cnMatrix™ EX1000 Series Switches

QUICK LOOK:

- **Zero-touch deployments**
- **Policy Based Automation**
- **Auto device profiling and segmentation**
- **Non-blocking, line-rate architecture with fully featured L2 switching**





cnMaestro



XMS

Cambium Networks' next generation switching platform offers a cloud managed, high performance, feature rich enterprise grade ethernet switching solution.

The cnMatrix platform of switches provides:

- Easy and simple, free cloud (or on premise) management with cnMaestro™ or XMS
- Zero-touch deployment of switches makes installation easy
- Policy Based Automation eliminates manual and time consuming configuration
- Enhanced Security with automated device profiling and segmentation
- Policy Based Automation eliminates manual configuration during adds, moves and changes of network devices
- Unified Wired-Wireless access solution



EX1028

The cnMatrix series of fully managed switches delivers full Layer 2 capabilities with enhanced access security. These switches come with a 5-Year Limited Lifetime Warranty.

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cnMatrix™ EX1000 Series Switches

Specifications

	EX1028-P	EX1028	EX1010-P	EX1010
Throughput	56 Gbps	56 Gbps	20 Gbps	20 Gbps
Non-Blocking Throughput	✓	✓	✓	✓
Forwarding Rate in Mpps (64 Byte Packets)	120	120	120	120
10/100/1000 Ports	24	24	8	8
2.5 G Ports	n/a	n/a	n/a	n/a
Uplink Ports	4 SFP	4 SFP	2 SFP	2 SFP
PoE+ Enabled Ports (802.3af/at)	24	n/a	8	n/a
Serial Console	✓	✓	✓	✓
USB	✓	✓	✓	✓
Out-of-Band Management Port	n/a	n/a	n/a	n/a
Rack Mount Kit	✓	✓	Optional	Optional
Internal Fans	2	Fanless	Fanless	Fanless
Reset Button	✓	✓	✓	✓
MAC Address Table Size	16K	16K	16K	16K
Flash Storage	128 MB	128 MB	128 MB	128 MB
DRAM	512 MB	512 MB	512 MB	512 MB
VLANs	4K	4K	4K	4K
QinQ*	Yes	Yesv	Yes	Yes
LACP/Trunking	8 LAGs/8 links per LAG	8 LAGs/8 links per LAG	8 LAGs/8 links per LAG	8 LAGs/8 links per LAG
QoS Priority Queues	8	8	8	8
PVRST	32	32	32	32
Ingress/Egress ACL	128	128	128	128
Static ARP Entries	512	512	512	512
ARP Entries	512	512	512	512
Static Routes	64	64	64	64
Dynamic Routing	n/a	n/a	n/a	n/a
IGMP Multicast Groups	256	256	256	256
Policy Based Automation	✓	✓	✓	✓

* Feature to be included in a future release.

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cnMatrix™ EX1000 Series Switches

Specifications - All Models

Quality of Service	ACL mapping and marking of ToS/DSCP (COS)
	ACL mapping marking of 802.1p
	ACL mapping to priority queue
	DiffServ support
	Honoring DSCP and 802.1p (CoS)
	Traffic shaping/metering
	Priority queue management using Weighted Round Robin (WRR), Strict Priority (SP) and a combination of WRR and SP
Traffic Management	ACL-based inbound rate limiting policies
	Broadcast, multicast and unknown unicast rate limiting
	Inbound rate limiting per port
	Outbound rate limiting per port/queue
Security	802.1x authentication
	MAC authentication*
	DHCP snooping
	RADIUS authentication/authorization
	Radius/Tacacs/Tacacs+
	Authentication, Authorization, and Accounting (AAA)
	Secure shell
	Secure copy (SCP)*
	Local username/password

Layer 2 Feature Set	802.1s multiple spanning tree
	VLAN, Port, Protocol, 802.1q
	QinQ*
	802.1d
	802.1x authentication
	Auto MDI/MDIX
	BPDU Guard, Root Guard
	IGMP Snooping v1/v2/v3*, Fast Leave
	LLDP/LLDP MED
	IGMP Proxy
	Static MAC
	Flow Control per port
	Per VLAN STP (PVST/PVRST)
	Port Mirroring: port based, ACL based, VLAN based
	Port Isolation/Private VLAN Edge
	Link Aggregation Groups (Static/LACP)
	Rate Limiting/Storm Control
	Jumbo frame (9k)
	DHCP Snooping
	BPDU filtering
	Broadcast/Multicast/Unlearned Unicast (Storm Control)
	DoS Protection
	Ping/TraceRoute/ICMPv6
Layer 3 Feature Set	Inter-VLAN Routing
	Static ARP
	Static Routes
	DHCP Relay

* Feature to be included in a future release.

cnMatrix™ EX1000 Series Switches

Specifications - All Models cont'd

Management

cnMaestro and XMS (cloud management)	Simple Network Time Protocol (SNTP)
Industry standard Command Line Interface (CLI)	Local/remote system logging
DHCP Client	Policy Based Automation
Embedded web management (HTTP/HTTPS)	Display log messages multiple terminals*
Embedded DHCP server	TFTP/SFTP
USB file management and storage	Telnet client/server
SSH / SSH v2	IPv6 management
SNMP v1/v2/v3	Password management
DHCP relay	Autoinstall support for firmware images and config files

Security

PERMIT/DENY ACTIONS FOR INBOUND IP AND LAYER 2 TRAFFIC CLASSIFICATION BASED ON:

Source/Destination IP address	EtherType
TCP/UDP Source/Destination port	IEEE 802.1p user priority
IP Protocol Type	VLAN ID
Type of Service (ToS) or differentiated services (DSCP) field	RFC 1858—Security Considerations for IP Fragment Filtering
Source/Destination MAC address	

* Feature to be included in a future release.

Hardware Specifications

	EX1028-P	EX1028	EX1010-P	EX1010
Power Supply	100-240 VAC	100-240 VAC	100-240 VAC	100-240 VAC
Max Switch Power (WITH TRAFFIC)	25.10W	19.50W	10.54W	9.88W
MTBF (Hours)	285,350	432,283	338,917	806,354
Weight	3.96 kg (8.75 lb)	2.77 kg (6.1 lb)	1.99 kg (4.375 lb)	1.6 kg (3.5375 lb)
Dimensions	44 x 4.4 x 25 cm (17.3 x 1.75 x 9.85 in)	44 x 4.4 x 20.9 cm (17.3 x 1.75 x 8.22 in)	21 x 4.4 x 25 cm (8.26 x 1.75 x 9.85 in)	21 x 4.4 x 25 cm (8.26 x 1.75 x 9.85 in)
CPU Speed	800 MHz	800 MHz	800 MHz	800 MHz
LEDs Per Port	Link/Activity, PoE	Link/Activity	Link/Activity, PoE	Link/Activity
PoE+ Power Budget	200W	n/a	75W	n/a
PoE+ Voltage	54V	n/a	54V	n/a

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cnMatrix™ EX1000 Series Switches

Hardware Specifications cont'd

	EX1028-P	EX1028	EX1010-P	EX1010
PoE Max Power Per Port	30W	n/a	30W	n/a
Rack Mountable	Yes 1U	Yes 1U	Yes 1U	Yes 1U
Temperature Ranges	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Operating Humidity	55° at 95% RH	55° at 95% RH	55° at 95% RH	55° at 95% RH
Storage Temperature	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Acoustic Noise dBA Per Switch (AMBIENT TEMPERATURE)	
EX1028-P	40 dB - < 33°C, 44.3 dB - 30°C-40°C, 52 dB - > 43°C
EX1028	Fanless
EX1010-P	Fanless
EX1010	Fanless

cnMatrix™ EX1000 Series Switches

IEEE Standards

Switching

Core Switching Features	IEEE 802.1ab—Link Layer Discovery Protocol (LLDP)
	IEEE 802.1D—Spanning tree compatibility
	IEEE 802.1p—Ethernet priority with user provisioning and mapping
	IEEE 802.1s—Multiple spanning tree compatibility
	IEEE 802.1Q—Virtual LANs with port-based VLANs
	IEEE 802.1X—Port-based authentication
VLAN Support	IEEE 802.1W—Rapid spanning tree compatibility
	IEEE 802.3—10BASE-T
	IEEE 802.3u—100BASE-T
	IEEE 802.3ab—1000BASE-T
	IEEE 802.3ac—VLAN tagging
	IEEE 802.3ad—Link aggregation
	IEEE 802.3x —Flow control
	Bridged Local Area Networks - Amendment 07: Multiple Registration Protocol
IEEE 802.1Q-2003	RFC 4541—Considerations for Internet Group Management Protocol (IGMP) Snooping Switches
	ANSI/TIA-1057—LLDP-MEDia Endpoint Discovery (MED)
Advanced Layer 2 Features	Authentication, Authorization, and Accounting (AAA)
	IEEE 802.1ad (QinQ)*
	Broadcast/Multicast/Unknown unicast storm recovery
	DHCP Snooping
	IGMP Snooping Querier
	Independent VLAN Learning (IVL) support
	Jumbo Ethernet frame support
	Port MAC locking
	Port mirroring
	Protected ports
	Static MAC filtering
Layer 3 Feature Set	Inter-VLAN Routing
	Static ARP
	Static Routes
	RFC 2131 – DHCP Relay

* Feature to be included in a future release.

cnMatrix™ EX1000 Series Switches

System Facilities

Event and error logging facility

Run-time and configuration download capability

PING utility

FTP Transfers via IPv4/IPv6

RFC 768—UDP

RFC 783—TFTP

RFC 791—IP

RFC 792—ICMP

RFC 793—TCP

RFC 826—ARP

RFC 894—Transmission of IP datagrams over Ethernet networks

RFC 896—Congestion control in IP/TCP networks

RFC 951—BOOTP

RFC 1034—Domain names - concepts and facilities

RFC 1035—Domain names - implementation and specification

RFC 1321—Message digest algorithm

RFC 1534—Interoperability between BOOTP and DHCP

RFC 2021—Remote network monitoring management information base version 2

RFC 2030—Simple Network Time Protocol (SNTP)

RFC 2132—DHCP options and BOOTP vendor extensions

RFC 2819—Remote Network Monitoring Management Information Base

RFC 2865—RADIUS client

RFC 2869—RADIUS Extensions

RFC 3579—RADIUS support for EAP

RFC 3580—IEEE 802.1X RADIUS usage guidelines

RFC 3164—BSD syslog protocol

RFC 3580—802.1X RADIUS Usage Guidelines

* Feature to be included in a future release.

Management

SNMP v1, v2, and v3

SSH 1.5 and 2.0

RFC 4252—SSH authentication protocol

RFC 4253—SSH transport layer protocol

RFC 4254—SSH connection protocol

RFC 4251—SSH protocol architecture

RFC 4716—SECSH public key file format

RFC 4419—Diffie-Hellman group exchange for SSH transport layer protocol

SSL 3.0 and TLS 1.0

RFC 2246—TLS protocol, version 1.0

RFC 2818—HTTP over TLS

RFC 3268—AES cipher suites for transport layer security

Telnet

Web GUI

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cnMatrix™ EX1000 Series Switches

SNMP MIBs

Enterprise MIBs for Full Configuration Support of Switching Features

- RFC 1213—MIB II
- RFC 1493—Bridge MIB
- RFC 1612—DNS resolver MIB extensions
- RFC 1643—Definitions of managed objects for Ethernet-like interface types
- RFC 2233—Interfaces group MIB using SMI v2
- RFC 2613—SMON MIB
- RFC 2618—RADIUS authentication client MIB
- RFC 2674—VLAN MIB
- RFC 2737—Entity MIB version 2*
- RFC 2819—RMON groups 1, 2, 3, and 9
- RFC 2863—IF-MIB
- RFC 2925—Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3273—RMON Groups 1, 2, and 3
- RFC 3291—Textual conventions for Internet network addresses
- RFC 3434—RMON Groups 1, 2, and 3
- RFC 4022—TCP-MIB
- RFC 4113—UDP-MIB

* Feature to be included in a future release.

Quality of Service MIBs

- MIBs for full configuration support of DiffServ, ACL, and CoS functionality
- RFC 3289—Management information base for DiffServ architecture (read-only)

Quality of Service

Classify Traffic Based on Same Criteria as ACLs and Optionally:

- Mark the IP DSCP or Precedence header fields
- Police the flow to a specific rate with two-color aware support
- RFC 2474—Definition of the differentiated services field (DS field) in the IPv4 and IPv6 headers
- RFC 2475—An architecture for differentiated services
- RFC 2597—Assured forwarding Per-Hop Behavior

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cnMatrix™ EX1000 Series Switches

Ordering Information

Type	Model	Part #	Description
Switch	cnMatrix	EX1028-P	MX-EX1028PxA-E	Intelligent Ethernet PoE+ Switch, 24 x 1 Gbps and 4 x 1 Gbps SFP fiber ports - no power cord; EMEA
Switch	cnMatrix	EX1028-P	MX-EX1028PxA-0	Intelligent Ethernet PoE+ Switch, 24 x 1 Gbps and 4 x 1 Gbps SFP fiber ports - no power cord
Switch	cnMatrix	EX1028	MX-EX1028xxA-E	Intelligent Ethernet Switch, 24 x 1 Gbps and 4 1 Gbps SFP fiber ports - no power cord; EMEA
Switch	cnMatrix	EX1028	MX-EX1028xxA-0	Intelligent Ethernet Switch, 24 x 1 Gbps and 4 1 Gbps SFP fiber ports - no power cord
Switch	cnMatrix	EX1010-P	MX-EX1010PxA-E	Intelligent Ethernet PoE Switch, 8 x 1 Gbps and 2 SFP fiber ports - no power cord; EMEA
Switch	cnMatrix	EX1010-P	MX-EX1010PxA-0	Intelligent Ethernet PoE Switch, 8 x 1 Gbps and 2 SFP fiber ports - no power cord
Switch	cnMatrix	EX1010	MX-EX1010xxA-E	Intelligent Ethernet Switch, 8 x 1 Gbps and 2 SFP fiber ports - no power cord; EMEA
Switch	cnMatrix	EX1010	MX-EX1010xxA-0	Intelligent Ethernet Switch, 8 x 1 Gbps and 2 SFP fiber ports - no power cord
Transceiver	n/a	SFP-1G-SX	1G SFP MMF SX Transceiver, 850 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	n/a	SFP-1G-LX	1G SFP SMF LX Transceiver, 1310 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	n/a	SFP-1G-Copper	1000Base-T (RJ45) SFP Transceiver. -40°C to 85°C (-40°F to 185°F)



EX1010



EX1028



EX1010-P



EX1028-P

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cnMatrix™ EX1000 Series Switches

cnMatrix Ordering Information

XMS Cloud	XMSC-SUB-10P-1	XMS-Cloud 1-year subscription for 10 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-10P-3	XMS-Cloud 3-year subscription for 10 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-10P-5	XMS-Cloud 5-year subscription for 10 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-16P-1	XMS-Cloud 1-year subscription for 16 port cnMatrix multi-GigE switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-16P-3	XMS-Cloud 3-year subscription for 16 port cnMatrix multi-GigE switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-16P-5	XMS-Cloud 5-year subscription for 16 port cnMatrix multi-GigE switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-28P-1	XMS-Cloud 1-year subscription for 28 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-28P-3	XMS-Cloud 3-year subscription for 28 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-28P-5	XMS-Cloud 5-year subscription for 28 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-52P-1	XMS-Cloud 1-year subscription for 52 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-52P-3	XMS-Cloud 3-year subscription for 52 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
XMS Cloud	XMSC-SUB-52P-5	XMS-Cloud 5-year subscription for 52 port cnMatrix switch including Policy-Based Automation and Cambium Care Advanced Support
Cambium Care Advanced	CCADV-SUP-xxx	Cambium Care Advanced, 1, 3 or 5-year support for one cnMatrix switch. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
Cambium Care Pro	CCPRO-SUP-xxx	Cambium Care Pro, 1, 3 or 5-year support for one cnMatrix switch. 24x7 TAC support and SW updates

ABOUT CAMBIUM NETWORKS

Cambium Networks empowers millions of people with wireless connectivity worldwide. Its wireless portfolio is used by commercial and government network operators as well as broadband service providers to connect people, places and things. With a single network architecture spanning fixed wireless and Wi-Fi, Cambium Networks enables operators to achieve maximum performance with minimal spectrum. End-to-end cloud management transforms networks into dynamic environments that evolve to meet changing needs with minimal physical human intervention. Cambium Networks empowers a growing ecosystem of partners who design and deliver gigabit wireless solutions that just work.

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