Cisco 3G Lightning Arrestor (3G-ACC-OUT-LA)

This document describes the Cisco 3G Lightning Arrestor kit for use on Cisco wireless 3G devices and Cisco 4G wireless devices, and provides instructions for mounting the arrestor.

Introduction

The Cisco 3G-ACC-LA provides a level of safety protection to the user as well as to wireless equipment by shunting to ground over-voltage transients induced into outdoor antennas and cables. These transients, in mild cases can produce interfering signals in a wireless system, and in extreme cases, can be dangerous and destructive.

Overvoltage transients can be created through lightning static discharges, switch processes, direct contact with power lines, or through earth currents. The Cisco 3G-ACC-OUT-LA Lightning Arrestor limits the amplitude and duration of disturbing interference voltages and improves the overvoltage resistance of in-line equipment, systems, and components. A lightning arrestor installed according to these mounting instructions balances the voltage potential, thus providing safety and preventing inductive interference to parallel signal lines within the protected system.

The Cisco 3G-ACC-OUT-LA Lightning Arrestor is designed for use with Cisco 3G wireless devices and Cisco 4G wireless devices, and antennas and cables that use standard TNC connectors.

Warnings

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

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Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning **To report a gas leak, do not use a telephone in the vicinity of the leak.** Statement 1039

Warning **This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

SAVE THESE INSTRUCTIONS

Warning **This product is not intended to be directly connected to the Cable Distribution System. Additional regulatory compliance and legal requirements may apply for direct connection to the Cable Distribution System. This product may connect to the Cable Distribution System ONLY through a device that is approved for direct connection.** Statement 1078

Warning **Disconnect or switch off in-line equipment when installing or inspecting lightning arrestors during an electrical storm.**

Warning **When connecting lightning arrestors, make sure that the succeeding equipment and components are disconnected or turned off.**

Warning **This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.**

Installation Considerations

Cisco recommends that you bulkhead mount the lightning arrestor so it can be installed as a wall feed, going through the wall of the protected space.

The importance of obtaining a good ground and bonding connection cannot be overstressed. Consider these points when grounding the lightning arrestor:

- Connect the lightning arrestor components directly to the grounding point.
- The contact points of the ground connection must be clean and free of dust and moisture.

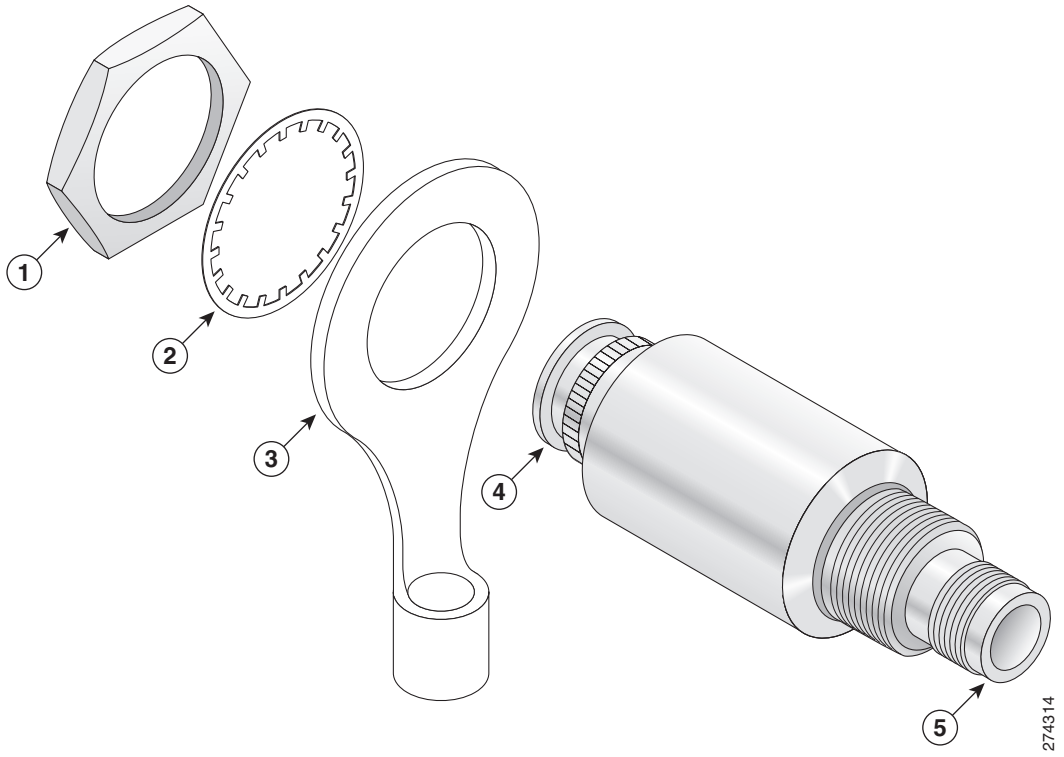
- Tighten threaded contacts to the torque specified by the manufacturer.

Installing the Lightning Arrestor

This arrestor is designed to be installed in series between the antenna cable that is attached to the 3G outdoor antenna and the second antenna cable entering the building. It is recommended that the arrestor and its ground connection is made as close as possible to where it enters the building, either just outside or just inside the building.

Cisco recommends that the lightning arrestor be bulkhead-mounted and grounded (i.e., arrestor attached directly onto a well-grounded bracket or well-grounded panel via the arrestor's threaded shaft and the supplied nut). If this is not possible, then the next best option is to use the ground lug provided with the kit. The ground lug requires a 6 AWG copper ground wire (user provided) to be crimped onto the lug, with the other end of the ground wire connected to a good solid ground point (eg, to an electrical ground buss bar), keeping the ground wire length as short as possible for best results (under 20 inches or under 0.5 meters). See Figure 1.

Figure 1 Lightning Arrestor (3G-ACC-OUT-LA) Details



1	Nut	**4**	Protected side TNC Plug (to 3G device)
2	Washer	**5**	Unprotected side TNC Jack (to antenna)
3	Lug		

Note This lightning arrestor is part of a lightning arrestor kit. The kit contains a lightning arrestor, a grounding lug, and this instruction sheet.

Note When you install the lightning arrestor, follow the regulations or best practices applicable to lightning protection installation in your local area.

Suggested Cable

Coaxial cable loses efficiency as the frequency increases, resulting in signal loss. The cable should be kept as short as possible because cable length also determines the amount of signal loss (the longer the run, the greater the loss).

Cisco recommends a high-quality, low-loss cable for use with the lightning arrestor.

Technical Specifications

Arrestor Type	Quarter wave high pass filter
Main path connectors	Unprotected side: TNC jack (female) Protected side: TNC plug (male)
Impedance	50Ω
Frequency range	800 MHz to 2200 MHz
Return loss	> 26 dB
Insertion loss	< 0.1 dB
RF CW power	< 20 W
Surge current handling capability	20 single / 10 multiple kA (test pulse 8/20 µs)
Residual pulse energy	.03 microjoules typically (test pulse 4 kV 1.2/50 µs; 2kA 8/20 µs)
Operating temperature range	–40°F to 185°F (–40°C to 85°C)
Waterproof rating	IP67
Mouting and grounding	Bulkhead
Alternate grounding	Supplied ground lug and customer-provided 6 AWG, 20 inches maximum length ground wire
Material	Housing: brass Center contact: gold-plated brass

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/cisco/web/support/index.html

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/

Cisco Marketplace:

http://www.cisco.com/go/marketplace/

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/en/US/docs/general/Illus_process/PDI/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com

Tip We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.*x* through 8.*x*.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year, at this URL:

http://www.cisco.com/cisco/web/support/index.html

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

http://tools.cisco.com/RPF/register/register.do

Note Use the Cisco Product Identification (CPI) tool on Cisco.com to locate your product serial number before submitting a web or phone request for service. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, or by copying and pasting **show** command output. Search results display an illustration of your product with the serial number label location. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is "down," or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html