AX78140/AX78120 Product Introduction

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Revision History

Revision	Date	Description
0.10	2016/06/15	Preliminary release
0.11	2016/10/11	1. Correct typos in Section 4.
1.00	2017/03/14	1. Updated the Selection Guide figure in Section 3. 2. Added Section 7 “Related Technical Archives”.
1.10	2024/01/17	1. Updated Selection Guide figure in Section 3. 2. Updated Ordering Information description in Section 4. 3. Remove Figure 13

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1. Introduction

With the rapid proliferation of USB interface in the embedded world, developers are looking for easiest ways to add USB to microcontroller-based applications in their design. ASIX's new AX781x0 family features three USB connectivity bridge solutions including USB 2.0 to Dual Serial (AX78120), USB 2.0 to Quad Serial (AX78140) and USB 2.0 to Dual Serial and Single Parallel (AX78140) controllers. Enabling smooth migration from legacy system using ASIX's MCS78x0 series, AX78140/AX78120 provide pin-to-pin compatible and driver backward compatible with MCS7840/MCS7820/MCS7810.

AX78140/AX78120 is a USB 2.0 to Quad/Dual Serial and Single Parallel controller. It has been developed to connect a wide range of standard serial devices to a USB host.

The AX78140/AX78120, in 64/48-pin LQFP, are available with RoHS compliant package and supports industrial grade from -40 to 85°C.

This document provides an overview of AX78140/AX78120 USB 2.0 to Multi I/O Controller products.

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2. Block Diagram

The following are AX78140/AX78120 block diagrams,

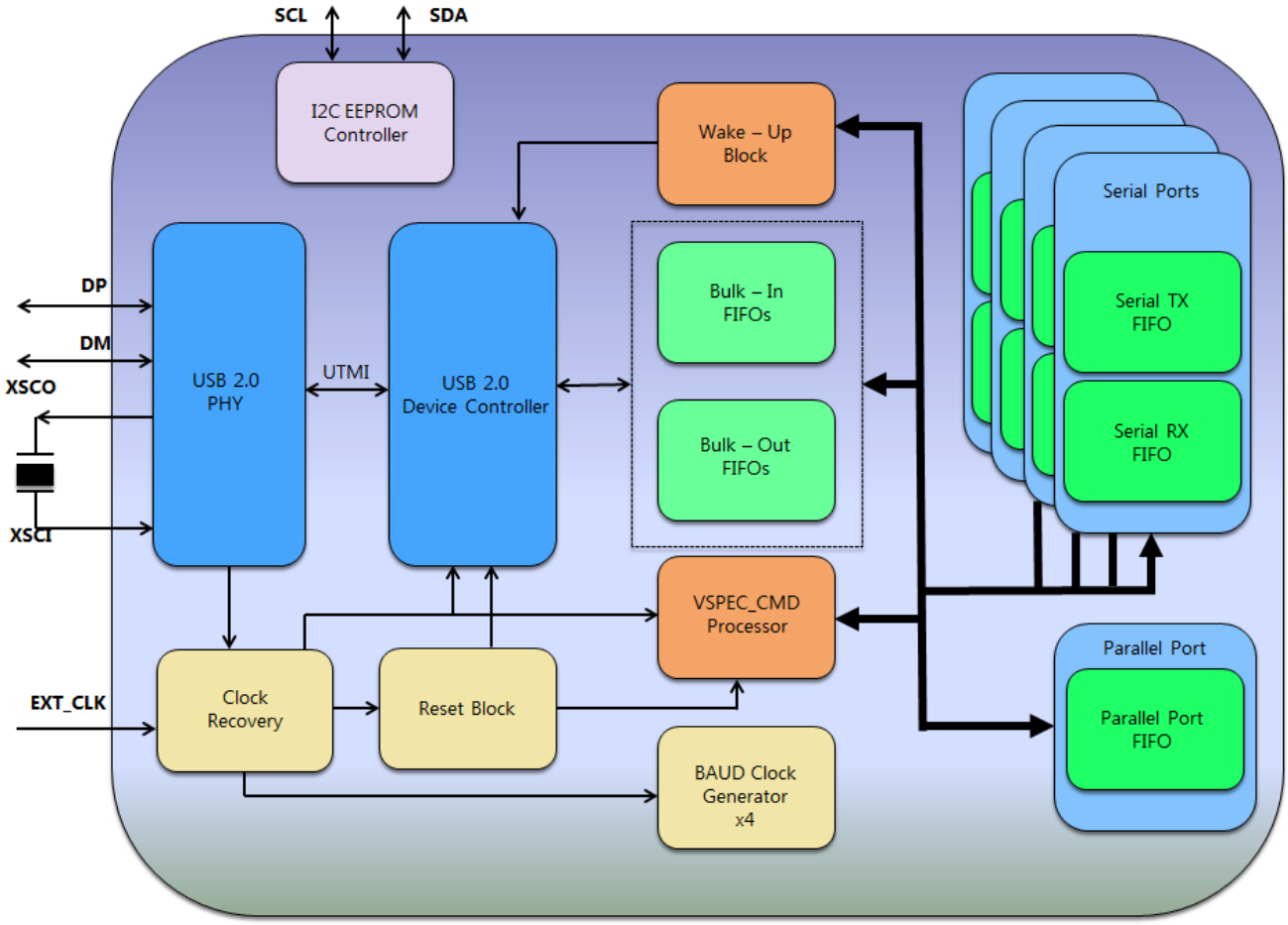

Figure 1. AX78140 Block Diagram

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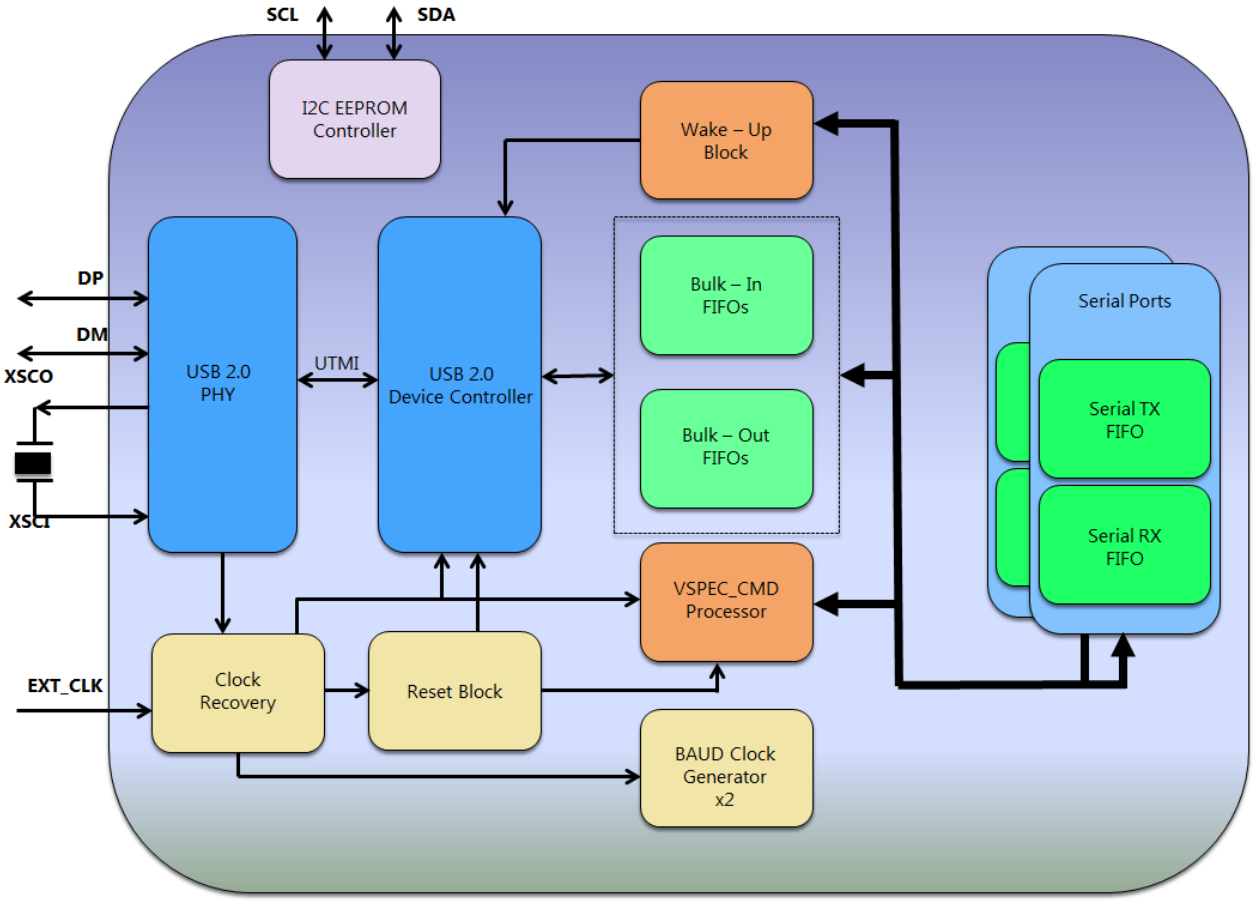

Figure 2. AX78120 Block Diagram

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3. Selection Guide

The following is the selection guide of ASIX USB Bridge family for different requirement applications. Please visit ASIX USB Bridge products web pages and contact ASIX's Sales (sales@asix.com.tw) for details.

Part No.	USB Speed	Serial Ports	Parallel Port	Temperature Range (˚C)	Package
AX78140	USB 2.0	2/4	1	-40 ~ +85	LQFP-64
AX78120	USB 2.0	1/2	-	-40 ~ +85	LQFP-48

Figure 3. USB Bridge Selection Guide

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4. Ordering Information

The following are the ordering information of AX78140/AX78120 silicon and AX78140/AX78120 4S/2S1P/2S demo boards. Please contact ASIX's Sales (sales@asix.com.tw) for more details.

Part Number	Description
AX78140 LI	64-pin LQFP lead Free package, Industrial temperature range: -40 to 85˚C.
AX78120 LI	48-pin LQFP lead Free package, Industrial temperature range: -40 to 85˚C.

AX781x0 Demo Boards	Description
AX78140 USB to 4S Demo Board	This is a USB to 4S adapter for AX78140 USB to 4S applications
AX78140 USB to 2S1P Demo Board	This is a USB to 2S1P adapter for AX78140 USB to 2S1P applications
AX78120 USB to 2S Demo Board	This is a USB to 2S adapter for AX78120 USB to 2S applications

Figure 4. Ordering Information

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5. Typical Target Applications

The following are AX78140/AX78120 typical target applications.

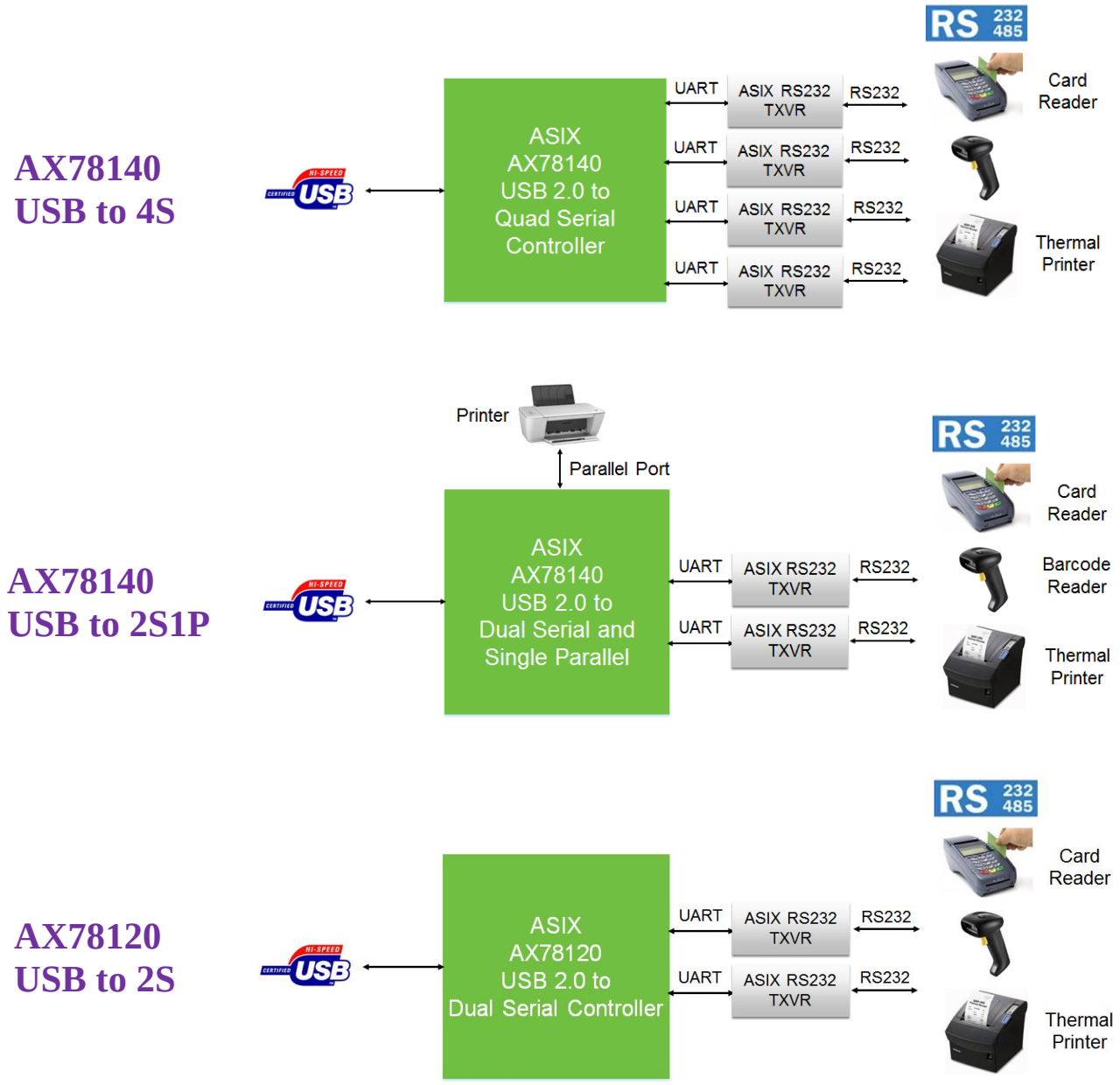

Figure 5. AX78140/AX78120 Typical Target Applications

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6. AX78140/AX78120 Demo Boards

ASIX Electronics provides AX78140 4S/2S1P and AX78120 2S demo boards for users to evaluate the basic functions of AX78140/AX78120 on different 4S/2S1P/2S target applications. If you need to purchase the AX78140/AX78120 demo boards, please contact ASIX's Sales (sales@asix.com.tw) for more details.

6-1. AX78140 USB to 4S Demo Board

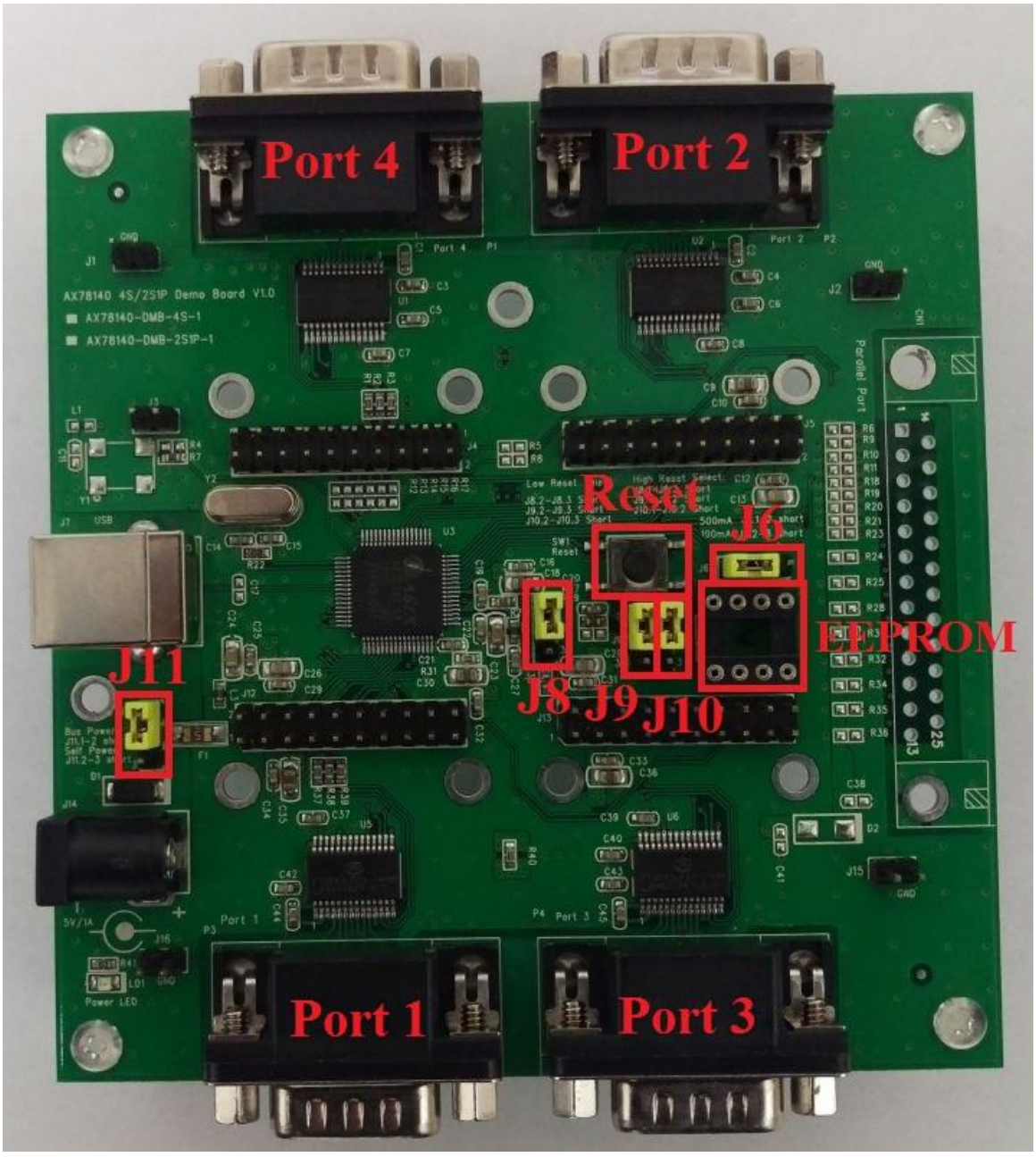

Figure 6. AX78140 USB to 4S Demo Board

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The following are the jumper configuration table of the AX78140 USB to 4S demo board. The I2C EEPROM is optional for AX78140 4S applications.

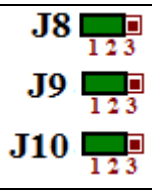
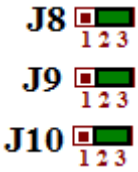
Jumper	Setting	Description
J11	(default)	Get 5V power source from USB connector for Bus-power application
		Get 5V power source from 5V DC power jack for Self-power application
J6	(default)	Set USB Max. Power to 500mA for Bus-power application
		Set USB Max. Power to 100mA for Self-power application
J8/J9/J10	 (default)	Pull high the RESET_SEL pin to set AX78140 RESET pin active high.
		Pull low the RESET_SEL pin to set AX78140 RESET pin active low.

Figure 7. AX78140 USB to 4S Demo Board Jumper Setting

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6-2. AX78140 USB to 2S1P Demo Board

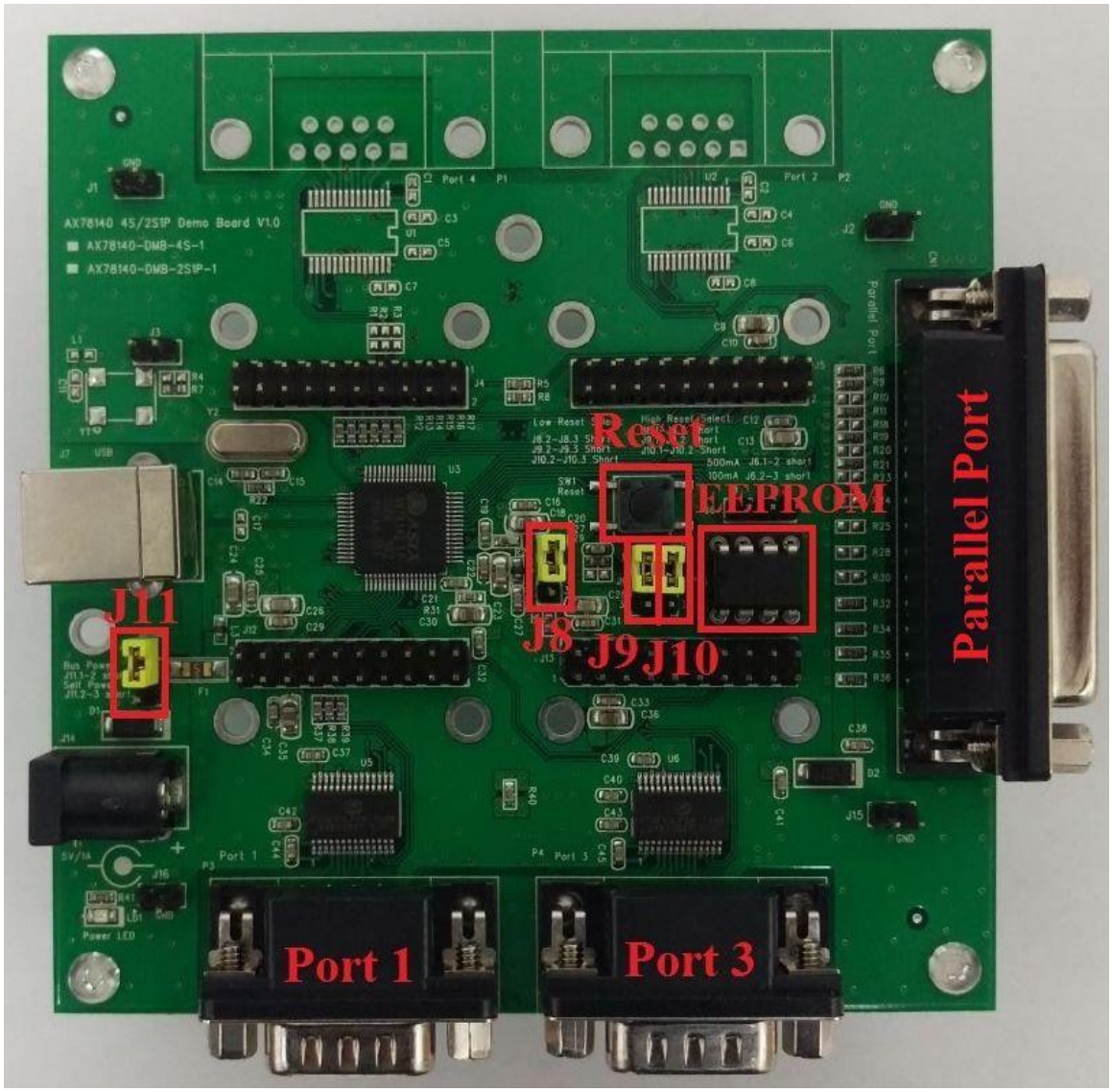

Figure 8. AX78140 USB to 2S1P Demo Board

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The following are the jumper configuration table of the AX78140 USB to 2S1P demo board. The I2C EEPROM is required for AX78140 2S1P applications.

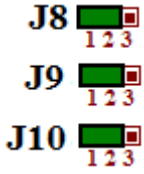
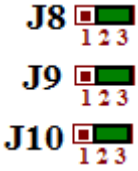
Jumper	Setting	Description
J11	(default)	Get 5V power source from USB connector for Bus-power application
		Get 5V power source from 5V DC power jack for Self-power application
J8/J9/J10	 (default)	Pull high the RESET_SEL pin to set AX78140 RESET pin active high.
		Pull low the RESET_SEL pin to set AX78140 RESET pin active low.

Figure 9. AX78140 USB to 2S1P Demo Board Jumper Setting

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6-3. AX78120 USB to 2S Demo Board

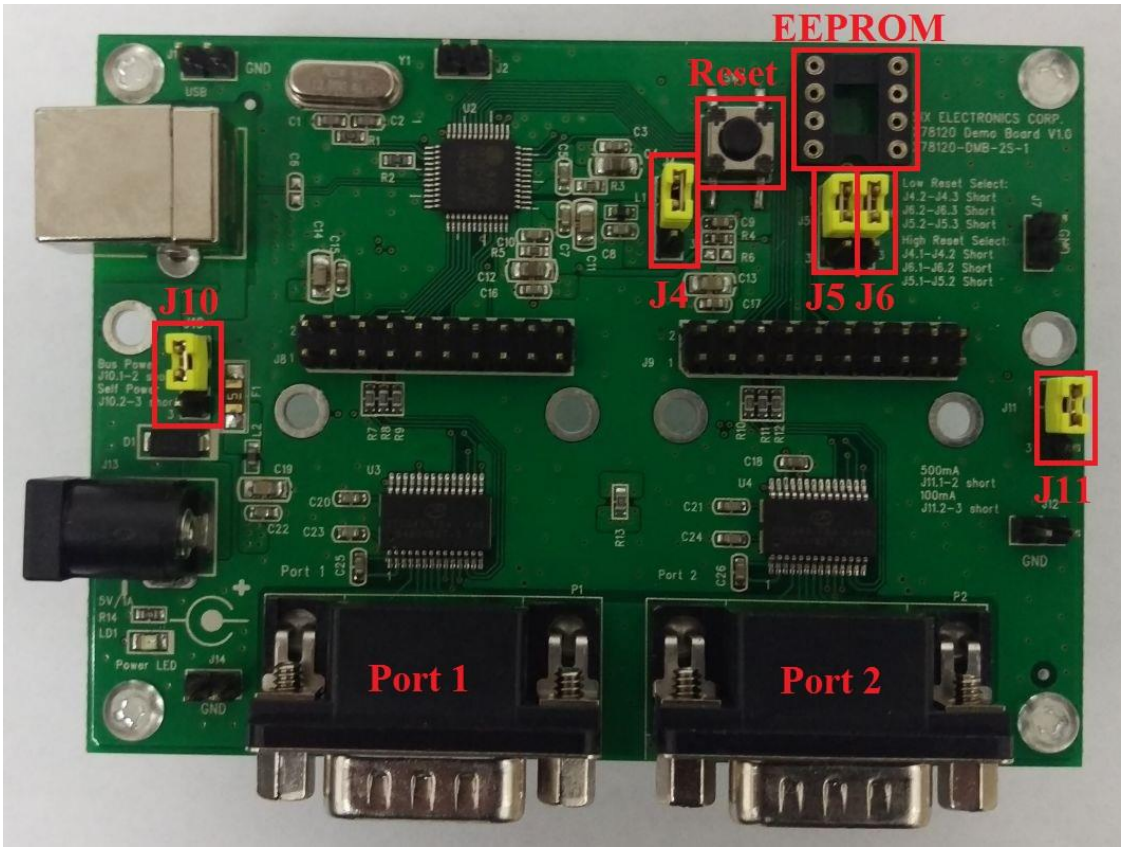

Figure 10. AX78120 USB to 2S Demo Board

The following are the jumper configuration table of the AX78120 USB to 2S demo board. The I2C EEPROM is optional for AX78120 2S applications.

Jumper	Setting	Description
J10	1 2 3 (default)	Get 5V power source from USB connector for Bus-power application
	1 2 3	Get 5V power source from 5V DC power jack for Self-power application
J11	1 2 3 (default)	Set USB Max. Power to 500mA for Bus-power application
	1 2 3	Set USB Max. Power to 100mA for Self-power application
J4/J5/J6	J4 1 2 3 J5 1 2 3 J6 1 2 3 (default)	Pull high the RESET_SEL pin to set AX78120 RESET pin active high.
	J4 1 2 3 J5 1 2 3 J6 1 2 3	Pull low the RESET_SEL pin to set AX78120 RESET pin active low.

Figure 11. AX78120 USB to 2S Demo Board Jumper Setting

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7. Related Technical Archives

The following are AX78140/AX78120 related technical archives list for your reference. You can download some basic AX78140/AX78120 related technical archives from AX78140/AX78120 product web pages.

AX78140/AX78120 Technical Archives	Type	Availability*
AX78140_120 Product Introduction	Document	This document
AX78140_120 Product Brief	Document	Public Release
AX78140 USB 2.0 to 4S Demo Board Reference Schematic	Schematic	Public Release
AX78140 USB 2.0 to 2S1P Demo Board Reference Schematic	Schematic	Public Release
AX78120 USB 2.0 to 2S Demo Board Reference Schematic	Schematic	Public Release
AX78120 USB 2.0 to 1S Reference Schematic	Schematic	Public Release
AX78140_120 Windows 11/10/8.x 64-bit Driver	Driver	Public Release
AX78140_120 Windows 11/10/8.x 32-bit Driver	Driver	Public Release
AX78140_120 Windows 7/Vista/XP 64-bit Driver	Driver	Public Release
AX78140_120 Windows 7/Vista/XP 32-bit Driver	Driver	Public Release
AX78140_120 Linux/Android Drivers	Driver	Public Release
AX78140 Datasheet	Document	MyASIX Membership
AX78120 Datasheet	Document	MyASIX Membership
AX78140_120 Application Design Guide	Document	MyASIX Membership
AX78140 USB 2.0 to 4S/2S1P Demo Board PCB file	PCB	MyASIX Membership
AX78120 USB 2.0 to 2S Demo Board PCB file	PCB	MyASIX Membership
AX78140 USB 2.0 to 4S/2S1P Demo Board Gerber files	Gerber	MyASIX Membership
AX78120 USB 2.0 to 2S Demo Board Gerber files	Gerber	MyASIX Membership
AX78140 USB 2.0 to 4S Demo Board BOM File	BOM	MyASIX Membership
AX78140 USB 2.0 to 2S1P Demo Board BOM File	BOM	MyASIX Membership
AX78120 USB 2.0 to 2S Demo Board BOM File	BOM	MyASIX Membership
AX78120 USB 2.0 to 1S Reference Schematic BOM File	BOM	MyASIX Membership
AX78140 IBIS Model	IBIS	MyASIX Membership
AX78120 IBIS Model	IBIS	MyASIX Membership
AX78140 Reliability Report	Report	MyASIX Membership
AX78120 Reliability Report	Report	MyASIX Membership
AX78140_120 EEPROM User Guide	Document	Contact ASIX Sales
AX78140_120 Windows EEPROM Utility	Utility	Contact ASIX Sales
AX78140_120 Windows MP Tool	Utility	Contact ASIX Sales
AX78140 RoHS Report	Report	Contact ASIX Sales
AX78120 RoHS Report	Report	Contact ASIX Sales
AX78140_120 Performance Test Report	Report	Contact ASIX Sales

Figure 12. Related Technical Archives

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