# Become FPGA Ready With Microchip's Hello FPGA Kit

Summary

Low-cost and compact-sized, the Hello FPGA kit is for anyone with low to medium FPGA knowledge. Based on the SmartFusion®2 FPGA with its Arm® Cortex®-M3 processor with embedded Flash, the kit supports power demos and provides a versatile platform for you to prototype your designs. With Arduino and mikroBUS™ connectors, Hello FPGA supports additional expansion boards for more prototyping capabilities.

Hello FPGA can be used to develop applications from simple control logic to data acquisition, image processing, signal processing and Artificial Intelligence (AI) applications. The kit measures live FPGA core power consumption and enables users to use the unique Flash*Freeze mode while maintaining the I/O state for low power applications. The Hello FPGA board includes a Microchip PIC32 MCU that it is used to program the SmartFusion2 SoC FPGA, monitor power and perform general housekeeping functions.
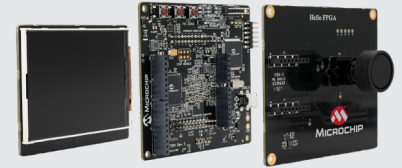
This kit can work as a standalone unit, as well as an extension to existing Microchip kits over the PICkit™ Header. The Hello FPGA Kit demonstrates the following features of the SmartFusion2 SoC FPGA:

- **DSP Functions:** FPGA processes input waveforms defined by GUI parameters and displays the output waveforms
- **Instant ON:** Highlighting fast wake-up time from Flash*Freeze (0.03W) mode to fully functional
- **Machine Learning Interlace:** Artificial Intelligence (real-time hand-written digit recognition)
- **Low Power:** Power monitor GUI shows power consumption for both operational and Flash*Freeze modes
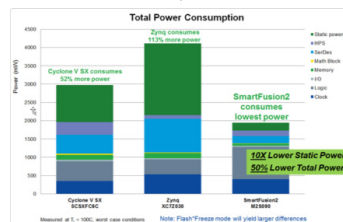
DSP Functions

Instant on
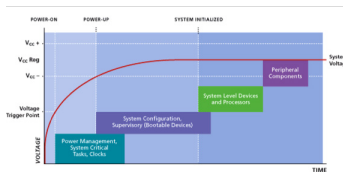
SmartFusion® 2
SoC FPGA

Machine
Learning Interface

Low power
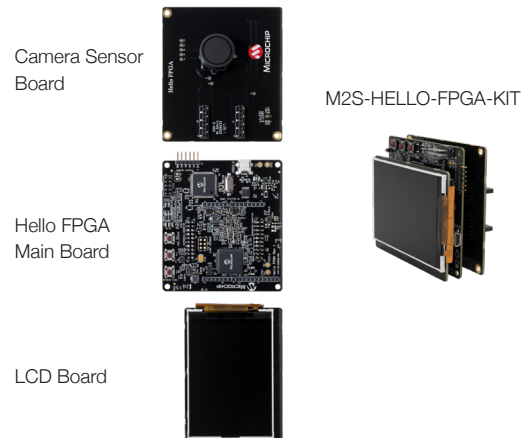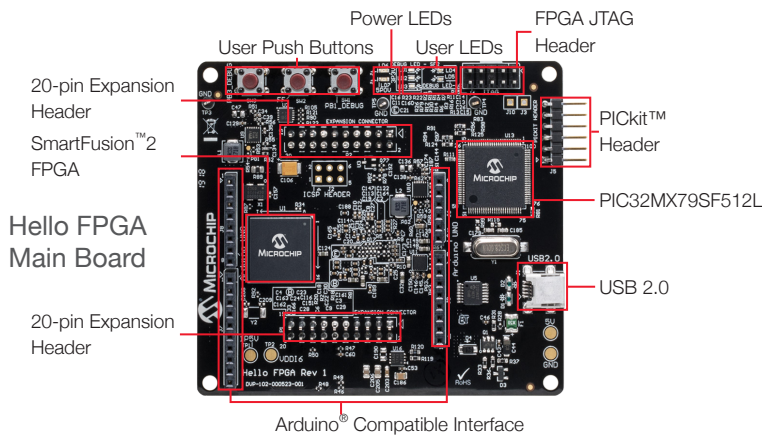
Total Power Consumption

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Features

- Based on M2S010-1VF256 SmartFusion2 FPGA
- 3x push buttons
- 5x LEDs
- FPGA JTAG header
- PICkit header
- PIC® microcontroller (PIC32MX79SF512L)
- 8 MB SPI Flash
- 8 Gb DDR3
- 2x 20-pin expansion headers
- USB 2.0 to power the kit and program the FPGA through MCU
- Arduino compatible interface
- Interfaced with camera sensor board
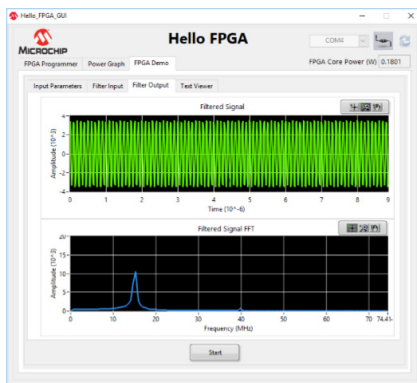- Interfaced with display board

Kit Contents

- FPGA main board with SmartFusion2 M2S010-1VF256
- Camera Sensor Board (LI-0V7725-MICRO v1.0)
- LCD board
- USB 2.0 A to Mini-B cable
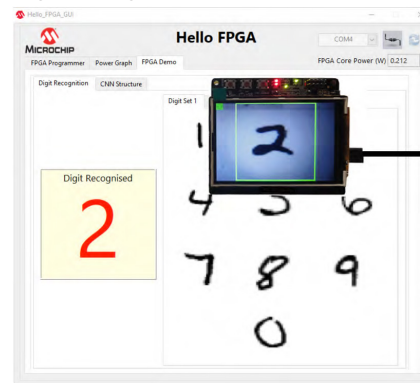- Quick start card

Quick Start Demonstrations

- FIR filter
- FFT on various waveforms
- FPGA core power measurement application
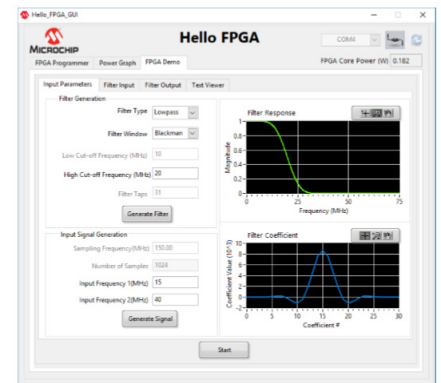- Image processing application
- Digit recognition application

Power LEDs
FPGA JTAG Header
User Push Buttons
User LEDs
20-pin Expansion Header
SmartFusion™2 FPGA
PICkit™ Header
PIC32MX79SF512L
Hello FPGA Main Board
20-pin Expansion Header
USB 2.0
Arduino® Compatible Interface

Camera Sensor Board
M2S-HELLO-FPGA-KIT
Hello FPGA Main Board
LCD Board

DSP Demonstration (FFT)

Digit Recognition Demonstration

DSP Demonstration (FIR)

www.microchip.com/FPGA

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