Meet the MSP@9&%R@O99 LaunchPad Development Kit
Part Number: MSP-EXP430FR4133

Resources

ti.com/launchpad

Below are the pins exposed at the BoosterPack connector.

Also shown are functions that map with the BoosterPack standard.
* Note that to comply with the I2C channels of the BoosterPack standard, a software-emulated I2C must be used.
** Some LaunchPads do not 100% comply with the standard, please check your LaunchPad to ensure compatibility
(!) Denotes I/O pins that are interrupt-capable.
A closer look at your new LaunchPad Development Kit

**Featured microcontroller:** MSP430FR4133

**This LaunchPad is great for...**
- Battery-operated LCD applications enabled by the ultra-low-power FRAM as well as the integrated LCD driver and charge pump of the MSP430FR4133
- Space constrained applications where abundant IO pins, flexible LCD pin configuration, and integrated smart analog and digital peripherals can save board space and simplify layout
- Remote control applications made easier with enhanced IR modulation

**What comes in the box?**

- MSP-EXP430FR4133 LaunchPad
- MSP430FR4133 Microcontroller
- eZ-FET on-board emulator
- 20-pin BoosterPack plug-in module connector (J1 & J2)
- User LEDs
- Button/Switch
- Jumper wiring (J101)
- 2 x 16-bit timers, 1 x 16-bit Low-Power Counter (LPC)
- 16-bit Cyclic Redundancy Checker (CRC)
- 10-channel 10-bit Analog-to-Digital Converter (ADC)
- 200kaps + Internal Reference
- Serial communication module (eUSCI)
- UART, SPI, I2C
- I2C enhanced IR Modulation

**Out-of-box Demo**

1. **Connecting to the computer**
   Connect the LaunchPad using the included USB cable to a computer. A green power LED should illuminate. For proper operation, drivers are needed. It is recommended to get drivers by installing an IDE such as TI’s CCS or IAR EW430. Drivers are also available at ti.com/MSPdrivers.

2. **Running the Out-of-box Demo**
   When connected to your computer, the LaunchPad will power up and display a greeting message on the LCD. Press and hold the S1 and S2 buttons simultaneously to select a new mode.

**Stopwatch Mode**
This mode provides a simple stopwatch application. It supports split time, where the display freezes while the stopwatch continues running in the background.

- **Timer Stopped:**
  - S1 - Start time
  - S2 - Reset time

- **Timer Running:**
  - S1 - Stop time
  - S2 - Split time (lap time)

**Temperature Mode**
This mode provides a simple thermometer application. Using the on-chip temperature sensor, the temperature is displayed on the LCD.

- **Temperature:**
  - S1 - Pause current temperature
  - S2 - Toggle temperature between °F/°C

**EnergyTrace™ Technology**

EnergyTrace technology implements a new method for measuring MCU current consumption. EnergyTrace uses a DC-DC solution to measure the time density of charge pulses. The EnergyTrace technology window allows users to view power data and compare power consumption! This makes optimizing the power consumption of an application easier than ever before!

**EnergyTrace Profile**
EnergyTrace Profile runtime and energy data for low power modes along with each function run during Active Mode.

**Graphical Power Data**
These two tabs of the EnergyTrace Technology window show a graph over time of power and energy.

**Enable EnergyTrace Technology Window**

1. Download CCS version 6.0 and newer
   - ti.com/ccs
2. Enable EnergyTrace Technology Window
   - In CCS, click: Window >> Preferences >> Code Composer Studio >> Advanced Tools >> EnergyTrace Technology
   - Check “Enable” box
3. Debug your application to launch EnergyTrace Window
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### More Resources

- **e2e Community**: e2e.ti.com
- **TI E2E Community**: [e2e.ti.com](http://e2e.ti.com)

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