

# AMARANTEN

## Installation and Setup guide

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### *Amaranten F1800 Series*

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# **Installation and Setup guide**

## **Amaranten F1800 Series**

Published 2006-09-21

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# Preface

## Target Audience

The target audience for this guide is the user who has taken delivery of a packaged Amaranten F1800 Series appliance. The guide takes the user from unpacking and installation of the device through to power-up and initial network connection.

## Text Structure

The text is divided into chapters and subsections. Numbered subsections are shown in the table of contents at the beginning of the document.

### Text links

Where a "See section" link is provided in the main text, this can be clicked on to take the reader directly to that reference eg. see Chapter 7, *Hardware Specifications*.

### Web links

Web links included in the document are clickable eg. <http://www.amaranten.com>

## Notes to the main text

Special sections of text which the reader should pay special attention to are indicated by icons on the left hand side of the page followed by a short paragraph in italicized text. There are the following types of such sections:



### **Note**

*This indicates some piece of information that is an addition to the preceding text. It may concern something that is being emphasised or something that is not obvious or explicitly stated in the preceding text.*



### **Tip**

*This indicates a piece of non-critical information that is useful to know in certain situations but is not essential reading.*



### **Caution**

*This indicates where the reader should be careful with their actions as an undesirable situation may result if care is not exercised.*



### **Important**

*This is an essential point that the reader should read and understand.*



### **Warning**

*This is essential reading for the user as they should be aware that a serious situation may result if certain actions are taken or not taken.*

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# Chapter 1. Product Overview

- [Unpacking the product, page 1](#)
- [Keypad, Ports and Connectors, page 2](#)

## 1.1. Unpacking the product



This section details the unpacking of the F1800 Series appliance. Carefully open the shipping packaging and carefully unpack its contents. The box should contain the following items:

1. The Amaranten F1800 Series Appliance
2. A mounting kit for 19" racks . The side brackets for this kit are already be attached but can be removed for flat surface operation.
3. Attachable rubber feet for flat-surface mounting
4. 1 x Ethernet cable
5. DB9 female to RJ45 console cable for RS232 connection
6. Two Power cords
7. CD-ROM containing:
  - Amaranten FineTune software
  - Amaranten Logger software
  - Required documentation in PDF format
8. Certificate of Authenticity



**Note**

*If any items are missing from your package, please contact your reseller or distributor.*

## 1.2. Keypad, Ports and Connectors

This section is an overview of the hardware's external design and construction.

**Figure 1.1. Front view of the Amaranten F1800 Series.**



The device features a number of connection ports. On the far right is the RS232 console port. On the far left is the device's display and keypad. Between are an array of 14 Ethernet ports.

Each Ethernet port has equal operational capacity and corresponds to a logical interface in the CorePlus software configuration. Going from left to right the Ethernet ports are:

1. 8 x Small Form Pluggable (SFP) Ethernet ports with logical interface names **sfp1** to **sfp8**. These are for Gigabit Ethernet links only.
2. 2 x RJ45 Gigabit Ethernet ports with logical interface names **ge1** and **ge2**. These connections are capable of link speed auto-negotiation and can therefore operate with 10Base-T, 100Base-Tx, or 1000Base-T.
3. 4 x RJ45 Fast Ethernet ports with logical interface names **fe1** to **fe4**. These connections are also capable of link speed auto-negotiation and can operate with 10Base-T or 100Base-Tx.

### Port Status LEDs

On the F1800 Series there are indicator lights associated with each port which illuminate according to link status and activity. The lights and lighting schemes vary according to port type:

#### SFP (sfp) ports

One green light is located directly to the right of the port connection. This is illuminated to show that a link is established.

#### Gigabit (ge) ports

Two lights are located at the top-right and top-left of the port. The top-left flashes green to indicate data traffic. The top-right light is: not lit if the link is 10 Mb, green if 100 Mb, yellow if 1 Gb.

#### Fast Ethernet (fe) ports

Two lights are located at the top-right and top-left of the port. The top-right flashes green to indicate data traffic. During 10 Mb operation the top-left light is not lit. During 100 Mb operation the top-left is continuously yellow to indicate the link is established.



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# Chapter 2. Installation

- [Installation Guidelines](#), page 4
- [Installing SFP modules](#), page 6
- [Connecting Power](#), page 8

## 2.1. Installation Guidelines

Follow these guidelines when installing your Amaranten F1800 Series appliance:

- Make sure that the power source circuits are properly grounded, then use the power cord supplied with the appliance to connect it to the power source.
- If your installation requires a different power cord than the one supplied with the appliance, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the appliance.
- Ensure that the appliance does not overload the power circuits, wiring and over-current protection. To determine the possibility of overloading the supply circuits, add together the ampere ratings of all devices installed on the same circuit as the appliance and compare the total with the rating limit for the circuit. The maximum ampere ratings are usually printed on the devices near the AC power connectors.
- Do not install the appliance in an environment where the operating ambient temperature might exceed the specified operating range (see Chapter 7, *Hardware Specifications*).
- Make sure that airflow around the sides and back of the appliance is not restricted.



### **Note**

*Detailed information concerning power supply range, operating temperature range etc. can be found at the end of this publication in Chapter 7, Hardware Specifications.*

## Flat Surface Installation

The F1800 Series device can be mounted onto any appropriate flat, level surface that can safely support the weight of the appliance and its attached cables.



### **Caution**

*Please ensure there is adequate space around the unit for ventilation and access to operating switches and cable connectors.*

## Rack Installation

A rack mounted Amaranten Security Gateway can be installed in most 19" standard racks. Fasten the appliance with screws suitable for the kind of rack you are using. The following guidelines should be followed:

- A rack or cabinet used for mounting should be adequately secured to prevent it from becoming unstable and/or falling over.

- Devices installed in a rack or cabinet should be mounted as low as possible, with the heaviest devices at the bottom and progressively lighter devices installed above.

**Note**

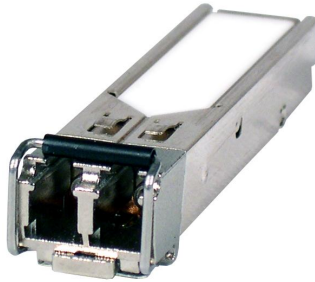
*F1800 Series devices come with rack-mounting brackets already attached to the unit.*

## 2.2. Installing SFP modules

Small Form Pluggable (SFP) modules come in different forms from different manufacturers. Shown below are some typical units. The F1800 Series device does not come with SFP modules and these must be purchased separately.

Installation of SFP units is usually similar. With the units shown, the modules are inserted into sockets with the label facing upwards. The module slides gently into position by pressing inwards.

**Figure 2.1. A typical 1000 Base LX/SX module**



**Figure 2.2. Installing a 1000 Base LX/SX module**



**Figure 2.3. A typical 1000 Base TX module**



**Figure 2.4. Installing a 1000 Base TX module**



## 2.3. Connecting Power

An F1800 Series appliance is delivered in a form able to support AC or DC power, but not both. The device should be ordered in either an AC or DC compatible hardware version.



### **Important**

*Please read the advisory concerning electrical safety in Chapter 6, Safety.*

The image below shows the back of the F1800 Series. To the extreme right is the power cord socket. To the left of the socket is a recessed button for resetting the device to factory defaults.

The Amaranten F1800 Series comes with two power supplies pre-installed in the unit. These power supplies provide redundancy and both should be connected before powering-up the unit. It is advisable to connect the two supplies to two independent power sources in order to achieve maximum reliability.



### **Note**

*If only one of the two power supplies is properly connected then a power supply failure will be assumed and a high pitched continuous alarm will sound when the Amaranten Security Gateway is switched on. For more details on power supply failure and hot-swapping F1800 Series supplies see Section 4.1, “Replacing the Power Supply”.*

**Figure 2.5. Rear view of the Amaranten F1800 Series.**



## Connecting AC Power

To connect the power cord, follow these steps:

1. Fit the powercord into the power adapter that comes with the F1800 Series.
2. Plug the power adapters power plug into the power receptacle on the back panel of the F1800 Series device.
3. Plug the other end of the power cord into a grounded power outlet.
4. For the F1800 Series repeat the above two steps for the second power supply.

## Connecting DC Power

Both the DC power supplies have single DC input supporting +/- 48VDC and return feed. A dedicated circuit breaker supporting the labelled current requirements is needed for each power supply in the F1800 Series

It is common that DC power is routed through DC power distribution panels in each rack in a typical site using battery backups providing 48 VDC. It might be located at the top of each rack where the F1800 Series is to be installed. The F1800 Series require two pairs of cables connected to each set of terminal studs on the power distribution panel.

**Note**

*Make sure to connect the input and return feed to the correct power distribution feed as there is no standard colouring scheme for DC power cables.*

The device must be connected to earth ground during operation. Connect a cable to a earth ground from the cabinet or other suitable grounding point to the chassis by fastening a U-type lug to the end of the ground wire and fasten it to the chassis with the power supply retaining screw.

**Warning**

*The power feed ground and chassis ground must be connected to the same earth point at an installation site.*

- Connect the device to earth ground:
  - Ensure a suitably qualified electrician has correctly installed the wiring.
  - Connect one end to the chassis ground point.
  - Connect the other end to the earth ground, for instance to the rack cabinet in which the F1800 Series is installed.
- Connect cables to the power supply:
  - Be certain that the voltage from all DC power source cables is 0V before and during installation. Take precautions so that power cannot accidentally be restored during installation.
  - Ensure a suitably qualified electrician has correctly installed all power connections.
  - Connect the F1800 Series DC power connector cable U-type lugs to the power distribution panel:
    - Fasten the positive (yellow) cable lug to the "+" distribution panel
    - Fasten the black (negative) cable lug to the "-" distribution panel
  - Connect the F1800 Series DC power connector to the DC terminal port on the power supply.
  - Repeat the previous 2 steps for the other power supply.

**Note**

*The DC power connector that comes with the F1800 Series is 0.90 meters in length and provides a terminal connector block and 2 cables. If the cable length is insufficient for installation, have a suitably qualified electrician modify the connector length.*

The DC distribution panel should now be powered on and the following done:

- Verify that the first power supply module's LED is illuminated.
- Power on the second power distribution.
- Verify the second power supply unit's LED is illuminated, then verify startup.





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# Chapter 3. Initial Setup

- [Attaching Connectors](#), page 12
- [Setup with local RS232 console](#), page 14
- [Setup with Display and Keypad](#), page 16
- [Finalizing the Configuration](#), page 17

## 3.1. Attaching Connectors

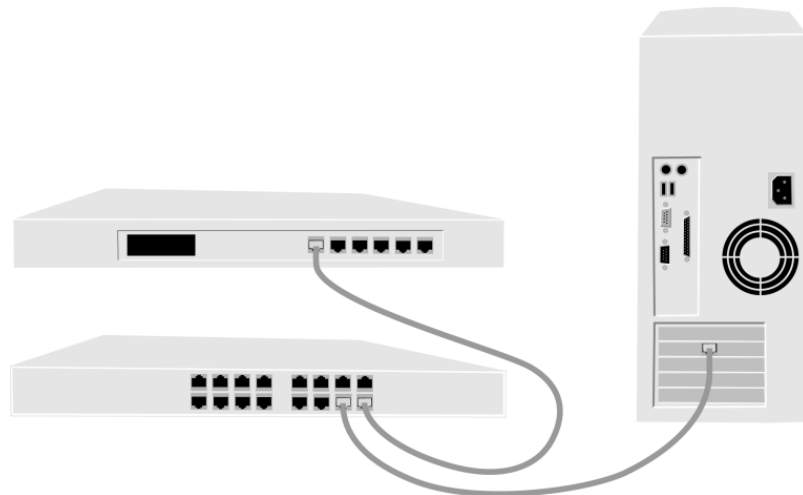
### 3.1.1. Connecting to a Network

The initial configuration of the F1800 Series device configures which Ethernet interface is to be used for remote management. Any interface can be used for this purpose. The selected interface can also be used for normal traffic.

The intended interface should be attached to the same network as the management server (or a network accessible from the management server via one or more routers).

Connect the interface to a switch or hub in the network using a regular straight-through Ethernet cable. In the diagram below, the Amaranten appliance (unit top-left) is connected to a switch (bottom-left).

**Figure 3.1. A typical installation setup**



The F1800 Series device can be connected directly to the network interface of the management server without using any switch or hub, but please note that in that case, a crossover cable must be used.

The final phase of the initial set-up requires actions performed using either the F1800 Series *Console* port or using the display and keypad on the front of the device (see Section 3.3, “Setup with Display and Keypad”).

### 3.1.2. Connecting the Console Port

The serial console port is an RS-232 port that enables a connection to a PC or terminal for monitoring and initial configuration of the F1800 Series device. To use the console port, you need the following equipment:

- A terminal or a (portable) computer with a serial port and the ability to emulate a terminal i.e. using the Hyper Terminal software included in most Microsoft Windows installations). The terminal should have the following settings: **9600 baud, No parity, 8 bits and 1 stop bit**.
- An RS-232 cable with appropriate connectors. The F1800 Series package includes an RS-232 null-modem cable.

To connect a terminal to the console port, follow these steps:

1. Set the terminal protocol as described previously.
2. Connect one of the connectors on the RS-232 cable supplied, directly to the console port on the F1800 Series device.
3. Connect the other end of the cable to the terminal or the serial connector of the computer running the communications software.

## 3.2. Setup with local RS232 console

Make sure that a terminal (or a computer running terminal emulation software) is connected to the console port on the Amaranten F1800 Series hardware as described above in Section 3.1.2, “Connecting the Console Port”.

1. Power up the F1800 Series appliance.



### Note

The hardware will need some time to power up and during this period, there will be no output to the terminal window.

When the device is starting, a text similar to the following will appear in the terminal window:

```
=====
Select Management Interface
=====
This will setup a small base configuration needed for the
system to start, and for remote management of the
Security Gateway to work. When this procedure is finished,
the remaining parts of the configuration may be completed
remotely using the Security Gateway Manager software.

Please choose your management interface
-----
ge1: Gigabit Ethernet interface 10/100/1000
ge2: Gigabit Ethernet interface 10/100/1000
fe1: Fast Ethernet interface 10/100
fe2: Fast Ethernet interface 10/100
fe3: Fast Ethernet interface 10/100
-----
ESC Return to previous menu
```

2. Select the interface that you have chosen for communication with the management station. Press *Enter* to confirm your choice.
3. Enter the IP address you intend to use for the management interface and enter the appropriate netmask and default gateway. It's also possible to specify a remote management network if it's different from the local management interface subnet. Press Ctrl-S to save the settings and continue.

```
=====
Base IP configuration
=====
Management Interface:
fe1: Fast Ethernet interface 10/100

Use DHCP:          [ ]
Use PPPoE:         [ ]

IP Address:        [192.168.10 .10 ]
Netmask:           [255.255.255.0# ]
Gateway Address:   [ . . . ] (Leave blank for none)
Allowed Mgmt Net: [ . . . ] (Leave blank for local
network)
Netmask:           [ . . . ]

NOTE: If this interface is NOT the external interface,
the gateway address should normally be left blank.
-----
```

**Note**

*It is possible to use DHCP on the interface.*

4. The following will appear in the terminal window:

```
=====  
Generating Base Configuration  
=====  
Writing configuration file, please wait...Done.  
It is recommended to start the core now.
```

Press **Y** to start CorePlus.

5. You will receive a confirmation message that CorePlus has successfully started as shown below:

```
Configuration done
```

## 3.3. Setup with Display and Keypad

The F1800 Series appliance is equipped with a keypad and display on the front panel. These can be used to setup the base configuration. Alternatively a local console can be used as described in Section 3.2, “Setup with local RS232 console”.

1. Power up the Amaranthen Security Gateway F1800 Series appliance.



### Note

*The system will need some time to power up. During this time it will show the top row of the display filled with white blocks*

```
Press Keypad to
Enter Setup
```

When the firmware has started the text *Press Keypad to Enter Setup* will appear. Press one of the buttons on the keypad to start the setup.

2. Select the interface that you would like to configure the base settings for by first pressing **Down** and then **Left** or **Right** until the correct interface name is shown.

```
Select Interface
< fe1 >
```

When the correct interface is selected press **Up** to get back to the menu, i.e. the display should show **< Select Interface >**.

3. Now enter the IP address that is to be used for management purposes. To do this press **Left** until you get to the **< IP Address >** menu. Press **Down** once to get to the IP address configuration.

```
IP Address
^ 192.168.000.001 ^
```

Press **Left** or **Right** to move between the individual digits and **Up** or **Down** to change the value. When finished entering the IP address, move to either the left or rightmost part of the display (^) and press **Up** to get back to the menu. Now use **Left** to step to the **< Subnet mask >** and **< Gw Address >** menus and repeat the same steps to configure the subnet and gateway addresses.

4. When done configuring the IP address press **Left** or **Right** to get to the **< Save Changes? >** menu, then press **Down** and select **< YES >** and then **Down** again to save the base configuration. When the configuration is stored you will be moved back to the **< Setup >** menu. Press **Left** or **Right** to step through the menu until you get to **< Start System >**. Press **Down** twice to start the system.
5. System Running will appear on the display when the F1800 Series device has started:

```
System Running
```

## 3.4. Finalizing the Configuration

After initial setup, the user should refer to the companion publications found in PDF format on the accompanying CD for information on how to begin to configure the F1800 Series device:

**Amaranten FineTune Administrators Guide**

FineTune is a software tool that provides the principal management interface for the F1800 Series device. The software runs on a Windows based PC workstation and is used by the administrator to manage one or multiple Amaranten Security Gateways. This describes how to register your Amaranten license and set-up a first security policy.

**Amaranten CorePlus Administrators Guide**

This describes the general operation and control of the CorePlus firmware, which is the Amaranten proprietary operating system that drives and controls the Amaranten F1800 Series hardware. The document includes examples of how to carry out typical administrative tasks such as setting up a VPN, and how to use the F1800 Series in various scenarios.

**Amaranten Log Reference Guide**

This documents and describes all log messages that might be generated by CorePlus during operation of the system.



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# Chapter 4. Product Maintenance

- [Replacing the Power Supply, page 19](#)
- [Replacing Fan Modules, page 22](#)

The F1800 Series device allows the on-site replacement of both fan and power supply modules.

**Figure 4.1. Replaceable modules in an F1800 Series device.**



## 4.1. Replacing the Power Supply

### Hot-swapping power supplies

The Amaranten F1800 Series has two power supplies which provide redundancy. Both should be connected to mains power and operating in tandem during normal operation.

#### Identifying a Failed Power Supply

In the event of a single power supply failure, a high pitched continuous sound will be heard coming from the F1800 Series device. In normal operation there is a green LED light that is visible on the back of each power supply. This light will not be visible on a supply if that unit has failed.

#### Hot-swapping a Power Supply

To hot-swap a failed power supply:

- Remove the power supply cord from the failed unit
- Unscrew and remove the retaining bar that crosses the back of both power supplies.
- Unlatch and gently pull out the failed supply. With the power supply shown, the lever on the supply must be firmly held between thumb and index-finger, and then pulled down to release the locking mechanism.

- Gently insert the new supply, replace the retaining bar and re-insert the power cord into the new unit.
- The new power supply's green light should come on indicating normal operation and the high pitch alarm should stop.

**Figure 4.2. Replacing a F1800 Series power supply.**



#### ***Switching off the Alarm***

*The high pitch alarm indicating power supply failure is deliberately intrusive. To switch it off, press in the small red switch which is recessed into the F1800 Series casing. This is located just to the left of both power supplies as shown in the above image. Switching the alarm off will not, in any way, alter the status of either power supply.*

**Figure 4.3. An F1800 Series AC power supply unit.**



**Figure 4.4. An F1800 Series DC power supply unit.**



## 4.2. Replacing Fan Modules

### Recommended Replacement Interval

The fan module in a F1800 Series device is liable to wear from mechanical movement and fan failure can lead to much more serious failures from overheating of electronic components. Although the fan modules are built for prolonged use it is nonetheless a recommended precaution that the fan module (shown below) be replaced every two years.

**Figure 4.5. An F1800 Series fan module.**



### Replacement Steps

- Power off the F1800 Series device.
- Unscrew the fan module retaining screws
- Pull the fan module outwards while holding the retaining screws (see below).
- Replace with the new module, securing with the retaining screws.

**Figure 4.6. Amaranten F1800 Series fan disassembly.**





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## Chapter 5. Warranty

### Limited Warranty

Amaranten warrants to the customer of the F1800 Series Appliance that the Hardware components will be free from defects in material and workmanship under normal use for a period of two (2) years from the Start Date (as defined below). The warranty will only apply to failure of the product if Amaranten is informed of the failure not later than two (2) years from the "Start Date" or thirty (30) days after that the failure was or ought to have been noticed by the customer. The warranty will not apply to products from which serial numbers have been removed or to defects resulting from unauthorized modification, operation or storage outside the environmental specifications for the product, in-transit damage, improper maintenance, defects resulting from use of third-party software, accessories, media, supplies, consumables or such items not designed for use with the product, or any other misuse. Any replacement Hardware will be warranted for the remainder of the original warranty period or thirty days, whichever is longer.

Note that the term *Start Date* means the earlier of Product registration or ninety (90) days following shipment from Amaranten.

### Obtaining Warranty Service

Warranty service may be obtained by contacting Amaranten within the applicable warranty period, and requesting a Return Material Authorization (RMA) number. If the product in question has not been registered with the Amaranten client web pages, then a proof of purchase (such as a copy of the dated purchase invoice) must be provided. If Purchaser's circumstances require special handling of warranty correction, then at the time of requesting the RMA number, the Purchaser may also propose special procedures as may be suitable to the case.

After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be clearly marked on the outside of the package. The package must be mailed or otherwise shipped to Amaranten with all costs of mailing/shipping/insurance prepaid. Amaranten shall not be responsible for any of the Purchaser's software, firmware, information, or memory data contained in, stored on, or integrated with any product returned to Amaranten pursuant to this warranty.

Any package returned to Amaranten without an RMA number will be rejected and shipped back to the Purchaser at the Purchaser's expense. Amaranten reserves the right in such a case to levy a reasonable handling charge in addition to mailing and or shipping costs.

To issue an Return Material Authorization (RMA) request for warranty or maintenance service for any Amaranten appliance product, please fill out the Amaranten RMA request form which can be found and submitted online at (clickable link):

[http://www.amaranten.com/support/support\\_rma\\_request.html](http://www.amaranten.com/support/support_rma_request.html)

Should there be a problem with the online form then Amaranten support can be contacted by email at: <mailto:support@Amaranten.com>.

### Customer Remedies

Amaranten's entire liability according to this warranty shall be, at Amaranten's option, either return of the price paid, or repair or replacement of the Hardware that does not meet Amaranten's limited warranty and which is returned to Amaranten with a copy of your receipt.

### Limitations of Liability

Refer to the legal statement at the beginning of the guide for a statement of liability limitations.

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## Chapter 6. Safety

### Safety Information

Amaranten F1800 Series devices are safety class I products and have protective ground terminals. There must be an uninterrupted safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

For LAN cable grounding:

- If your LAN covers an area served by more than one power distribution system, be sure their safety grounds are securely interconnected.
- LAN cables may occasionally be subject to hazardous transient voltage (such as lightning or disturbances in the electrical utilities power grid). Handle exposed metal components of the network with caution.

There are no user-serviceable parts inside these products. Only service-trained personnel can perform any adjustment, maintenance or repair.

### Säkerhetsföreskrifter

Dessa produkter är säkerhetsklassade enligt klass I och har anslutningar för skyddsjord. En obruten skyddsjord måste finnas från strömkällan till produktens nätkabelanslutning eller nätkabel. Om det finns skäl att tro att skyddsjorden har blivit skadad, måste produkten stängas av och nätkabeln avlägnas till dess att skyddsjorden har återställts.

För LAN-kablage gäller dessutom att:

- om LAN:et täcker ett område som betjänas av mer än ett strömförsörjningssystem måste deras respektive skyddsjord vara ihopkopplade.
- LAN kablage kan vara föremål för farliga spänningstransienter (såsom blixtnedslag eller störningar i elnätet). Hantera metallkomponenter i förbindelse med nätverket med försiktighet.

Det finns inga delar i produkten som kan lagas av användaren. All service samt alla justeringar, underhåll eller reparationer får endast utföras av behörig personal.

### Informations concernant la sécurité

Cet appareil est un produit de classe I et possède une borne de mise à la terre. La source d'alimentation principale doit être munie d'une prise de terre de sécurité installée aux bornes du câblage d'entrée, sur le cordon d'alimentation ou le cordon de raccordement fourni avec le produit. Lorsque cette protection semble avoir été endommagée, débrancher le cordon d'alimentation jusqu'à ce que la mise à la terre ait été réparée.

Mise à la terre du câble de réseau local:

- si votre réseau local s'étend sur une zone desservie par plus d'un système de distribution de puissance, assurez-vous que les prises de terre de sécurité soient convenablement interconnectées.
- Les câbles de réseaux locaux peuvent occasionnellement être soumis à des surtensions transitoires dangereuses (telles que la foudre ou des perturbations dans le réseau d'alimentation pub-

lic). Manipulez les composants métalliques du réseau avec précautions.

Aucune pièce contenue à l'intérieur de ce produit ne peut être réparée par l'utilisateur. Tout dépannage, réglage, entretien ou réparation devra être confié exclusivement à un personnel qualifié.

## Hinweise zur Sicherheit

Dies ist ein Gerät der Sicherheitsklasse I und verfügt über einen schützenden Erdungsterminal. Der Betrieb des Geräts erfordert eine ununterbrochene Sicherheitserdung von der Hauptstromquelle zu den Geräteingabeterminals, den Netzkabeln oder dem mit Strom belieferten Netzkabelsatz voraus. Sobald Grund zur Annahme besteht, dass der Schutz beeinträchtigt worden ist, das Netzkabel aus der Wandsteckdose herausziehen, bis die Erdung wiederhergestellt ist.

Für LAN-Kabelerdung:

- Wenn Ihr LAN ein Gebiet umfasst, das von mehr als einem Stromverteilungssystem beliefert wird, müssen Sie sich vergewissern, dass die Sicherheitserdungen fest untereinander verbunden sind.
- LAN-Kabel können gelegentlich gefährlichen Übergangsspannungen ausgesetzt werden (beispielsweise durch Blitz oder Störungen in dem Starkstromnetz des Elektrizitätswerks). Bei der Handhabung exponierter Metallbestandteile des Netzwerkes Vorsicht walten lassen.

Dieses Gerät enthält innen keine durch den Benutzer zu wartenden Teile. Wartungs-, Anpassungs-, Instandhaltungs- oder Reparaturarbeiten dürfen nur von geschultem Bedieningspersonal durchgeführt werden.

## Considerazioni sulla sicurezza

Questo prodotto è omologato nella classe di sicurezza I ed ha un terminale protettivo di collegamento a terra. Dev'essere installato un collegamento a terra di sicurezza, non interrompibile che vada dalla fonte d'alimentazione principale ai terminali d'entrata, al cavo d'alimentazione oppure al set cavo d'alimentazione fornito con il prodotto. Ogniqualvolta vi sia probabilità di danneggiamento della protezione, disinserite il cavo d'alimentazione fino a quando il collegamento a terra non sia stato ripristinato.

Per la messa a terra dei cavi LAN:

- se la vostra LAN copre un'area servita da più di un sistema di distribuzione elettrica, accertatevi che i collegamenti a terra di sicurezza siano ben collegati fra loro;
- i cavi LAN possono occasionalmente andare soggetti a pericolose tensioni transitorie (ad esempio, provocate da lampi o disturbi nella griglia d'alimentazione della società elettrica); siate cauti nel toccare parti esposte in metallo della rete.

Nessun componente di questo prodotto può essere riparato dall'utente. Qualsiasi lavoro di riparazione, messa a punto, manutenzione o assistenza va effettuato esclusivamente da personale specializzato.

## Consideraciones sobre seguridad

Este aparato se enmarca dentro de la clase I de seguridad y se encuentra protegido por una borna de puesta a tierra. Es preciso que exista una puesta a tierra continua desde la toma de alimentación eléctrica hasta las bornas de los cables de entrada del aparato, el cable de alimentación hasta haberse subsanado el problema.

Puesta a tierra del cable de la red local (LAN):

- Si la LAN abarca un área cuyo suministro eléctrico proviene de más de una red de distribución de electricidad, cerciorarse de que las puestas a tierra estén conectadas entre sí de modo seguro.
- Es posible que los cables de la LAN se vean sometidos de vez en cuando a voltajes momentáneos que entrañen peligro (rayos o alteraciones en la red de energía eléctrica). Manejar con precaución los componentes de metal de la LAN que estén al descubierto.

Este aparato no contiene pieza alguna susceptible de reparación por parte del usuario. Todas las reparaciones, ajustes o servicio de mantenimiento debe realizarlos solamente el técnico.

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# Chapter 7. Hardware Specifications



Below are the key hardware specifications for Amaranten F1800 Series installation.

**Figure 7.1. F1800 Series Dimensions and Weight**

Height x Width x Depth (mm)	88 x 440 x 440
Device weight	12.0 kg
Device form Factor	2U
Rack Mountable 19" ?	Yes
Redundant Hot-Swappable Power Supply (AC)	100-240V 50 to 60 Hz AC
Redundant Hot-Swappable Power Supply (DC)	36VDC to 72VDC

**Figure 7.2. Regulatory and Safety Standards**

Safety	UL, CE
EMC	FCC class A, CE class A, VCCI class A

**Figure 7.3. Environmental**

Humidity	20% to 95% noncondensing
Operational Temperature	5 to 55° C
Vibration	0.41 Grms <sup>2</sup> (3-500 Hz)
Shock	30 G

## Further information

For complete product specifications refer to (clickable link):

<http://www.amaranten.com/products/>