



VKSP Software Fact Sheet

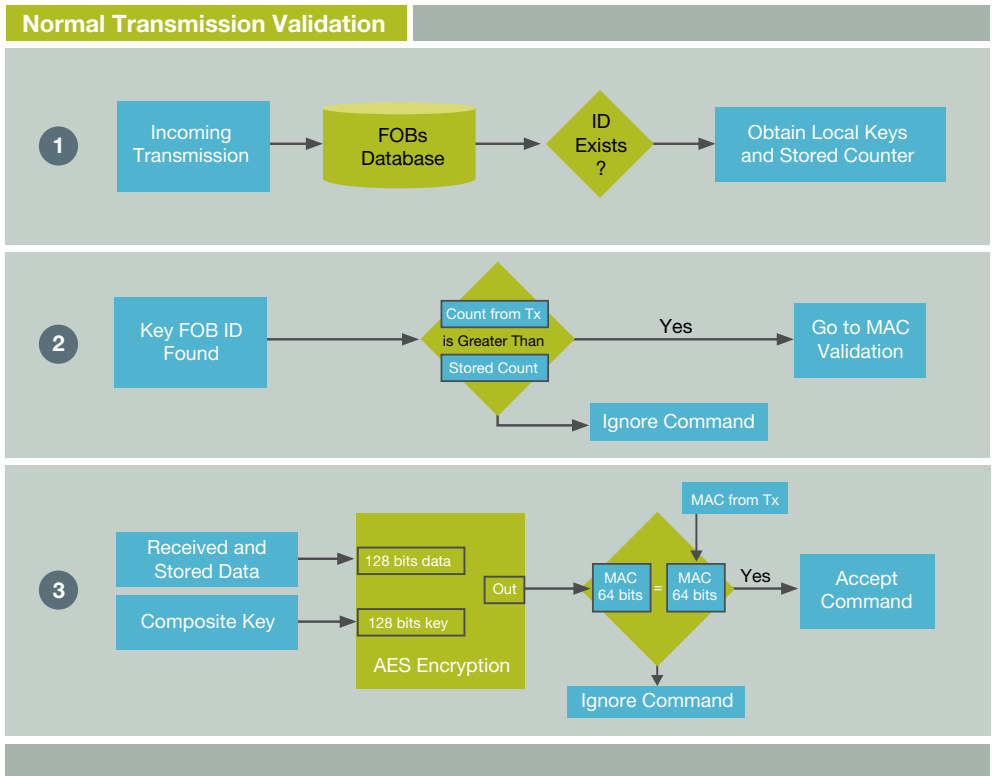
Variable Key Security Protocol Software Library

Overview

The Variable Key Security Protocol (VKSP) Software Library from Freescale is a one-way authentication algorithm with a 128-bit key. It is ideal security for applications which require remote operation, such as remote keyless entry (RKE) systems or garage door openers. This code-efficient, time-based algorithm has the benefit of not requiring resynchronization, for example, if the key fob button is pressed many times when out of range of the receiver.

Currently, RKE systems can be used to provide additional features, such as remote engine start, engine status, climate control settings and alarm status in automotive applications. They can also enhance system and personal security by combining anti-theft alarms and panic buttons. In the home, Radio Frequency (RF) systems can be used to enable garage door openers and other security or comfort features. Freescale's Variable Key security protocol solution is a key enabler for all of these markets.

Variable Key Security protocol can be implemented on most Freescale microcontrollers and is delivered as object code.



Target Applications

- Automotive remote keyless entry
- Automotive passive entry systems
- Garage door control
- Home automation
- Wireless alarm and security system
- Industrial remote control systems

Features

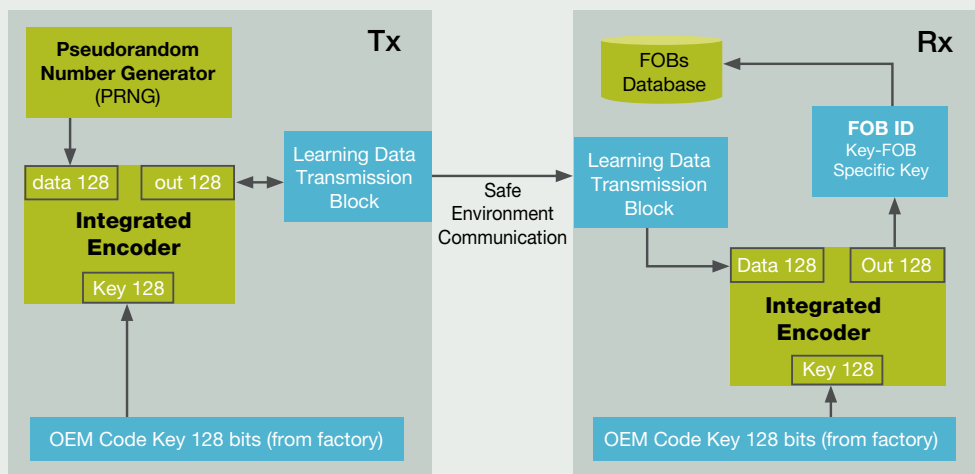
- Protocol:
 - Increased security with a 128-bit key authentication
 - System does not require any kind of count resynchronization
 - Time-based variable key
 - 254 different commands can be implemented
 - Flexible enough to use with different encryption algorithms for code or execution time reduction
- Software Library
 - Layer/interfaces design on both the receiver and transmitter provides user flexibility with different non-volatile memory and encryption drivers
 - Receiver is designed as a state machine system, which eases the integration and interaction with other applications

Benefits

- Very secure protocol with a 128-bit key
- Simple to use—synchronization is no longer an issue
- Modularity and state machine oriented design allows the integration and co-existence of the receiver library with other complex modules
- Flexibility, regardless of which microcontroller is used
- Re-use of already developed modules, such as memory drivers and proprietary encryption algorithms

Learning Sequence

The Key is formed by a fixed OEM key (same for all devices) + the Variable Key + a key segment that was generated and stored during the learning process. The key segment is transmitted in pseudo-random number formats that prevent encryption. Every fob generates differently within the key in a way that is invisible to the manufacturer. The protocol offers a flexible authentication Algorithm chosen based on system requirements.



VKSP software can be implemented on many Freescale products including most 8-, 16- and 32-bit microcontroller products. New implementations can be made available upon customer request. VKSP implementations are available for the following products:

Product Family	Recommended Tools
• MC9S08QGxx	◦ DEMO9S08QG
• MC9S08Dxxx	◦ DEMO9S08DZ60

* See www.freescale.com/vksp for a list of currently supported products

Learn More:

For current information about Freescale products and documentation, please visit www.freescale.com.