

R&S®SITLINE ETH-S

ETHERNET ENCRYPTOR

Specifications

R&S®SITLine ETH-S is an Ethernet encryptor that enables secure data exchange through an Ethernet connection and ensures the data's confidentiality and integrity. The high-quality, cutting-edge encryption uses the entire line bandwidth of a 1 Gbit/s line in full-duplex mode regardless of the package size being transferred. In combination with the low latency, the device is integrated into the data network without any significant compromise to the network functionalities and performance.

General data

Installation		
Form factor	rack	4,5", 1 HU
	W x H x D	115 x 37 x 195 mm (4.5 x 1.5 x 7.7 in)
Weight		1.0 kg (2.2 lb)
Power supply		
DC power supply	redundant power supply modules	replaceable during operation 110-240 V AC, 50/60 Hz
DC input	voltage	24 V to 48 V
	quantity	2
Power consumption	on the AC power socket	max. 20 W
Battery	type	CR 1/2 AA, built-in
	voltage	3 V
	durability	10 years depending on the utilization rate
Climatic and environmental conditions		
Ambient temperature	storage	-20 °C to +70 °C
	operation	0 °C to +50 °C
Humidity	without condensation	up to 90 % relative
Air pressure	transport	min. 566 hPa (equates to approx. 4500 m above sea level)
	operation	min. 795 hPa (equates to approx. 2000 m above sea level)
Heat loss	maximum	approx. 68 BTU/h
Reliability		
MTBF	in accordance with SN 29500 at 25 °C	660.939 h
Device without display and additional components	in accordance with SN 29500 at 45 °C	345.662 h
	in accordance with SN 29500 at 50 °C	289.687 h



Data sheet | Version 02.02

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Network

Data ports		
Number of ports	1 line	2 ports - A1 private /unencrypted - X1 public /encrypted
Type		SFP
Data rate	line rate	1 Gbit/s
Frame type	Ethernet (IEEE frame, DIX Ethernet II)	IEEE802.3, Ethernet II
Ethernet MTU	IEEE frame	1518 /1522 bytes
	DIX Ethernet II	9216 bytes
Media	determined by the transceiver	optical (SM, MM) various types electrical (10/100/1000Base-T)
VLAN support	VLAN, Q in Q	802.1Q, 802.1ad, 802.1ah
WAN services		
Port-based	in accordance with MEF	EPL, EP-LAN, dark fiber
VLAN-based	in accordance with MEF	EVPL, EVP-LAN
Frame processing		
Transfer mode		store & forward
Throughput on the X port	unencrypted max.	1 Gbit/s 1.488.095 PDU/s
	encrypted max.	1 Gbit/s 1.329.787 PDU/s
	encrypted + 8 bytes integrity max.	1 Gbit/s 1.225.490 PDU/s
Latency	Frame size	on 1 Gbit/s line
	64 Byte	4 μ
	256 Byte	5,7 μ s
	512 Byte	8 μ s
	1518 Byte	17 μ s
Frame filter	9198 Byte	86 μ s
	block or bypass	IEEE Layer 2 Control Protocols Cisco Layer 2 Control Protocols Precision Time Protocol

Device management

Management ports		
Number of ports	2	local management (console) remote /online management (MGMT)
Type		2 * RJ-45
Frame type MTU	Ethernet (IEEE frame, DIX Ethernet II)	IEEE 802.3
	IEEE frame	1518 /1522
	DIX Ethernet II	1518 /1522
Data rate	Ethernet	10/100/1000 Mbit/s, auto-neg.
Media		electrical
Remote /online management		
VLAN support		IEEE 802.1Q
IP protocol		IPv4, IPv6
		static IP address on the management port
Access	out-of-band	local management port (MGMT)
	in-band	red data port (A1) or using the black data port (X1)
Local management		
External terminal	protocol	SSH
		terminal program /SSH client
USB	mass storage port	USB 2.0 for firmware update; log export
Connector		USB-A
Card reader		
Format	contact smart card	ID-1 (ISO 7816-2) secure configuration memory trust anchor
Network management		
Protocol	SNMP	v2c, v3
Supported MIBs	standard	SNMP MIB (RFC 3418), Interfaces Group MIB (RFC 2863), Ethernet-like Interfaces MIB (RFC 3635), MAU MIB (RFC 4836)
	private	SITLine-II MIB

Cryptography and security

Symmetric cryptography		
Algorithm		AES
Key length		256 bit
Mode		GCM
Integrity checksum	configurable (on/off/length)	0 (off), 8, 12, 16 bytes
Replay protection	configurable (on/off)	integrity must be active
Operational mode		
Standard	full Ethernet payload including ET field	all network services (P2P, P2MP, MP2MP)
Ethernet tunnel	new Ethernet frame	only point-to-point services (P2P, P2MP)
Secure connections		
Number		up to 1000 session keys simultaneously
Connection establishment		automatic
Key assignment	configurable	port or 1st VLAN tag
Encryption offset	configurable	up to 3 VLAN tags
Key agreement		
Protocol		authenticated Diffie-Hellman ECKAS-DH
Authentication		ECGDSA, see also asymmetric cryptography
Key lifetime		
Master key	automatic key renewal without interrupting the connection	10 – 65.535 s (standard 36000 s)
Session key	automatic key renewal without interrupting the connection	1 – 32.767 s (standard 180 s)
Authentication /signatures		
Asymmetric cryptography	device certificate	X.509
	certificate storage	on smart card
	certificate change	offline /online using the smart card
	key length	ECC (ANSI X9.62, ECDSA) 384 bit device – device authentication 512 bit device – SMS authentication
Security management connection	hash algorithm	SHA-384 device – device authentication SHA-512 device – SMS authentication
	protocol	TLS 1.2
Additional functions		
Secure Boot		only firmware signed by the manufacturer
Hardware monitoring		BITE during Boot and operation
Tamper resistant		Tamper event prevents regular boot; emergency boot only to detamper the device
Clear		Button on the front of the device to reset it to the delivery state

Approvals and certificates

Safety		LVD 2014/35/EU: EN 62368-1:2014+AC:2015
EMV		EMCD 2014/30/EU: EN 55032:2012+AC:2013 (Class A), EN 55024:2010+A1:2015, EN61000-3-2:2014 (Class A), EN61000-3-3:2013
Security approvals	national	VS-NUR FÜR DEN DIENSTGEBRAUCH (RESTRICTED)
	NATO	NATO RESTRICTED (NR)
	EU	RESTREINT UE /EU RESTRICTED (in approval)

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