

ETS-1-10G/L2

Ethernet Access Switches



- Advanced L2 functions
- Multicast support (IGMP Snooping, MVR)
- Advanced security (multilayer ACLs, IP Source Guard, and Dynamic ARP Inspection)

MARKET SEGMENTS AND APPLICATIONS

New generation access switches provide end users connectivity to large-scale networks, small and medium business networks, and service provider networks, using 10 Gigabit Ethernet interfaces.

The switches support VLANs, multicast groups, and advanced security.

Specifications

CAPACITY

Switching Capacity	See Table 1
Throughput	See Table 1
MAC Address Table	See Table 1
RAM (DDR3)	See Table 1
ROM (SPI Flash)	64 MB
VLAN Table	4094
ARP Table	1000
Jumbo Frames	12288 bytes
L3 Interfaces	See Table 1
Link Aggregation Groups (LAG)	24 groups, up to 8 ports in one LAG
QoS	8 output queues priorities per port

ETHERNET INTERFACES

Ports	See Table 1
Power over Ethernet (PoE)	PoE (15.4W per port): 802.3af PoE+ (30W per port): 802.3at
Features	Head-of-line blocking (HOL) protection Auto MDI/MDIX Flow control (IEEE 802.3X) Jumbo frames Port mirroring (SPAN, RSPAN)

MANAGEMENT

Configuration	Web-based interface Command Line Interface (CLI)
Control Port	RS-232 interface, RJ-45 connector
Protocols	SNTP (Simple Network Time Protocol) Traceroute LLDP (802.1ab) + LLDP MED Simple Network Management Protocol (SNMP) Management interface blocking Download and upload of configuration file via TFTP/SFTP Automated backup of configuration file via TFTP/SFTP
Access	Access control – privilege levels Local authentication IP addresses filtering for SNMP Flash File System Limiting of traffic to CPU Password encryption Telnet client and server SSH client and server Macro commands
IPv6	IPv6 Host Dual-stack IPv4, IPv6 Static IPv4/IPv6 routes

SECURITY

ACL	L2-L3-L4 ACL IPv4/IPv6 ACL for device control ACL based on: <ul style="list-style-type: none"> Physical port number IEEE 802.1p VLAN ID EtherType DSCP Protocol type TCP/UDP port number User Defined Bytes
TACACS+	TACACS+ clients Input commands authorization via TACACS+ Input commands logging via TACACS+
RADIUS	RADIUS clients
Syslog	
Security Features	IP Source Guard IPv6 ND Inspection IPv6 RA Guard Dynamic ARP Inspection Traffic segmentation Debugging commands MAC-based authentication, Port Security, Static MAC entries Two 802.1Q headers traffic control Support for several versions of configuration file DoS attacks prevention
IEEE 802.1X	IEEE 802.1x based interface authentication

QUALITY OF SERVICE (QOS) AND RATE LIMITING

Class of Service	IEEE 802.1p Class of Service (CoS)
Bandwidth Control	Shaping Policing Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR) ACL-based traffic classification ACL-based VLAN assignment ACL-based CoS/DSCP mark assignment DSCP to CoS/CoS to DSCP remarking

LAYER 2

VLAN	802.1Q Q-in-Q Selective Q-in-Q (VLAN Translation) GVRP MAC-based VLAN Protocol-based VLAN rules
MAC Table	Independent learning mode per VLAN MAC Multicast Support Configurable aging time of MAC addresses Static MAC Entries MAC change events monitoring per ports
L2 Multicast	Multicast profiles Static Multicast groups
IGMP	IGMP Snooping v1,2,3 IGMP Snooping fast-leave IGMP querier IGMP proxy-report IGMP authorization via RADIUS
MVR	
MLD	MLD Snooping v1,2 MLD Snooping fast-leave
DHCP	DHCP snooping DHCPv6 Snooping DHCP clients filtering DHCP autoprovision DHCP relay (IPv4 support) DHCP relay Option 82 DHCP Option 82
PPPoE	PPPoE Intermediate Agent PPPoE Circuit-ID tag
BPDU	BPDU attacks prevention STP BPDU Guard BPDU Filtering

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RESILIENCY

L2 Protection	STP (Spanning Tree Protocol, IEEE 802.1d)	
	RSTP (Rapid Spanning Tree protocol, IEEE 802.1w)	
	MSTP (Multiple Spanning Tree, IEEE802.1s)	
	ERPS (Ethernet Ring Protection Switching), G.8032v2	
	STP Root Guard	
	STP Loop Guard	
	Spanning Tree Fast Link option	
	Layer 2 Protocol Tunneling	
	Loopback Detection (LBD)	
	Port isolation	
	Storm control for different traffic (broadcast, multicast, unknown unicast)	
	Link Aggregation	8 groups
		Static LAG
Dynamic LAG (LACP)		
LAG Balancing Algorithm		

MONITORING AND DIAGNOSTICS

Diagnostic	Ping (IPv4/IPv6 support)
	Virtual Cable Testing (VCT)
	Optical transceiver diagnostics
Monitoring	Statistics on interfaces
	CPU utilization monitoring per task and per queue
	RAM utilization monitoring
	Temperature monitoring
	TCAM utilization monitoring
OAM/CFM	802.3ah Ethernet Link OAM
	Dying Gasp
	802.3ah Unidirectional Link Detection (UDLD)

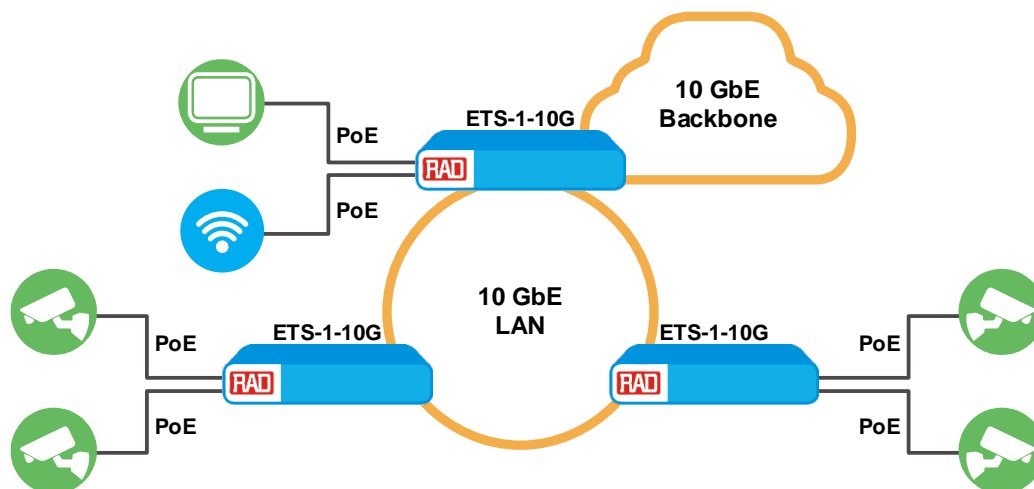
GENERAL

Environment

See Table 1

Physical and Power

See Table 1



ETS-1-10G/L2

Ethernet Access Switches

Table 1. Technical Features

Specification	ETS-1-10G/L2/ 4SP/24P/AC	ETS-1-10G/L2/ 4SP/48P/AC	ETS-1-10G/L2/ 4SP/24U/AC	ETS-1-10G/L2/ 4SP/24S
Interfaces				
10/100/1000BASE-T PoE/PoE+	24	48	–	–
10/100/1000BASE-T (RJ-45)	–	–	24	–
100BASE-FX/1000BASE-X (SFP)	–	–	–	24
1000BASE-X (SFP)/10GBASE-R (SFP+)	4	4	4	4
Performance				
Packet Processor	Realtek RTL9301	Realtek RTL9311	Realtek RTL9301	Realtek RTL9311
Switching Capacity	128 Gbps	176 Gbps	128 Gbps	128 Gbps
Throughput on 64-byte packets*	95.2 MPPS	130.9 MPPS	95.2 MPPS	95.2 MPPS
Buffer memory	1.5 MB	2 MB	1.5 MB	2 MB
RAM (DDR3)	512 MB	512 MB	512 MB	1 GB
MAC Table	16384	32768	16384	32768
L2 Multicast groups (IGMP Snooping)	1023	4094	1023	4094
L3 Multicast groups (IGMP Proxy)	512	2048	512	2048
L3 interfaces	8 VLANs, up to 5 of IPv4 for each VLAN, up to 300 IPv6 GUA total for all VLANs	8 VLANs, up to 5 of IPv4 for each VLAN, up to 300 IPv6 GUA total for all VLANs	20 VLANs, up to 5 IPv4 for each VLAN, up to 124 IPv6 GUA total for all VLANs	20 VLANs, up to 5 IPv4 for each VLAN, up to 512 IPv6 GUA total for all VLANs
L3 IPv4 Unicast routes	496	992	496	2048
VRRP routers	32	32	32	32
SQinQ rules	384 (ingress)/ 512 (egress)	768 (ingress)/ 1024 (egress)	384 (ingress)/512 (egress)	768 (ingress)/1024 (egress)
MAC ACL rules	509	766	509	766
IPv4/IPv6 ACL rules	384/192	640/320	384/192	640/320
*Values are given for one-way transmission				
Physical and Power				
Dimensions (W x D x H)	430 x 44 x 225	440 x 44 x 447	430 x 44 x 203 mm	430 x 44 x 275
Weight	3.36 kg	7.46 kg	2.44 kg	4.69 kg
Power Supply	176-264 VAC, 50–60 Hz	176-264 VAC, 50–60 Hz	100–240 VAC, 50–60 Hz 18–72 VDC	Hot Swappable Power Supplies, see Ordering (ordered separately)
PoE budget	370 W	720 W		
Maximum power consumption (including PoE)	420 W	820 W	25 W	55 W
Operating temperature	-20 to +50°C	-10 to +50°C	-20 °C to +50 °C	-10 to +45°C
Storage temperature	-40 to +70 °C			
Operating humidity	no more than 80%			
Cooling	2 fans	4 fans	2 fans	4 fans
Hardware support for Dying Gasp	yes	no	yes	no

ETS-1-10G/L2

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Ordering

ETS-1-10G/L2/4SP/24P/AC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, 176-264 VAC

ETS-1-10G/L2/4SP/48P/AC

L2 Ethernet switch, 48 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, 176-264 VAC

ETS-1-10G/L2/4SP/24U/AC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X, 10GBase-R, 220V AC

ETS-1-10G/L2/4SP/24S

L2+ Ethernet aggregation switch, 24 ports of 100BASE-FX/1000BASE-X (SFP), 4 ports of 1000BASE-X (SFP)/10GBASE-R (SFP+), dual PS slots (PSs not included)

Hot Swappable Power Supplies

Separately ordered per needed quantity (1 or 2) and type (DC or AC)

ETS-1-10G-PS/AC220/160W

AC Power Supply Module for ETS-1-10G/L2/4SP/24S, 100-264 VAC, 50-60 Hz, 160W

ETS-1-10G-PS/DC48/100W

DC Power Supply Module for ETS-1-10G/L2/4SP/24S, 36-76 VDC, 100W

OPTIONAL ACCESSORIES

CBL-SGW-RJ45-D9-F-6FT

RJ-45 to DB-9 console cable

International Headquarters

24 Raoul Wallenberg St., Tel Aviv 6971923, Israel
Tel 972-3-6458181 | Fax 972-3-7604732
Email market@rad.com

North American Headquarters

900 Corporate Drive, Mahwah, NJ 07430, USA
Tel 201-529-1100 | Toll Free: 800-444-7234 | Fax: 201-529-5777
Email market@radusa.com



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