

- Bandwidth up to 56 Gbps
- Non-blocking architecture
- L3 switches
- Stacking up to 8 devices
- Hot-swappable redundant power supplies
- Passive cooling
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)



**MES23281** industrial switch is designed for organization of the secure data transmission networks on sites where it is necessary to meet the requirements for ensuring resistance to temperature influences.

The switch has 10/100/1000BASE-T Gigabit ports and 10/100/1000BASE-T/1000BASE-X/100BASE-FX combo ports for optional connection of an optic-fiber cable.

The distinctive features of the switch are passive cooling and hot-swappable redundant power supplies.

## Technical features

Interfaces	
10/100/1000BASE-T (RJ-45)	24
10/100/1000BASE-T/1000BASE-X/ 100BASE-FX Combo	4
Console port RS-232 (RJ-45)	1
USB 2.0	1
Performance	
Bandwidth	56 Gbps
Throughput for 64 bytes <sup>1</sup>	41,6 MPPS
Buffer memory	1,5 MB
RAM (DDR3)	512 MB
ROM (RAW NAND)	512 MB
MAC table	16384
ARP table <sup>2</sup>	820
VLAN table	4094
L2 Multicast groups	2047

<sup>1</sup> The value is given for one-way transmission

<sup>2</sup> For each host in the ARP table, an entry is created in the routing table

## Technical features (continued)

SQinQ rules	958 (ingress/egress)
ACL rules	958
L3 IPv4 Unicast routes <sup>1</sup>	818
L3 IPv6 Unicast routes <sup>1</sup>	210
L3 IPv4 Multicast routes(IGMP Proxy, PIM) <sup>1</sup>	412
L3 IPv6 Multicast routes (IGMP Proxy, PIM) <sup>1</sup>	103
VRRP routers	255
Maximum size of ECMP groups	8
VRF	16 (including default VRF)
L3 interfaces	130
Link Aggregation Groups (LAG)	48, up to 8 ports per LAG
Quality of Service (QoS)	8 egress queues per port
Jumbo frames size	10240 bytes
Stacking	8 devices

## Features and capabilities

### Interfaces functions

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)
- Stacking

### MAC addresses functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Automatic MAC addresses aging
- Static MAC Entries
- MAC Flapping logging

### VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

### L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host based IGMP Snooping Fast Leave
- Pim-Snooping
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

### L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spaning Tree protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree, IEEE802.1s)
- STP Multiprocess
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD) на основе VLAN
- ERPS (G.8032v2)
- Flex-link
- Private VLAN, Private VLAN Trunk
- Layer 2 Protocol Tunneling (L2PT)

### L3 functions

- Static IP routes
- RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP<sup>2</sup> (IPv4 Unicast, IPv4 Multicast, IPv6 Unicast)
- BFD (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-Based Routing (IPv4)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- IP Unnumbered
- ECMP Load Balancing
- VRF

<sup>1</sup>IPv4/IPv6 Unicast/Multicast routes share hardware resources

<sup>2</sup>BGP protocol support is provided under license

## Features and capabilities (continued)

### Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

### Ipv6 functions

- IPv6 Host
- Dual-stack

### Service functions

- Virtual Cable Testing (VCT)
- Virtual Cable Testing
- Green Ethernet

### Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI
- PPPoE Intermediate Agent

### ACL (Access Control List)

- L2-L3-L4 ACL (Access Control List)
- Time-Based 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

### Quality of Service (QoS)

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Bandwidth management
- Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR) algorithms
- Three marking colors
- ACL-based CoS/DSCP assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS/CoS to DSCP remarking
- 802.1p, DSCP mark assignment for IGMP

### OAM/CFM

- 802.3ah Ethernet Link OAM
- Dying Gasp
- 802.1ag Connectivity Fault Management (CFM)
- 802.3ah Unidirectional Link Detection

### Management functions

- Download and upload of configuration file via TFTP/SCP
- Redirecting the output of CLI commands to an arbitrary file on ROM
- SNMP
- Command Line Interface (CLI)
- WEB interface
- Syslog
- SNTP (Simple Network Time Protocol)
- NTP (Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Processing traffic management with two 802.1Q headers
- Authorization of entered commands using TACACS+ server
- Access control – privilege levels
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) client
- SSH, Telnet server
- SSH, Telnet client
- Remote start of commands via SSH
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCPv6 Relay, DHCPv6 LDRA (Option 18, 37)
- PPPoE Circuit-ID tag
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6 support)
- DNS server (Resolver)

### Monitoring functions

- Interface statistics
- RMON/SMON
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM utilization monitoring

### MIB/IETF

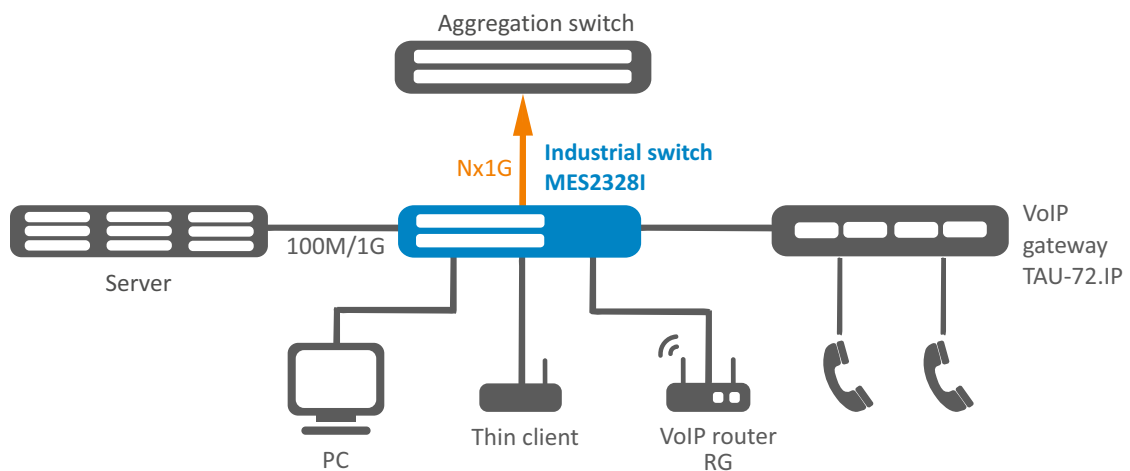
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 271,1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB

## Features and capabilities

### MIB/IETF (continued)

- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 DS field in the IPv4 и IPv6 header
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

## Use case



## Physical specifications

### Physical specifications and environmental parameters

Power supply	100–240 V AC, 50–60 Hz; 36–72 V DC Power supply options: • 1 AC/DC power supply • 2 AC/DC hot-swappable power supplies
Input current	3.03–7.27 A for AC 1.2–2.4 A for DC
Maximum power consumption	33 W
Heat dissipation	33 W
Operating temperature	from -40 to +60 °C
Storage temperature	from -50 to +70 °C
Operating humidity	no more than 80 %
Cooling	passive cooling
Form factor	19", 1U
Dimensions (W × H × D)	430 × 44 × 305 mm
Weight	3.85 kg

## Ordering information

Name	Description
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<b>MES2328I</b>	MES2328I Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 combo ports 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L3
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### Related products

<b>PM160-220/12</b>	PM160-220/12 power supply module, 100–240 V AC, 160 W
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<b>PM100-48/12</b>	PM100-48/12 power supply module, 36–72 V DC, 100 W
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### Related software

<b>ECCM-MES2328I</b>	ECCM-MES2328I option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2328I
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## Contact us

## About ELTEX



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