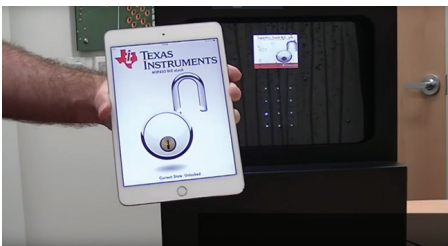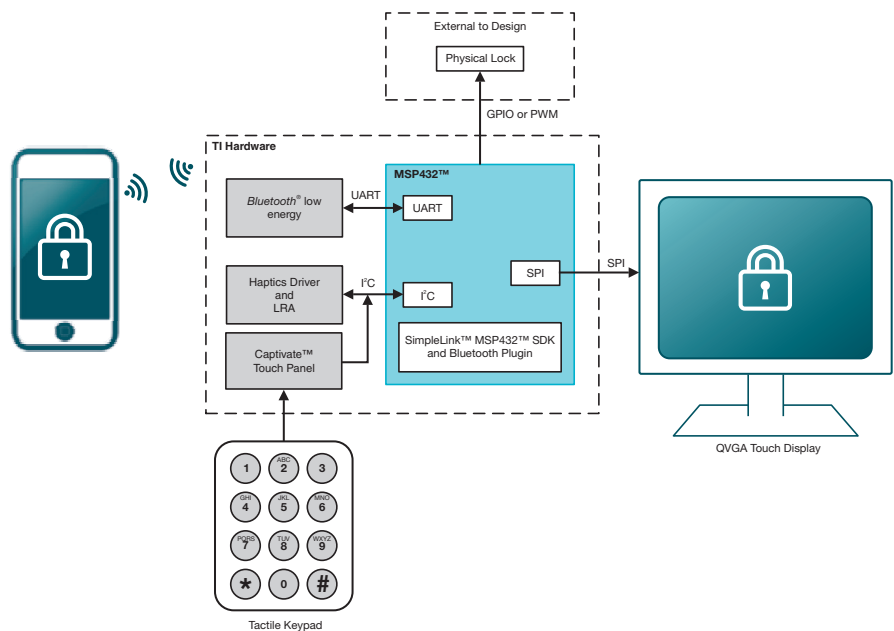# SimpleLink™ MSP432™ MCU for electronic lock and intrusion HMI keypad

Electronic Locks

Electronic lock types defined

Most electronic locks are battery powered making battery life a key design challenge. Low power DC/DC with nano-amp quiescent current, load switches and an ultra-low-power microcontroller make extremely long battery life possible. Electronic smart locks are also incorporating more interactive RGBW LCD, capacitive touch and audio feedback to enable more intuitive and aesthetically pleasing devices while maintaining minimal power consumption. In residential homes, *Bluetooth*® low energy is often used for smart electronic lock designs.

External to Design
Physical Lock
GPIO or PWM
TI Hardware
MSP432™
Bluetooth® low energy — UART — UART
Haptics Driver and LRA — I²C — I²C
Captivate™ Touch Panel
SPI — SPI
SimpleLink™ MSP432™ SDK and Bluetooth Plugin
QVGA Touch Display
Tactile Keypad

MSP432—*Bluetooth*® low energy solution—Customer benefits

Most integrated

- Differentiate your security solution with Bluetooth low energy connectivity, robust capacitive touch and high-precision analog integration with MSP432 MCU and CC2640R2F network processor.

Extend your battery life with lowest system power

- 660-nA standby, 80-µA/MHz MCU
- Lowest BLE radio, lowest power capacitive touch

Quickest way to market

- Get started quickly and scale your platform of products by designing on a common SimpleLink SDK platform

Collateral

Existing collateral

- BLE Access Control Panel TI Design: **TIDM-1004**
- **SimpleLink MSP432 SDK** with *Bluetooth*® and Wi-Fi® plug-ins
- BLE access control panel **training video**
- BLE over-the-air update and LZ4 compression **training**
- Voice recognizer solution: **software and demo**
- **SimpleLink Academy** for MSP432 MCU
- MSP432 MCU + BLE **HomeKit™** and **demo**

(Continued on the following page)

TI Design: Access Control Panel (TIDM-1004)

SimpleLink MSP432, SimpleLink CC264x and CapTIvate™ technology

Wireless Access Control Panel

- Proximity wake up
- LCD for keypad status, integrated haptics
- iOS/Android™ BLE app for remote access
- Optimized for ultra-low-power operation, <20-µA overall system (average)
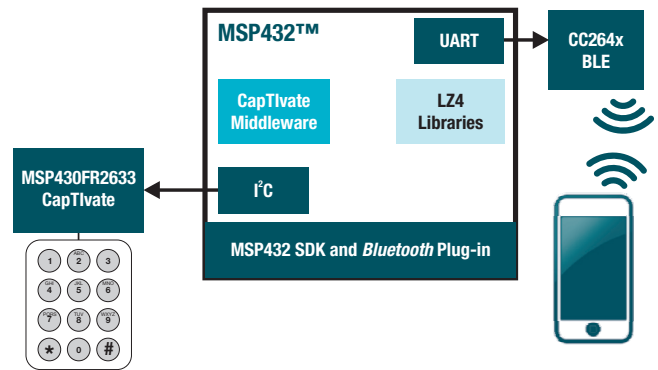
MSP432 as wireless host MCU for

- CC2640 BLE network processor
- CapTIvate touch controller
- HMI integration: QVGA display

SimpleLink platform

- Portfolio: MSP432 host and CC2640 network processor
- Software: MSP432 SDK and Bluetooth plug-in
- Unified environment: LaunchPad™ and CapTIvate integration

SimpleLink™
MCU Platform
One environment.
Unlimited potential.
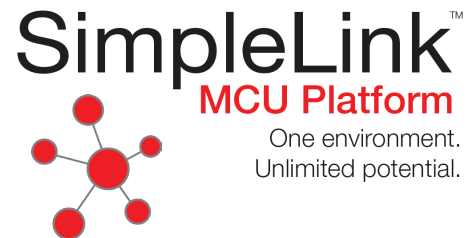
Enabling compression for over-the-air (OTA) updates

Faster firmware updates and code portability

- Enabling ULP and faster OTA download with LZ4 compression
- Reduce code size and download time by 25 percent
- Leverage 16-bit integrated ADC and scale up to 2 MB of programming resources with MSP432 MCU and CC2640 combo
- 100-percent code portability across SimpleLink platform via SDK and plug-ins
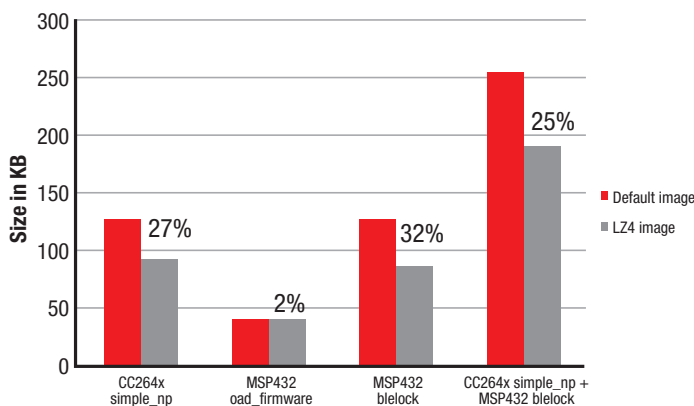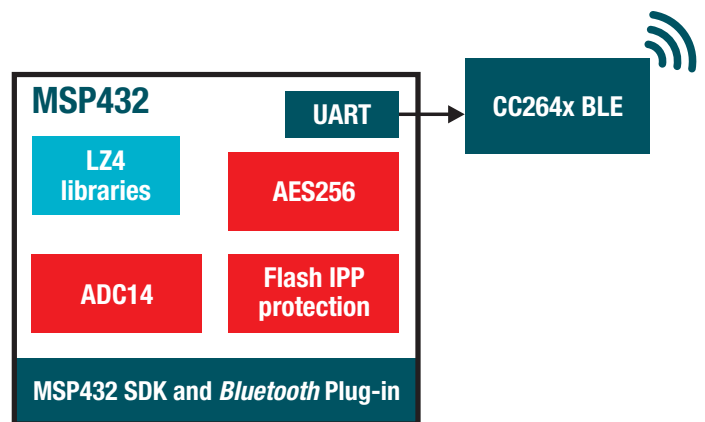
Related applications

- Access control panels (**TIDM-1004**)
- Glass-breakage detector, building gas detector
- Water meter, gas meter

Resources
SimpleLink SDK Bluetooth plug-in
TI parts include:
- MSP432P401R, MSP432P4111 MCUs
- CC2650 (BLE) Wireless MCU

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TEXAS INSTRUMENTS

SWAT008

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