DAS3 Series IP-DSLAM

System Installation Guide

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DAS3 Series IP-DSLAM
System Installation Guide
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Chapter 1 Preface

This preface discusses the following topic:

- Purpose
- Organization
- Conventions

Purpose

The purpose of this guide is to provide detailed information and description of DAS3 Series IP-DSLAM, which includes both software and hardware architecture and other specific features.

Organization

This guide contains the following information:

- Preface
- Product Overview
- Preparing for Installation
- Installing the DAS3 Series
- System Specifications
- Hardware Specification
- Software Specification
- System Connector Pin-Outs

Conventions

This section describes the conventions used in this guide.

This sign indicates the **NOTICE**. A note contains helpful suggestions or reference relay on the topical subjects.

This sign indicates the **TIP**. Performing the information described in the paragraph will help you solve a problem. The tip information might not be troubleshooting or even an action, but could be useful information.

This sign indicates the **CAUTION**. In this situation, you might do something that could result in equipment damage or loss of data.

This sign indicates the DANGER. You are in situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

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Chapter 2 Product Overview

This chapter provides an overview of the DAS3 Series IP-DSALM (Digital Subscriber line Access Multiplexer) and the service application overview. This chapter contains the following sections:

- Introduction to the DAS3 Series
- DAS3 Series System Overview
- Alarm I/O Module
- System Management

Introduction to the DAS3 Series

DAS3 Series IP-DSLAM is a revolutionary product with capabilities to interface directly with evolving IP network in a cost effective manner. The Gigabit Ethernet Network uplink interfaces on the DAS3 Series IP-DSLAM can directly connect to an Internet router or LAN Switch.

The DAS3 Series comes in compact size (1.2U high) and can be used as desktop unit or can be mounted on the rack. It can be fitted on rack with 19 inches in width and 23 inches in depth through the optional rack mount-kit.

The DAS3 Series is an advanced IP based DSLAM that can be used by service providers to offer broadband multi-service features on the last mile access network on copper based local loop, it offers ADSL, ADSL2, and ADSL2+ interfaces and delivers advanced IP services that include QoS, multicast, subscriber management. These service features prevent clogging and congestion of the bandwidth available to the users allowing smooth, easy and efficient passage of video, voice and data packets across the networks, which also enables operators to increase their revenues and maximize their profits manifold.

The feature rich design make DAS3 Series the most economical and suitable solution for next generation broadband access platforms. It provides among other advantages easy maintenance and easy installation, which in turn reduces operating cost and network down time to the service providers.

The DAS3 Series has 24/48 ADSL Subscriber ports and Network uplink interfaces consists of 2 pairs of Gigabit Ethernet and mini-GBIC. Using various uplink settings, it is possible to stack the DAS3 Series units and aggregate multiple units over a common network connection.

Features

DAS3 Series IP-DSLAM is designed to meet with industry standards in functionality, performance, and reliability. As a compact IP-DSLAM platform, DAS3 Series can provide ADSL service for 24/48 users over existing PSTN telephone wiring. More detailed features are listed below:

Hardware Features:

- Pizza box type supports 24/48 ADSL ports and build-in POTS splitter equipped available
- Cost effective access solution for always on high-speed Internet service application
- Existing twisted pair telephone line via POTS splitter/Low-Pass-Filter, it means ADSL and telephone services can be provided concurrently
- Support service capacity expansion via units stacking
- Two pair of 10/100/1000 Ethernet and mini-GBIC uplink Network uplink interfaces
- Support non-blocking switching fabric and Wire-speed switching capability
- Alarm input IO

Software Features:

- Local system configuration and management through RS-232 console
- Remote system configuration and management using Telnet or Web-browser
- Embedded SNMP v1, v2c management agent with standard MIB-II
- Support TFTP/HTTP firmware upgrade
- Support Subscriber traffic isolation among ADSL line ports
- Support RFC 2684 multi-protocol over AAL5
- Support RFC 2516 PPPoE packet forwarding
- Support QoS for IEEE 802.1p priority queues
- Support Subscriber rate limiting
- Support IEEE 802.1Q VLAN tagging
- Support IEEE 802.1ad VLAN stacking and VLAN translation
- Manually configurable mapping between VLAN tag and ATM PVC
- Support IEEE 802.1D/w spanning tree bridging between Network uplink interface
- Support IGMP snooping and GMRP
- Support OAM F5 fault diagnostic
- Support MAC address access control
- Support IP packet filtering
- Support IEEE 802.3ad link aggregation on Network uplink interface

Field Applications

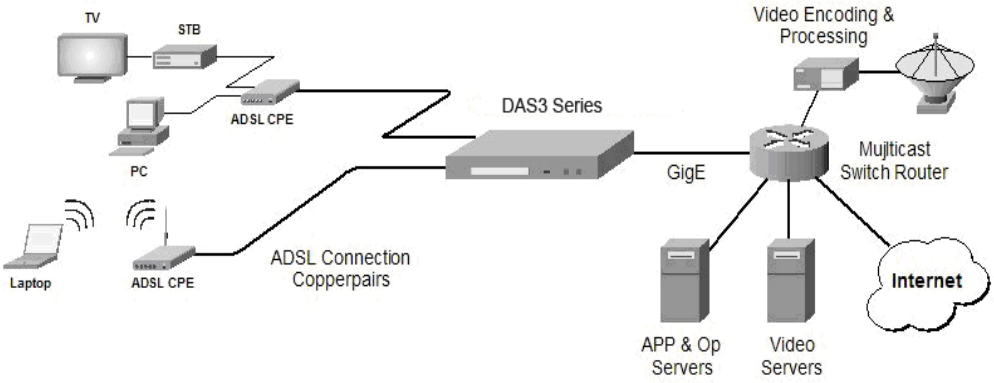
This section contains the most popular application scenarios for DAS3 Series IP-DSLAM, and helps operator to understand how to implement and service with it.

Internet Service

With the ADSL CPE connecting to DAS3 Series, IP traffic will be managed and monitored to ensure the connection quality.

DAS3 Series IP-DSLAM has ability to transport traffic with a variety of protocols from ADSL CPE or end user PC to service applications such as PPPoE (RFC 2516), RFC 2684 Bridge, and L2TP, L2F, PPTP, IP-Sec. tunneling.

Figure 2-1 Internet Service Illustrate



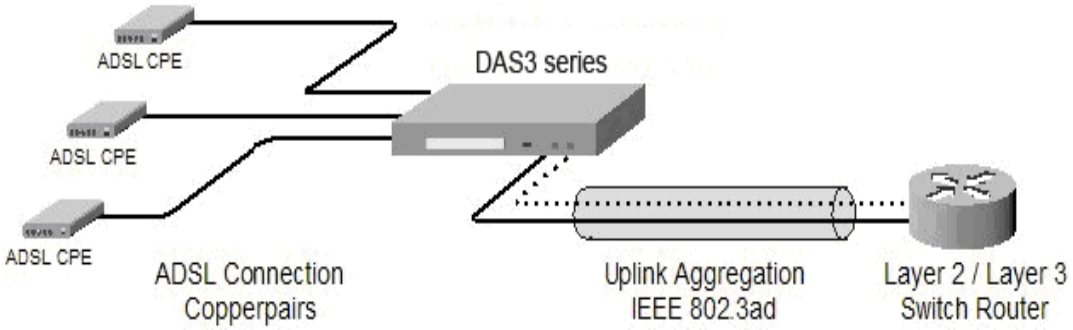
Service Applications

This section describes various usages of DAS3 Series IP-DSLAM.

Uplink Aggregation

The DAS3 Series supports Network uplink aggregation complied in IEEE 802.3ad standard, this allow operator to configure both of DAS3 Series GE uplink interfaces in a single logical interface to extending the bandwidth transmission.

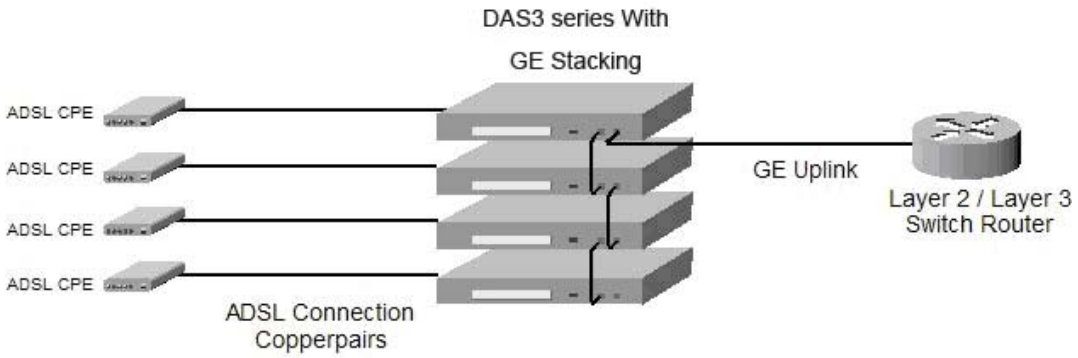
Figure 2-2 DAS3 Series Link Aggregation Illustrate



Stacking Application

The DAS3 Series supports stacking via GE uplink interface; all units will share a single source.

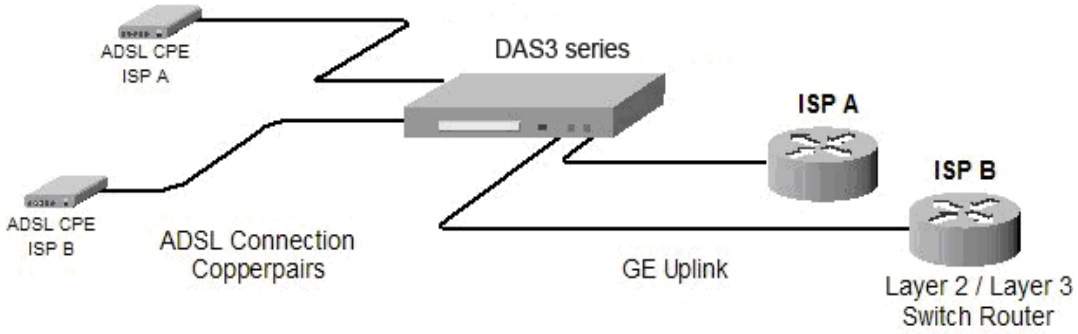
Figure 2-3 DAS3 Series Stacking Illustrate



Service Provider Demarcation

The DAS3 Series has ability to separate the traffics where it belongs by assigning different VLAN ID; the GE uplink of DAS3 Series could be operated as individual interface of another.

Figure 2-4 DAS3 Series Service Provider Demarcation Illustrate



DAS3 Series System Overview

DAS3 Series IP-DSLAM is built in 1.96 inch (1.2 U) high, 10.2 inch (26 cm) deep of DAS3 DC series (or 12.6 inches (32 cm) deep of DAS3 AC series) and 17.7 inch wide (23 inch bracket available) compact design. Pluggable build-in splitter is optional.

Front View

The Figure 2-5 ~ 2-8 shows the front panel of the DAS3 Series IP-DSLAM.

Figure 2-5 DAS3248DC Front Panel

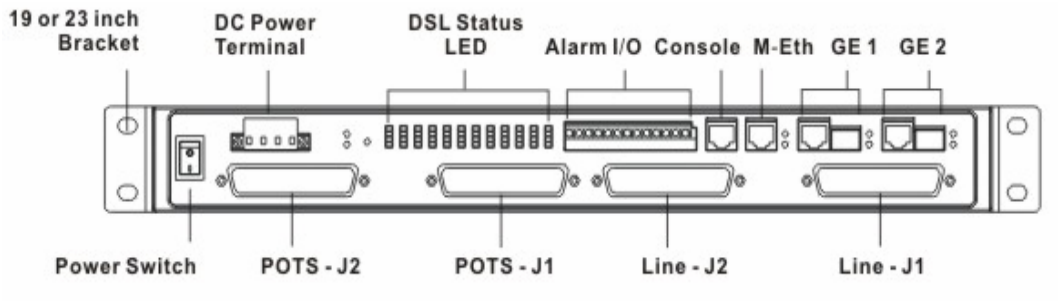


Figure 2-6 DAS3224DC Front Panel

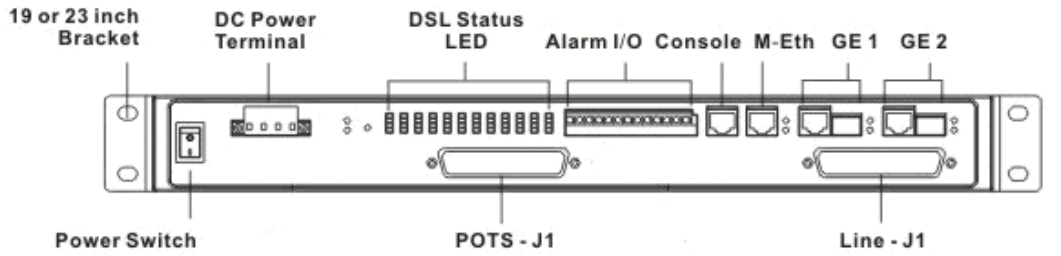


Figure 2-7 DAS3248 Front Panel

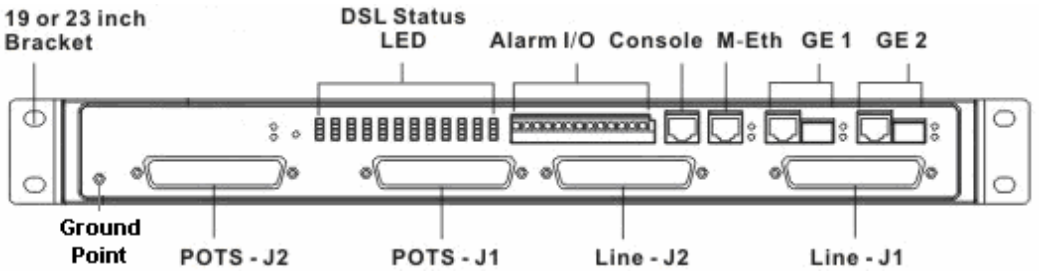
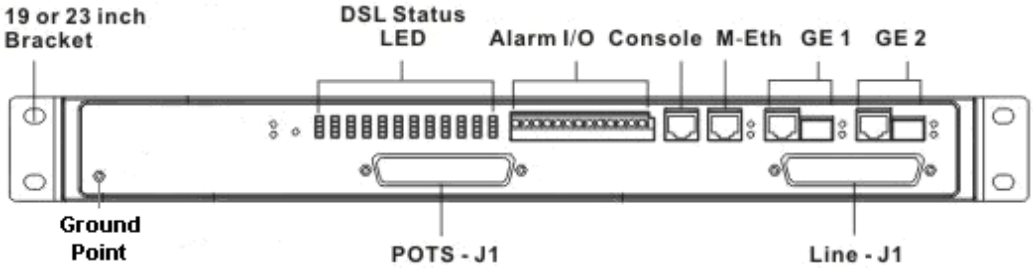


Figure 2-8 DAS3224 Front Panel



The **錯誤! 找不到參照來源。** shows the LED status of the DAS3 Series IP-DSLAM.

The Table 2-2 shows the front panel connector description of the DAS3 Series IP-DSLAM.

Table 2-1 DAS3 Series Front Panel LED Status

LED	State	Function
Power LED		
Power	Green solid	System power normal
	Off	Card fault
ALarm LED		
Alarm	Red on	Fan alarm or temperature alarm
	Orange	There is alarm happened from alarm input ports
DSL Status LED (port 1 ~ port 48)		
1 ~ 48	Green slow blinking	ADLS port enable
	Green fast blinking	Training with CPE
	Green solid per port	The ADSL link is currently connect
Eth-1/Eth-2		
Upper LED	Orange Solid on	Ethernet interface is activate
Lower LED	Green Solid on	Fiber interface is inactivate
	Green Solid on	Interface is link

Table 2-2 DAS3 Series Front Panel Connector

Connector	Descriptions
GE1/GE2	10/100/1000 Ethernet interface or mini-GBIC optical interface.
Magagement	Management Ethernet interface to provide out-band management.
Console	RJ-45 serial interface to provide command line environment.
Alarm I/O	Provide external or internal operation alarm.
Line – J1	The 1 ~ 24 ADSL port connect to subscriber line
Line – J2	The 25 ~ 48 ADSL port connect to subscriber line
Phone – J1	The 1 ~ 24 voice port connect to PSTN
Phone – J2	The 25 ~ 48 voice port connect to PSTN

Rear View

The Figure 2-9, Figure 2-10 shows the rear panel of the DAS3 Series IP-DSLAM.

Figure 2-9 DAS3 DC Series Rear View

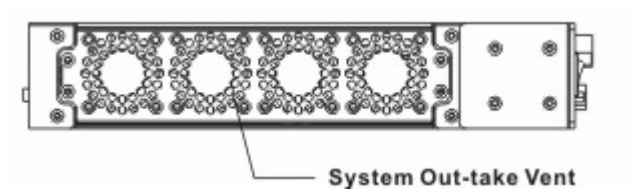
Figure 2-10 DAS3 AC Series Rear View

The equipment has provision for a permanently connected Protective Earthing Conductor.

Side View

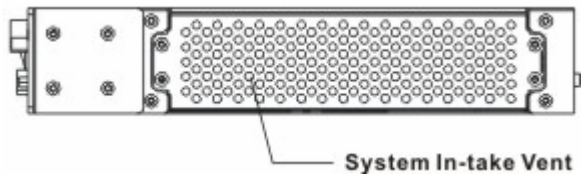
The Figure 2-11 shows the Left-hand Side view of the DAS3 Series IP-DSLAM.

Figure 2-11 Left-hand Side View



The Figure 2-12 shows the Right-hand Side view of the DAS3 Series IP-DSLAM.

Figure 2-12 Right-hand Side View



Alarm I/O Module

The Alarm I/O Module contains alarm I/O relay.

Table 2-3 Alarm I/O Relay Pin Description

Digital I/O Pin	Description
Output Pin (for alarm output receptacle)	
CO	Common pin
NO	Circuit with normal open pin
NC	Circuit with normal close pin
Input Pin (for alarm input relay)	
1 (+), 2 (-)	First pair of input signal terminal
3 (+), 4 (-)	Second pair of input signal terminal
5 (+), 6 (-)	Third pair of input signal terminal
7 (+), 8 (-)	Fourth pair of input signal terminal

System Management

Operator can provision and manage the DAS3 Series IP-DSALM through the following system management mode:

CLI Ex – Command line management with a local console or Telnet through in-band or out-band IP interface for CIT (Craft Interface Terminal) connection.

Local Management

The DAS3 Series provide Ethernet interface for **CLI Ex** connection at local maintenance and operation. An RJ-45 to DB-9 can be used to connect DAS3 Series to PC via serial port.

IP Network Management

AMS –The DAS3 Series network interfaces supports out-band management, the M-Eth interface associates with SNMP (Simple Network Management Protocol) v1, and v2c as SNMP agent to communicate with remote inquires, all management activities can be performed by SNMP operations.

Web-management –Providing control for specific device in the network using HTTP protocol. It could be used the Microsoft Internet Explorer to remotely control DAS3 Series products. It provides GUI interface for host (PC) to establish point-to-point communication with remote device.

Out-band Management

The DAS3 Series provides out-band management through Management Ethernet interface with proper IP address to associate in the Layer 3 networks.

Chapter 3 Preparing for Installation

This chapter tells you how to prepare for the installation of the DAS3 Series IP-DSLAM. The chapter contains the following sections:

- Safety Requirements
- Site Requirements
- Tools and Equipment Required
- Unpacking the DAS3 Series System
- Verifying Contents
- Inspecting for Damage

Safety Requirements

This section describes safety requirement of DAS3 Series system. Before you install the DAS3 Series system, ensure that all the criteria in this section are met. The section describes the following safety requirements:

- Safety Guidelines
- Preventing Electrostatics Discharge Damage
- General Maintenance Guidelines

Safety Guidelines

Before working on the equipment, be aware of standard safety guidelines and the hazards that are involved in working it electrical circuitry to prevent accidents. Adhere to the following cautions and warnings and those throughout the guide for safe and hazard-free installation.

Only trained and qualified personnel should be allowed to install or replace this equipment.

Before removing the equipment, disconnect the telephone-network cables to avoid contact with telephone-network voltages.

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

Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

Read the power instructions before you connect the system to its power source.

For safety reason, the ground wire must connect to safety (earth) ground at supply side of the AC wiring; ensure that the host is connected to earth ground during the normal use.

To reduce the risk of electric shock when servicing any individual unit, disconnect the power cord or cords that connect the unit to the AC power strip or DC bus bar.

Two people are required to lift the box. Grasp the box underneath the lower edge and lift with both hands. To prevent injury, keep your back straight and lift with your legs, not your back.

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack

Ethernet cable must be shielded when used in a central office environment.

This unit is intended for installation in restricted access areas, A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key or other means of security, and is controlled by the authority responsible for the location.

To reduce the risk of fire, use only No. 36 AWG or larger telecommunication line cord.

Use copper conductors only.

Never touch un-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

Ultimate disposal of this product should be handled according to all national laws and regulations.

Do not use this product near water; for example, near bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

Do not use this product near water; for example, near bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

Never install telephone RJ-21 connector in wet locations unless the connector is specifically designed for wet locations.

Do not use a telephone to report a gas leak in the vicinity of the leak.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) is a transfer of electrostatic charge between bodies of different electrostatic potentials, such as an operator and a piece of electrical equipment. It occurs when electronic components are improperly handled, and it can damage equipment and impair electrical circuitry. Electrostatic discharge is more likely to occur with the combination of synthetic fibers and dry atmosphere.

Use an antistatic strap during removing and replacing DAS3 Series units.

Always use an ESD ankle or wrist strap and ensure that it makes good skin contact.

To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively.

Do not touch any exposed contact pins or connector shells of interface ports that do not have a cable attached. If cables are connected at one end only, do not touch the exposed pins at the unconnected end of the cable.

This equipment is intended for use in residential and commercial environments only.

Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

General Maintenance Guidelines

The following maintenance guidelines apply to DAS3 Series system units:

Keep the DAS3 Series box area clear and dust-free during and after installation.

If you remove the chassis cover for any reason, store it in a safe place.

Do not perform any action that creates a hazard to people or makes equipment unsafe.

Keep walk areas clear to prevent falls or damage to equipment.

Site Requirements

This section describes requirements for the site in which the DAS3 Series system is to be installed. Before you install the DAS3 Series system, ensure that all the criteria in this section are met. The section describes the following:

- Environmental Requirements
- Power
- Cabling
- Rack Mounting

Environmental Requirements

To have proper operation of the DAS3 Series system depends on a proper environment. This section describes environmental requirements for the site in which you intend to install the DAS3 Series system.

Temperature Humidity and Altitude

The system can tolerate a wide range of temperatures. Table 3-1 shows the recommendation for temperature, humidity, and altitude conditions in a central office (CO) environment.

Table 3-1 CO Operating Environment Requirements

Environmental Specifications	Descriptions
Temperature	-40º to 65ºC – Operating -40º to 70ºC – Storage
Humidity	5 to 95% (non condensing)
Altitude	0 to 10,000 ft (0 to 3048 m)

To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 45ºC.

Ventilation

The DAS3 Series fans maintain a suitable operating temperature for the internal circuitry. Ensure that the air intake vents at the left side of the box and the air exhaust vents on the right side of the box are not obstructed in anyway.

Figure 3-1 DAS3 Series Ventilation Control Diagram

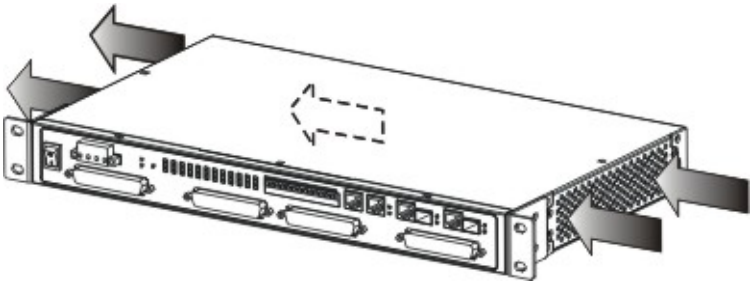


Table 3-2 System Air-Flow Specification

Field	Description
Fan unit	4
Air flow	7 (CFM)
Air pressure	3 (mmH20)
Speed per fan	6000 (RPM)
Noise level	26 (dBA)

Space

The DAS3 Series system fits in either a 19-inch (48.26 cm) wide rack or a 23-inch (58.42 cm) wide rack.

The DAS3 Series is 1.96 inches in height and 10.2 inches in depth of DAS3 DC series (12.6 inches in depth of DAS3 AC series). Depending on your configuration type, plan accordingly so that the CO rack accommodates your needs.

Power

The DAS3 Series IP-DSLAM using built-in power converter unit, the built-in power converter unit is required a VDC power source for it needs. The voltage is from -36 VDC to -72 VDC with power consumption of DAS3 DC series. The voltage is from 90 ~ 264 VAC, 47 ~ 63 Hz of DAS3 AC series.

Before you connect the system to a power source, verify that the power source is properly grounded and that it falls within the internal power supply rating.

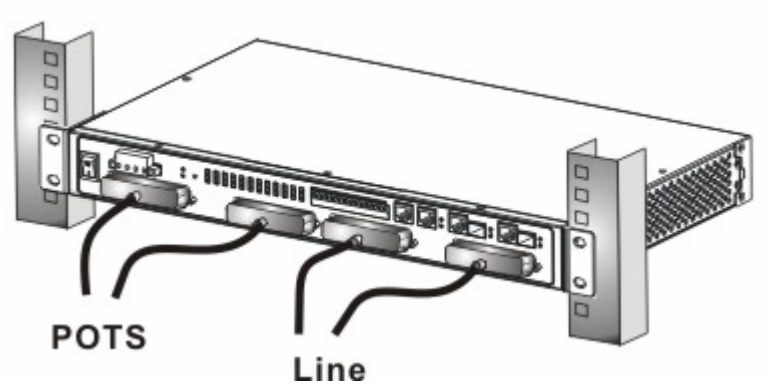
Cabling

For detailed information on the required cables, refer to “Appendix System Connector Pin-Outs”.

DAS3 Series Cabling

The Figure 3-2 illustrates the DAS3 Series system cabling.

Figure 3-2 DAS3 Series Cabling Diagram

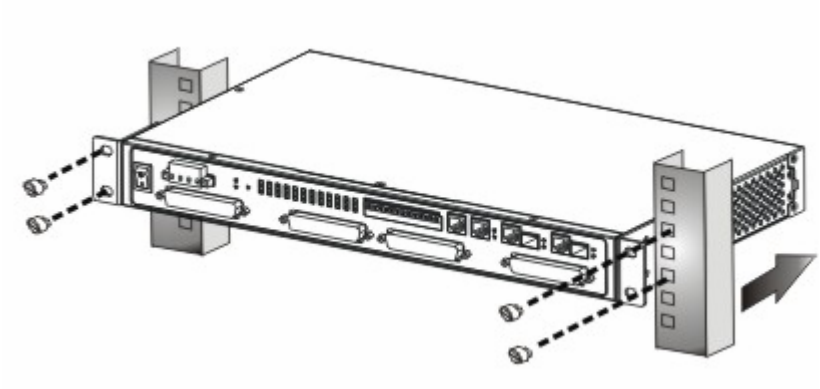


Rack Mounting

Mount your DAS3 Series system in a rack is highly recommend. Ensure that vertical rivet spacing on the rack rails meets standard EIA-310-C or ETS300 requirements.

DAS3 Series fits into a 19 inch wide rack or an ETSI 600 mm wide (23 inch) cabinet by replacing the ear bracket.

Figure 3-3 DAS3 Series Mounting Diagram.



Tools and Equipment Required

The Table 3-3 lists the tools and equipment you need to install and remove the DAS3 Series system components.

Table 3-3 Installation Tools Lists

Check	Tools and Equipment
Hardware Components	
	DAS3 Series System
	DC Power Module
	RJ-45 to DB-9 Female adaptor
	RJ-45 connector, straight-through 10Bast/100Base-T Ethernet, half/full-duplex compliant with IEEE 802.3
	RJ-21 Telco Cables
Software Components	
	AMS software package (Optional)
Tools	
	A 3/16 inch flat-head screwdriver
	A Phillips-head screwdriver
	Necessary equipment for ESD protection
	Mounting screw – To mount the DAS3 Series system to the rack
	Tie wraps

Unpacking the DAS3 Series System

Each DAS3 Series system units is securely packaged in a shipping box.

To unpack the DAS3 Series units, complete the following steps:

Step 1 Inspect the packing containers.
If any damage or other signs of mishandling are evident, inform both the local freight carrier before unpacking. Your freight carrier can provide you with the procedures necessary to file a claim for damages.

Step 2 Carefully open the box.

Step 3 Remove all packing material.

Step 4 Remove the unit form the box.

Step 5 Open the accessory kits and boxes that contain the cables, documentation, and management software. Do not use a knife to open these boxes.

Verifying Contents

To verify that your shipment is complete, make sure that you received everything on your packing list, and then compare your packing list to your order. If any items are missing or you need additional information, contact your local supporter.

Inspecting for Damage

After you verify that all of the equipment is included, carefully examine the assemblies, units and cables for any damage resulting from shipping. If you suspect any damage form shipping, contact your local freight carrier for procedures on damage claims.

If you observe any physical defects in the items you ordered, obtain standard warranty service by delivering the defective part to your local supporter during the applicable warranty period.

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Chapter 4 Installing the DAS3 Series

This chapter describes how to install the DAS3 Series IP-DSLAM.
This chapter contains the following sections:

- Installation Checklist
- DAS3 Series System Installation Procedures

Installation Checklist

The Table 4-1 lists the task to be completed when installing the DAS3 Series IP-DSLAM.

Table 4-1 Installation Checklist

Installation Procedures	Page Number
Unpack the Shipping Carton	18
Setup the Hardware Environments:	
• Connect the Console port to the PC's COM port	23
• Configure the PC's COM port	23
• Connect RJ-21 Telco Cable	24
• Connect RJ-45 Network uplink Interface	25
• Power on the System	26

DAS3 Series System Installation Procedures

This section describes procedures for the site in which the DAS3 Series system is to be installed.
The section describes the following:

- Measure Rack Space
- Install the DAS3 Series Box Chassis
- Connecting a Console
- Connecting the RJ-21 Subscriber Line Interface
- Connecting the RJ-45 Network Uplink Interface
- Attach and Apply Power

Measure Rack Space

To ensure stability of rack, you must install your DAS3 Series system from the bottom to the top of the rack. Before you install any of the chassis, measure the total rack space required to install your system. The required rack space depends on the number of DAS3 Series box chassis that you plan to use.

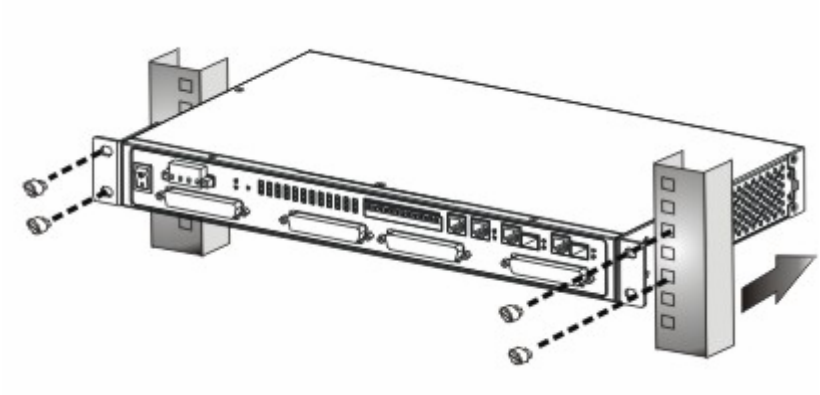
The DAS3 Series is 1.96inches in height and 10.2 inches in depth of DAS3 DC series (12.6 inches in depth of DAS3 AC series).

Install the DAS3 Series Box Chassis

Complete the following steps to install the DAS3 Series box chassis.

Two people are required to lift the box. Grasp the box underneath the lower edge and lift with both hands. To prevent injury, keep your back straight and lift with your legs, not your back.

Figure 4-1 Install the DAS3 Series Box Chassis



Step 1 Put on an antistatic wrist strap and attach it to the rack.

Step 2 Attach the mounting aids to the rack, different rack will provide different aids, make sure the mounting aids is attach stable before setting DAS3 Series.

Step 3 Carefully lift the box chassis from underneath and rest it on the mounting aids.

Step 4 Push the box chassis back into the rack.

Step 5 Using a Phillips-head screwdriver; screw the ear brackets to the rack. Using fore screws at each bracket.

Step 6 Repeat Step 1 through Step 5 for each DAS3 Series as necessary.

Connecting a Console

Complete the following steps to connect the DAS3 Series Console management.

Step 1 Connect the RJ-45 to DB-9 adapter cable to the Console port on the DAS3 Series.

Step 2 Connect the other end (Female) to the computer's COM port.

Figure 4-2 RJ-45 to DB-9-female Adapter cable for Console Management

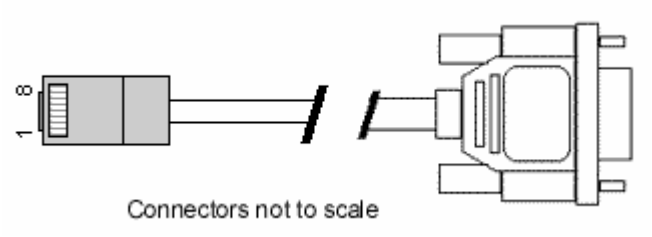
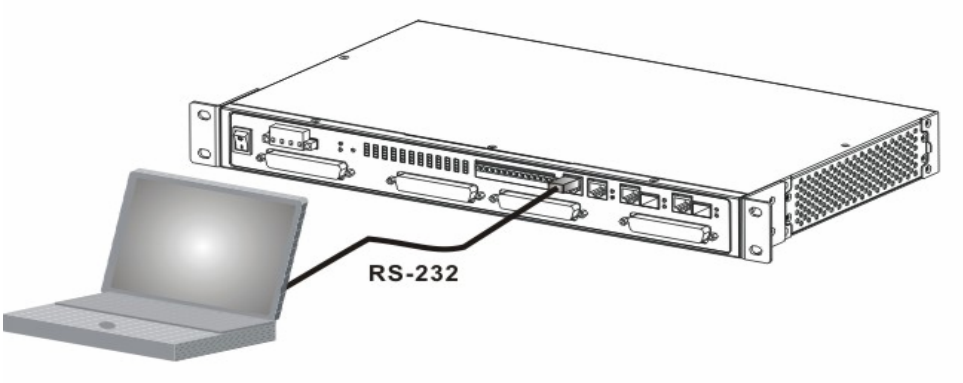


Figure 4-3 DAS3 Series Console Port Management Cabling



Configure the PC's COM port

Use your terminal emulation program (such as HyperTerminal in Windows) to set your COM protocol to the following settings:

Table 4-2 DAS3 Series Console Management Setting

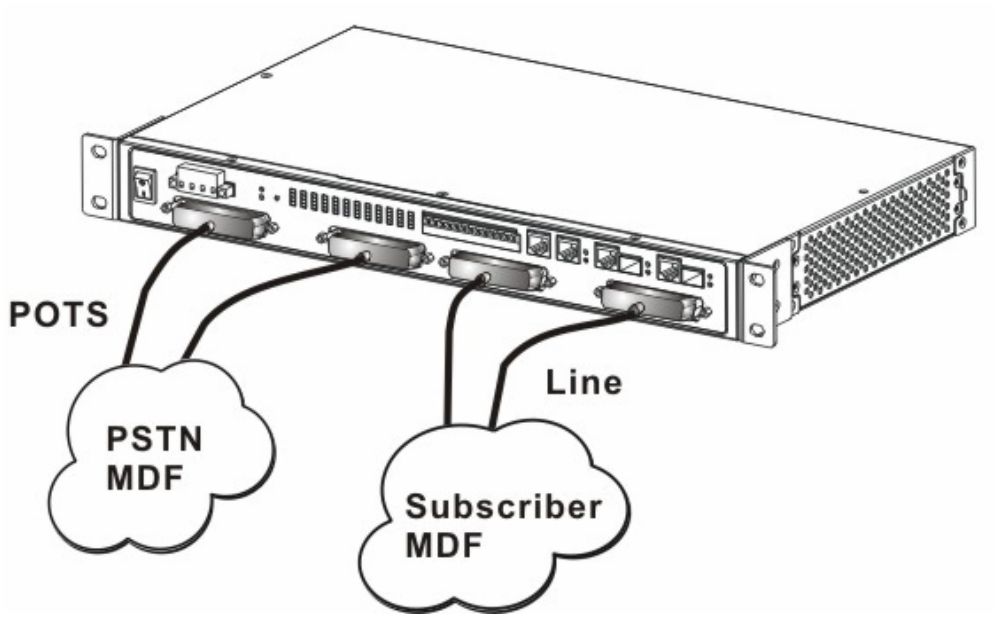
Parameter	Setting
Baud rate	9600
Data bits	8
Parity	None
Start bits	1
Stop bits	1
Flow control	None

Connecting the RJ-21 Subscriber Line Interface

DAS3 Series RJ-21 Telco Cable Connecting

Complete the following steps to connect the RJ-21 connector

Figure 4-4 Rear Panel RJ-21 Connector Cabling for DAS3 Series



Step 1 Attach the RJ-21 champ cable to connect the DAS3 Series to the Subscriber MDF corresponding DSL bus sockets.

Step 2 Attach the RJ-21 champ cable to connect the DAS3 Series to the PSTN MDF where the socket with "**POTS**" labels.

Step 2 Screw tight the RJ-21 champ with connect socket, make sure the connection is tight enough due to cabling.

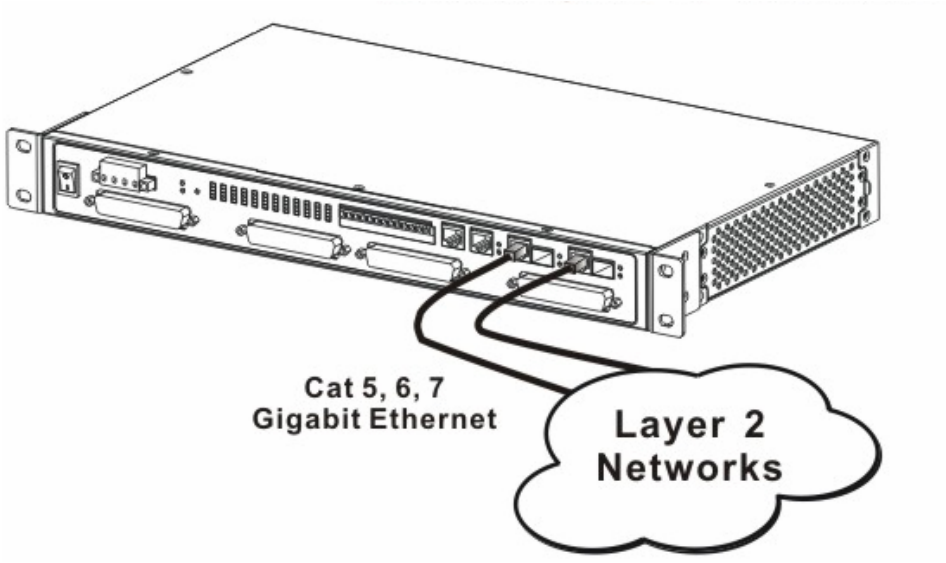
Step 3 Repeat Step 1 through Step 2 for each RJ-21 socket as necessary.

Connecting the RJ-45 Network Uplink Interface

Complete the following steps to connect the RJ-45 network uplink.

To ensure the 1000 Base-T performance, please using the standard Category 5, 6, 7 Ethernet UTP cable.

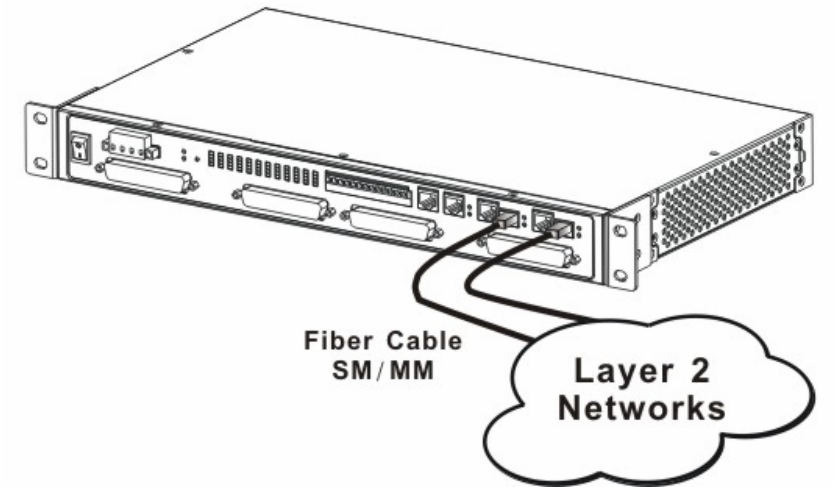
Figure 4-5 Front Panel RJ-45 Network Uplink Cabling for DAS3 Series



Step 1 Connect one end of the RJ-45 to the "**GigE 1**" or "**GigE 2**" port on the DAS3 Series front panel.

Step 2 Connect the other end of RJ-45 to the Layer 2 / Layer 3 switch router of provider's IP network.

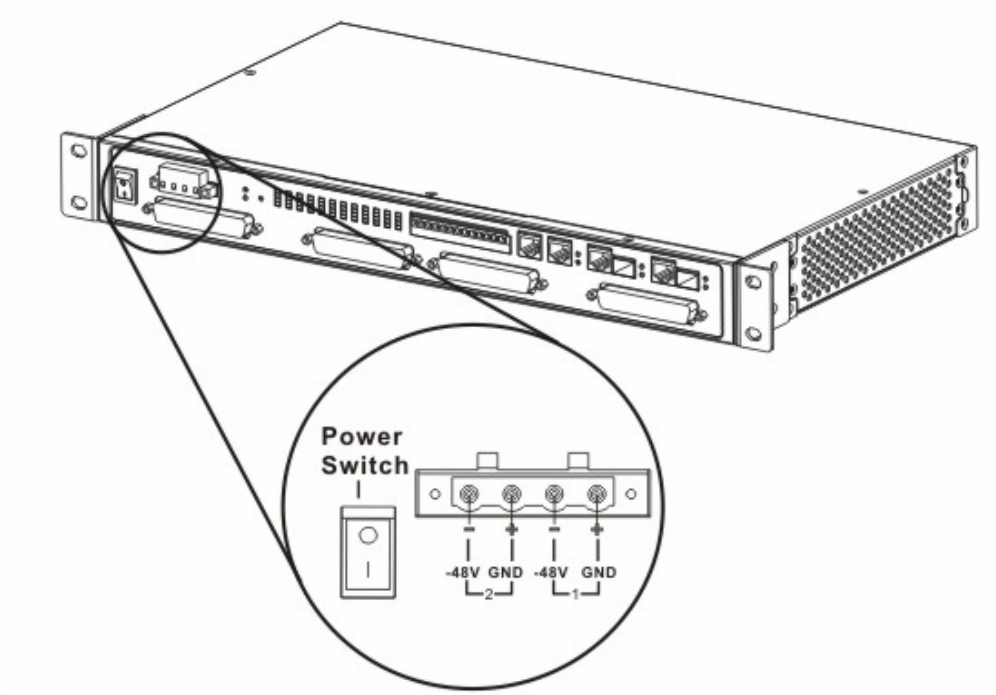
Figure 4-6 Front Panel mini-GBIC Network Uplink Cabling for DAS3 Series



Attach and Apply DC Power

Complete the instruction to connect the DC power cord to DAS3 DC Series.

Figure 4-7 Front Panel AC Power Connection for DAS3 Series



Step 1 Ensure the power switch is set to the off position.

Step 2 Use the Philip-head screwdriver to turn the screws on the terminal block counterclockwise to losses the terminal connectors, GND (positive), -48VDC (negative), and ground.

Step 3 Remove the PVC wrapping of the wire to be connected to the terminal block

Step 4 Insert the end of the wire into the corresponded receptacle with the terminal block behind the screws. They must be fully inserted into the terminal block, so that no bare wire is exposed.

Step 5 Tighten the screws and pull on the wire to verify that it is held firmly in place.

Step 6 If you are connecting a second power source, repeat Step 2 to Step 5 for the second block.

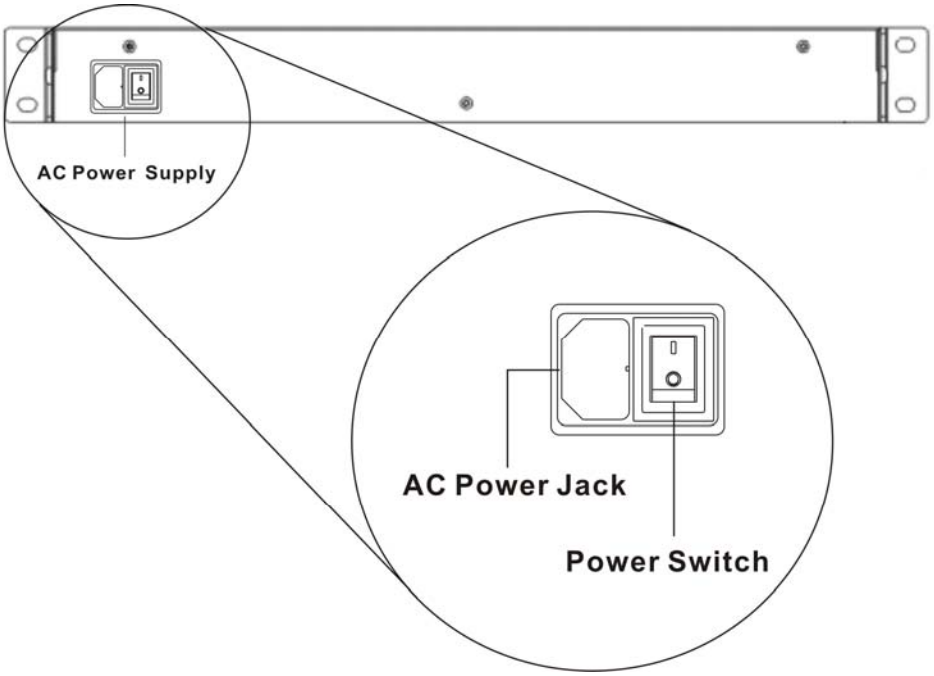
Step 7 Turn on the power switch and visually check that the Power LED at front panel is On.

The input voltage tolerance limits for DC power are -36 to -72 VDC.

Attach and Apply AC Power

Complete the instruction to connect the AC power cord to DAS3 AC series.

Figure 4-8 Rear Panel AC Power Connection for DAS3 AC series



Step 1 Ensure the power switch is set to the off position.

Step 2 Connect the AC power cord to AC power jack.

Step 3 Turn on the power switch and visually check that the Power LED at front panel is On.

The input voltage tolerance limits for AC power are 90 ~ 264 VAC, 47 ~ 63 Hz.

Attach the Earth Ground

Complete the instruction to connect the grounding cord of DAS3 Series.

Figure 4-9 Earth Ground of DAS3 DC Series

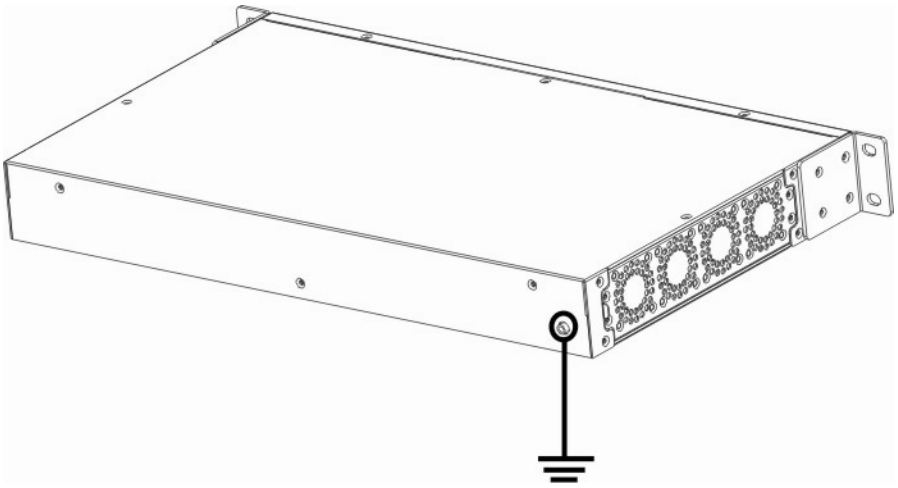
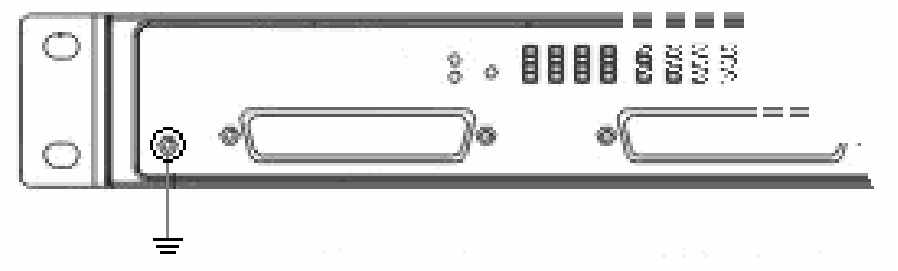


Figure 4-10 Earth Ground of DAS3 AC Series



Step 1 Ensure the power switch is set to the off position.

Step 2 Use the Philip-head screwdriver to turn the screws on the earth ground screw point.

Step 3 Strip one end of the ground wire to the ground hole of system

Step 4 Connect the other end of the ground wire to a suitable grounding point at your site.

The equipment has provision for a permanently connected Protective Earthing Conductor.

Chapter 5 System Specifications

The chapter provides the detail descriptions of technical specification of DAS3 Series in hardware and software, respectively. This chapter contains the following sections:

- Hardware Specification
- Software Specification

Hardware Specification

This section shows the system hardware specification of the DAS3 Series IP-DSLAM.

Table 5-1 lists the hardware specifications of DAS3 Series system.

Table 5-1 DAS3 Series System Specification

Specification	Description
Dimensions	Height: 1.96 inches (1.2U) Width: 17.7 inches, exclude ear bracket; 19 inches or 23 inches, include ear bracket Depth (DC): 10.2 inches (26 cm) Depth (AC): 12.6 inches (32 cm)
Weight	48 ports with splitter: 6.5 Kg 24 ports with splitter: 6 Kg
Console interface Management access	• RJ-45 to RS-232 Female DB-9 adaptor cable • Gigabit Ethernet out-band management
Power requirements	DC: 85Walt; -36VDC ~ -72VDC; ~2 Amp. AC: 90 ~ 264 VAC, 47 ~ 63 Hz
Acoustic noise	26 dB at normal fan speed
Front-panel Switching Throughput	Network uplink interface to Network uplink interface: 1 Gbps per port Network uplink interface to ADSL Access interface: minimum 16 Mbps per port
Network uplink interface	2 x RJ-45 Gigabit Ethernet interface (10/100/1000 Base-T) or 2 x mini-GBIC optical interface. (Alternative)
ADSL Subscriber interface	DAS3248/DAS3248DC: 48 ports (2 x RJ-21 Connectors) DAS3224/DAS3224DC: 24 ports (1 x RJ-21 Connector)
Alarm I/O	4 of alarm input contact 1 of alarm output receptacle
ADSL Standards support	• ANSI T1.413 • ITU-T G.992.1, (G.dmt) Annex A • ITU-T G.992.2, (G.lite) Annex A • ITU-T G.992.3 (ADSL2) Annex A, AnnexL • ITU-T G.992.5 (ADSL2+) Annex A, AnnexM
ADSL Data rate	Upstream: 32 kbps multiples from 32 kbps to 2816 kbps Downstream: 32 kbps multiples from 64 kbps to 28000 kbps
ATM Protocol	• Ethernet over ATM (RFC 1483 bridge) • IPoA (RFC 1483 route) • PPPoA (RFC 2364)

Specification	Description
	• PPPoE (RFC 2516)
CO operating requirements	Temperature: -40º to 149ºF (-40º to 65ºC) – Operating -40º to 158ºF (-40º to 70ºC) – Short-term operating -40º to 158ºF (-40º to 70ºC) – Storage Humidity: 5 to 95% (non condensing) Altitude: 0 to 10,000 ft (0 to 3048 m) Operating shock: 5 to 500 Hz, 0.5 gravity (0.1octave per minutes) Non-operating shock: 5 to 100 Hz, 1 gravity (0.1 octave per minute); 100 to 500 Hz, 1.5 gravities (0.2 octave per minute); 500 to 1000 Hz, 1.5 gravities (0.2 octave per minute)
Safety Certifications	• CE • EN55022 Class A/CISPR 22 • CB • IEC60950-1

Software Specification

Table 5-2 lists the software specification of DAS3 Series.

Table 5-2 DAS3 Series Software and Management Specification

Specification	Description
System Control	**Alarm Status Surveillance** • Automatic alarm and status report • LED indication for system status **Performance Monitoring** • Line rate • Throughput monitoring • RFC 2662/RFC 3440 compliant ADSL line performance parameters gathering • Support ICMP ping test **Configuration** • Support add, delete, query, and modify functions for configuration • IGMP snooping setting • VLAN setting • STP/RSTP setting • ADSL Subscriber line management per profile setting • Support MIB community string, community access privilege, Trap IP setting • System firmware upgrade and download through TFTP • BOOTP/DHCP client **Security** • Support security and multiple level login
VLAN	• Support IEEE 802.1Q VLAN Tagging, Port-based VLAN, and GVRP • Support 512 VLANs concurrently • Support IEEE 802.1ad VLAN stacking and VLAN translation
Link Aggregation	Support 802.3ad static and dynamic link aggregation
QoS	• Support IEEE 802.1p with 8-priority queues • DiffServ support • Pack classification basis on MAC/IP addresses and TCP/UDP port number
Multicast	• Support IGMP snooping on IGMPv1, IGMP v2 and IGMP v3 membership • Up to 256 Multicast Groups and 256 copies for each Multicast Group • Broadcast storm control
Bridging	• 4 K MAC addresses • MAC, IP, TCP/UDP port addresses filtering • Support DHCP/PPPoE intermediate (relay) agent • Support Option82 Circuit ID and Remote ID
Routing	• Support IPOA router mode by IPOA to IPOE tunneling • Support PPPoA mode by PPPoA to PPPoE tunneling
Diagnostics, OAM and Access Control	• DELT Loop diagnostic protocol • ADSL Subscriber MAC address number limiting • ICMP Ping diagnosis • ATM OAM F5 diagnosis • Network management services control

Specification	Description
Network Management	• CLI through console and Telnet • SNMP manageable by SNMP v1/v2c • Web management • Provide configuration, fault, performance, security management • NMS support
Management MIB	• RFC 1157 SNMP v1 • SNMP v2c • RFC 1213 MIB-II • RFC 1493 Bridge MIB • RFC 2233 IF-MIB • RFC 2515 ATM MIB • RFC 2674 802.1Q MIB • RFC 2622 / RFC 3440 ADSL line MIB • Enterprise DAS3 Series MIB

Appendix A System Connector Pin-Outs

DAS3 Series System connector Pin-outs contains RJ-21 Subscriber connector, RJ-45 to RS-232 DB-9 adapter local craft management, and RJ-45 GE Network uplink and Management interface.

RJ-21 xDSL Connector Port Mapping

The female RJ-21 (Champ) subscriber connectors are located at the rear of DAS3 Series box chassis. Table A-1 shows ADSL and POTS connectors correspond to ports on ADSL – J1/J2, Line – J1/J2, and POTS J1/J2.

Figure A-1 RJ-21 Connector

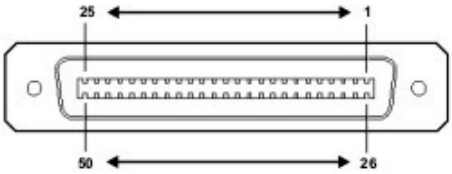


Table A-1 RJ-21 Connector Pin Assignment

Line Port / POTS Port		Champ Pin	
J1	**J2**	**Tip**	**Ring**
1	25	1	26
2	26	2	27
3	27	3	28
4	28	4	29
5	29	5	30
6	30	6	31
7	31	7	32
8	32	8	33
9	33	9	34
10	34	10	35
11	35	11	36
12	36	12	37
13	37	13	38
14	38	14	39
15	39	15	40
16	40	16	41
17	41	17	42
18	42	18	43
19	43	19	44
20	44	20	45
21	45	21	46
22	46	22	47
23	47	23	48
24	48	24	49
None	None	25	50

Standard Telco Color Chart

Table A-2 lists the reference colors that are used for the DAS3 Series IP-DSLAM system cables.

Table A-2 Telco Color Chart Mapping Table

Wire Color	P1	Wire Color	P2	Wire Color	P1	Wire Color	P2
Wht/blu	1	Wht/blu	1	Grn/blk	38	Grn/blk	38
Blu/wht	26	Blu/wht	26	Blk/brn	14	Blk/brn	14
Wht/org	2	Wht/org	2	Brn/blk	39	Brn/blk	39
Org/wht	27	Org/wht	27	Blk/gry	15	Blk/gry	15
Wht/grn	3	Wht/grn	3	Gry/blk	40	Gry/blk	40
Grn/wht	28	Grn/wht	28	Yel/blu	16	Yel/blu	16
Wht/brn	4	Wht/brn	4	Blu/yel	41	Blu/yel	41
Brn/wht	29	Brn/wht	29	Yel/org	17	Yel/org	17
Wht/gry	5	Wht/gry	5	Org/yel	42	Org/yel	42
Gry/wht	30	Gry/wht	30	Yel/grn	18	Yel/grn	18
Red/blu	6	Red/blu	6	Grn/yel	43	Grn/yel	43
Blu/red	31	Blu/red	31	Yel/brn	19	Yel/brn	19
Red/org	7	Red/org	7	Brn/yel	44	Brn/yel	44
Org/red	32	Org/red	32	Yel/gry	20	Yel/gry	20
Red/grn	8	Red/grn	8	Gry/yel	45	Gry/yel	45
Grn/red	33	Grn/red	33	Vio/blu	21	Vio/blu	21
Red/brn	9	Red/brn	9	Blu/vio	46	Blu/vio	46
Brn/red	34	Brn/red	34	Vio/org	22	Vio/org	22
Red/gry	10	Red/gry	10	Org/vio	47	Org/vio	47
Gry/red	35	Gry/red	35	Vio/grn	23	Vio/grn	23
Blk/blu	11	Blk/blu	11	Grn/vio	48	Grn/vio	48
Blu/blk	36	Blu/blk	36	Vio/brn	24	Vio/brn	24
Blk/org	12	Blk/org	12	Brn/vio	49	Brn/vio	49
Org/blk	37	Org/blk	37	Vio/gry	25	Vio/gry	25
Blk/grn	13	Blk/grn	13	Gry/vio	50	Gry/vio	50

RJ-45 Management Ethernet Connector Pin-Outs

The Management Ethernet port, a 10/100/1000 Base-T interface with RJ-45 receptacle connector is on the DAS3 Series faceplate.

It is used to connect the DAS3 Series to the management station. Table A-3 shows the pin assignments of RJ-45 GE Network uplink interface.

Figure A-2 RJ-45 GE Connector

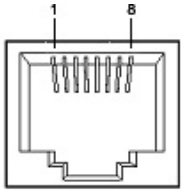


Table A-3 RJ-45 GE Connector Pin Assignment

Pine	Description
1	TP0 +
2	TP0 -
3	TP1 +
4	TP2 +
5	TP2 -
6	TP1 -
7	TP3 +
8	TP3 -

Local Console Connector Pin-Outs

RJ-45 connector on the DAS3 Series faceplate is use for Console management. A RJ-45 to DB-9 Female adaptor is used to connect on PC's COM port. Table A-4 lists the pin assignment between RJ-45 and DB-9 interface.

Figure A-3 RJ45 to DB-9 Adaptor

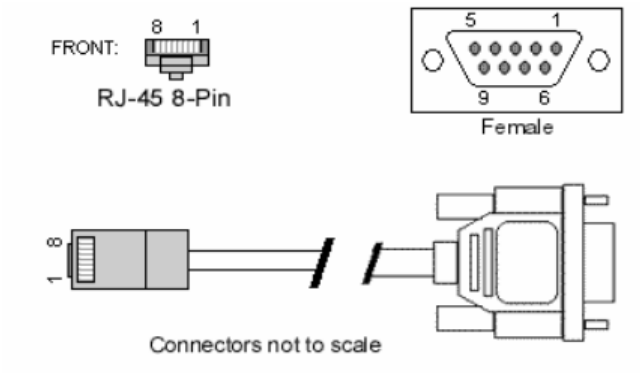


Table A-4 RJ45 to DB-9 Pint Assignment

DB-9	DB-9 Signal	RJ-45 signal	RJ-45
1			2
2	TxD	TxD	6
3	RxD	RxD	5
4			1
5	GND	GNDF	4
6			3
7			7
8			8
9			

Appendix B Abbreviations and Acronyms

The abbreviations and acronyms used in this document.

Table B-1 Abbreviations and Acronyms Table

Abbreviations	Full Name
AAL	ATM Adaptation Layer
ADSL	Asymmetric Digital Subscriber line
AIS	Alarm Indication Signal
ATM	Asynchronous Transfer Mode
ATU-C	ADSL Transceiver Unit at the central office end
ATU-R	ADSL Transceiver Unit at the remote end
CBR	Constant Bit Rate
CV	Coding Violation
DSLAM	Digital Subscriber line Access Multiplexer
ES	Error Seconds
EOA	Ethernet over ATM
GE	Gigabit Ethernet
IP	Internet Protocol
LAN	Local Area Network
LOF	Loss of Frame
LOS	Loss of Signal
LPR	Loss of Power
OAM	Operation, Administration, and Maintenance
PCR	Peak Cell Rate
PSD	Power Spectral Density
PVC	Permanent Virtual Channel
rtVBR	Real time Variable Bit Rate
SCR	Sustainable Cell Rate
SNR	Signal-to Noise Ratio
SNMP	Simple Network Management Protocol
UAS	Unavailable Seconds
UBR	Unspecified Bit Rate
VC	Virtual Channel
VCI	Virtual Channel Identify
VCL	Virtual Channel Link
VDSL	Very high-speed Digital Subscriber line
VLAN	Virtual Local Area Network
VP	Virtual Path
VPI	Virtual Path Identifier
VTU-O	VDSL Transmission Unit at the Optical network interface
VTU-R	VDSL Transmission Unit at the remote end
WAN	Wide Area Network
xDSL	ADSL/VDSL

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