

Microcontrollers in Blood Glucose Meters



A blood glucose meter (BGM) is a device used to determine the approximate concentration of glucose in the blood. In order to test your blood you need a test strip and a blood glucose meter. When a drop of blood is placed on the test strip it interacts with elements on the strip that causes a reaction and an electric current is generated. This current is sent to the BGM. The Op Amp and transimpedance amplifier on the BGM convert the current into voltage. This voltage is then precisely sampled by the Analog-to-Digital Converter (ADC) of the meter. TI's ultra-low-power MSP430™ and ARM® Cortex®-M4 MSP432™ MCUs have best-in-class integrated Op Amps and ADCs that process the data to calculate the glucose level in the blood sample. This value can then be transmitted to a PC, portable equipment or the Cloud, wirelessly (using RF) or wired (using USB-PHDC).

Why partner with TI in blood glucose meters?

- Targeted products for low-, mid- and high-end BGM markets
- Integrated Analog Front End to reduce BOM and improve accuracy
- Ultra-low power to maximize battery life
- Industry's broadest radio portfolio to enable wireless communications
- Worldwide application and supply chain support
- ISO 11073 / Continua Alliance support

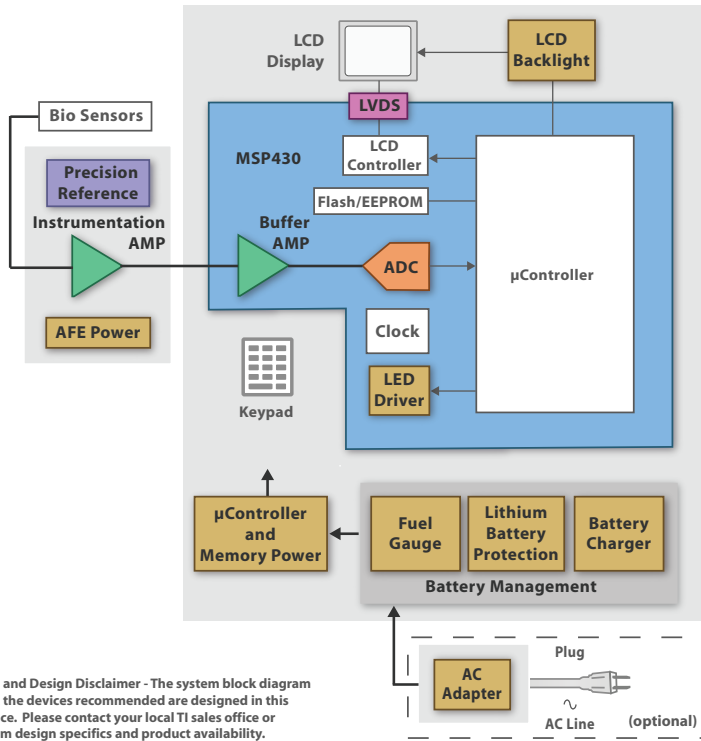
Issue/Need	Requirements	TI Solution
FDA driving accuracy requirements higher	16-/24-bit sigma delta ADCs	MSP430FR6xx MSP430F66xx MSP430FG6xx
Cost sensitivity increasing	Integrated low-cost silicon BOM	MSP430FG4xx MSP430FR4xx
Longer battery life	Ultra-low-power MCU	MSP430™ MCU ULP architecture
Upload to tablet/smart phone	RF peripherals	BLE – CC26xx NFC – TRF79xx / RF430
Richer user interfaces	32-bit processing	MSP432™ 32-bit ARM® Cortex®-M4F TM4C ARM Cortex

Getting Started

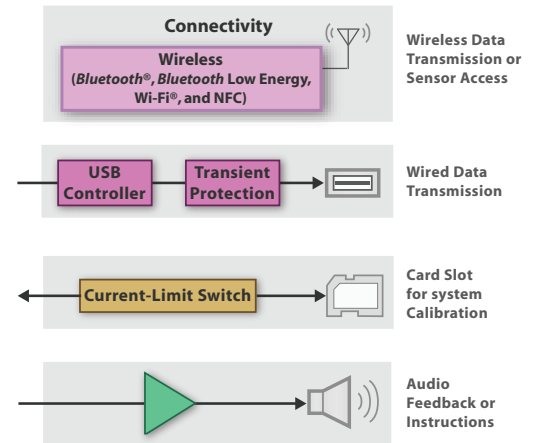
- Portable Medical Meters: www.ti.com/solution/medical_meters_portable
- Medical and Healthcare Applications: www.ti.com/medical
- Medical Applications Guide: www.ti.com/lit/slyb108

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Core Portable Medical System
(Processor, Memory, Display, Keypad, Power, Battery Management)



System-Based and Optional Functional Blocks in Portable Medical Systems



Product Availability and Design Disclaimer - The system block diagram depicted above and the devices recommended are designed in this manner as a reference. Please contact your local TI sales office or distributor for system design specifics and product availability.

LEGEND	
Logic	Processor
Interface	Power
RF/IF	ADC/DAC
Amplifier	Clocks
	Other

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Note: The European Free Call (Toll Free) number is not active in all countries. If you have technical difficulty calling the free call number, please use the international number above.

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Email	tiasia@ti.com or ti-china@ti.com
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