



# cnMatrix EX2K Switch Basic Configuration Guide



Thank you for choosing the cnMatrix switch, a Cambium Networks communications device. Before you begin installing the switch, **verify** you have all the package contents available, and a PC with SSH client, such as PuTTY or OpenSSH SSH Client.

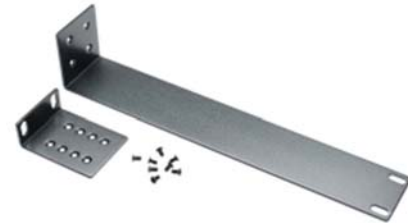
## Package Contents

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Rack mount ears (2x) with screws (8x) are included with the 16-port, 28-ports and 52-ports models.  
(Spare rack mount ears: MX-EXTFULLA-0)



A rack mount kit for the 10-port models can be ordered as an optional accessory.  
(MX-EXTXHALFA-0)



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### cnMatrix Switch

EX2010 models:



EX2016M-P model:



EX2028 models:



EX2052 models:









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Power Cord (separate accessory)



## Product Overview

The cnMatrix switch comes in eight SKUs to support various deployment scenarios:

Model Name / Part Number	Number of Ports	Power over Ethernet	Throughput	Switch
cnMatrix EX2010 / MX-EX2010xxA-0	10	No	20 Gbps	
cnMatrix EX2010-P / MX-EX2010PxA-0	10	Yes	20 Gbps	
cnMatrix EX2028 / MX-EX2028xxA-0	28	No	128 Gbps	
cnMatrix EX2028-P / MX-EX2028PxA-0	28	Yes	128 Gbps	
cnMatrix EX2052 / MXEX2052GxxA00	52	No	176 Gbps	
cnMatrix EX2052-P / MXEX2052GxPA00	52	Yes	176 Gbps	

cnMatrix EX2052R-P / MXEX2052GxPA10	52	Yes	176 Gbps	
cnMatrix EX2016M-P / MXEX2016MxPA00	16	Yes	86 Gbps	

## Powering Up

Connect the power cord to the power inlet, and then plug the power cord into a wall socket.



For the EX2052R-P model, first install the removable power supply (CRPS) into the power supply slot in the rear of the switch. **The CRPS is sold as a separate accessory.** The CRPS are available in AC or DC input options

Connect the power cord (separate accessory) to the CRPS power inlet, and then plug the power cord into a wall socket.



For the EX2052R-P model, please purchase an approved power supply (CRPS) through an authorized dealer.

Example:

Model: ZRE-1AB0K2 Cambium p/n: MXCRPSAC1200A0



When the switch is booting up, the illuminated Cambium Networks logo will be blinking blue. When the switch is fully up and running, the illuminated Cambium Networks logo is solid blue.

## Default Configuration

IP address 192.168.0.1 is automatically configured on Out-Of-Band Management Port (MGMT). There is no default IP address In Band Network Ports.



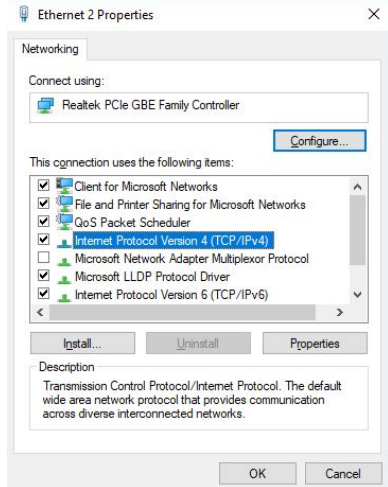
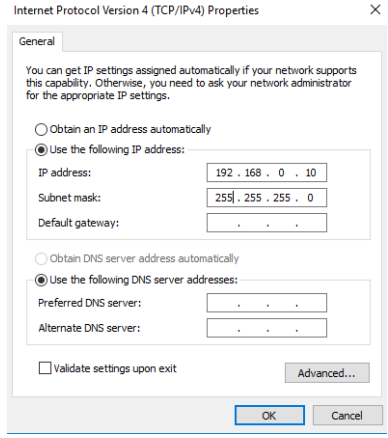
Note: DHCP is enabled by default on In Band Ports (VLAN1).

### Default login information:

Username: **admin**

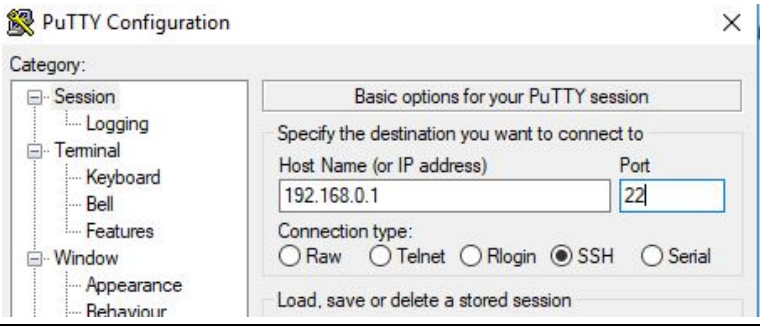
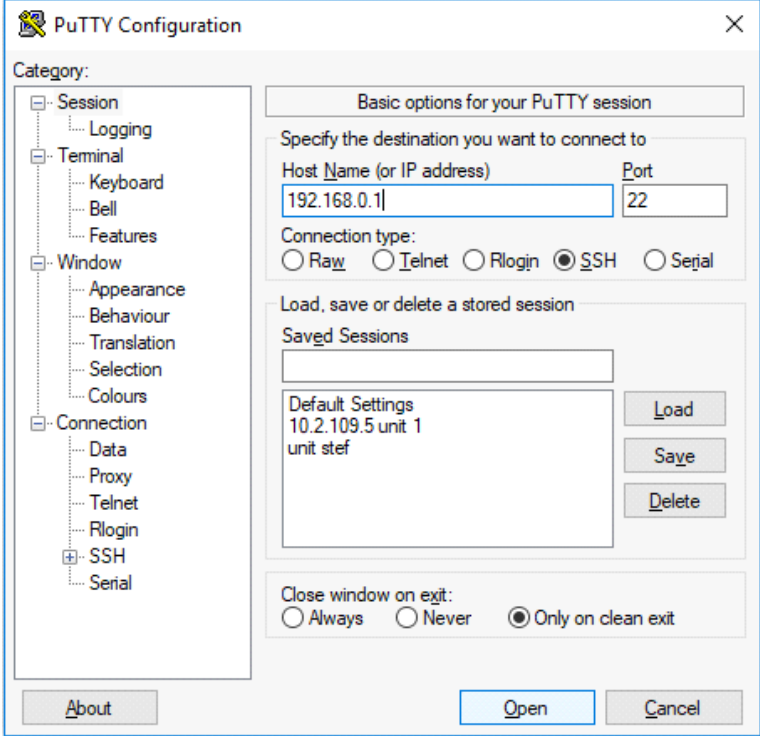
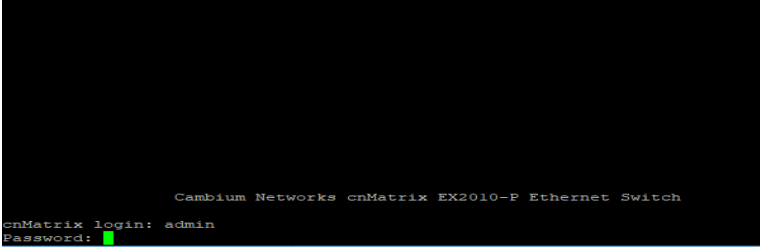
Password: **admin**

## Configure Management PC

1	In Windows, double-click the Control Panel command. The Control Panel window is displayed.	
2	In the Control Panel window, select the View network status and tasks option. The Network and Sharing Center window is displayed.	
3	Click the Change adapter settings option. The Network Connections window is displayed.	
4	Double-click the interface. The interface Properties window is displayed.	
5	Select the Internet Protocol Version 4 (TCP/IPv4) option. Click OK.	
6	Set The IP address of the interface to 192.168.0.10 and the Subnet mask to 255.255.255.0	



## Logging in to the switch

1	Use PuTTY SSH client.	
2	On the PuTTY Configuration window, in the Host Name field, enter the 192.168.0.1 IP address and in the Port field, enter the 22 value.	
3	Click Open. The login prompt is displayed.	
4	In the cnMatrix login prompt enter the default username: <b>admin</b>	
5	In the Password prompt enter the default login password: <b>admin</b>	

## Hardware Overview

### LED Color

cnMatrix Logo (Power)  
LED is continuously blue - the switch is operational.

cnMatrix Logo (Power)  
LED is blinking blue - the switch is initializing.

### cnMaestro LED

Blinking blue: Connecting to cnMaestro.  
Solid blue: Connected to cnMaestro.



### Reset button

Simple reboot: hold for 1-5 seconds.  
Factory reset: hold for 10-15 seconds.

### Console

RJ45 connection for console access.

### Ports

Data ports used for traffic forwarding. Orange border ports indicate PoE+ up to 30W. (802.3af/at) Green border ports indicate PoE+ up to 60W. (802.3af/at/bt)

### Management Port

Used for Managing the switch. It provides out of band network connectivity for management of the switch.

### Fiber Ports

1 Gig/10 Gig fiber ports (SFP+). The 10-port cnMatrix provides 1 Gig fiber ports (SFP).

## Specifications

cnMatrix Models	EX2028-P	EX2028	EX2010-P	EX2010
MTBF (hours)	285.350.90	432.283.26	338.917.20	806.354.10
Power budget	400W	n/a	100W	n/a
Power supply	AC/Internal	AC/Internal	AC/Internal	AC/Internal
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)
LEDs per port	Link/Activity, PoE	Link/Activity, PoE	Link/Activity, PoE	Link/Activity, PoE
Rack mountable	Yes 1U	Yes 1U	Yes 1U	Yes 1U
Operating Temperature	-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)

## Specifications (cont'd)

cnMatrix Models	EX2052	EX2052-P	EX2052R-P	EX2016M-P
MTBF (hours)	393,648	238,063	202,977	385,242
Power Budget	n/a	400W	CRPS dependent	240W
Power Supply	AC/Internal	AC/Internal	CRPS (not internal)	AC/Internal
Weight	3.6 kg (7.93lb)	5.4kg (11.90lb)	4.3 kg (9.48 lb) Or 5.2 kg (11.46lb)	3.6 kg (7.93 lb)
Dimensions	44 x 4.4 x 20.9 cm (17.3 x 1.75 x 8.22 in)	44 x 4.4 x 35 cm (17.3 x 1.75 x 13.78 in)	44 x 4.4 x 35 cm (17.3 x 1.75 x 13.78 in)	44 x 4.4 x 25 cm (17.3 x 1.75 x 9.85 in)
LEDs per port	Link/Activity	Link/Activity, PoE	Link/Activity, PoE	Link/Activity, PoE
Rack mountable	Yes 1U	Yes 1U	Yes 1U	Yes 1U
Operating Temperature	-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)

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4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it

is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

signature of Ty Coon, 1 April 1990

Ty Coon, President of Vice

That's all there is to it!

## Hardware Warranty

Cambium provides standard warranty as per Cambium's standard warranty policy for applicable warranty period for each product type. For details, regarding Cambium's warranty policy, warranty terms and conditions and applicable warranty periods, please click <https://www.cambiumnetworks.com/support/standard-warranty/>.

## Electrical Safety Information

This switch is designed with a power inlet with an integrated ground. A power cord from the switch shall be connected to a power outlet with ground connection.



To prevent loss of life or physical injury, observe the following safety guidelines. In no event shall Cambium Networks be liable for any injury or damage caused during the installation of the switch.

The equipment is designed for indoor installation and not intended to be connected to exposed (outside) networks.

Equipment intended for installation in Information Technology Equipment Rooms. "Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75."

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect power cord to a properly wired and grounded electrical outlet.
- Connect to properly wired outlets any equipment that will be attached to this product.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.

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*There are no serviceable parts inside this equipment. Service should be provided only by a qualified service technician.*

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Le switch est conçu avec une prise de courant possédant une connexion à la terre. Un cordon d'alimentation devra être connecté à la prise de courant possédant une connexion à la terre.

L'équipement est prévu pour des installations en intérieur et n'est pas prévu pour être installé à l'extérieur.

CAUTION: The SFP/SFP+ ports should use UL listed Optical Transceiver product, Rated Laser Class I, 3.3Vdc.

Si le transceiver optique n'est pas livré avec l'appareil, le manuel d'utilisation doit comporter la description ci-dessous ou son équivalent :« Ce produit est destiné à être utilisé avec un transceiver optique homologué UL, tension DC3.3V, classe laser I.

## FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**Modifications:** Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI - A

## RoHS/WEEE Compliance

### Caring for the Environment: RoHS/WEEE

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

## Europe- EU Declaration of Conformity

Hereby, CAMBIUM NETWORKS, Inc. declares that the equipment type [EX2010, EX2010-P, EX2028, EX2028-P, EX2052, EX2052-P, EX2052R-P, EX2016M-P] is in compliance with Directive 2014/30/EU. The full text of the EU declaration of conformity is available at the following internet address:

<https://www.cambiumnetworks.com/>

### Online Resources

User Guides: <https://www.cambiumnetworks.com/guides>

Technical Training: <https://learning.cambiumnetworks.com>

Cambium Networks Support Centre: <https://support.cambiumnetworks.com>

Contact us: <https://www.cambiumnetworks.com/support/contact-support/>