

# cnMatrix EX3024F Switch

Intelligent Ethernet Fiber Aggregation Switching

## EX3024F Switch Quick Look

- Zero-touch deployments
- Policy-based automation
- Auto device profiling and segmentation
- Non-blocking, line-rate architecture with fully featured L2/L3 switching

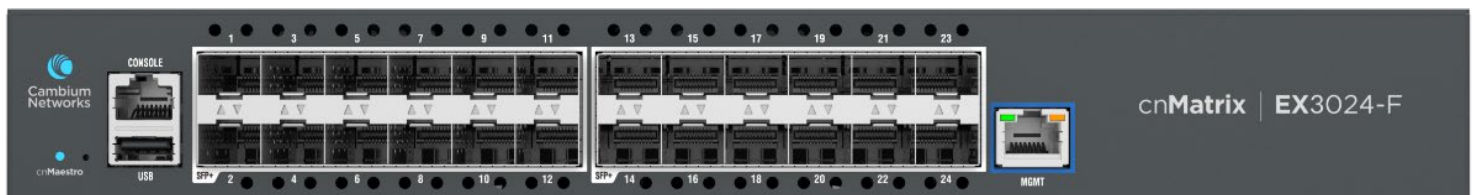


Cambium Networks' next-generation cnMatrix™ switching platform offers a cloud-managed, high-performance, feature-rich enterprise-grade ethernet switching solution.

### FEATURES

- Easy and simple, free cloud (or on premise) management with cnMaestro™
- Zero-touch deployment of switches makes installation easy
- Policy-based automation (PBA) eliminates manual and time-consuming configuration **during adds, moves, and changes of network devices**
- Enhanced security with automated device profiling and segmentation
- Unified wired–wireless access solution

The cnMatrix series of fully managed switches delivers full Layer 2 and Layer 3 capabilities with enhanced security. The EX3024F is a fiber aggregation switch that has all 10 Gbps SFP+ fiber ports. Also, this switch has dual internal power supplies for additional robustness and redundancy. These switches come with a five-year limited lifetime warranty.



## cnMatrix EX3024F Switch

### Specifications

Throughput	480 Gbps	Flash Storage	256 MB
Forwarding Rate in Mpps (64 Byte Packets)	120	DRAM	2 GB
10/100/1000 Ports	n/a	VLANs	4K
2.5 G Ports	n/a	QinQ	Yes
Fiber Ports	24 SFP+	LACP/Trunking	8 LAGs/8 links per LAG
PoE+ Enabled Ports 802.3af/at	N/A	QoS Priority Queues	8
PoE+ Enabled Ports 802.3af/at/bt	N/A	PVRST	32 (128 future)
Serial Console	✓	Ingress/Egress ACL	128
USB Port	✓	Static ARP Entries	512
Out-of-Band Management Port	✓	ARP Entries	512
Rack Mount Kit	✓	Static Routes	64
Internal Fans	2	Dynamic Routing	512 (2K future)
Reset Button	✓	IGMP Multicast Groups	256 (1K future)
MAC Address Table Size	16K	Policy-Based Automation	✓

### Specifications – All Models

<b>Quality of Service</b>	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	<b>Security</b>	802.1x authentication, MAB MAC authentication DHCP snooping RADIUS authentication/authorization Authentication, authorization, and accounting* (AAA) Radius/TACACS/TACACS+ Secure shell Secure copy (SCP) Local username/password
<b>Traffic Management</b>	ACL-based inbound rate-limiting policies Broadcast, multicast, and unknown unicast rate limiting Inbound rate limiting per port Outbound rate limiting per port/queue		

\*Feature to be included in a future release.

## cnMatrix EX3024F Switch

### Specifications – All Models, continued

Layer 2 Feature Set		Management	
<p>MLAG*</p> <hr/> <p>VLAN, port, protocol, 802.1q</p> <hr/> <p>QinQ</p> <hr/> <p>802.1d, MSTP, PVRST, RSTP</p> <hr/> <p>ERPS – Ethernet ring protection switching</p> <hr/> <p>Auto MDI/MDIX</p> <hr/> <p>BPDU guard, root guard</p> <hr/> <p>BPDU filtering</p> <hr/> <p>IGMP snooping v1/v2/v3*, fast leave</p> <hr/> <p>IGMP proxy</p> <hr/> <p>LLDP/LLDP MED</p> <hr/> <p>Static MAC</p> <hr/> <p>Flow control per port</p> <hr/> <p>Port mirroring: port based, ACL based, VLAN based</p> <hr/> <p>Port isolation/private VLAN edge</p> <hr/> <p>Link aggregation groups (Static/LACP)</p> <hr/> <p>Rate limiting/storm control</p> <hr/> <p>Jumbo frame (9k)</p> <hr/> <p>DHCP snooping</p> <hr/> <p>ARP inspection</p> <hr/> <p>Broadcast/multicast/unlearned unicast (storm control)</p> <hr/> <p>Ping/traceroute/ICMPv6</p>	<p><b>Management</b></p> <p>cnMaestro (cloud management)</p> <hr/> <p>Industry-standard command line interface (CLI)</p> <hr/> <p>DHCP client</p> <hr/> <p>Embedded web management (HTTP/HTTPS)</p> <hr/> <p>Embedded DHCP server</p> <hr/> <p>USB file management and storage</p> <hr/> <p>Out-of-band Ethernet management</p> <hr/> <p>SSH/SSH v2</p> <hr/> <p>SNMP v1/v2/v3</p> <hr/> <p>DHCP relay</p> <hr/> <p>Simple Network Time Protocol (SNTP)</p> <hr/> <p>Local/remote system logging</p> <hr/> <p>Policy-based automation</p> <hr/> <p>Display log messages multiple terminals*</p> <hr/> <p>TFTP/SFTP</p> <hr/> <p>Telnet client/server</p> <hr/> <p>IPv6 management</p> <hr/> <p>Password management</p> <hr/> <p>Auto-install support for firmware images and config files</p>	<p><b>ACL Filtering</b></p> <p>Permit/deny actions for inbound IP and layer-2 traffic classification for this list of items:</p>	<p>Source/destination IP address</p> <hr/> <p>TC/UDP source/destination port</p> <hr/> <p>IP protocol type</p> <hr/> <p>Type of Service (ToS) or differentiated services (DSCP) field</p> <hr/> <p>Source/destination MAC address</p> <hr/> <p>EtherType</p> <hr/> <p>IEEE 802.1p user priority</p> <hr/> <p>VLAN ID</p> <hr/> <p>RFC 1858—Security considerations for IP fragment filtering</p>
<p><b>Layer 3 Feature Set</b></p> <hr/> <p>Inter VLAN routing</p> <hr/> <p>Static ARPs</p> <hr/> <p>Static routes</p> <hr/> <p>DHCP relay</p> <hr/> <p>Dynamic routing – RIPv1/v2</p> <hr/> <p>Dynamic routing – OSPFv2</p> <hr/> <p>Route redistribution</p>			

\*Feature to be included in a future release.

## cnMatrix EX3024F Switch

### Hardware Specifications

Power Supply	Dual internal 120W	PoE+ Power Budget	N/A
Max Switch Power (with Traffic)	75W	PoE+ Voltage	N/A
MTBF (Hours)	928,678	PoE Max Power per Port	N/A
Weight	3 kg	Rack Mountable	Yes 1U
Dimensions (HxWxL)	44.4x33.0x23.05 cm	Temperature Ranges	0°C to 50°C (32°F to 122°F)
CPU Speed	1.4 GHz	Storage Temperature	-40°C to 70°C (-40°F to 158°F)
LEDs per Port	Link/Activity		
Acoustic Noise dBA per Switch (Ambient Temperature)	36.2 dBA: < 29°C 45.6 dBA: 29°C-34°C 52 dBA: > 34°C		

### Switching – IEEE Standards

<b>Core Switching Features</b>	IEEE 802.1ab—Link Layer Discovery Protocol (LLDP)	<b>Advanced Layer 2 Features</b>	Authentication, authorization, and accounting (AAA)	
	IEEE 802.1D—Spanning tree compatibility		IEEE 802.1ad (QinQ)	
	IEEE 802.1p—Ethernet priority with user provisioning and mapping		Broadcast/multicast/unknown unicast storm recovery	
	IEEE 802.1s—Multiple spanning tree compatibility		DHCP snooping	
	IEEE 802.1Q—Virtual LANs with port-based VLANs		IGMP snooping querier	
	IEEE 802.1X—Port-based authentication		ERPS – G.8032	
	<b>VLAN Support</b>		IEEE 802.1W—Rapid spanning tree compatibility	Jumbo Ethernet frame support
			IEEE 802.3—10BASE-T	Port MAC locking
			IEEE 802.3u—100BASE-T	Port mirroring
			IEEE 802.3ab—1000BASE-T	Protected ports
IEEE 802.3ac—VLAN tagging		Static MAC filtering		
<b>IEEE 802.1Q-2003</b>	IEEE 802.3ad—Link aggregation	<b>Layer 3 Features</b>	Inter-VLAN Routing	
	IEEE 802.3x —Flow control		Static ARP	
	Bridged local area networks - Amendment 07: Multiple Registration Protocol		Static routes	
	RFC 4541—Considerations for Internet Group Management Protocol (IGMP)		RFC 2131 – DHCP relay	
	Snooping switches		RFC 2328 – OSPF version 2	
	ANSI/TIA-1057—LLDP-Media Endpoint Discovery (MED)		RFC 2453 – RIP version 2	

## cnMatrix EX3024F Switch

### System Facilities – IEEE Standards

Event and error logging facility	RFC 1035—Domain names—implementation and specification
Run-time and configuration download capability	RFC 1321—Message digest algorithm
PING utility	RFC 1534—Interoperability between BOOTP and DHCP
FTP via IPv4/IPv6	RFC 2021—Remote network monitoring management information base version 2
RFC 768—UDP	RFC 2030—Simple Network Time Protocol (SNTP)
RFC 783—TFTP	RFC 2132—DHCP options and BOOTP vendor extensions
RFC 791—IP	RFC 2819—Remote network monitoring management information base
RFC 792—ICMP	RFC 2865—RADIUS client
RFC 793—TCP	RFC 2869—RADIUS extensions
RFC 826—ARP	RFC 3579—RADIUS support for EAP
RFC 894—Transmission of IP datagrams over Ethernet networks	RFC 3580—IEEE 802.1X RADIUS usage guidelines
RFC 896—Congestion control in IP/TCP networks	RFC 3164—BSD syslog protocol
RFC 951—BOOTP	RFC 3580—802.1X RADIUS usage guidelines
RFC 1034—Domain names—concepts and facilities	

### Management – IEEE Standards

SNMP v1, v2, and v3	RFC 4419—Diffie-Hellman group exchange for SSH transport layer protocol
SSH 1.5 and 2.0	SSL 3.0 and TLS 1.0
RFC 4252—SSH authentication protocol	RFC 2246—TLS protocol, version 1.0
RFC 4253—SSH transport layer protocol	RFC 2818—HTTP over TLS
RFC 4254—SSH connection protocol	RFC 3268—AES cipher suites for transport layer security
RFC 4251—SSH protocol architecture	Telnet
RFC 4716—SECSH public key file format	Web GUI

## cnMatrix EX3024F Switch

### SNMP MIBs – IEEE Standards

Enterprise MIBs for Full Configuration Support of Switching Features	RFC 1213—MIB II	RFC 1213—MIB II
	RFC 1493—Bridge MIB	RFC 2819—RMON groups 1, 2, 3, and 9
	RFC 1612—DNS resolver MIB extensions	RFC 2863—IF-MIB
	RFC 1643—Definitions of managed objects for Ethernet-like interface types	RFC 2925—Definitions of managed objects for remote ping, traceroute, and lookup operations
	RFC 2233—Interfaces group MIB using SMI v2	RFC 3273—RMON groups 1, 2, and 3
	RFC 2613—SMON MIB	RFC 3291—Textual conventions for internet network addresses
	RFC 2618—RADIUS authentication client MIB	RFC 3434—RMON groups 1, 2, and 3
	RFC 2674—VLAN MIB	RFC 4022—TCP-MIB
	RFC 2737—Entity MIB version 2*	RFC 4113—UDP-MIB
	Quality of Service MIBs	MIBs for full configuration support of DiffServ, ACL, and CoS functionality

### Quality of Service – IEEE Standards

Classify Traffic Based on Same Criteria as ACLs and Optionally:	Mark the IP DSCP or precedence header fields	RFC 2475—An architecture for differentiated services
	Police the flow to a specific rate with two-color aware support	RFC 2597—Assured forwarding per-hop behavior
	RFC 2474—Definition of the differentiated services field (DS field) in the IPv4 and IPv6 headers	

### cnMatrix Ordering Information

Type	Part Number	Description
Switch	MXEX3024xFxA00	cnMatrix EX3024F, Intelligent Ethernet Fiber Aggregation Switch, 24 - 10 Gbps SFP+ ports, dual internal AC power supplies - no power cord
Switch	MXEX3024xFxA01	cnMatrix EX3024F, Intelligent Ethernet Fiber Aggregation Switch, 24 10 Gbps SFP+ ports, dual internal AC power supplies - no power cord, USA only
Power Cord	N000900L040A	AC line cord, US Type B, 1.2m C13 Connector
Transceiver	SFP-10G-SR	10G SFP+ MMF SR Transceiver, 850 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-SX	1G SFP MMF SX Transceiver, 850 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-10G-LR	10G SFP+ SMF LR Transceiver, 1310 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-LX	1G SFP SMF LX Transceiver, 1310 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-Copper	1000Base-T (RJ45) SFP Transceiver. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-10G-Copper	10G Base-T (RJ45) SFP Transceiver. 0°C to 70°C (-40°F to 185°F)

\*Feature to be included in a future release.

## cnMatrix EX3024F Switch

### Management & Advanced Care Ordering Information

Part Number	Description
CCADV-UPG-EX3024F-1	Cambium Care Advanced Add-on to cnMaestro X, 1-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3024F-3	Cambium Care Advanced Add-on to cnMaestro X, 3-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3024F-5	Cambium Care Advanced Add-on to cnMaestro X, 5-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3024F-1	Cambium Care Advanced, 1-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3024F-3	Cambium Care Advanced, 3-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3024F-5	Cambium Care Advanced, 5-year support for one EX3024F. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCPRO-SUP-EX3024F-1	Cambium Care Pro, 1-year support for one EX3024F. 24x7 TAC support, SW updates
CCPRO-SUP-EX3024F-3	Cambium Care Pro, 3-year support for one EX3024F. 24x7 TAC support, SW updates
CCPRO-SUP-EX3024F-5	Cambium Care Pro, 5-year support for one EX3024F. 24x7 TAC support, SW updates
MSX-SUB-EX3024F-1	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 1-year subscription
MSX-SUB-EX3024F-3	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 3-year subscription
MSX-SUB-EX3024F-5	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 5-year subscription
MSX-SUB-EX3024F-7	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 7-year subscription
MSX-SUB-EX3024F-10	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 10-year subscription

#### ABOUT CAMBIUM NETWORKS

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences and device connectivity with compelling economics. Our ONE Network platform simplifies management of Cambium Networks' wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.

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