

PMod Connectors				
J8	Function	FPGA Pin	Pin Name	Voltage
1	PMOD_D0_P	L11	MSIO3PB2	3.3V
2	PMOD_D0_N	L12	MSIO3NB2	3.3V
3	PMOD_D1_P	L14	MSIO5PB2	3.3V
4	PMOD_D1_N	L13	MSIO5NB2	3.3V
5	PMOD_D2_P	N14	MSIO2PB2	3.3V
6	PMOD_D2_N	M13	MSIO2NB2	3.3V
7	PMOD_D3_P	M15	MSIO0PB2	3.3V
8	PMOD_D3_N	N15	MSIO0NB2	3.3V
9	GND	-	-	-
10	GND	-	-	-
11	+3.3V	-	-	-
12	+3.3V	-	-	-

A/D Converters				
U6	Function	FPGA Pin	Pin Name	Voltage
18	ADC_DR_N	H4	MSIO99NB7	3.3V
21	ADC_CLK_IN	F4	MSIO96PB7/GB6/CCC_NW1_CLKI1	3.3V
23	ADC_CS_N	G2	MSIO98NB7	3.3V
24	ADC_SCK	F2	MSIO97NB7	3.3V
25	ADC_SDO	F3	MSIO96NB7	3.3V
26	ADC_SDI	F5	MSIO95NB7	3.3V
27	ADC_RST	G5	MSIO95PB7	3.3V

LED and User Buttons				
Function	FPGA Pin	Pin Name	Level	
LED1_GREEN	J16	MSIO11PB2//CCC_NE0_CLKI0	Active High	
LED1_RED	K16	MSIO4PB2	Active High	
LED2_GREEN	M16	MSIO1NB2	Active High	
LED2_RED	N16	MSIO1PB2	Active High	
USER_BUTTON1	H12	MSIO27NB1	Active High	
USER_BUTTON2	H13	MSIO28NB1	Active High	

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Future Electronics – Microsemi Creative Board Quick Start Guide

Product Overview

The Creative Development Board allows developers to quickly deploy on one of the lowest cost FPGA platforms in the market. At the heart of the kit is a 25k logic element IGL002 or SmartFusion2 FPGA from Microsemi, which offers more resources in low density devices with the lowest power, proven security and exceptional reliability.

Coupled with the FPGA are 3 industry-leading interface standards to enable developers to create any application they can imagine:

- I - Arduino™ compatible shield
- II - mikroBUS™ socket
- III - PMod™ Connector/Interface

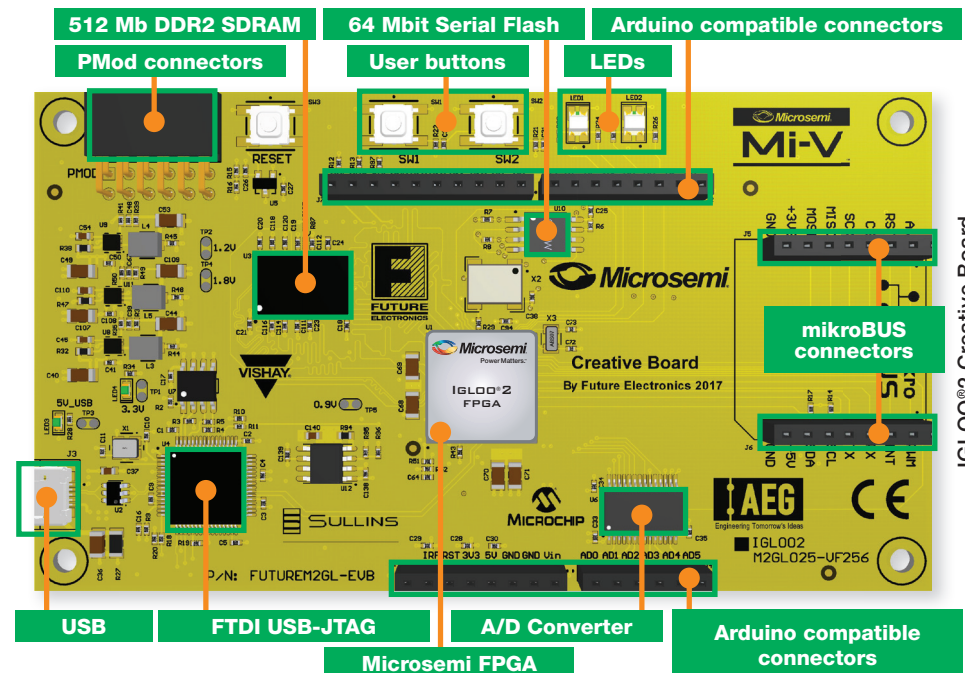
There are hundreds, if not thousands, of peripherals that can be connected to the Creative Board. Developers can work with various sensors, drivers, displays, wireless modules, etc.

The Creative Board also comes with 64 Mbit of Serial Flash, 512 Mb DDR2 Synchronous DRAM, Embedded FlashPro5, USB for power UART and Debug. Finally, there is a 6-channel, 16/24-bit Analog to Digital Converter.

Microsemi has also introduced RISC-V, an open instruction set architecture, as a soft core to the IGL002 and SmartFusion2 FPGAs.

Board Components

The following key components are found on the Microsemi Creative Development Board:



IGL002 Creative Board

Software Installation

Tools are available for download at <https://www.microsemi.com/products/fpga-soc/design-resources/design-software/libero-soc#downloads>. You can download either Windows or Linux Libero SoC development software. Following are instructions for Windows:

- Download and install the latest revision of Libero SoC (and Service Packs) by following Libero SoC – InstallShield Wizard

License Installation

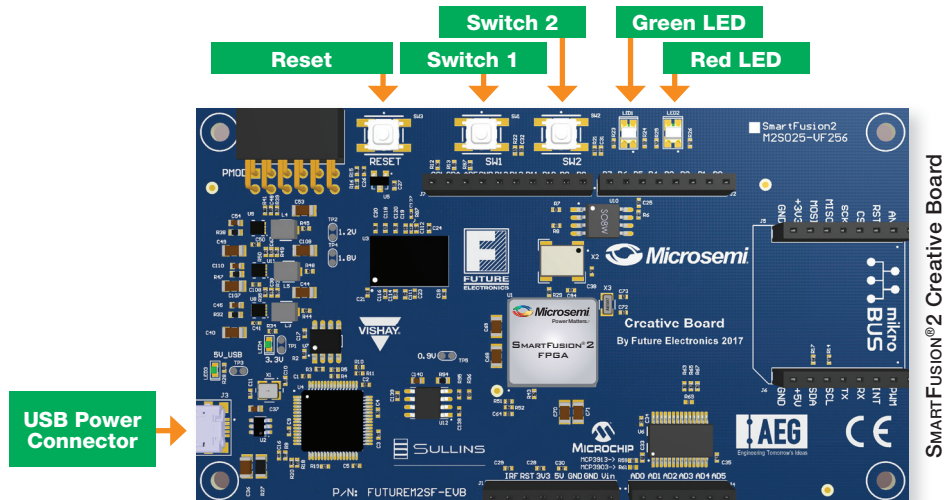
In order to run Libero SoC, you must first request then install a license.

- Request a free license by logging in to Microsemi SoC Portal <https://soc.microsemi.com/portal/default.aspx?r=1>
- Answer all the survey questions
- Select Libero Gold Node Locked for Windows; your license will arrive by email
- To install a Node Locked disk ID license in Windows, add or update your LM_LICENSE_FILE environment variable so it points to the new License.dat file by following the instruction found in: https://www.microsemi.com/document-portal/doc_view/131602-libero-software-installation-and-licensing-guide

For more information, to get schematics, software, guides, etc., please register and download: <https://www.FutureElectronics.com/CreativeDevelopmentBoard>

Running the Out-of-Box Demo

To power up the device out of the box, connect the board via **USB Power Connector**, as shown in the picture below, to a USB power source such as a computer. By default, the **Green LED** will start blinking slowly every 1 second while the **Red LED** will blink every 2 seconds.



- Press and hold **Switch 1**, the **Green LED** will start blinking faster (every 0.5 second)
- Press and hold **Switch 2**, the **Red LED** will start blinking faster (every 1 second)

The demo is implemented directly on the FPGA fabric on the SmartFusion2, while on the IGL002 it is done using the RISC-V soft core.

mikroBUS™ Adaptors

J5	Function	FPGA Pin	Pin Name	Voltage
1	AD_CH0	U6(2)	A/D Converter MCP3903-E/SS CH0	5.0V Max
2	MIKRO_RST	R11	MSIO134NB4	3.3V
3	MIKRO_CS	T12	MSIO138PB4	3.3V
4	MIKRO_SCK	R12	MSIO138NB4	3.3V
5	MIKRO_MISO	T13	MSIO145PB4	3.3V
6	MIKRO_MOSI	R13	MSIO145NB4	3.3V
7	+3.3V	–	–	–
8	GND	–	–	–

J6

1	MIKRO_PWM	R10	MSIO131NB4	3.3V
2	MIKRO_INT	R9	MSIO130NB4	3.3V
3	MIKRO_RX	R8	MSIO126PB4	3.3V
4	MIKRO_TX	T8	MSIO122NB4	3.3V
5	MIKRO_SCL	T7	MSIO122PB4	3.3V
6	MIKRO_SDA	R6	MSIO120PB4	3.3V
7	+5.0V_USB	–	–	–
8	GND	–	–	–

Arduino™ Connectors

J1	Function	FPGA Pin	Pin Name	Voltage
1	NC	–	V _{IN}	–
2	GND	–	–	–
3	GND	–	–	–
4	+5.0V_USB	–	–	–
5	+3.3V	–	IOREF	–
6	ARD_RESET	G1	MSIO97PB7/GB2/CCC_NW0_CLKI1	3.3V
7	+3.3V	–	–	–
8	NC	–	–	–

J2

1	ARD_IO0	P6	MSIO121PB4/PROBE_A	3.3V
2	ARD_IO1	P7	MSIO121NB4/PROBE_B	3.3V
3	ARD_IO2	N7	MSIO125NB4/GB7/CCC_SW1_CLKI2	3.3V
4	ARD_IO3	M7	MSIO125PB4/GB3/CCC_SW0_CLKI3	3.3V
5	ARD_IO4	P8	MSIO126NB4	3.3V
6	ARD_IO5	M8	MSIO129NB4	3.3V
7	ARD_IO6	N8	MSIO129PB4/CCC_SW1_CLKI3	3.3V
8	ARD_IO7	P9	MSIO131PB4/GB11/VCCC_SE0_CLKI	3.3V

J4

1	AD_CH0	U6(2)	A/D Converter MCP3903-E/SS CH0	5.0V Max
2	AD_CH1	U6(5)	A/D Converter MCP3903-E/SS CH1	5.0V Max
3	AD_CH2	U6(6)	A/D Converter MCP3903-E/SS CH2	5.0V Max
4	AD_CH3	U6(9)	A/D Converter MCP3903-E/SS CH3	5.0V Max
5	AD_CH4	U6(10)	A/D Converter MCP3903-E/SS CH4	5.0V Max
6	AD_CH5	U6(13)	A/D Converter MCP3903-E/SS CH5	5.0V Max

J7

1	ARD_IO8	M9	MSIO132PB4	3.3V
2	ARD_IO9	M10	MSIO132NB4	3.3V
3	ARD_IO10	N10	MSIO133NB4	3.3V
4	ARD_IO11	P10	MSIO133PB4/GB15/VCCC_SE1_CLKI	3.3V
5	ARD_IO12	P12	MSIO143PB4	3.3V
6	ARD_IO13	P13	MSIO143NB4	3.3V
7	GND	–	–	–
8	ARD_AVREF	–	+3.3V	–
9	ARD_SDA	T9	MSIO130PB4/VCCC_SE0_CLKI	3.3V
10	ARD_SCL	T6	MSIO120NB4/CCC_SW0_CLKI2	3.3V