

Brochure

# Sentinel<sup>®</sup> HL

Hardware Protection.  
Redefined.

[cpl.thalesgroup.com](http://cpl.thalesgroup.com)



# Introduction

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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 and scenarios where the protected application runs on a USB-supported device. There are also options for embedding the license key directly on circuit boards.

For over three decades, software publishers have put their trust in Thales Sentinel's hardware-based protection keys in order to protect their valuable software against piracy. Thales 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 protecting intellectual property (IP) to managing the product catalog to improved user experience. Supported by a set of development and management tools, the Thales 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 Thales Sentinel HL hardware based licensing solutions, visit our HL solution webpage [here](#)

## Features and benefits at a glance

- Sentinel HL keys are available in HASP, Hardlock, or SuperPro configuration
- **Driverless** - Sentinel HL keys are field upgradeable from Sentinel HASP, Hardlock or Sentinel SuperPro configurations to a driverless configuration using Sentinel LDK, eliminating the need of installing device drivers on end-user machines
- **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

## 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 compatible for 32-bit and 64-bit Windows binaries (requires a paid upgrade)
- Operating Temperature: -25 °C to 85 °C

Sentinel HL Basic is Thales' most cost-effective software protection key. Ideal for licensing scenarios that do not require component licensing and where memory is not required.

## 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.



# 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.



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

## 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 for 32-bit and 64-bit Windows binaries (requires a paid upgrade)
- Operating Temperature: -25° C to 85° C
- Sentinel V-Clock for secure time-based licensing (requires a paid upgrade)
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

## 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 compatible for 32-bit and 64-bit Windows binaries
- 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)

## 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.



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

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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.



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.

## 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 compatible for 32-bit and 64-bit Windows binaries
- 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)

## 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: Sentinel HASP HL, Driverless
- Firmware upgradable in the field
- AppOnChip compatible for 32-bit and 64-bit Windows binaries
- 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)

## Sentinel **HL Max** - Chip Form Factor

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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.



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

## 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 compatible for 32-bit and 64-bit Windows binaries
- Operating Temperature: -20 °C to 60 °C
- Concurrent licensing support (requires ISV to purchase a pre-paid pool of network seats)

## 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.



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 Drive microSD

Sentinel HL Drive microSD 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.



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

## 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 compatible for 32-bit and 64-bit Windows binaries
- 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)

## 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

# 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.



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

# Sentinel LDK Developer

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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.

# THALES

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