

R&S®SITLINE ETH4G

R&S®SITLINE ETH40G

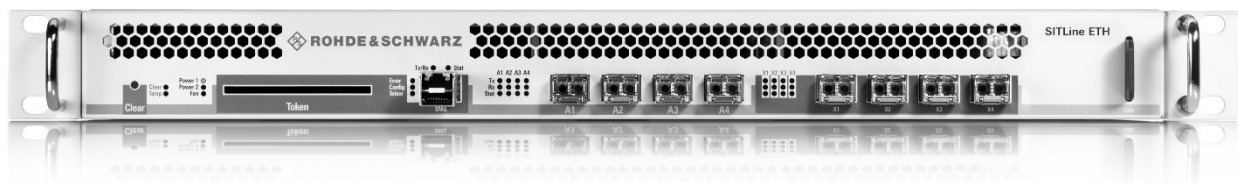
ETHERNET ENCRYPTOR

Specifications

Network and management interfaces

Each R&S®SITLine ETH has two identical interfaces (to the private network A and to the public network X). The device functions quasi-transparently. On the interface module, each port to the private network is internally connected and adjusted to the public network to establish a protected line. R&S®SITLine ETH models require optical or electrical transceivers which are available as accessories. The transceivers are not part of the default delivery.

Network interfaces		
R&S®SITLine ETH40G 4 x 10-Gbit/s lines	Ports A1 to A4/X1 to X4	Optical or electrical SFP+ transceiver, hot swap (optional, see ordering details)
R&S®SITLine ETH4G 4 x 1-Gbit/s lines	Ports A1 to A4/X1 to X4	Optical or electrical SFP transceiver, hot swap (optional, see ordering details)
Management interfaces		
“SMS” port	For communication within security and network management and for the on-site configuration	Electrical SFP transceiver (included in the scope of delivery), 1000BASE-SX SFP transceiver (optional)
“Token” slot	For initializing the device and for updating the firmware on-site	ID1 smart card: Device token; update token is optional
“Clear” button	For deleting the device certificate and the cryptographic parameters	Recessed button (requires a sharp object)



Data sheet | Version 06.00

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Security functions and cryptographic parameters

Authentication and key agreement		
Device certificates	Are created and signed by the R&S®SITScope security management system	X.509 certificates, based on smart card technology
	Deployment	First deployment is offline over smart card token; renewal is online over the network
Authentication algorithm		Elliptic curves (ANSI X9.62) with a key length of 257 bits, SHA-256
Key agreement for symmetrical encryption		Diffie Hellman with elliptic curves (ECKAS DH) with a key length of 257 bits
Random number generation	Internal generator	Compliant with class PTG.3
		Approved by the BSI (German Federal Office for Information Security)
Data encryption		
Algorithm and key length	Standard	AES with 256 bits
	Configurable	Other symmetrical algorithms possible
Encryption mode		
Transfer mode transport	Payload encryption, Ethernet address information unchanged	GCM (Galois/Counter Mode): <ul style="list-style-type: none"> • Cryptographically independent frames • Encryption of identical frames with different results • Including defense measures against replay attacks
Transfer mode tunnel	Encryption of payload including Ethernet address information	
Integrity protection	Integrity check	Activation is optional, length adjustable from 8 bytes to 16 bytes
	Integrity range	Always comprises payload, VLAN tag and MAC address field are optional
Lifespan of the master key		Configurable (min. 6 hours, max. 7 days), key exchange without any effects on existing communication connections
Lifespan of the session key	Also applies for derived keys for data encryption and protection of data integrity	Min. 1 minute, max. 7 days, key exchange without any effects on existing communication connections
Network operating modes		
Ethernet Line (E-Line) Ethernet LAN (E-LAN) Ethernet Tree (E-Tree)	Port-based encryption (all VLANs)	Multipoint operating mode PORT-EPLAN
		VLAN-independent encryption
	VLAN-based encryption	Offset configurable for 0 to 3 unencrypted VLAN tags (Q in Q)
		Multipoint operating mode VID-EVPLAN
Secure connections	For each device	VLAN-specific encryption
		Offset configurable for 1 to 3 unencrypted VLAN tags (Q in Q)
Jumbo frames support		Up to 16,000 bytes

General data

Performance and reliability		
Throughput	GCM, full-duplex	Max. 9.9 Gbit/s per 10-Gbit Ethernet line Max. 0.9 Gbit/s per 1-Gbit Ethernet line
Latency	Cut through	0.003 ms per 10-Gbit Ethernet line
		0.005 ms per 1-Gbit Ethernet line
	Store and forward	0.003 ms (10-Gbit Ethernet and 64-byte frame)
		0.005 ms (10-Gbit Ethernet and 1518-byte frame)
		0.005 ms (1-Gbit Ethernet and 64-byte frame) 0.018 ms (1-Gbit Ethernet and 1518-byte frame)
Mean time between failures (MTBF)	According to SN 29500-2005-1, fixed installation, +20 C environment temperature; continuous operation; including power supply units and fan cartridges; without transceivers	
	R&S®SITLine ETH40G optical	185,968 h
	R&S®SITLine ETH4G optical	185,968 h
Installation		
Design	Rack format	19", 1 RU
Dimensions	W x H x D	435 mm × 44 mm × 505 mm
Rack mounting	Mounting material (brackets, rails)	19", 1 RU, depths: 360 mm to 850 mm
Distance required for bending the cable for rack mounting	Front side (of the front edge)	65 mm
	Back side (of the back edge)	20 mm
Weight	Device only	Max. 8.6 kg
Dispatch		
Dispatch weight	Including packaging, accessories, manuals	Max. 19.5 kg
Dimensions of packaging	W x H x D	668 mm × 225 mm × 720 mm
Power supply and ventilation		
AC/DC supply		110 V to 240 V AC (50 Hz/60 Hz), redundant, hot swap
Current consumption (for 230 V)	Maximum	0.47 A
	On average	0.39 A
Power consumption	Maximum	100 W
	On average	
	R&S®SITLine ETH40G	80 W
	R&S®SITLine ETH4G	65 W
Heat loss	Calculated value	
	R&S®SITLine ETH40G	273 BTU/h
	R&S®SITLine ETH4G	212 BTU/h
Battery		Lithium AA, hot swap
Air flow		From front to back (cold aisle environment)
Fans	San Ace	Fan cartridges, hot swap
Climatic conditions and mechanical load-bearing capacity		
Temperature	Temperature range for operation	5 °C to +50 °C
	Temperature range for usage	0 °C to +55 °C
	Temperature range for storing	-20 °C to +70 °C
Humidity		Max. 90 % rel. humidity, without dew
Air pressure	Transport	566 hPa (corresponds to 4,500 m)
	Operation	795 hPa (corresponds to 2,000 m)
Vibration	Sinus-shaped	5 Hz to 150 Hz

Ordering details

R&S®SITLine ETH and R&S®SITScope security management system

Name	Type	Order number
R&S®SITLine ETH4G for 4 × 1-Gigabit Ethernet, Rack format (19"), 1 RU, incl. 1 device token, without optical transceivers (accessories)		
Ethernet encryptor, 4 lines, 4 × 1 Gbit/s, AC	R&S®SITLine ETH4G-602	5414.7766.02
Ethernet encryptor, 4 lines, license for 1 × 1 Gbit/s, AC	R&S®SITLine ETH4G-603	5414.7766.03
R&S®SITLine ETH4G license upgrade to 4 × 1 Gbit/s	R&S®SITLine ETH4G line ext	5414.6176.02
R&S®SITLine ETH4G upgrade to R&S®SITLine ETH40G	R&S®SITLine ETH4G upgrade	5414.6182.02
R&S®SITLine ETH40G for 4 × 10-Gigabit Ethernet, Rack format (19"), 1 RU, incl. 1 device token, without optical transceivers (accessories)		
Ethernet encryptor, 4 lines, 4 × 10 Gbit/s, AC	R&S®SITLine ETH40G-302	5414.6130.02
Ethernet encryptor, 4 lines, license for 1 × 10 Gbit/s, AC	R&S®SITLine ETH40G-303	5414.6130.03
Accessories for R&S®SITLine ETH		
Optical SFP+ transceiver (10GBASE-SR)		3661.9660.02
Optical SFP+ transceiver (10GBASE-LR)		3662.0809.02
Optical SFP transceiver (1000BASE-SR)		3661.8706.02
Optical SFP transceiver (1000BASE-LR)		3661.9654.02
Electrical SFP transceiver (10/100/1000BASE-T)		3661.3110.02
Electrical SFP+ transceiver (10GBASE-T)		3652.0341.02
AC power supply unit		5414.7837.00
Fan cartridge		5414.3390.02
Device token, ID1 smart card		5414.6501.02
Management Information Base (MIB) for SNMP browser	R&S®SITLine ETH SNMP MIB	5401.8930.30
R&S®SITScope security management system		
Set consisting of software and tools (server and client software), 3 root tokens, 4 user tokens, 1 USB smart card reader, 1 USB dongle smart card reader, 1 USB cable (type A to B)	R&S®SITScope Set	5410.8400.53
R&S®SITScope Set, preinstalled on server hardware "Large" (recommended for installations exceeding 50 R&S®SITLine ETH Ethernet encryptors, depending also on the scope of log data of the entire system)	R&S®SITScope Appliance "Large"	5410.8400.14
Accessories for R&S®SITScope		
Root token, ID1 smart card with a pop-out SIM		5410.0650.06
User token, ID1 smart card with a pop-out SIM		5410.0650.07
USB smart card reader (benchtop model)		6131.2191.00
USB dongle smart card reader		3629.2864.00

Rohde & Schwarz Cybersecurity GmbH
Muehldorfstrasse 15 | 81671 Munich, Germany
Info: +49 30 65884-222
Email: cybersecurity@rohde-schwarz.com
www.rohde-schwarz.com/cybersecurity

Rohde & Schwarz GmbH & Co. KG
www.rohde-schwarz.com



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R&S®SITLine ETH4G/40G Ethernet encryptor
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