



Astro-EVB-F1K(A)-L144

Development Board User Guide

Welcome to Capital Microelectronics Astro family development kit: [Astro-EVB-F1K\(A\)-L144](#). Whether you just want to learn about the Capital Microelectronics device design, or have a specific design implementation to complete, the kit provides a perfect environment to help you start designing with and evaluating the powerful features of Capital Microelectronics Astro devices quickly and efficiently.

Overview

[Astro-EVB-F1K\(A\)-L144](#) is an Astro module board with an AS1E5F1KL144 or AS1E5F1KAL144 device on it. It enables users to use all the powerful features of AS1E5F1K(A)L144 devices without having to worry about how to design the complex circuitry for power supply and configuration; Also, Astro-EVB-F1K(A)-L144 users can access all the available AS1E5F1K(A)L144 I/Os without having to worry about how to create and manufacture the complex PCB board.

This document mainly describes features and operation of Astro-EVB-F1K(A)-L144.

Features

The important features of Astro-EVB-F1K(A)-L144 are listed below:

- CME Astro AS1E5F1K(A)L144 device on board
- Provides 99 user I/O pins
- Two headers (on the top and bottom sides) to ease the layout design of user's own mother board
- Easy configuration via JTAG with the data transfer up to 1MB per second
- Various configuration schemes
 - ✓ JTAG-based configuration
 - ✓ AS SPI configuration from embed flash
- Provides one on-board 4M bits SRAM
- Provides one on-board clock oscillator
- Provides two user push buttons
- Provides two LED
- Power jack for power and power switch

Block Diagram

The block diagram of Astro-EVB-F1K(A)-L144 is shown in **Figure 1**.

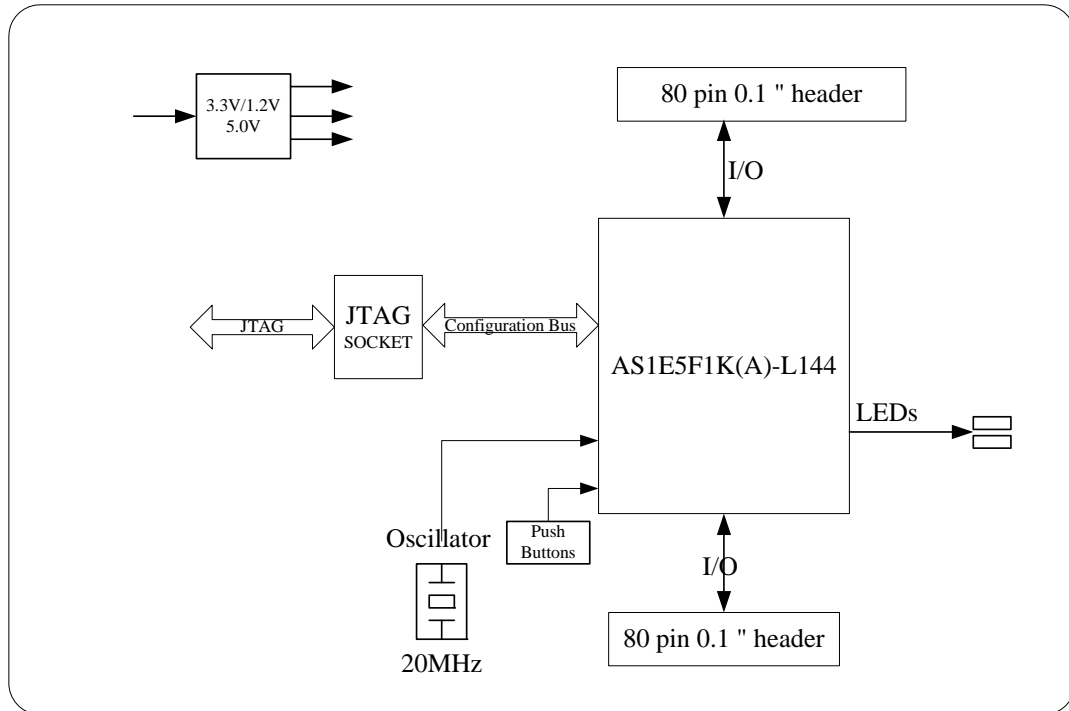


Figure 1 Astro-EVB-F1K(A)-L144 Block Diagram

General Description

This section mainly introduces to you about signal definitions of Astro-EVB-F1K(A)-L144 development board.

Signal Assignments

Table 1 summarizes the pin assignment of the connectors on Astro-EVB-F1K(A)-L144 development board. They are arranged by the function description.

The whole table is divided into three parts of different colours. The part with words in blue describes components on Astro-EVB3-M-A mother board whose signals are connected to Astro-EVB-F1K(A)-L144. The part with words in red defines components on Astro-EVB-F1K(A)-L144 only. The part with black words are headers unspent.

Table 1 Pin Assignment of the Connectors

Pin AS1E5F1K(A)L144	Signal	Header on Astro-EVB-F1K(A)-L144	Header on Astro-EVB3-M-A	Description
	GND	J4-1	J4-1	Power
	GND	J4-2	J4-2	
	+3.3V	J4-3	J4-3	
	+3.3V	J4-4	J4-4	
	GND	J4-41	J4-41	
	GND	J4-42	J4-42	
	GND	J4-79	J4-79	
	GND	J4-80	J4-80	
	GND	J3-1	J3-1	
	GND	J3-2	J3-2	
	+5V	J3-3	J3-3	
	+5V	J3-4	J3-4	
	GND	J3-41	J3-41	
	GND	J3-42	J3-42	
	GND	J3-79	J3-79	
	GND	J3-80	J3-80	
IN25	CLOCK0	Only Input		Global clock
IO78	PHY1_RSTN	J3-74	J3-74	PHY
IO79	PHY1_CRS	J3-73	J3-73	
IO80	PHY1_COL	J3-72	J3-72	
IO81	PHY1_TD3	J3-71	J3-71	
IO82	PHY1_TD2	J3-70	J3-70	
IO83	PHY1_TD1	J3-69	J3-69	
IO84	PHY1_TD0	J3-68	J3-68	
IO85	PHY1_TXEN	J3-67	J3-67	
IO86	PHY1_TXC	J3-66	J3-66	
IO87	PHY1_INTRP	J3-65	J3-65	
IO88	PHY1_RXER	J3-64	J3-64	
IO89	PHY1_RXC	J3-63	J3-63	
IO90	PHY1_RXDV	J3-62	J3-62	
IO91	PHY1_RXD0	J3-61	J3-61	
IO92	PHY1_RXD1	J3-60	J3-60	
IO93	PHY1_RXD2	J3-59	J3-59	
IO94	PHY1_RXD3	J3-58	J3-58	
IO95	PHY1_MDC	J3-57	J3-57	
IO96	PHY1_MDIO	J3-56	J3-56	
IO39	DS_SCLK	J4-48	J4-48	RTC
IO38	DS_IO	J4-47	J4-47	
IO37	DS_CE	J4-46	J4-46	
IO5	LCD_D0	J3-08	J3-08	

Table 1 Pin Assignment of the Connectors

Pin AS1E5F1K(A)L144	Signal	Header on Astro-EVB-F1K(A)-L144	Header on Astro-EVB3-M-A	Description
IO4	LCD_D1	J3-09	J3-09	Char LCD
IO3	LCD_D2	J3-10	J3-10	
IO2	LCD_D3	J3-11	J3-11	
IO1	LCD_D4	J3-12	J3-12	
IO99	LCD_D5	J3-13	J3-13	
IO98	LCD_D6	J3-14	J3-14	
IO97	LCD_D7	J3-15	J3-15	
IO8	LCD_RS	J3-05	J3-05	
IO6	LCD_E	J3-06	J3-06	
IO7	LCD_RW	J3-07	J3-07	
IO74	LED_USER0	J3-78	J3-78	LED
IO75	LED_USER1	J3-77	J3-77	
IO76	LED_USER2	J3-76	J3-76	
IO77	LED_USER3	J3-75	J3-75	
IO36	RS232_TX0	J4-45	J4-45	RS-232
IO35	RS232_RX0	J4-44	J4-44	
IO10	PD_RXD	J4-8	J4-8	
IO11	PD_TXD	J4-7	J4-7	
IO9	PD_TDI	-	-	8051-JTAG
IO12	PD_TMS	-	-	
IO13	PD_TDO	-	-	
IO14	PD_TCK	-	-	
IO21	SCL	J4-18	J4-18	I2C
IO20	SDA	J4-17	J4-17	
IO17/SCLK	SPI_SCLK	J4-15	J4-15	SPI ADC
IO14/SDO	SPI_ADDR (SDI)	J4-14	J4-14	
IO18	SPI_CS	J4-12	J4-12	
IO48/SDI	SPI_DOUT (SDO)	J4-13	J4-13	
IO19	SPI_EOC	J4-16	J4-16	
IO22	SW_DIP0	J4-19	J4-19	DIP switch S1
IO28	SW_DIP1	J4-20	J4-20	
IO29	SW_DIP2	J4-34	J4-34	
IO30	SW_DIP3	J4-35	J4-35	
IO31	SW_USER0	J4-38	J4-38	Push button SW1-SW4
IO32	SW_USER1	J439	J439	
IO33	SW_USER2	J4-40	J4-40	
IO34	SW_USER3	J4-43	J4-43	
IN27/CLK2	SW1	J4-36	J4-36	Push button on up-board
IN26/CLK1	SW2	J4-37	J4-37	
IO50	A0	J4-53	J4-53	

Table 1 Pin Assignment of the Connectors

Pin AS1E5F1K(A)L144	Signal	Header on Astro-EVB-F1K(A)-L144	Header on Astro-EVB3-M-A	Description
IO51	A1	J4-52	J4-52	SRAM
IO52	A2	J4-51	J4-51	
IO53	A3	J4-50	J4-50	
IO54	A4	J4-49	J4-49	
IO47	A5	J4-67	J4-67	
IO46	A6	J4-68	J4-68	
IO44	A7	J4-69	J4-69	
IO43	A8	J4-70	J4-70	
IO42	A9	J4-71	J4-71	
IO60	A10	J4-76	J4-76	
IO61	A11	J4-75	J4-75	
IO62	A12	J4-74	J4-74	
IO63	A13	J4-73	J4-73	
IO64	A14	J4-72	J4-72	
IO69	A15	J4-57	J4-57	
IO68	A16	J4-56	J4-56	
IO67	A17	J4-55	J4-55	
IO66	A18	J4-54	J4-54	
IO56	D0	J4-62	J4-62	
IO57	D1	J4-63	J4-63	
IO58	D2	J4-64	J4-64	
IO59	D3	J4-65	J4-65	
IO65	D4	J4-77	J4-77	
IO73	D5	J4-78	J4-78	
IO72	D6	J4-60	J4-60	
IO71	D7	J4-59	J4-59	
IO55	CE	J4-61	J4-61	
IO70	RD	J4-58	J4-58	
IO49	WR	J4-66	J4-66	
IO41	LED1	-	-	
IO40	LED2	-	-	up-board

Powering up the Development Board

To quickly see your kit board function, the following actions are required:

1. Power up the development board:

Plug the 5VDC power plug in the power jack and push down the power switch SW3

2. Connect your computer and the FP-JTAG interface of the Astro-EVB-F1K(A)-L144 board using USB -> JTAG cable, and then you can debug your FP Design.

3. Connect your computer and the 8051-JTAG interface of the Astro-EVB-F1K(A)-L144 board using USB -> JTAG cable, and then you can debug your 8051 Design.

About Capital Microelectronics

Capital Microelectronics is the global pioneer and leader of the innovative APGA (Adaptable Programmable Gate Array) technologies. The company offers a full spectrum of programmable logic devices, software design tools, intellectual property (IPs) and design services. Focusing on multiple applications such as telecommunication equipments, industrial control systems and consumer products, we use the Chinese leading foundry partner, SMIC, to manufacture our chips to offer solutions tailored for China market.

Technical Support Assistance

Tel: +86 10 82150100

E-mail: support@capital-micro.com.cn

Website: www.capital-micro.com

Revision History

Table below shows the revision history for this document.

Date	Version	Revision
January, 2010.	0.50	Initial CME Release

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