



# **A $\mu$ D8000-12, A $\mu$ D8000-12B, and A $\mu$ D8000Q-12B 12-Port ADSL Micro DSLAMs Installation Instructions**

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## Unpacking and Inspecting the Equipment

### HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES



This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

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Unpack and inspect the equipment. The following components should be included:

- 1 AμD8000
- 4 Rubber Bumpers
- 1 DB9 Socket to RJ45 Plug Adapter

If there is visible damage, do not attempt to connect the device. Contact your sales representative.

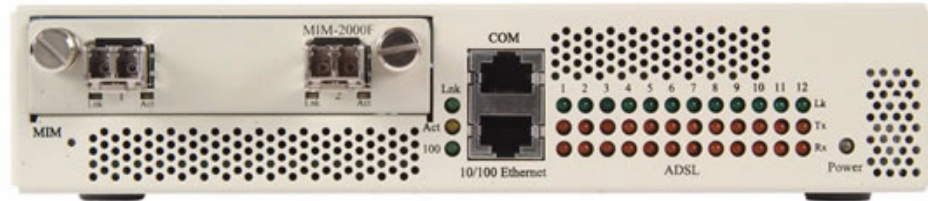


Figure 1. AμD8000-12 ADSL Micro DSLAM

## Selecting the Installation Site

**CAUTION:** The maximum recommended ambient temperature for the AμD8000 is 65° C (149° F). Do not stack AμD8000 chassis on top of one another; the air vents on top of the chassis require a minimum of 0.5-inch (1.3 cm) free airspace for adequate circulation.

Affix the (4) provided rubber bumpers to the bottom corners of the unit to provide surface grip.

### Tabletop

Place the AμD8000 such that the cables will not become a tripping hazard or pull loose from the unit.

### Rack

AμD8000 micro DSLAMs may be placed side by side horizontally on a standard 19" shelf. Ensure all cables are secured such that they will not become a tripping hazard or pull loose from the unit.

### Remote Cabinet

AμD8000 micro DSLAMs may be placed side by side horizontally within the cabinet. Vertical door mount brackets are available for purchase as separate accessories; contact your sales representative for further information.

---

## Powering Up the AμD8000

Attach DC power leads and a ground connection to one of the two terminal blocks on the back of the AμD8000. Either terminal block may be used. Although not required for operational purposes, both terminal blocks may be connected for redundancy.

To apply power to the AμD8000:

### ► Procedure

1. Loosen the screws on top of the terminal block
2. Insert the leads and ground wire into the front of the terminal block. Be sure to attach the positive lead to the positive terminal (+) and the negative lead to the negative terminal (–) as indicated on the terminal block labels.
3. Tighten the screws.
4. Turn on the power source and verify that the Power LED on the front of the unit is illuminated. Solid amber illumination indicates one power terminal is connected, and solid green illumination indicates both power terminals are connected.

## Connecting the ADSL Line(s)

The default operational mode is Multimode: each port detects and matches the mode of the remote modem.

The default bandwidth is Adaptive: each port trains up at the highest possible speed support by the AμD8000, the remote modem, and the copper pair connecting the two.

To connect the ADSL lines:

### ► Procedure

1. Plug your DSL cable's RJ21 connector into the corresponding RJ21 port on the back of the AμD8000. For most applications, an AμD8000 ADSL link requires a straight-through DSL cable.
2. For each port being connected to a remote subscriber unit, verify that the link has been established. The ADSL Lk (Link) LED for that port will pulse green to indicate the connection has been made. Link up time can vary from one to five minutes depending on the quality, gauge and distance of the copper cables.

## Operational Mode

### **Multimode** (default)

The ADSL port detects and matches the operational mode of the remote ADSL modem to which it's connected.

---

### Full Rate: G.DMT, T1.413 or Alcatel

An in-line splitter is required at the remote end of the ADSL connection when a single line is being utilized for both phone and data.

### G.lite

Microfilters are required at the remote end of the ADSL connection when a single line is being utilized for both phone and data.

## Port Mode

### Adaptive (default)

The ADSL port automatically trains up to the best possible speed supported by the AμD8000, the ADSL modem at the remote end and the copper cable pair connecting the two.

### On

The ADSL port requires upstream and downstream bandwidths to be specified individually.

### Off

The ADSL port is administratively turned off.

## Bandwidth and Distance

The default ADSL bandwidth setting is adaptive, allowing each port to train up to the best possible speed circumstances will allow. The eventual outcome could be any combination of existing possible upstream and downstream bandwidths, and may or may not be reflected in the following tables. When port mode is set to ON, upstream and downstream bandwidths must be selected manually for that port.

Distance capabilities listed below assume the use of 26 American Wire Gauge (AWG) cable. Connections made with cable of a heavier gauge will link up at greater distances. The AμD8000 may not link up if the cable is in poor condition or if the cable distance is greater than a particular bandwidth will support. Remote ADSL modems determine bandwidth through communication with the AμD8000.

Note: The following tables show maximum possible distances for various sample combinations of upstream and downstream bandwidths over a typical ADSL line, as a guide in determining achievable distances at various bandwidth settings. The tables are not comprehensive. The many possible combinations of upstream and downstream bandwidths, along with attainable corresponding distances for each combination, are far more numerous than that which is feasible to list here.

**Table 1. Full Rate: T1.413, Alcatel, and G.dmt**

|               |       |       |        |        |        |        |        |        |        |        |        |        |        |
|---------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Up (kbps)     | 1,024 | 1,024 | 1,024  | 960    | 896    | 832    | 736    | 576    | 416    | 384    | 288    | 192    | 96     |
| Down (kbps)   | 8,064 | 7,712 | 7,072  | 5,632  | 4,480  | 3,584  | 2,784  | 2,144  | 1,696  | 1,184  | 832    | 512    | 288    |
| Distance (ft) | 8,000 | 9,000 | 10,000 | 11,000 | 12,000 | 13,000 | 14,000 | 15,000 | 16,000 | 17,000 | 18,000 | 19,000 | 20,000 |
| Distance (m)  | 2,438 | 2,743 | 3,048  | 3,353  | 3,658  | 3,962  | 4,267  | 4,572  | 4,877  | 5,182  | 5,486  | 5,791  | 6,096  |

**Table 2. G.lite**

|             |        |        |        |        |        |
|-------------|--------|--------|--------|--------|--------|
| Up (kbps)   | 512    | 416    | 288    | 192    | 128    |
| Down (kbps) | 1,536  | 1,536  | 1,056  | 768    | 448    |
| Dist (ft)   | 15,000 | 16,000 | 17,000 | 18,000 | 19,000 |
| Dist (m)    | 4,572  | 4,877  | 5,182  | 5,486  | 5,791  |

The AμD8000 exceeds the International Telecommunications Union - Telecommunications Standardization Sector (ITU-T) Recommendation G992.1 minimum requirements of 640 kbps upstream and 6,000 kbps downstream speeds.

## 10/100BaseT Ethernet Uplink

The 10/100 Ethernet port on the AμD8000 functions as a management port and an uplink port. If you do not wish to utilize the 10/100 Ethernet port as an uplink, it can be configured for use as a management port only.

A 10/100BaseT port on a MIM functions the same as the 10/100BaseT port on the AμD8000.

### ► Procedure

1. Plug your Ethernet cable RJ45 connector into the RJ45 10/100 Ethernet port on the front of the AμD8000. For most applications, an AμD8000 Ethernet uplink connects to a PC using a straight-through Ethernet cable and to a hub or a switch using a crossover Ethernet cable. For any other connection combinations you must verify the pinout of the Ethernet device to which you are connecting the AμD8000 in order to determine which type of cable is required.
2. Verify the connection; solid green illumination of the Lnk (Link) LED indicates an Ethernet connection has been established. If the Lnk LED is illuminated but not the 100 LED then a 10 Mbps connection has been established. If the Lnk and 100 LEDs are both illuminated, then a 100 Mbps connection has been established.

AμD8000 10/100BaseT Ethernet ports and MIM-10/100 Ethernet ports may be interconnected (daisy-chained) with additional Micro, Mini, or IP DSLAMs such that a single router can be used for all. The uplink port at one end of each 10/100BaseT Ethernet uplink connection between two DSLAMs must be configured to utilize the DSLAM Interconnection function via NMS.

---

## Duplex Mode

Default: Auto-Negotiate (non-configurable)

- Half Duplex – Receive and transmit functions are mutually exclusive; data transmission occurs in only one direction at a time. Packet collisions are common.
- Full Duplex – The Ethernet line can receive and transmit simultaneously, effectively upping the aggregate bandwidth from 10 Mbps to 20 Mbps (or from 100 Mbps to 200 Mbps) and preventing packet collisions.

## T1 Uplink

### ► Procedure

1. Plug the T1 cable into the T1 RJ45 port on the MIM. For most applications, AμD8000 T1 Uplinks require a straight-through T1 cable.
2. Verify the connection; flashing or pulsing green illumination of the corresponding LED indicates a T1 link has been established.
3. Repeat the steps if you have two T1 connections.

## Speed

The MIM T1 ports determine speed via communication with the remote T1 equipment to which they are connected.

## Frame Type

Default: Extended Super Frame (ESF)

Frame type is the T1 data encapsulation method. A T1 frame consists of 193 bits (8-bit samples of each of the 24 T1 timeslots plus a synchronization bit) transmitted at a rate of 8,000 frames per second (1,544 kbps) across the T1 line.

- Extended Super Frame (default) – Extended Super Frame (ESF) format, used in Wide Area Networks, assembles data into 24-frame transmission clusters and integrates the following:
  - Facilities Data Link (FDL) - communication support through in-service monitoring and diagnostics
  - Cyclic Redundancy Check (CRC) - detects line errors and scrutinizes data integrity
- Super Frame – Super Frame (SF) format assembles data into 12-frame transmission clusters

---

## Line Code

Default: Bipolar with 8 Zero Substitution (B8ZS)

Line code is a T1 mode of transmission. The following line code options fall within the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) G.703 Standard for Transmission Facilities.

- Bipolar with 8 Zero Substitution (default) – B8ZS is used to accommodate the minimum ones density requirement in the North American public network. B8ZS line encoding helps prevent loss of synchronization between the AμD8000 and remote equipment by using bipolar violations to guarantee that pulses are always present in the line.
- Alternate Mark Inversion – Alternate Mark Inversion (AMI) is a T1 mode of transmission that alternates positive and negative pulses. It is typical with AMI for a link to encounter long strings of zeros which can potentially cause loss of synchronization between units. Paradyne products, however, meet the North American minimum ones density requirement internally such that loss of synchronization is prevented between the AμD8000 and remote T1 devices with AMI as is with B8ZS.

## Line Attenuation

Default: 0 dB

Shorter distances between the AμD8000 and remote devices often require increasing line attenuation in order to prevent the T1 signal from becoming too strong for repeaters, switches and other T1 transmission equipment that may be encountered along the line. Increased line attenuation translates to decreased T1 transmit amplitude.

- 0 dB (default) – Receivers on most newer T1 transmission equipment can automatically adjust for incoming amplitude, allowing them to run at zero attenuation regardless of distance.
- –7.5 dB, –15 dB, –22.5 dB – Some older T1 transmission equipment cannot automatically adjust for incoming amplitude and line attenuation must be set accordingly.

## Timing

The MIM T1 ports derive timing from an intermediate device on the T1 line.

## E1 Uplink

### ► Procedure

1. Plug the E1 cable into the E1 RJ45 port on the front of the AμD8000. For most applications, AμD8000 E1 Uplinks require a straight-through E1 cable.
2. Verify the connection, flashing or pulsing green illumination of the corresponding LED indicates an E1 link has been established.

- 
3. Repeat the steps if you have a second E1 connection.

## Speed

The MIM E1 ports determine speed via communication with the remote E1 equipment to which they are connected.

## Frame Type

Default: Cyclic Redundancy Check (CRC)

Frame type is an E1 data encapsulation method. An E1 frame consists of 249 bits (8-bit samples of each of the 31 E1 timeslots plus a synchronization bit) transmitted at a rate of 8,000 frames per second (1,992 kbps) across the E1 line.

- Cyclic Redundancy Check (default) – Cyclic Redundancy Check (CRC) detects line errors and scrutinizes data integrity across the E1 line by appending a CRC character to the end of the data block. The character is a hexadecimal value calculated from the contents of each data block. The remote equipment makes a similar calculation upon receipt of each data block and requests retransmission if there is a difference.
- No Cyclic Redundancy Check – CRC is disabled.

## Line Code

Default: High Density Binary 3 (HDB3)

Line code is an E1 mode of transmission. The following line code options fall within the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) G.703 Standard for Transmission Facilities.

- High Density Binary 3 (default) – High Density Binary 3 (HDB3) is used to accommodate the minimum ones density requirement in the European public network. HDB3 line encoding helps prevent loss of synchronization between the AμD8000 and remote E1 equipment by using bipolar violations to guarantee that pulses are always present in the line.
- Alternate Mark Inversion – Alternate Mark Inversion (AMI) is an E1 mode of transmission that alternates positive and negative pulses. It is typical, with AMI, for a link to encounter long strings of zeros which can potentially cause loss of synchronization between units. Paradyne products however, meet the European minimum ones density requirement internally such that even with AMI loss of synchronization is prevented between the AμD8000 and remote E1 devices.

## Timing

The MIM E1 ports derive timing from an intermediate device on the E1 line.

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## Default Settings

No configuration is necessary for an AμD8000 to operate at default settings.

### User Access Defaults

**Table 3. Username/Password**

| ACCESS     | USERNAME* | PASSWORD* |
|------------|-----------|-----------|
| read/write | superuser | Password  |
| read only  | general   | Password  |

\* Usernames and passwords are case sensitive.

**Table 4. Community String**

| ACCESS     | COMMUNITY STRING* |
|------------|-------------------|
| read/write | Password          |
| read only  | Password          |

\* Community strings are case sensitive.

### System Defaults

**Table 5. System Defaults**

| PARAMETER                                 | DEFAULT                         |
|---|---------------------------------|
| Gateway                                   | 0.0.0.0                         |
| Inband Management                         | disabled                        |
| Inband Management VLAN ID                 | 0 (off)                         |
| IP Address                                | 192.168.254.252                 |
| Mgmt (Management) IP Address Filter Range | 0.0.0.0 - 255.255.255.255 (all) |
| Subnet Mask                               | 255.255.255.0                   |
| TFTP (Trivial File Transfer Protocol)     | enabled                         |
| System Name                               | DSLAM model name                |
| Uplink DSLAM Interconnection              | neither (off)                   |
| Web Server (NMS)                          | enabled                         |

---

## ADSL Circuit Defaults

**Table 6. ADSL Circuit Defaults**

| <b>PARAMETER</b>                  | <b>DEFAULT</b>            |
|-----------------------------------|---------------------------|
| Backbone-VLAN                     | 0 (off)                   |
| Circ. ID (Circuit Identification) | n/a (no default)          |
| Flood                             | Uplink                    |
| Frame Type                        | 1483LLC                   |
| IP Range 1                        | 0.0.0.0 – 255.255.255.255 |
| IP Range 2                        | 0.0.0.0 – 0.0.0.0         |
| Operational Mode                  | Multimode                 |
| Pri (VLAN Priority)               | 0 (none)                  |
| Protocol                          | All                       |
| Speed Downstream                  | n/a (Adaptive port mode)  |
| Speed Upstream                    | n/a (Adaptive port mode)  |
| VLAN Range                        | 0 – 0 (off)               |
| VPI, VCI                          | 0, 35                     |
| VPI/VCI Detect                    | Enabled                   |

## Uplink Interface Defaults

**Table 7. Ethernet Uplink**

| <b>PARAMETER</b> | <b>NON-CONFIGURABLE</b> |
|------------------|-------------------------|
| Speed            | Auto-Negotiate          |
| Duplex Mode      | Auto-Negotiate          |

**Table 8. T1 Uplink**

| <b>PARAMETER</b> | <b>DEFAULT</b>                          |
|------------------|---|
| Frame Type       | ESF (Extended Super Frame)              |
| Line Code        | B8ZS (Bipolar with 8 Zero Substitution) |
| Line Buildout    | 0 dB                                    |

---

**Table 9. E1 Uplink**

| PARAMETER  | DEFAULT                       |
|------------|-------------------------------|
| Frame Type | CRC (Cyclic Redundancy Check) |
| Line Code  | HDB3 (High Density Bipolar 3) |

## Initial Configuration

Initial configuration of an AμD8000 can be accomplished via either Command Line Interface (CLI) or the Network Management System (NMS). Initial configuration using the CLI requires a direct connection from your PC to the RJ45 COM (communication) Port. Initial configuration using the NMS requires a direct connection from your PC to the Ethernet RJ45 MGMT (management) Port. For more complete information regarding system configuration with the NMS and the CLI, please refer to the NMS Management User's Guide and the CLI Management User's Guide.

NOTE: Although the AμD8000 can also be managed via Simple Network Management Protocol (SNMP v1.0), initial configuration of the IP Address, Subnet Mask and Gateway must first be completed via the CLI or NMS before you can access the AμD8000 management system with SNMP.

## Configuration Using the Command Line Interface (CLI)

Initial configuration of an AμD8000 via the CLI requires the provided DB9 socket to RJ45 plug adapter, a straight-through RJ45-to-RJ45 Ethernet cable, and a terminal emulation program installed on your PC. See the CLI User's Guide for complete system requirements.

To establish a connection with the AμD8000:

### ► Procedure

1. Plug the provided DB9 socket to RJ45 plug adapter into the RS232 serial port on your PC. See [DB9 to RJ45 Adapter](#) on page 23 for pin assignments.
2. Connect one end of a straight-through Ethernet cable to the adapter plugged into your PC, and the other end of the cable into the RJ45 COM Port located on the front of the AμD8000.
3. Launch a terminal emulation program on your PC and configure the program settings. Actual settings will depend upon the program you use, although they should be modeled after the list below. Refer to your program user manual for further information.
  - Baud: 9600
  - Data Bits: 8
  - Flow Control: None
  - Port: Com 1
  - Parity: none
  - Stop bits: 1
  - Transmit Delay: n/a

---

## Logging In

Once your Terminal Emulator has been launched and configured, the following information will appear on your screen:

```
Copyright (C) [year]
[product] Version [number] (Boot Prom [number] )
System Build Date: [date,time,year]
Mac Address: [address] , IP Address: [address]
```

This information will be followed by a request for username and, once username has been entered, a request for password. You must log in as a superuser in order to make configuration changes.

| Username/Password Defaults |           |           |
|----------------------------|-----------|-----------|
| ACCESS                     | USERNAME* | PASSWORD* |
| read/write                 | superuser | Password  |
| read only                  | general   | Password  |

\* Usernames and passwords are case sensitive.

## Setting the IP Address, Subnet Mask, and Gateway

Most system settings can be configured with the CLI through a direct COM Port connection regardless of the IP Address, Subnet Mask, and Gateway settings on your AμD8000. However, you will not be able to use NMS or SNMP unless either your AμD8000 has been configured with proper settings for these three parameters or your PC has been configured to accept the defaults.

To set IP Address, Subnet Mask, and Gateway, enter the following commands (replacing xxx.xxx.xxx.xxx with meaningful values).

```
set slot 1 ip_address xxx.xxx.xxx.xxx*
set slot 1 subnet_mask xxx.xxx.xxx.xxx*
set slot 1 default_gateway xxx.xxx.xxx.xxx*
```

## Setting Up Inband Management

If remote network utilization of NMS, CLI, or SNMP is desired, you must configure Inband Management.

```
set slot 1 inband_management on
```

## Setting the Inband Management VLAN ID

If your network is running VLANs to facilitate packet direction or promote packet security, you must set an Inband MGMT (Management) VLAN ID. Do not set an Inband MGMT VLAN ID if your network is not running VLANs. In the following command, replace the x with a VLAN ID. VLAN ID may be from 0 to 4095.

```
set slot 1 inband_mgmt_vlan_id x
```

---

## Other Configuration with the CLI

You may now make desired configurations with CLI either through the established direct connection or, if you chose to set Inband Management, via a remote network connection using Telnet. Likewise, if you chose to set Inband Management, you will now also be able to utilize SNMP across the network. Refer to the CLI and SNMP Management User Guide for information regarding specific parameter configurations.

To help ensure that any subsequent configurations of the management system will not be inadvertently altered or deleted, change default community strings immediately following initial setup. See the SNMP Management User's Guide.

## Logging Out of the CLI

When configuration is complete, log out. If you forget to log out, the CLI will automatically log you out after five minutes of inactivity.

### **logout**

**CAUTION:** If you disconnect your PC from the COM Port without logging out and a new connection is established before the five-minute inactivity period has expired, the new user will have full access to the management system without being required to log in.

---

## Configuration Using the Network Management System (NMS)

Initial configuration of an AμD8000 via the NMS requires a straight-through RJ45 to RJ45 Ethernet cable and a web browser such as Microsoft Internet Explorer installed on your PC. See the NMS User's Guide for complete system requirements.

### Configuring Your PC to Enable Communication with the NMS

The following instructions are based on a Windows operating system; different operating systems may vary in their requirements. Contact your System Administrator or Information Technology Manager if you are having trouble with these settings.

To set up your Windows-based PC for use with the NMS:

#### ► Procedure

1. Click the Windows Start button.
2. Select Settings.
3. Click on Control Panel.
4. Double-click on the Network icon.
5. Click on the Configuration tab.
6. Scroll down under Network Components and double-click on your TCP/IP Ethernet Adapter.
7. Click on the IP Address tab.

NOTE: Make note of the current IP Address and Subnet Mask configurations on your PC before entering the new values; once initial configuration of NMS has been completed, you will need to reconfigure your PC with these original values.

8. Click on "Specify an IP Address".
9. Enter an IP Address for your PC from 192.168.254.1 through 192.168.254.251. (The default IP address of the AμD8000 is 192.168.254.252.)
10. Enter a Subnet Mask of 255.255.255.0.
11. Click on Add.
12. Click on OK. Reboot your PC if so prompted.

---

## Connecting Your PC to the 10/100BaseT Port

The 10/100 Ethernet port does not have switching capabilities; its main purpose is to allow a direct PC connection for SNMP and NMS access. A direct connection with the Ethernet port may also be used to access the management system with the CLI via Telnet (see the CLI Management User's Guide).

The 10/100 Ethernet port auto-negotiates speed and duplex mode; these configurations cannot be set on the AμD8000. For the best configuration results, your PC should be set to auto-negotiate speed and duplex mode as well. If your PC cannot be configured to auto-negotiate, speed may be set at either 10 Mbps or 100 Mbps but duplex mode must be set to Half Duplex; a 10/100 Ethernet MGMT connection cannot be made if your PC is set to Full Duplex.

Using a straight-through Ethernet cable, connect your PC to the Ethernet RJ45 MGMT Port on the front of the AμD8000 and verify the connection. The MGMT, 10/100 and T1/E1 ports are labeled numerically from left to right; corresponding LEDs are located to the left of the ports and are labeled in the same manner. Solid or flashing green illumination of the MGMT LED (LED 1) indicates a 100 Mbps connection has been established. Solid or flashing amber indicates a 10 Mbps connection has been established.

See [Ethernet and MGMT Port Pinouts](#) on page 23.

## Launching a Web Browser and Logging In

### ► Procedure

1. Launch a web browser such as Microsoft Internet Explorer (v4.0 or higher) or Netscape Navigator (v4.0 or higher).
2. Type the AμD8000's default IP Address (192.168.254.252) into the address field at the top of the browser window and press the Enter key.
3. The NMS Log In window will pop up: enter the default username and password. You must log in as a Superuser in order to make configuration changes.

**Table 10. Username/Password Defaults**

| Access     | Username* | Password* |
|------------|-----------|-----------|
| read/write | superuser | Password  |
| read only  | general   | Password  |

\* Usernames and passwords are case sensitive.

4. Click on OK.

---

## System Configuration

The NMS main window will appear automatically upon log in.

### ► Procedure

To configure management parameters:

1. Click on the System Configuration (chassis) button in the top, left-hand corner of the window. A floating window will pop up with the AμD8000 model type, revision and MAC Addresses, as well as several fields for configuration.

Set all applicable fields in the System Configuration window before clicking on the Submit button, as each time the Submit button is clicked you will be required to re-establish NMS connectivity.

**Table 10-2. Management Parameters**

| Parameter                   | Description  |
|-----------------------------|--|
| IP Address                  | Specify the management IP address for the DSLAM.   |
| Subnet Mask                 | Specify the subnet mask for the IP address.  |
| Gateway                     | Specify the first-hop gateway address.   |
| Inband MGMT                 | If remote network utilization of NMS, CLI or SNMP is desired, click the Inband MGMT box so that a checkmark appears.<br><br>CAUTION: Managing your DSLAM via an inband connection can increase the security risks of unapproved and/or unwanted users accessing the management system. It is recommended that inband management be disabled when not in use. |
| Management IP Address Range | Enter the range of IP Addresses from which you wish to allow inband management of your DSLAM; addresses outside of this range will not be able to access the management system.  |
| TFTP                        | Trivial File Transfer Protocol (TFTP) is the method by which port configurations are saved to local files and new firmware versions are obtained. For security purposes, it is recommended that TFTP be set to OFF when not in use.  |
| VLAN Id                     | If your network is running VLANs to facilitate packet direction and/or promote packet security, enter your proprietary Inband Management VLAN ID. If your network is not running VLANs, leave the field blank.   |

2. Click on Submit. NMS connectivity will be lost immediately upon clicking the Submit button; you must close your web browser, reconfigure the IP Address and Subnet Mask on your PC and then re-launch your web browser.

---

## Reconfiguring the IP Address and Subnet Mask on Your PC With the Original Values

The following instructions are based on a Windows operating system; different operating systems may vary in their requirements.

To return your Windows-based PC to its original IP address:

### ► Procedure

1. Click on the Windows Start button.
2. Select Settings.
3. Click on Control Panel.
4. Double-click on the Network icon.
5. Click on the Configuration tab.
6. Scroll down under Network Components and double-click on your TCP/IP Ethernet Adapter.
7. Click on the IP Address tab.
8. Depending upon which option was formerly selected, do one of the following:
  - Click on Obtain an IP Address Automatically
  - or
  - Click on Specify an IP Address and then manually enter your proprietary IP Address and Subnet Mask
- NOTE: The Subnet Mask entered now must match the one set for the A $\mu$ D8000. The IP Address entered must be in the same subnet.
9. Click on OK. Reboot your PC if so prompted.

## RAM and NVRAM

Configuration backup is inherent in the A $\mu$ D8000. Upon initial power-up, default parameters will remain in place unless changed through the NMS, CLI, or SNMP. Once changed, new configurations will automatically be recorded in both Random Access Memory (RAM) and Non-Volatile Random Access Memory (NVRAM). Although data stored in RAM will be erased if the A $\mu$ D8000 loses power, data stored within NVRAM will remain intact (even if the unit loses power) unless deliberately cleared or reconfigured.

---

## Local Files

Individual port configurations can be saved locally on your PC as a backup, or for use as a template for future configurations. Once the AμD8000 has been configured as desired, the settings can be uploaded through a Trivial File Transfer Protocol (TFTP) tool with a GET command and the following information:

Host name: [Micro DSLAM IP Address]

Remote filename: NVR\_CFG.bin.[superuser password]

Local filename: [user preference]

For example:

```
tftp get 137.26.10.32:NVR_CFG.bin.Password myfile
```

Port configuration files can also be downloaded from a local file to a AμD8000 by use of a TFTP Put command. Refer to your TFTP user manual.

NOTE: Only individual port configurations can be saved to a local file. Chassis configurations cannot be uploaded or downloaded; they must be manually configured for each unit.

## LED Indicators

Some LEDs are described in the following table as pulsing and flashing. A pulsing LED blinks steadily at a rate of once per second. A flashing LED blinks at a more rapid, less constant rate.

**Table 11. LED Behavior**

| LED                            | STATE           | INDICATION                                | ADDITIONAL INFORMATION  |
|--------------------------------|-----------------|---|---|
| Power                          | solid green     | μD8000 is receiving power                 | If the Power LED is not illuminated, it is unlikely that the μD8000 is receiving power, in which case none of the LEDs will be illuminated.   |
| 10/100 Ethernet Lnk (Link)     | solid green     | Ethernet connection is established        | If the Lnk LED is illuminated, but not the Ethernet 100 LED, then a 10 Mbps connection has been established. If the Lnk and 100 LEDs are both illuminated, then a 100 Mbps connection has been established. |
|                                | no illumination | no Ethernet connection                    | The Ethernet 100 and Act LEDs will remain unlit by default.   |
| 10/100 Ethernet Act (Activity) | flashing amber  | Ethernet activity                         | Traffic is flowing without any problems.  |
|                                | solid amber     | heavy traffic                             |   |
|                                | no illumination | no Ethernet activity                      | Either there is no Ethernet link or a link exists but there is no activity.   |
| 10/100 Ethernet 100            | solid green     | Ethernet connection is established        | If the Ethernet Lnk LED is illuminated, but not the 100 LED, then a 10 Mbps connection has been established. If the Lnk and 100 LEDs are both illuminated, then a 100 Mbps connection has been established. |
|                                | no illumination | no Ethernet connection                    | The Ethernet 100 and Act LEDs will remain unlit by default.   |
| ADSL Lk (Link)                 | pulsing green   | ADSL connection is established and active | The port has received valid data from the remote ADSL modem within the last second.   |
|                                | solid green     | ADSL connection is established            | An ADSL link exists and the port may be transmitting but it has not received any data from the remote ADSL modem within the last second.  |
|                                | no illumination | no ADSL connection                        | The ADSL Rx and Tx LEDs will remain unlit by default.   |
| ADSL Rx (Receiving)            | flashing amber  | ADSL activity                             | The port is receiving data from the remote ADSL modem.  |
|                                | solid amber     | heavy Rx traffic                          | The port is receiving large amounts of data from the remote ADSL modem.   |
|                                | no illumination | no activity                               | An ADSL link may exist but the port is not receiving any data from the remote modem.  |
| ADSL Tx (Transmitting)         | flashing amber  | ADSL activity                             | The port is transmitting data to the remote ADSL modem.   |
|                                | solid amber     | heavy Tx traffic                          | The port is transmitting large amounts of data to the remote ADSL modem.  |
|                                | no illumination | no activity                               | An ADSL link may exist but the port is not transmitting any data to the remote modem.   |

Note: The 10/100 Ethernet Lnk LED behaves identically for both management and uplink connections.

## Connector Pin Assignments

### ADSL RJ21 Pinouts – 12-Port

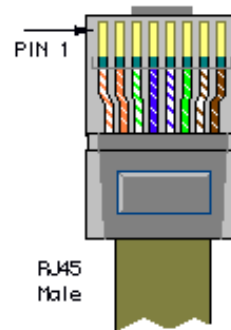
| PORT -> |      | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
|---------|------|----|----|----|----|----|----|----|----|----|----|----|----|
| ADSL    | Tip  | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|         | Ring | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| Voice   | Tip  | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|         | Ring | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |

(pins 13 and 38 are not used)

### E1 and T1 RJ45 Pinouts

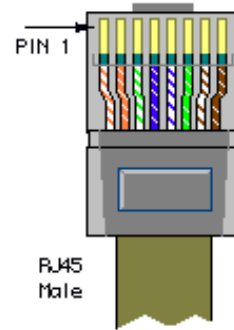
If the cable you are using is shielded, it must be grounded through Pins 3,6,7, and 8.

| PIN | CONNECTION |
|-----|------------|
| 1   | Rx Ring    |
| 2   | Rx Tip     |
| 3   | not used   |
| 4   | Tx Ring    |
| 5   | Tx Tip     |
| 6   | not used   |
| 7   | not used   |
| 8   | not used   |



## Ethernet and MGMT Port Pinouts

| PIN | CONNECTION |
|-----|------------|
| 1   | Rx+        |
| 2   | Rx-        |
| 3   | Tx+        |
| 4   | not used   |
| 5   | not used   |
| 6   | Tx-        |
| 7   | not used   |
| 8   | not used   |



## DB9 to RJ45 Adapter

The provided COM port adapter has the following pinouts.

| Pin | A $\mu$ D8000 RJ45 PORT Pinouts |     | Direction | PC RS232 Serial Port Pinouts |                     |
|-----|---------------------------------|-----|-----------|------------------------------|---------------------|
| 1   | Transmit Data                   | TxD | ->        | RxD                          | Receive Data        |
| 2   | Data Set Ready                  | DSR | <-        | RTS                          | Request to Send     |
| 3   | Clear to Send                   | CTS | <-        | DTR                          | Data Terminal Ready |
| 4   | Receive Data                    | RxD | <-        | TxD                          | Transmit Data       |
| 5   | Ground                          | GND | <->       | GND                          | Ground              |
| 6   | Data Terminal Ready             | DTR | ->        | CTS                          | Clear to Send       |
| 7   | Request to Send                 | RTS | ->        | DSR                          | Data Set Ready      |
| 8   | No Connect                      | NC  | -         | DCD                          | Data Carrier Detect |

---

## **▲ Important Safety Instructions**

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. This product is to be connected to a nominal –48 VDC supply source that is electrically isolated from the AC source. The positive terminal of the DC source is to be reliably connected to earth. Connect a green/yellow earthing (grounding) wire to the protective earthing (grounding) screw, identified by the protective earth symbol on the back of the chassis.
3. This product may only be used in a Restricted Access Location in accordance with the requirements of the National Electric Code, ANSI/NFPA 70, or in accordance with the standards and regulatory requirements of the country in which it is installed. A Restricted Access Location is a secure area (dedicated equipment rooms, equipment closets, or the like) for equipment where access can only be gained by service personnel or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that must be taken. In addition, access into this designated secured area is possible only through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
4. A readily accessible disconnect device as part of the building installation shall be incorporated in fixed wiring. The DC disconnect device must be rated at a minimum 48 VDC, minimum 2A. The disconnect device shall be readily accessible to the operator. The disconnect device must be included with an adequately rated fuse or circuit breaker in the ungrounded conductor. Use a minimum 18 AWG (0.75 mm<sup>2</sup>) fixed power source wires with strain retention.
5. Input power to the ALARM relay interface (located on the front panel of the enclosure) must not exceed 30 V rms or 48 VDC.
6. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
7. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
8. Do not attempt to service this product yourself, as it will void the warranty. Opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
9. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are interconnected, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.
10. General purpose cables are described for use with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer. To reduce the risk of fire, use a UL Listed or CSA Certified, minimum No. 26 AWG (0.128 mm<sup>2</sup>) telecommunication cable, or comparable cables certified for use in the country of installation.
11. The equipment is intended for installation in a maximum 149° F (65° C) ambient temperature, in an environment that is free of dust and dirt.
12. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:
  - Never install telephone wiring during a lightning storm.
  - Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

- 
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
  - Use caution when installing or modifying telephone lines.
  - Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
  - Do not use the telephone to report a gas leak in the vicinity of the leak.
13. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

## **Regulatory Compliance for Class A Equipment**

### **US Federal Communications Commission (FCC)**

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. 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 his own expense.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

### **Industry Canada**

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

### **Europe**

This Class A product complies with European Norm EN55022.

Warning: In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures to correct the situation.

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## Warranty, Sales, Service, and Training Information

Contact your local sales representative, service representative, or distributor directly for any help needed. For additional information concerning warranty, sales, service, repair, installation, documentation, training, distributor locations, or Paradyne worldwide office locations, use one of the following methods:

- **Internet:** Visit the Paradyne World Wide Web site at [www.paradyne.com](http://www.paradyne.com).  
(Be sure to register your warranty at [www.paradyne.com/warranty](http://www.paradyne.com/warranty).)
- **Telephone:** Call our automated system to receive current information by fax or to speak with a company representative.
  - Within the U.S.A., call 1-800-870-2221
  - Outside the U.S.A., call 1-727-530-2340



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