





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**

Rack mount ears (2x) with screws (8x) are included with the 16-port, 28-ports and 52-ports models.

(Spare rack mount ears: MX-EXTXFULLA-0)



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



#### cnMatrix Switch

#### EX2010 models:



EX2028 models:



#### EX2016M-P model:



EX2052 models:



Power Cord (separate accessory)





# **Product Overview**

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

| Model Name / Part<br>Number           | Number of Ports | Power<br>over<br>Ethernet | Throughput | Switch   |
|---------------------------------------|-----------------|---------------------------|------------|--|
| cnMatrix EX2010 /<br>MX-EX2010xxA-0   | 10              | No                        | 20 Gbps    |  |
| cnMatrix EX2010-P /<br>MX-EX2010PxA-0 | 10              | Yes                       | 20 Gbps    |  |
| cnMatrix EX2028 /<br>MX-EX2028xxA-0   | 28              | No                        | 128 Gbps   |  |
| cnMatrix EX2028-P /<br>MX-EX2028PxA-0 | 28              | Yes                       | 128 Gbps   | E HHHHHHH  |
| cnMatrix EX2052 /<br>MXEX2052GxxA00   | 52              | No                        | 176 Gbps   | TOTAL COLUMN TOTAL |
| cnMatrix EX2052-P /<br>MXEX2052GxPA00 | 52              | Yes                       | 176 Gbps   | ARRAM SAMALA AMALA MALA SERVICE STREET STREE |



| cnMatrix EX2052R-P /<br>MXEX2052GxPA10 | 52 | Yes | 176 Gbps | TARABA BARBA |
|--|----|-----|----------|--|
| cnMatrix EX2016M-P /<br>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 CPRS 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.



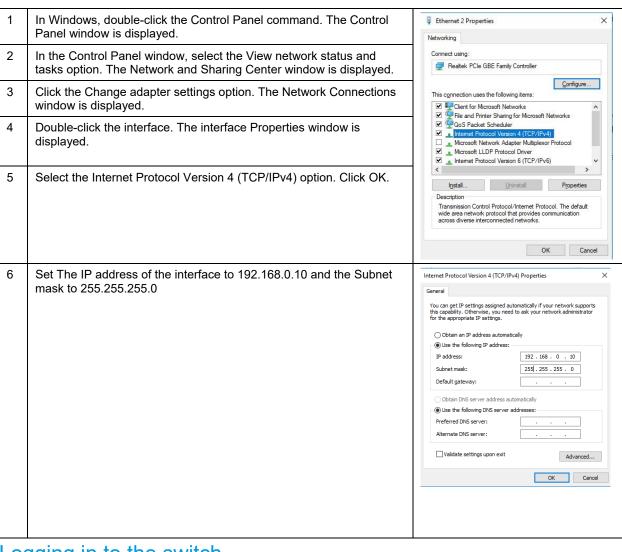


Note: DHCP is enabled by default on In Band Ports (VLAN1).

### Default login information:

Username: admin
Password: admin

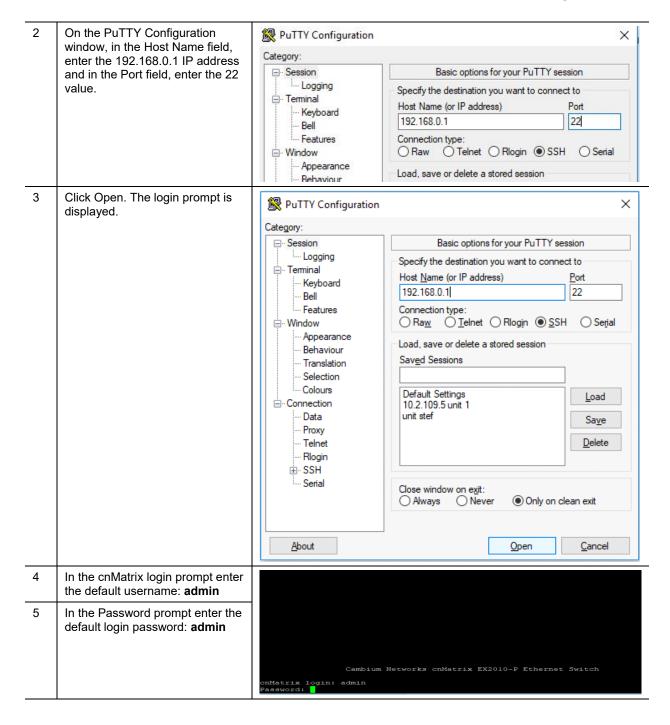
# Configure Management PC



# Logging in to the switch

Use PuTTY SSH client.







### **Hardware Overview**

Power LED 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: Press and release within 10 seconds.

Factory default: Press and hold for > 10 seconds Console RJ45 connection for console access.

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) 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<br>(17.3 x 1.75 x 9.85 in) | 44 x 4.4 x 20.9 cm<br>(17.3 x 1.75 x 8.22 in) | 21 x 4.4 x 25 cm<br>(8.26 x 1.75 x 9.85 in) | 21 x 4.4 x 25 cm<br>(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<br>(+32°F to + 122°F)        | -0°C to + 50°C<br>(+32°F to + 122°F)          | -0°C to + 50°C<br>(+32°F to + 122°F)        | -0°C to + 50°C<br>(+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<br>(-40°F to +158°F)         | -40°C to +70°C<br>(-40°F to +158°F)           | -40°C to +70°C<br>(-40°F to +158°F)         | -40°C to +70°C<br>(-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)<br>Or 5.2 kg (11.46lb)      | 3.6 kg (7.93 lb)                            |  |
| Dimensions            | 44 x 4.4 x 20.9 cm<br>(17.3 x 1.75 x 8.22 in) | 44 x 4.4 x 35 cm<br>(17.3 x 1.75 x 13.78 in) | 44 x 4.4 x 35 cm<br>(17.3 x 1.75 x 13.78 in) | 44 x 4.4 x 25 cm<br>(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<br>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<br>(+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<br>(-40°F to +158°F)           | -40°C to +70°C<br>(-40°F to +158°F)          | -40°C to +70°C<br>(-40°F to +158°F)          | -40°C to +70°C<br>(-40°F to +158°F)         |  |

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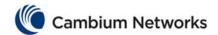
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#### Open SSH 5.1

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- IDEA is no longer included, its use is deprecated
- DES is now external, in the OpenSSL library
- GMP is no longer used, and instead we call BN code from OpenSSL
- Zlib is now external, in a library
- The make-ssh-known-hosts script is no longer included
- TSS has been removed
- MD5 is now external, in the OpenSSL library
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@version 3.0 (December 2000)

Optimised ANSI C code for the Rijndael cipher (now AES)

@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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## **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 <a href="https://www.cambiumnetworks.com/support/standard-warranty/">https://www.cambiumnetworks.com/support/standard-warranty/</a>.



## **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.

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

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 transceiveur optique n'est pas livré avec l'appareil, le manuel d'utilisation doit comporter la description cidessous ou son équivalent :« Ce produit est destiné à être utilisé avec un transceiveur 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-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: <a href="https://www.cambiumnetworks.com/">https://www.cambiumnetworks.com/</a>

#### 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/