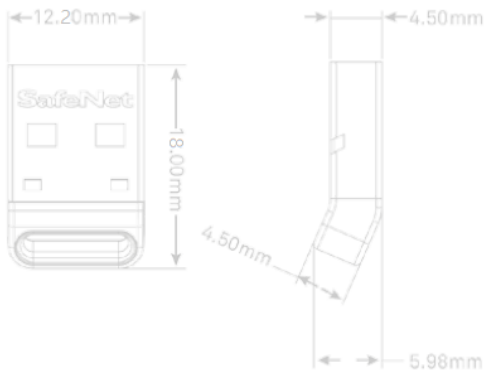


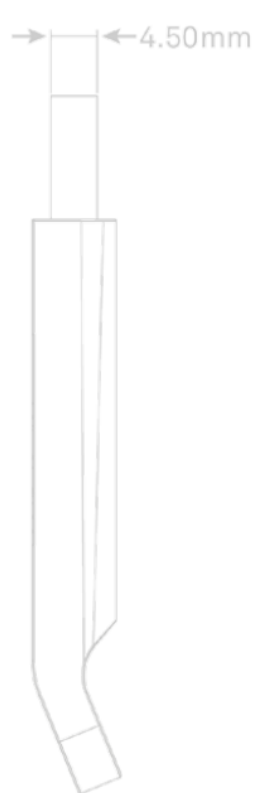


SENTINEL  
SOFTWARE  
MONETIZATION  
SOLUTIONS



# Sentinel<sup>®</sup> HL

Hardware Protection. Redefined.



The Sentinel HL family of keys offers the highest level of copy and IP protection available. Offered in a wide variety of types and form factors, the Sentinel HL keys protect software by allowing access and execution of the application only when the key is physically connected. Sentinel HL keys are ideal for software publishers whose primary concern is security. They are ideal for scenarios where the protected application runs on a device that supports USB or ExpressCard, with additional options for embedding directly on circuit boards.

For over three decades, software publishers are putting their trust in SafeNet's hardware based protection keys in order to protect their valuable software against piracy. SafeNet's state-of-the-art technologies provide full-scale security and licensing solutions for software vendors wishing to address each and every aspect of the software monetization lifecycle – from copy and intellectual property (IP) protection to product catalog management and ongoing end-user experience improvement. Supported by a set of development and management tools, the Sentinel portfolio enables software vendors and developers to implement flexible licensing enforcement solutions that best meet their business needs and their customers' evolving demands.

For more information on SafeNet's Sentinel HL hardware based licensing solutions, visit:

**[www.safenet-inc.com/SentinelHL](http://www.safenet-inc.com/SentinelHL)**



[www.safenet-inc.com/contact-us](http://www.safenet-inc.com/contact-us)

## Features and benefits at a glance:

- **Backwards compatibility** – 100% compatible with your existing Sentinel HASP HL, Hardlock and Sentinel SuperPro hardware.
- **Increased Security** – All Sentinel HL hardware-based protection keys employ a highly secure SmartCard chip providing the utmost security against malicious hardware attacks such Differential Power Analysis (DPA) and electron microscopy.
- **Highly Customizable** – Provides more real estate for the purpose of a personalized logo or text.
- **Future proof** – Add future functionality and enhancements to in-the-field deployed keys using our unique UpdateOnChip™ mechanism.
- **AppOnChip** – Execute code segments on-board the key, providing a virtually inseparable binding between the key and your application
- **Driverless** – Sentinel HL keys are field upgradeable from Sentinel HASP HL, Hardlock or Sentinel SuperPro configurations to a driverless configuration using Sentinel LDK, eliminating the need of installing device drivers on end-user machines.



## Sentinel HL Basic

Sentinel HL Basic is a simple and effective solution for protecting software. The key has no internal memory, requires no preprogramming and is immediately ready for delivery as part of the protected software. Sentinel HL Basic allows protecting high volume software licenses that do not require ongoing management and maintenance and are offered out-of-the-box.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip, allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Mini Form Factor: 40.5 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C

*SafeNet's most cost-effective software protection key.  
Ideal for licensing scenarios that do not require component  
licensing and where memory is not required.*



## Sentinel HL Pro

Sentinel HL Pro is a comprehensive software protection solution for a variety of purposes including read/write memory and read only memory protection. A single Sentinel HL Pro allows fine grained licensing of up to 39 features or applications within an application suite. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip, allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- 224Bytes Protected memory
- Mini Form Factor: 40.5 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Sentinel SuperPro, Driverless
- Firmware upgradable in the field
- AppOnChip Compatible
- Operating Temperature: -25°C to 85°C
- -Sentinel V-Clock for secure time-based licensing (requires additional license)
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*The ideal solution for component licensing where only a small number of product features are required.*



## Sentinel HL Max

Sentinel HL Max is the ideal solution for protecting a large number of applications or features. The Sentinel HL Max key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Mini Form Factor: 40.5 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Hardlock, Sentinel SuperPro, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*A step up from the Sentinel HL Pro model, the Sentinel HL Max can be used to license a large number of components or provide a metered licensing model.*



## Sentinel HL Max - Micro Form Factor

Sentinel HL Max in Micro form factor offers a robust protection and flexible licensing enforcement in a sleek new design – making it virtually invisible and decreasing the possibility of accidental or deliberate damage. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Micro Form Factor: 18 x 12.2 x 4.5mm
- Available Configurations: Sentinel HASP HL, Hardlock, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*The ideal solution for cases in which reduced visibility minimizes the likelihood of tampering and accidental or deliberate breakage, including use with notebooks, embedded systems, medical devices, machinery controls and other equipment with stationary licensing keys.*



## Sentinel HL Max - ExpressCard Form Factor

Sentinel HL Max in ExpressCard form factor provides a powerful copy protection and licensing with the convenience of an inconspicuous ExpressCard form factor. The Sentinel HL Max combines SafeNet's award-winning Sentinel family of hardware protection keys in a sleek form factor. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- ExpressCard Form Factor: 75 x 34 x 5mm
- Available Configurations: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*The ideal licensing solution for applications that require a large number of applications or features offered as an ExpressCard solution.*





## Sentinel HL Max - Chip Form Factor

Sentinel HL Max in Chip form factor is the ideal solution for protecting and licensing software running on embedded systems. The license protection and implementation becomes an integral part of the product design, completely invisible to the naked eye. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Available Configurations: Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*A comprehensive single-chip licensing solution that seamlessly integrates into your existing hardware.*



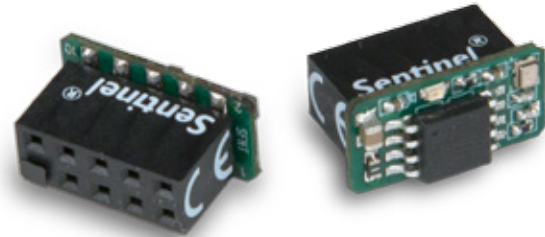
## Sentinel HL Max - Board Form Factor

Sentinel HL Max in Board form factor is the ideal solution for protecting and licensing software running on embedded systems without having the need to spend time and efforts on hardware circuit design and testing. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism. Software publishers can use the Sentinel HL Board by simply plugging it into their device's mother board. The license protection and implementation becomes an integral part of the product design, completely invisible to the naked eye.

### Technical Specifications

- Industry pioneering White-box cryptography
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 & RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Board Form Factor: 15.2 x 8 x 12.4mm
- Connector: Socket, Pitch 2.54mm, 5 x 2Row
- ESD Protection to 6000V of USB interface pin
- Available Configurations: Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*A comprehensive board licensing solution that flawlessly integrates into your existing hardware, facilitating memory programming for software publishers..*



## Sentinel HL Net

Sentinel HL Net provides a robust solution for protecting enterprise software designed for operating in a networked environment. By using the Sentinel HL Net key, developers can impose restrictions on the number of concurrent users from a secure program in addition to offering the option of concurrent licensing support. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionalityProtect over 2000 features or applications
- 31KB Protected memory
- Mini Form Factor: 40.5 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Hardlock, Sentinel SuperPro, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -25°C to 85°C
- Sentinel V-Clock for secure time-based licensing

*The most robust yet flexible solution for protecting enterprise software designed for operating in a networked infrastructure while offering the option of adjustable concurrent licensing support.*



## Sentinel HL Time

Sentinel HL Time contains a highly accurate Real Time Clock (RTC) which provides time-based (expiration date & days from first use) and tamper-proof expiration date license management solutions. Sentinel HL Time is the best solution for flexible time-based sales and licensing of protected software. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Real Time Clock for secure time-based licensing
- Midi Form Factor: 52 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -20°C to 60°C
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*The Sentinel HL Time is the ideal solution for time-based licensing options (days from first use and expiration date) made possible thanks to its on-board tamper-proof Real Time Clock.*



## Sentinel HL NetTime

The Sentinel HL NetTime key allows you to simultaneously limit the number of concurrent users and the application itself when running in a networked environment. Available with flexible options to meet your business needs, the Sentinel HL NetTime allows you to use concurrent licenses per feature that are completely configurable during fulfillment. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory
- Real Time Clock for secure time-based licensing
- Midi Form Factor: 52 x 16 x 8mm
- Available Configurations: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: -20°C to 60°C

*Combining the features of the both the Sentinel HL Net and the Time keys, the NetTime is the ideal solution for implementing time-based licensing in networked environments.*



## Sentinel HL Drive

Sentinel HL Drive combines the powerful copy protection and licensing capabilities of the Sentinel HL Max key with the convenience of a mass storage device. All of the software protection features are available on a USB Flash drive so you can protect, license and distribute your software on a single hardware element. The key contains a unique 32-bit ID that allows protecting each copy of your application with a unique key and fully controlling the secure software update mechanism.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Unique AES encryption key for each feature programmed to securely isolate its functionality
- Protect over 2000 features or applications
- 31KB Protected memory, up to 4GB Flash Memory
- Maxi Form Factor: 68 x 18.6 x 8.2mm
- Available Configurations: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip support
- Operating Temperature: 0°C to 70°C
- Sentinel V-Clock for secure time-based licensing
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

*The Sentinel HL Drive combines licensing flexibility and portability with the convenience of a mass storage device. The Sentinel HL Drive allows you to protect, license and distribute your software using a single hardware element.*



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## Sentinel LDK Master

Sentinel LDK Master is used by your production personnel to create various licenses and lock them to Sentinel HL protection keys. The Master key allows writing specific data to memory and the update of deployed in-the-field keys. The Sentinel LDK Master contains a highly accurate Real Time Clock (RTC) which enables time-based (expiration date & days from first use) and tamper proof expiration date license management options.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Midi Form Factor: 52 x 16 x 8mm

*The Sentinel LDK Master Key is an essential part of the licensing and production process containing your individual Vendor ID.*



## Sentinel LDK Developer

Sentinel LDK Developer is used by your software engineers in conjunction with additional Sentinel Toolbox protection tools to protect your software and data files. The Sentinel LDK Developer, similarly to the Sentinel HL Time, contains a highly accurate Real Time Clock (RTC) which enables time-based (expiration date & days from first use) and tamper proof expiration date license management solutions.

### Technical Specifications

- Industry pioneering White-box cryptography proven to provide the highest level of protection against hardware emulation
- High performance SmartCard chip allowing faster software execution and improved operational efficiency
- Standard public cryptography algorithms AES 128, ECC 163 and RSA 2048
- Midi Form Factor: 52 x 16 x 8mm

*The Sentinel LDK Developer key is used as part of the software protection process defining the exact licensing terms for each specific product or feature.*







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For the "SafeNet is recognized by the analyst community as the Market Leader of the Global Software License Management Market"



//CODiE//  
2012 SIIA CODiE WINNER  
BEST DRM SOLUTION

//CODiE//  
2013 SIIA CODiE WINNER

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