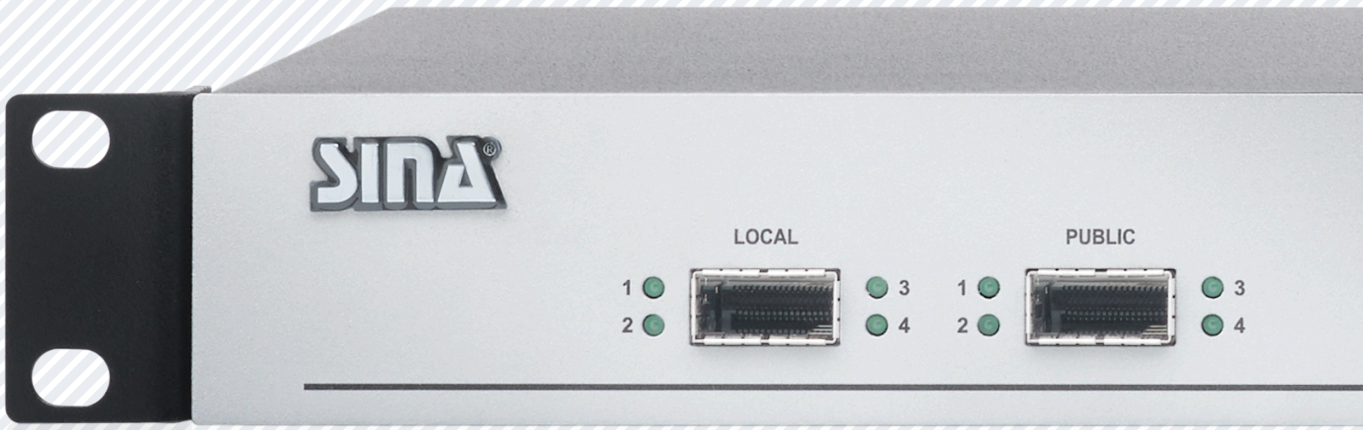
SINA®
L2 Box S

Highly efficient and fast

Encryption Technology for
Network Layer 2



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The SINA L2 Box S as a powerful Ethernet encryption device enables secure information exchange in networks.

The flexible and modular architecture of the SINA L2 Box S supports applications in MAN, WAN and SAN areas at transfer rates of up to 100 Gbit/s. The SINA L2 Box S protects both point-to-point and multipoint connections.

The SINA L2 Box S together with the SINA L3 Box S allow secure communication as needed at OSI network layers 2 and 3. Thanks to its low latency, the SINA L2 Box S is predestined for usage scenarios with high Quality of Service or real time requirements.

The new SINA L2 Box S 100G expands the SINA L2 product portfolio and is the most powerful cryptographic solution on network level 2, thanks to a data throughput of up to 100 GBit/s. The solution is particularly impressive in data centre interconnect scenarios due to its strong encryption performance (up to 99% of line speed) when sending large amounts of data while simultaneously taking into account very high security requirements for Restricted use.

Protocol transparent encryption with nearly line speed

The SINA L2 Box S works with complete transparency, i.e. without defining any specific network protocol. SINA L2 Boxes S can also be interconnected via an IP network (Ethernet over IP), and VLANs can be independently encrypted. Besides, it also allows to encrypt VLANs individually. Crypto-keys can be changed without interrupting the secure connection.

Extended protection is further achieved by disguising the encrypted traffic flow by using Traffic Flow Security (TFS).

System security

The SINA L2 Box S has a standalone mechanism that only executes integrity-protected software on a system basis. Furthermore, the SINA L2 Box S has a device protection mechanism, which leads to restricted usability in the event of unlawful opening of the system. Thus, the SINA L2 Box S has a holistic system protection that prevents manipulation of hardware and software components and continuously increases security.

IT security concept

The device models of the SINA L2 Box S are based on a holistic IT security concept. This follows the BSI recommendation of action on “migrating to post-quantum cryptography” and includes in particular:

- a secure system platform (with manipulation-proof housing);
- smartcard technology (two-factor authentication)
- FPGA-based cryptography (using hardware random number generators);
- adjustable key change times increase the security level as needed (down to every minute possible);
- hardware and firmware dimensioned and configured in compliance with regulations.

Excellent security level

The cryptographic mode GCM (Galois Counter Mode) allows an IPsec-equivalent security level of integrity and replay protection even at network layer 2. At the same time, the SINA L2 Box S acts as a highly secure firewall, since only cryptographically authenticated packets are processed. The verification is hardware-based using AES-GCM-based signature. This also ensures the DDOS-resistance of SINA L2 Box S. Further, GCM supports point-to-multipoint and multipoint-to-multipoint encryption.

System monitoring

The SINA L2 Box S supports both SNMPv2c and SNMPv3-based monitoring of the operational status. Monitoring-relevant messages are logged via Syslog. The information can be sent to network management systems or the associated SINA Management. Using SINA Monitoring (available separately), the information can be visualized and processed as needed.

High availability

All 19" variants of the SINA L2 Box S have redundant power supply units. The three most powerful hardware versions are additionally equipped with power supply units that can be exchanged during operation (hot swappable).

Flexible licensing model

The models of the third hardware generation can be flexibly configured in several licence levels. Depending on needs and network requirements, it is possible to enable the overall performance of the SINA L2 Box S 40G variably from 1 × 10 GBit/s to 4 × 10 GBit/s, or start with SINA L2 Box S 100G at 50 Gbit/s and extend to 100 Gbit/s when needed.

The SINA L2 Box S 40G makes use of QSFP+ interfaces to create an optimal network connection. The SINA L2 Box S 100G has QSFP28 interfaces to provide the maximum possible data throughput when required.

Benefits

- WAN optimisation through transport efficiency
- Multi-port functionality
- German national RESTRICTED (VS-NfD), NATO RESTRICTED, RESTREINT UE/EU RESTRICTED
- No need for changes to the network infrastructure
- Almost maintenance-free operation
- Protocol-transparent encryption up to 100 GBit/s line speed
- Real-time encryption, hardware based, very low latency
- Flexible licensing model

Management

The SINA L2 Box S is easily configurable from the SINA Management. That means, if SINA equipment is already employed in a network environment, then the existing SINA Management can also be used to manage the SINA L2 Boxes S.

Approval-related construction classes

	SINA L2 Box S
Performance data	
Approval level	German national RESTRICTED (VS-NfD), NATO RESTRICTED, RESTREINT UE/ EU RESTRICTED
Firmware	Version 3.3.2 / 3.3.3
Manipulation protection	Integrated
Configuration token	SINA ID tokens
Key management	SINA Management (from Version 3.24.0)

Additional performance data

	SINA L2 Box S 50M-2 compact	SINA L2 Box S 1G-3	SINA L2 Box S 10G-3	SINA L2 Box S 40G	SINA L2 Box S 100G
General technical data					
Design Dimensions (W × D × H)	Desktop device 210 × 220 × 42 mm	19″ 1HE 430 × 230 × 44 mm	19″ 1HE 430 × 330 × 44 mm	19″ 1HE 430 × 330 × 44 mm	19″ 1HE 430 × 330 × 44 mm
Weight	approx. 2.7 kg	approx. 4 kg	approx. 7 kg	approx. 7 kg	approx. 7 kg
Power supply	12–30 V DC External PSU: 100–240 V AC, 50–60 Hz	110–240 V AC, 50–60 Hz Redundant	110–240 V AC, 50–60 Hz Redundant hot-swap	110–240 V AC, 50–60 Hz Redundant hot-swap	110–240 V AC, 50–60 Hz Redundant hot-swap
Power consumption	approx. 8 W	approx. 12 W	approx. 40 W	approx. 50 W	approx. 70 W
MTBF	> 60,000 h	> 50,000 h	> 50,000 h	> 50,000 h	> 50,000 h
Cryptography					
Throughput*	50 MBit/s	1,000 MBit/s	10,000 MBit/s	40,600 MBit/s	100,000 MBit/s
Latency (per device)	≤ 0.04 ms	≤ 0.04 ms	≤ 0.009 ms	≤ 0.004 ms	≤ 0.005 ms
Symmetric encryption method	AES (256-bit key), GCM mode				
Asymmetric encryption method	ECC (DH-ECKAS)				
LAN connections					
Network interfaces	2 × 10/100BASE-T TP RJ45	2 × 10/100/1,000BASE-T TP RJ45	2 × 1G/10GBASE SFP/SFP+	2 × 10G/40GBASE SFP+/ QSFP+	2 × 100GBASE QSFP28 (FEC)
Management interface	10/100/1,000 BASE-T TP RJ45				
Management interface	Serial DB9				
Environmental conditions (operation)					
Operating temperature	+1°C to +50°C	+1°C to +40°C	+1°C to +40°C	+1°C to +40°C	+1°C to +40°C
Humidity	10 % to 85 %, non-condensing				
Storage and transport temperature	-10°C to +60°C at max. 90 % humidity				

Sources
Authority customers in Germany can acquire SINA components from the framework contract of the Procurement Office of the German Federal Ministry of the Interior. secunet would also be pleased to serve all other national and international customers.

*Maximum unidirectional throughput on layer 1 level. The effective data throughput depends on the operating mode. Detailed measurement results are available upon request.

secunet Security Networks AG
Kurfürstenstraße 58 · 45138 Essen · Germany
T +49 201 5454-0 · info@secunet.com
secunet.com

More information:
secunet.com/en/sina

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