



**AE8000
INSTALLATION**

**Quick Reference
Guide**

Revision A

ACT AE8000 High Density Core Switch Installation

Quick Reference Guide

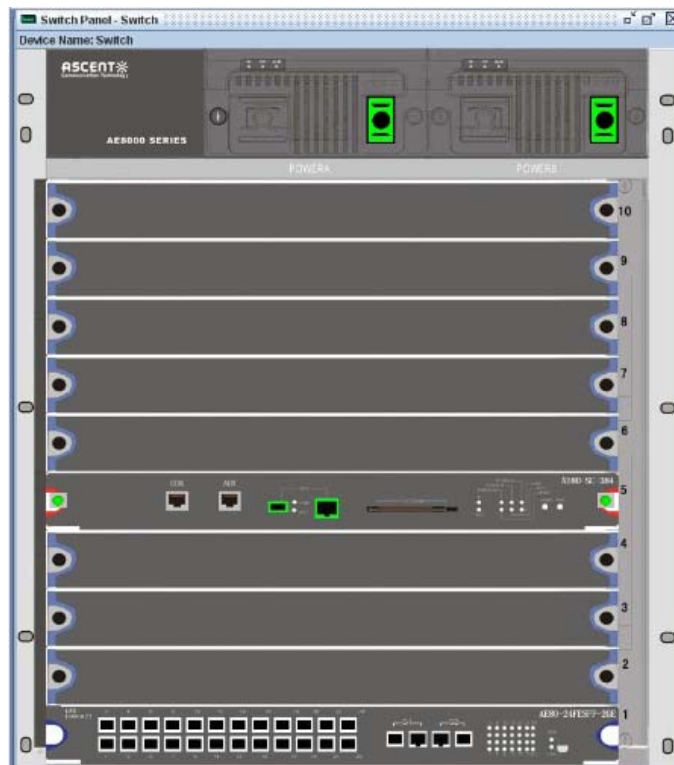
ACT Document Number: AE8000 CORE SWITCH QRG Revision A

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This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

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Revision History

Revision	Date	Reason for Change
A	02/01/2012	Initial Release

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1 Precautions

WARNING!

This equipment is intended for indoor applications. To prevent fire or electrical shock, do not expose units to water or moisture.

- Ensure adequate cooling and ventilation as specified.
- The installation and operation manual should be read and understood before units are put into use.
- Always replace protective caps on optical connectors when not in use.
- Typical connectors used are SC/APC 8° green, LC/APC 8° green, SC/PC blue or LC/PC blue.
- Dangerous voltages are present within the unit at all times. **Mains power kills.**
- Do not operate unit without all covers and panels properly installed. **Mains power kills.**

Cleaning

Use only a damp cloth for cleaning the front panel. Use a soft dry cloth to clean top of unit. Do not use spray cleaner of any kind.

Overloading

Overloading wall outlets and extension cords can result in a risk of fire or electric shock. Use approved electrical cords.

Damage requiring service

Unplug the unit and refer servicing to Ascent Communication Technology qualified service personnel only.

Servicing

Do not attempt to service this unit yourself. Refer all servicing to Ascent Communication Technology qualified service personnel only.

WARNING!

Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fibre or connector ends when handling optical equipment.

2 Introduction

2.1 Overview

ACT AE8000 P2P CORE Switch Platform is a series of high performance, carrier-class L2/L3/L4 switch/router platform, which provide Network Operators and Services Providers with the powerful aggregation layer for the Gigabit Ethernet P2P services in Fiber to The Home/Business (FTTH & FTTB) networks.

AE8000 series includes three base models: AE8006, AE8009 and AE8012. With the modular design, these series of platforms fit into the standard 19 inch rack with 6, 9, 12 RU height respectively. The platform provides high density ports with flexible configuration options through user friendly interface to allow operators to expand the existing networks and services quickly.

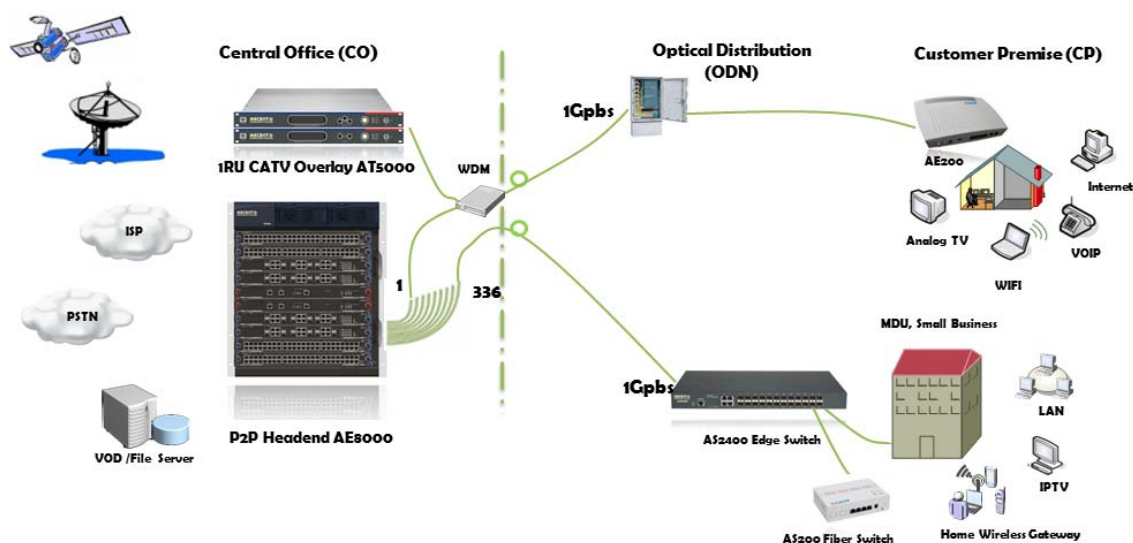
Designed for high reliability, AE8000 series is capable of supporting dual power supplies and dual aggregation and controller cards. It supports Active Ethernet subscribers with 24 or with 48 ports per line card for Fast Ethernet optical subscriber lines or for Gigabit Ethernet optical subscriber lines. High data volumes are supported via an Aggregation Switch & Controller Card, which provides the central management for switching and routing. Uplink cards are available with up to 8 x 10 Gbps ports for XFP plug-ins. Advanced routing and switching features are all supported in a sophisticated control package.

AE8000 series offers robust switching and routing capabilities, and seamless cooperate with ACT routing and switching products. Combined with ACT Video Overlay package, the AE8000 provides full integration with current and future telecommunications applications and is a perfect end-to-end FTTX solution in offering advanced Video, Voice, and Data services.

2.2 Features

- High density Gigabit Active Ethernet FTTH platform supports up to 336 subscribers per chassis
- High performance L2/L3/L4 switching with IPv6 supported
- Up to 4 x 10 Gbps uplinks with XFP ports with link aggregation
- Passive backplane supporting 2.6 Tbps switching fabric
- High-level security supporting extended ACL, DAP, RADIUS, and Intelligent ARP defence
- Supports Active Ethernet technology with Fast Ethernet and Gigabit Ethernet subscriber lines
- Strict QoS with 802.1p, Diffserv, and L2-L4 flow classification
- Wire-speed switching and aggregation with up to 384 Gbps capacity
- Dual hot-swappable redundant controller cards
- Dual hot-swappable power supplies for redundancy
- Shelf management for monitoring and control via network. Both CLI and SNMP access
- Advanced routing and switching features
- RADIUS-based broadband management and customer SLA control
- Low Power consumption to save maintenance and services cost

2.3 Application Diagram



2.4 Specification

	AE8006	AE8009	AE8012
Expanded slot quantity	3	6	10
Service slot quantity	2	4	8
Backplane bandwidth	768Gbps	1.5Tbps	2.6Tbps
Exchange capacity	384G	768G	1.5T
Packet's forwarding rate	143Mpps	286Mpps	572Mpps
Maximum # of 10G ports	8	16	32
Maximum # of 1G ports	96	192	384
Maximum # of 100M ports	96	192	384
Physical size (WxDxH)	482×548×266mm	482×548×399mm	482×548×533mm
Power consumption	600W	600W	1000W

AE8012 Gigabit Active Ethernet P2P Platform - 19" 12RU

Controller card slots	2 controller card slots
Line card slots	8 line card slots
Backplane	Passive backplane with 2.6 Tbps throughput capacity
Shelf manager	SNMP (Simple Network Management Protocol), CLI (Command Line Interface)
Operating temperature	0~40 °C optimal performance 15~35 °C
Relative humidity	10% to 90% no condensation
Dimensions (W x D x H)	482×548×533 mm, 19x22x21 in
Ship size (W x D x H)	670 x 600 x 600 mm

2.5 Models and Options

AE8000 Series Switch P2P

AE8006-Chassis

AE8009-Chassis

AE8012-Chassis

Description

AE8006 Modular Switch chassis 6RU (3 slots, including 1 MSU slot and 2 network module slots)

AE8009 Modular Switch chassis 9RU (6 slots, including 2 MSU slot and 4 network module slots)

AE8012 Modular Switch chassis 12RU (10 slots, including 2 MSU slots and 8 network module slots)

AE8000 Series Power Supply

AE80-PWR-AC-600

220V AC power supply for AE8006/AE8009

AE80-PWR-AC-1000

220V AC power supply for AE8012

AE80-PWR-DC

-48V DC power supply for AE8006/AE8009/AE8012

AE8000 Switching Control

AE80-SC-096

AE8000 Switching Control Unit - for AE8003/AE8006, 96G

AE80-SC-192

AE8000 Switching Control Unit - 192G

AE80-SC-384

AE8000 Switching Control Unit - 384G

AE8000 Series Modules

AE80-24FE-SFP-2GE

24-port 100M SFP + 2-port 1000M SFP/TX Combo Module

AE80-24GE-SFP

20-port 1000M SFP + 4-port 1000M SFP/TX Combo Module

AE80-24GE-TX

20-port 10/100/1000M TX + 4-port 1000M SFP/TX Combo Module

AE80-48FE-TX

48-port 10/100M TX Module

AE80-48GE-TX

48-port 10/100/1000M TX Module

AE80-48GE-SFP-MPLS

48-port 1000M SFP Module, support MPLS, Selective QinQ

AE80-1TE-XFP

1-port 10G Ethernet Module (req. XFP modules)

AE80-2TE-XFP

2-port 10G Ethernet Module (req. XFP modules)

AE80-4TE-XFP

4-port 10G Ethernet Module (req. XFP modules)

3 Installation

3.1 Equipment Inventory

On receiving the new AE8000, you should carefully unpack and examine the contents for loss or damage that may have occurred during shipping. Refer to warranty registration if loss or damage has occurred. The basic AE8000 unit (shipped without cards fitted) should consist of the following:

Qty	Description
1	AE8000 chassis with either an AC or DC power supply unit.
1	AC power supply cord.
1	(Optional) Installation and operating manual and test sheet.

3.2 Packaging and Transportation

Keep all packing boxes and packaging of the AE8000 for future transport.

Use only the original packaging of the AE8000 when transporting. This packaging has been specifically designed to protect the equipment.

WARNING!

The AE8000 is a heavy item of equipment requiring at least 2 persons to move it, for example, during unpacking and installation. Use the lifting handles provided on the chassis.

3.3 Power and Cooling Requirements

The AE8000 can be supplied with AC or DC power. When the AE8000 runs on AC power, it requires a mains input of 230 Vac at 50 Hz. When the AE8000 runs on DC power, it requires a 48 Vdc battery supply.

Note:

Depending on specific requirements, one or two AC or DC power supply units can be installed, or one AC and one DC power supply unit.

Power consumption using either an AC or DC supply is 1000 VA maximum.

The AE8000 is designed to operate reliably in the long term with an ambient temperature of 15~30°C and relative humidity of 40~65%. Ambient conditions outside these limits for prolonged periods may damage the equipment.

Free ambient air should be maintained around all sides of the unit. Care should be taken to ensure that the airflow around the unit is unrestricted.

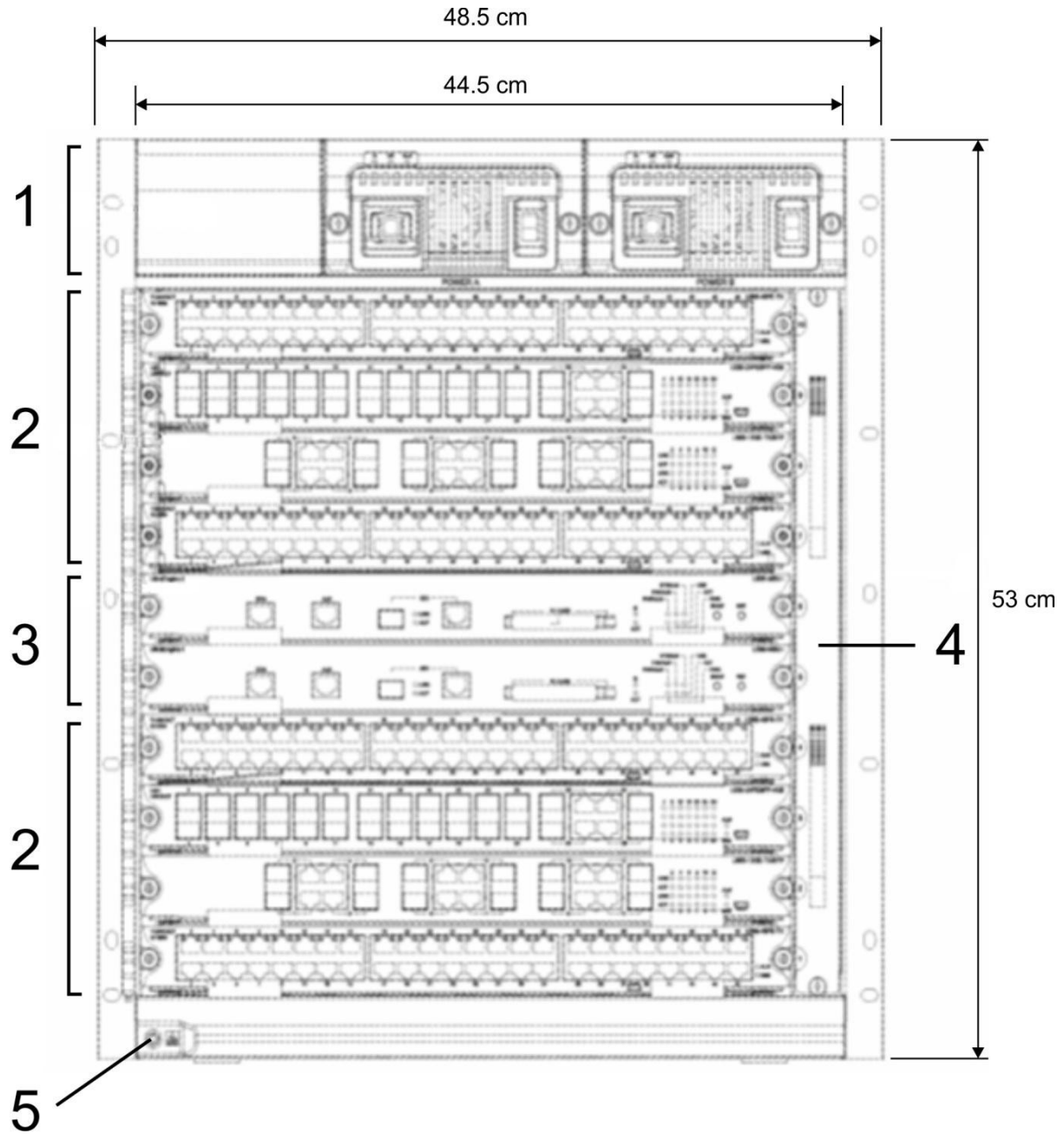
Do not allow ventilation holes/filters to become blocked.

Avoid installing the AE8000 in dusty locations, as this can also adversely affect the unit's reliability.

WARNING!

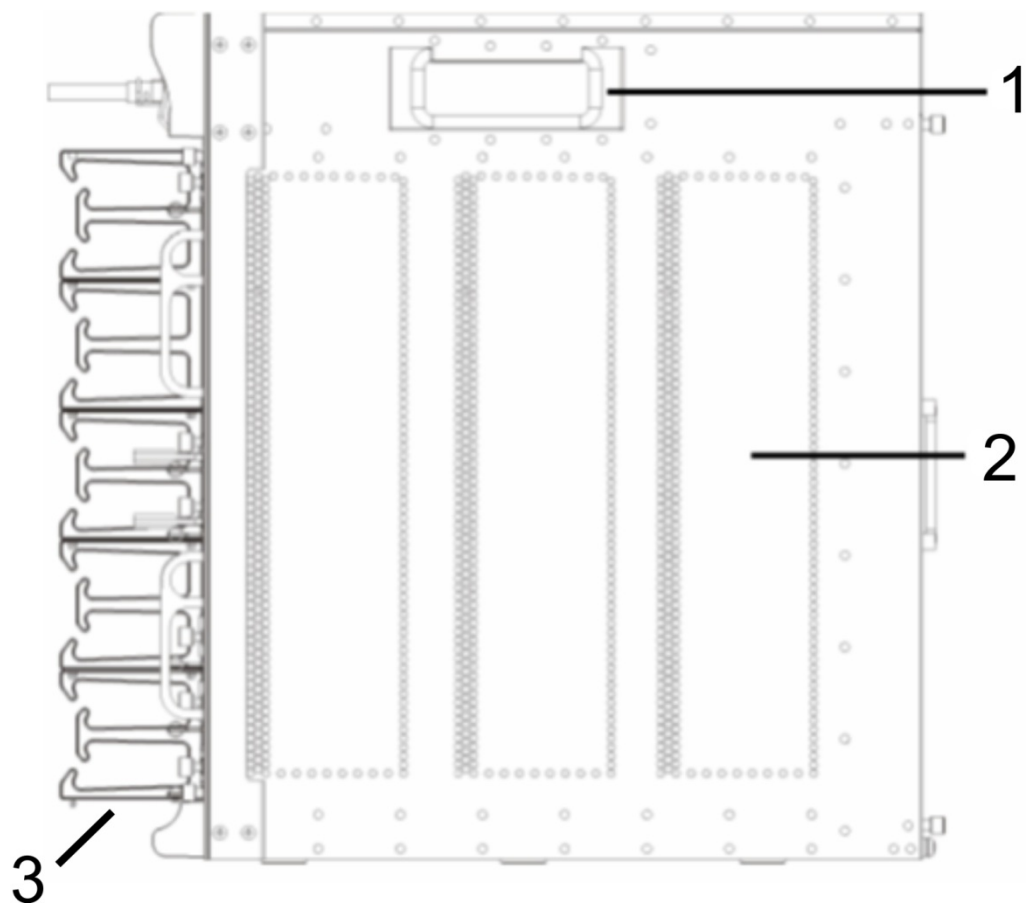
Do not install or operate the AE8000 unit outdoors.

3.4 Front View



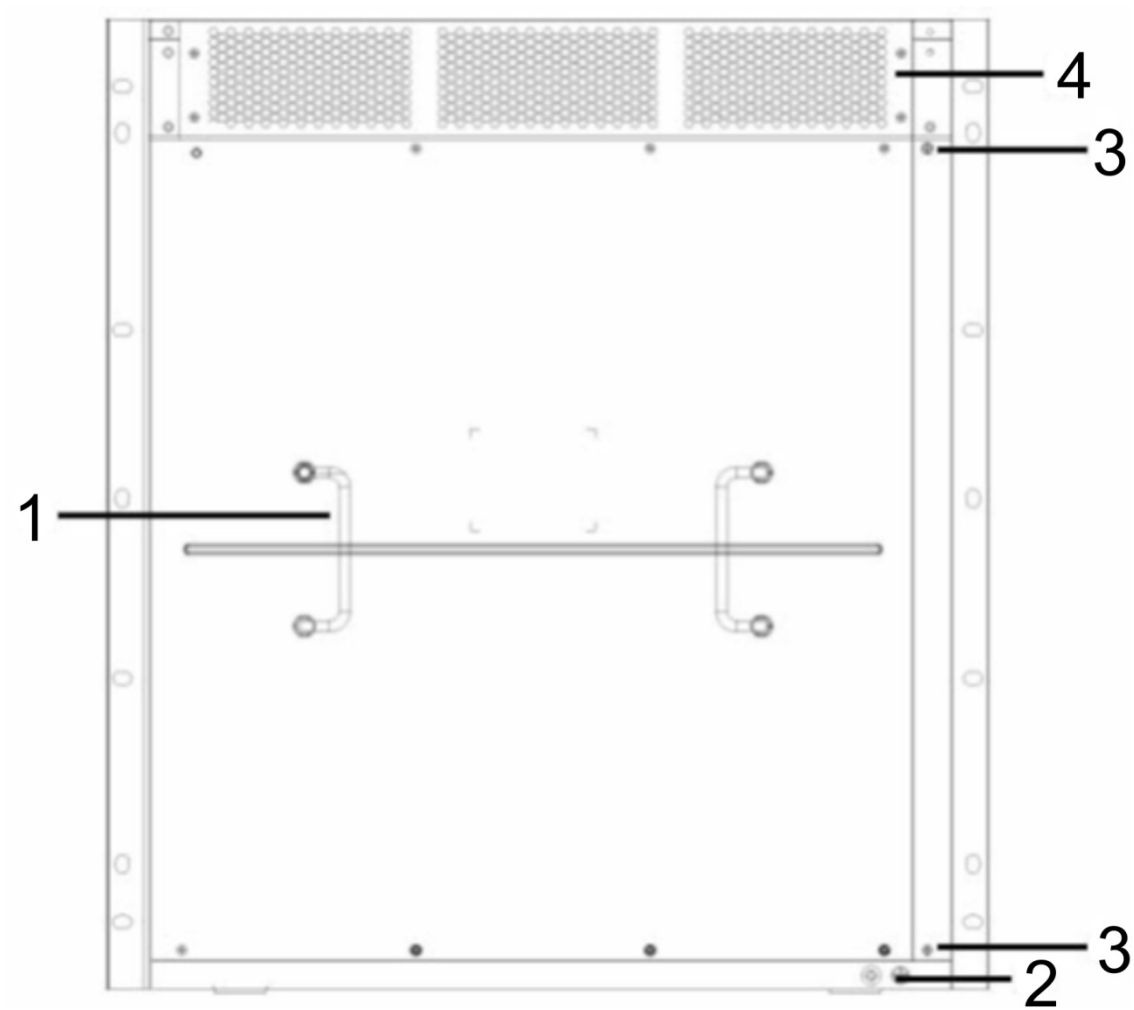
Label	Item	Description
1	Power source layer	The AC/DC power module can be installed on this layer.
2	Function cards	Different types of service boards can be installed on this layer; up to 8 line cards.
3	Control cards	Space for up to 2 control cards.
4	Fan module	Slot for a fan module.
5	ESD point	Electro Static Discharge grounding point

3.5 Side View



Label	Item	Description
1	Lifting handle	Used these handles when lifting the AE8000 unit.
2	Air inlet/outlet	Cold air enters the chassis on the left-hand side and hot air exits on the right-hand side.
3	Line clip	Used to fix the Ethernet line or optical fibre on the front port.

3.6 Rear View



Label	Item	Description
1	Handles	Used to install the chassis backplane.
2	Grounding column	Chassis grounding terminal.
3	Dust-filter handles	Handles for installing the dust filter over the chassis air inlet.
4	Air outlet	Air outlet for the fan-cooled power supply unit(s).

3.7 Chassis Installation

3.7.1 Cabinet Requirements

The AE8000 is designed to be installed in a standard 19-inch cabinet, which must be of good quality and robust construction due to the heavy weight of a fully-populated AE8000 chassis. Slide rails or a support tray in the cabinet are recommended.

The cabinet must be level and stable on its foundations, and must be located indoors in a non-dusty environment, with adequate clearance for ventilation and sufficient access for maintenance purposes.

Do not fit any of the separately supplied control or line cards etc. into the AE8000 at this stage.

Ensure that front and rear screw fixings are in the correct positions in the cabinet, relative to the mounting holes in the AE8000 chassis.

Two persons are required to lift the AE8000. Use the lifting handles provided.

Keep the AE8000 level whilst inserting it into the cabinet. Check for any obstructions that could prevent correct installation.

When the AE8000 is fully inserted into the cabinet, install the fixing screws and tighten securely.

3.7.2 Electrical Connections

Grounding Requirements

WARNING!

This equipment must be properly grounded.

Connect an adequately-sized local grounding cable to the chassis grounding terminal on the rear of the AE8000 chassis. Securely tighten the terminal fixing screw.


Connection to DC Power Supply

If the AE8000 is fitted with a DC power supply unit, proceed as follows.

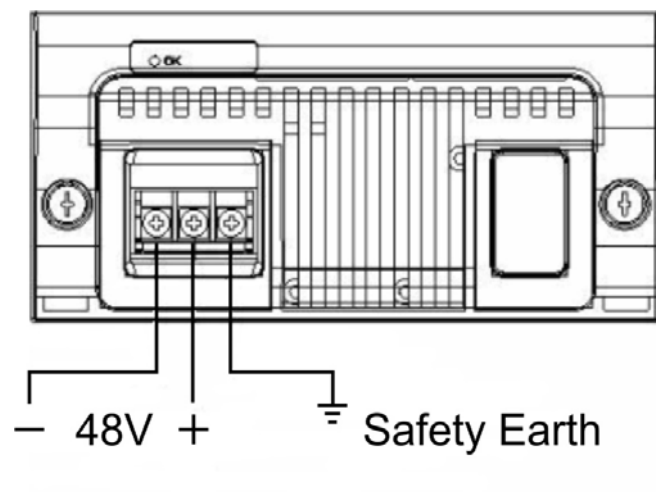
WARNING!

Ensure that the DC power source is turned OFF before continuing.

Check that the local DC power source is suitable for connection to the AE8000.

Connect the 48 Vdc (—), (+) and safety earth  to the DC power supply unit, as shown in the diagram below.

Observe colour-coding of cables and connection terminals.



Securely tighten all terminal fixing screws.

Connection to AC Power Supply

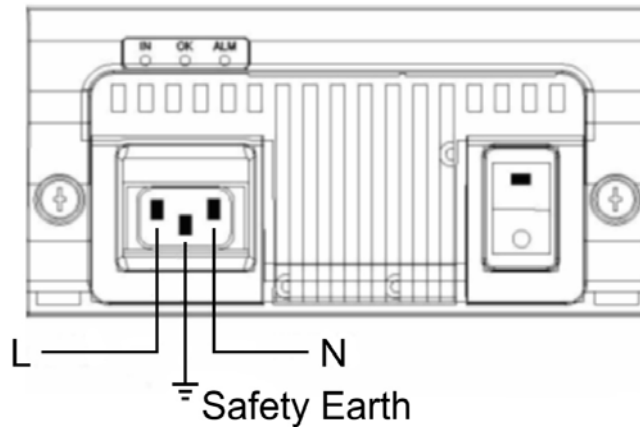
If the AE8000 is fitted with an AC power supply unit, proceed as follows.

WARNING!

Ensure that the AC power source is turned OFF before continuing.

Check that the local AC power source is suitable for connection to the AE8000.

Plug the power supply cord into the socket on the AC power supply unit, as shown in the diagram below.

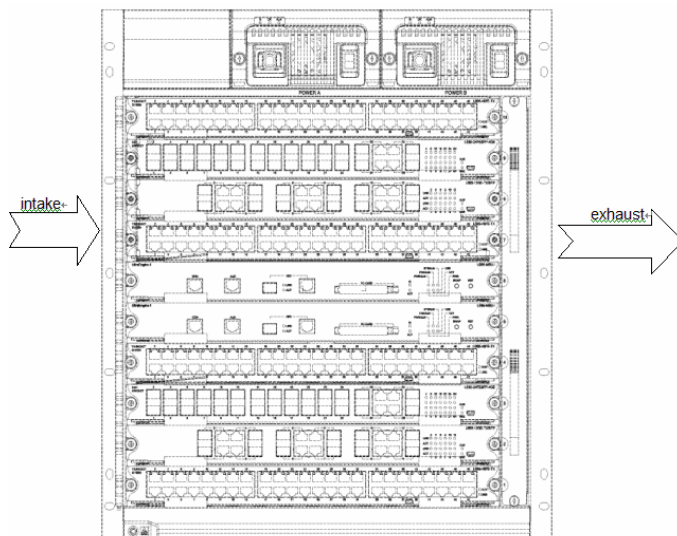


Connect the other end of the power supply cord to the local AC power socket, which should be initially switched **OFF**.

3.7.3 Air Flow and Cooling System

AE8000 operates in a working temperature between 0 and 40. The temperature of the device should be maintained within 50-80% of the highest temperature limit to guarantee the reliability, security and maintenance capability.

The device is equipped with the fan for air exhaust and mandatory air flow, ensuring the device to run normally in the regulated conditions. See figure below for the solution of the ventilation and cooling system.



3.8 Card Installation & Removal

3.8.1 General

The required cards for the chassis are supplied separately, and must be installed after the chassis has been correctly fitted into the cabinet.

All cards are installed and removed in a similar manner. However, ensure that you observe the following precautions:

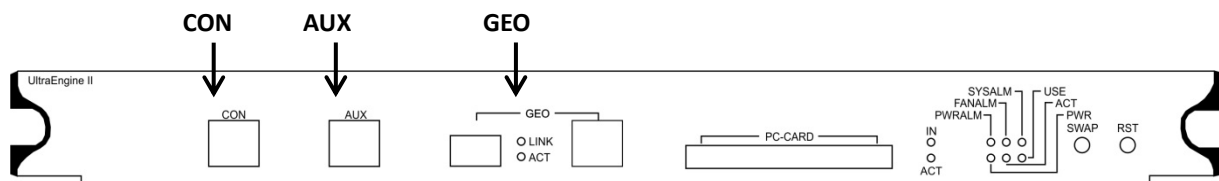
- Always wear a grounded anti-static wrist strap when handling cards.
- Do not handle the edges of the PCB or touch electronic components.
- When installing a card, ensure that it engages correctly with the backplane before fitting retaining screws. Do not over-tighten these screws.
- When connecting optical-fibre cables, ensure that you correctly identify single-mode and multi-mode types, and use the corresponding plug-in interfaces.
- Do not pack optical-fibre cables too tightly, and do not bend the cables excessively.
- Before attempting to remove a card, ensure that all cables are disconnected and that the two retaining screws have been removed.

Note:

Slots 5 and 6 in the AE8000 chassis are reserved for the Switching & Control Cards AE80-SC-192 or AE80-SC-384.

3.8.2 Switching & Control Card AE80-SC-[192 | 384]

This card is used for state control, route management, user-access control and network maintenance. The switching capacity is either 192 Gbps or 384 Gbps.



Connect the RJ45 end of the Ethernet cable to the CON serial interface of the card and then connect the other end of the Ethernet cable to the network manager device or the terminal control device.

The AUX serial interface (RS-232 protocol via RJ45) is used to connect the modem and the remote terminal computer through PSTN for systematic debugging, configuration, maintenance, management and software download.

The GEO port has an RJ45 and an SFP interface, the latter having priority if both are connected. It is used to connect a remote computer for program downloading. The GEO port can also be used to connect to a remote network manager workstation.

The PC-CARD interface is used to increase the amount of memory available to the main control board.

Front-panel LEDs

Label	Description
PWR	Green ON - the card is powered normally. Green OFF - the card is not powered.
USE	Green ON - the card is working normally (in active mode). Green OFF - the card is in standby mode and can be swapped out.
ACT	Green ON - the card is in main control state. Green OFF - the card is not in main control state.
PWRALM	Red ON - there is a fault in the system power supply. Red OFF - the system power supply is normal.
FANALM	Red ON - there is a fault on the system fan. Red OFF - the system fan is running normally.
SYSALM	Red ON - there is a system fault. Red OFF - the system is running normally.
IN	Green ON - a memory card is inserted in the PC-CARD slot. Green OFF - no memory card is present.
ACT	Green BLINKING - a memory card read/write operation is in progress. Green OFF - no memory card read/write operation is in progress.
LINK	Green ON - the 1000 Mbit/s GEO port has established a link. Green OFF - no link is established.
ACT	Green ON - the 1000 Mbit/s GEO port has data activity. Green OFF - the 1000 Mbit/s GEO port has no data activity.

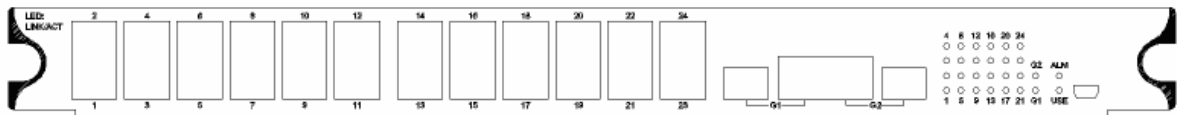
Front-panel keys

Label	Description
RST	Reset key for card.
SWAP	When two Switching & Control cards are installed, this changes the current active card to standby mode (USE LED OFF), and the current standby card to active mode (USE LED ON). The card that is currently in standby mode can then be removed for maintenance or replacement purposes.

3.8.3 Line Card AE80-24FE-SFP-2GE

This card provides 24 x 100 Mbps Ethernet optical interfaces (SFP) and two combo 1000 Mbps optical/electrical interfaces (RJ45 or SFP, latter has priority if both are connected).

There is also a serial interface for debugging purposes (not open to user).



It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

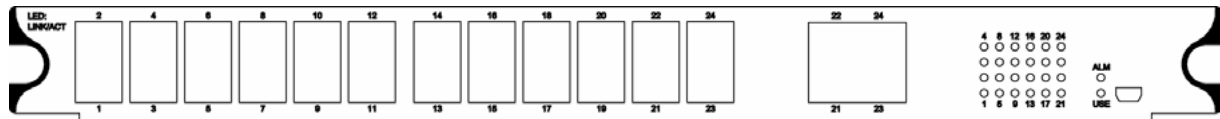
Front-panel LEDs

Label	Description
LINK/ACT	One LED for each port, numbered 1-24 and G1-G4. Green ON - the port and peer device are connected correctly, and the port is in LINK UP mode. Green OFF - the port is in LINK DOWN mode. Green BLINKING - the port is receiving/transmitting data.
ALM	Red ON - there is a card fault. Red OFF - the card is working normally.
USE	Green ON - the card is working normally. Green OFF - the card is not in use.

3.8.4 Line Card AE80-24GE-SFP

This card provides 20 x 1000 Mbps Ethernet optical interfaces (SFP) and four combo 1000 Mbps optical/electrical interfaces (RJ45 or SFP, latter has priority if both are connected).

There is also a serial interface for debugging purposes (not open to user).



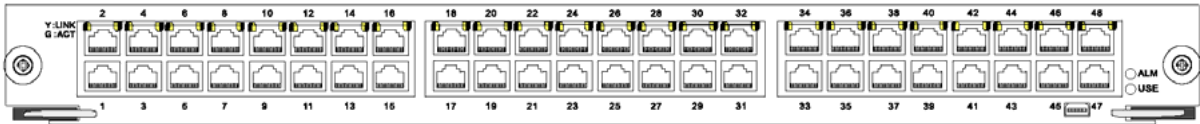
It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

Front-panel LEDs

Label	Description
LINK/ACT	One LED for each port, numbered 1-24. Green ON - the port and peer device are connected correctly, and the port is in LINK UP mode. Green OFF - the port is in LINK DOWN mode. Green BLINKING - the port is receiving/transmitting data.
ALM	Red ON - there is a card fault. Red OFF - the card is working normally.
USE	Green ON - the card is working normally. Green OFF - the card is not in use.

3.8.5 Line Card AE80-48GE-TX

This card provides 48 x 10/100/1000 Mbps Ethernet electrical interfaces (RJ45). There is also a serial interface for debugging purposes (not open to user).



It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

Front-panel LEDs

Label	Description
LINK (yellow)	One pair of LEDs above each even-numbered port, 2-48. Yellow ON - the port and peer device are connected correctly, and the port is in LINK UP mode. Yellow OFF - the port is in LINK DOWN mode.
ACT (green)	Green BLINKING - the port is receiving/transmitting data. Green OFF - no data is being received or transmitted.
ALM	Red ON - there is a card fault. Red OFF - the card is working normally.
USE	Green ON - the card is working normally. Green OFF - the card is not in use.

3.8.6 Line Card AE80-1TE-XFP

This card provides 1 x 10000 Mbps XFP optical interface.

There is also a serial interface for debugging purposes (not open to user).



It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

Front-panel LEDs

Label	Description
LINK-EN	Green ON - the port is available for use. Green OFF - the port is shut down, and is not available for use.
LINK	Green ON - the port and peer device are connected correctly, and the port is in LINK UP mode. Green OFF - the port is in LINK DOWN mode.
RX	Green ON - the port is currently receiving data. Green OFF - no data is being received.
TX	Green ON - the port is currently transmitting data. Green OFF - no data is being transmitted.
ALM	Red ON - there is a card fault. Red OFF - the card is working normally.
USE	Green ON - the card is working normally. Green OFF - the card is not in use.

3.8.7 Line Card AE80-2TE-XFP

This card provides 2 x 10000 Mbps XFP optical interfaces.

There is also a serial interface for debugging purposes (not open to user).



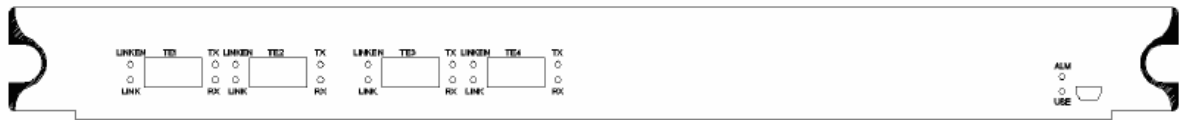
It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

Front-panel LEDs

Label	Description
LINK-EN	Green ON - the port is available for use.
	Green OFF - the port is shut down, and is not available for use.
LINK	Green ON - the port and peer device are connected correctly, and the port is in LINK UP mode.
	Green OFF - the port is in LINK DOWN mode.
RX	Green ON - the port is currently receiving data.
	Green OFF - no data is being received.
TX	Green ON - the port is currently transmitting data.
	Green OFF - no data is being transmitted.
ALM	Red ON - there is a card fault.
	Red OFF - the card is working normally.
USE	Green ON - the card is working normally.
	Green OFF - the card is not in use.

3.8.8 Line Card AE80-4TE-XFP

This card provides 4 x 10000 Mbps XFP optical interfaces.
There is also a serial interface for debugging purposes (not open to user).



It enables L2/L3 wire-speed switchover and routing and connects the core layer or the access-layer device, allowing port QoS or user QoS.

Front-panel LEDs

Label	Description
LINK-EN	Green ON - the port is available for use. Green OFF - the port is shut down, and is not available for use.
LINK	Green ON - the port and peer device are connected correctly, and the port is in LINK UP mode. Green OFF - the port is in LINK DOWN mode.
RX	Green ON - the port is currently receiving data. Green OFF - no data is being received.
TX	Green ON - the port is currently transmitting data. Green OFF - no data is being transmitted.
ALM	Red ON - there is a card fault. Red OFF - the card is working normally.
USE	Green ON - the card is working normally. Green OFF - the card is not in use.

3.9 Final Checks

Before switching on the power supply to the AE8000, check that:

- All required cards are correctly installed.
- All optical-fibre and Ethernet cables are properly connected.
- All grounding and power-supply cables are properly connected.
- All cables are bundled neatly, without excessive bending.
- All fixing screws are securely tightened.
- All surplus packaging/installation debris has been removed from the cabinet and surrounding area.

3.10 Switching On

1. Switch on the AC and/or DC power supplies to the AE8000 chassis.
2. Ensure all power switches are in the **ON** position.
3. Check that the green power **OK** indicators on all power supply units are illuminated.
4. Check that the green **PWR** indicators on all switching & control cards are illuminated.
5. If two switching & control cards are fitted, one should be in active mode (green **USE** indicator illuminated), and the other in standby mode (green **USE** indicator **OFF**).
6. Check that the green **USE** indicators on all line cards are illuminated.
7. Check that no red **ALM** indicators are illuminated on any cards.

4 First Time Configuration

1. Follow all installation steps and power the chassis as previously described.
2. Locate the included console cable (RJ45 to DB9) and connect it to the SCC line card "CON" port.
3. Connect the Serial interface (BD9) to a PC or Server and launch a terminal program such as HyperTerminal.
4. Use the standard HyperTerminal login details to access the PC or server COM port to which the console cable is connected.

9600 bits per second; 8 data bits; no parity; 1 stop bit; no flow control.



5. Initialise the connection; the following screen should be displayed.



6. Enter the following commands into the interface in order to enable Web access on slot 7 port 1 by browsing to <http://192.168.25.168:80/>

For Unsecure Web login (no Username and Password)

```
Switch> enable
Switch# config
Switch_config# Switch_config#
ip http server
Switch_config# ip http port 80

Switch_config# aaa authentication login default none
Switch_config# aaa authentication enable default none

Switch_config# interface
Switch_config# interface gigaEthernet 7/24
Switch_config_g7/24# no shut
Switch_config_g7/24# exit

Switch_config# interface vlan 1
Switch_config_v1# ip address 192.168.25.168 255.255.255.0
Switch_config_v1# no ip directed-broadcast
Switch_config_v1# exit
```

For Secure Web login (with Username and Password)

```
Switch> enable
Switch# config
Switch_config# Switch_config#
ip http server
Switch_config# ip http port 80

Switch_config# aaa authentication login default local
Switch_config# aaa authentication enable default enable
Switch_config# username test password 0 admin
Switch_config# enable password 0 admin level 15

Switch_config# interface
Switch_config# interface gigaEthernet 7/24
Switch_config_g7/24# no shut
Switch_config_g7/24# exit

Switch_config# interface vlan 1
Switch_config_v1# ip address 192.168.25.168 255.255.255.0
Switch_config_v1# no ip directed-broadcast
Switch_config_v1# exit
```

7. Access <http://192.168.25.168:80/> in a Web Browser

Note:

Access will require a valid username and password, as defined by:

```
Switch_config# username test password 0 admin
```

```
Switch_config# enable password 0 admin level 15
```

```
user; admin
```

```
pass; admin
```

5 Basic Interface Commands

5.1 Getting Help

By using a question mark (?) or the direction keys, you can obtain the associated information for any command:

Input a question mark to list all commands available for the current command mode:

For example: **Switch>?**

Input some known character and then a question mark (without Space) to obtain a list of applicable commands beginning with that character, in the current command mode.

For example: **Switch> s?**

Input a command, then a space and a question mark to obtain the command parameters list.

For example: **Switch> show ?**

You can use the Up Arrow key to see the command you previously inputted. You can continue to press the Up Arrow key to see more past commands that you've inputted. Press the Down Arrow key after pressing Up Arrow key to see the command following the current one.

5.2 Command Mode

The Command-Line Interface has many different modes. You can use different command modes to configure different components of the switch. The commands available to you depend on which mode you are in. You can get an applicable commands list in a given mode when input a question mark (?).

The following table lists frequently used command modes:

Command Mode	How to Access	Interface Prompt	How to exit
System Supervision Mode	Type " Ctrl-p " after power on	monitor#	Type quit
User Mode	Log in	Switch>	Type exit or quit
Administration Mode	Type the input command or enable command in User mode	Switch#	Type exit or quit
Global Configuraton Mode	Type the config command in Administration Mode	Switch_config#	Type exit or quit or use Ctrl-Z to return to Administration Mode.
Interface Configuration Mode	Type the interface command in global Configuration Mode, e.g. interface f0/1	Switch_config_f0/1#	Type exit or quit or use Ctrl-Z to return to Administration Mode.

Only a limited subset of the commands is available in each command mode. If you have trouble in inputting a command, check the interface prompt and input the question mark (?) for a list of available commands. You might be in the wrong command mode or using an incorrect syntax.

In the following example, the change of system prompt indicates the change of command mode:

```
Switch> enter
Password: <enter password>
Switch# config
Switch_config# interface
f0/1
Switch_config_f0/1#
quit Switch_config#
quit Switch#
```

5.3 Cancelling a Command

If you want to cancel a command or revert back to the default setting, just add the keyword **no** before the command. For example, **no ip routing**, is the cancellation of the **ip routing** command.

5.4 Saving the Configuration

You may need to save the configuration changes, so that you can recover the original configuration in case of a system restart or a power cut. You can use the **write** command to save the configuration in Administration Mode or Global Configuration Mode.

Note:

For detailed information on the extensive scope of the AE8000 CLI, refer to the separately supplied ACT AE8000 Command User Guide.

6 Switching and Routing Features

IEEE Standard	IEEE 802.1D IEEE 802.3 IEEE 802.3u IEEE802.3ad IEEE802.3x IEEE 802.3z IEEE802.1Q IEEE 802.1p IEEE 802.1w IEEE 802.1x
Access control	Subscriber port filters by MAC, VLAN, IP
AAA (Authentication, Authorization, Accounting)	Radius, TACACS+, IEEE802.1x
VLAN	Supported for port-based VLAN, pass-through VLAN, GVRP, Super VLAN Stacking (QinQ)
Quality of Service	IEEE802.1p, ToS, Application port control, DiffServ, WRR, SP, SWRR
Link aggregation	Similar ports can be aggregated into one logical link with LACP
Routing protocols	RIP, OSPF, BGP, NAT
DHCP	Integrated DHCP server, Supports Client, Relay, Server
Multicast routing	IGMP V1/2/3, PIM-DM, PIM-SM, IGMP snooping
STP	802.1D (STP), 802.1w (RSTP), 802.1s (MSTP)
MPLS	Support Multiprotocol Label Switching, MPLS VPN, MPLS TE
IPv6	Supported
ACL	Standard and Extended ACL, support IP based, Source/destination IP, L3 IP protocol, TCP/UDP port, IP priority, and time ranger ACL
MAC Control	Supports port/MAC binding, MAC ACL
Flow Control	HOL blocking prevention, Half-duplex: Back pressure Full-duplex: IEEE 802.3x
ARP	Supported
Port Aggregation	Supports 802.3ad, loading balance
Customer Access	Supports 802.1x
Port Mirroring	Supported
Broadcast Control	Supported
Security	Supports MSU redundancy, hot swapped, VRRP
Console Interface	CLI, Web
Console Port	RS-232
Telnet	Supported
SNMP (MIB)	v1 / v2 / v3
SysLog	Supported
RMON	1, 2, 3, 9

7 Product Warranty

Ascent Communication Technology warrants its equipment to be free of manufacturing defects in material and workmanship for a period of one year from date of shipment, provided it is installed and operated in accordance with factory recommendations.

The liability of Ascent Communication Technology under this warranty is solely limited to repairing; replacing or issuing credit provided that:

1. Ascent Communication Technology' support desk is promptly notified in writing or by telephone that a failure or defect has occurred.
2. A return authorisation number is obtained from Ascent Communication Technology' helpdesk and clearly marked on the outside of the shipping container and all documents.
3. Customer is responsible for all shipping and handling charges. C.O.D. and freight collect will not be accepted without prior approval from Ascent Communication Technology' helpdesk.
4. The equipment (in ACT's sole discretion) has not been abused, misused or operated under conditions outside manufacturer's specifications.

The warranty does not cover the following:

1. Products purchased from someone other than an authorised Ascent Communication Technology distributor.
2. Damage caused by accident, negligence, misuse, abuse, improper operation or failure to operate the equipment within the manufacturer's specifications.
3. Damage caused by fluctuation in electrical current, lightning, power surges, etc.
4. Damage resulting from overhaul, repair or attempt to repair caused by someone other than Ascent Communication Technology' qualified service personnel.
5. Any product, in which the serial number has been defaced, modified or removed.
6. Any product that has been opened or modified without prior written permission from ACT.
7. Replacement of parts necessitated by normal wear and tear.
8. Any consequential or implied damages.
9. Ascent Communication Technology will not be liable for DFB Laser failure after 90 days from receipt of item. Any claim for DFB Lasers will be presented to the laser vendor for replacement. Ascent Communication Technology will make every effort to replace faulty lasers although ultimate judgement is at the laser vendor's discretion. Ascent Communication Technology will provide all labour costs associated with the replacement of the laser within the one-year warranty period.

8 Declaration of Conformity

According to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Ascent Communication Technology
Manufacturer's Address:	8-10 Keith Campbell Court, Scoresby, Victoria 3179, Australia
Declares, that the product	AE8000 -
Product Name:	Advanced Optical Communications Mainframe
Conforms to the following standards:	
Safety:	EN 80083-1, EN 60950, IEC 950, AS/NZS 3260:1993, EN-60825-1, IEC 825-1, AS/NZS 2211.1 Laser Safety
EMC:	EN 50083-2, EN-55022:1994, IEC/CISPR 22:1993, AS/NZS CISPR 22:2006
CATV/HFC:	EN-50083

Supplementary Information:

CE

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

The product herewith complies with the requirements of the following directives and carries the CE-marking accordingly:

- The EMC Directive 89/336/EEC
- The Low Voltage Directive 73/23/EEC

The product was tested in a typical configuration with Ascent Communication Technology.

FCC WARNING

This equipment has been tested and found to comply with the limits for class A device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates uses and can radiate radio frequency and, if not installed in and used in accordance with the instructions, may cause harmful interference to radio communication. 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 the user's own expense.



ROHS Compliance

Parts	Toxic or harmful substances or elements					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Chasis	O	O	O	O	O	O
Rack	O	O	O	O	O	O
Baseboard	O	O	O	O	O	O
Module	O	O	O	O	O	O
Interface Card	O	O	O	O	O	O

O: The toxic or harmful substances' levels in each homogeneous materials of each part, are under the limitation of SJ/T 11363—2006 regulation.

X: The toxic or harmful substances' levels at least in one homogeneous materials of one part, exceed the limitation of SJ/T 11363—2006 regulation





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Specifications and product availability are subject to change without notice.

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