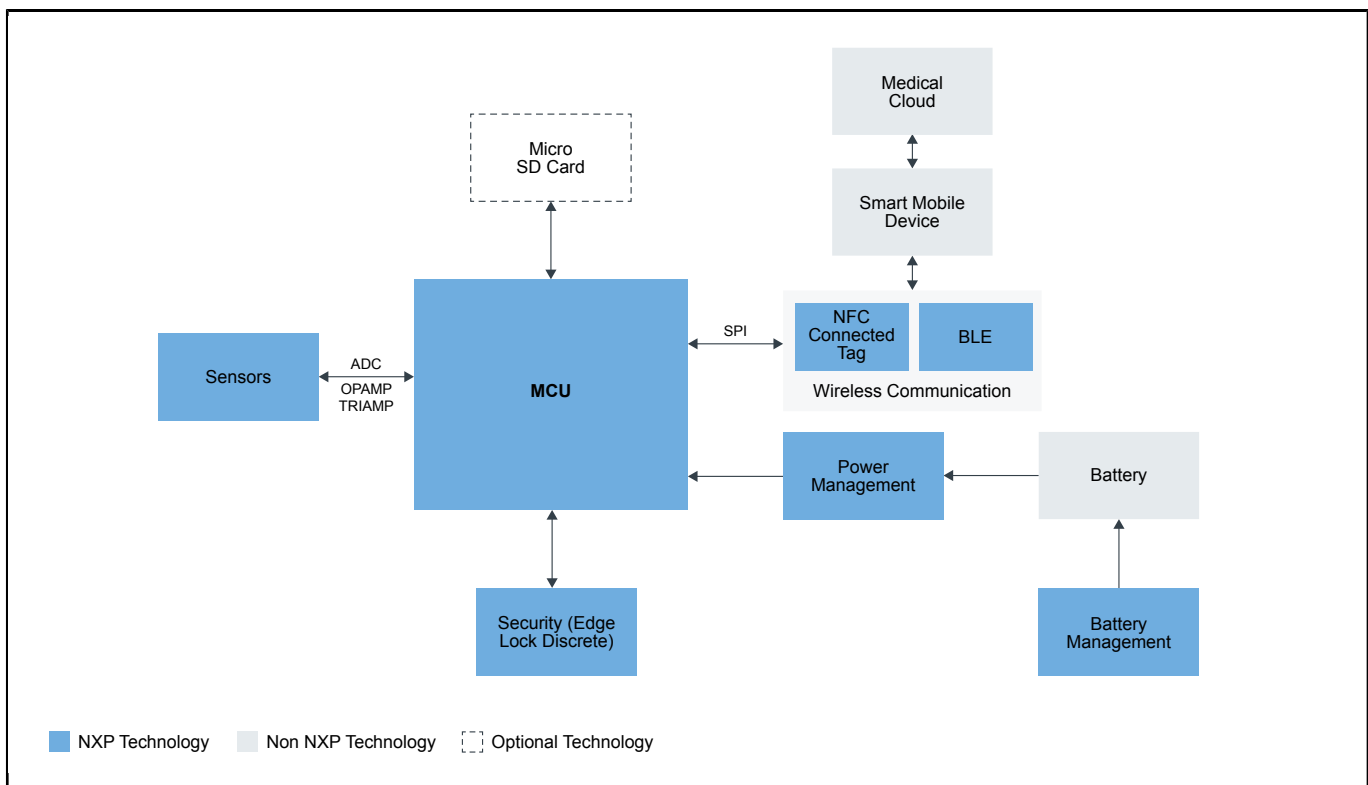# Vital Signs Monitors

Last Updated: Apr 27, 2023

Vital sign monitors provide doctors and healthcare staff with valuable information about the physiological condition of a patient. These noninvasive monitors can measure several vital signs such as heart rate, the percentage of hemoglobin in the blood that is saturated with oxygen (pulse oximetry), blood pressure and respiratory rate. Those measurements can be securely transmitted to either the patient's mobile device for storage or the patient's physician for control.

NXP offers a wide variety of low-power and low-cost MCUs, crossover MCUs, sensors and secure wireless products suitable for vital signs monitors.
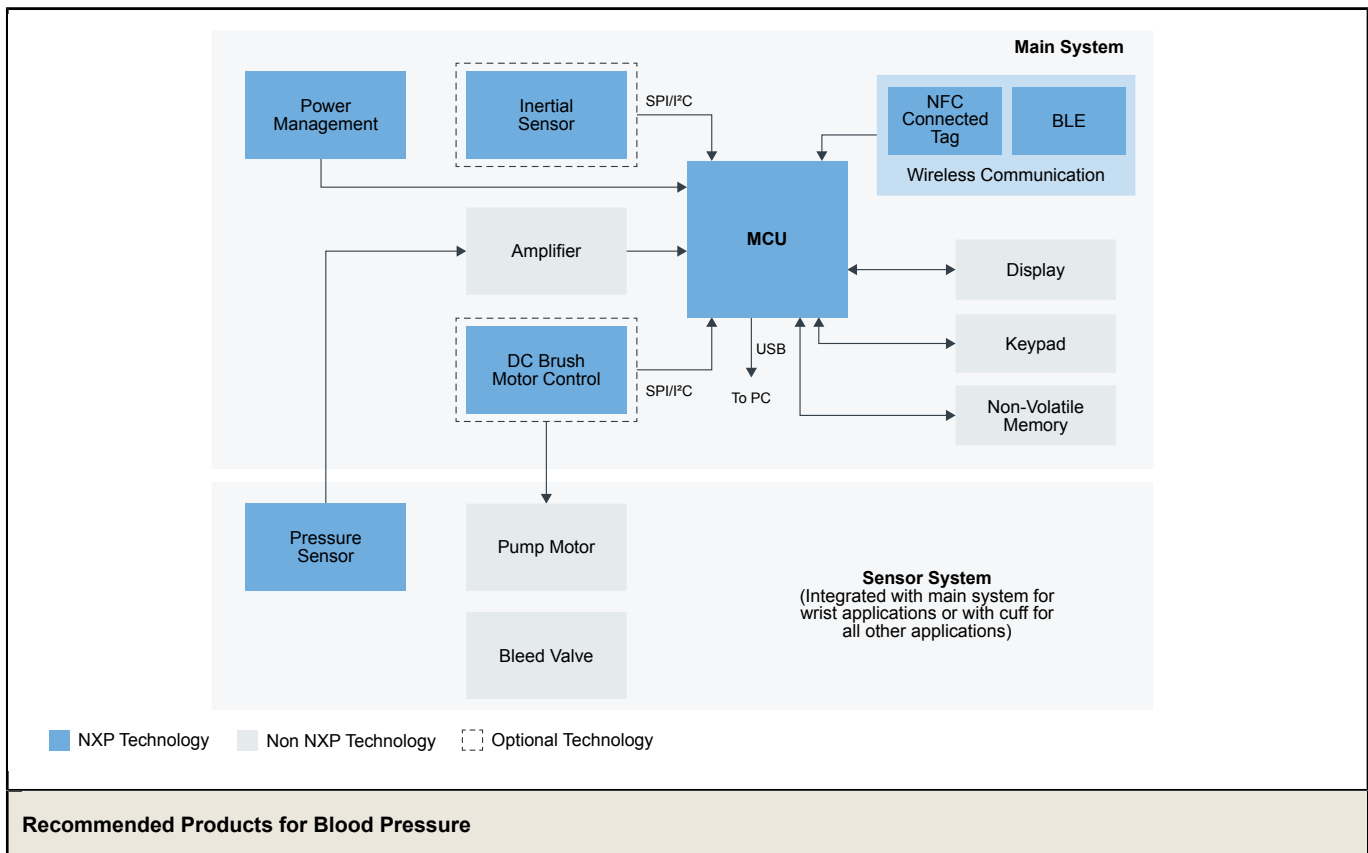
## General Application Block Diagram



NXP Technology · Non NXP Technology · Optional Technology

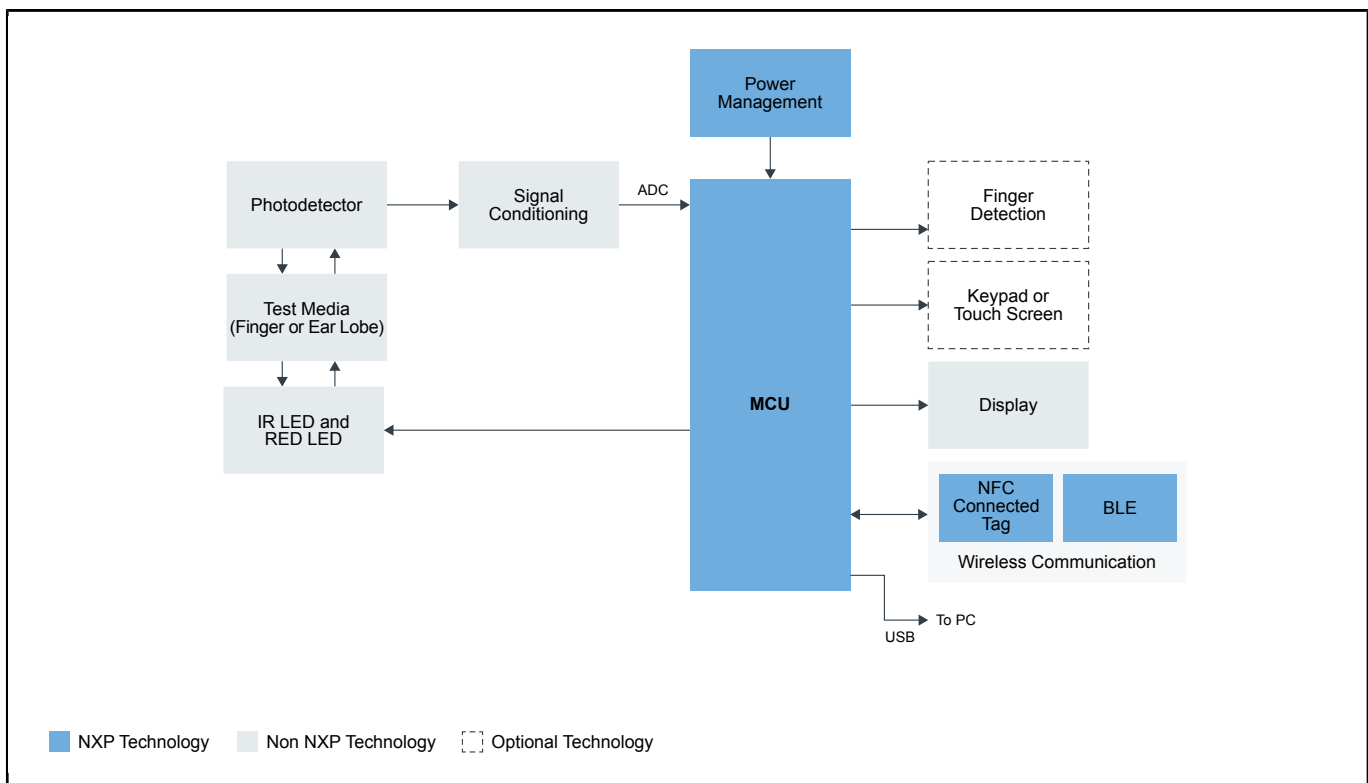| Recommended Products for General Application | |
|---|---|
| MCU | • MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals<br>• MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security<br>• NHS52S04: NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT<br>• General Purpose MCUs: General Purpose MCUs<br>• i.MX RT Crossover MCUs: i.MX RT Crossover MCUs<br>• i.MX 8 Family – Arm® Cortex®-A53, Cortex-A72, Virtualization, Vision, 3D Graphics, 4K Video |

| NFC Connected Tag | • Connected NFC Tags: Connected NFC Tags<br>• NTAG I²C Plus 2K: NFC Forum Type 2 Tag with I²C Interface<br>• NTAG® 5 Link: NFC Forum-Compliant I²C Bridge for IoT on Demand<br>• NTAG® 5 Boost: NFC Forum-Compliant I²C Bridge for Tiny Devices |
|---|---|
| Power Management | • PMICs: Power Management Integrated ICs (PMICs) |
| Sensors | • P3T1035xUK: I3C, I²C-Bus, ±0.5 °C Accuracy, Digital Temperature Sensor<br>• P3T2030xUK: I3C, I²C-Bus, 2.0 °C Accuracy, Digital Temperature Sensor<br>• FXOS8700CQ: Digital Motion Sensor - 3D Accelerometer (±2g/±4g/±8g) + 3D Magnetometer<br>• MPL3115A2: Absolute Digital Pressure Sensor (20 to 110 kPa)<br>• FXLS8964AF: ±2g/±4g/±8g/±16g, Low-Power 12-Bit Digital Accelerometer<br>• FXLS8962AF: ±2g/±4g/±8g/±16g, Low Power 12-bit Digital Accelerometer |
| Security (EdgeLock Discrete) | • EdgeLock® A5000 Plug and Trust Secure Authenticator: Authentication Made Secure, Scalable and Easy<br>• EdgeLock 2GO: EdgeLock® 2GO |
| BLE/Wi-Fi | • NHS52S04: NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT<br>• QN9090/30: Bluetooth Low-Energy MCU with Arm®Cortex®-M4 CPU, Energy Efficiency, Analog and Digital Peripherals and NFC Tag Option<br>• MCX Arm Cortex-M: MCX Industrial and IoT Microcontrollers<br>• 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + Bluetooth® 5.2 Solution |
| Battery Management | • PCA9420-PCA9421: PMIC for Low Power Applications<br>• MC34673: 1.2 A Single-Cell Li-Ion / Li-Polymer Battery Charger<br>• USB Type C: USB Type-C Plug'n Play: Efficient Data and Power Delivery |

## Blood Pressure Block Diagram



**Recommended Products for Blood Pressure**

| MCU | • MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals<br>• MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security<br>• NHS52S04: NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT<br>• LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family |
|---|---|
| Sensors | • FXLS8974CF: ±2g/±4g/±8g/±16g, Low-Power 12-Bit Digital IoT Accelerometer |
| NFC Connected Tag | • Connected NFC Tags: Connected NFC Tags |
| DC Brush Motor Control | • GD3000: 3-Phase Brushless Motor Pre-Driver<br>• MC34SB0410: Quad Valve Controller System on Chip<br>• MC34SB0800: Octal Valve Controller System on Chip |
| Pressure Sensor | • MPXx5050: Differential and Gauge Pressure Sensor (-50 to 50 kPa)<br>• MPL3115A2: Absolute Digital Pressure Sensor (20 to 110 kPa)<br>• Differential/Gauge Up to 115 kPa: Differential/Gauge Up to 115 kPa |
| BLE | • 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + Bluetooth® 5.2 Solution<br>• NHS52S04: NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT<br>• IW612: 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 6 (802.11ax) + Bluetooth® 5.4 + 802.15.4 Tri-Radio Solution |
| Power Management | • MC34673: 1.2 A Single-Cell Li-Ion / Li-Polymer Battery Charger<br>• PCA9420-PCA9421: PMIC for Low Power Applications<br>• USB Type C: USB Type-C Plug'n Play: Efficient Data and Power Delivery |

# Pulse Oximetry Block Diagram

| Recommended Products for Pulse Oximetry | |
|---|---|
| MCU | • MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals<br>• MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security<br>• LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family |
| Power Management | • USB Type C: USB Type-C Plug'n Play: Efficient Data and Power Delivery<br>• NFC Charging: NFC Wireless Charging<br>• PCA9420-PCA9421: PMIC for Low Power Applications<br>• MC34673: 1.2 A Single-Cell Li-Ion / Li-Polymer Battery Charger |
| NFC Connected Tag | • Connected NFC Tags: Connected NFC Tags |
| BLE | • NHS52S04: NHS52S04: Ultra-Low-Power Bluetooth® Low Energy Solution With Arm® Cortex®-M33 TrustZone® for Medical IoT<br>• 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + Bluetooth® 5.2 Solution<br>• IW612: 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 6 (802.11ax) + Bluetooth® 5.4 + 802.15.4 Tri-Radio Solution |

View our complete solution for Vital Signs Monitors.

**Note:** The information on this document is subject to change without notice.