

ETS-1-1G/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 Gigabit Ethernet interfaces.

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

Specifications

CAPACITY

Switching Capacity	See Table 1
Throughput	See Table 1
Max. Frame Size	Jumbo Frame: 10K bytes
MAC Address Table	8K
ACL Table	1.5K
RAM (DDR3)	256 MB
ROM (SPI Flash)	32 MB
VLAN table	4K
Buffer Memory	512 KB

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) Port mirroring RSPAN

MANAGEMENT

Control Port	RS-232 interface, RJ-45 connector
Protocols	SNTP (Simple Network Time Protocol) Traceroute LLDP (802.1ab) + LLDP MED SNMPv3 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 CLI with password-protected access Password encryption Telnet client and server, SSH server Macro commands System log
IPv6	IPv6 Host Dual-stack Static IPv4/IPv6 routes

SECURITY

ACL	L2-L3-L4 ACL
	IPv6 ACL
	ACL based on: - Physical port number - IEEE 802.1p - VLAN ID - EtherType - DSCP - Protocol type - TCP/UDP port number - User Defined Bytes
TACACS+	TACACS+ clients Commands logging via TACACS+
RADIUS	RADIUS clients
Syslog	
Passwords	Password encryption Password recovery
Security Features	IP Source Guard Dynamic ARP Inspection Traffic segmentation Debugging commands Rate limit of traffic to CPU MAC-based authentication, Port Security, Static MAC entries Protection against non-authorized DHCP servers Support for several versions of configuration file DoS attacks prevention
SSL/SSH	SSH server/SSL
IEEE 802.1X	Port-based MAC-based

QUALITY OF SERVICE (QOS) AND RATE LIMITING

Class of Service	IEEE 802.1p Class of Service (CoS)
Bandwidth Control	8 egress queues per port Shaping Policing Storm Control Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR) ACL-based traffic classification ACL-based VLAN assignment IEEE 802.1p priority for management VLAN 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) 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: 509 groups Port-based IGMP Snooping Fast Leave IGMP querier IGMP proxy-report features IGMP authorization via RADIUS
MVR	
MLD	MLD Snooping v1,2
DHCP	DHCP 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

RESILIENCY

L2 Protection	STP (Spanning Tree Protocol, IEEE 802.1d)
	RSTP (Rapid Spanning Tree protocol, IEEE 802.1w)
	MSTP (Multiple Spanning Tree, IEEE802.1s)
	STP Root Guard
	STP Loop Guard
	STP BPDU Guard
	BPDU Filtering
	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)

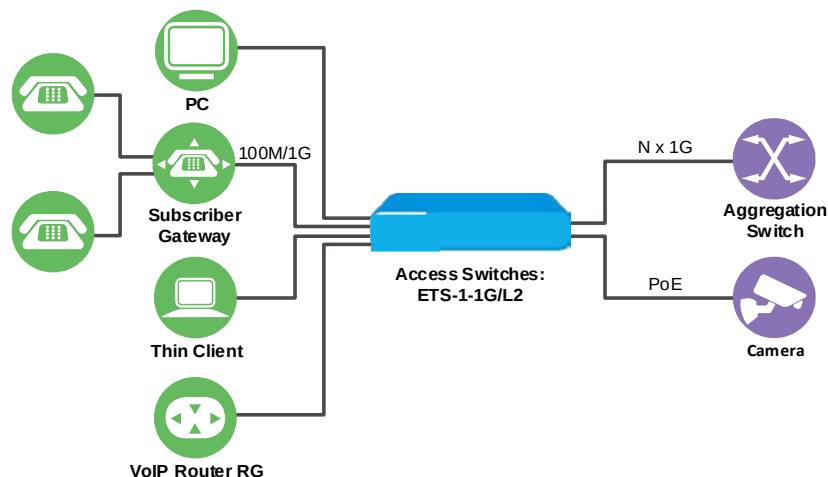
GENERAL

Environment

Operating Temperature	ETS-1-1G/L2/2S/8U/AC: -20 to +60°C (-4 to 140°F)
	Other models: -20 to +50°C (-4 to 122°F)
Storage Temperature	-40 to 70°C (-40 to 158°F)
Cooling	Passive
Operational and Storage Relative Humidity	10% to 95%
	Non-condensing

Physical and Power

See Table 1



ETS-1-1G Ethernet Access Switches, Typical Application

Table 1. Technical Features – ETS-1-1G/L2 Product Family

Specification	ETS-1-1G/L2/2S/8U/AC ETS-1-1G/L2/2S/8U/DC	ETS-1-1G/L2/2S/8P/ACW ETS-1-1G/L2/2S/8P/DC	ETS-1-1G/L2/4CMB/24U/AC ETS-1-1G/L2/4CMB/24U/DC	ETS-1-1G/L2/4CMB/24P/AC ETS-1-1G/L2/4CMB/24P/DC
Interfaces				
10/100/1000BASE-T (RJ-45) PoE/PoE+	-	8	-	24
10/100/1000BASE-T (RJ-45)	8	-	24	-
1000BASE-X (SFP)	2	2	-	-
Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X	-	-	4	4
Performance				
Switching Capacity	20 Gbps	20 Gbps	56 Gbps	56 Gbps
Throughput	up to 14.88 MPPS	up to 14.88 MPPS	up to 41.658 MPPS	up to 41.658 MPPS
Physical and Power				
Dimensions (WxDxH)	310x44x177	430x178x44 mm	430x178x44 mm	430x178x44 mm
Weight	1.72 kg	2.69 kg	2.35 kg	2.35 kg
Power Supply	AC: 100–250 VAC, 60/50 Hz DC: 18–72 VDC	AC: 100–250 VAC, 60/50 Hz DC: 18–72 VDC	AC: 110–250 VAC, 60/50 Hz DC: 18–72 VDC	AC: 170–264 VAC, 60/50 Hz DC: 18–72 VDC
Power Consumption	10W	24W (not including PoE)	25W	70W (not including POE)
POE Maximum power	-	256W	-	370W

Ordering

ETS-1-1G/L2/2S/8U/AC

L2 Ethernet switch, 8 x 10/100/1000BASE-T ports, 2 x 1000BASE-X (SFP) ports

ETS-1-1G/L2/2S/8U/DC

L2 Ethernet switch, 8 x 10/100/1000BASE-T ports, 2 x 1000BASE-X (SFP) ports, 48 VDC

ETS-1-1G/L2/2S/8P/ACW

L2 Ethernet switch, 8 x 10/100/1000BASE-T (PoE/PoE+) ports, 2 x 1000BASE-X (SFP) ports

ETS-1-1G/L2/2S/8P/DC

L2 Ethernet switch, 8 x 10/100/1000BASE-T (PoE/PoE+) ports, 2 x 1000BASE-X (SFP) ports, 48 VDC

ETS-1-1G/L2/4CMB/24U/AC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 COMBO ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X

ETS-1-1G/L2/4CMB/24U/DC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 COMBO ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, 48 VDC

ETS-1-1G/L2/4CMB/24P/AC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T POE+, 4 COMBO ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X

ETS-1-1G/L2/4CMB/24P/DC

L2 Ethernet switch, 24 ports of 10/100/1000BASE-T POE+, 4 COMBO ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, 48 VDC

OPTIONAL ACCESSORIES

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

RJ-45 to DB-9 console cable