

SINA[®] L2 Box S

Encryptors for Network Layer 2



Benefits:

- » No need for changes to the network infrastructure
- » Virtually maintenance-free operation
- » Full duplex encryption at line speed
- » IPsec-equivalent security level (with Galois Counter Mode)
- » Configuration according to customer requirements (SFP modules)
- » Approved up to RESTRICTED

The SINA L2 Box S product line provides high-performance encryptors for the secure exchange of information in networks (layer 2). The flexible and modular architecture of the SINA L2 Boxes S supports applications in MAN, WAN and SAN areas at transfer rates of up to 10 Gbit/s. The SINA L2 Box S encryptors protect both point-to-point and multipoint connections.

Together with the IPsec gateways of the SINA L3 Box S product line, the SINA L2 Box S encryptors allow communications to be secured as needed at OSI network layers 2 and 3. Working at low latency, the SINA L2 Boxes S are destined for application scenarios with demanding Quality of Service or real-time requirements.

The SINA L2 Box S product line also features the SINA L2 Box S 10G, the highest performing encryption device in the SINA range for VS-NfD (RESTRICTED) communication. The latest encryptor in this product line is SINA L2 Box S 50M compact which is ideal for use in mobile scenarios.

IT security concept

The devices of the SINA L2 Box S product line are based on a holistic IT security concept. It comprises the following:

- A secure system platform,
- Smartcard technology,

- FPGA-based cryptography (using hardware based random number generators) and
- Hardware and firmware dimensioned and configured in compliance with regulations.

IPsec-equivalent security level

The cryptographic mode GCM (Galois Counter Mode) allows an IPsec-equivalent security level of integrity and replay protection at network layer 2. In addition to the classical point-to-point encryption still supported in CBC mode (Cipher Block Chaining), the GCM mode supports point-to-multipoint and multipoint-to-multipoint encryption additionally.

Initial system booting and operation

The SINA L2 Box S encryptors load their initial configuration and the keying material required for operation (for device authentication) from a PIN-protected SINA smart card. This data is read from the smart card

and stored in the internal memory of the manipulation-protected device. For subsequent operations, this smart card is no longer required and can be used as a configuration backup for replacement devices. The external smartcard reader needs to be connected to the device during the booting routine only. This means it can be disconnected after the initial phase to be available for other SINA L2 Box S encryptors. Once the configuration has been loaded from the SINA smartcard, the SINA L2 Boxes S are ready for operation immediately. Subsequent operation is virtually maintenance-free. When the validity period of the authentication key expires it is just necessary to load new key material into the device.

The SINA L2 Box S encryption device works completely transparent, i.e. without defining any specific protocol. Facultative the system is capable of supporting IP traffic as well as individual VLAN encryption. Keys are changed without interrupting the secure connection. Disguising the encrypted communication via Traffic Flow Security offers additional confidence.

Systems monitoring

The SINA L2 Boxes S support both SNMPv2c and SNMPv3-based system monitoring. Monitoring reports are sent as syslogs to network management systems or to the responsible SINA Management.




High availability

In point-to-point configurations, high availability of the connection is guaranteed by multiple dimensioning of the line, including the corresponding SINA L2 Boxes S. This can be achieved analogously for multipoint configurations. The key servers required for multipoint configurations can be deployed redundantly in the network. All SINA L2 Boxes S with a 19" footprint feature redundant power supplies, with power supplies of the models 1G and 10G being hot swappable.





Management

The SINA L2 Boxes are easily configurable from a single SINA Management instance. That means once SINA equipment being already deployed in a network environment, the existing SINA Management can be used to manage the SINA L2 Boxes as well.

Approval-related construction classes

   SINA L2 Box S	
Approval	RESTRICTED, NATO RESTRICTED, RESTREINT UE
Firmware	Version 3.3
Manipulation protection	Integrated
Configuration token	SINA smart card
Key management	SINA Management (from version 3.11)

Additional details and performance data

		 SINA L2 Box S 50M compact	 SINA L2 Box S 100M-2	 SINA L2 Box S 1G-2	 SINA L2 Box S 10G-2
General technical data					
Design	W × D × H	desktop device VESA 100 210 × 220 × 42 mm	19" 1 U 430 × 230 × 44 mm	19" 1 U 430 × 330 × 44 mm	19" 2 U 430 × 360 × 88 mm
Weight		2.5 kg	4 kg	7 kg	10 kg
Power supply		12 ... 30 V DC PSU included: 100 ... 240 V AC 47 ... 63 Hz	110-240 V AC 50-60 Hz or -48 V DC, Redundant Hot-Swap	110-240 V AC 50-60 Hz or -48 V DC, Redundant Hot-Swap	110-240 V AC 50-60 Hz or -48 V DC, Redundant Hot-Swap
Power consumption		7 W	11 W	90 W	90 W
MTBF		> 60,000 hr	> 50,000 hr	> 50,000 hr	> 50,000 hr
Cryptography					
Throughput	P2P: Frame mode (CBC), full duplex	50 Mbit/s	100 Mbit/s	1 Gbit/s	10 Gbit/s
	MP: GCM mode, full duplex*	up to 50 Mbit/s	up to 99 Mbit/s*	up to 995 Mbit/s*	up to 9,955 Mbit/s*
Latency	Per device	≤ 0.05 ms	≤ 0.05 ms	≤ 0.008 ms	≤ 0.004 ms
Symmetric encryption method	AES (256 bit, CBC or GCM)	■	■	■	■
Asymmetric encryption method	ECC (DH-ECKAS)	■	■	■	■
LAN connections					
Network interfaces		2 × 10/100Base-T TP RJ45	2 × 10/100/1000Base-T TP RJ45	1GBASE-SR-850 nm / LR SM 1310 nm	1G / 10GBASE-SR-850 nm / LR SM 1310 nm (alternative SFP+ available)
Management interface	10/100Base-T TP RJ45	■	■	■	■
	Serial DB9	■	■	■	■
Temperature					
Operation		+1 °C to +50 °C	+1 °C to +40 °C	+5 °C to +40 °C	+1 °C to +40 °C
Air humidity	10% to 85% non-condensing	■	■	■	■
Storage and transport		-10 °C to +60 °C at a maximum of 90% humidity	-20 °C to +60 °C at a maximum of 90% humidity	-20°C to +60°C at a maximum of 90% humidity	-20°C to +60°C at a maximum of 90% humidity

*Assuming a maximum packet size of 9,000 bytes.

More information:
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