



# RocKid-EB2-1F4C

## Development Board User Guide

Welcome to Agate Logic Angelo family Development Kit: RocKid. Whether you just want to learn about the Agate Logic 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 Agate Logic Angelo Devices quickly and efficiently.

### Overview

RocKid-EB2-1F4C with the board version 1.0 is an Angelo module board with an AG1F4-BA device on it. It enables users to use all the powerful features of AG1F4-BA devices without having to worry about how to design the complex circuitry for power supply and configuration; Also, RocKid-EB2-1F4C users can access all the available AG1F4-BA I/Os without having to worry about how to create and manufacture the complex PCB board.

This document mainly describes features and operation of RocKid-EB2-1F4C.

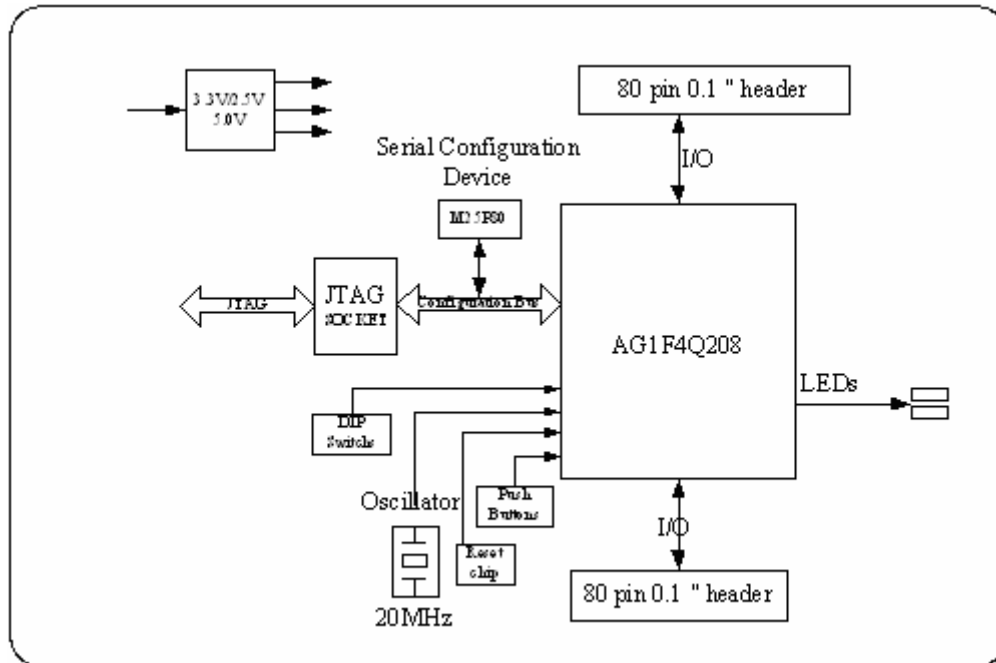
### Features

The important features of RocKid-EB2-1F4C are listed below:

- Agate Logic Angelo device with QFP208 package
- Provides 118 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 serial configuration device M25P80
- Provides a PLCC44 socket for 8051 MCU
- Provides one on-board clock oscillator
- Provides one chip reset push button and two user push buttons
- Provides four DIP switch, two for mode select and two for user.
- Provides two LEDs
- Power jack for power and power switch

## Block Diagram

The block diagram of RocKid-EB2-1F4C is shown in **Figure 1**.



**Figure 1 RocKid-EB2-1F4C Block Diagram**

## General Description

This section mainly introduces to you about signal definitions of RocKid-EB2-1F4C development board.

## Signal Assignments

**Table 1** summarizes the pin assignment of the connectors on RocKid-EB2-1F4C 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 RocKid-EB1-MA mother board whose signals are connected to RocKid-EB2-1F4C. The part with words in red defines components on RocKid-EB2-1F4C only. The part with black words are headers unspent.

<b>AG1F4-BA Pin</b>	<b>Signal</b>	<b>Header on RocKid-EB2-1F4C</b>	<b>Header on RocKid-EB2-MA</b>	<b>Description</b>	
	GND	J4-1	J9-1	Power	
	GND	J4-2	J9-2		
	+3.3V	J4-3	J9-3		
	+3.3V	J4-4	J9-4		
	GND	J4-41	J9-41		
	GND	J4-42	J9-42		
	GND	J4-79	J9-79		
	GND	J4-80	J9-80		
	GND	J3-1	J10-1		
	GND	J3-2	J10-2		
	+5V	J3-3	J10-3		
	+5V	J3-4	J10-4		
	GND	J3-41	J10-41		
	GND	J3-42	J10-42		
	GND	J3-79	J10-79		
	GND	J3-80	J10-80		
IO52	CLOCK0			Global clock input	
IO113	BLDC_CC0	J3-60	J10-60	BLDC	
IO112	BLDC_COUT0	J3-61	J10-61		
IO111	BLDC_CC1	J3-62	J10-62		
IO110	BLDC_COUT1	J3-63	J10-63		
IO109	BLDC_CC2	J3-64	J10-64		
IO108	BLDC_COUT2	J3-65	J10-65		
IO107	BLDC_COUT3	J3-66	J10-66		
IO106	BLDC_POS2	J3-67	J10-67		
IO105	BLDC_POS1	J3-68	J10-68		
IO104	BLDC_POS0	J3-69	J10-69		
IO103	BLDC_CTRAP	J3-70	J10-70		
IO76	CAN_AD0	J4-62	J9-62	Multiplexed address/data bus	
IO77	CAN_AD1	J4-63	J9-63		
IO78	CAN_AD2	J4-64	J9-64		
IO79	CAN_AD3	J4-65	J9-65		
IO80	CAN_AD4	J4-66	J9-66		
IO81	CAN_AD5	J4-67	J9-67		
IO82	CAN_AD6	J4-68	J9-68		
IO83	CAN_AD7	J4-69	J9-69		
IO85	CAN_WR	J4-71	J9-71	CAN controller control signals	
IO86	CAN_RD_E	J4-72	J9-72		
IO87	CAN_CS	J4-73	J9-73		
IO88	CAN_ALE/AS	J4-74	J9-74		

<b>AG1F4-BA Pin</b>	<b>Signal</b>	<b>Header on RocKid-EB2-1F4C</b>	<b>Header on RocKid-EB2-MA</b>	<b>Description</b>	
IO89	CAN_INT	J4-75	J9-75		
IO84	CAN_DIR	J4-70	J9-70	Data direction control	
IO117	DIG3	J3-56	J10-56	DS1-DS4 Select	7-segment Display
IO116	DIG2	J3-57	J10-57		
IO115	DIG1	J3-58	J10-58		
IO114	DIG0	J3-59	J10-59		
IO125	SEG7	J3-48	J10-48	7-segment Display	
IO124	SEG6	J3-49	J10-49		
IO123	SEG5	J3-50	J10-50		
IO122	SEG4	J3-51	J10-51		
IO121	SEG3	J3-52	J10-52		
IO120	SEG2	J3-53	J10-53		
IO119	SEG1	J3-54	J10-54		
IO118	SEG0	J3-55	J10-55		
IO65	DS_SCLK	J4-51	J9-51	RTC	
IO66	DS_IO	J4-52	J9-52		
IO67	DS_CE	J4-53	J9-53		
IO14	LCD_D0	J3-08	J10-08	LCD data bit 0	LCD
IO13	LCD_D1	J3-09	J10-09	LCD data bit 1	
IO12	LCD_D2	J3-10	J10-10	LCD data bit 2	
IO11	LCD_D3	J3-11	J10-11	LCD data bit 3	
IO10	LCD_D4	J3-12	J10-12	LCD data bit 4	
IO9	LCD_D5	J3-13	J10-13	LCD data bit 5	
IO8	LCD_D6	J3-14	J10-14	LCD data bit 6	
IO7	LCD_D7	J3-15	J10-15	LCD data bit 7	
IO17	LCD_RS	J3-05	J10-05	LCD register select	
IO16	LCD_E	J3-06	J10-06	LCD enable signal	
IO15	LCD_RW	J3-07	J10-07	LCD read, write select	
IO102	LED_USER7	J3-71	J10-71	LEDs	
IO101	LED_USER6	J3-72	J10-72		
IO100	LED_USER5	J3-73	J10-73		
IO99	LED_USER4	J3-74	J10-74		
IO98	LED_USER3	J3-75	J10-75		
IO97	LED_USER2	J3-76	J10-76		
IO96	LED_USER1	J3-77	J10-77		
IO95	LED_USER0	J3-78	J10-78		

<b>AG1F4-BA Pin</b>	<b>Signal</b>	<b>Header on RocKid-EB2-1F4C</b>	<b>Header on RocKid-EB2-MA</b>	<b>Description</b>	
IO91	RS232_TX1	J4-77	J9-77	RS-232	
IO92	RS232_RX1	J4-78	J9-78		
IO63	SCL	J4-49	J9-49	I2C clock signal	EEPROM
IO64	SDA	J4-50	J9-50	I2C data signal	
IO58	SPI_SCLK	J4-44	J9-44	SPI ADC	
IO59	SPI_ADDR	J4-45	J9-45		
IO60	SPI_CS	J4-46	J9-46		
IO61	SPI_DOUT	J4-47	J9-47		
IO62	SPI_EOC	J4-48	J9-48		
IO68	SW_DIP7	J4-54	J9-54		
IO69	SW_DIP6	J4-55	J9-55		
IO70	SW_DIP5	J4-56	J9-56		
IO71	SW_DIP4	J4-57	J9-57		
IO72	SW_DIP3	J4-58	J9-58		
IO73	SW_DIP2	J4-59	J9-59		
IO74	SW_DIP1	J4-60	J9-60		
IO75	SW_DIP0	J4-61	J9-61		
IO6	SRAM_A00	J3-16	J10-16	SRAM	
IO153	SRAM_A01	J3-17	J10-17		
IO152	SRAM_A02	J3-18	J10-18		
IO151	SRAM_A03	J3-19	J10-19		
IO150	SRAM_A04	J3-20	J10-20		
IO134	SRAM_A05	J3-43	J10-43		
IO133	SRAM_A06	J3-44	J10-44		
IO132	SRAM_A07	J3-45	J10-45		
IO131	SRAM_A08	J3-46	J10-46		
IO130	SRAM_A09	J3-47	J10-47		
IO3	SRAM_A10	J3-37	J10-37		
IO2	SRAM_A11	J3-36	J10-36		
IO1	SRAM_A12	J3-35	J10-35		
IO136	SRAM_A13	J3-34	J10-34		
IO137	SRAM_A14	J3-33	J10-33		
IO143	SRAM_A15	J3-27	J10-27		
IO144	SRAM_A16	J3-26	J10-26		
IO145	SRAM_A17	J3-25	J10-25		
IO146	SRAM_A18	J3-24	J10-24		
IO148	SRAM_DQ0	J3-22	J10-22		
IO147	SRAM_DQ1	J3-23	J10-23		
IO4	SRAM_DQ2	J3-38	J10-38		

<b>AG1F4-BA Pin</b>	<b>Signal</b>	<b>Header on RocKid-EB2-1F4C</b>	<b>Header on RocKid-EB2-MA</b>	<b>Description</b>
IO5	SRAM_DQ3	J3-39	J10-39	
IO138	SRAM_DQ4	J3-32	J10-32	
IO139	SRAM_DQ5	J3-31	J10-31	
IO140	SRAM_DQ6	J3-30	J10-30	
IO141	SRAM_DQ7	J3-29	J10-29	
IO149	SRAM_CE_N	J3-21	J10-21	
IO142	SRAM_OE_N	J3-28	J10-28	
IO135	SRAM_WE_N	J3-40	J10-40	
IO20	I2S_LRCK	J4-07	J9-07	D/A
IO21	I2S_MCLK	J4-08	J9-08	
IO19	I2S_SCLK	J4-06	J9-06	
IO18	I2S_SDIN	J4-05	J9-05	
IO22	SPKR_N	J4-09	J9-09	Speaker
IO23	SPKR_P	J4-10	J9-10	
IO24	SW_USER0	J4-11	J9-11	Push button SW1-SW4
IO25	SW_USER1	J4-12	J9-12	
IO26	SW_USER2	J4-13	J9-13	
IO27	SW_USER3	J4-14	J9-14	
IO24	SW1	-	-	Push button on up-board
IO25	SW2	-	-	
IO39	AD0			8051 Signal
IO41	AD1			
IO43	AD2			
IO45	AD3			
IO46	AD4			
IO47	AD5			
IO48	AD6			
IO49	AD7			
IO36	A8			
IO37	A9			
IO38	A10			
IO40	A11			
IO42	A12			
IO44	A13			
IO56	A14			
IO51	A15			
IO33	P3_0			
IO32	P3_1			
IO31	P3_2			
IO30	P3_3			

AG1F4-BA Pin	Signal	Header on RocKid-EB2-1F4C	Header on RocKid-EB2-MA	Description
IO29	P3_4			
IO28	P3_5			
IO35	P3_6			
IO34	P3_7			
IO50	ALE			
IO94	LED1	-	-	LEDs on up-board
IO93	LED2	-	-	
IO57		J4-43	J9-43	Unspent Headers
IO90		J4-76	J9-76	

## 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 SW4.

2. Connect your computer and the RocKid-EB2-1F4C board using USB -> JTAG cable, and then you can debug your design.
3. Push down the Chip\_Rst push button on RocKid-EB2-1F4C to reset the chip.

## About Agate Logic

Agate Logic is the global pioneer and leader of the innovative Adaptable Programmable Gate Array (APGA) technologies. The company offers a full spectrum of programmable logic devices, software design tools, intellectual property (IP) 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 the market in China.

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