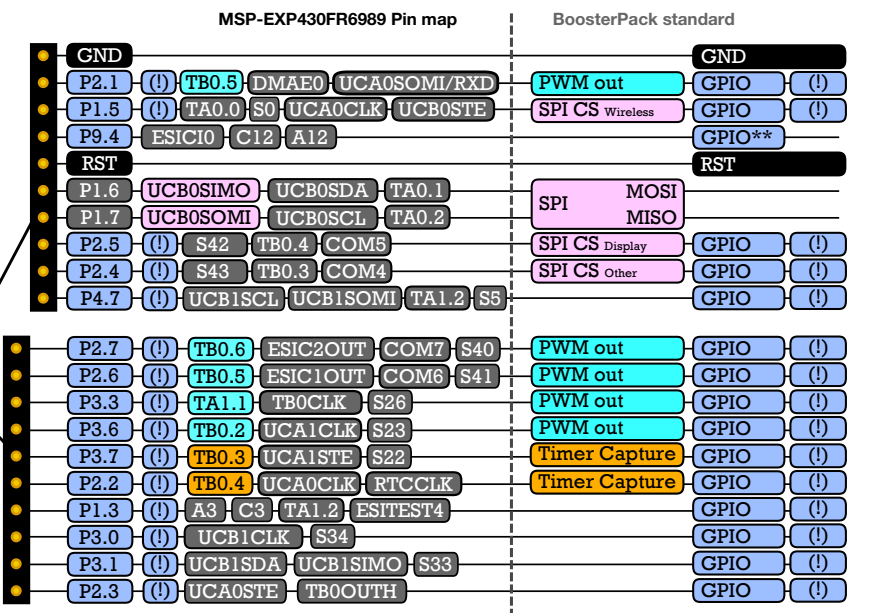
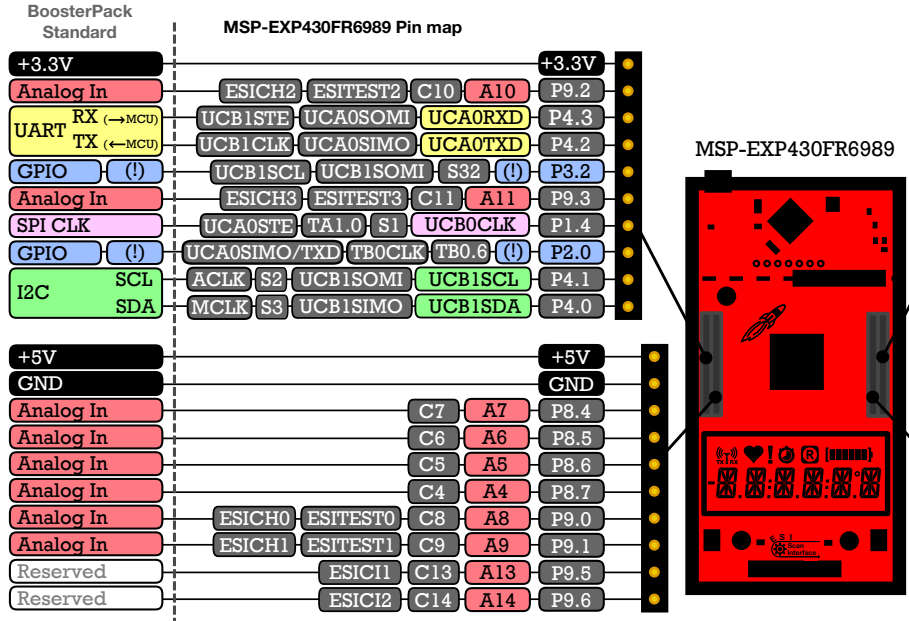


Meet the LaunchPad Development Kit

Part Number: MSP-EXP430FR6989

Below are the pins exposed @ the MSP-EXP430FR6989 BoosterPack connector

Also shown are functions that map with the BoosterPack pinout standard. Refer to the MSP430FR6989 Datasheet for additional details.
NOTE: Some LaunchPads & BoosterPacks do not 100% comply with the standard, so please check your specific LaunchPad to ensure pin compatibility.

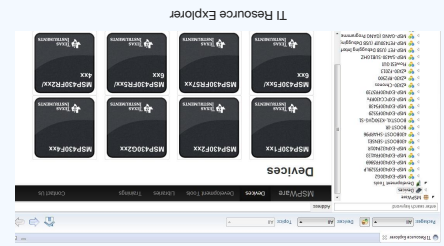


(!) Denotes I/O pins that are interrupt-capable
** Some LaunchPads do not have a GPIO here

Resources @ ti.com/launchpad

Code examples
Open Source Design Files
Documentation
Example projects
Videos
Tutorials
Other TI products

Software Tools



Professional Software tools
LaunchPad is supported by professional IDEs that provide industrial-grade features and full debug-capability. Set breakpoints, watch variables & more with LaunchPad.

ti.com/mspiar
ti.com/ccs
Code Composer Studio™ IDE
IAR Embedded Workbench®



BoosterPack Ecosystem

BoosterPack plug-in modules plug into the header pins on the LaunchPad to allow you to explore different applications that your favorite TI MCU can enable. There is a broad range of application-specific and general purpose BoosterPacks available from both Texas Instruments and third parties. Stack multiple BoosterPacks on a single LaunchPad to greatly enhance the functionality of your design. BoosterPacks include:

- Wireless Connectivity
- Environmental Sensing
- Power Sources

>> See them all @ ti.com/boosterpacks

A closer look at your new LaunchPad Development Kit


Featured microcontroller: MSP430FR6989

This LaunchPad is great for...

- Battery-operated LCD applications enabled by the ultra-low-power and integrated LCD driver on the MSP430FR6989
- Remote sensing and datalogging with up to 128 kB of embedded FRAM
- Rotation detection utilizing the Extended Scan Interface, a dual analog front-end (AFE)


What comes in the box?

MSP-EXP430FR6989 LaunchPad

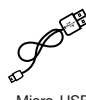


eZ-FET on-board emulator
Enables programming, debugging & application UART via USB.
Featuring EnergyTrace™++ technology, enabling power-aware debugging


QSG
This Quick Start Guide



Micro-USB Cable



Software @ ti.com/msp-exp430fr6989

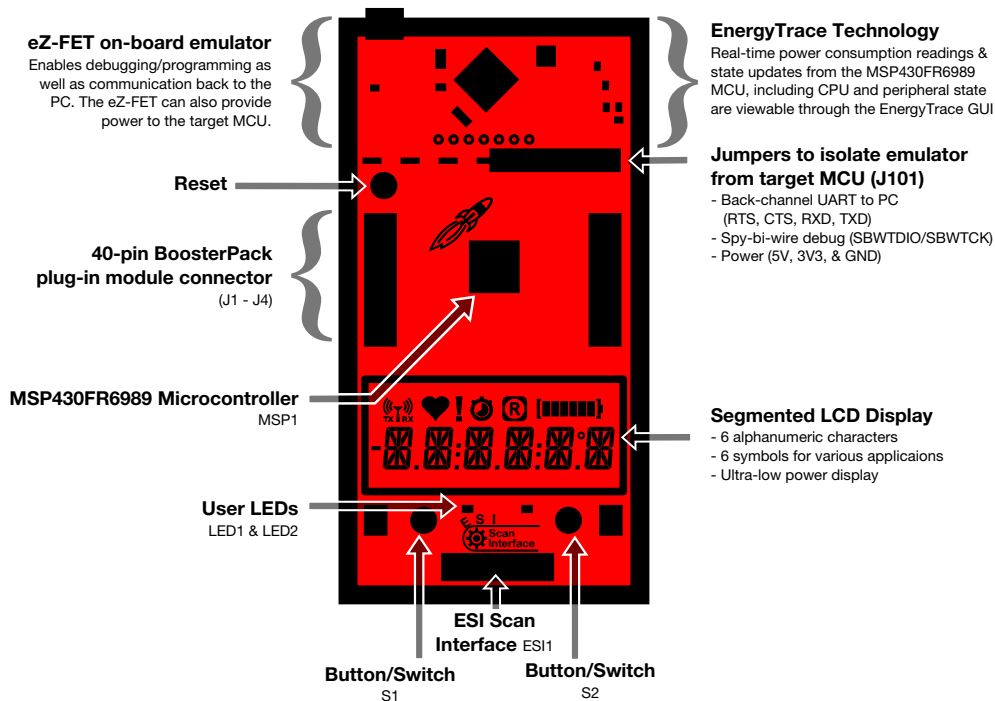


MSP430FR6989 Microcontroller

- 16 MHz CPU
- 128 kB Embedded FRAM
- Liquid Crystal Display (LCD)
- LCD support up to 320 segments
- Extended Scan Interface (ESI)
- 83 General Purpose Input/Output

- 5 x 16-bit timers, 1 x 16-bit Real-Time Clock (RTC)
- Direct Memory Access (DMA)
- 128-bit or 256-bit AES Security Encryption/Decryption
- 16-channel 12-bit Analog-to-Digital Converter (ADC)
- Serial communication module (eUSCI)
 - UART, SPI, I2C
 - IrDA enhanced IR Modulation

MSP-EXP430FR6989 Overview



Out-of-box Demo

Find more information @ ti.com/msp-exp430fr6989

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.

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

EnergyTrace++™ Technology

Find more information @ ti.com/EnergyTrace

EnergyTrace technology implements a unique method for measuring MCU current consumption. EnergyTrace uses a DC-DC solution to measure the time density of charge pulses. On the MSP430FR6989 device, built in hardware enables EnergyTrace+[CPU States]+[Peripheral States]. 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

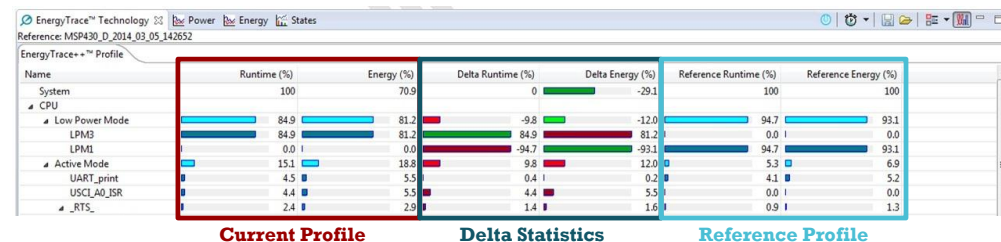
EnergyTrace Profile runtime and energy data for low power modes along with each function run during Active Mode.

Graphical Power Data

These three tabs of the EnergyTrace Technology window show a graph over time of power, energy, and device state.

Enable EnergyTrace Technology Window

- Download CCS version 6.0 and newer
- ti.com/ccs
- Enable EnergyTrace Technology Window
- In CCS, click: Window>> Preferences >> Code Composer Studio >> Advanced Tools >> EnergyTrace Technology
- Check "Enable" box
- Select EnergyTrace+[CPU State]+[Peripheral State]
- Debug your application to launch EnergyTrace Window



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