



Create trust in your embedded system

Enhance data protection and ensure secure access, perfectly suited for retrofit solutions.



Cybersecurity threats lead to

- Financial Damage
- Reputational Damage
- Loss of Customer trust

Embedded systems need to comply with Global cybersecurity regulations & standards

EU Regulations

- Radio Equipment Directive (RED)
- Cyber Resilience Act (CRA)
- Network & Information Security (NIS2)
- Data Act

US & Global Regulations

- For medical devices (FDA Act)
- For financial services (PCI-DSS)
- California IoT law (SB-327)
- Japan: IoT Security and Safety Framework (IoT-SSF)

Industry Standards

- Cyber Security Standard for IoT devices (EN 303 645)
- Security Framework for industrial automation and control systems (IEC 62443-4-2)
- NIST Cybersecurity for IoT Program (NISTIR 8259A)

How to meet unique requirements for security embedded systems

Embedded systems security issues

- Long Product Lifecycle
- Difficult to update
- Limited flexibility



Requirements

- Data confidentiality
- System integrity
- Data availability



Security Upgrade Kit

- Encryption
- Trusted platform
- Access control

Swissbit Security Upgrade Kit: Ensuring secure embedded systems



Creating trust in your embedded system

The Security Upgrade Kit with **microSD card Security Level 2** creates trust in your embedded systems. The kit **enhances data protection** and **ensures secure access control** with ease allowing users to keep their embedded system always secure by upgrading existing microSD/ SD cards. It is perfectly suited for retrofit solutions providing **exceptional embedded security**.

Data Protection



Access Control



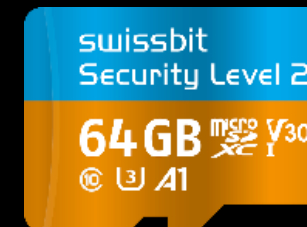
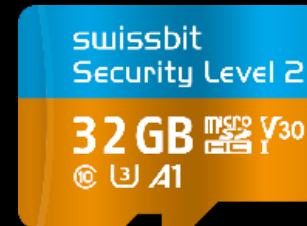
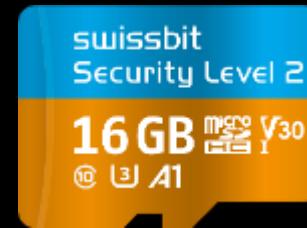
Perfect for Retrofit



Product overview: Swissbit Security Level 2

Key Facts

- + Hardware-based Access Control
- + Easy to use access control
- + Self encrypting drive using real-time AES 256
- + Individual configuration of protection profiles
- + Industrial grade memory (pSLC) for high endurance



Use Cases

- + Copy & Cloning protection Configurations, Privacy Data and AI models
- + System Integrity protection as Retrofit Secure boot
- + Data Protection for Removable media
- + License Protection as hardware dongle

Swissbit Security Level 2 microSD card corresponds to Industrial Security Standards

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The many parts of IEC 62443

	IEC 62443-1-1	IEC TR-62443-1-2	IEC 62443-1-3	IEC TR-62443-1-4
General	Terminology, concepts and models	Master glossary of terms and abbreviations	System security conformance metrics	IACS security lifecycle and use-cases
Policies & Procedures	IEC 62443-2-1 Establishing an industrial automation and control system security program	IEC TR-62443-2-2 Implementation guidance for an IACS security management system	IEC TR-62443-2-3 Patch management in the IACS environment	IEC 62443-2-4 Security program requirements for IACS service providers
System	IEC TR-62443-3-1 Security technologies for industrial automation and control systems	IEC 62443-3-2 Security risk assessment and system design	IEC 62443-3-3 System security requirements and security levels	
Component	IEC 62443-4-1 Product development requirements	IEC 62443-4-2 Technical security requirements for IACS components		

Source: IEC 62443-4-1:2018

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<https://www.iotglobalnetwork.com/iotdir/2020/04/16/iec-62443-how-to-achieve-the-highest-levels-of-industrial-security-24420/>



How does it work

Made in Germany

Built-In Security

Flash Controller
with special behavior

Administration Access

Managed
Device Access

Unauthorized Access

swissbit®
Flash Controller

HW AES 256

swissbit®
Firmware

Access Control

pSLC
Flash

Industrial
Grade

Access Control

Protection Profiles

per partition

1

Public

Private

Hidden

2

Read/ Write

Read Only

CD Rom

How does it work

Made in Germany

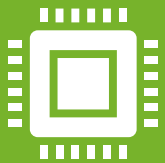
Built-In Security

Flash Controller
with special behavior



Administration Access

Configuring & Provisioning
Enable and Disable Protection



Device Access

Policy based restricted access
Authentication Needed



Adversary Access

Blocking all unauthenticated
Read or Write operations

swissbit®

Flash Controller

HW AES 256

swissbit®
Firmware

Access Control

pSLC
Flash

Industrial
Grade

Access Control

User defined
Partition table

Boot

RootFS

AppFS

Credentials

Protection Profiles
per partition

1

Public

Private

2

Read Only

Read/ Write

CD Rom

Flexible RO

Ensuring secure embedded Linux systems

Protecting data e.g. IP, configurations and credentials from being stolen, copied or manipulated on any embedded Linux system



Ensure data confidentiality of externally stored data like security logs, privacy or configurations on any embedded Linux system



Ensure system integrity of the operating system and applications on many embedded Linux systems



Security Upgrade Kit ensures business continuity



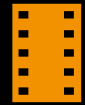
Intellectual Property



Credentials



Identifiers
(Device and people)



Digital
Product-License



Algorithms /
Firmware



Logfiles /
Logdata



Location



Accounts



Process Data



Configuration
(Files/Flags)



Safety
Functions



Sensor Data







Privacy



Communication

Security Goal Description

Asset	Comment	 Confident.	 Integrity	 Authenticity	 Availability
Operating System	Basic system functionality, security settings	(X)	X	X	
Application Software	Protection from manipulation	(X)	X	X	
Communication Interface	LAN, IPconfig, MAC, WiFi, WAN, LoRa, ISM Radio, ...				X
Configuration Files	Hostname, Backend URLs, IPs	X	X		
Login Credentials	Root PW Hash, Public Keys	X			
License Files		(X)	X	X	
VPN Private Key		X			
Backend URLs		(X)	X	X	
Privacy Data		X			
Application Data	Sent to a backend	(X)	X	X	

Security upgrade kit for any organization



Enterprise OT & IT

The Security Upgrade Kit fortifies company networks, ensuring that operations remain secure and uninterrupted.



Public Sector

The Security Upgrade Kit ensures the resilience and reliability of the public sector's digital services.



Critical Infrastructures

Security Upgrade Kit ensures operational continuity and public trust.

How to get started: Security Upgrade Kit with software, tools and drivers

www.swissbit.com/security-upgrade-kit



Setup & Configuration



Target System Integration



Secure Boot
Implementation



Linux



Windows



Linux



Windows

Available for Raspberry Pi
Portable to other systems



RaspberryPi



Linux

How to get started

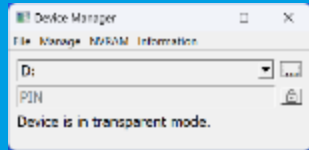
Setup and Configuration

Tools
available



Initial Configuration

Card Manager App



Card Manager CLI



DLL / Lib Support



Target System Integration

Designed for
possible



Routine Lock and Unlock

ASDD Protocol



U-Boot Integration

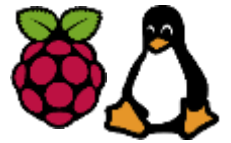


Card Manager CLI or Lib



Secure Boot Implementation

Available for Raspberry Pi
Portable to other systems



Reference Design

U-Boot based Integration Source Code available



Tested with

RPi Zero (2W)

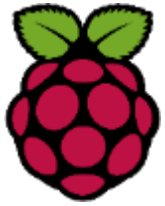
2B

3B(+)

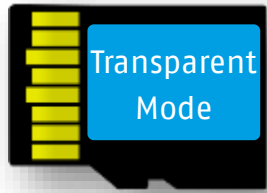
4

Not 5

Raspberry Pi OS
Bookwork 32/64 bit



Secure Boot for Raspberry Pi: How to get started



Prepare your OS

Flashing
Partitioning

Your favorite tools

Setup U-Boot

1) Copy files
2) Add Config lines

File manager + Editor

Setup Protection

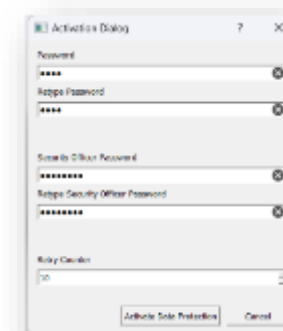
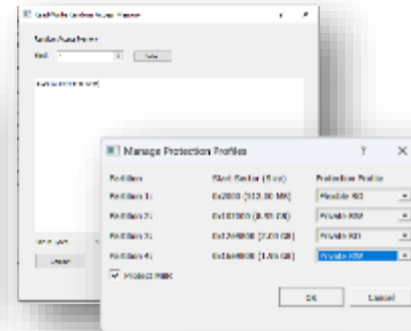
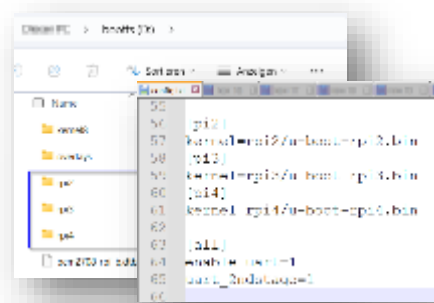
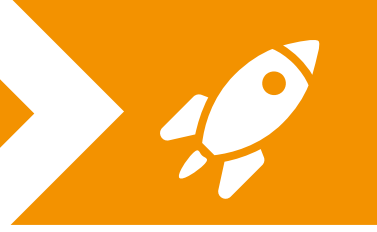
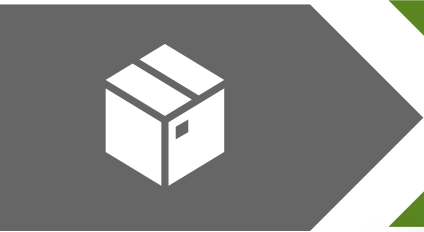
1) Set Protection Profile
2) Set Unlock Profile

Card Manager

Activate Protection

1) Set Pin and
2) Set SO PIN

Card Manager



Get your security upgrade now

Contact us

swissbit[®]

swissbit.com/security-upgrade-kit/
sales@swissbit.com

Why Swissbit

Trusted Partner for 20 years

- Own production & products "Made in Germany"
- Worldwide leader of industrial storage and security solutions

Proven Security Competence

- Over 10 years of field proven security products and solutions to protect data and devices
- Trusted supply chain

Best Service & Support

- Custom form factor and custom branding possible
- Unique sales & worldwide technical support



Your Partner for Trusted Data & Identity

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