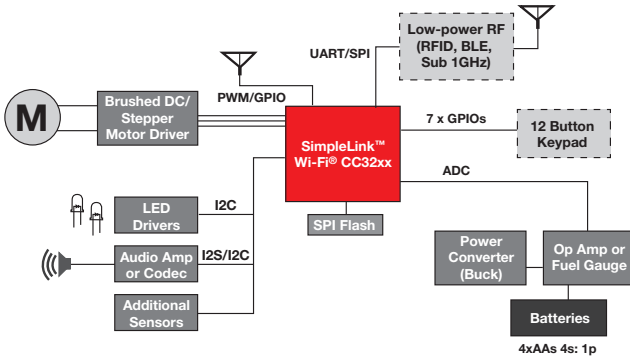
IP smart door locks: Power optimized and added security features for cloud connectivity with SimpleLink™ Wi-Fi®

Texas Instruments



Electronic door locks with integrated Wi-Fi opens the door to new and desirable features such as locking/unlocking a door from anywhere in the world, remote monitoring of entrances, flexible permission control, and integration with a doorbell camera or an entry sensor. Having an integrated Wi-Fi allows direct Internet connection to the home AP, without the need of additional bridge or gateway. The design challenge with using Wi-Fi connectivity is finding a balance between the built-in security features you need while not sacrificing battery life.

The SimpleLink Wi-Fi CC3220 wireless microcontroller or CC3120 network processor can help you achieve longer battery life while helping you securely control and monitor through the cloud.

Features	Benefits
• Industry's lowest power, with TI's cutting edge proprietary network learning algorithm and configurable low-power modes optimizing across more than 100 Access Points world wide o 115uA/135uA for CC3120/CC3220 in deep sleep mode, and as low as 210uA for CC3220 while maintaining a secured connection to AP o 4.5uA in hibernate mode, intermittently connected with fast reconnection	• Can extend 4xAA battery life for the entire lock, including CC26xx BLE, up to: o 1.5 year in "always connected" mode for on-demand access by user request o 3.8 years for wakeup on trigger mode
• Enhanced security protocols allow secure connection and encryption up to application level • CC3220S offers robust Wi-Fi and networking stacks running on a separate on-chip execution environment with a dedicated Cortex™ • On-chip Wi-Fi security features, including network and manufacturer IP protection facilitated by hardware crypto engine (incl. APIs to AES256, DES, SHA/MD5, CRC)	• Enables protection against hostile takeover (e.g. malicious over the air update), and IP theft, without external secure components
• Fast wakeup by an external trigger (300 msec), from a 4.5 uA hibernate mode to WPA2 secured AP connection • TLS/SSL connection to local network in 200msec utilizing the embedded hardware crypto engines	• Enhanced user experience with low latency response from a button push or RF event
• Highly integrated CC32xx wireless MCU (SOC) with an ARM Cortex -M4 at 80MHz, and a separate network processor managing all Wi-Fi and internet IP sockets • Application dedicated 256KB of RAM + optional 1MB of XIP flash	• CC3220 in the heart of the system: running the customer application and simultaneously controlling wake-up triggers, lock control processing and network connection • Reduced BOM cost to the customer
• Best-in-class interoperability with extensive testing with over 200 access points • Wi-Fi alliance certified IC's and modules • Regulatory certifications for FCC, IC, CE/RED and more	• Robust communication with a variety of access points world-wide • Reduced design complexity, time, resources and costs with certified and transferrable licenses
• SimpleLink™ common software architecture across the SimpleLink MCU portfolio of MCUs, Sub1GHz, BLE and Wi-Fi technologies	• Allowing developers to invest once and reuse across technologies using code and tool compatibility between platforms
• Software and plug-ins for Amazon Web Services, Apple's HomeKit, IBM Watson IoT, and other cloud partner applications	• Get to market faster with easy to integrate cloud-compliant options

Learn more about the **Battery Powered Smart Lock Reference Design TIDC-01005**

See additional system parts at **TI electronic smart lock reference design page**

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