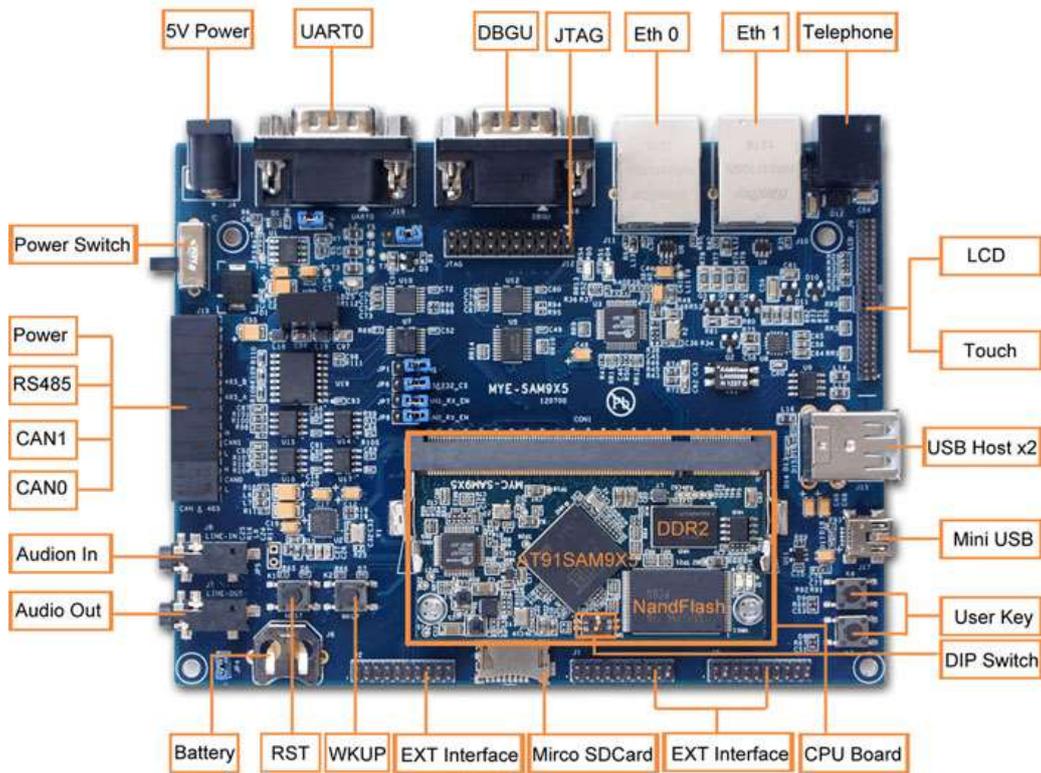
Figure 1-7 MYD-SAM9X5 Development Board Peripherals
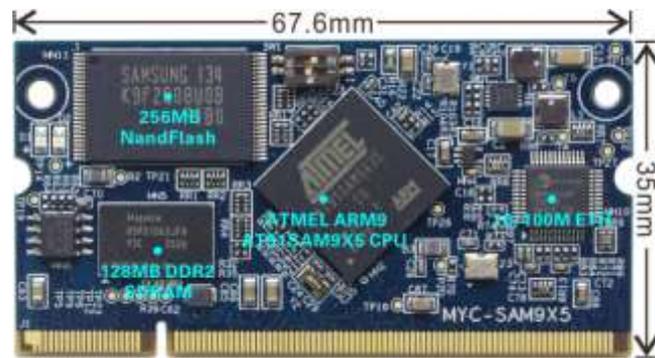
Figure 1-8 MYC-SAM9X5 CPU Module Top-view

Figure 1-9 MYC-SAM9X5 CPU Module Bottom-view

MYIR TECH LIMITED

www.myirtech.com

Software Features

The MYD-SAM9X5 is a Linux and Android ready-to-run development board. MYIR offers software packages along with the board. Many peripheral drivers are provided in source code to help customers quickly start their own development and create their own applications. The board is also provided with sample codes bundle for the peripherals using Keil's MDK-ARM. The software features are summarized as below:

OS	Item	Features	Description
Linux	Boot	Boot Strap	First boot program (source code available)
		u-boot	Secondary boot program (source code available)
		Boot Mode	Boot Linux from NAND Flash
		Image update	Support programming kernel image into Nand Flash through USB
		File system update	Support programming file system into Nand Flash through USB
	Kernel	Version	Linux 2.6.39 (source code available)
		File system	Supports ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/UBIFS
	File system	Format	UBIFS file system
	Drivers		USB Host, USB Device, Ethernet, MMC/SD, CAN, RS485, NandFlash, TWI (I2C), SPI, WM8904 (Audio), LCD Controller, RTC, Touch-Screen, PWM, USART, LED (source code available)
	Graphical Library	QT	Already ported (source code available)
Android	Kernel	Version	Android 2.3.5
	Drivers		Ethernet, Serial port driver (USART1, DBGU), USB (USB_HOST*2,USB_OTG), SD card driver (Micro SD, MMC/SD), SMD, SPI, TWI, DMA, LCD+touch (LCD and touch screen driver), GPIO driver
-	MDK Sample Code Bundle	Development tool	MDK-ARM 4.53
		Sample code	getting-started, adc_adc10, adc_touchscreen, can, dma, lcd, periph_protect, pmc_clock_switching, pwm, ssc_dma_audio, twi_eeprom, usart_serial, emac0, emac1, hsmci_multimedia_card, hsmci_sdcard, smc_nandflash, spi_serialflash, usb_audio_looprec, usb_cdc_serial, usb_core, usb_hid_keyboard, usb_hid_mouse, usb_hid_msd, usb_hid_transfer, usb_iad_cdc_cdc, usb_iad_cdc_hid, usb_iad_cdc_msd, usb_massstorage

MYiR Make Your Idea Real

Order Information

Product Item	Part No.	Packing List
MYD-SAM9G15 Development Board	MYD-SAM9G15	➢ One MYD-SAM9X5 Development Board
MYD-SAM9G25 Development Board	MYD-SAM9G25	➢ One DB9-to-DB9 Serial cable
MYD-SAM9G35 Development Board	MYD-SAM9G35	➢ One Net cable
MYD-SAM9X25 Development Board	MYD-SAM9X25	➢ One USB cable
MYD-SAM9X35 Development Board	MYD-SAM9X35	➢ One 5V/2A Power adapter
MY-LCD43TP 4.3-inch LCD Module	MY-LCD43TP	➢ One Product DVD
MY-LCD70TP 7-inch LCD Module	MY-LCD70TP	(including user manual, datasheet, schematic in PDF format and software packages)
MYC-SAM9G15 CPU Module	MYC-SAM9G15	
MYC-SAM9G25 CPU Module	MYC-SAM9G25	**Add-on Options**
MYC-SAM9G35 CPU Module	MYC-SAM9G35	➢ MY-LCD43TP 4.3-inch LCD Module
MYC-SAM9X25 CPU Module	MYC-SAM9X25	➢ MY-LCD70TP 7-inch LCD Module
MYC-SAM9X35 CPU Module	MYC-SAM9X35	➢ MYC-SAM9X5 CPU Module

Remark:
1. *One MYD-SAM9X5 Development Board includes one CPU module MYC-SAM9X5 mounted on the base board. If you need more CPU module, you can order extra ones.*
2. *For Price information, please contact MYIR.*
3. *Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYD-SAM9X5 board based on Atmel ARM926EJ-S processor can work in harsh environment with working temperature ranging from -40 to 85 Celsius. Please contact us for price and availability of products of industrial grade if you needed.*
4. *We accept custom design based on the MYD-SAM9X5, whether reducing, adding or modifying the existing hardware according to customer's requirement.*

More details about the MYD-SAM9X5 can be found at:
http://www.myirtech.com/list.asp?id=424

MYiR™

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

MYIR TECH LIMITED
www.myirtech.com