Ultimate KEELOQ® Technology, the Next Generation of Security
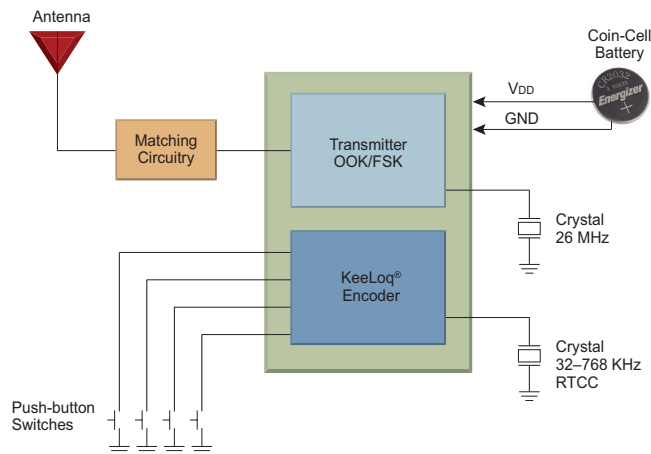
Featuring MCS3142 Dual KEELOQ Encoder

Summary

Microchip Technology has had a long history as a major supplier in the security industry primarily utilizing our proprietary, royalty-free KEELOQ Hopping Code Technology, an industry proven technology used worldwide by leading manufacturers, to provide additional security to their applications for more than 15 years.

The Ultimate KEELOQ Protocol is a new timer-based solution offering enhancements to the Classic KEELOQ Protocol structure such as industry-standard AES-128 block cipher, programmable 32-bit serial number, programmable 128-bit encryption key and KEELOQ Secure Learn Mode (128-bit Seed). It incorporates a timer-driven message counter which continuously increments, independent of events, to provide a better, more secure solution. The time-keeping functionality provides additional protection against capture and replay attack techniques.

The entire structure is available in the MCS3142 Dual KEELOQ Encoder, which provides a complete turnkey solution.

The addition of our new Ultimate KEELOQ Protocol provides the customer the ability to develop highly secure authentication applications for a variety of markets such as security systems (keypads, remote sensors and access control), remote keyless entry (automotive) and authentication (identity and property) applications.

Ultimate KeeLoq Features

- Timer driven messages
- Time stamped events
- Industry standard AES-128 encryption
- Secure learn mode for pairing
- Time recovery after power loss

Operating Features

- Operating voltage 1.8–3.6V
- Operating temperature −40°C to 85°C: industrial
- 20-pin TSSOP package
- 1.8–3.6V operation
- Four switch inputs
- 15 functions available
- Configurable button modes
- One active-low LED drive
- Configurable minimum code word completion

RF Transmitter Features

- Fully integrated transmitter
- Operation in 310–928 MHz
- Configurable bit rate
- Configurable modulation, supporting OOK and FSK
- Configurable data modulation, supporting PWM and Manchester

Applications

- Garage door openers
- Tire pressure monitoring sensors
- Automotive Remote Keyless Entry (RKE) systems
- Automotive alarm systems
- Remote key pads
- Security and safety sensors
- Wireless sensors
- Remote control

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Featured Development Tool

Wireless Security Remote Control Development Kit – 433 MHz (DM182017-4)
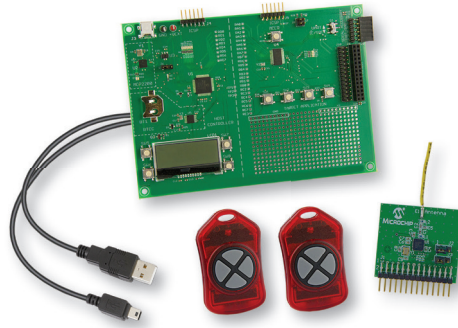
To support the new Ultimate KᴇᴇLᴏǫ protocol, we offer the Wireless Security Remote Control Development Kit, which is a demonstration and development platform for wireless security applications. The kit demonstrates two security protocols: Ultimate KᴇᴇLᴏǫ Protocol and Classic KᴇᴇLᴏǫ Protocol. It contains a four-button key fob transmitter based on the MCS3142 Dual KᴇᴇLᴏǫ Encoder, receiver PICtail™ daughterboard, and Embedded Security Development Board. The software download contains a Graphical User Interface (GUI) to assist with additional development work.

MPLAB® X Integrated Development Environment (IDE)

MPLAB X IDE is a software program that runs on a PC (Windows® , MAC® OS, Linux®) to develop applications for Microchip microcontrollers and digital signal controllers. It is called an Integrated Development Environment (IDE) because it provides a single integrated "environment" to develop code for embedded microcontrollers.

Development Tools from Microchip

Part Number	Development	Description
DM182017-4	Wireless Security Remote Control Development Kit: 433.92 MHz	Ultimate and Classic KᴇᴇLᴏǫ® with MCS3142 dual encoder
PG164130	PICkit™ 3	In-Circuit Debugger/Programmer
DV164035	ICD3	In-Circuit Debugger
DV007004	PM3	Universal Device Programmer
Other Wireless Development Kits		
DM182017-1	Wireless Security Remote Control Development Kit: 433.92 MHz	RF one-way applications: 433.92 MHz supports Classic and Advanced (AES) KᴇᴇLᴏǫ
DM182017-2	Wireless Security Remote Control Development Kit: 868 MHz	RF one-way applications: 868 MHz supports Classic and Advanced (AES) KᴇᴇLᴏǫ
DM182017-3	Wireless Security Remote Control Development Kit: 915 MHz	RF one-way applications: 915 MHz supports Classic and Advanced (AES) KᴇᴇLᴏǫ

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www.microchip.com/keeloq

Visit our web site for additional product information and to locate your local sales office.

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