ASIX Multi-Port Ethernet Controller Product Introduction

Revision 1.2
May 25th, 2009

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Revision History

Revision	Date	Description
1.0	2008/03/07	Initial release
1.1	2008/03/20	1. Change the document name to “ASIX Multi-Port Embedded Ethernet Product Introduction”.
1.2	2009/05/25	1. Added the AX88782 & AX88613 related information. 2. Added more technical archives information in Section 7. 3. Modified the descriptions of product introduction in Section 1. 4. Change the document name to “ASIX Multi-Port Ethernet Controller Product Introduction”.

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1. Introduction

ASIX Electronics provides some multi-port embedded Ethernet controllers that support different processor host interfaces commonly used in embedded system applications. The supported processor host interfaces are PCI bus, non-PCI bus (SRAM-like) and Ethernet MAC's MII/Reverse MII or RMII/Reverse RMII bus. The following URL provides detailed online resource of ASIX Electronics multi-port embedded Ethernet solutions:
(Refer to http://www.asix.com.tw/products.php?op=ProductList&PLine=65).

This product introduction applies specifically to the following four multi-port Ethernet controllers, namely, AX88742, AX88783, AX88782 and AX88613.

2-Port PCI Fast Ethernet
AX88742 -- 32-bit PCI 2-Port 10/100M Fast Ethernet Controller

2-Port Non-PCI Fast Ethernet
AX88783 -- Non-PCI 8/16/32-bit 2-Port 10/100M Fast Ethernet Controller
AX88782 -- Non-PCI 8/16-bit 2-Port 10/100M Fast Ethernet Controller

MII/RMII Fast Ethernet
AX88613 -- 3-Port 10/100M Fast Ethernet Switch Controller

This document provides an overview of the AX88742/AX88783/AX88782/AX88613 multi-port embedded Ethernet products.

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2. Block Diagram

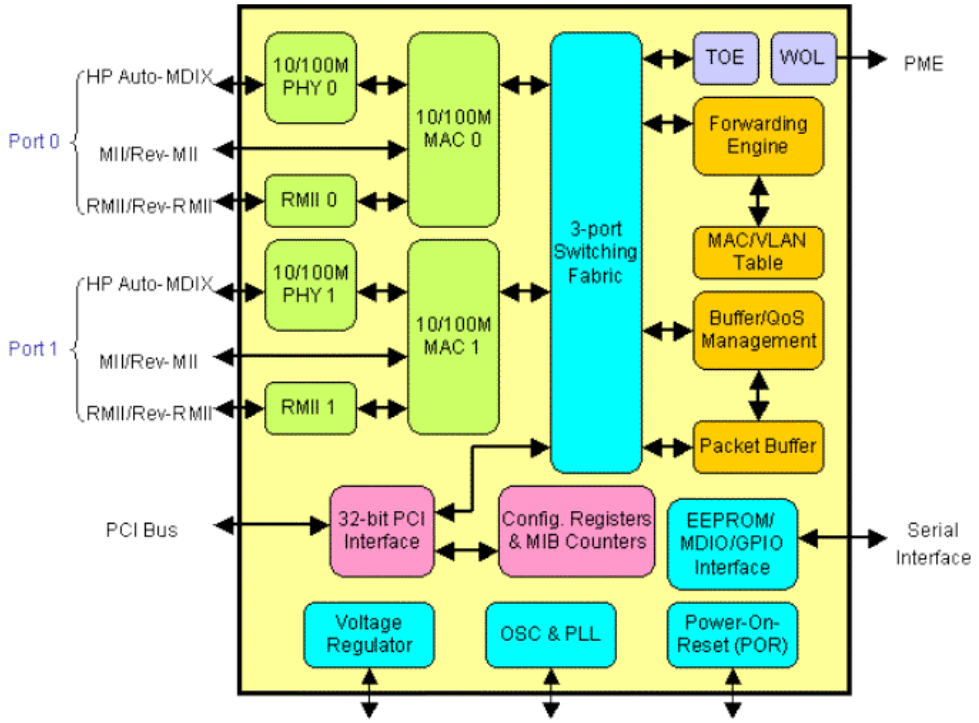


Figure 1. AX88742 PCI 32-bit 2-Port Controller Block Diagram

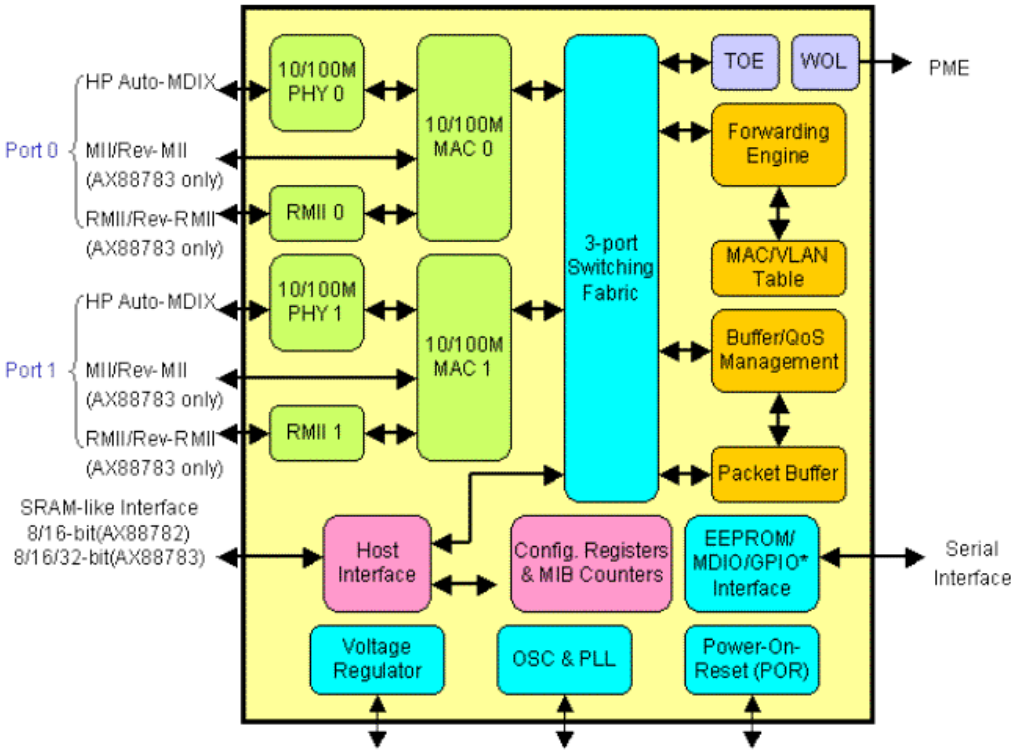


Figure 2. AX88783/AX88782 Non-PCI 8/16/32-bit 2-Port Controller Block Diagram

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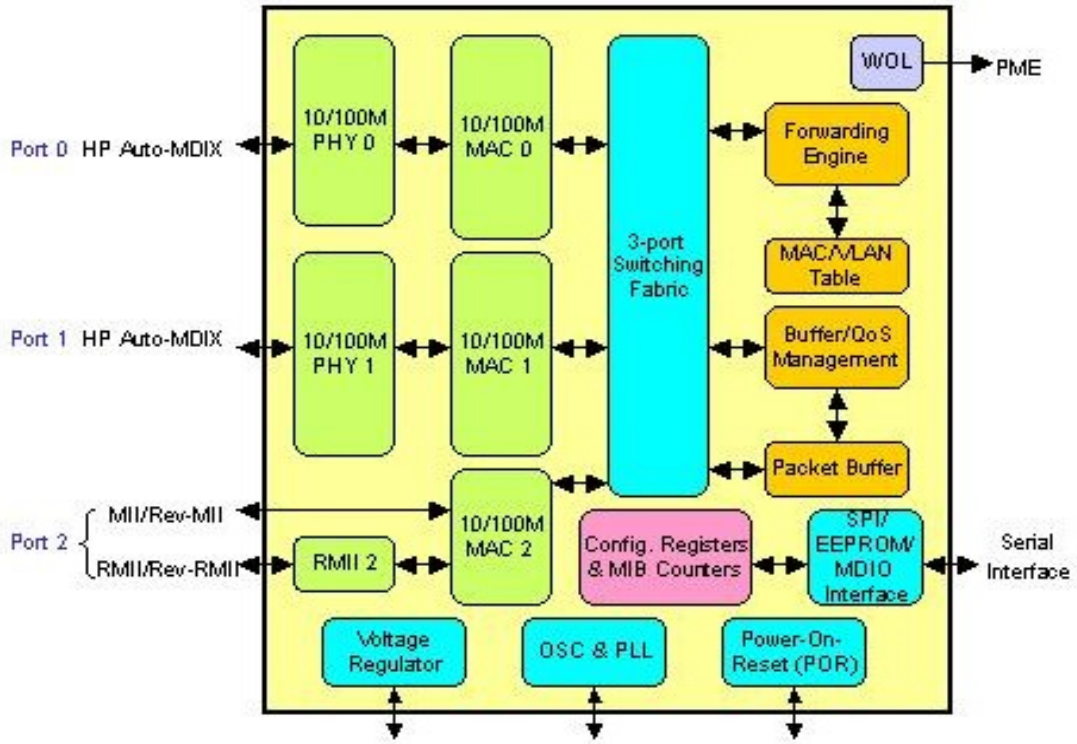


Figure 3. AX88613 3-Port Fast Ethernet Switch Controller Block Diagram

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3. Selection Guide

The AX88742/AX88783/AX88782/AX88613 are targeted at different embedded system applications, as listed below.

Part No.	Host Interface	Ethernet MAC/PHY (Mbps)	MAC Interface	HP Auto-MDIX	Embedded Packet Buffer (Bytes)	NE2000 Compatible	IP/TCP/UDP Checksum	Wakeup-on-LAN	Temperature Range(°C)	Package
AX88782	8/16-bit SRAM-like	10/100	-	v	32K	-	v	v	0 ~ +70	LQFP-80
AX88783	8/16/32-bit SRAM-like	10/100	(Rev-)MII/ (Rev-)RMII	v	32K	-	v	v	0 ~ +70	LQFP-128
AX88742	32-bit PCI	10/100	(Rev-)MII/ (Rev-)RMII	v	32K	-	v	v	0 ~ +70	LQFP-128
AX88613	RMII/MII	10/100	-	v	32K	-	v	v	0 ~ +70	LQFP-80

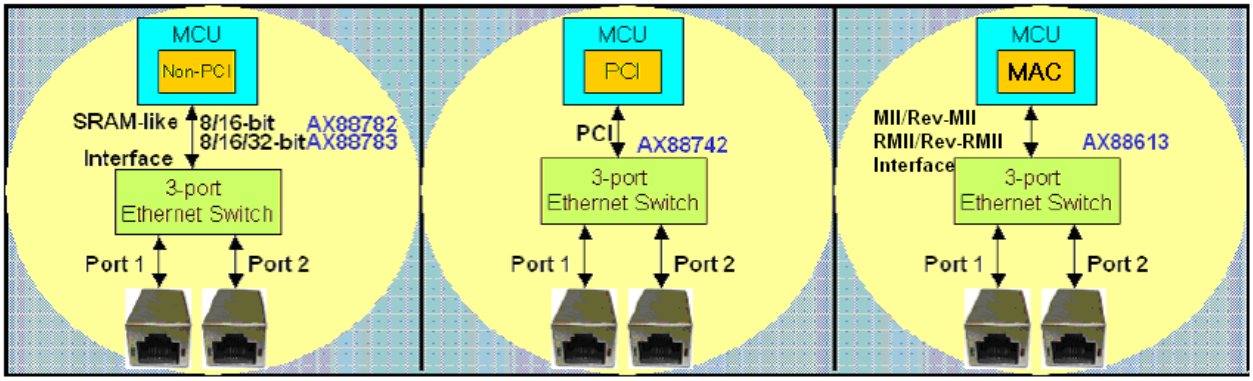


Figure 4. AX88742/AX88783/AX88782/AX88613 Selection Guide

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4. Ordering Information

The following is the ordering information of AX88742/AX88783/AX88782/AX88613 chips and AX88742/AX88783/AX88782/AX88613 demo boards. Please contact ASIX's Sales (sales@asix.com.tw) for details.

Part Number	Description
AX88742 LF	128 PIN, LQFP/E-PAD Package, Commercial Grade 0°C to +70 °C (Green, Lead-Free)
AX88783 LF	128 PIN, LQFP/E-PAD Package, Commercial Grade 0°C to +70 °C (Green, Lead-Free)
AX88782 LF	80 PIN, LQFP/E-PAD Package, Commercial Grade 0°C to +70 °C (Green, Lead-Free)
AX88613 LF	80 PIN, LQFP/E-PAD Package, Commercial Grade 0°C to +70 °C (Green, Lead-Free)

Demo Boards	Description
AX88742 demo board	This is an AX88742 PCI interface demo board.
AX88783 SMDK2440 demo board	This is an AX88783 non-PCI interface demo board for the SMDK2440 evaluation platform with Samsung S3C2440A ARM920T core CPU.
AX88782 SMDK2440 demo board	This is an AX88782 non-PCI interface demo board for the SMDK2440 evaluation platform with Samsung S3C2440A ARM920T core CPU.
AX88613 demo board	This is an AX88613 3-port switch demo board for users to verify AX88613 with external MCU through the MII/Rev-MII/RMII/Rev-RMII interface.

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5. Target Applications

The following are some PC/Internet and consumer electronics target applications for your reference.

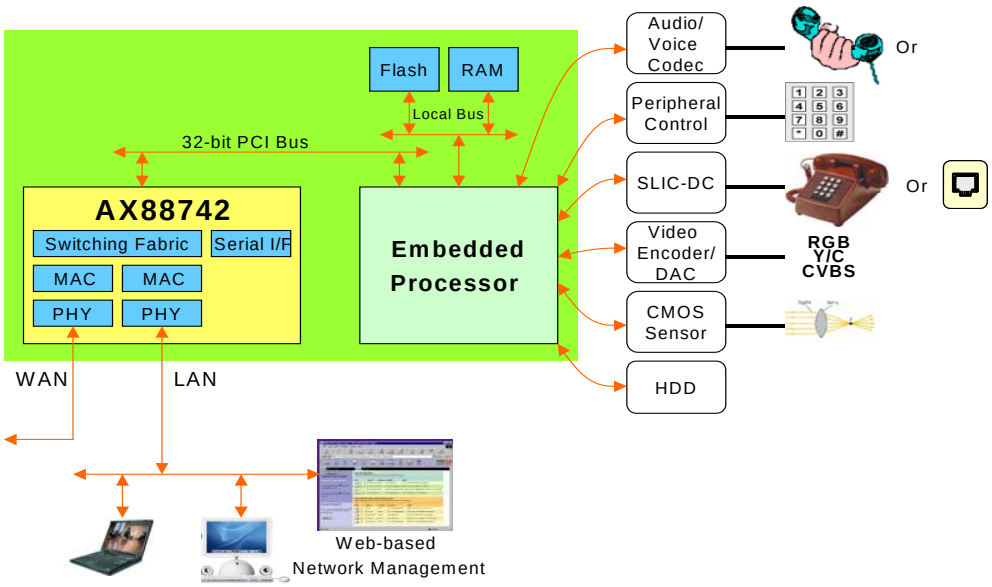


Figure 5. Examples of AX88742 Target Applications

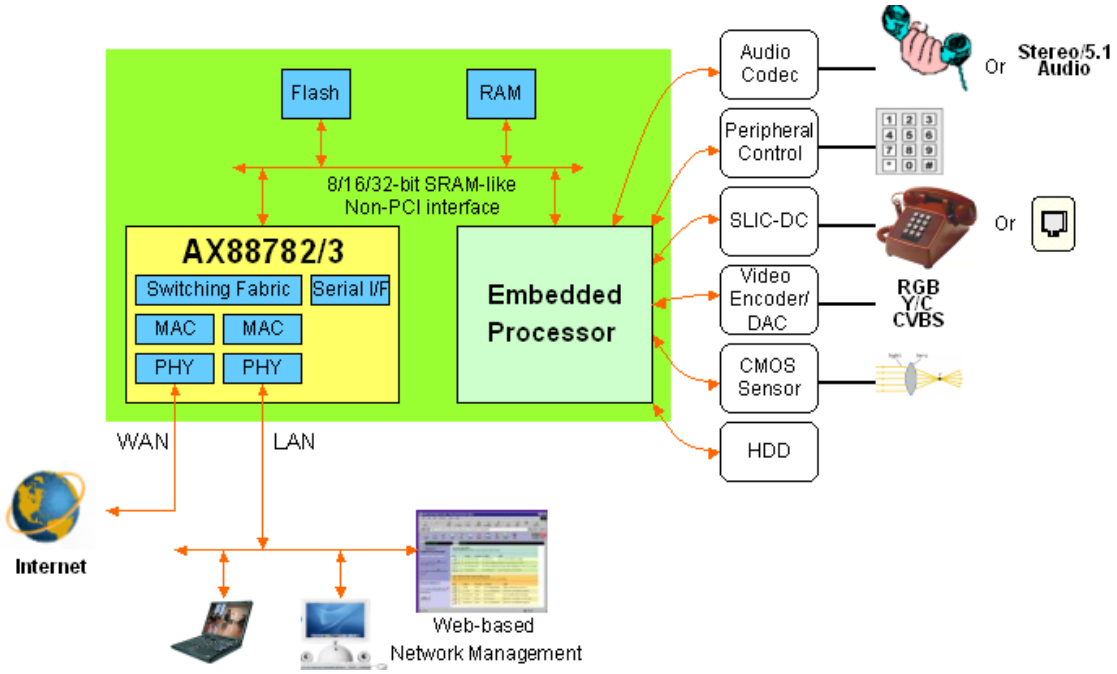


Figure 6. Examples of AX88783/AX88782 Target Applications

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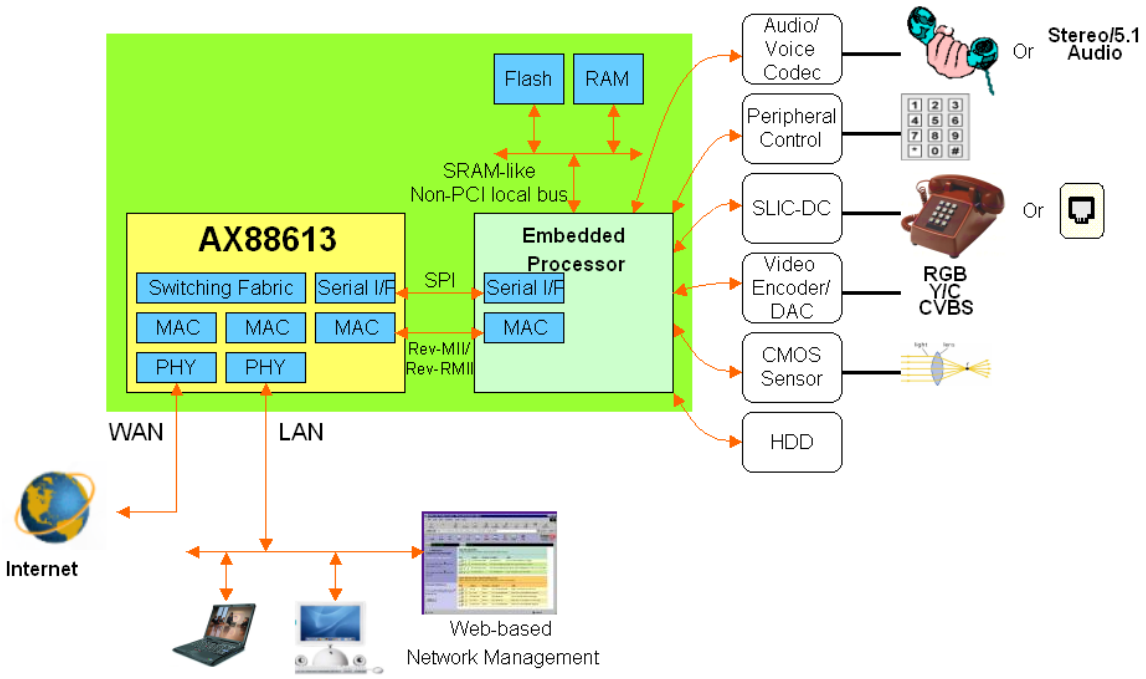


Figure 7. Examples of AX88613 Target Applications

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6. Demo Boards

ASIX Electronics provides the AX88742/AX88783/AX88782/AX88613 demo boards for users to evaluate the basic functions of the AX88742/AX88783/AX88782/AX88613. If you need to purchase the AX88742/AX88783/AX88782/AX88613 demo boards, please contact ASIX's Sales (sales@asix.com.tw) for details.

6-1. AX88742 Demo Board

The following is the picture of AX88742 demo board for your reference.

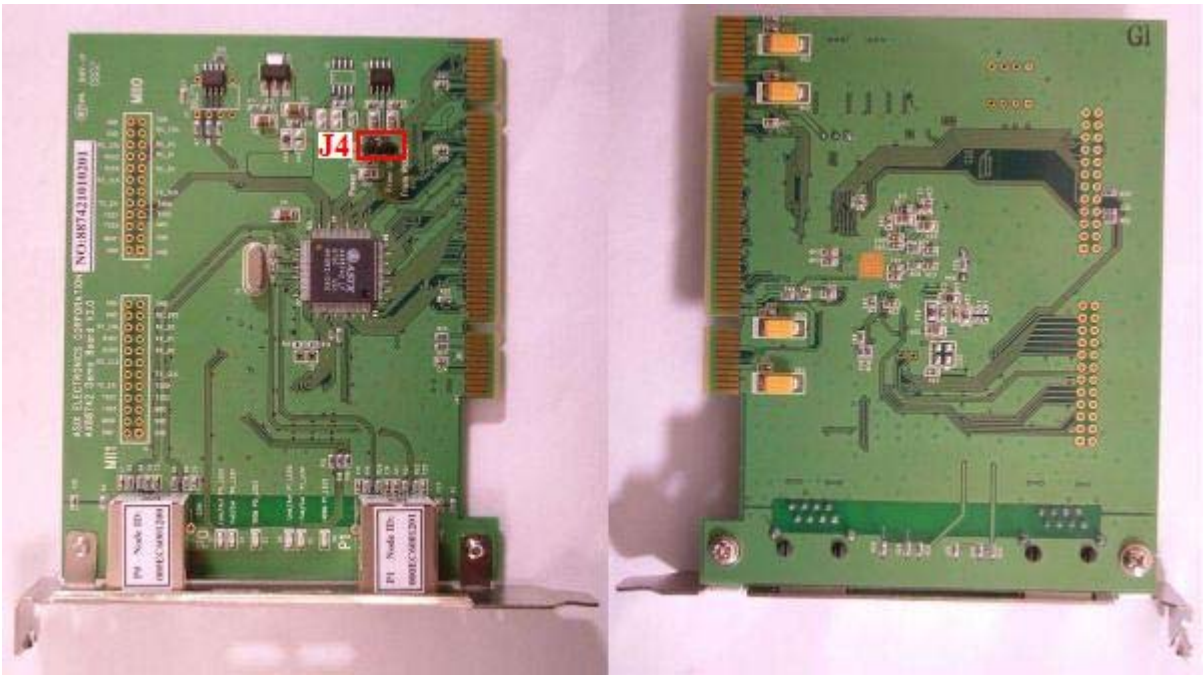


Figure 8. AX88742 Demo Board

The following are the jumper configuration table of the AX88742 demo board.

Jumper	Setting	Description
J4	 (Default)	The AX88742 VCC33 power source comes from the 5V to 3.3V Voltage Regulator.
		The AX88742 VCC33 power source comes from the PCI 3.3V power pin directly.

Figure 9. AX88742 Demo Board Jumper Setting Table

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6-2. AX88783 SMDK2440 Demo Board

The following is the picture of AX88783 SMDK2440 demo board for your reference.

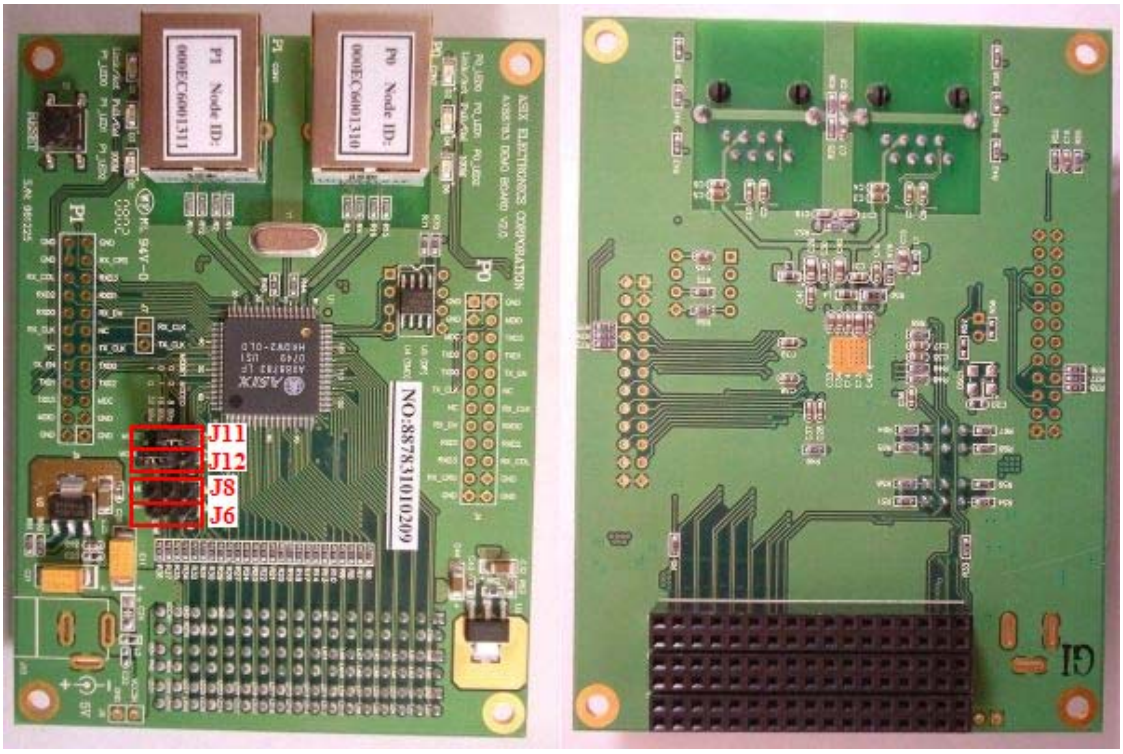


Figure 10. AX88783 SMDK2440 Demo Board

The following are the jumper configuration table of the AX88783 SMDK2440 demo board

Jumper	Setting	Description
J6 *Note1	1 2 3 (Default)	Pull high the INT signal. The INT signal should be pulled high when the INT pin is set to active low.
	1 2 3	Pull down the INT signal. The INT signal should be pulled down when the INT pin is set to active high.
J8 *Note2	1 2 3 (Default)	Pull high the PME signal. The PME signal should be pulled high when the PME pin is set to active low.
	1 2 3	Pull down the PME signal. The PME signal should be pulled down when the PME pin is set to active high.
J11 (MODE1) /J12 (MODE0)	J11 1 2 3 (Low) J12 1 2 3 (Low)	Set to 8-bit CPU interface mode.
	J11 1 2 3 (Low) J12 1 2 3 (High)	Set to 16-bit CPU interface mode.
	J11 1 2 3 (High) J12 1 2 3 (Low)	Set to 32-bit CPU interface mode. (Default)

Figure 11. AX88783 SMDK2440 Demo Board Jumper Setting Table

Note:
1. The J6 header is not set on AX88783 SMDK2440 demo board since the INT signal has been pulled high on the SMDK2440 platform.
2. The J8 header is not set on AX88783 SMDK2440 demo board since the PME signal is not supported on the SMDK2440 interface.

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6-3. AX88782 SMDK2440 Demo Board

The following is the picture of AX88782 SMDK2440 demo board for your reference.

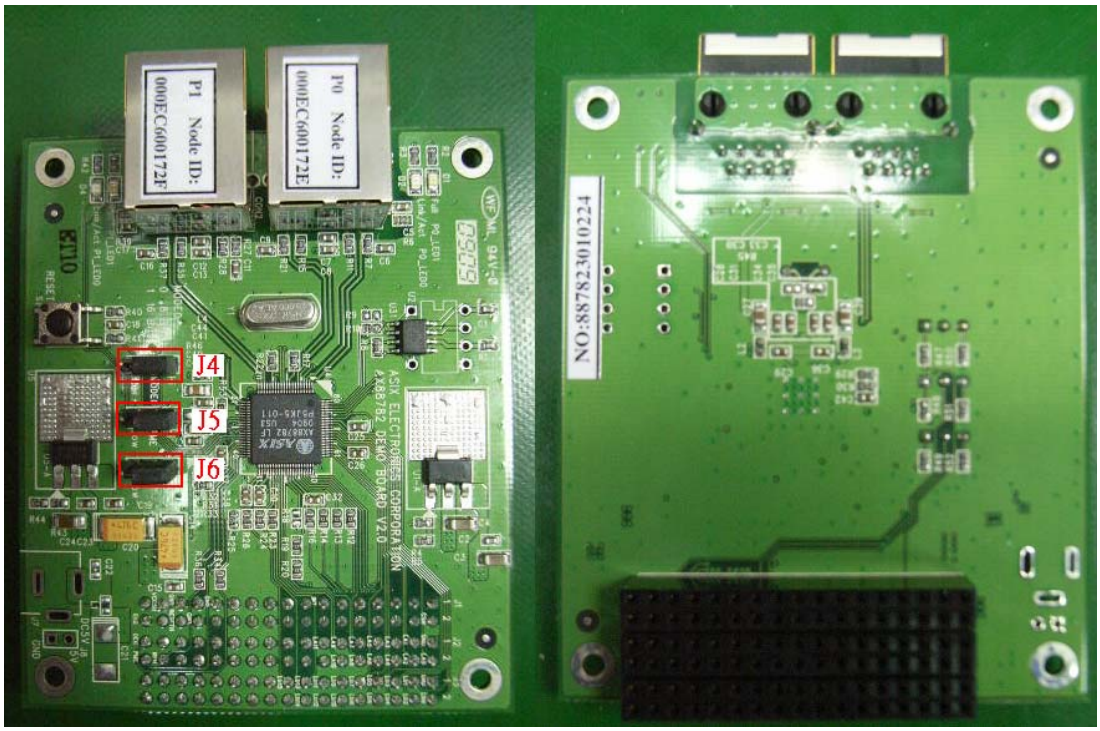


Figure 12. AX88782 SMDK2440 Demo Board

The following are the jumper configuration table of the AX88782 SMDK2440 demo board.

Jumper	Setting	Description
J4(MODE0)	1 2 3 (Default)	Set to 16-bit CPU interface mode.
	1 2 3	Set to 8-bit CPU interface mode.
J5 *Note1	1 2 3 (Default)	Pull high the PME signal. The PME signal should be pulled high when the PME pin is set to active low.
	1 2 3	Pull down the PME signal. The PME signal should be pulled down when the PME pin is set to active high.
J6 *Note2	1 2 3 (Default)	Pull high the INT signal. The INT signal should be pulled high when the INT pin is set to active low.
	1 2 3	Pull down the INT signal. The INT signal should be pulled down when the INT pin is set to active high.

Figure 13. AX88782 SMDK2440 Demo Board Jumper Setting Table

Note:
1. The J5 header is not set on AX88782 SMDK2440 demo board since the PME signal is not supported on the SMDK2440 interface.
2. The J6 header is not set on AX88782 SMDK2440 demo board since the INT signal has been pulled high on the SMDK2440 platform.

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6-4. AX88613 Demo Board

The following is the picture of AX88613 demo board for your reference.

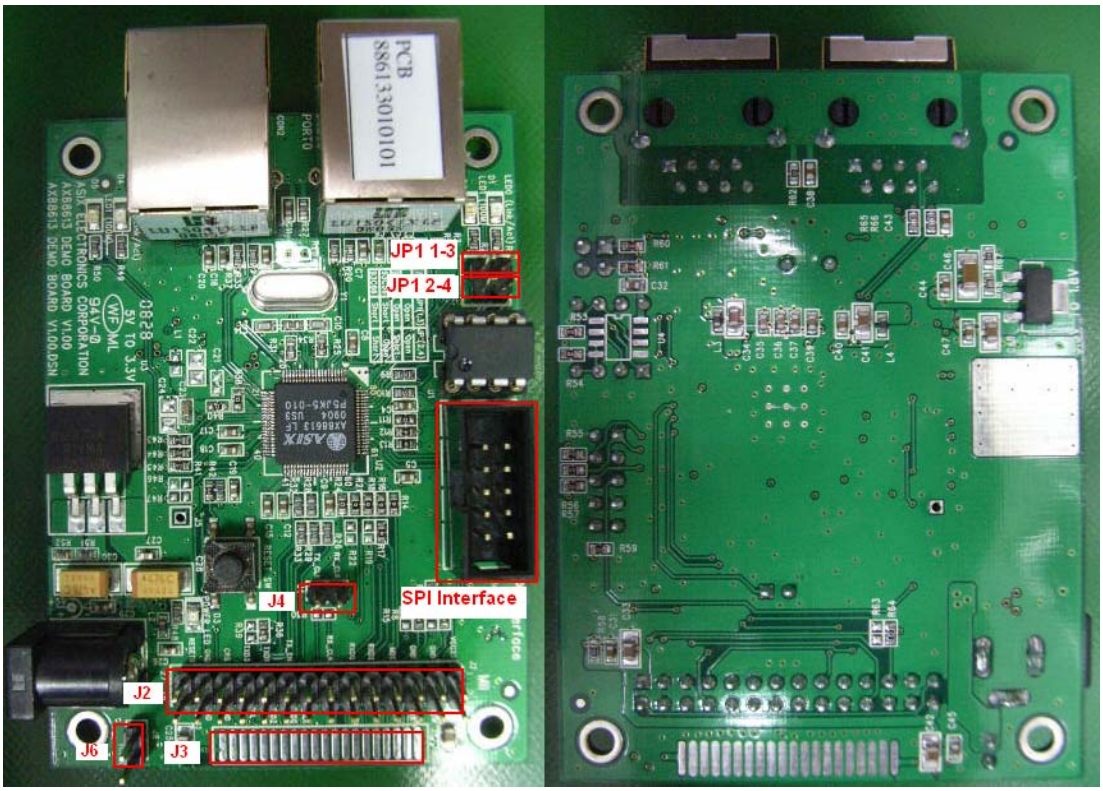


Figure 14. AX88613 Demo Board

The following are the jumper configuration table of the AX88613 demo board.

Jumper	Setting		Description
JP1	JP1(1,3)	JP1(2,4)	Select EEPROM Type
	Open	Open	None
	Open	Short	93C46
	Short	Open	93C56
	Short	Short	93C66 (Default)
J2, J3			MII/Rev-MII/RMII/Rev-RMII interface connector
J4	Open (Default)		No supply 50MHz reference clock from TX_CLK (pin #54) to RX_CLK (pin #71)
	Short		Supply 50MHz reference clock from TX_CLK (pin #54) to RX_CLK (pin #71) for RMII or Rev-RMII mode
J6	Open (Default)		No supply 5V power source to J3 MII interface connector
	Short		Supply 5V power source to J3 MII interface connector

Figure 15. AX88613 Demo Board Jumper Setting Table

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7. Related Technical Archives

The following are the AX88742/AX88783/AX88782/AX88613 products web pages for your reference. You can download some basic AX88742/AX88783/AX88782/AX88613 related technical archives from these web sites directly. You might need to register the MyASIX membership (http://www.asix.com.tw/RegLogin.php?mod=thisis) in order to download some technical archives. Please contact ASIX's Sales (sales@asix.com.tw) for more detailed information.

AX88742 -- 32-bit PCI 2-Port 10/100M Fast Ethernet Controller
(http://www.asix.com.tw/products.php?op=pItemdetail&PItemID=99;65;105&PLine=65)

AX88783 -- Non-PCI 8/16/32-bit 2-Port 10/100M Fast Ethernet Controller
(http://www.asix.com.tw/products.php?op=pItemdetail&PItemID=98;65;86&PLine=65)

AX88782 -- Non-PCI 8/16-bit 2-Port 10/100M Fast Ethernet Controller
(http://www.asix.com.tw/products.php?op=pItemdetail&PItemID=101;65;86&PLine=65)

AX88613 -- 3-Port 10/100M Fast Ethernet Switch Controller
(http://www.asix.com.tw/products.php?op=pItemdetail&PItemID=102;65;107&PLine=65)

Note: The "**1N2P Driver**" string in the AX88742/AX88783/AX88782/AX88613 Driver Download web pages means the One NIC/Two Ports driver. The AX88742/AX88783/AX88782/AX88613 2-Port Ethernet controller with the "1N2P" driver works as one NIC card with two Ethernet ports through the Switch Fabric function of AX88742/AX88783/AX88782/AX88613.

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7-1. AX88742 Technical Archives

Technical Archives	Type	Release Type
ASIX Multi-Port Ethernet Controller Product Introduction	Document	Public Release
AX88742 Product Brief	Document	Public Release
AX88742 Simplified Datasheet	Document	MyASIX Membership
AX88742 Full Datasheet	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller EEPROM/ Manufacture User Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Software Programming Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Application Design Note	Document	MyASIX Membership
AX88742 PCI Demo Board BOM File	Document	MyASIX Membership
AX88742 PCI Demo Board Reference Schematic	Schematic	Public Release
AX88742 PCI Demo Board PCB Layout File	PCB Layout	MyASIX Membership
AX88742 PCI Demo Board Gerber Files	Gerber	MyASIX Membership
AX88742 Linux Kernel 2.6.x 1N2P Driver Source	Driver	Public Release
AX88742 Vista 32-bit 1N2P Driver	Driver	Public Release
AX88742 WinXP/2000 32-bit 1N2P Driver	Driver	Public Release
AX88742 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver for x86 CEPC Platform	Driver	Public Release
AX88742 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver for MainStone II Intel PXA27X Platform	Driver	Public Release
AX88742 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver for SMDK2410 ARM Platform	Driver	Public Release
AX88742 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver for AU1200 MIPS Platform	Driver	Public Release
AX88742 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver for SH4 Platform	Driver	Public Release
AX88742 Windows CE 6.0 1N2P Driver for x86 CEPC Platform	Driver	Public Release
AX88742 Windows CE 6.0 1N2P Driver for Intel PXA27x ARM Platform	Driver	Public Release
AX88742 Windows CE 6.0 1N2P Driver for NEC Vr5500 MIPS Platform	Driver	Public Release
AX88742 Windows CE 6.0 1N2P Driver for Renesas US7750R HA7750R HARP(Aspen) SH4 Platform	Driver	Public Release
AX88742 Windows Configuration Tool	Driver	Contact ASIX Sales
AX88742 IBIS Model	IBIS Model	Contact ASIX Sales
AX88742 Reliability Report	Report	Contact ASIX Sales
AX88742 RoHS Report	Report	Contact ASIX Sales
AX88742 Hardware Throughput Test Report	Report	Contact ASIX Sales

Figure 16. AX88742 Technical Archives

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7-2. AX88783 Technical Archives

Technical Archives	Type	Release Type
ASIX Multi-Port Ethernet Controller Product Introduction	Document	Public Release
AX88783 Product Brief	Document	Public Release
AX88783 Simplified Datasheet	Document	MyASIX Membership
AX88783 Full Datasheet	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller EEPROM/ Manufacture User Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Software Programming Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Application Design Note	Document	MyASIX Membership
AX88783 SMDK2440 Demo Board BOM File	Document	MyASIX Membership
AX88783 SMDK2440 Demo Board Reference Schematic	Schematic	Public Release
AX88783 SMDK2440 Demo Board PCB Layout File	PCB Layout	MyASIX Membership
AX88783 SMDK2440 Demo Board Gerber Files	Gerber	MyASIX Membership
AX88783 Linux Kernel 2.6.x/2.4.x 1N2P Driver Source	Driver	Public Release
AX88783 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver Source	Driver	Contact ASIX Sales
AX88783 Windows CE 6.0 1N2P Driver Source	Driver	Contact ASIX Sales
AX88783 IBIS Model	IBIS Model	Contact ASIX Sales
AX88783 Reliability Report	Report	Contact ASIX Sales
AX88783 RoHS Report	Report	Contact ASIX Sales
AX88783 Hardware Throughput Test Report	Report	Contact ASIX Sales

Figure 17. AX88783 Technical Archives

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7-3. AX88782 Technical Archives

Technical Archives	Type	Release Type
ASIX Multi-Port Ethernet Controller Product Introduction	Document	Public Release
AX88782 Product Brief	Document	Public Release
AX88782 Simplified Datasheet	Document	MyASIX Membership
AX88782 Full Datasheet	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller EEPROM/ Manufacture User Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Software Programming Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Application Design Note	Document	MyASIX Membership
AX88782 SMDK2440 Demo Board BOM File	Document	MyASIX Membership
AX88782 SMDK2440 Demo Board Reference Schematic	Schematic	Public Release
AX88782 SMDK2440 Demo Board PCB Layout File	PCB Layout	MyASIX Membership
AX88782 SMDK2440 Demo Board Gerber Files	Gerber	MyASIX Membership
AX88782 Linux Kernel 2.6.x/2.4.x 1N2P Driver Source	Driver	Public Release
AX88782 Windows CE 5.0/Mobile 5/Mobile 6 1N2P Driver Source	Driver	Contact ASIX Sales
AX88782 Windows CE 6.0 1N2P Driver Source	Driver	Contact ASIX Sales
AX88782 IBIS Model	IBIS Model	Contact ASIX Sales
AX88782 Reliability Report	Report	Contact ASIX Sales
AX88782 RoHS Report	Report	Contact ASIX Sales
AX88782 Hardware Throughput Test Report	Report	Contact ASIX Sales

Figure 18. AX88782 Technical Archives

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7-4. AX88613 Technical Archives

Technical Archives	Type	Release Type
ASIX Multi-Port Ethernet Controller Product Introduction	Document	Public Release
AX88613 Product Brief	Document	Public Release
AX88613 Simplified Datasheet	Document	MyASIX Membership
AX88613 Full Datasheet	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller EEPROM/ Manufacture User Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Software Programming Guide	Document	Contact ASIX Sales
ASIX Multi-Port Ethernet Controller Application Design Note	Document	MyASIX Membership
AX88613 3-Port Switch Demo Board BOM File	Document	MyASIX Membership
AX88613 3-Port Switch Demo Board Reference Schematic	Schematic	Public Release
AX88613 3-Port Switch Demo Board PCB Layout File	PCB Layout	MyASIX Membership
AX88613 3-Port Switch Demo Board Gerber Files	Gerber	MyASIX Membership
AX88613 IBIS Model	IBIS Model	Contact ASIX Sales
AX88613 Reliability Report	Report	Contact ASIX Sales
AX88613 RoHS Report	Report	Contact ASIX Sales
AX88613 Hardware Throughput Test Report	Report	Contact ASIX Sales

Figure 19. AX88613 Technical Archives

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