Accton

Making Partnership Work

CheetahSwitch Workgroup-3008A
CheetahSwitch Workgroup-3016A
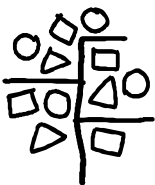# Quick Installation Guide

Accton
Making Partnership Work

CheetahSwitch Workgroup-3008A
Smart Fast Ethernet Switch with 8 10BASE-T / 100BASE-TX Ports

CheetahSwitch Workgroup-3016A
Smart Fast Ethernet Switch with 16 10BASE-T / 100BASE-TX Ports

Accton

International Headquarters
No. 1 Creation Road III,
Science-based Industrial Park
Hsinchu 300, Taiwan, R.O.C.
Phone: 886-3-5770-270
FAX: 886-3-5770-267
Internet: support@accton.com.tw

USA Headquarters
6 Hughes
Irvine, CA 92618
Phone Numbers -
  Sales: 800-926-9288
  Support: 888-398-4101 or 949-707-4847
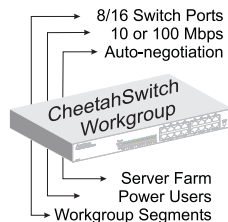 RMA: 800-762-4968
  FAX: 949-707-2460

ES3008A
ES3016A
E012000-R05
150917-101

Contents

Introduction

These CheetahSwitches are ideal for moving workgroups from the conventional 10Mbps shared Ethernet collision domain to multiple dedicated Ethernet segments. These switches deliver dedicated 10/100 Mbps links to each attached LAN segment (independent collision domain) or attached PCs – all with conventional cabling and adapters. They completely eliminate the bottlenecks of shared 10Mbps Ethernet networks by providing a wide bandwidth of up to 3.2 Gbps. This makes them ideal for increasing the throughput of interconnected Ethernet hubs or server farms. On top of all that, they use auto-negotiation to select the optimal transmission speed and communication mode for each connection. They use store-and-forward switching to maintain maximum data integrity, even under heavy loading.

Installing the Switch

Before installing the switch, verify that you have all the items listed under "Package Contents." If any of the items are missing or damaged, contact your local Accton distributor. Also be sure you have all the necessary tools and cabling before installing the switch. Note that this switch can be installed on any suitably large flat surface or in a standard EIA 19-inch rack.

Package Contents

These CheetahSwitches include:

- CheetahSwitch Workgroup-3008A (Model No. ES3008A), or CheetahSwitch Workgroup-3016A (Model No. ES3016A)
- Four rubber foot pads
- Quick Installation Guide
- AC power cord
- Owner registration card
- Rack mount bracket kit (for ES3016A)

Description of Hardware

These switches contain 8/16 10BASE-T / 100BASE-TX dual-speed ports. They use auto-negotiation to set the transmission speed (10/100 Mbps) and mode (half/full duplex). If the attached device does not support auto-negotiation, the speed will still be correctly set by the switch using auto-sensing. However, full duplex can only be supported if the attached device also uses auto-negotiation.

CheetahSwitch Workgroup-3008A/3016A

The following figure shows the components of these switches:
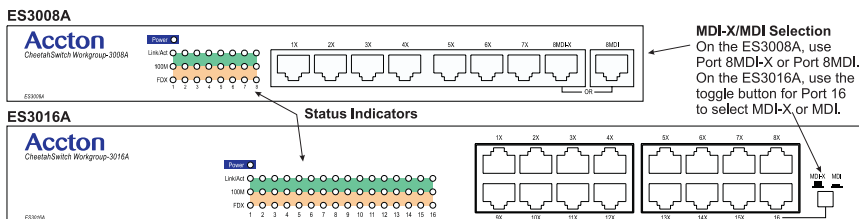
Mounting the Hub

This switch can be placed directly on your desktop, or mounted in a rack (ES3016A).

Before you start installing the switch, make sure you can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected. Verify the following installation requirements:

- Power requirements: 110 to 230 VAC (± 10%) at 47 to 63 Hz (± 3Hz). The switch's power supply automatically adjusts to the input voltage level.
- The switch should be located in a cool dry place, with at least 10 cm. (4 in.) of space at the front and back for ventilation.
- Place the switch out of direct sunlight, and away from heat sources or areas with a high amount of electromagnetic interference.
- If you intend to mount the switch in a rack (ES3016A), make sure you have all the necessary mounting screws, brackets, bolts and nuts, and the right tools.
- Check if network cables and connectors needed for installation are available.

Stacking Switches on a Flat Surface

The CheetahSwitch can be stacked anywhere there is enough flat space, such as on a table or desktop.

1. Stick the self-adhesive rubber foot pads (that come with this package) on each of the 4 concave spaces located on the bottom of the first switch.
2. Place the first switch on a firm flat surface where you want to install the stack.
3. Repeat step 1 for each switch before stacking them. The rubber foot pads cushion the switch against shock/vibrations and provide space between each switch for ventilation.
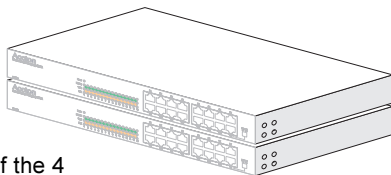
Mounting Switches in a Rack (ES3016A)

Please comply with the following
instructions to ensure that your switch
is securely mounted in the rack.

1. Use a standard EIA 19-inch rack.
2. Use the brackets and screws
   supplied in the rack mounting kit.
3. Use a cross-head screwdriver to attach
   the brackets to the side of the switch.
4. Position the switch in the rack by lining up the holes in the
   brackets with the appropriate holes on the rack, and then use the
   supplied screws to mount the switch in the rack.
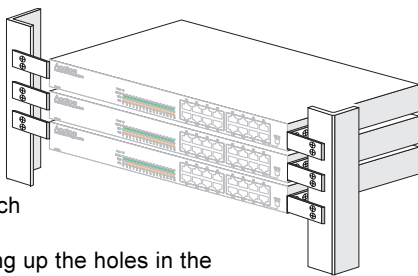
Connecting the Switch System

These CheetahSwitches have 8/16 RJ-45 ports that support connection to
10Mbps Ethernet or 100Mbps Fast Ethernet, and half or full-duplex operation.
The transmission speed for each port is automatically set by the switch to match
the highest speed supported by the connected device. The transmission mode
can be set for each port using auto-negotiation (if also used by the attached
device). However, full duplex can only be supported if the attached device also
uses auto-negotiation. Also note that this CheetahSwitch uses store-and-forward
switching to maintain maximum data integrity under any type of loading.

Making a Connection to an RJ-45 Port

You can use straight-through twisted-pair cable to connect any RJ-45 (MDI-X)
port on the switch to any device that uses a standard network interface such as a
workstation or server, or to a network interconnection device such as a bridge or
router (depending on the port type implemented).

1. Prepare the network devices you wish to network. Make sure you have
   installed 10BASE-T or 100BASE-TX network interface cards for connecting to
   the switch's RJ-45 (MDI-X) station ports.

2. Prepare straight-through shielded or unshielded twisted-pair cables with
   RJ-45 plugs at both ends. Use 100Ω Category 3, 4 or 5 cable for standard
   10Mbps Ethernet connections, or 100Ω Category 5 cable for 100Mbps Fast
   Ethernet connections.

3. Connect one end of the cable to the RJ-45 port of the network interface card,
   and the other end to any available RJ-45 port on the switch. All RJ-45 ports
   support 10Mbps and 100Mbps Ethernet connections. When inserting an
   RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is
   properly seated. Using the switch in a stand-alone configuration, you can
   network up to 8/16 end nodes.

🖐 Do not plug a phone jack connector into any RJ-45 port. This may damage the switch. Instead, use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

Notes: 1. When using Port 8MDI-X on the ES3008A, do not use Port 8MDI.
2. Make sure each twisted-pair cable does not exceed 100 meters (328 feet).
3. We advise using Category 5 cable for all network connections to avoid any confusion or inconvenience in the future when you upgrade attached devices to Fast Ethernet.

Making a Connection via an MDI Daisy-Chain Port

To connect to another compatible switch or hub, take these steps:

1. Use the RJ-45 daisy-chain port (i.e., Port 8MDI on the ES3008A, Port 16MDI on the ES3016A). When using the ES3016A, set the daisy-chain switch to MDI and connect to any MDI-X station port on the other device. Alternatively, you can connect from any RJ-45 MDI-X port on the switch to an MDI daisy-chain port on the other device.

2. Prepare straight-through shielded or unshielded twisted-pair cables with RJ-45 plugs at both ends. Use 100Ω Category 3, 4 or 5 cable for standard 10Mbps Ethernet connections, or 100Ω Category 5 cable for 100Mbps Fast Ethernet connections.

3. Connect one end of the cable to Port 8MDI on the switch, and the other end to any MDI-X station port on the other device. When inserting an RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

Notes: 1. When using Port 8MDI on the ES3008A, do not use Port 8MDI-X.
2. Make sure each twisted-pair cable does not exceed 100 meters (328 feet).
3. To connect to another switch or hub, you may also attach to (MDI-X) station ports at both ends if you use crossover cabling. (Refer to "Port and Cable Assignments" on page 9 for a description of crossover cable.)

Restrictions on Cascade Length - The IEEE 802.3 standard recommends restricting the number of hubs (i.e., repeaters) cascaded via twisted-pair cable to 4; while IEEE 802.3u provides even stricter recommendations for Fast Ethernet. Therefore, when cascading devices other than this switch, please refer to the accompanying documentation for cascade restrictions. However, note that because switches break up the path for connected devices into separate collision domains, you should not include the switch or connected cabling in your calculations for cascade length involving other devices.

Powering On the Switch

1. Plug the power cord into the power socket at the rear of the switch, and the other end into a power outlet.
2. Check the LED marked Power on the front panel to see if it is on. The unit will automatically select the setting that matches the connected input voltage. Therefore, no additional adjustments are necessary when connecting it to any input voltage within the range marked on the rear panel.

3. The switch performs a self-diagnostic test upon power-on. (Note that this test takes about 20 seconds to complete.)

Note: The unit supports a "hot remove" feature which permits you to connect/disconnect cables without powering off the switch and without disrupting the operation of the devices attached to the switch.

Verifying Port Status

Check each connection by viewing the port status indicators shown in the following table.

LED	State	Indication
Link/Act	On	Port has established a valid network connection.
	Flashing	Traffic is traversing the port.
100M	On	Communications have been set to 100 Mbps.
FDX	On	Communications have been set to full-duplex mode.
	Flashing Green (ES3008A)	A collision occured on the port segment when operating in half-duplex mode.

Verifying System Operation

Verify that all attached devices have a valid connection. The switch monitors the link status for each port. If any device is properly connected to the switch and transmitting a link beat signal, the Link indicator will light up for the corresponding port. If the Link indicator fails to light when you connect a device to the switch, check the following items:

- Both sides of each connection must use the same transmission mode (i.e., half or full duplex). The switch can use auto-negotiation to set both speed and mode. However, full duplex can only be supported if the attached device also uses auto-negotiation.
- Be sure all network cables and connectors are properly attached to the connected device and the switch.
- See if your cable is functioning properly by using it for another port and attached device that displays valid indications when connected to the network.
- Be sure no twisted-pair cable exceeds 100 meters (328 feet).

Applications

This switch segments your network, significantly increasing both bandwidth and throughput. Any port on the switch can be attached to a hub (i.e., shared collision domain) or provide a dedicated link to a single network device (e.g., a workstation). When a port on the switch is connected to an Ethernet hub (i.e., a 10 or 100 Mbps repeater), the bandwidth provided by that port is shared by all the devices connected to the attached hub. However, when a port is connected to an end node or to a device that breaks up the collision domain (e.g., another switch, bridge or router), the attached device has access to the full bandwidth provided by that port.

CheetahSwitch Workgroup-3008A/3016A

Bridging Functions - This switch provides fully transparent bridging functions which automatically learn node addresses, that are subsequently used to filter and forward all traffic based on the destination address. When traffic passes between devices attached to the same shared collision domain, those packets are filtered from the switch. But when traffic must be passed between unique segments (i.e., different ports on the switch), the high-speed switching fabric forwards the packets at near zero latency.

Switching Functions - This switch uses store-and-forward switching to pass traffic, thus ensuring data integrity under any load.

Flexible Configuration - This switch is not only designed to segment your network, but also to provide a wide range of options in setting up network connections. It can be used as a simple stand-alone switch; or can be connected with standard repeater hubs, switches, or other network interconnection devices in various configurations.
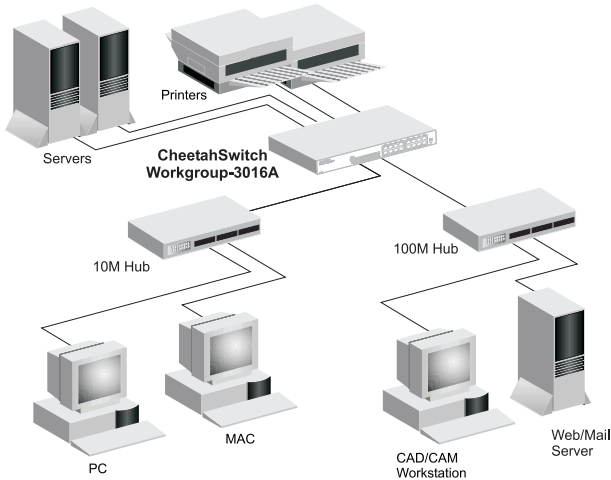
Product Specifications

Base Unit

Physical Characteristics

Access Method	CSMA/CD, 10 Mbps or 100 Mbps	
Standards Conformance	IEEE 802.3, IEEE 802.3u	
Communication Rate	10/100 Mbps	
Communication Mode	Full or half duplex	
Media Supported	*10BASE-T* - 100Ω Category 3,4,5 twisted-pair	
	100BASE-TX - 100Ω Category 5 twisted-pair	
Indicator Panel	Power, link/activity, speed (100 Mbps), full duplex (FDX)	

	ES3008A	ES3016A	
Number of Ports			
10BASE-T/100BASE-TX	8 RJ-45 ports	16 RJ-45 ports	
MDI-X/MDI Selection[1]	Alternate ports	Toggle switch	1: on last port
Dimensions	251x118x37 mm	330x204x44 mm	
	(9.9x4.7x1.5 in)	(13x8x1.7 in)	
Weight	0.8Kg (1.76lb)	2.1Kg (4.63lb)	
Power Consumption	20 Watts max.	27 Watts max.	
Heat Dissipation	68 BTU/hr max.	92 BTU/hr max.	
Maximum Current (@110/240V)	0.2 / 0.1 A$_{RMS}$	0.5 / 0.22 A$_{RMS}$	
Input Power	100 to 240V (±10%),	110 to 230V (±10%),	
	50 to 60 Hz (±3Hz),	47 to 63 Hz (±3Hz)	

Temperature	Standard Operating: 0 to 50°C (32 to 122°F)	
	Storage: -40 to 70°C (-40 to 158°F)	
Humidity	5% to 95% (Noncondensing)	
Certification	CE Mark	
Emissions	FCC Class B, VCCI Class B, CISPR Class B	
Immunity	IEC 1000-4-2/3/4/6	
Safety	CSA/NRTL (C22.2.950,UL1950), TÜV/GS	
	(EN60950)	

Switching Criteria

Network Bridging Function	Filtering, forwarding and learning	
Switching Method	Store-and-forward	
Address Table	ES3008A: 1K entries	
	ES3016A: 8K entries	
Address Resolution	Via fast hashing scheme	
Filtering/Forwarding Rate	Line speed	

Traffic Control

Flow Control	Back pressure for half-duplex	
	IEEE802.3x for full-duplex	

Troubleshooting

Diagnosing Switch Indicators

The switch can be easily monitored through panel indicators to assist the network manager in identifying problems. This section describes common problems you may encounter and possible solutions.

Symptom: Link indicator does not light up (green) after making a connection.

Cause: Network interface (e.g., a network adapter card on the attached device), network cable, or switch port is defective.

Solution: Verify that the switch and attached device are powered on. Be sure the cable is plugged into both the switch and corresponding device. Verify that the proper cable type is used and its length does not exceed specified limits. Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

Symptom: Power indicator does not light up (green) after power on.

Cause: Defective power outlet, power cord, or internal power supply.

Solution: Check the power outlet by plugging in another device that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the unit's power supply replaced by an qualified Accton distributor.

Power and Cooling Problems

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet, and verify that the fans on back of the unit are unobstructed and running prior to shutdown. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, contact your Accton distributor for assistance.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g., the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

Verify that each port is set to the same transmission mode used by the attached device (i.e., half or full duplex). All ports can use auto-negotiation to set the transmission mode. However, full duplex can only be supported if the attached device also uses auto-negotiation.

Port and Cable Assignments

RJ-45 Port Description
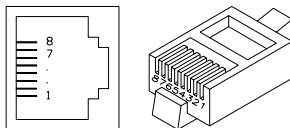
RJ-45 station ports (MDI-X) can be attached to any devices which use a standard network interface (e.g., a workstation, server, bridge or router). RJ-45 daisy-chain ports (MDI) can be cascaded to a station port on similar networking devices (e.g., another switch or hub). Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10 Mbps connections or 100Ω Category 5 cable for 100 Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Pin	Assignment (Station Ports)	Assignment (Daisy-Chain Port)
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
6	Output Transmit Data -	Input Receive Data -
4,5,7,8	Not Used	Not Used

Schematics for both straight and crossover twisted-pair cable are shown below.

Straight-Through		Crossover	
(Hub)	(Adapter)	(Hub)	(Switch)
1 IRD+ ———— 1 OTD+		1 IRD+ ————— 1 IRD+	
2 IRD- ———— 2 OTD-		2 IRD- ————— 2 IRD-	
3 OTD+ ———— 3 IRD+		3 OTD+ ————— 3 OTD+	
6 OTD- ———— 6 IRD-		6 OTD- ————— 6 OTD-	

EMI Certification

FCC Class B (USA)

Accton Technology Corporation

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

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

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment and receiver
• Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to
• Consult the dealer or an experienced radio/TV technician for help

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Note: In order to maintain compliance with the limits of a Class B digital device, Accton requires that you use a quality interface cable when connecting to this device. Changes or modifications not expressly approved by Accton could void your authority to operate this equipment. Suggested cable type is unshielded or shielded (UTP/STP) cable – Category 3 or greater for 10Mbps connections, and Category 5 for 100Mbps connections.

Class B (Canada Department of Communications)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numérques", NMB-003 édictée par le ministère des Communications.

VCCI Class B Compliance (Japan)

　この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

　取扱説明書に従って正しい取り扱いをして下さい。

CE Mark Declaration of Conformance (for EMI and Safety - Europe)

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014. It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR-22(1985)	class B
	EN60555-2(1995)	class B
	EN60555-3	
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line), 0.5kV - (signal line)
	IEC1000-4-6(1995)	3Vrms

This product complies with the requirements of the Low Voltage Directive 73/23/ EEC and the EMC Directive 89/336/EEC.

Safety Compliance

Underwriters Laboratories Inc. (USA)

Important! Before making connections, make sure you have the correct Cord Set. Check it (read the label on the cable) against the following specification list.

Voltage	Cord Set Specifications
120 Volts	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG; type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Parallel blade, grounding type attachment plug rated 15A, 125V
240 Volts (North America)	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG; type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Tandem blade, grounding type attachment plug rated 15A, 125V
240 Volts (Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm² IEC-320 receptacle; male plug rated 10A, 250V

Wichtige Sicherheitshinweise (Germany)

1. Bitte lesen Sie diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssigoder Aerosolreiniger. Am besten eignet sich ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlu ßsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Beschädigungen hervorrufen.
7. Die Belüftungsöffnungen dienen der Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen, die sich am Gerät befinden, sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.

14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a. Netzkabel oder Netzstecker sind beschädigt.
    b. Flüssigkeit ist in das Gerät eingedrungen.
    c. Das Gerät war Feuchtigkeit ausgesetzt.
    d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

15. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm^2 einzusetzen.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

Warranty

Accton warrants to the original owner that the product delivered in this package will be free from defects in material and workmanship for a period of three (3) years from the date of purchase from Accton or it's Authorized reseller. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase and including proof of purchase. There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty does not cover the product if it is damaged in the process of being installed. Accton recommends that you have the company from whom you purchased this product install it.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE. ACCTON SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ACCTON NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY.